

Valid until August 2014

NHP

CIRCUIT BREAKER PRODUCTS TECHNICAL CATALOGUE

CPB



MINIATURE CIRCUIT
BREAKERS (MCBs)

01

PANELBOARDS,
LOADCENTRES
& MCB CHASSIS

02

MOULDED CASE
CIRCUIT BREAKERS
(MCCBs)

03

CHASSIS ASSEMBLIES
(MCCBs)

04

TRANSFER SWITCHES
& CONTROLLERS
(MCCBs)

05

TEMBREAK 1,
TO 400 A / 1000 V
(MCCBs)

06

AIR CIRCUIT
BREAKERS (ACBs)
& ARC DETECTION
SYSTEMS

07

EARTH LEAKAGE
RELAYS

08

TECHNICAL
REFERENCE

09



Valid until August 2014

Terasaki and NHP

The Terasaki Electric Company, Japan, was founded in 1923 in the industrial city of Osaka. In its early beginnings it started with the manufacture of air circuit breakers. Terasaki later expanded its operations in the late 40s when they entered the marine industry manufacturing a complete line of moulded case circuit breakers.

Terasaki is world famous for its installations of marine switchgear, including air and moulded case circuit breakers in a majority of the world's ocean-going marine vessels.

Terasaki has developed systems beyond basic switchgear requirements for guidance and monitoring of ships on the high seas.

Terasaki is very proud of its achievements in this area, proving that quality and reliability of Terasaki products is recognised where service conditions are sometimes arduous and severe.

In the 1960s Terasaki expanded their production facilities to enable them to enter the industrial market as well as continuing to expand within the well established marine business. Terasaki have a total of four factories throughout Japan, mainly in the Osaka area, as well as affiliated companies in the UK, Malaysia, Spain, Italy, Finland, Sweden, Brazil and China.

Terasaki were the pioneers and the first circuit breaker company to introduce current limiting circuit breakers to the world in 1963 utilising the contact repulsion principle, which was first introduced in the TL range of moulded case circuit breakers.

NHP was appointed sole agent for Terasaki products in Australia in 1979 and in New Zealand in 1999. From that time until now, NHP has established Terasaki products as a standard in the market.



Prices shown in published catalogues or price lists are recommended selling prices only and there is no obligation on the part of any reseller to maintain the same prices. Prices are subject to change without notice and all orders are accepted by the Company on the condition that they will be invoiced at the prices ruling at the date of despatch.

Prices are nett unless otherwise stated, are shown in Australian Dollars, are valid only for sales within Australia and are subject to GST.

Products offered for sale in this pocket book are subject to our standard Conditions of Sale, applicable at the date the order is placed. NHP standard Conditions of Sale can be viewed on our website at <http://ecat.nhp.com.au> or by requesting a copy from any NHP office.

NHP has a policy of continuous product improvement and we reserve the right to alter any product at any time without notice. All detail is subject to change without notice and should be confirmed at the time of purchase. All price lists and quotations are issued on an Errors & Omissions Excepted basis (E&OE).

Miniature circuit breakers (MCBs) and acc.

Safe-T MCBs, Din-T MCBs Din-T6, 10, 10H and 15, Din-Safe RCDs and safety switches, Din-T MCB accessories. Surge diverters, contactors and time switches.

1

Panelboards, loadcentres and accessories

Insulated and metal loadcentres, general purpose, multi-purpose and premier panelboards, busbar chassis and fuses.

2

Tembreak 1 and 2**Moulded Case Circuit Breakers (MCCBs)**

Thermal magnetic and electronic type MCCBs, earth leakage switches, DC and plug-in MCCBs.

3

Chassis assemblies for the TemBreak range

Temway XA / XB, PXB, XB SS and XC series, chassis to suit 125 - 250 AF MCCBs, terminal covers and HC high current chassis.

4

MCCB transfer switches and controllers

Manual, basic and automatic transfer switches, logic panels, transfer switch options and accessories.

5

TemBreak 630 A - 1600 A and 1000 V mining MCCBs

Thermal-magnetic and electronic MCCBs, 1000 V mining MCCBs and MCCB isolating switches.

6

Air Circuit Breakers and Arc detection relays

Standard air circuit breakers, main power circuit terminals, overcurrent relays and serial communication options. Arc detection relays.

7

Earth leakage relays

Surface mounting type TZS, DIN rail mounting type RD3A and RD1B, panel mounting type RD1DF, RD1EP, RD3E2 and RD1G2 and mining earth leakage relays.

8

Technical reference

MCB, MCCB general technical information, motor starting tables, DC applications, discrimination (selectivity) cascading, Type '1' and '2' co-ordination data. Electronic MCCB setting details.

9

This price list catalogue is segregated into sections. A guide to the contents of each section is situated at the front of the price list catalogue, and the first page of each section has its own index for easier product selection.

A product listing index is situated at the front of this price list.

Each page has a bold section number for prompt page location and is identified by both its section number and its page number eg. 1-16 signifies this is section 1 page 16. All **catalogue numbers** are bold and shaded.

All prices are in \$AUS (exclusive of GST)

Prices for equipment fitted with coils, apply to standard voltages only.

Non-standard voltages shown are available on request at additional cost.

An alphanumeric index by catalogue number is located at the rear of the price list catalogue. Items prefixed **I** in the alphanumeric index are available on indent only. These items are not stocked and will be brought in only on a customer request, the item can not be returned for credit. For more information on indent items please contact NHP customer service. Items prefixed **A** in the alphanumeric index are assembled to customer order/ requirements.

Current NHP standard conditions of sale apply to this price list catalogue.

The prices in this price list catalogue are recommended prices only (exclusive of GST) and there is no obligation on resellers to comply with the recommendation.

Product group

Section number

Cat. No. of product is shown next to the applicable price. The catalogue numbers are bold and shaded for quick identification.

Section and page number e.g. section 1, page 16.

1 DIN-T
Miniature circuit breakers

Din-T6

2-in-1 Double the capacity of your load centre

6 kA 'C' curve

- Standard AS/NZS 60898
- Approval No. NSW24783
- Current range 2 - 40 A
- C curve tripping characteristics
- Saves up to 50 % space
- DIN rail mounting
- General purpose light and power


Curve types: C (5 - 10 in)

1 pole + 1 pole
Single module width (18 mm)

In (A)	Cat. No.	Price \$	In (A)	Cat. No.	Price \$
2	DTCBD61102C	182.00	2	DTCBD6202C	171.00
4	DTCBD61104C	182.00	4	DTCBD6204C	171.00
6	DTCBD61106C	182.00	6	DTCBD6206C	171.00
10	DTCBD61110C	182.00	10	DTCBD6210C	171.00
16	DTCBD61116C	182.00	16	DTCBD6216C	171.00
20	DTCBD61120C	182.00	20	DTCBD6220C	171.00
			25	DTCBD6225C	171.00
			32	DTCBD6232C	171.00
			40	DTCBD6240C	171.00

Must be same phase.

2 pole
Single module width (18 mm)



1P + 1P 3 Pole

3 pole
Double module width (36 mm)

In (A)	Cat. No.	Price \$	In (A)	Cat. No.	Price \$
2	DTCBD6302C	275.00	2	DTCBD6402C	390.00
4	DTCBD6304C	275.00	4	DTCBD6404C	390.00
6	DTCBD6306C	275.00	6	DTCBD6406C	390.00
10	DTCBD6310C	275.00	10	DTCBD6410C	390.00
16	DTCBD6316C	275.00	16	DTCBD6416C	390.00
20	DTCBD6320C	275.00	20	DTCBD6420C	390.00
25	DTCBD6325C	275.00	25	DTCBD6425C	390.00
32	DTCBD6332C	275.00	32	DTCBD6432C	390.00
40	DTCBD6340C	275.00	40	DTCBD6440C	390.00

4 pole
Double module width (36 mm)

Notes: 16 mm tunnel terminals.
Not suitable for chassis mounting.
Compatible with NHP Terasaki auxiliaries and accessories.

1 - 16 NHP Sales 1300 NHP NHP www.nhp.com.au
GST not included
Price schedule 'T1'

Page contents

Illustrative photographs or diagrams indicative of products available (not necessarily to scale)

Recommended list price (exclusive of GST)

Footnotes, as necessary, are referred to the bottom of each page. E.g. 2).

PRODUCT	SUB PRODUCT	BRAND	SECTION	PAGE
A				
ACBs	ACB ordering information	Terasaki	7	9
	Dimensions	Terasaki	7	37
	Introduction, standards	Terasaki	7	2
	Main power circuit terminal specifications	Terasaki	7	11
	NHP Servicing	Terasaki	7	34
	Overcurrent Release (OCR) Specification	Terasaki	7	16
	Performance specification of AR and AR-H ACB	Terasaki	7	12
	Providing solutions	Terasaki	7	38
	Retrofitting and installation kits	Terasaki	7	35
	Serial communication options	Terasaki	7	30
	Specifications	Terasaki	7	10
	Standard accessories	Terasaki	7	6
	Stocked AR ACBs	Terasaki	7	4
	TemPower Rack remote racking	Terasaki	7	33
	TemRelay external alarm module	Terasaki	7	32
TemVision remote monitoring and control	Terasaki	7	32	
Tripping options	Terasaki	7	261	
C				
Chassis	Chassis assemblies overview	Terasaki	4	2
	Chassis to suit 125 – 250 AF MCCBs	Terasaki	4	11
	Terminal covers	Terasaki	4	12
	to suit TemBreak 1 630 – 1250 AF MCCBs	Terasaki	4	15
	to suit TemBreak 2 125 – 630 AF MCCBs	Terasaki	4	15
	XA / XB, PXB series	Terasaki	4	3
	XB SS series	Terasaki	4	7
	XC series	Terasaki	4	9
Contactors	CA 8 contactors and emergency lighting test unit ..	S+S	1	56
L				
Loadcentres	Insulated – Din-Modula 150 series	Terasaki	2	6
	Insulated – Din-Modula weatherproof series	Terasaki	2	8
	Insulated – Din-T flush mount	Terasaki	2	5
	Insulated – Din-T surface mount	Terasaki	2	4
	Insulated – ILC series	Terasaki	2	3
	Insulated – MCE weatherproof series	Terasaki	2	7
	Metal – NLC for Din-T MCBs	Terasaki	2	9
	Metal – TLC for Safe-T MCBs	Terasaki	2	10
M				
MCBs	Accessories – mounting	Din-T	1	35
	Accessories for Din-T series MCBs	Din-T	1	50
	Changeover switch, pushbuttons	Din-T	1	44
	DC current circuit breaker selection table	Terasaki	9	9
	Dimensions – Safe-T & Din-T	Din-T	1	61
	Din busbar comb	Din-T	1	43

PRODUCT	SUB PRODUCT	BRAND	SECTION	PAGE
	Din mount housing, panelboard switch & kilowatt meters	Din-T	1	42
	Din-Safe MCBs (RCBO)	Din-T	1	30
	Din-Safe safety switches	Din-T	1	25
	Din-Safe single pole	Din-T	1	28
	Din-Safe-M add on earth leakage modules	Din-T	1	32
	Din-T 10 Series 10 kA miniature circuit breakers	Din-T	1	19
	Din-T 10H Series 10 kA miniature circuit breakers	Din-T	1	22
	Din-T 15 Series 15 kA miniature circuit breakers	Din-T	1	23
	Din-T 6 easy-fit	Din-T	1	24
	Din-T 6 Series 6 kA miniature circuit breakers	Din-T	1	14
	Din-T auxiliary contacts & Din-T motor operator DTMD	Din-T	1	40
	Din-T contactors and hour run counter	Din-T	1	52
	Din-T impulse switches	Din-T	1	55
	Din-T MCB: B, C and D curve definitions	Terasaki	9	7
	Din-T MCB: Effects of frequency	Terasaki	9	3
	Din-T MCB: Ratings table	Terasaki	9	2
	Din-T MCB: Temperature compensation curves	Terasaki	9	8
	Din-T MCB: Time current curves	Terasaki	9	4
	Din-T series 6 kA 2-in-1	Din-T	1	16
	Din-T Series 6 kA for DC applications	Din-T	1	17
	Din-T Series general features	Din-T	1	12
	Din-T shunt and undervoltage trip	Din-T	1	39
	LockDIN™	Din-T	1	46
	Main switch 63 – 100 A	Din-T	1	38
	MCB Fuse-fault current limiting	Terasaki	9	10
	Meter Isolator	Din-T	1	48
	Miniature Circuit Breaker selection guide	Din-T	1	2
	Safe-T Earth leakage relay (ELR)	Terasaki	1	11
	Safe-T Series 6 kA miniature circuit breakers	Terasaki	1	6
	Safe-T Series 6 kA miniature circuit breakers with shunt trip	Terasaki	1	8
	Safe-T Single pole width RCCBs SRCB (RCBO)	Terasaki	1	10
	Safe-T Switchboard hardware and accessories	Terasaki	1	9
	Selectivity/Cascade: MCB & MCCB	Terasaki	9	11
MCCBs	0.7 A – 12 A (XM30PB)	Terasaki	3	21
	0.7 A – 12 A (XM30PB)	Terasaki	3	22
	1000 A	Terasaki	3	113
	1000 A / 1250 A / 1600 A	Terasaki	3	123
	125 A	Terasaki	3	24
	125 A	Terasaki	3	32
	1250 A	Terasaki	3	121
	160 A – 250 A	Terasaki	3	59
	160 A / 250 A	Terasaki	3	42
	1600 A	Terasaki	3	122

PRODUCT	SUB PRODUCT	BRAND	SECTION	PAGE
	2000 A	Terasaki	3	128
	2000 A / 2500 A / 3200 A	Terasaki	3	131
	2013 stocking guide for			
	125 A – 400 A TemBreak 1 MCCBs	Terasaki	6	3
	2500 A	Terasaki	3	129
	3200 A	Terasaki	3	130
	400 A	Terasaki	3	69
	400 A / 630 A	Terasaki	3	92
	630 A	Terasaki	3	85
	630 A / 800 A	Terasaki	3	103
	630 A / 800 A	Terasaki	3	115
	DC MCCBs	Terasaki	3	143
	Earth Leakage MCCBs	Terasaki	3	133
	Internal accessory installation TemBreak 1 and 2	Terasaki	3	8
	Introduction to TemBreak 2	Terasaki	3	2
	MCCB 380/415 V clearance requirements	Terasaki	9	47
	MCCB Cross reference	Terasaki	9	67
	MCCB types and setting ranges	Terasaki	3	16
	Motor circuit: application tables	Terasaki	9	38
	Motor starting: Motor rated currents	Terasaki	9	45
	Plug-in MCCBs	Terasaki	3	146
	Selection and location guide for MCCBs	Terasaki	6	2
	Selectivity/Cascade: MCB & MCCB	Terasaki	9	11
	Short circuit co-ordination	Terasaki	9	24
	Short circuit current calculator	Terasaki	9	22
	Switch disconnectors MCCBs	Terasaki	3	142
	T2SW Add on CT block for MCCBs	Terasaki	3	20
	Technical reference tables	Terasaki	3	12
	TemBreak 2 and TemBreak 1 Cross Reference	Terasaki	3	148
	TemBreak 2 Electronic OCR & MCCBs	Terasaki	9	51
	TL100EM 1000 V MCCB	Terasaki	6	7
	TL1250NE	Terasaki	6	34
	TL630NE	Terasaki	6	32
	TL800NE	Terasaki	6	33
	VS125NJ 1000 V MCCB	Terasaki	6	5
	VS250NJ 1000 V MCCB	Terasaki	6	6
	Watts loss – MCCBs	Terasaki	9	21
	XS/XH630/800	Terasaki	6	13
	XS1250SE	Terasaki	6	28
	XS1600SE	Terasaki	6	31
	XV1250NE 1000 V MCCB	Terasaki	6	30
	XV400NE 1000 V MCCB	Terasaki	6	9
	XV630/800 1000 V MCCB	Terasaki	6	24
P				
Panelboards	CD chassis	Terasaki	2	65

PRODUCT	SUB PRODUCT	BRAND	SECTION	PAGE
	CONCEPT economical panelboards	Terasaki	2	14
	CONCEPT•PLUS accessory modules	Terasaki	2	29
	CONCEPT•PLUS energy metering	Terasaki	2	26
	CONCEPT•PLUS Grizz-Bar isolation	Terasaki	2	24
	CONCEPT•PLUS multi-purpose panelboards	Terasaki	2	17
	CONCEPT•PLUS options and accessories	Terasaki	2	30
	CONCEPT•PLUS Safe-T	Terasaki	2	27
	CONCEPT•PREMIER 2	Terasaki	2	40
	CONCEPT•PREMIER accessory modules	Terasaki	2	48
	CONCEPT•PREMIER Grizz-Bar isolation	Terasaki	2	37
	CONCEPT•PREMIER MCCB	Terasaki	2	47
	CONCEPT•PREMIER options and accessories	Terasaki	2	50
	CONCEPT•PREMIER premium panelboards	Terasaki	2	32
	CONCEPT•PREMIER Safe-T	Terasaki	2	45
	CONCEPT•TOUGH heavy-duty panelboards	Terasaki	2	52
	CT chassis	Terasaki	2	67
	GB chassis	Terasaki	2	62
	Modular panelboard features	Terasaki	2	70
	NC chassis	Terasaki	2	58
	Panelboard DIN switch-fuse & fuse links	KATKO	2	69
	Panelboard hardware to suit the CONCEPT range ...	Terasaki	2	56
	Panelboards – introduction	Terasaki	2	11
	Panelboards – quick reference table	Terasaki	2	12
Pole covers	Pole Covers to suit Safe-T and Din-T series	Terasaki	2	2

R

RCD	RCD/Earth Leakage applications and AS/NZS Standards	Terasaki	9	68
Relays	Arc detecting relay system	Selco	7	39
	Arc D-Tect ordering information	Selco	7	44
Relays - earth leakage	DIN Rail mounting type RD1B series	Terasaki	8	5
	DIN Rail mounting type RD3A series	Terasaki	8	4
	Panel mounting type RD1DF series	Terasaki	8	6
	Panel mounting type RD1EP series	Terasaki	8	7
	Panel mounting type RD1G2 series	Terasaki	8	10
	Panel mounting type RD3E2 series	Terasaki	8	8
	Surface mounting type TZS series	Terasaki	8	2
Relays - mining earth leakage	Accessories	Terasaki	8	15
	Panel mount mining relays, DSRM72 and DSR48T Series	Terasaki	8	12
	Remote current transformer (toroid) TD and DSR Series	Terasaki	8	14

PRODUCT	SUB PRODUCT	BRAND	SECTION	PAGE
S				
Surge protection	Surge diverters	Cirprotec	1	57
Switch - transfer	Accessories to suit 125 – 630 AF MCCB	Terasaki	5	36
	Logic panel selection	Terasaki	5	28
	Transfer switch component ordering	Terasaki	5	12
	Transfer switch options	Terasaki	5	34
	Transfer switch selection	Terasaki	5	7
	Transfer switch types	Terasaki	5	2
Switches - time	Time switches	Grasslin	1	68
T				
Technical reference	Electrical mathematical formulae	Terasaki	9	50
	IP Ratings chart	Terasaki	9	70
	NHP Technical News publications	Terasaki	9	71

Valid until August 2014

National Manufacturing and Distribution Centre

NHP prides itself on being able to provide customers with tailored solutions that suit their individual needs. Whilst we have significant stockholdings and expertise at all our locations throughout Australia and New Zealand, the purpose of our National Manufacturing and Distribution Centre in Laverton, Melbourne is to develop these solutions through manufacturing, assembly, servicing and design and engineering.

SIZE

Warehouse 7,000 m²
Manufacturing 5,000 m²

STAFF

270+ Employees

OPERATING HOURS

6.00am - 11.30pm, Monday-Friday

STOCKHOLDING

- 45,000+ line items (20,000 stocked)
- Approximately \$70 M

ITEM THROUGHPUT

- Approximately 5,500 per day
(6,000 lines throughout Australasia)



NHP NATIONAL MANUFACTURING AND DISTRIBUTION CENTRE

FACTS

- Orders released for picking before 3.00 pm are despatched the same day.
- The Supply Chain team strives to achieve 95 % customer service based on an 'on time in full, first time' measurement.



Scan the QR code to view the Laverton Tour brochure.



Scan the QR code to view our Concept Express video



Creating a sustainable future

Adopting emerging technologies to support sustainable practices

A major push towards more sustainable practices by many in the industrial electrical industry is today clear for all and a major focus at NHP is to provide sustainable solutions for our customers as well as throughout our own operations.

In 2010 we designed and constructed our very own Sustainability Centre - located at our existing National Manufacturing and Distribution Centre in Laverton, Melbourne.

Housing cutting-edge technology and equipment enabling research & development and testing, the Centre aids investigation into ways to effectively introduce and manage sustainable practices. Sustainable technologies within the centre include:

- A horizontal axis wind generator
- Solar photo-voltaic systems
- Grid interactive systems
- Off-grid hybrid systems
- Dual axis solar tracker, and
- Energy Management & control systems

NHP are also proud participants in the Victorian Government's electric vehicle trial which will provide valuable insights to assist in future business planning, as well as help the wider community understand the process, timelines and barriers for transitioning to electric vehicle technologies in the future.

These initiatives highlight our commitment to sustainable practices across all facets of the workplace. Our aim is to remain at the forefront of the industry, as leaders in providing alternative energy solutions for commercial and industrial applications.

Working closely with Melbourne University, RMIT University and Victoria University, NHP is also proud to educate young electrical engineers in this growing and important industry sector.



ONE OF NHP'S ELECTRIC CARS ON DISPLAY AT THE SUSTAINABILITY CENTRE IN LAVERTON, MELBOURNE



Scan the QR code to Book a Live Tour.



Scan the QR code for further information on our electric car trial.

Valid until August 2014

Products and Brands

To assist customers in finding what they want, we have classified our extensive product range into the following categories.

1. Market Categories

AUTOMATION SYSTEMS

The automation system relies on information from the field to control the process. NHP's switching and sensing suite of products cover all field sensing requirements including standard and hazardous area applications.



Rockwell Software



SPECTRUM CONTROLS

WAGO

ESA

MITSUBISHI

CARLO GAVAZZI

POWER DISTRIBUTION & PROTECTION

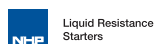
Most processes, even if automated, still require some manual control and NHP provides a complete range of control products and systems for this purpose.



ALLEN-BRADLEY
ERICO
WOHNER
SELCO

MOTOR CONTROL & DRIVES

Divided into two distinct product ranges, NHP's plugs and sockets provide solutions for a wide range of applications and are available in a wide range of amperages and pin configurations.



AUCOM
SANTERNO
GHISALBA
MICROELETTRICA

POWER QUALITY

NHP offer a large variety of quality safety products that meet international standards, with products ranging from emergency stop switches, light curtains, and safety monitoring relays all the way up to fully integrated safety PLC systems and SIL3 rated Safety Critical Shutdown systems.



ELECTRONICON
BELUK

ENCLOSURES & CLIMATE CONTROL

NHP has a complete range of mild steel, stainless and plastic enclosure options in a variety of IP ratings and configurations including modular switchboard systems.

To complement NHP's enclosure systems, a wide range of climate control solutions are also available.

CUBIC

FIBOX



MODULAR



COSMOTEC
STEGO
IBOCO



SIGNALLING DEVICES

With an extensive range of audible and visual signalling devices, NHP provides solutions for hundreds of applications, be it general safety warning, process control, fire or evacuation.

klaxon

MOFLASH
SIGNALLING

Allen-Bradley

REM LIVE

TERMINATION & WIRING SYSTEMS

NHP has a wide range of screw and screw-less terminals, terminal accessories (such as DIN rail and jumper pins), cable ducting and pre-wired cable looms for Allen Bradley automation systems which significantly reduces labour intensive wire termination.

sprecher+schuh

WAGO
INNOVATIVE CONNECTIONS



Allen-Bradley

BOCCHIOTTI
ERICO

TIMERS & CONTROL RELAYS

NHP offers a range of control relays and timers that can be used in conjunction with a conventional automation system to switch higher loads or in stand alone applications where the only basic single function control is required.



Allen-Bradley



finder

GRASSLIN

FIELD SWITCHING & SENSING

The automation system relies on information from the field to control the process. NHP's switching and sensing suite of products cover all field sensing requirements including standard and hazardous area applications.



CARLO GAVAZZI
STEUTE

PLUGS & SOCKETS

Divided into two distinct product ranges, NHP's plugs and sockets provide solutions for a wide range of applications and are available in a wide range of amperages and pin configurations.



PROCONNECT

OPERATOR CONTROL DEVICES

Most processes, even if automated, still require some manual control and NHP provides a complete range of control products and systems for this purpose.



ELEKTRA
SPOHN + BURKHARDT
TER

SAFETY PRODUCTS

NHP offer a large variety of quality safety products that meet international standards, with products ranging from emergency stop switches, light curtains, and safety monitoring relays all the way up to fully integrated safety PLC systems and SIL3 rated Safety Critical Shutdown systems.



STEUTE

HAZARDOUS AREA EQUIPMENT

NHP provided a world class range of hazardous area equipment for explosive environments including light fittings, enclosures and terminal boxes, control stations and intrinsically safe automation products.



WAGO
STEUTE
ALLEN-BRADLEY

METERING

Energy Metering is the essential component to understanding your energy consumption and power quality. NHP has a complete range of energy meters and power quality analysers to meet the most demanding of applications.



RENEWABLE ENERGY PRODUCTS

NHP offers a large selection of products and solutions tailored towards renewable energy applications including Solar and Wind.



SERVICES & TRAINING

NHP has a wide range of services including technical support, field service and maintenance contracts, repair services and training.



Products and Brands

2. Application Classes

HAZARDOUS AREA EQUIPMENT

When servicing important industries such as the oil and gas, petrochemical and grain handling there is no room for complacency. At NHP our aim is to provide a world class range of hazardous area equipment for the hazardous market which includes light fittings, terminal boxes, control stations and an extensive suite of automation products. NHP has been in this field for many years and has acquired a comprehensive knowledge on explosion protection products, so wherever explosive atmospheres are prevalent, NHP can provide the safest solution.



WAGO

STEUTE

ALLEN-BRADLEY

PROCESS CONTROL

Like the principles which drive the process industry, NHP is committed to delivering products of continuous quality to assist our customers in achieving process optimisation. Encompassing a wide range of industries including oil refining, petrochemicals, water and sewage treatment, food processing, and pharmaceuticals, the NHP process control product portfolio offers complete system integration.

SAFETY

For any industrial application, the safety of employees and the general population is of major importance. NHP has a long history in the safety industry and can be a trusted destination for all your safety application needs. NHP offer a large variety of quality products that meet all relevant international standards, with products ranging from simple emergency stop switches, to light curtains, safety monitoring relays all the way up to fully integrated safety PLC systems. Our product range extends further into SIL3 rated Safety Critical Shutdown systems.



STEUTE

KATKO



Rockwell Software

3. Application Solutions

ENERGY MANAGEMENT

NHP can provide Energy Management Metering and Software solutions that monitor and record energy information so operators can identify consumption trends and take corrective actions. Real-time measurements of these electrical parameters, such as voltage variations or distortions, may have alarm thresholds set to warn managers if preset limits are reached. These real-time measurements also allow site managers to anticipate overload conditions that could, for example, trip a circuit breaker. NHP can provide a wide range of products to complement any Energy Management Solution.

SUSTAINABILITY

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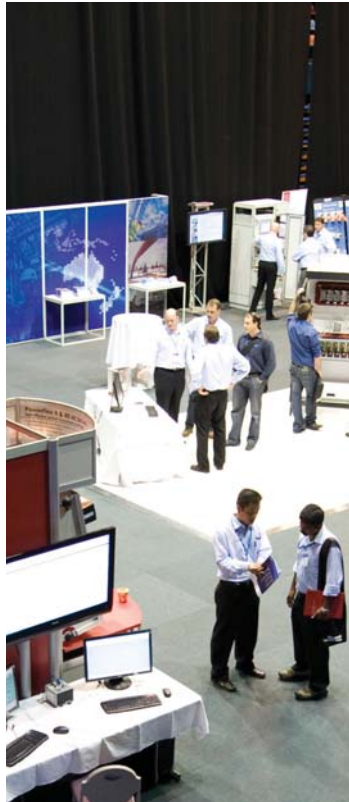
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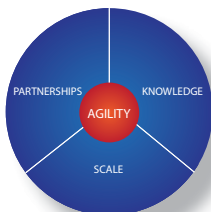


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1

Miniature circuit breakers (MCBs) and accessories

Miniature Circuit Breaker selection guide	1 - 2
Safe-T Series 6 kA miniature circuit breakers	1 - 6
Safe-T Series 6 kA miniature circuit breakers with shunt trip	1 - 8
Safe-T Switchboard hardware and accessories	1 - 9
Safe-T Single pole width RCCBs SRCB (RCBO)	1 - 10
Safe-T Earth leakage relay (ELR)	1 - 11
Din-T Series general features	1 - 12
Din-T 6 Series 6 kA miniature circuit breakers	1 - 14
Din-T series 6 kA 2-in-1	1 - 16
Din-T Series 6 kA for DC applications	1 - 17
Din-T 10 Series 10 kA miniature circuit breakers	1 - 19
Din-T 10H Series 10 kA miniature circuit breakers	1 - 22
Din-T 15 Series 15 kA miniature circuit breakers	1 - 23
Din-T 6 easy-fit	1 - 24
Din-Safe safety switches	1 - 25
Din-Safe single pole	1 - 28
Din-Safe MCBs (RCBO)	1 - 30
Din-Safe-M add on earth leakage modules	1 - 32
Accessories – mounting	1 - 35
Main switch 63 – 100 A	1 - 38
Din-T shunt and undervoltage trip	1 - 39
Din-T auxiliary contacts & Din-T motor operator DTMD	1 - 40
Din mount housing, panelboard switch & kilowatt meters	1 - 42
Din busbar comb	1 - 43
Changeover switch, pushbuttons	1 - 44
LockDIN™	1 - 46
Meter Isolator	1 - 48
Accessories for Din-T series MCBs	1 - 50
Din-T contactors and hour run counter	1 - 52
Din-T impulse switches	1 - 55
CA 8 contactors and emergency lighting test unit	1 - 56
Surge diverters	1 - 57
Dimensions – Safe-T & Din-T	1 - 61
Time switches	1 - 68

2

Panelboards, loadcentres and accessories busbar**Chassis assemblies**

Pole Covers to suit Safe-T and Din-T series	2 - 2
---	-------

Loadcentres

Insulated – ILC series	2 - 3
Insulated – Din-T surface mount	2 - 4
Insulated – Din-T flush mount	2 - 5
Insulated – Din-Modula 150 series	2 - 6

Insulated – MCE weatherproof series	2 - 7
Insulated – Din-Modula weatherproof series	2 - 8
Metal – NLC for Din-T MCBs	2 - 9
Metal – TLC for Safe-T MCBs	2 - 10

CONCEPT

Panelboards – introduction	2 - 11
Panelboards – quick reference table	2 - 12
CONCEPT economical panelboards	2 - 14
CONCEPT•PLUS multi-purpose panelboards	2 - 17
CONCEPT•PLUS Grizz-Bar isolation	2 - 24
CONCEPT•PLUS energy metering	2 - 26
CONCEPT•PLUS Safe-T	2 - 27
CONCEPT•PLUS accessory modules	2 - 29
CONCEPT•PLUS options and accessories	2 - 30
CONCEPT•PREMIER premium panelboards	2 - 32
CONCEPT•PREMIER Grizz-Bar isolation	2 - 37
CONCEPT•PREMIER 2	2 - 40
CONCEPT•PREMIER Safe-T	2 - 45
CONCEPT•PREMIER MCCB	2 - 47
CONCEPT•PREMIER accessory modules	2 - 48
CONCEPT•PREMIER options and accessories	2 - 50
CONCEPT•TOUGH heavy-duty panelboards	2 - 52
Panelboard hardware to suit the CONCEPT range	2 - 56
NC chassis	2 - 58
GB chassis	2 - 62
CD chassis	2 - 65
CT chassis	2 - 67

KATKO

Panelboard DIN switch-fuse & fuse links	2 - 69
Modular panelboard features	2 - 70

3**TemBreak 1 and 2 MCCBs**

Introduction to TemBreak 2	3 - 2
Internal accessory installation TemBreak 1 and 2	3 - 8
Technical reference tables	3 - 12
MCCB types and setting ranges	3 - 16

MCCBs by amp rating

T2SW Add on CT block for MCCBs	3 - 20
0.7 A – 12 A (XM30PB)	3 - 21
125 A	3 - 24
160 A / 250 A	3 - 42
400 A	3 - 69
630 A	3 - 85
630 A / 800 A	3 - 103
1000 A	3 - 113
1250 A	3 - 121
1600 A	3 - 122

2000 A	3 - 128
2500 A	3 - 129
3200 A	3 - 130

Accessories for MCCBs

0.7 A – 12 A (XM30PB)	3 - 22
125 A	3 - 32
160 A – 250 A	3 - 59
400 A / 630 A	3 - 92
630 A / 800 A	3 - 115
1000 A / 1250 A / 1600 A	3 - 123
2000 A / 2500 A / 3200 A	3 - 131
Earth Leakage MCCBs	3 - 133
Switch disconnectors MCCBs	3 - 142
DC MCCBs	3 - 143
Plug-in MCCBs	3 - 146
TemBreak 2 and TemBreak 1 Cross Reference	3 - 148
TO / TG / TT, TemBreak 2, TemBreak 1 Cross Reference	Section 9

4

Chassis assemblies for the TemBreak range

Chassis assemblies overview	4 - 2
XA / XB, PXB series	4 - 3
XB SS series	4 - 7
XC series	4 - 9
Chassis to suit 125 – 250 AF MCCBs	4 - 11
Terminal covers	4 - 12

HC High-current chassis

to suit TemBreak 2 125 – 630 AF MCCBs	4 - 15
to suit TemBreak 1 630 – 1250 AF MCCBs	4 - 15

5

MCCB transfer switches and controllers

Terasaki

Transfer switch types	5 - 2
Transfer switch selection	5 - 7
Transfer switch component ordering	5 - 12
Logic panel selection	5 - 28
Transfer switch options	5 - 34
Accessories to suit 125 – 630 AF MCCB	5 - 36

6

TemBreak 1, 630 A – 1600 A and 1000 V mining MCCBs

Selection and location guide for MCCBs	6 - 2
2013 stocking guide for 125 A – 400 A TemBreak 1 MCCBs	6 - 3

MCCBs and accessories

VS125NJ 1000 V MCCB	6 - 5
VS250NJ 1000 V MCCB	6 - 6

TL100EM 1000 V MCCB	6 - 7
XV400NE 1000 V MCCB	6 - 9
XS/XH630/800	6 - 13
XV630/800 1000 V MCCB	6 - 24
XS1250SE	6 - 28
XV1250NE 1000 V MCCB	6 - 30
XS1600SE	6 - 31
TL630NE	6 - 32
TL800NE	6 - 33
TL1250NE	6 - 34

7

TemPower2 air circuit breakers (ACBs)

Introduction, standards	7 - 2
Stocked AR ACBs	7 - 4
Standard accessories	7 - 6
ACB ordering information	7 - 9
Specifications	7 - 10
Main power circuit terminal specifications	7 - 11
Performance specification of AR and AR-H ACB	7 - 12
Overcurrent Release (OCR) Specification	7 - 16
Tripping options	7 - 26
Serial communication options	7 - 30
TemRelay external alarm module	7 - 32
TemVision remote monitoring and control	7 - 32
TemPower Rack remote racking	7 - 33
NHP Servicing	7 - 34
Retrofitting and installation kits	7 - 35
Dimensions	7 - 37
Providing solutions	7 - 38
Arc detecting relay system	7 - 39
Arc D-Tect ordering information	7 - 44

8

Earth leakage relays

Surface mounting type TZS series	8 - 2
DIN Rail mounting type RD3A series	8 - 4
DIN Rail mounting type RD1B series	8 - 5
Panel mounting type RD1DF series	8 - 6
Panel mounting type RD1EP series	8 - 7
Panel mounting type RD3E2 series	8 - 8
Panel mounting type RD1G2 series	8 - 10

Mining earth leakage relay

Panel mount mining relays, DSRM72 and DSR48T Series	8 - 12
Remote current transformer (toroid) TD and DSR Series	8 - 14
Accessories	8 - 15

9

Technical reference data

Din-T MCB: Ratings table	9 - 2
Din-T MCB: Effects of frequency	9 - 3
Din-T MCB: Time current curves	9 - 4
Din-T MCB: B, C and D curve definitions	9 - 7
Din-T MCB: Temperature compensation curves	9 - 8
DC current circuit breaker selection table	9 - 9
MCB Fuse-fault current limiting	9 - 10
Selectivity/Cascade: MCB & MCCB	9 - 11
Watts loss – MCCBs	9 - 21
Short circuit current calculator	9 - 22
Short circuit co-ordination	9 - 24
Motor circuit: application tables	9 - 38
Motor starting: Motor rated currents	9 - 45
MCCB 380/415 V clearance requirements	9 - 47
Electrical mathematical formulae	9 - 50
TemBreak 2 Electronic OCR & MCCBs	9 - 51
MCCB Cross reference	9 - 67
RCD/Earth Leakage applications and AS/NZS Standards	9 - 68
IP Ratings chart	9 - 70
NHP Technical News publications	9 - 71

Miniature circuit breakers and accessories (MCBs)

1

	Page
Miniature Circuit Breaker selection guide	1 - 2
Safe-T Series 6 kA miniature circuit breakers	1 - 6
Safe-T Series 6 kA miniature circuit breakers with shunt trip	1 - 8
Safe-T Switchboard hardware and accessories	1 - 9
Safe-T Single pole width RCCBs SRCB (RCBO)	1 - 10
Safe-T Earth leakage relay (ELR)	1 - 11
Din-T Series general features	1 - 12
Din-T 6 Series 6 kA miniature circuit breakers	1 - 14
Din-T series 6 kA 2-in-1	1 - 16
Din-T Series 6 kA for DC applications	1 - 17
Din-T 10 Series 10 kA miniature circuit breakers	1 - 19
Din-T 10H Series 10 kA miniature circuit breakers	1 - 22
Din-T 15 Series 15 kA miniature circuit breakers	1 - 23
Din-T 6 easy-fit	1 - 24
Din-Safe safety switches	1 - 25
Din-Safe single pole	1 - 28
Din-Safe MCBs (RCBO)	1 - 30
Din-Safe-M add on earth leakage modules	1 - 32
Accessories - mounting	1 - 35
Main switch 63 - 100 A	1 - 38
Din-T shunt and undervoltage trip	1 - 39
Din-T auxiliary contacts & Din-T motor operator DTMD	1 - 40
Din mount housing, panelboard switch & kilowatt meters	1 - 42
Din busbar comb	1 - 43
Changeover switch, pushbuttons	1 - 44
LockDIN™	1 - 46
Meter Isolator	1 - 48
Accessories for Din-T series MCBs	1 - 50
Din-T contactors and hour run counter	1 - 52
Din-T impulse switches	1 - 55
CA 8 contactors and emergency lighting test unit	1 - 56
Surge diverters	1 - 57
Dimensions - Safe-T & Din-T	1 - 61
Time switches	1 - 68

Miniature circuit breakers Safe-T & Din-T



Miniature Circuit Breakers	Safe-T	DIN-T6	Din-T10
Standard (AS/NZS) ¹⁾	3111 / 2184 ²⁾	60898	60898
No. poles & module width			
1P	25 mm	18 mm	18 mm
2P	50 mm	36 mm	36 mm
3P	75 mm	54 mm	54 mm
4P	100 mm	-	72 mm
Mounting	Clip tray	DIN rail	DIN rail
Current ratings	6 A - 100 A	2 A - 63 A	0.5 A - 63 A
Short circuit rating (kA)	6 kA	6 kA	10 kA
Curve types	General	C & D	B, C & D
Rated AC voltage 1P/2,3,4P	240/415 V	240/415 V	240/415 V
Rated DC voltage	250 V -2P 5 kA	48 V 1P 110 V 2P	48 V 1P 110 V 2P
Sealable in ON-Off position	No	Yes	Yes
Trip-free mechanism	Yes	Yes	Yes
Centre trip position	Yes	No	No
Padlock facility- non captive	Yes	Yes	Yes
Padlock facility- captive	Yes	Yes	Yes
Busbar connection- On-top	Fork	Pin	Pin
Busbar connection- OFF-bottom	Fork	Fork/Pin	Fork/Pin
Terminal size- On-top	-	35 mm ²	35 mm ²
Terminal size- OFF-bottom	-	35 mm ²	35 mm ²

Notes: ¹⁾ UL listed MCB refer to NHP.

²⁾ AS only.



Din-T15	Din-T10H	Din-T 2-in-1	Din-T DC	Din-T Easy-Fit
60947-2	60947-2	60898	60898	60898
18 mm	27 mm	18 mm	18 mm	18 mm
36 mm	54 mm	18 mm	36 mm	-
54 mm	81 mm	36 mm	-	54 mm
72 mm	108 mm	36 mm	81 mm	-
DIN rail	DIN rail	DIN rail	DIN rail	DIN rail
0.5 A - 63 A	80 A-125 A	2 A-40 A	0.5 A-63 A	6 A-63 A
15 kA - 50 kA	10 kA	6 kA	6 kA T15	6 kA
C	C & D	C	B & C	C
240/415 V	240/415 V	240/415 V	240/415 V	240/415 V
48 V 1P 110 V 2P	125 V 2P 250 V 4P	-	250 V 1P 500 V 2P 880 V 4P	-
Yes	Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes	Yes
No	No	No	No	No
Yes	Yes	Yes	Yes	Yes
Yes	Yes	No	Yes	No
Pin	Pin	Pin	Fork/Pin	-
Fork/Pin	Pin	Pin	Fork/Pin	Pin
35 mm ²	70 mm ²	16 mm ²	35 mm ²	4 mm ² 6 A-20 A 35 mm ² 25 A - 63 A
35 mm ²	70 mm ²	16 mm ²	35 mm ²	35 mm ²

Miniature circuit breakers Safe-T & Din-T

**Safe-T SRCB****Din-Safe DSRCD****Din-Safe DSRCBS**

Residual Current Devices	Safe-T SRCB	Din-Safe DSRCD	Din-Safe DSRCBS
Standard (AS/NZS) ¹⁾	3111 /3190 ²⁾	61008	61009
No. poles & module width	1P + N - 25 mm	2P - 36 mm, 4P - 72 mm	1P + N - 18 mm
Mounting	Clip tray	DIN rail	DIN rail
Current ratings	10 A, 16 A, 20 A	40 A, 63 A, 80 A, 100 A & 125 A	6 A, 10 A, 16 A, 20 A, 25 A & 32 A
Trip sensitivity	10 mA & 30 mA	30 mA, 100 mA, 300 mA, 500 mA	30 mA
Sensitivity type	AC	AC, A, AI, S & B	AC & A
Short circuit rating (kA)	6 kA	Inc -10 kA MCB or fuse backup	6 kA
Curve types	General	-	B & C
Rated AC voltage	240 V	240 V/415 V	240 V
Sealable in ON-Off position	No	Yes	Yes
Trip-free mechanism	Yes	Yes	Yes
Centre trip position	Yes	No	No
Padlock- non captive	No	Yes	Yes
Padlock- captive	Yes	No	No
Busbar connection- On-top	Fork	Pin	-
Busbar connection- OFF-bottom	Fork	Fork/Pin	Pin
Terminal size- On-top	-	50 mm ²	16 mm ²
Terminal size- OFF-bottom	-	50 mm ²	35 mm ²

Notes: ¹⁾ UL listed MCB refer to NHP.

²⁾ AS only.

**Din-Safe DSRCBH****Din-Safe DSRCB****Din-Safe DSRCB-P****Din-Safe DSRCM****Din-Safe Easy-fit**

61009	61009	61009	3190 ²⁾	61008
1P + N - 18 mm	2P - 36 mm	2P - 36 mm	1P + N, 3P & 3P + N	2P - 36 mm, 4P - 72 mm
DIN rail	DIN rail	DIN rail	DIN rail	DIN rail
6 A, 10 A, 16 A, 20 A, 25 A, 32 A & 40 A	6 A, 10 A, 16 A, 20 A, 25 A, 32 A & 40 A	6 A, 10 A, 16 A, 20 A, 25 A, 32 A & 40 A	32 A, 63 A	40 A, 63 A
10 mA & 30 mA	10 mA & 30 mA	10 mA & 30 mA	30 mA, 100 mA & 300 mA	30 mA
A	AC & A	AC & A	AC	AC
10 kA	10 kA	10 kA	-	Inc - 10 kA MCB or fuse backup
C	C	C	-	-
240 V	110 V/240 V	110 V/240 V	240 V/415 V	240 V/415 V
Yes	Yes	Yes	No	Yes
Yes	Yes	Yes	Yes	Yes
No	No	No	No	No
Yes	Yes	Yes	No	Yes
Yes	Yes	Yes	No	No
-	Pin	-	-	-
Fork/Pin	Fork/Pin	Fork/Pin	-	Pin
25 mm ²	25 mm ²	25 mm ²	32 A- 16 mm ² 63 A- 25 mm ²	50 mm ²
35 mm ²	35 mm ²	35 mm ²	-	50 mm ²

Safe-T series

6-100 A

1

6 kA

- Standard AS 3111 AS 2184 ¹⁾
- Approval No. V99347
- UL 489 fluorescent switching duty ¹⁾
- Lloyd's register
- Current range 6 -100 A 1, 2, 3 and 4 pole
- Clip-tray mounting. Suits CT type busbar chassis
- General purpose light and power distribution

Technical data

Interrupting capacity: 6 kA at 250 V AC (sym) 1 pole
 6 kA at 400 V AC (sym) 2 & 3 pole
 5 kA at 125 V DC 2 pole

Thermal setting: Fixed (40 °C)

Magnetic setting: Fixed

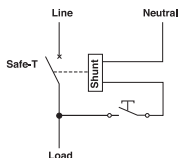
Tropic proofed: Standard

Shunt Trip - Coil rating

Voltage (V)	Current peak (A)
120-440 V AC	4.88 (440 V)
48-250 V DC	2.32 (250 V)

Warnings

Short time rated coil.
 Coil burnout will result if coil remains energised.



Shunt trip wiring diagram



Notes: ¹⁾ Fluorescent light switching duty – UL 489

All Safe-T MCBs are by design suitable for fluorescent light switching duty as per the requirements of UL 489 issued by Underwriters Laboratories (USA). Performance standards of UL 489 to regularly switch banks of fluorescent lights ON and OFF require the MCB to withstand the higher inrush current (up to 30 times normal rating). If the MCB cannot withstand this inrush current, contact erosion and excess temperature rise will be experienced. Safe-T MCBs have been designed to withstand this type of duty. (Refer NHP)

Backup fuse data, refer to page 9 - 10. Accessories, refer to page 1 - 9.

Safe-T series

6-100 A

1

Amp rating	Cat. No.	1 pole Price \$	Cat. No.	2 pole Price \$
6	SAFET6106		SAFET6206	
10	SAFET6110		SAFET6210	
16	SAFET6116		SAFET6216	
20	SAFET6120		SAFET6220	
25	SAFET6125		SAFET6225	
32	SAFET6132		SAFET6232	
40	SAFET6140		SAFET6240	
50	SAFET6150		SAFET6250	
63	SAFET6163		SAFET6263	
80	SAFET6180		SAFET6280	
100	SAFET61100		SAFET62100	
63	SAFET6163NA ²⁾		SAFET6263NA ²⁾	
100	SAFET61100NA ²⁾		SAFET62100NA ²⁾	

Amp rating	Cat. No.	3 pole Price \$	Cat. No.	3P + N ¹⁾ Price \$
6	SAFET6306		SAFET6406	
10	SAFET6310		SAFET6410	
16	SAFET6316		SAFET6416	
20	SAFET6320		SAFET6420	
25	SAFET6325		SAFET6425	
32	SAFET6332		SAFET6432	
40	SAFET6340		SAFET6440	
50	SAFET6350		SAFET6450	
63	SAFET6363		SAFET6463	
80	SAFET6380		SAFET6480	
100	SAFET63100		SAFET64100	
63	SAFET6363NA ²⁾		SAFET6463NA ²⁾	
100	SAFET63100NA ²⁾		SAFET64100NA ²⁾	

- Notes:** ¹⁾ Neutral pole is switched but does not provide overcurrent or short circuit protection.
²⁾ NA – Non-Auto MCB without overcurrent or short circuit protection, suitable for main switch.
Refer page 9 - 10 for back-up fuse data. Accessories refer page 1 - 9.

Safe-T series

6-100 A fitted with shunt trip

Amp rating	Cat. No.	1 pole Price \$	Cat. No.	2 pole Price \$
6	SAFET6106SHT		SAFET6206SHT	
10	SAFET6110SHT		SAFET6210SHT	
16	SAFET6116SHT		SAFET6216SHT	
20	SAFET6120SHT		SAFET6220SHT	
25	SAFET6125SHT		SAFET6225SHT	
32	SAFET6132SHT		SAFET6232SHT	
40	SAFET6140SHT		SAFET6240SHT	
50	SAFET6150SHT		SAFET6250SHT	
63	SAFET6163SHT		SAFET6263SHT	
80	SAFET6180SHT		SAFET6280SHT	
100	SAFET61100SHT		SAFET62100SHT	
63	SAFET6163NASHT ²⁾		SAFET6263NASHT ²⁾	
100	SAFET61100NASHT ²⁾		SAFET62100NASHT ²⁾	

Amp rating	Cat. No.	3 pole Price \$	Cat. No.	3P + N ¹⁾ Price \$
6	SAFET6306SHT		SAFET6406SHT	
10	SAFET6310SHT		SAFET6410SHT	
16	SAFET6316SHT		SAFET6416SHT	
20	SAFET6320SHT		SAFET6420SHT	
25	SAFET6325SHT		SAFET6425SHT	
32	SAFET6332SHT		SAFET6432SHT	
40	SAFET6340SHT		SAFET6440SHT	
50	SAFET6350SHT		SAFET6450SHT	
63	SAFET6363SHT		SAFET6463SHT	
80	SAFET6380SHT		SAFET6480SHT	
100	SAFET63100SHT		SAFET64100SHT	
63	SAFET6363NASHT ²⁾		SAFET6463NASHT ²⁾	
100	SAFET63100NASHT ²⁾		SAFET64100NASHT ²⁾	

Operation

For remote tripping of Safe-T MCB (1 to 4 poles), manual resetting of MCB required. Inline shunt trip requires no extra pole spaces; refer to page 1 - 10 for connection diagram.

Application

Emergency stop and isolation of industrial socket outlets.

- Notes:** ¹⁾ Neutral pole is switched but does not provide overcurrent or short circuit protection.
²⁾ NA – Non-Auto MCB without overcurrent or short circuit protection, suitable for main switch.

Backup fuse data, refer to page 9-10.

Accessories to suit Safe-T MCBs, refer to page 1 - 9.

Safe-T series

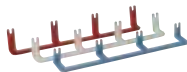
Options, hardware and accessories

1

Description		Cat. No.	Price \$
Handle lock	Yellow	TAA5LY ¹⁾	
Padlock attachment	1 pole	TKB50SGL ¹⁾	
	3 pole	TKC50SG ¹⁾	
Padlock attachment kits (captive)	12 pack and resin	SAFETLCK 12 ¹⁾	
	24 pack and resin	SAFETLCK 24 ¹⁾	
Tunnel terminal	35 mm ² Safe-T (6-63 A)	7T1ST ¹⁾	
	70 mm ² Safe-T (80-100 A)	7T2ST ¹⁾	
T-off plastic caps		TH250TOPC	
Pole fillers		SAFETPF	
Clip-tray (per 12 pole pieces)		TDB50SG12	
Link bar (1 phase)	18 pole	LB18	
Link bar (3 phase) 120 A	12 pole	LB3PH12	
	18 pole	LB3PH18	



3 phase
wiring harness



3 phase link bars



1 phase link bar



Tunnel terminals



TAA5LY



TKC50SG
Locking attachments

Notes: ¹⁾ Doesn't suit SRCB.

Safe-T series (RCBO)

Single pole width residual current circuit breakers

- Standard AS 3111 AS 3190
- Approval No. N15251
- Current rating: 10, 16 and 20 A
- Voltage 240 V AC 50/60 Hz (not suitable for 415/440 V)
- Short circuit protection 6000 A
- Earth leakage protection 30 mA and 10 mA



Operation

Safe-T single pole width residual current circuit breakers offer overload, short circuit and earth leakage protection in a single module width unit.

Mounting arrangements are identical to those throughout the Safe-T MCB range utilising the NHP clip-tray mounting system in panelboards and loadcentres.

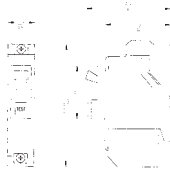
Amp rating	No. of poles	Modules	Trip sensitivity (mA)	Cat. No. ¹⁾	Price \$
10	1	1	30	SRCB 1030	
16	1	1	30	SRCB 1630	
20	1	1	30	SRCB 2030	
10	1	1	10	SRCB 1010	
16	1	1	10	SRCB 1610	
20	1	1	10	SRCB 2010	

* For other current ratings or for 3 phase, refer to ELR relay page 1-11.

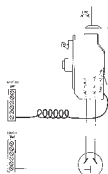
Accessories

Description	Cat. No.	Price \$	
Padlock attachment kit (captive)	12 pack and resin 24 pack and resin	SRCBLCK 12 SRCBLCK 24	
Adaptor kit	Eaton, Cutler-Hammer (Quicklag)	SRCBWA	
	Heinemann	SRCBHA	

Dimensions (mm)



Connection diagram



Adaptors - allows SRCB to be fitted to Heinemann and Eaton chassis



Padlock attachment kit

Notes: ¹⁾ Neutral not switched.

Nuisance tripping may be experienced in VFD and motor starting applications, refer NHP.

Safe - T series (ELR)

Earth leakage relay

1

- Standard AS 3190
- Approval No. N15380
- NHP clip-tray mounting (CT chassis)

Application

The ELR is identical in width to the single pole Safe-T MCB. The ELR is clip-tray mountable alongside the Safe-T MCB when fitted to the CT chassis, as found in the CST/CPS series panelboards.

When the ELR is combined with a Safe-T MCB fitted with a shunt trip, the resulting combination offers overload, short circuit and earth leakage protection and can be retrofitted into an existing installation or installed in a new installation.

Suitable for commercial and industrial applications.

Test function

A test button is provided on the unit to functionally test the detection and tripping circuits.

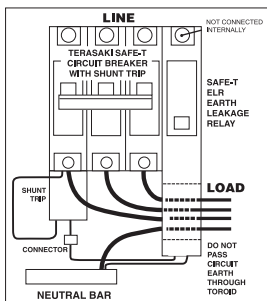
It is recommended a functional test be performed monthly.



No. of Poles	Sensitivity (mA) ¹⁾	Voltage (AC)		Cat. No.	Price \$
1	10	240	50/60 Hz	ELR24010	
1	30	240	50/60 Hz	ELR24030	
1	100	240	50/60 Hz	ELR240100	
1	300	240	50/60 Hz	ELR240300	
1	30	415-440	50/60 Hz	ELR44030	

Technical data

- Operation: Instantaneous
- Frequency: 40-60 Hz
- Output ratings: I peak 8 A,
I average 0.5 A
- Toroid window: 4 x 35 mm²
(aperture diameter 35 mm)
- Dimensions: H = 152 mm
W = 25 mm
D = 60 mm
- Weight: 0.16 kg



Notes: Nuisance tripping may be experienced in VFD and motor starting applications, refer NHP.

Din-T series

General features

Advantages of the Din-T series miniature circuit breakers

- Short circuit breaking capacity of 6, 10 and 15 kA at 415 V AC
- Increased rating up to 63 kA when backed up with HRC fuses (Refer page 9 - 10)
- Rated current range from 0.5 A to 125 A
- Silver graphite contacts
- Input connection by lifting cage terminal with capacity of up to 35 mm² giving fast and practical connection
- Output terminals offer finger and hand protection with a capacity of up to 35 mm²
- Snap fixing with two stop locations, for normal DIN rail mounting
- Approval number N17481
- Conforms to AS/NZS 60898 and AS 60947-2 as applicable

Brief description

The Din-T series miniature circuit breakers have inverse time delayed thermal and instantaneous magnetic trips and are suitable for mounting in distribution boards or in switchgear panels and consumer units.

Operation

Protection against overheating of electrical conductors, excess currents due to overload, short circuit or earth fault.

Application

In switching, control, distribution and measurement systems for domestic, commercial and industrial installations.

Tripping characteristics

Thermal release

In case of overload, the release is initiated by a bi-metal strip. Standards AS/NZS 60898 and AS 60947 define the range of release for specific overload values. Reference ambient temperatures are 30 °C and 40 °C for the respective standards.

Magnetic release

In case of short circuit, an electromagnet with plunger ensures instantaneous tripping. AS/NZS 60898 describes the characteristics for the following curve types:

Curve Type	Test current	Application
B	3 - 5 x I _n	Resistive loads
C	5 - 10 x I _n	Protection of general distribution loads - lighting - socket outlets - motors etc.
D	10 - 20 x I _n	Protection of circuits having high inrush transient currents - high inertia motor starting - transformers - welders

Din-T series

General features

1

Handle

Sealable and padlockable with quick-make and quick-break type mechanism. The handle is sealable in ON and OFF position. Due to the free-tripping mechanism, the MCB contacts open through overload or short circuit even when the handle is sealed in the ON position on all types.

Input terminal ('OFF' side)

Box terminal with lifting screw for copper and aluminium conductors: maximum capacity 1 x 35 mm² or 2 x 16 mm².

When unscrewing the screw, the head lifts; however, on pushing the screw head, the box terminal opens. This system enables the MCBs to be linked with a cable and fork or pin type bus comb. The MCB is delivered with a half open box terminal and a lifted screw head.

Output terminal ('ON' side)

Box terminal with captive terminal screw for copper and aluminium conductors: max. 1 x 35 mm² or 2 x 16 mm².

The box terminals are always delivered in the open position. Output terminal screw has IP 20 protection against direct finger contact by standard design.

Arc chamber

Contains arc extinction plates, (de-ionising type) designed to break up and dissipate the arc which is generated during interruption of all types of faults.

Electromagnet

Operating the plunger which opens the contacts instantaneously.

Arc magnetic blowout system

Short circuit currents do not flow through the bi-metal but are directed by the blowout magnet in such a way that the arc is transferred to a special arc runner, therefore taking the bi-metal out of the circuit, which ensures the thermal trip characteristics remain unchanged after an MCB has been exposed to a fault current.

- This combination of the electromagnet (with a plunger rapidly opening the contacts), the blowout magnet and the arc chamber, results in an extremely high short circuit breaking capacity, and very low let through energy.

Catalogue Number construction for Din-T MCBs (6, 10, 10H and 15)

DTCB - XX - X - XX - X

Product series code Din-T Circuit Breaker	Short circuit capacity (A)	Polarity	Current (A)		CurveType
			05	05	
6	6000		01	1	B 3 In - 5 In
10	10000	1 1 pole	02	2	C 5 In - 10 In
10H	10000	2 2 pole	03	3	D 10 In - 20 In
15	15000	3 3 pole	04	4	
DC	6000	1N 1P + N	06	6	
D6	6000	4 3P + N	10	10	
E6	6000	11 1P + 1P	13	13	
			Etc		

Din-T6

Series 2-63 A



6 kA 'C' curve

- Standard AS/NZS 60898
- Approval No. N17481
- Current range 2-63 amps 1, 2 and 3 pole
- Sealable and lockable handle
- DIN rail mounting
- Padlockable in OFF position
- Suits CD, NC or GB chassis
- General purpose light, power and motor starting

Curve type: C (5 – 10 I_n)

Single pole

In (A)	Cat. No.	Price \$	In (A)	Cat. No.	Price \$
2	DTCB6102C		20	DTCB6120C	
4	DTCB6104C		25	DTCB6125C	
6	DTCB6106C		32	DTCB6132C	
10	DTCB6110C		40	DTCB6140C	
13	DTCB6113C		50	DTCB6150C	
16	DTCB6116C		63	DTCB6163C	

Double pole

In (A)	Cat. No.	Price \$	In (A)	Cat. No.	Price \$
2	DTCB6202C		20	DTCB6220C	
4	DTCB6204C		25	DTCB6225C	
6	DTCB6206C		32	DTCB6232C	
10	DTCB6210C		40	DTCB6240C	
13	DTCB6213C		50	DTCB6250C	
16	DTCB6216C		63	DTCB6263C	

Triple pole

In (A)	Cat. No.	Price \$	In (A)	Cat. No.	Price \$
2	DTCB6302C		20	DTCB6320C	
4	DTCB6304C		25	DTCB6325C	
6	DTCB6306C		32	DTCB6332C	
10	DTCB6310C		40	DTCB6340C	
13	DTCB6313C		50	DTCB6350C	
16	DTCB6316C		63	DTCB6363C	

Notes: The LINE-side is the OFF or bottom of the MCB, and connects to CD, NC or GB chassis tee-offs.

Suitable for the following side mounted accessories:

- AUX/ALM switches – refer page 1 - 40
- Shunt trip and UVT Trip – refer page 1 - 39
- Clip-on RCD module and Din-Safe-M module- refer page 1 - 32
- Din-T terminals and accessories – refer page 1 - 50

Din-T6

Series 2-63 A

1

6 kA 'D' curve

- Standard AS/NZS 60898
- Approval No. N17481
- Current range 2-63 amps 1, 2 and 3 pole
- Sealable and lockable handle
- DIN rail mounting
- Padlockable in OFF position
- Suits CD, NC or GB chassis
- Motor starting and transformer applications



Curve type: D (10 – 20 In)

Single pole

In (A)	Cat. No.	Price \$	In (A)	Cat. No.	Price \$
2	DTCB6102D		20	DTCB6120D	
4	DTCB6104D		25	DTCB6125D	
6	DTCB6106D		32	DTCB6132D	
10	DTCB6110D		40	DTCB6140D	
13	DTCB6113D		50	DTCB6150D	
16	DTCB6116D		63	DTCB6163D	

Double pole

In (A)	Cat. No.	Price \$	In (A)	Cat. No.	Price \$
2	DTCB6202D		20	DTCB6220D	
4	DTCB6204D		25	DTCB6225D	
6	DTCB6206D		32	DTCB6232D	
10	DTCB6210D		40	DTCB6240D	
13	DTCB6213D		50	DTCB6250D	
16	DTCB6216D		63	DTCB6263D	

Triple pole

In (A)	Cat. No.	Price \$	In (A)	Cat. No.	Price \$
2	DTCB6302D		20	DTCB6320D	
4	DTCB6304D		25	DTCB6325D	
6	DTCB6306D		32	DTCB6332D	
10	DTCB6310D		40	DTCB6340D	
13	DTCB6313D		50	DTCB6350D	
16	DTCB6316D		63	DTCB6363D	

Notes: The LINE-side is the OFF or bottom of the MCB, and connects to CD, NC or GB chassis tee-offs.

Suitable for the following side mounted accessories:

- AUX/ALM switches – refer page 1 - 40
- Shunt trip and UVT Trip – refer page 1 - 39
- Clip-on RCD module and Din-Safe-M module- refer page 1 - 32
- Din-T terminals and accessories – refer page 1 - 50

1

Din-T6**2-in-1 Double the capacity of your load centre****6 kA 'C' curve**

- Standard AS/NZS 60898
- Approval No. NSW24783
- Current range 2 - 40 A
- C curve tripping characteristics
- Saves up to 50 % space
- DIN rail mounting
- General purpose light and power



1P + 1P

3 Pole

Curve type: C (5 – 10 In)**1 pole + 1 pole****Single module width (18 mm)****2 pole****Single module width (18 mm)**

In (A)	Cat. No.	Price \$	In (A)	Cat. No.	Price \$
2	DTCBD61102C		2	DTCBD6202C	
4	DTCBD61104C		4	DTCBD6204C	
6	DTCBD61106C		6	DTCBD6206C	
10	DTCBD61110C		10	DTCBD6210C	
16	DTCBD61116C		16	DTCBD6216C	
20	DTCBD61120C		20	DTCBD6220C	
Must be same phase.			25	DTCBD6225C	
			32	DTCBD6232C	
			40	DTCBD6240C	

3 pole**Double module width (36 mm)****4 pole****Double module width (36 mm)**

In (A)	Cat. No.	Price \$	In (A)	Cat. No.	Price \$
2	DTCBD6302C		2	DTCBD6402C	
4	DTCBD6304C		4	DTCBD6404C	
6	DTCBD6306C		6	DTCBD6406C	
10	DTCBD6310C		10	DTCBD6410C	
16	DTCBD6316C		16	DTCBD6416C	
20	DTCBD6320C		20	DTCBD6420C	
25	DTCBD6325C		25	DTCBD6425C	
32	DTCBD6332C		32	DTCBD6432C	
40	DTCBD6340C		40	DTCBD6440C	

Notes: 16 mm tunnel terminals.
 Not suitable for chassis mounting.
 Compatible with NHP Terasaki auxiliaries and accessories.

Din-T DC

Series 0.5-63 A

1

6 kA 'C' curve

- Standard AS/NZS 60898
- Approval No. NSW 24265
- Current range 0.5 - 63 A 1P and 2P
- C curve tripping characteristic
- DC Voltage 250 V 1P, 500 V 2P
- AC Voltage 230 V 1P, 400 V 2P
- Sealable and lockable handle
- DIN rail mounting
- Suit CD, NC and GB chassis
- Industrial applications



1 Pole

2 Pole

Operation

Din-T DC MCBs are equipped with a permanent magnet which aids arc extinguishing under fault conditions, making this range of MCBs suitable for voltages up to 250 V DC (1 pole), 500 V DC (2 pole) and 880 V DC (4 pole). Din-T DC 1P and 2P MCBs are also suitable for AC voltages. Polarity labeling must be respected due to the permanent magnet in the MCB.

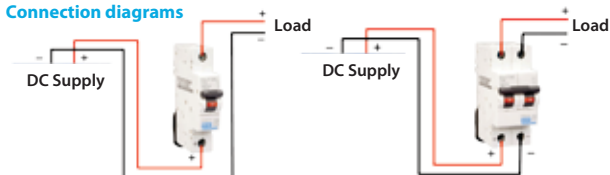
Curve type: C (5 - 10 I_n)

Single pole

Double pole

In (A)	Cat. No.	Price \$	In (A)	Cat. No.	Price \$
0.5	DTCBDC105C				
1	DTCBDC101C		1	DTCBDC201C	
2	DTCBDC102C		2	DTCBDC202C	
4	DTCBDC104C		4	DTCBDC204C	
6	DTCBDC106C		6	DTCBDC206C	
10	DTCBDC110C		10	DTCBDC210C	
16	DTCBDC116C		16	DTCBDC216C	
20	DTCBDC120C		20	DTCBDC220C	
25	DTCBDC125C		25	DTCBDC225C	
32	DTCBDC132C		32	DTCBDC232C	
40	DTCBDC140C		40	DTCBDC240C	
50	DTCBDC150C		50	DTCBDC250C	
63	DTCBDC163C		63	DTCBDC263C	

Connection diagrams



Din-T DC

Series 0.5-63 A

1

6 kA 'B' curve

- Standard AS/NZS60898
- Approval No. NSW 24265
- Current range 10 - 63 A 4P
- B curve tripping characteristic
- DC Voltage 880 V 4P (1000 V PV systems)
- Sealable and lockable handle
- DIN rail mounting
- Industrial applications



Operation

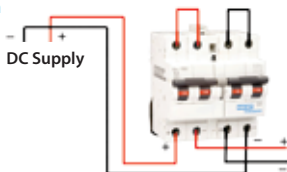
Din-T DC MCBs are equipped with a permanent magnet which aids arc extinguishing under fault conditions, making this range of MCBs suitable for voltages up to 250 V DC (1 pole), 500 V DC (2 pole) and 880 V DC (4 pole). Din-T DC 1P and 2P MCBs are also suitable for AC voltages. Polarity labeling must be respected due to the permanent magnet in the MCB.

Curve type: B (3 – 5 I_n)

Four pole

In (A)	Cat. No.	Price \$
10	DTCBDC410B	
16	DTCBDC416B	
20	DTCBDC420B	

Connection diagram



Notes: Suitable for the following side mounted accessories:

- AUX/ALM switch – refer page 1 - 40
- Shunt trip – refer page 1 - 39
- UVT trip – refer page 1 - 39
- Clip-on RCD module – refer page 1 - 32
- Din-T terminals and accessories – refer page 1 - 50

Din-T10

Series 6-63 A

1

10 kA 'B' curve

- Standard AS/NZS 60898
- Approval No. N17481
- Current range 6 - 63 A 1, 2, and 3 pole
- Sealable and lockable handle
- DIN rail mounting
- Padlockable in OFF position
- Suits NC, CD or GB type chassis
- Resistive load applications

Great
for long
cable runs
(Carpark
lighting)



Curve type: B (3 - 5 I_n)

Single pole

In (A)	Cat. No.	Price \$	In (A)	Cat. No.	Price \$
6	DTCB10 1 06B		6	DTCB10 2 06B	
10	DTCB10 1 10B		10	DTCB10 2 10B	
16	DTCB10 1 16B		16	DTCB10 2 16B	
20	DTCB10 1 20B		20	DTCB10 2 20B	
25	DTCB10 1 25B		25	DTCB10 2 25B	
32	DTCB10 1 32B		32	DTCB10 2 32B	
40	DTCB10 1 40B		40	DTCB10 2 40B	
50	DTCB10 1 50B		50	DTCB10 2 50B	
63	DTCB10 1 63B		63	DTCB10 2 63B	

Triple pole

In (A)	Cat. No.	Price \$
6	DTCB10 3 06B	
10	DTCB10 3 10B	
16	DTCB10 3 16B	
20	DTCB10 3 20B	
25	DTCB10 3 25B	
32	DTCB10 3 32B	
40	DTCB10 3 40B	
50	DTCB10 3 50B	
63	DTCB10 3 63B	

Notes: The LINE-side is the OFF or bottom of the MCB, and connects to NC, GB or CD chassis tee-offs.

A range of UL standard MCBs is available on indent (Ref DTCBUL10...C)

Suitable for the following side mounted accessories:

- AUX/ALM switch - refer page 1 - 40
- Shunt trip and UVT trip - refer page 1 - 39
- Clip-on RCD module - refer page 1 - 32
- Din-T terminals and accessories - refer page 1 - 50

Din-T10

Series 0.5 - 63 A

1

10 kA 'C' curve

- Standard AS/NZS 60898
- Approval No. N17481
- Current range 0.5 - 63 A 1, 2, 3 and 4 pole
- Sealable and lockable handle
- DIN rail mounting
- Padlockable in OFF position
- Suits NC, CD or GB chassis
- General purpose light, power and motor starting



Curve type: C (5 - 10 I_n)

Single pole

In (A)	Cat. No.	Price \$	In (A)	Cat. No.	Price \$
0.5	DTCB10 1 05C		0.5	DTCB10 2 05C	
1	DTCB10 1 01C		1	DTCB10 2 01C	
2	DTCB10 1 02C		2	DTCB10 2 02C	
4	DTCB10 1 04C		4	DTCB10 2 04C	
6	DTCB10 1 06C		6	DTCB10 2 06C	
10	DTCB10 1 10C		10	DTCB10 2 10C	
13	DTCB10 1 13C		13	DTCB10 2 13C	
16	DTCB10 1 16C		16	DTCB10 2 16C	
20	DTCB10 1 20C		20	DTCB10 2 20C	
25	DTCB10 1 25C		25	DTCB10 2 25C	
32	DTCB10 1 32C		32	DTCB10 2 32C	
40	DTCB10 1 40C		40	DTCB10 2 40C	
50	DTCB10 1 50C		50	DTCB10 2 50C	
63	DTCB10 1 63C		63	DTCB10 2 63C	

Triple pole

In (A)	Cat. No.	Price \$	In (A)	Cat. No.	Price \$
0.5	DTCB10 3 05C				
1	DTCB10 3 01C		1	DTCB10 4 01C	
2	DTCB10 3 02C		2	DTCB10 4 02C	
4	DTCB10 3 04C		4	DTCB10 4 04C	
6	DTCB10 3 06C		6	DTCB10 4 06C	
10	DTCB10 3 10C		10	DTCB10 4 10C	
13	DTCB10 3 13C		13	DTCB10 4 13C	
16	DTCB10 3 16C		16	DTCB10 4 16C	
20	DTCB10 3 20C		20	DTCB10 4 20C	
25	DTCB10 3 25C		25	DTCB10 4 25C	
32	DTCB10 3 32C		32	DTCB10 4 32C	
40	DTCB10 3 40C		40	DTCB10 4 40C	
50	DTCB10 3 50C		50	DTCB10 4 50C	
63	DTCB10 3 63C		63	DTCB10 4 63C	

Din-T10

Series 0.5 - 63 A

1

10 kA 'D' curve

- Standard AS/NZS 60898
- Approval No. N17481
- Current range 0.5 - 63 A 1, 2, 3 and 4 pole
- Sealable and lockable handle
- DIN rail mounting
- Padlockable in OFF position
- Suits NC, CD or GB type chassis
- Motor starting and transformer applications



Curve type: D (10 - 20 I_n)

Single pole		Double pole			
In (A)	Cat. No.	Price \$	In (A)	Cat. No.	Price \$
0.5	DTCB10 1 05D		0.5	DTCB10 2 05D	
1	DTCB10 1 01D		1	DTCB10 2 01D	
2	DTCB10 1 02D		2	DTCB10 2 02D	
4	DTCB10 1 04D		4	DTCB10 2 04D	
6	DTCB10 1 06D		6	DTCB10 2 06D	
10	DTCB10 1 10D		10	DTCB10 2 10D	
13	DTCB10 1 13D		13	DTCB10 2 13D	
16	DTCB10 1 16D		16	DTCB10 2 16D	
20	DTCB10 1 20D		20	DTCB10 2 20D	
25	DTCB10 1 25D		25	DTCB10 2 25D	
32	DTCB10 1 32D		32	DTCB10 2 32D	
40	DTCB10 1 40D		40	DTCB10 2 40D	
50	DTCB10 1 50D		50	DTCB10 2 50D	
63	DTCB10 1 63D		63	DTCB10 2 63D	

Triple pole			Four pole		
In (A)	Cat. No.	Price \$	In (A)	Cat. No.	Price \$
0.5	DTCB10 3 05D		0.5	-	
1	DTCB10 3 01D		1	-	
2	DTCB10 3 02D		2	-	
4	DTCB10 3 04D		4	DTCB10 4 04D	
6	DTCB10 3 06D		6	DTCB10 4 06D	
10	DTCB10 3 10D		10	DTCB10 4 10D	
13	DTCB10 3 13D		13	DTCB10 4 13D	
16	DTCB10 3 16D		16	DTCB10 4 16D	
20	DTCB10 3 20D		20	DTCB10 4 20D	
25	DTCB10 3 25D		25	DTCB10 4 25D	
32	DTCB10 3 32D		32	DTCB10 4 32D	
40	DTCB10 3 40D		40	DTCB10 4 40D	
50	DTCB10 3 50D		50	DTCB10 4 50D	
63	DTCB10 3 63D		63	DTCB10 4 63D	

Din-T10H

Series 80-125 A



10 kA 'C' Curve

7.5 kA 'D' Curve

- Standard AS/NZS 60947 - 2
- Current range 80 - 125 A 1, 2, 3 and 4 pole
- Module width = 27 mm
- DIN rail mounting
- Suits NCH or CDH hybrid type chassis
- Industrial applications

Curve type: C (5 - 10 I_n)

Single pole

In (A)	Cat. No.	Price \$	In (A)	Cat. No.	Price \$
80	DINT10H180C		80	DINT10H280C	
100	DINT10H1100C		100	DINT10H2100C	
125	DINT10H1125C		125	DINT10H2125C	

Double pole

Triple pole

In (A)	Cat. No.	Price \$	In (A)	Cat. No.	Price \$
80	DINT10H380C		80	DINT10H480C	
100	DINT10H3100C		100	DINT10H4100C	
125	DINT10H3125C		125	DINT10H4125C	

Four pole

Curve type: D (10 - 20 I_n)

Single pole

In (A)	Cat. No.	Price \$	In (A)	Cat. No.	Price \$
80	DINT10H180D		80	DINT10H280D	
100	DINT10H1100D		100	DINT10H2100D	
125	DINT10H1125D		125	DINT10H2125D	

Double pole

Triple pole

In (A)	Cat. No.	Price \$	In (A)	Cat. No.	Price \$
80	DINT10H380D		80	DINT10H480D	
100	DINT10H3100D		100	DINT10H4100D	
125	DINT10H3125D		125	DINT10H4125D	

Four pole

Notes: The LINE-side is the OFF or bottom of the MCB, and connects to NCH or CDH chassis tee-offs.

Din-T10H MCBs do not fit NC or CD chassis with 18mm pole pitch.

All poles include overcurrent and short circuit protection.

Suitable for the following side mounted accessories:

- AUX/ALM switch - refer page 1 - 40
- Shunt trip - refer page 1 - 39
- Din-T terminals and accessories - refer page 1 - 50

Din-T15

Series 6 - 63 A

1

15 kA, 20 kA, 25 kA, 50 kA 'C' curve

- Standard AS/NZS 60947 - 2
- Current rating 6 - 63 A 1, 2, 3 and 4 pole
- Sealable and lockable handle
- DIN rail mounting
- Suits NC or CD type chassis
- Industrial applications



Curve type: C (5 - 10 In)

Single pole

In (A)	Cat. No.	Price \$	Double pole	Cat. No.	Price \$
6	DTCB15 1 06C		6	DTCB15 2 06C	
10	DTCB15 1 10C		10	DTCB15 2 10C	
13	DTCB15 1 13C		13	DTCB15 2 13C	
16	DTCB15 1 16C		16	DTCB15 2 16C	
20	DTCB15 1 20C		20	DTCB15 2 20C	
25	DTCB15 1 25C		25	DTCB15 2 25C	
32	DTCB15 1 32C		32	DTCB15 2 32C	
40	DTCB15 1 40C		40	DTCB15 2 40C	
50	DTCB15 1 50C		50	DTCB15 2 50C	
63	DTCB15 1 63C		63	DTCB15 2 63C	

Triple pole

Four pole

In (A)	Cat. No.	Price \$	In (A)	Cat. No.	Price \$
6	DTCB15 3 06C		6	DTCB15 4 06C	
10	DTCB15 3 10C		10	DTCB15 4 10C	
13	DTCB15 3 13C		13	DTCB15 4 13C	
16	DTCB15 3 16C		16	DTCB15 4 16C	
20	DTCB15 3 20C		20	DTCB15 4 20C	
25	DTCB15 3 25C		25	DTCB15 4 25C	
32	DTCB15 3 32C		32	DTCB15 4 32C	
40	DTCB15 3 40C		40	DTCB15 4 40C	
50	DTCB15 3 50C		50	DTCB15 4 50C	
63	DTCB15 3 63C		63	DTCB15 4 63C	

Short circuit capacity

In (A)	No. poles	Voltage (V)	Icu (kA)
6-25	1	240	25
	2-4	240/415	50/25
32-40	1	240	20
	2-4	240/415	40/20
50-63	1	240	15
	2-4	240/415	30/15

Notes: The LINE-side is the OFF or bottom of the MCB, and connects to chassis.

Ics = 50 % Icu.

Din-T6

Easy-Fit MCB and RCCBs – Tool-free connection

6 kA 'C' curve

- Standard AS/NZS 60898
- Approval No. NSW 24783
- Current range 2 - 63 A
- C curve tripping characteristic
- Cable clamping technology
- Line side- Plug in or screw in busbar comb
- Load side- Screw-less cable connection up to 20 A
- DIN rail mounting
- General purpose light and power

NEW

Curve type: C (5 – 10 I_n)
Single pole

Triple pole

In (A)	Cat. No.	Price \$	In (A)	Cat. No.	Price \$
6	DTCBE6106C ¹⁾		6	DTCBE6306C ¹⁾	
10	DTCBE6110C ¹⁾		10	DTCBE6310C ¹⁾	
16	DTCBE6116C ¹⁾		16	DTCBE6316C ¹⁾	
20	DTCBE6120C ¹⁾		20	DTCBE6320C ¹⁾	
25	DTCBE6125C ²⁾		25	DTCBE6325C ²⁾	
32	DTCBE6132C ²⁾		32	DTCBE6332C ²⁾	
40	DTCBE6140C ²⁾		40	DTCBE6340C ²⁾	
50	DTCBE6150C ²⁾		50	DTCBE6350C ²⁾	
63	DTCBE6163C ²⁾		63	DTCBE6363C ²⁾	

Din-Safe RCD

- Standard AS/NZS 61008
- Approval No NSW 17482
- Current range 40 - 63 A
- 2 pole and 4 pole configurations
- 30 mA sensitivity
- Cable clamping technology
- Line side- Screw terminal
- Load side- Screw terminal or plug in busbar comb
- DIN rail mounting

Reduced
installation
time

No. poles	Trip sens.	Amp rating	Voltage	Cat. No.	Price \$
2P (1P+N)	30 mA	40 A	240 V	DSRCDE24030	
		63 A	240 V	DSRCDE26330	
4P (3P+N)	30 mA	40 A	240/415 V	DSRCDE44030	
		63 A	240/415 V	DSRCDE46330	

Notes: ¹⁾ Screw-less cable clamping 'load-side' connection.

²⁾ Screw 'load-side' connection.

Double pole and 'D' Curve available on request.

Din-Safe

Safety switches (RCCB)

1

- Standard AS/NZS 61008
- Approval No. N17482
- Current ratings 40, 63, 80 and 100 A
- 2 and 4 pole configuration
- Accepts Din-T side mounting accessories
- Handle sealable and padlockable

High immunity type



No. poles	Trip sens.	Amp rating	Voltage	Cat. No.	Price \$
2P (1P+N)	30 mA	40 A	240 V	DSRCD24030	
		63 A	240 V	DSRCD26330	
		80 A	240 V	DSRCD28030	
	100 mA	40 A	240 V	DSRCD240100	
		80 A	240 V	DSRCD280100	
	300 mA	40 A	240 V	DSRCD240300	
80 A		240 V	DSRCD280300		
4P (3P+N)	30 mA	40 A	415 V	DSRCD44030	
		63 A	415 V	DSRCD46330	
		80 A	415 V	DSRCD48030	
		100 A	415 V	DSRCD410030	
	100 mA	40 A	415 V	DSRCD440100	
		63 A	415 V	DSRCD463100	
		80 A	415 V	DSRCD480100	
		100 A	415 V	DSRCD4100100	
	300 mA	40 A	415 V	DSRCD440300	
		100 A	415 V	DSRCD4100300	
	500 mA	100 A	415 V	DSRCD4100500	

High immunity type

2P (1P+N)	30 mA	40 A	240 V	DSRCD24030AI	
		63 A	240 V	DSRCD26330AI	
4P (3P+N)	30 mA	40 A	415 V	DSRCD44030AI	
		63 A	415 V	DSRCD46330AI	

Selective type (40 ms delay)

2P (1P+N)	100 mA	63 A	240 V	DSRCD263100S	
	300 mA	63 A	240 V	DSRCD263300S	
4P (3P+N)	100 mA	63 A	415 V	DSRCD463100S	
		100 A	415 V	DSRCD4100100S	
	300 mA	63 A	415 V	DSRCD463300S	
		100 A	415 V	DSRCD4100300S	

Notes: 30 mA tripping characteristics: $0.5 \times \Delta n =$ no tripping, $1 \times \Delta n = T \leq 300$ ms, $2 \times \Delta n = T \leq 150$ ms, $5 \times \Delta n = T \leq 40$ ms

1

Din-Safe

Safety switches (RCCB)

- Standard AS/NZS 61008
- Approval No. N17482
- Current ratings 40, 63, 80 and 100 A
- 2 and 4 pole configuration
- Accepts Din-T side mounting accessories
- Handle sealable and padlockable

High
immunity
type



Type A RCD

No. poles	Trip sens.	Amp rating	Voltage	Cat. No.	Price \$
2P (1P+N)	30 mA	40 A	240 V	DSRCD24030A	
		63 A	240 V	DSRCD26330A	
		80 A	240 V	DSRCD28030A	
	100 mA	40 A	240 V	DSRCD240100A	
		80 A	240 V	DSRCD280100A	
4P (3P+N)	30 mA	40 A	415 V	DSRCD44030A	
		63 A	415 V	DSRCD46330A	
		100 A	415 V	DSRCD410030A	
	100 mA	63 A	415 V	DSRCD463100A	
		80 A	415 V	DSRCD480100A	

Type B

4P (3P+N)	30 mA	63 A	240 V	DSRCD46330B	
	100 mA	63 A	240 V	DSRCD463100B	
	500 mA	125 A	415 V	DSRCD4125500B	
	300 mA	63 A	415 V	DSRCD463300BS ¹⁾	

Notes: ¹⁾ Selective type.

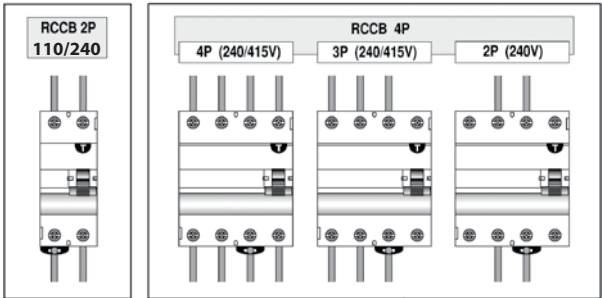
30 mA tripping characteristics: $0.5 \times \Delta n = \text{no tripping}$, $1 \times \Delta n = T \leq 300 \text{ ms}$,
 $2 \times \Delta n = T \leq 150 \text{ ms}$, $5 \times \Delta n = T \leq 40 \text{ ms}$

Din-Safe

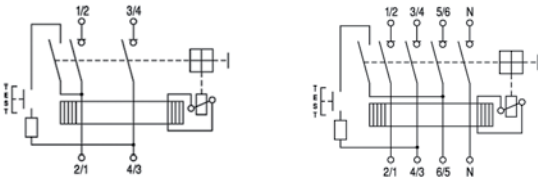
Safety switches (RCCB)

1

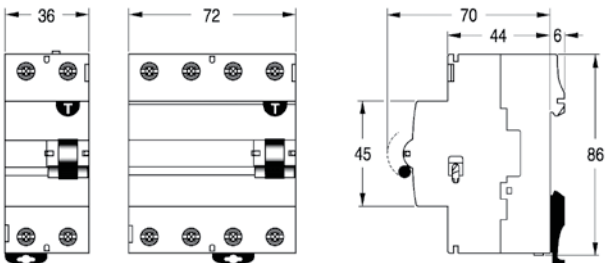
Connection details



Circuit diagrams



Dimensions (mm)



1

Din-Safe

Compact single pole width residual current circuit breaker
(RCBO) Same dimensions as a standard MCB

6 kA

- Standard AS/NZS 61009
- Approval No. NSW24576
- Current range 6 - 32 A
- C curve tripping characteristic
- Short circuit, overcurrent and earth leakage protection
- Sensitivity 30 mA
- DIN rail mounting
- Dual DIN clip
- Suits NC, CD and GB chassis
- Suitable for loadcenters and panelboards
- General purpose light and power



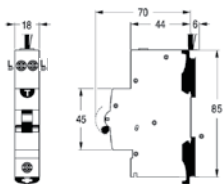
Curve type: C (5 – 10 In)

Trip sens.	No. of poles	Voltage	Short circuit cap.	In (A)	Cat. No. ¹⁾	Price \$
30 mA	1 pole	240 V AC	6 kA	6	DSRCBS0630C	
				10	DSRCBS1030C	
				16	DSRCBS1630C	
				20	DSRCBS2030C	
				25	DSRCBS2530C	
				32	DSRCBS3230C	

Curve type: B (3 – 5 In)

Trip sens.	No. of poles	Voltage	Short circuit cap.	In (A)	Cat. No. ¹⁾	Price \$
30 mA	1 pole	240 V AC	6 kA	6	DSRCBS0630B	
				10	DSRCBS1030B	
				16	DSRCBS1630B	
				20	DSRCBS2030B	
				25	DSRCBS2530B	
				32	DSRCBS3230B	

Dimensions (mm)



Connection diagram



Notes: ¹⁾ Insert 'A' at end of part number for Type A RCD e.g. DSRCBS-20-30-CA.
Nuisance tripping may be experienced in VFD and motor starting applications, refer NHP.

Din-Safe

Single pole width residual current circuit breaker (RCBO)

1

10 kA

- Standard AS/NZS 61009
- Approval No. N17482
- One module wide (18 mm)
- Short circuit, overcurrent and earth leakage protection
- Short circuit capacity 10 kA
- Sensitivity 10 and 30 mA
- Suits NC, CD or GB chassis
- Type 'A' RCD

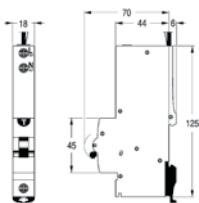
Higher immunity to harmonics



Curve type: C (5 – 10 In)

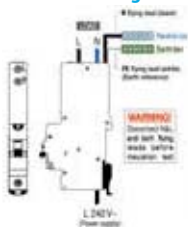
Trip sens.	No. of poles	Voltage	Short circuit cap.	In (A)	Cat. No. ¹⁾ 2)	Price \$
30 mA	1 Pole	240 V AC	10 kA	6	DSRCBH0630A	
				10	DSRCBH1030A	
				16	DSRCBH1630A	
				20	DSRCBH2030A	
				25	DSRCBH2530A	
				32	DSRCBH3230A	
				40	DSRCBH4030A	
10 mA	1 Pole	240 V AC	10 kA	6	DSRCBH0610A	
				10	DSRCBH1010A	
				16	DSRCBH1610A	
				20	DSRCBH2010A	
				25	DSRCBH2510A	
				32	DSRCBH3210A	
				40	DSRCBH4010A	

Dimensions (mm)



line side

Connection diagram



Notes: The LINE-side is the OFF or bottom of the MCB, and connects to chassis tee-offs.

¹⁾ Neutral not switched.

²⁾ Will not accept Din-T side mounting accessories.

30 mA tripping characteristics: 0.5 x IΔn = no tripping, 1 x IΔn = T ≤ 300 mS

2 x IΔn = T ≤ 150 mS, 5 x IΔn = T ≤ 40 mS

Nuisance tripping may be experienced in VFD and motor starting applications refer NHP.

Din-Safe MCB (RCBO)



10 kA MCB without Pigtail (RCBO)

- Standard AS/NZS 61009
- Approval No. N17482
- Switched neutral
- Suits 3 P+N NC or GB chassis or special CD chassis
- Suits loadcenters

Din-Safe MCB is a combined MCB/RCD providing overload, short circuit and earth leakage protection in the one integral unit.

Curve type: C (5 – 10 I_n)

Type AC RCD

Trip sens.	No. of poles	Voltage (AC)	Phase	In (A)	Cat. No.	Price \$
30 mA	2 Pole	110/240	1 P+N	6	DSRCB0630	
				10	DSRCB1030	
				16	DSRCB1630	
				20	DSRCB2030	
				25	DSRCB2530	
				32	DSRCB3230	
				40	DSRCB4030	

Type A RCD

Trip sens.	No. of poles	Voltage (AC)	Phase	In (A)	Cat. No.	Price \$
30 mA	2 Pole	110/240	1 P+N	10	DSRCB1030A	
				16	DSRCB1630A	
				20	DSRCB2030A	
				25	DSRCB2530A	
				32	DSRCB3230A	
				40	DSRCB4030A	
				10 mA	2 Pole	110/240
10	DSRCB1010A					
16	DSRCB1610A					
20	DSRCB2010A					
100 mA	2 Pole	110/240	1 P+N	10	DSRCB10100A	
				16	DSRCB16100A	
				20	DSRCB20100A	

Notes: 30 mA tripping characteristics: 0.5 x I_{Δn} = no tripping, 1 x I_{Δn} = T ≤ 300 mS
2 x I_{Δn} = T ≤ 150 mS, 5 x I_{Δn} = T ≤ 40 mS

Din-Safe MCB (RCBO)

1

10 kA MCB with Pigtail (RCBO)

- Standard AS/NZS 61009
- Approval No. N17482
- Un-switched neutral
- Suits NC, CD or GB chassis

Complete with revised terminal configuration and neutral pigtail, will fit standard Din-T 3 ph chassis.



Curve type: C (5 – 10 I_n) Type AC RCD

Trip sens.	No. of poles	Voltage (AC)	Phase	I _n (A)	Cat. No.	Price \$
30 mA	2 Pole	110/240	1P+N	6	DSRCB0630P	
				10	DSRCB1030P	
				16	DSRCB1630P	
				20	DSRCB2030P	
				25	DSRCB2530P	
				32	DSRCB3230P	
				40	DSRCB4030P	

Notes: 30 mA tripping characteristics: 0.5 x I_{Δn} = no tripping, 1 x I_{Δn} = T ≤ 300 mS
2 x I_{Δn} = T ≤ 150 mS, 5 x I_{Δn} = T ≤ 40 mS

Din-Safe-M

Add-on earth leakage modules

- Standard AS/NZS 3190
- Approval No N11974
- Current ratings 32 and 63 amps
- Sensitivity Δn 30, 100 and 300 mA
- Suits Din-T6, 10 and 15
- Can identify trip is either earth leakage or overload/short circuit



Tripping characteristics

0.5 x Δn	no tripping
1 x Δn	$t \leq 300$ ms
5 x Δn	$t \leq 40$ ms

Din-Safe-M modules to suit Din-T6, 10 and 15

No. of poles ¹⁾	Sensitivity	MCB rating ³⁾	Width mods. ²⁾	Cat. No. ¹⁾	Price \$
1P+N ⁴⁾	30 mA	32 A	2	DSRCM32301PN	
		63 A	2	DSRCM63301PN	
	100 mA	32 A	2	DSRCM321001PN	
		63 A	2	DSRCM631001PN	
	300 mA	32 A	2	DSRCM323001PN	
		63 A	2	DSRCM633001PN	
3P	30 mA	63 A	3	DSRCM63303P	
		63 A	3	DSRCM631003P	
	100 mA	32 A	2	DSRCM32303PN	
		63 A	3	DSRCM63303PN	
3P + N	100 mA	32 A	2	DSRCM321003PN	
		63 A	3	DSRCM631003PN	
	300 mA	32 A	2	DSRCM323003PN	
		63 A	3	DSRCM633003PN	

Din-Safe-M space requirements

Type	Without MCB fitted neutral not switched	MCB fitted neutral not switched	MCB fitted neutral switched
1P + N 32/63 A	2 modules (36 mm)	3 modules (54 mm)	4 modules (72 mm)
3P + N 32 A	2 modules (36 mm)	5 modules (90 mm)	6 modules (108 mm)
3P + N 63 A	3 modules (54 mm)	6 modules (108 mm)	7 modules (126 mm)
3P 63 A	3 modules (54 mm)	6 modules (108 mm)	N/A

- Notes:**
- 1P+N and 3P+N type supply neutral connected by 'pigtail' cable.
 - Dimensions of Din-Safe-M unit only; add MCB width for total installed width.
 - 'MCB rating' refers to the max. MCB rating the module can be fitted to.
 - 1P + N suitable for 415 V 2P applications.
Not suitable for Din-T10H MCBs.

Din-Safe-M

Modules to be combined with Din-T MCBs

1

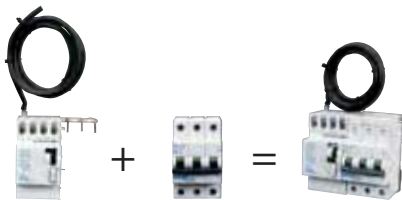
Operation

The combined Din-T MCB/Din-Safe-M earth leakage module has two operating toggles which indicate the reason for the trip action taking place.

- When an overload or short circuit occurs the Din-T MCB will operate. In this case the Din-Safe-M toggle will remain in the ON position.
- If an earth leakage fault occurs both toggles will move to the OFF position. In order to reset the MCB the Din-Safe-M unit must be reset first.
- In both instances – if the cause of the trip operation has not been rectified, a trip operation will occur as soon as the MCB is turned to the ON position. The trip free mechanism of the MCB ensures that a successful trip operation takes place even when the toggle is held in the ON position.

Assembly

- Place the MCB and Din-Safe-M unit on a flat surface. Be sure that both the MCB and the Din-Safe-M toggles are in the ON position.
- Slide the two units towards each other inserting the connecting bars or links into the MCB tunnel terminal, ensuring no undue pressure is applied to the metal tripping pin of the Din-Safe-M unit.
- Push in the connecting clips, locking the unit together.
- Check that the MCB trips when the toggle on the Din-Safe-M is moved to the OFF position.
- Tighten the busbar connections between the MCB and the Din-Safe-M and fit the insulating cover supplied.
- If the pigtail and N connections are reversed, the breaker will trip as soon as load is energised. Reset Din-Safe-M module before switching MCB 'ON'.
- In the case of a three phase 3 wire system (no neutral) use 3 phase models. 3P+N models will operate satisfactorily but test button will only function if neutral pigtail is connected.



- Din-Safe-M modules are an earth leakage module only. To complete the functional unit a Din-T6, Din-T10 or Din-T15 MCB must be added as shown.

Din-Safe-M

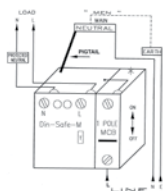
Modules to be combined with Din-T MCBs

Testing

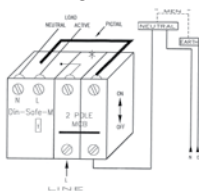
The MCB/Din-Safe-M combination must be connected with the line conductors to the LINE side (OFF/Bottom side) of the MCB and the load conductors connected to the Din-Safe-M terminals. The MCB/Din-Safe-M combination must be tested with the supply connected before connecting the load. First switch the Din-Safe-M unit 'ON' then the MCB. When the test button is pressed, both handles should trip. It is recommended that the test button is operated periodically to test the detection and tripping functions of the combined unit.

- Both 1P+N and 3P+N models have a neutral pigtail connection. 3P modules have no neutral connection at all.

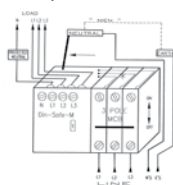
Din-Safe-M 1P+N with 1 pole MCB (neutral not switched)



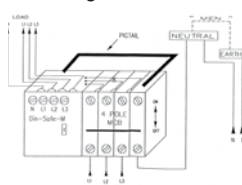
Din-Safe-M 1P+N with 2 pole MCB switching active and neutral



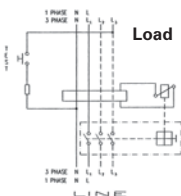
Din-Safe-M 3P+N with 3 pole MCB (neutral not switched)



Din-Safe-M 3P+N with 4 pole MCB switching active and neutral



Connection diagram



Accessories

Mounting of add-on devices onto MCBs, RCCBs and RCBOs

1

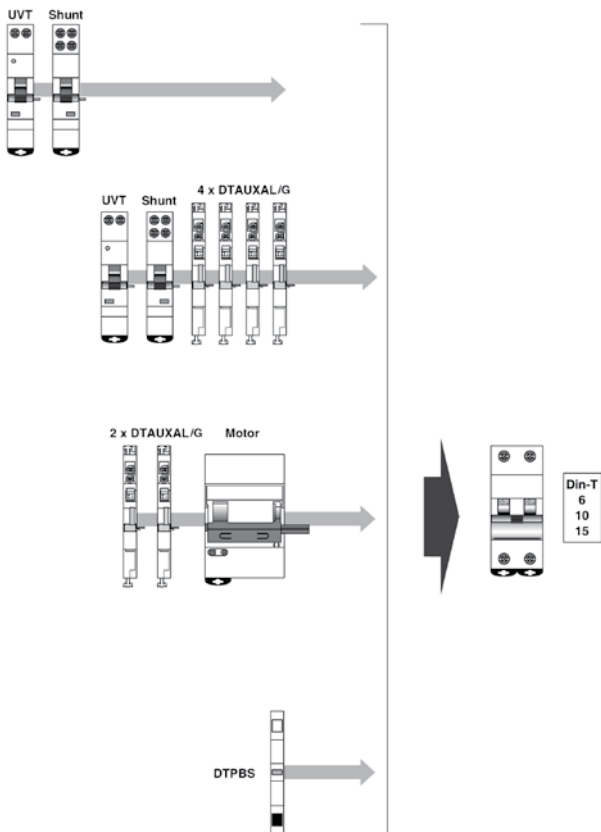
Type/Description	Din-T, DC, 6, 10, 15	Din-T 10H	DSRCB, DSRCD	DSRCM	DINTMS	Change -over switch
DTAUXAL Signal or AUX contact	L - R	-	R	R	L - R	L - R
DTAUXALG Signal or AUX contact, gold	L - R	-	R	R	L - R	L - R
DINT10HHS Signal or AUX + AUX contact	-	R	-	-	-	-
DTPBS Panelboard switch	L - R	-	R	-	-	-
DINTSHT Shunt trip	-	L	-	-	-	-
DTSHT Shunt trip	L - R	-	R	R	-	-
DTUVT Undervoltage trip	L - R	-	R	R	-	-
DTMD Motor operator	L - R	-	R	R	-	-

L = Left mounting R = Right mounting

1

Accessories

Mounting on the left-hand side

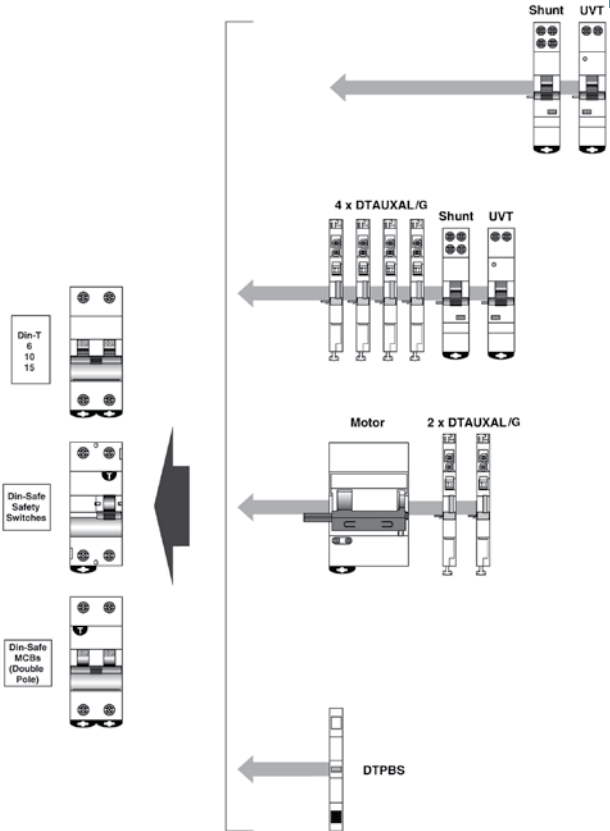


Notes: The above accessories will not fit to Din-T10H MCBs.
Shunts and auxiliaries, refer to pages 1 - 39 and 1 - 40.

Accessories

Mounting on the right-hand side

1



Notes: DSRCBH and DSRCBS - Single pole RCD/MCB will not accept side mounted accessories.
DINTMS - Main switches will accept side mounting auxiliary contacts only.

1

Din-TMS 63-100 A

Main switch DIN rail mount



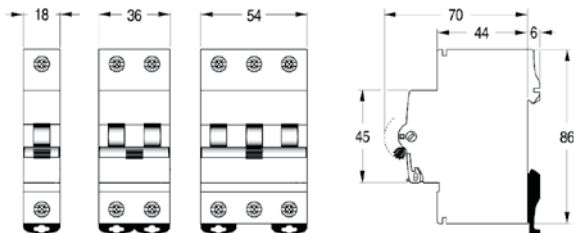
- Standard IEC 60947-3
- Double-break contacts
- Padlockable handle
- Handle sealable in ON and OFF position
- DIN rail mount
- Suits NC, CD or GB type chassis

Din-T main switches have the same profile as Din-T MCBs and are suitable for use as a main switch (isolator) in loadcentres and distribution boards

No. of poles	Rated current (A)	Cat. No.	Price \$
1	63	DINTMS631	
	80	DINTMS801	
	100	DINTMS1001	
2	63	DINTMS632	
	80	DINTMS802	
	100	DINTMS1002	
3	63	DINTMS633	
	80	DINTMS803	
	100	DINTMS1003	

63 A - 100 A
side mounts to
NC chassis
63 A - 80 A side
mounts to
CD chassis

Dimensions (mm)



Notes: AUX/ALM switch, refer to page 1 - 40.

The LINE-side is the OFF or bottom of the isolator, and connects to NC or CD chassis tee-offs.

Din-T

Shunt and undervoltage trip

1

Din-T shunt trip

- Couples to left or right side of MCB
- Modular width – 18 mm
- Busbar cavity both ends
- Field assembly
- Continuously rated
- Terminals for remote indication



DTSHT 110415V

Operation

The shunt trip makes it possible to remotely switch the MCB by energising C1 & C2 terminals of the shunt trip.

Shunt trip - Din-T6, 10 & 15

Rated voltage	Current rating	Operating time (ms)	Cat. No.	Price \$
110 to 415 V AC	110 V - 0.3 A	10	DTSHT110415V	
110 to 125 V DC	240 V - 0.6 A	4		
	415 V - 1.0 A	2		
24 to 60 V AC	24 V - 1.0 A	10	DTSHT2460V	
24 to 48 V DC	48 V - 2.0 A	4		

Shunt trip - Din-T 10H

Rated voltage	Current rating	Operating time (ms)	Cat. No. ¹⁾	Price \$
110 to 415 V AC	110 V - 0.3 A	10	DINTSHT110415U	
110 to 125 V DC	240 V - 0.6 A	4		
	415 V - 1.0 A	2		
24 to 60 V AC	24 V - 1.0 A	10	DINTSHT2460U	
24 to 48 V DC	48 V - 2.0 A	4		

Din-T undervoltage trip ²⁾

- Couples to left or right side of MCB
- Modular width – 18 mm
- Busbar cavity both ends
- Field assembly

The Din-T UVT trips the MCB when the operating voltage threshold is lower than $0.5 \times U_n$. Adjustable time delay up to 300 ms eliminates nuisance tripping.



DTUVT240VAC

Rated voltage	Cat. No.	Price \$
230 V AC	DTUVT240VAC	
12 V AC/DC	DTUVT12VDC	
24 V AC/DC	DTUVT24VDC	

Power loss 3 VA

Notes: ¹⁾ Shunt fits to left side of Din-T10H MCBs only.

²⁾ UVT does not suit Din-T10H MCBs.

Din-T

Auxiliary contacts for MCBs

- Suitable for Din-T 6, 10 & 15
- Suitable for 2P RCBO and 2P & 4P RCCB ¹⁾³⁾
- Stack up to 4 units left or right side ²⁾
- Field fittable, includes all fitting accessories
- Includes busbar cavity for chassis mounting
- Changeover contact
- Current rating 5 A



DTAUXAL

Din-T auxiliary contact - Din-T 6, 10, 15, DSRCBH, DSRCB

Contact function	Contact material	Module width	Cat. No.	Price \$
H or S	Silver	0.5	DTAUXAL	
H or S	Gold	0.5	DTAUXALG	

'H' = auxiliary switch 'S' = alarm switch

Din-T auxiliary contact - Din-T10H

Contact function	Contact material	Module width	Cat. No.	Price \$
H+H/S	Silver	0.5	DINT10H - HS ²⁾	

Din-T auxiliary contact - DSRCBS

Contact function	Contact material	Module width	Cat. No. ³⁾	Price \$
H	Silver	0.5	DSRCBSAX	
H or S	Silver	0.5	DSRCBSAXAL	
H or S	Gold	0.5	DSRCBSAXALG	

- Notes:**
- ¹⁾ DTAUXAL type contact fits right side only on 2P RCBO and 2/4P RCCB.
 - ²⁾ Auxiliary contacts for Din-T10H MCBs are not stackable and fit to right side only.
 - ³⁾ Fit right hand side only.

Din-T

Motor operator for MCBs

1

Din-T motor operator DTMD

- Suitable for Din-T 6, 10 & 15
- Suitable for 2P RCBO and 2P & 4P RCCB
- Field fittable, includes all fitting accessories
- Fits left or right side of device
- Padlockable in the OFF position
- Manual operation is possible



DTMD240VAC

Rated voltage	Module width	Cat. No.	Price \$
240 V AC	3	DTMD240VAC	

Technical

Rated voltage Un	240 V AC
Impulse to switch ON/OFF	>50 ms
Closing time	500 ms
Opening time	200 ms
Electrical endurance	10,000 ops
Terminal capacity	2.5 mm ²
Weight	380 g

Notes: DTMD240VAC fits right side only on 2P RCBO and 2/4P RCCB.
DTMD240VAC is not suitable for use with Din-T10H MCBs.

1

DIN mount housing to suit 22.5 mm devices

- DIN rail mount
- Mounts 22.5 mm panelmount devices
- Suitable for loadcentres and panelboards



Holder is DIN rail mounted, and is designed to allow mounting of 22.5 mm panelmount devices in loadcentres and Concept family of panelboards. Ideal for mounting pilot lights, pushbuttons and key selector switches.

Description	Cat. No.	Price \$
Holder DIN profile suit 22.5 mm devices	M22IVS	

Panelboard switch (DTPBS)

The panelboard switch coupled to a main device is intended to switch off any 2 - 63 A MCB in case the front cover of the enclosure is removed. It is a mechanical safety device, which reduces the risk of electric shock in case of manipulation of the panelboard.

The panelboard switch can easily be coupled either to the right or left-hand side of the main device, according to the instructions below.

No. modules wide ¹⁾	Cat. No.	Price \$
0.5	DTPBS	

Kilowatt hour meters

- 8 Digit LCD
- Displays - Total active energy
 - Total reactive energy
 - Partial active energy
 - Partial reactive energy
 - Power demand
 - Maxium demand (power)
- Active energy: Class 1
- Input current 1 A or 5 A CT



CE4DT04A2

No. modules wide ¹⁾	Cat. No. ²⁾	Price \$
KWH meter DIN 4 module	CE4DT 14A2	
KWH meter DIN 4 module (CUMMS)	CE4DT 14A6	

Notes: ¹⁾ 'DTSP' - 0.5 module width spacer available if required when DTPBS used.
²⁾ CE4DT Price Schedule 'Y8'.

Busbar comb

Din-T MCBs

1

80 A ⁴⁾

Pin type busbars



No. of poles	1 Phase ¹⁾ Cat. No.	Price \$	3 Phase Cat. No.	Price \$
8 Way	IBC108P		-	
12 Way	IBC112P		ICL123	
15 Way	IBC115P		ICL153	
18 Way	IBC118P		ICL183	
21 Way	IBC121P		ICL213	
55 Way	IBC155P		-	
57 Way	-		ICL573	

Pin type busbar	Cat. No.	Price \$
1P+N 56 Way pin type busbar comb	ICL562	
1P+N 6 Way pin type busbar comb	ICL62	
1P+N 10 Way pin type busbar comb	ICL102	
3P+Aux 56 Way pin type busbar comb	ICL563A ²⁾	
3P+N 56 Way pin type busbar comb	ICL564	



Fork type busbar	Cat. No.	Price \$
56 Way 1 phase fork type busbar comb	ICL561F	
57 Way 3 phase fork type busbar comb	ICL573F	

End caps	Cat. No.	Price \$
1P end cap to suit IBC style buscomb	IBCEC1	
2P and 3P end cap to suit ICL style buscomb	ICLEC23 ³⁾	
3P+N end cap to suit ICL style buscomb	ICLEC4 ³⁾	



ICL123


 ICLTOC
T-off cap (strip of 5)


ICL573F

- Notes:** 1) IBC busbar combs come complete with endcaps.
 2) 16 x 3 MCB connections and 16 x 9 mm spaces (AUXs).
 3) ICL end caps do not suit IBC busbar combs.
 4) Current rating 80 A endfed. 130 A certified.

Din-T

Modular changeover switch

- Standard IEC 60669 - 1
- Handle sealable and lockable in ON or OFF position
- Terminal protection IP 20
- Captive terminal screws with cross head



Without OFF I - II

In (A)	No. of Poles	No. of Modules	Connection	Cat. No.	Price \$
32	1	1		DTCS3212	
32	2	1		DTCS3222	

With OFF I - O - II

In (A)	No. of Poles	No. of Modules	Connection	Cat. No.	Price \$
32	1	1		DTCS3213	
32	2	1		DTCS3223	

Din-T

Pushbuttons and pilot lights

- Modular size
- DIN rail mounting
- Terminal protection IP 20
- Contacts, 16 A @ 250 V AC



Description	No. of Poles	No. of Modules	Contacts	Cat. No.	Price \$
Pushbutton	2	1	N/O + N/C	DTPB11	
Pushbutton illuminated	1	1	N/O	DTPB10L ¹⁾	
Pilot light base	1	1		DTPLB ²⁾	
Lamp 240 V neon	-	-		DTPLL240	
Lamp 24 V (filament)	-	-		DTPLL24	
Lens red	-	-		DTPLLRD	
Lens green	-	-		DTPLLGR	
Lens orange	-	-		DTPLLOR	
Lens clear	-	-		DTPLLCL	

Notes: ¹⁾ Order lens separately. 240 V lamp built-in and cannot be changed.

²⁾ Order lens and lamp separately.

Valid until August 2014

MCB LOCKING SOLUTIONS - LockDIN™

NHP

The miniature circuit breaker locking solution
for NHP DIN-T circuit breakers.

POWER PROTECTION



PP-LOCKDIN-MCB-CPB

The first comprehensive system for safe
and secure locking of DIN miniature circuit
breakers (MCBs)

- Designed specifically for the mining industry
- Easy to install and retrofit to existing Concept•Premier and Concept•TOUGH panelboards
- Can be used with DINsafe RCBOs
- Accepts 2.5 - 6.5 mm padlocks, hasps and scissor arrangements
- Can only be used with the NHP DIN-T range
- Can be used with 1, 2 and 3 pole DIN-T MCBs



LOCK DIN™

1

Din-T lockdogs provide a captive locking attachment for Din-T MCBs and RCDs.

The system is designed to be used in conjunction with Concept Premier and Concept Tough Panelboards. If a switchboard is being specifically designed to accommodate the new LOCK DIN™, then extra depth is required between escutcheon and door to accommodate the padlocks being used on site.

The LOCK DIN™ is designed to be clipped onto the line side of the MCB. This requires the line terminal screw to be tightened before installation. The escutcheon cut out needs to be increased by 16 mm over the line terminal to allow for the extended profile of the MCB with the LOCK DIN™ fitted.



DTLLA



DTLLB



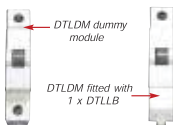
MCB in ON Position.
Non lockable.



2 x DTLLB for a 3 pole MCB
The use of 1 x DTLLA



MCB in OFF Position.
Can be locked.

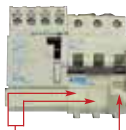


DTLDM dummy
module

DTLDM fitted with
1 x DTLLB



1 x DTLCM

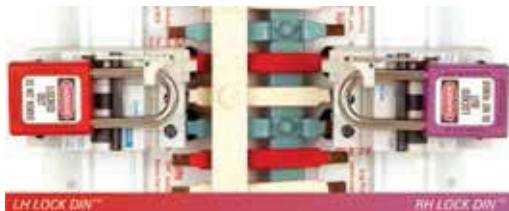


2 x DTLLB 1 x DTLLA

LOCK DIN™

1

Description	Cat. No.	Price \$
Locking devices		
LH locking assembly for MCBs and single pole RCBOs	DTLLA	
RH locking assembly for MCBs and single pole RCBOs	DTLLARH	
LH locking assembly for 2 pole RCBOs	DTLLAB	
RH locking assembly for 2 pole RCBOs	DTLLABRH	
Locking assembly for DINT-10H MCB	DTLLA10H	
12 pack LH locking assembly for MCBs and single pole RCBOs	DTLLABULK	
12 pack RH locking assembly for MCBs and single pole RCBOs	DTLLARHBULK	
Pole fillers and blanking devices		
12 pack locking blank for MCBs and single pole RCBOs	DTLLB	
Locking blank for DSRCM (add on RCCB), 3 pole MCBs	DTLCM	
Dummy MCB (for total touch protection)	DTLDM	
12 pack pole filler (extended length to suit 63 mm cutout)	DTLPF	
Escutcheons and labels		
Concept premier escutcheon size 1 24 way to suit LockDIN	CPPE5100DTL	
Concept premier escutcheon size 2 48 way to suit LockDIN	CPPE5200DTL	
Concept premier escutcheon size 3 60 way to suit LockDIN	CPPE5300DTL	
Concept premier escutcheon size 4 84 way to suit LockDIN	CPPE5400DTL	
Concept premier escutcheon size 5 96 way to suit LockDIN	CPPE5500DTL	
Concept tough escutcheon size 2 48 way to suit LockDIN	CTES248RDCOLD	
Concept tough escutcheon size 3 96 way to suit LockDIN	CTES396RDCOLD	
Centre escutcheon label 1 - 48	LABLE148DT	
Centre escutcheon label 49 - 96	LABLE4996DT	



Meter Isolator LOCK DIN™

1

The Lockable Meter Isolator from NHP utilises the captive locking system known as LOCK DIN™. LOCK DIN™ has been designed for safe and secure captive locking of Terasaki DIN-T MCBs. When you combine LOCK DIN™ with a sealable enclosure and Terasaki MCB you have a complete system suitable for meter isolation and supply capacity/ service protection. ¹⁾

DTPC Complete kits include: enclosure, MCB and LOCK DIN™

No. of poles	Amps	kA	Curve	Cat. No.	Price \$
Enclosure type - DTPC (2 pole)					
1 pole	63 kA	6 A	C	DTPC2LDCB	
			D	DTPC2LDCBV	
Enclosure type - DTPC (4 pole)					
3 pole	63 kA	6 kA	C	DTPC4LDCB	
		10 kA	D	DTPC4LDCBV	

ILC Complete kits include: enclosure, MCB and LOCK DIN™

No. of poles	Amps	kA	Curve	Cat. No.	Price \$
Enclosure type - ILC (4 pole)					
1 pole	63 kA	6 A	C	ILC4SLDCB1P	
			D	ILC4SLDCB1PD	
	80-125 A	10 kA	C	ILC4SLDCB_1P ²⁾	
			D	ILC4SLDCB_1PD ²⁾	
3 pole	63 A	6 kA	C	ILC4SLDCB3P	
		10 kA	D	ILC4SLDCB3PD	
	80-125 A	10 kA	C	ILC4SLDCB_3P ²⁾	
			D	ILC4SLDCB_3PD ²⁾	



Notes: ¹⁾ As the service and installations rules vary from region to region please consult these to check suitability.

²⁾ Insert 80, 100 or 125 for required amp rating.

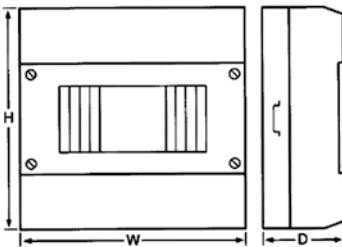
Meter Isolator LOCK DIN™

1

Enclosures only, to suit meter isolator

To suit	Enclosure type	Cat. No.	Price \$
1 P MCB <63 A	DTPC (2 pole)	DTPC2LD	
1-3 P MCB <63 A	DTPC (4 pole)	DTPC4LD	
1-3 P MCB <63 A	ILC (4 pole)	ILC4SLD	
1-3 P MCB 80-125 A	ILC (4 pole)	ILC4SLD10H	
2 P RCBO 6-40 A	DTPC (2 pole)	DTPC2LDRCBO	

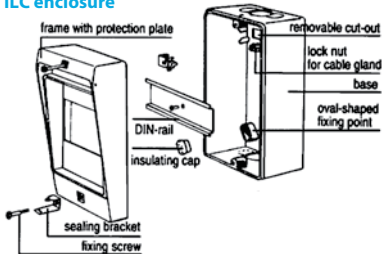
DTPC enclosure



Dimensions (mm)

No. of poles	Height	Width	Depth
2 pole	139	51	61
4 pole	139	88	61

ILC enclosure



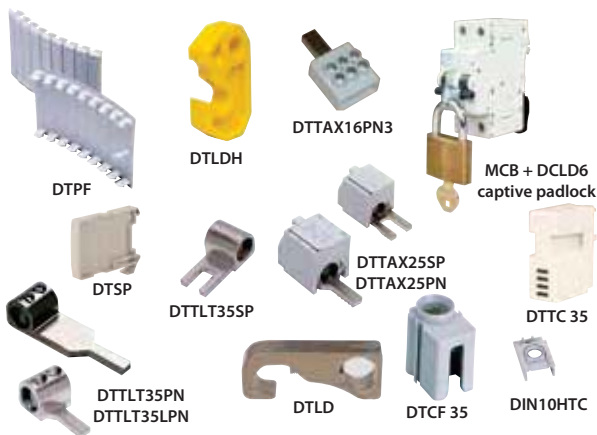
Dimensions (mm)

No. of poles	Height	Width	Depth
4 pole	175	90	100

Din-T series MCBs

Accessories

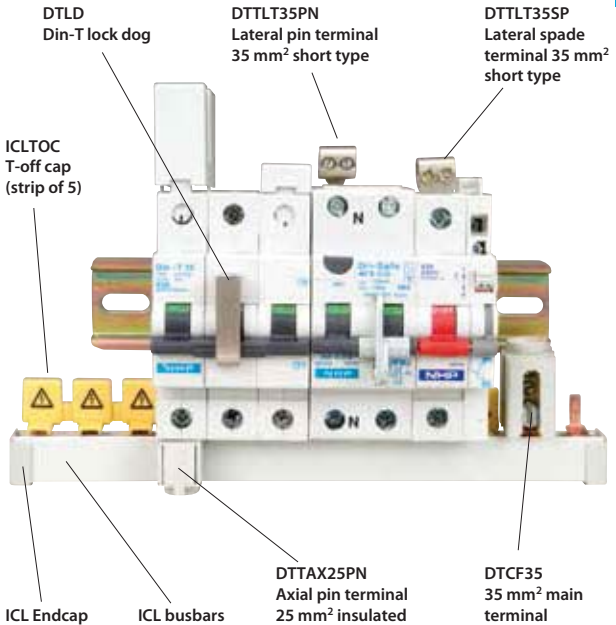
Description	Cat. No.	Price \$
Lateral pin terminal 35 mm ² (short type)	DTTLT35PN	
Lateral pin terminal 35 mm ² (long type)	DTTLT35LPN	
Din-T lock dog (Non-captive)	DTLD	
Din-T lock dog captive (LOCK DIN) Refer page 1 - 46	-	
Din-T lock dog captive (1 - 4 pole) ¹⁾	DCLD6	
Din-T lock dog to suit DINT10H	DTLDH	
Lateral spade terminal 35 mm ² (short type)	DTTAX35SP	
Axial spade terminal 25 mm ² (insulated)	DTTAX25SP	
Axial pin terminal 25 mm ² (insulated)	DTTAX25PN	
Axial pin terminal 50 mm ² (insulated)	DTTAX50PN	
3 way neutral link suit RCCB	DTTAX16PN3	
35 mm ² main terminal	DTCF35	
185 mm ² main terminal	NEB185	
Pole filler (1 strip of 4 poles, 8 x 9 mm segments)	DTPF	
Busbar comb Refer page 1 - 43	-	
End cap (strip offs) (T-off cap)	ICLTOC	
1/2 module spacer (9 mm wide)	DTSP	
Din-T terminal cover 5 mm	DTTC5	
Din-T terminal cover 35 mm	DTTC35	
Din-T 10H terminal cover	DINT10HTC	
Din-T 1P RCBO terminal cover	DSRCBHTC	



Notes: ¹⁾ Suitable for padlock hasp size 4.5 to 6.5 mm.

Din-T series MCBs Accessories

1



Din-T

Series contactors



- Standard AS/NZS 60947.4.1
- Voltage 240/415 V AC
- Silent operated magnetic drive
- Integrated surge suppression
- Switch position indicator
- DIN rail mount

Application

Din-T contactors are electromagnetically controlled switches used to control single or multiphase high power loads while the control itself can be low power. Applications include switching and control of lighting equipment, heating, ventilation, pumps, heat pumps and other equipment.

Features

Except for the 20 A version, all Din-T contactors have DC coils, resulting in noise-free silent operation. As all DC coil contactors have an internal diode rectifier bridge they can be operated by both DC and AC power supplies. The built-in varistor protects the coil against an overvoltage of up to 5 kV. The switch position of contacts is visible via a flag indicator on the front of the contactor.

Current lth	Contact config.	Coil volts	No. of Mods.	Cat. No.	Price \$
20 A	1 NO / 1 NC	240 V AC	1	DTC2011240	
20 A	2 N/O	24 V AC	1	DTC202024	
20 A	2 N/O	240 V AC	1	DTC2020240	
20 A	2 N/C	240 V AC	1	DTC2002240	
24 A	4 N/O	12 V AC/DC	2	DTC244012	
24 A	4 N/O	240 V AC/DC	2	DTC2440240	
24 A	4 N/C	240 V AC/DC	2	DTC2404240	
24 A	4 N/O	24 V AC/DC	2	DTC244024	
40 A	4 N/O	24 V AC/DC	3	DTC404024	
40 A	4 N/O	240 V AC/DC	3	DTC4040240	
63 A	4 N/O	24 V AC/DC	3	DTC634024	
63 A	4 N/O	240 V AC/DC	3	DTC6340240	

Din-T hour run counter

- DIN rail mounting
- Synchronous motor drive
- 99,999.99 hours
- Permanent visual display non-resettable
- Protection IP 20



No. Modules	Voltage	Cat. No. ¹⁾	Price \$
2	230 V AC	DTHR	

Notes: ¹⁾ Cannot be reset.

Din-T

Series contactors

1

Technical data

Type	DTC20	DTC24	DTC40	DTC63
Rated continuous current I_{th}	20 A	24 A	40 A	63 A
AC 1/AC 7a switching of heaters				
Rated operational current I_e ¹⁾	20 A	24 A	40 A	63 A
Rated output AC 1 240 V 1 ϕ 415 V 3 ϕ	4 kW	5.3 kW	8.7 kW	13.3 kW
	–	16.0 kW	26.0 kW	–
AC 3/AC 7b switching of motors				
Rated operational current I_e ¹⁾	9 A	9 A	22 A	30 A
Rated output AC 3 240 V 1 ϕ 415 V 3 ϕ	1.3 kW	1.3 kW	3.7 kW	5.0 kW
	–	4.0 kW	11.0 kW	15.0 kW
AC 5a switching of electric discharge lamp controls ²⁾ (uncompensated)				
Rated operational current I_e ¹⁾	8 A	10 A	30 A	44 A
AC 5b switching of incandescent lamps ²⁾				
Rated operational current I_e ¹⁾	6 A	7 A	15 A	22 A
Switching on capacity				
$\cos_\phi = 0.95$ at 220-230 V 1 phase	100 A	–	–	–
$\cos_\phi = 0.65$ at 380-400 V 3 phase	–	90 A	220 A	300 A
Switching off capacity				
$\cos_\phi = 0.95$ at 220-230 V 1 phase	80 A	–	–	–
$\cos_\phi = 0.65$ at 380-400 V 3 phase	–	72 A	176 A	240 A
Ohmic loss per contact I_n	1.0 W	1.5 W	3.0 W	6.0 W
Endurance and mechanical switching				
Max. switching frequency at AC 1/AC 7a	300 h	300 h	300 h	300 h
Max. switching frequency at AC 3/AC 7b	600 h	600 h	600 h	600 h
Mechanical service life	106	106	106	106
Electrical service life at AC 1/AC 7a	150,000	150,000	150,000	150,000
Electrical service life at AC 3/AC 7b	150,000	500,000	170,000	240,000
Terminal capacity max.	1x10 mm ²	2x4 mm ²	1x25 mm ²	2x10 mm ²
Magnetic control system				
Control voltage range	85...110 % x U_n			
Rated operating frequency	50 / 60 Hz		DC, 40...450 Hz	
Operating temperature range	-22 °C to +55 °C ³⁾			
Max. pull-in coil power loss	8 VA/5 W	4 VA/4 W	5 VA/5 W	65 VA/65 W
Max. holding coil power loss	3.2 VA/1.2 W	4 VA/4 W	5 VA/5 W	4.2 VA/4.2 W
Switching on delay	9...12 ms	<40 ms	<40 ms	<40 ms
Switching off delay	10...12 ms	<40 ms	<40 ms	<40 ms
Terminal capacity max.	1 x 4 mm ² or 2 x 2.5 mm ²			

Notes: ¹⁾ When parallel switching 2 current paths the rated current I_e will be multiplied by 1.6.

²⁾ For additional lamp switching data refer to NHP.

³⁾ If several contactors are mounted side by side in a row fit a half-module spacer (Cat. No. DTSP) between every second contactor.

Din

Series contactors



- Standard AS/NZS 60947.4.1
- Voltage 240/415 V AC
- Switch position indicator
- DIN rail mount

Application

Din contactors are electromagnetically controlled switches used to control single or multiphase high power loads while the control itself can be low power. Applications include switching and control of lighting equipment, heating, ventilation, pumps, heat pumps and other equipment.

Current I _{th}	Contact config.	Coil volts	No. of Mods.	Cat. No.	Price \$
20 A	2 N/O	24 V AC	1	DTC202024L	
20 A	2 N/O	240 V AC	1	DTC2020240L	
25 A	4 N/O	12 V AC	2	DTC254012L	
25 A	4 N/O	240 V AC	2	DTC2540240L	
25 A	4 N/C	240 V AC	2	DTC2504240L	
40 A	4 N/O	240 V AC	3	DTC4040240L	
63 A	4 N/O	240 V AC	3	DTC6340240L	

Technical data

Type	DTC20...L	DTC25...L	DTC40...L	DTC63...L
Rated continuous current I _{th}	20 A	25 A	40 A	63 A

AC 1/AC 7a switching of heaters

Rated operational current I _e	20 A	25 A	40 A	63 A
Rated output kW	4	5.4	8.4	13

AC 7b

Rated operational current I _e	7 A	8.5 A	15 A	25 A
Rated output kW	1.2	1.5	2.4	3.8

Switching on capacity (A)

AC 1/7a cos ϕ 0.8 U _e 1.05	30	37.5	60	94.5
AC 7b cos ϕ 0.45 U _e 1.05	160	200	320	504

Performance

AC 1/7a cos ϕ 0.8 U _e 1.05	20	25	40	63
AC 7b cos ϕ 0.45 U _e 0.17	4	5.4	8.4	13

General

Terminal capacity mm ²	6	10	25	25
Control voltage range 85 - 110% x U _n				
Frequency 50 Hz				
Rated insulation voltage 500 V				
Pick up time 50 ms				
Mechanical life >3x10 ⁴				
Electrical life >1x10 ⁵				

Din-T Impulse switch

1

Din-T impulse switch

- Standard IEC 60669-2-2
- Visual indication of contact position
- Manual or electrical operation
- Terminal protection IP 20
- 16 A 240 V AC contact rating



Function

Impulse switches are electromechanical switches used to control medium power loads while the control itself remains low power. The device switches between 2 stable positions each time a brief pulse is required to switch positions. The device can also be switched manually.

Diagram	Coil Voltage	No. of poles	No. of mods.	In	Cat. No. ¹⁾	Price \$
	12 V AC	1	1	16 A	DTIS1012VAC	
	24 V AC	1	1	16 A	DTIS1024VAC	
	48 V AC	1	1	16 A	DTIS1048VAC	
	240 V AC	1	1	16 A	DTIS10240VAC	
	12 V DC	1	1	16 A	DTIS1012VDC	
	24 V DC	1	1	16 A	DTIS1024VDC	
	12 V AC	2	1	16 A	DTIS2012VAC	
	24 V AC	2	1	16 A	DTIS2024VAC	
	48 V AC	2	1	16 A	DTIS2048VAC	
	240 V AC	2	1	16 A	DTIS20240VAC	
	12 V DC	2	1	16 A	DTIS2012VDC	
	24 V DC	2	1	16 A	DTIS2024VDC	
	12 V DC	2	1	32 A	DTIS123212VDC	
	12 V AC	2	1	16 A	DTIS1112VAC	
	24 V AC	2	1	16 A	DTIS1124VAC	
	48 V AC	2	1	16 A	DTIS1148VAC	
	240 V AC	2	1	16 A	DTIS11240VAC	
	12 V DC	2	1	16 A	DTIS1112VDC	
	24 V DC	2	1	16 A	DTIS1124VDC	
	12 V DC	2	1	32 A	DTIS113212VDC	

Add on power contact ²⁾

Diagram	Coil Voltage	No. of poles	No. of mods.	In	Cat. No. ¹⁾	Price \$
		2	1	16 A	DTIS2NO	
		2	1	16 A	DTIS2CO	
		2	1	32 A	DTIS132PWR	

Notes: ¹⁾ When stacking in rows ensure adequate ventilation, insert spacer (DTSP) every second device.

²⁾ Only suitable for 32 A DTIS.
32 A unit available - refer NHP.

Sprecher + Schuh CA 8 contactors

Features

- Ideally suited for heating, lighting, hot water and storage heating applications
- Small size (2.5 pole width), panel or DIN rail mounting
- Contactors can be mechanically interlocked
- Large range of snap-on accessories ¹⁾
- Conforms to AS/NZS 60947 with world-wide approvals



Contactor CA 8-5

Maximum current ratings (amps) at 415 volts

Cat. No. ¹⁾	CA 8-5-10_AC ²⁾			CA 8-9-10_AC ²⁾ [CA 8-12-10_AC ²⁾]			4-POLE CA 8-9-M40_AC	
Price \$ ³⁾								
Heating loads AC 1	2 Pole Parallel	3 Pole Parallel		2 Pole Parallel	3 Pole Parallel		4 Pole Parallel	
Amps per phase 40 °C (A)	20	34	50	20	34	50	20	64
Amps per phase 60 °C (A)	16	27	40	16	27	40	16	51
Lighting loads								
Tungsten per phase (A)	4	-	-	7	-	-	7	-
Fluorescent 40 °C (A)	18	30	45	18	30	45	18	57
Fluorescent 60 °C (A)	14.5	24	35	14.5	24	35	14.5	45
Motor loads								
Amps 415 volt AC 3	5.3			9.0 [12]			9.0	
kW @ 60 °C	2.6			4.5 [6.1]			4.5	

Emergency lighting test unit

		Cat. No.	Price \$
Standard switch operated emergency lighting test unit	reset - test	ELTS ⁴⁾	
Key operated emergency lighting test unit	reset - test	ELTK ⁴⁾	



ELTS



ELTK

- Notes:** ¹⁾ For further information refer to Part A Section 1 Price List Catalogue.
²⁾ Supplied with 1 N/O auxiliary contact. For 1 N/C auxiliary contact specify 01 instead of 10 when ordering.
³⁾ Price is for standard AC coil voltage. Specify voltage when ordering
⁴⁾ Cat. No. ELTS and ELTK use Price Schedule 'A4'

DIN rail mounted surge diverters - Electrical network

1

Features:

- Compact size
- Status indication (via flag)
- DIN rail mounting
- Thermal disconnection
- Remote indication (via volt free contact)



PSC series



PSM series

PSC Series

The PSC pluggable range consists of Class 1+2 (according to IEC 61643-11) surge protective devices (lightning arrestor) (10/350 μ s) and surge protector (8/20 μ s) with low U_p (protection of downstream equipments) for single-phase and three-phase electrical power networks.

These units are ideal for protection of service entrances and distribution panels in areas exposed to lightning activity or externally generated heavy transients.

No. of

phases	I_{imp}	I_{max}	Connection	I_N	U_c	U_p	Cat. No.
1P	12.5 kA	65 kA	L-N	20 kA	275 V	≤ 1.3 kV	CPTPSC1-12/230IR
1P	25 kA	65 kA	N-PE	25 kA	255 V	≤ 1.5 kV	CPTPSC1-25N
1P	25 kA	100 kA	L-N	25 kA	275 V	≤ 1.3 kV	CPTPSC1-25/230IR
1P	50 kA	65 kA	N-PE	50 kA	255 V	≤ 1.5 kV	CPTPSC1-50N
1P	100 kA	100 kA	N-PE	50 kA	255 V	≤ 1.5 kV	CPTPSC1-100N
1P+N	12.5 kA	65 kA	L+N-PE	20 kA	275 V	≤ 1.3 kV	CPTPSC2-12/230IR ¹⁾²⁾³⁾
1P+N	25 kA	100 kA	L+N-PE	25 kA	275 V	≤ 1.3 kV	CPTPSC2-25/230IR ¹⁾²⁾³⁾
3P+N	12.5 kA	65 kA	L+L+L+N-PE	20 kA	440 V	≤ 1.3 kV	CPTPSC4-12/400IR ¹⁾²⁾³⁾
3P+N	25 kA	100 kA	L+L+L+N-PE	25 kA	440 V	≤ 1.3 kV	CPTPSC4-25/400IR ¹⁾²⁾³⁾

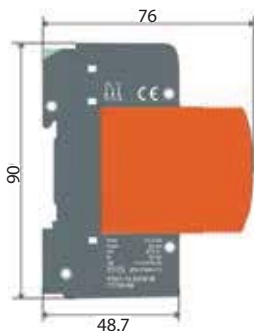
Accessories	For use with	Cat. No.
Replacement module - limp 12.5 kA	CPTPSC1-12/230IR, CPTPSC2-12/230IR & CPTPSC4-12/400IR	CPTPSC-12-230MOD
Replacement module - limp 25 kA	CPTPSC1-25/230IR, CPTPSC2-25/230IR & CPTPSC4-25/400IR	CPTPSC-25-230MOD

- Notes:**
- ¹⁾ U_p listed above is between L-N. The U_p between N-PE is ≤ 1.5 kV.
 - ²⁾ U_c listed above is between L-N. The U_c between N-PE is 255 V.
 - ³⁾ I_{imp} listed above is between L-N. The I_{imp} between N-PE is 25 kA.
 - ⁴⁾ I_{imp} listed above is between L-N. The I_{imp} between N-PE is 50 kA.
 - ⁵⁾ I_{imp} listed above is between L-N. The I_{imp} between N-PE is 100 kA.

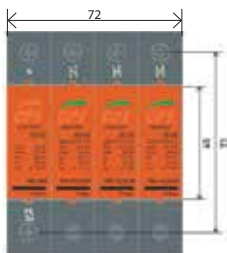
1

DIN rail mounted surge diverters - Electrical network

Dimensions (mm)



All PSC series

CPTPSC112230IR
CPTPSC125N
CPTPSC150NCPTPSC125230IR
CPTPSC1100N
CPTPSC212230IRCPTPSC412230IR
CPTPSC225230IR

CPTPSC425400IR

Notes: CPTPSC425400IR dimensions are H x W x D (mm): 90 x 155 x 76.

DIN rail mounted surge diverters - Electrical network

1

PSM Series

The PSM pluggable range consists of Class 2 (according to IEC) surge protective devices designed for protection against transient overvoltages in single-phase and three-phase electrical power networks.

These units are ideal for protection of distribution and branch panels, electronic equipment etc.

No. of phases	I_{max}	Connection	I_N	U_c	U_p	Cat. No.
1 P	20 kA	L-N	10 kA	275 V	< 1.4 kV	CPTPSM1- 20/230 IR
1 P	20 kA	N-PE	10 kA	255 V	< 1.5 kV	CPTPSM1- 20N
1 P	40 kA	L-N	20 kA	275 V	< 1.3 kV	CPTPSM1- 40/230 IR
1 P	40 kA	N-PE	20 kA	275 V	< 1.5 kV	CPTPSM1- 40N
1 P+N	20 kA	L+N-PE	10 kA	275 V	< 1.4 kV	CPTPSM2- 20/230 IR ¹⁾²⁾
1 P+N	40 kA	L+N-PE	20 kA	275 V	< 1.3 kV	CPTPSM2- 40/230 IR ¹⁾³⁾
3 P+N	20 kA	L+L+L+ N-PE	10 kA	440 V	< 1.4 kV	CPTPSM4- 20/400 IR ¹⁾²⁾
3 P+N	40 kA	L+L+L+ N-PE	20 kA	440 V	< 1.3 kV	CPTPSM4- 40/400 IR ¹⁾³⁾

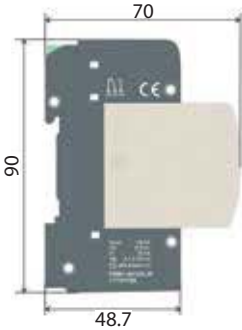
Accessories	For use with	Cat. No.
Replacement module - I_{max} 20 kA	CPTPSM1-20/230IR, CPTPSM2- 20/230IR & CPTPSM4-20/400IR	CPTPSM-20-230MOD
Replacement module - I_{max} 40 kA	CPTPSM1-40/230IR, CPTPSM2- 40/230IR & CPTPSM4-40/400IR	CPTPSM-40-230MOD

Notes: ¹⁾ U_p listed above is between L-N. The U_p between N-PE is ≤ 1.5 kV.
²⁾ U_c listed above is between L-N. The U_c between N-PE is 255 V.
³⁾ U_c listed above is between L-N. The U_c between N-PE is 265 V.

1

DIN rail mounted surge diverters - Electrical network

Dimensions (mm)



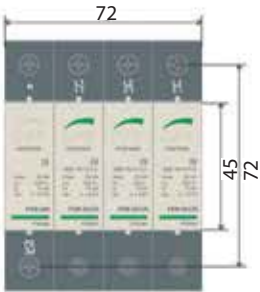
All PSM models



1P PSM models

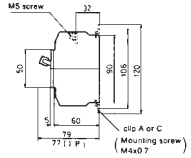
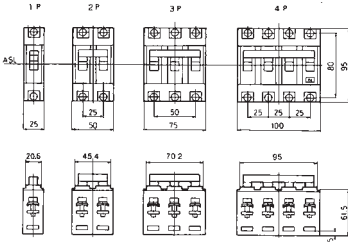


1P+N PSM models



3P+N PSM models

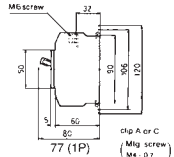
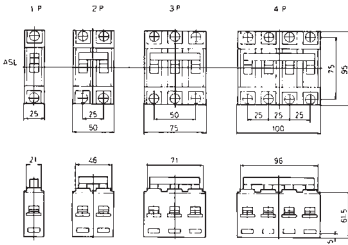
Safe-T (6-63 A) MCBs



Preparation of conductor



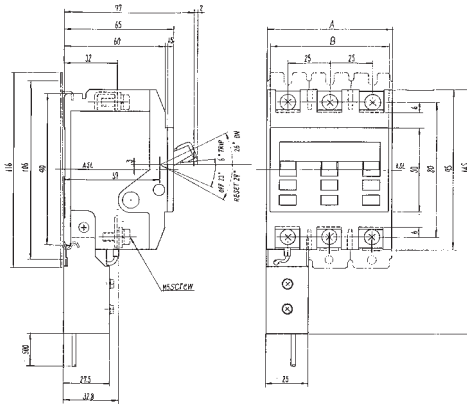
Safe-T (80-100 A) MCBs



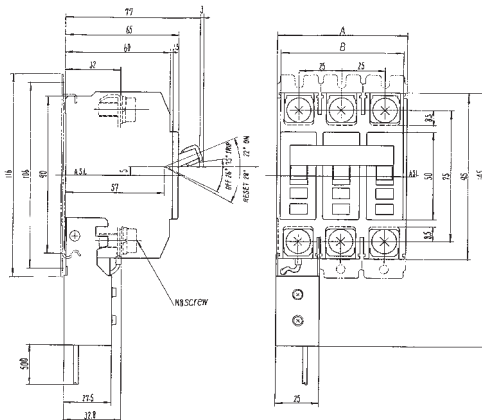
preparation of conductor

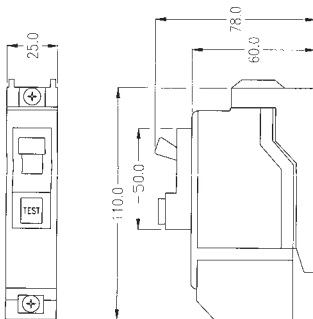
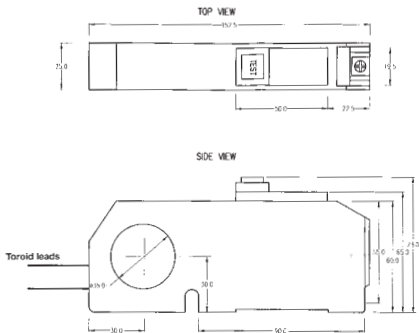


Safe-T (6-63 A)

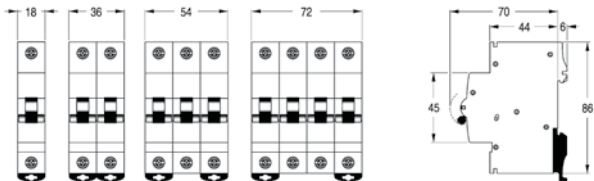


Safe-T (80-100 A)

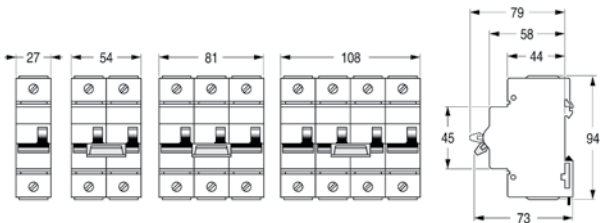


Safe-T (SRCB) RCBO**Safe-T (ELR) earth leakage relay**

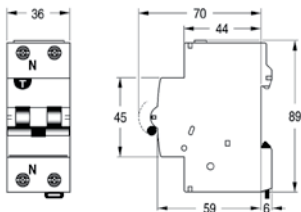
Din-T 6, 10, 15 / Din-T DC - MCBs



Din-T 10H - MCBs

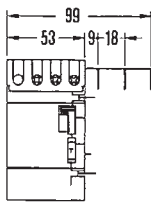
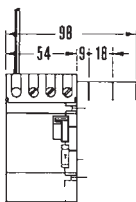
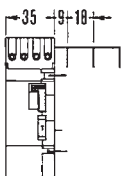
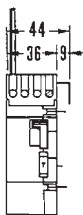
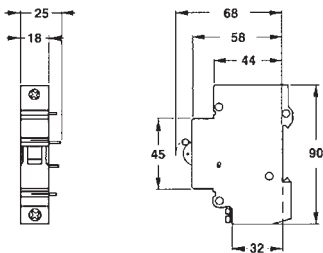
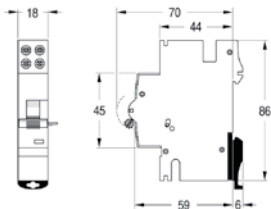
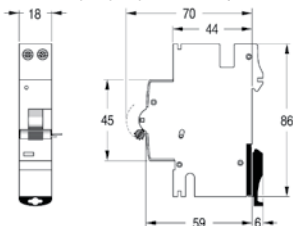


Din-Safe - 2 P RCBO



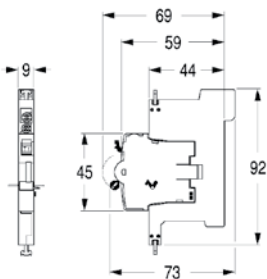
DSRCBS



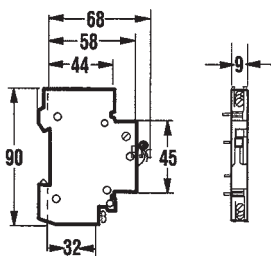
Din-Safe – Add-on earth leakage module**1 P + N (32 & 63 A) 3 P + N (32 A)****3 P + N (63 A)****3 P (63 A)****Din-T shunt trip****To suit:****Din-T 6, 10, 15, Din-T DC****To suit:****Din-T 10H****Din-T undervoltage trip****To suit:****Din-T 6, 10, 15, Din-T DC (not Din-T10H)**

Auxiliary contacts for MCBs

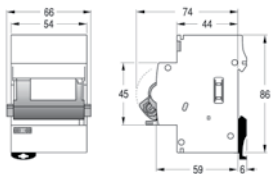
Din-T 6, 10, 15, Din-T DC



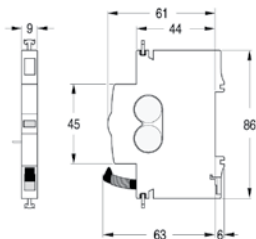
Din-T 10H



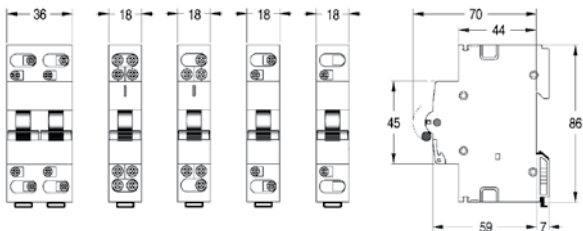
Din-T - motor operator



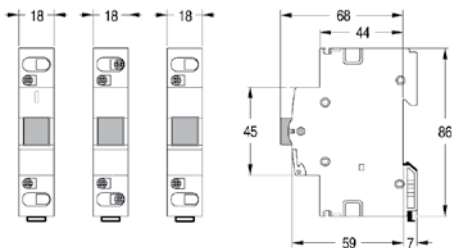
Din-T - panelboard switch



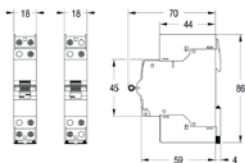
Din-T - changeover switch



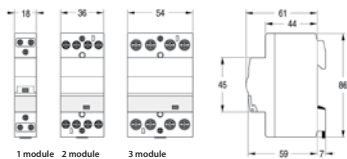
Din-T - pushbutton



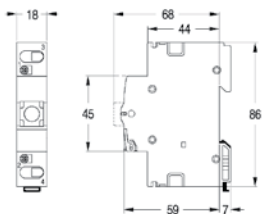
Din-T - impulse switch



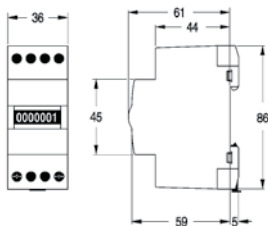
Din-T - contactor



Din-T - Pilot light



Din-T - hour run counter



Time switches

Talento range

1

- Digital & Analogue
- 24 hr, 7 day and yearly programming
- 17.5 mm wide and standard DIN housing
- 1, 2 and 4 channel flexibility
- Economical synchronous operation and quartz precision with reserve
- Manual override
- Pulse switching capability (TAL 471,472 PLUS)
- Energy saving ASTRO function (TAL 791 PLUS)



TAL111MINI

TAL371
MINI PLUS

TAL371 PRO

Specifications

Supply voltage: 220 - 240 V 50 Hz
 Contact rating: 16 A / 240 V AC 1
 (resistive load)

* Other voltages available, contact NHP.

Analogue 24 hr & 7 day - 16 A rating (resistive load)

Pro-gramme	Reserve	Min. switch time	Contact	Cat. No.	Price \$
24 hr	-	30 min	1 N/O	TAL111MINI	
24 hr	-	30 min	1 C/O	TAL111	
24 hr	50 hr	30 min	1 N/O	TAL211MINI	
24 hr	150 hr	30 min	1 C/O	TAL211	
7 day	-	3 hr	1 C/O	TAL171	
7 day	150 hr	3 hr	1 C/O	TAL271	

Digital 24 hr, 7 day & yearly - 16 A rating (resistive load)

Programme	Reserve	Min. switch time	No. of memory locations	Contact	Cat. No.	Price \$
24hr/7 days	3 yrs	1 min	50	1 C/O	TAL371MP240VAC	
24hr/7 days	3 yrs	1 min	70	1 C/O	TAL371PRO	
24hr/7 days	3 yrs	1 min	70	2 C/O	TAL372PRO	
24hr/7 days	3 yrs	1 min	100	1 C/O	TAL471PRO	
24hr/7 days	3 yrs	1 min	100	2 C/O	TAL472PRO	
Astro	3 yrs	Daylight	Switch	1 C/O	TAL791PRO	
Yearly	3 yrs	1 sec	800	2 C/O	TAL892PLUSTOP	
Yearly	3 yrs	1 sec	800	4 C/O	TAL892PLUSTOP AND TALCEPLUSTOP	

Panelboards, Loadcentres and accessories

Busbar chassis assemblies

	Page
Pole Covers to suit Safe-T and Din-T series	2 - 2
Loadcentres	
Insulated – ILC series	2 - 3
Insulated - Din-T surface mount	2 - 4
Insulated - Din-T flush mount	2 - 5
Insulated – Din-Modula 150 series	2 - 6
Insulated - MCE weatherproof series	2 - 7
Insulated – Din-Modula weatherproof series	2 - 8
Metal – NLC for Din-T MCBs	2 - 9
Metal – TLC for Safe-T MCBs	2 - 10
CONCEPT	
Panelboards - introduction	2 - 11
Panelboards - quick reference table	2 - 12
CONCEPT economical panelboards	2 - 14
CONCEPT•PLUS multi-purpose panelboards	2 - 17
CONCEPT•PLUS Grizz-Bar isolation	2 - 24
CONCEPT•PLUS energy metering	2 - 26
CONCEPT•PLUS Safe-T	2 - 27
CONCEPT•PLUS accessory modules	2 - 29
CONCEPT•PLUS options and accessories	2 - 30
CONCEPT•PREMIER premium panelboards	2 - 34
CONCEPT•PREMIER Grizz-Bar isolation	2 - 39
CONCEPT•PREMIER 2	2 - 42
CONCEPT•PREMIER Safe-T	2 - 47
CONCEPT•PREMIER MCCB	2 - 49
CONCEPT•PREMIER accessory modules	2 - 50
CONCEPT•PREMIER options and accessories	2 - 52
CONCEPT•TOUGH heavy-duty panelboards	2 - 54
Panelboard hardware to suit the CONCEPT range	2 - 58
NC chassis	2 - 60
GB chassis	2 - 64
CD chassis	2 - 67
CT chassis	2 - 69
KATKO	
Panelboard DIN switch-fuse & fuse links	2 - 71
Modular panelboard features	2 - 72

Pole covers

Safe-T and Din-T

Safe-T pole covers

- Standard AS/NZS 3132
- Degree of protection IP 30
- Surface mounting
- Colour – Black
- Supplied complete with clip tray



Pole capacity	Cat. No.	Price \$
1	SAFE-TPC1	
3	SAFE-TPC23	

Dimensions (mm)

Pole capacity	H	W	D
1	160	30	64
3	160	80	64

Price schedule 'T1'

Din-T pole covers for Din-T series MCBs

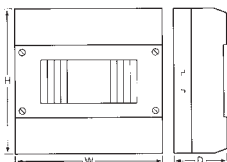
- Standard AS/NZS 3132
- Suits Din-T6, 10, 10H, 15 MCBs and associated DIN equipment
- Made from high impact resistant material
- Degree of protection IP 30
- Surface mounting
- Colour – Grey
- 2 and 4 way lead sealable



Capacity	Cat. No. ¹⁾	Price \$
1 Pole	CSPC1	
2 Pole	DTPC2	
4 Pole	DTPC4	
6 Pole	DTPC6	
8 Pole	DTPC8	
1 Pole (Suits 1P MCB with LockDIN)	DTPC2LD	
3 Pole (Suits 3P MCB with LockDIN)	DTPC4LD	

Dimensions (mm)

Pole capacity	H	W	D
1	130	32	62
2	139	51	61
4	139	88	61
6	165	140	72
8	198	200	72



Notes: ¹⁾ Will not accept DSRCBH single pole RCDs.

Insulated loadcentres

ILC series

- Standard AS/NZS 3132
- Suits Din-T6, 10, 10H, 15 MCBs and associated DIN equipment
- Made from high impact resistance material
- Comprehensive cable entry facilities at top, bottom, sides and rear
- Modern consumer unit designed with an attractive styling for new buildings, replacing old units, or adding extensions



2

Ordering details

Pole capacity	Cat. No.	Price \$
4	ILC 4S	
8	ILC 8S	
1-3 (Suits ≤ 63 A Din-T MCB with Lockdin)	ILC4SLD	
1-3 (Suits 80-125 A Din-T MCB with Lockdin)	ILC4SLD10H	

Optional accessories

Description	Cat. No.	Price \$
Comb type busbars	REFER PAGE	
Main switches	REFER PAGE	
Earth and neutral bar kit	4 x 10 mm ²	ILC 4EN
	2 x 16 mm ² + 8 x 10 mm ²	ILC 8EN
Lead sealing bracket	ILCSB	

Technical data

- Maximum load 120 amp
- Maximum operating voltage 415 V AC
- Degree of protection IP 43
- Material: self-extinguishing halogen-free polystyrene
- Colour: Base: Grey RAL 7035
Door: Clear

Dimensions (mm)

Cat. No.	H	W	D
ILC 4S	175	90	100
ILC 8S	175	170	120

Notes: Earth and neutral kit ordered separately.
 Bus comb ordered separately.
 Will not accept DSRCBH single pole RCDs.

Insulated loadcentres

DIN-T – surface mount

2

- Standard AS/NZS 3439-3
- Suits NHP Din-T MCBs and associated DIN equipment
- Surface mount
- Degree of protection IP 40
- Split earth neutral bars
- Removable earth and neutral bar support
- Transparent or white door
- Door hinged at the top
- Supplied complete with Buscomb



Ordering details

Pole cap.	No. of rows	Neutral bar	Earth bar	Trans. door Cat. No.	White door Cat. No.	Price \$
8	1	4/4	8	CSB08ST	CSB08SW	
12	1	5/3/3	12	CSB12ST	CSB12SW	
18	1	9/3/3/3	18	CSB18ST	CSB18SW	
24	2	10/3/3/3/3	24	CSB24ST	CSB24SW	
36	3	12/12/12	36	CSB36ST	CSB36SW	

Dimensions

Pole capacity	Width (mm)	Height (mm)	Depth (mm)
8	185	200	94
12	256	200	97
18	363	220	97
24	269	326	97
36	306	473	102

Insulated loadcentres

DIN-T – flush mount

- Standard AS/NZS 3439-3
- Suits NHP Din-T MCBs and associated DIN equipment
- Flush mount
- Degree of protection IP 40
- Split earth neutral bars
- Removable earth and neutral bar support
- Transparent or white door
- Door hinged at the top
- Supplied complete with Buscomb



2

Ordering details

Pole cap.	No. of rows	Neutral bar	Earth bar	Trans. door Cat. No.	White door Cat. No.	Price \$
12	1	5/3/3	12	CSB12FT	CSB12FW	
18	1	9/3/3/3	18	CSB18FT	CSB18FW	
24	2	10/3/3/3/3	24	CSB24FT	CSB24FW	
36	3	12/12/12	36	CSB36FT	CSB36FW	

Metal backing plate long

Pole capacity	Cat. No.	Price \$
12	CSB12FMPL	
18	CSB18FMPL	
24	CSB24FMPL	
36	CSB36FMPL	

Dimensions

Pole capacity	Description	Width (mm)	Height (mm)	Depth (mm)
12	Base	270	211	66
12	Cover	304	246	29
18	Base	380	232	76
18	Cover	412	267	29
24	Base	270	304	76
24	Cover	305	358	29
36	Base	308	470	76
36	Cover	342	503	29

Flush enclosure - cut out dimensions (mm)

Enclosure type	Width	Height
12 way	259	199
18 way	365	213
24 way	259	311
36 way	296	458

Insulated loadcentres

Din-Modula 150 series

2

- Standard AS/NZS 3439.3
- Suits Din-T6, 10, 10H & 15 MCBs and associated DIN equipment
- IP 40 protection rating
- Totally insulated
- Maximum 100 amp load
- 150 mm centre distance between DIN rails with 30 mm behind the mounting frame
- The range consists of 36, 54 and 72 pole enclosures
- Neutral and earth bars rated at 100 amps



These enclosures have generous 150 mm wiring space between and 30 mm behind equipment rails. The removable mounting frame serves to ease cabling and wiring greatly. Din-Modula 150 is designed for indoor use and to accept the Din-T 6, 10, 10H and 15 MCB range, time switches, contactors and main switches.

Technical data

- Material: Base: Grey impact resistant polystyrene
Door: Clear polycarbonate
- Halogen free

Ordering details

No. of rows	Pole cap.	Neutral bar	Earth bar	Surface Cat. No. ¹⁾	Price \$
2	36	1 x 18	1 x 18	DM15036	
3	54	2 x 18	1 x 24	DM15054	
4	72	2 x 18	1 x 36	DM15072	

Optional accessories

Description	Cat. No.	Price \$
Neutral 19-36	DM150NAA	
Neutral 37-54	DM150NAB	
Neutral 55-72	DM150NAC	
Locking device	DM150LD	
Coupling kit	DM150JK	

Dimensions (mm)

Cat. No.	H	W	D
DM15036	450	355	142
DM15054	600	355	142
DM15072	750	355	142

Notes: ¹⁾ Will not accept DSRCBH single pole RCDs.
Neutral bar extension kits must be ordered separately.
When flush mount required order separately by description.

Insulated loadcentres

MCE weatherproof series

- Suits Din-T6, 10, 10H, 15 and DC MCBs
- Suits DSRCBS 1P and DSRCB 2P RCBOs
- IP 65 - IK 08
- Maximum 120 A load
- Totally insulated
- Base polycarbonate, RAL 7035
- Cover polycarbonate, transparent
- UV resistant UL508
- 5 and 9 pole
- Pre-punched knockouts



2

The MCE weatherproof enclosure was designed to meet the tough demands of Australia's environment. The MCE is ideal for roof mounted applications such as used in solar (photovoltaic) applications.

Ordering details

No. of rows	Pole capacity	Cat. No.	Price \$
1	5	MCEPCN5MFM	
1	9	MCEPCN9MFM	

No earth or neutral bars

Dimensions (mm)

Pole capacity	H	W	D
5	200	116	105
9	200	190	105

Insulated loadcentres

Din-Modula weatherproof series

2

- Standard AS/NZS 3439.3
- Suits Din-T6, 10, 10H & 15 MCBs
- IP 55-IK07 protection
- Maximum 120 amp load
- Padlocking possible
- Door changeable left or right side
- Totally insulated
- Halogen free



The Din-Modula weatherproof was designed with maximum flexibility in mind.

Using the connection set, two or more enclosures can be joined together – maintaining the IP protection rating. A further feature of flexibility is that of the adjustable height DIN rail. Grey impact resistant polystyrene base and clear polycarbonate door.

Din-Modula weatherproof was designed for use with the Din-T 6, 10, 10H and 15 MCB range in wet area applications, out of direct sunlight. Split neutral and earth bars are provided. For accessories, **refer to page 1 - 43 & 1 - 50**.

Accessories

- Circuit identification labels
- Split neutral and earth bars
- Weatherproof sealing caps for mounting screws
- Pole fillers
- Locking bracket to suit a padlock
- Connection set-for joining enclosures together at extra cost
- 125 mm DIN rail centres

Ordering details

No. of rows	Pole cap.	Neutral bar	Earth bar	Cat. No.	Price \$
1	12	8/4	8	DMWP12	
2	24	18/6	18	DMWP24	
3	36	24/12	18	DMWP36	

Optional accessories

Description	Cat. No.	Price \$
Locking device	DMWPLD	
connection set	DMWPCS	

Dimensions (mm)

Pole capacity	H	W	D
12	250	285	138
24	375	285	138
36	500	285	138

Metal loadcentres

NLC loadcentres for 'Din-T' MCBs

- Suits Din-T6, 10, 10H & 15 MCBs and associated DIN equipment
- 1 mm zinc annealed steel
- Polyester powder coated N42 grey
- Earth and neutral bars provided
- Circuit schedule labels provided
- DIN rail fitted
- IP 30 (IP 40 with door)
- Commercial and light industrial applications



2

Ordering details

Pole cap.	Surface mount enclosure ⁴⁾	Price \$	Flush ¹⁾ escutcheon	Price \$	Door ^{1) 2)}	Price \$
	Cat. No.		Cat. No.		Cat. No.	
8	NLC8S		NLC8FE		LD6/8	
12	NLC12S		NLC12FE		LD9/12	
15	NLC15S		NLC15FE		LD12/15	
18	NLC18S		NLC18FE		LD15/18	
21	NLC21S		NLC21FE		LD18/21	
24	NLC24S		-		LD24	

Load center supplied standard as base and escutcheon. Door and flush escutcheon supplied as optional extras.

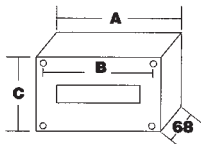
Earth and neutral bars – 2 x 25 mm², remaining 16 mm²

Options and accessories

Description	Cat. No.	Price \$
Locking kit includes bracket and fasteners (CL001)	DSLK	
Fitting of Din-T MCB single pole	ADD EACH	
Fitting of Din-T MCBs two and three pole	ADD EACH	
NSW Public Works Department E1 type lock	ADD	

Dimensions (mm)

Pole cap.	A ³⁾	B	C ³⁾
8	268	192	245
12	343	267	245
15	418	342	245
18	493	417	245
21	568	492	245
24	693	549	245



Notes: ¹⁾ Doors and flush escutcheons supplied loose.

²⁾ Door has provision for lock. Lock kit ordered separately.

³⁾ Dimensions 'A' and 'C' increased by 50 mm when flush mounted. With door depth = 98 mm.

⁴⁾ Accepts DSRCBH single pole RCDs.

Metal loadcentres

TLC loadcentres for 'Safe-T' MCBs

2

- Suitable for Safe-T MCBs and Safe-T RCDs
- 1 mm zinc annealed steel
- Polyester powder coated N42 grey
- Earth and neutral bars provided
- Circuit schedule labels provided
- MCB clip tray fitted
- IP 30 (IP 40 with door)
- Australian made
- Commercial and light industrial applications



Ordering details

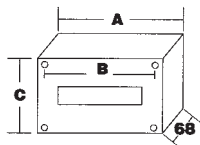
Pole cap.	Surface mount enclosure ²⁾	Price \$	Door ¹⁾	Price \$
	Cat. No.		Cat. No.	
6	TLC6S		LD6/8	
12	TLC12S		LD12/15	
18	TLC18S		LD18/21	

Options and accessories

Description	Cat. No.	Price \$
Safe-T pole fillers	SAFETPF	
Locking kit includes bracket and fasteners (CL001)	DSLK	
Fitting of Safe-T MCB 1, 2 and 3 pole	ADD	
DIN mount adaptor for time clock and contactors	TLCDMA	
NSW Public Works Department E1 type lock	ADD	

Dimensions (mm)

Pole cap.	A	B	C
6	268	192	245
12	418	342	245
18	568	492	245



- Notes:** ¹⁾ Doors supplied loose.
²⁾ Accepts DSRCBH single pole RCDs.

NHP – The panelboard innovators



2

CONCEPT

The NHP CONCEPT family range of panelboards keeps a common and attractive appearance throughout the range.

CONCEPT

The economical panelboard:

The 'CONCEPT' panelboard is designed for those wanting a visually attractive, economical panelboard, but also offering a robust enclosure with an excellent range of standard features. This type of panelboard is designed to be stocked nationally as an 'off the shelf' panelboard.

CONCEPT•PLUS

The multipurpose panelboard:

For those wanting an 'off the shelf' panelboard which offers a large range of features and options. The CONCEPT•PLUS is a multipurpose panelboard that offers among its many features: indoor rated panelboard with dust seal option, six modular sizes, and accessory boxes that can be added to extend the height or width of the panelboard. CONCEPT•PLUS panelboards are available for either DIN or NEMA (Safe-T) MCBs.

CONCEPT•PREMIER

The premium panelboard:

The CONCEPT•PREMIER panelboard range has all the features of CONCEPT•PLUS, but also includes important additional features, such as a greater box depth, weatherproof rating, the option of stainless steel enclosures, a floor mounting plinth, plus others.

CONCEPT•PREMIER panelboards are available for Safe-T, Din-T, 125 A and 250 A MCCBs or combinations thereof.

CONCEPT•TOUGH

The heavy-duty panelboard:

The CONCEPT•TOUGH panelboard range has all the features of CONCEPT•PREMIER plus more, the CONCEPT•TOUGH has an increase in depth, width and material thickness for extra strength. The increase in depth allows the use of a wider range of padlock/locking facilities on isolators and circuit breakers between the door and escutcheon. This extra depth also allows larger accessory items to be mounted below the escutcheon such as contactors and change-over switches. The CONCEPT•TOUGH has a vast amount of wiring space and very generously sized glandplate entry and exit points due to the extra width. This package is all put together in a rigid 2 mm fully welded construction for those extra tough applications.

Quick reference table

Features and options	CONCEPT	CONCEPT-PLUS
Circuit Breaker Types	Din-T	Din-T / Safe-T
Enclosure Details & Accessory Spacing		
Width	485 mm	585 mm
Depth	151 mm	185 mm
IP Rating	IP 40	IP 42 ¹⁾
Material	1 mm	1.6 mm
Pole capacity	24 - 60	18 - 96
Colours available (doors)	Grey & Orange	Grey & Orange
Spare DIN rail - rail mounting space	12 Poles	18 Poles
Largest contactor under PB escutcheon	CA 7-43	CA 7-85
Largest contactor in accessory module	-	CA 6-180
Main Switches, Busbars, Earth & Neutral Bars		
STD Main switch rating	160 A or 250 A	160 or 250 A standard
Maximum main switch sizes available	250 A	400 A
Dual Earth & Neutral bars	-	-
Lock type on door (keylock)	Flush	Flush
Chassis type	Din chassis	NC - GB - CT
Common Features		
Horizontal DIN rail	✓	✓
Knockouts for MCBs & accessories	✓	✓
Door reversible RHS to LHS	✓	✓
Door hinged independent of escutcheon	✓	✓
Optional Accessories & Features		
Emergency lighting kits – option	✓	✓
Split chassis – option	✓	✓
Special colours – option	✓	✓
Rain & dust hood	-	-
Custom 'modular' assemblies – option	-	✓
Accessory / header boxes – option	-	✓
Brass or aluminium gland plates – option	-	✓
Removable gland plates – standard	-	✓
Can fit MCCBs – option	-	✓
Fault current limiter DIN fuses – option	-	✓
Flush surround kits – option	✓	✓
Hinged escutcheon	-	optional
Dust seal	-	optional
Floor mounting plinth – option	-	✓
Wall mounting brackets – option	-	-
'3 point locking' door – on Lge encl. ²⁾	-	-
Stainless steel enclosure – option	-	-

Notes: For a more complete listing of accessory details refer to accessory pages relating to individual panelboards.

¹⁾ Dust seal option - IP52B.

²⁾ On large enclosures ≥ 1000 mm.

Quick reference table

Features and options	CONCEPT•PREMIER	CONCEPT•TOUGH
Circuit Breaker Types	Din-T / Safe-T/ 125 & 250 A MCCBs	Din-T / Safe-T/ 125 & 250 A MCCBs
Enclosure Details & Accessory Spacing		
Width	640 mm	800 mm
Depth	240 mm	300 mm
IP Rating	IP 66	IP 66
Material	1.6 mm	2.0 mm
Pole capacity	18 - 96	18 - 96
Colours available (doors)	Grey & Orange	Grey & Orange
Spare DIN rail mounting space	18 Poles	18 Poles
Largest contactor under PB escutcheon	CA 6-180	CA 6-180
Largest contactor in accessory module	CA 6-420	CA 6-420
Main Switches, Busbars, Earth & Neutral Bars		
STD Main switch rating	160 or 250 A standard	–
Maximum main switch sizes available	< 800 A	< 800 A
Dual Earth & Neutral bars	✓	✓
Lock type on door (keylock)	T-handle, flush (series 2)	Chrome plated LHandle
Chassis type	CD-NC-GB-XA-XB	CD-NC-GB-XA-XB
Common Features		
Horizontal DIN rail	✓	✓
Knockouts for MCBs & accessories	✓	✓
Door reversible RHS to LHS	✓	–
Door hinged independent of escutcheon	✓	✓
Optional Accessories & Features		
Emergency lighting kits – option	✓	✓
Split chassis – option	✓	✓
Special colours – option	✓	✓
Rain & dust hood	✓	✓
Custom 'modular' assemblies – option	✓	✓
Accessory / header boxes – option	✓	accessory only
Brass or aluminium gland plates – option	✓	✓
Removable gland plates – standard	✓	✓
Can fit MCCBs – option	✓	✓
Fault current limiter DIN fuses – option	✓	✓
Flush surround kits – option	✓	–
Hinged escutcheon	standard	standard
Dust seal	standard	standard
Floor mounting plinth – option	✓	✓
Wall mounting brackets – option	✓	standard
'3 point locking' door – on Lge encl. ¹⁾	✓	✓
Stainless steel enclosure – option	✓	✓

Notes: For a more complete listing of accessory details refer to accessory pages relating to individual panelboards.

¹⁾ On large enclosures ≥ 1000 mm.

CONCEPT

The economical panelboard for Din-T MCBs

2

- Standard AS/NZS 3439-3
- Type tested busbar system
- Compact 160 A or 250 A main switch
- Door fitted independent of escutcheon
- Left or right hand door hinging
- Lockable door
- Australian made
- Commercial and industrial applications



Application

The Concept range is an economical panelboard designed for the commercial and light industrial sectors. It will accept Din-T circuit breakers and associated accessory devices.

Features

- Two-tone colour scheme, make a colour change by simply changing the door colour.
- The door is field changeable from right to left hinged and is totally independent of the escutcheon.
- Gloss white escutcheon has been dished to allow a wide range of accessories to fit under the door.
- Knockouts provided in the escutcheon for up to 12 modules of extra standard DIN rail equipment.
- Compact main switch with a 160 A or 250 A rating.
- Earth and neutral bars, circuit identification and schedule cards supplied.

Technical data

Material type:	1 mm steel
Finish:	Polyester powder coated
Colour (AS 2700-1995):	Base – charcoal gloss Door – N42 storm grey or X15 orange Escutcheon – bright white gloss
Protection degree:	IP 30 without door IP 40 with door, IP42 with rain hood
Busbar ratings:	250 A 20 kA for 0.2 seconds
Main Switch:	160 A 3 pole 415 V AC top mount 250 A 3 pole 415 V AC top mount

CONCEPT**The economical panelboard for Din-T MCBs****CONCEPT****Surface mount panelboard with grey door**

Suits Din-T MCBs (DIN) refer to section one

Main switch	Pole cap.	Box size	Height (mm)	Cat. No.	Price \$
160 A	24	1	700	CON 24 M160 G	
	36	2	800	CON 36 M160 G	
	48	3	900	CON 48 M160 G	
	60	4	1000	CON 60 M160 G	
250 A	24	1	700	CON 24 M250 G	
	36	2	800	CON 36 M250 G	
	48	3	900	CON 48 M250 G	
	60	4	1000	CON 60 M250 G	

Width = 485 mm, Depth = 151 mm includes door. (Door = 20 mm)

CONCEPT**Surface mount panelboard with orange door**

Suits Din-T MCBs (DIN) refer to section one

Main switch	Pole cap.	Box size	Height (mm)	Cat. No.	Price \$
160 A	24	1	700	CON 24 M160 O	
	36	2	800	CON 36 M160 O	
	48	3	900	CON 48 M160 O	
	60	4	1000	CON 60 M160 O	
250 A	24	1	700	CON 24 M250 O	
	36	2	800	CON 36 M250 O	
	48	3	900	CON 48 M250 O	
	60	4	1000	CON 60 M250 O	

Width = 485 mm, Depth = 151 mm includes door. (Door = 20 mm)

CONCEPT**The economical panelboard for Din-T MCBs****Accessories**

2

Description	Cat. No.	Price \$
Split chassis kit (supplied loose)	STKCD	
Emergency lighting kit ¹⁾ (supplied loose)	Rotary control switch unwired	CPELK1
	Rotary control switch prewired	CPELK1W
	Key operated control switch unwired	CPELK2
Pole fillers (Din-T)	DTPF	
Flush kit	SIZE 1 CON	CONFK1
	SIZE 2 CON	CONFK2
	SIZE 3 CON	CONFK3
	SIZE 4 CON	CONFK4
Spare Key (set of 2) CL001 x 2	KEYCL001	
Spare Key (set of 2) 92268 x 2	KEY92268	
Door lock	CL001	CPDHANDLECL001
	92268	CPDHANDLE92268
	NSW PWD ELOCK	CPDHANDLEELOCK
	Padlockable	CPDHANDLEPADLCK
	Non-lockable	CPDHANDLENOLOCK

Notes: ¹⁾ Emergency lighting kits can be field fitted to Concept panelboards utilising horizontal DIN knockouts at top of board. Kits include control switch, timer, 24 A 4 Pole N/C contactor, labels and wiring diagram to complete control circuit which complies with AS 2293.1.

CONCEPT•PLUS

Multi-purpose panelboards for Din-T or Safe-T MCBs

- Standard AS/NZS 3439-3
- IP 42
- 6 modular sizes up to 96 poles
- Accessory module
- Type tested busbar chassis system
- Compact 250 A main switch
- Generous wiring room
- Removable gland plates
- Door fitted independent of escutcheon
- Flush door handle
- Left or right hand door hinging
- Commercial and industrial applications



Application

The Concept Plus range of panelboards provide a unique enclosure system for the NHP range of Din-T and Safe-T MCBs and associated accessory devices.

Features

- Two-tone colour scheme, make a colour change simply by changing the door colour
- The door is field changeable from right to left hinged and is totally independent of the escutcheon
- Gloss white escutcheon has been dished to allow a wide range of accessories to fit under the door
- Knockouts provided in the escutcheon for up to 18 modules of standard DIN rail equipment
- Removable gland plates aid on-site installation of cables
- New compact main switch with a fully enclosed rating of 160 A and 250 A
- Earth and neutral bars, circuit identification and schedule cards supplied standard

Technical data

Material type:	1.6 mm steel, polyester powder coated
Colour (AS 2700-1995):	Base - Charcoal gloss Door - N42 Storm grey or X15 orange Escutcheon - bright white
Protection degree:	IP 42 - with door (Dust seal option)
Busbar ratings:	SafeT - 250 A CT (355 A option) Din-T - 250 A NC (400 A option) Din-T - 250 A Grizz-Bar
Main switch (options):	Safe-T 100 A Non-auto (chassis mount CST) Din-T M/S 100 A (chassis mount CDT) 160 A 3 pole 415 V AC (top mount) 250 A 3 pole 415 V AC (top mount) 200 A MCCB (top mount)
Neutral and earth bars:	2 x 8 mm studs; tunnel terminals with 2 screws 10 kA 1 second.

CONCEPT•PLUS 2

Multi-purpose panelboards for Din-T MCBs

2



CONCEPT•PLUS 2

Din-T – Surface mount with grey door

Suits Din-T MCBs (DIN) refer to section one

Main switch	Pole capacity	Box size	Height (mm)	Cat. No.	Price \$
-	18	1	700	CDT 18G2	
	24	1	700	CDT 24G2	
	36	2	900	CDT 36G2	
	48	2	900	CDT 48G2	
	60	3	1100	CDT 60G2	
	72	4	1300	CDT 72G2	
	84	4	1300	CDT 84G2	
	96	5	1500	CDT 96G2	
160 A	18	1	700	CDT 18M160G2	
	24	1	700	CDT 24M160G2	
	36	2	900	CDT 36M160G2	
	48	2	900	CDT 48M160G2	
	60	3	1100	CDT 60M160G2	
250 A	18	1	700	CDT 18M250G2 ¹⁾	
	24	1	700	CDT 24M250G2 ¹⁾	
	36	2	900	CDT 36M250G2	
	48	2	900	CDT 48M250G2	
	60	3	1100	CDT 60M250G2	
	72	4	1300	CDT 72M250G2	
	84	4	1300	CDT 84M250G2	
	96	5	1500	CDT 96M250G2	

Width = 585 mm, Depth = 185 mm includes door. (Door = 20 mm)

Notes: ¹⁾ Main switch supplied loose i.e. CDT18-M250-G2 = CDT18G2 + EVA3250H.

CONCEPT•PLUS 2

Multi-purpose panelboards for Din-T MCBs



2

CONCEPT•PLUS 2

Din-T – Surface mount with orange door

Suits Din-T MCBs (DIN) refer to section one

Main switch	Pole cap.	Box size	Height (mm)	Cat. No.	Price \$
-	18	1	700	CDT 1802	
	24	1	700	CDT 2402 ²⁾	
	36	2	900	CDT 3602 ²⁾	
	48	2	900	CDT 4802 ²⁾	
	60	3	1100	CDT 6002 ²⁾	
	72	4	1300	CDT 7202	
	84	4	1300	CDT 8402	
	96	5	1500	CDT 9602	
160 A	18	1	700	CDT 18M16002	
	24	1	700	CDT 24M16002 ²⁾	
	36	2	900	CDT 36M16002 ²⁾	
	48	2	900	CDT 48M16002	
	60	3	1100	CDT 60M16002 ¹⁾	
250 A	18	1	700	CDT 18M25002 ¹⁾	
	24	1	700	CDT 24M25002 ¹⁾²⁾	
	36	2	900	CDT 36M25002 ²⁾	
	48	2	900	CDT 48M25002 ²⁾	
	60	3	1100	CDT 60M25002 ²⁾	
	72	4	1300	CDT 72M25002 ²⁾	
	84	4	1300	CDT 84M25002 ²⁾	
	96	5	1500	CDT 96M25002 ¹⁾²⁾	

Width = 585 mm, Depth = 185 mm includes door. (Door = 20 mm)

Notes: ¹⁾ Main switch supplied loose i.e. CDT18-M250-O2 = CDT1802 + EVA3250H.
²⁾ Enclosure with orange base replace "O" with "OO" e.g. CDT36OO2.

CONCEPT•PLUS 2

Multi-purpose panelboards for Din-T MCBs

NEW

2



Extra row
horizontal
DIN Rail
24 Poles



CONCEPT•PLUS 2

Din-T – Surface mount with grey door

Suits Din-T MCBs (DIN) refer to section one

Main switch	Pole capacity	Box size	Height (mm)	Cat. No.	Price \$
-	18	1	700	CDTE18G2	
	36	2	900	CDTE36G2	
	48	3	1100	CDTE48G2	
	72	4	1300	CDTE72G2	
	96	5	1500	CDTE96G2	
160 A	18	1	700	CDTE18M160G2	
	36	2	900	CDTE36M160G2	
	48	3	1100	CDTE48M160G2	
	72	4	1300	CDTE72M160G2	
	96	5	1500	CDTE96M160G2	
250 A	18	1	700	CDTE18M250G2	
	36	2	900	CDTE36M250G2	
	48	3	1100	CDTE48M250G2	
	72	4	1300	CDTE72M250G2	
	96	5	1500	CDTE96M250G2	

Width = 585 mm, Depth = 185 mm includes door. (Door = 20 mm)

Notes: NC 250 topfeed chassis
24P horizontal DIN rail cut-out below chassis
Made to order

CONCEPT•PLUS 2**Multi-purpose panelboards
for Din-T MCBs****NEW**

Extra row
horizontal
DIN Rail
24 Poles



2

CONCEPT•PLUS 2**Din-T – Surface mount with orange door**

Suits Din-T MCBs (DIN) refer to section one

Main switch	Pole capacity	Box size	Height (mm)	Cat. No.	Price \$
-	18	1	700	CDTE18O2	
	36	2	900	CDTE36O2	
	48	3	1100	CDTE48O2	
	72	4	1300	CDTE72O2	
	96	5	1500	CDTE96O2	
160 A	18	1	700	CDTE18M160O2	
	36	2	900	CDTE36M160O2	
	48	3	1100	CDTE48M160O2	
	72	4	1300	CDTE72M160O2	
	96	5	1500	CDTE96M160O2	
250 A	18	1	700	CDTE18M250O2	
	36	2	900	CDTE36M250O2	
	48	3	1100	CDTE48M250O2	
	72	4	1300	CDTE72M250O2	
	96	5	1500	CDTE96M250O2	

Width = 585 mm, Depth = 185 mm includes door. (Door = 20 mm)

Notes: NC 250 topfeed chassis
 24P horizontal DIN rail cut-out below chassis
 Made to order

CONCEPT•PLUS 2**Multi-purpose panelboards
for Din-T MCBs****CONCEPT•PLUS 2****Din-T – Surface mount with grey door****Suits DIN-T-MCBs (DIN) refer to section one**

100 - 160 A main switch = S160NJ3160 MCCB

NEW**MCCB
Main
Switch**

Main switch	Pole cap.	Box size	Height (mm)	Cat. No.	Price \$
100 - 160 A ¹⁾	24	1	700	CDT24MCCB160G2	
	42	2	900	CDT42MCCB160G2	
	60	3	1100	CDT60MCCB160G2	
	78	4	1300	CDT78MCCB160G2	
	96	5	1500	CDT96MCCB160G2	

160 - 200 A main switch = S250NJ3250 MCCB

Main switch	Pole cap.	Box size	Height (mm)	Cat. No.	Price \$
160 - 200 A ²⁾	24	1	700	CDT24MCCB200G2	
	42	2	900	CDT42MCCB200G2	
	60	3	1100	CDT60MCCB200G2	
	78	4	1300	CDT78MCCB200G2	
	96	5	1500	CDT96MCCB200G2	

Width = 585 mm, Depth = 185 mm includes door. (Door = 20 mm)

Notes: ¹⁾ Factory set 160 A. Adjustable down to 100 A.²⁾ Factory set 200 A. Adjustable down to 160 A.
For 250 A refer NHP.

For orange door change "G" to "O" e.g. CDT24MCCB160O2 made to order.

Valid until August 2014

NC BUSBAR CHASSIS

Enclosed busbar distribution system for Din-T, MCBs and RCBOs.

NHP

POWER PROTECTION



PP-TERASAKI-CHASSIS-CPB

The Concept range of busbar chassis assemblies have been specifically designed for incorporating into the Concept family of panelboards

- Models from 6 to 108 poles
- Standard AS/NZS 3439.1
- 250 A and new 400 A rating
- Improved withstand ratings
- Retrofittable with CD chassis
- Improved form rating

CONCEPT • PLUS CONCEPT • PREMIER

TERASAKI
Innovators in Protection Technology

CONCEPT•PLUS 2

**Multi-purpose panelboards
for Din-T MCBs C/W isolation chassis**

2

NEW
Grizz-Bar
Isolation
chassis

**CONCEPT•PLUS 2****Din-T – Surface mount with grey door****Suits Din-T MCBs (DIN) refer to section one**

Main switch	Pole capacity	Box size	Height (mm)	Cat. No.	Price \$
–	24	1	700	CDG 24G2	
	36	2	900	CDG 36G2	
	48	2	900	CDG 48G2	
	60	3	1100	CDG 60G2	
	72	4	1300	CDG 72G2	
	84	4	1300	CDG 84G2	
	96	5	1500	CDG 96G2	
160 A	24	1	700	CDG 24M160G2 ¹⁾	
	36	2	900	CDG 36M160G2 ¹⁾	
	48	2	900	CDG 48M160G2 ¹⁾	
	60	3	1100	CDG 60M160G2 ¹⁾	
250 A	24	1	700	CDG 24M250G2 ¹⁾	
	36	2	900	CDG 36M250G2 ¹⁾	
	48	2	900	CDG 48M250G2 ¹⁾	
	60	3	1100	CDG 60M250G2 ¹⁾	
	72	4	1300	CDG 72M250G2 ¹⁾	
	84	4	1300	CDG 84M250G2 ¹⁾	
	96	5	1500	CDG 96M250G2 ¹⁾	

Width = 585 mm, Depth = 185 mm includes door. (Door = 20 mm)

Notes: ¹⁾ Main switch supplied loose i.e. CDG18-M250-G2 = CDG18G2+EVA3250H

CONCEPT•PLUS 2

Multi-purpose panelboards for Din-T MCBs C/W isolation chassis



2

CONCEPT•PLUS 2

Din-T – Surface mount with orange door

Suits Din-T MCBs (DIN) refer to section one

Main switch	Pole capacity	Box size	Height (mm)	Cat. No. ²⁾	Price \$
–	24	1	700	CDG 24O2	
	36	2	900	CDG 36O2	
	48	2	900	CDG 48O2	
	60	3	1100	CDG 60O2	
	72	4	1300	CDG 72O2	
	84	4	1300	CDG 84O2	
	96	5	1500	CDG 96O2	
	160 A	24	1	700	CDG 24M160O2 ¹⁾
36		2	900	CDG 36M160O2 ¹⁾	
48		2	900	CDG 48M160O2 ¹⁾	
60		3	1100	CDG 60M160O2 ¹⁾	
250 A	24	1	700	CDG 24M250O2 ¹⁾	
	36	2	900	CDG 36M250O2 ¹⁾	
	48	2	900	CDG 48M250O2 ¹⁾	
	60	3	1100	CDG 60M250O2 ¹⁾	
	72	4	1300	CDG 72M250O2 ¹⁾	
	84	4	1300	CDG 84M250O2 ¹⁾	
	96	5	1500	CDG 96M250O2 ¹⁾	

Width = 585 mm, Depth = 185 mm includes door. (Door = 20 mm)

Notes: ¹⁾ Main switch supplied loose i.e. CDG18-M250-O2 = CDG18O2+EVA3250H
²⁾ Enclosure with orange base replace "O" with "OO" e.g. CDG36OO2.

CONCEPT•PLUS 2**Energy metering panelboards
for Din-T MCBs****NEW
DESIGN**

- Standard AS/NZS 3439-3
- Dual metering, separate light and power (Greenstar V3.0)
- kWh, kvarh
- RS 485 Comms or pulsed output
- EM21 72R Energy meter
- Retro fit kits available
- IP 42
- Commercial and industrial applications

**Improve
your
NABERS,
GREENSTAR
rating****Application**

The Concept-Plus energy metering range of panelboards have been designed to meet the energy metering requirements of today's market.

CONCEPT•PLUS**160 A Energy metering panelboards with grey door**

CT connect meters rated 150 A for light circuits and 150 A for power circuits

Pole capacity	Box size	Light poles	Power poles	Main switch	Cat. No.	Price \$
36	1100 mm	12	24	160 A	CDM36M160G2	
48	1300 mm	18	30	160 A	CDM48M160G2	
60	1300 mm	18	42	160 A	CDM60M160G2	

CONCEPT•PLUS**250 A Energy metering panelboards with grey door**

CT connect meters rated 150 A for light circuits and 250 A for power circuits

Pole capacity	Box size	Light poles	Power poles	Main switch	Cat. No.	Price \$
60	1300 mm	18	42	250 A	CDM60M250G2	
72	1500 mm	24	48	250 A	CDM72M250G2	
84	1500 mm	30	54	250 A	CDM84M250G2	
96	1700 mm	36	60	250 A	CDM96M250G2	

CONCEPT•PLUS**Retro fit energy metering kits with grey door**

Main switch	Box size	Light	Power poles	Cat. No. ¹⁾	Price \$
-	400 mm	-	250 A	CDMRFG	
250 A	600 mm	-	250 A	CDMRFSM250AG6	
250 A	600 mm	125 A	250 A	CDMRFDM250AG6	

Width = 585 mm, depth = 185 mm, includes (door = 20 mm)

Notes: ¹⁾ Delete M160 and M250 if no main switch is required. Replace G with O for Orange door.

For other combinations or options refer to NHP.

Metering boards are not suitable for utility metering.

CONCEPT•PLUS**Multi-purpose panelboards
for Safe-T MCBs**

2

CONCEPT•PLUS**Safe-T – Surface mount with grey door**

Suits Safe-T-MCBs (NEMA) refer section one

Main switch	Pole cap.	Box size	Height (mm)	Cat. No.	No M/S Price \$
-	24	1	700	CST 24G	
	36	2	900	CST 36G	
	48	3	1100	CST 48G	
	60	4	1300	CST 60G	
	72	5	1500	CST 72G	
	96	6	1700	CST 96G	
160 A	24	1	700	CST 24M160G ¹⁾	
	36	2	900	CST 36M160G ¹⁾	
	48	3	1100	CST 48M160G ¹⁾	
	60	4	1300	CST 60M160G ¹⁾	
250 A	24	1	700	CST 24M250G ¹⁾	
	36	2	900	CST 36M250G ¹⁾	
	48	3	1100	CST 48M250G ¹⁾	
	60	4	1300	CST 60M250G ¹⁾	
	72	5	1500	CST 72M250G ¹⁾	
	96	6	1700	CST 96M250G ¹⁾	

Width = 585 mm, Depth = 185 mm includes door. (Door = 20 mm)

Notes: ¹⁾ Main switch supplied loose i.e. CST24M250G = CST24G + CST250MS.

CONCEPT•PLUS**Multi-purpose panelboards
for Safe-T MCBs**

2

**CONCEPT•PLUS****Safe-T – Surface mount with orange door**

Suits Safe-T-MCBs (NEMA) refer section one

Main switch	Pole cap.	Box size	Height (mm)	Cat. No.	No M/S Price \$
–	24	1	700	CST 240	
	36	2	900	CST 360	
	60	4	1300	CST 600	
	72	5	1500	CST 720	
	96	6	1700	CST 960	
160 A	24	1	700	CST 24M1600 ¹⁾	
	36	2	900	CST 36M1600 ¹⁾	
	60	4	1300	CST 60M1600 ¹⁾	
250 A	24	1	700	CST 24M2500 ¹⁾	
	36	2	900	CST 36M2500 ¹⁾	
	60	4	1300	CST 60M2500 ¹⁾	
	72	5	1500	CST 72M2500 ¹⁾	
	96	6	1700	CST 96M2500 ¹⁾	

Width = 585 mm, Depth = 185 mm includes door. (Door = 20 mm)

Notes: ¹⁾ Main switch supplied loose i.e. CST24M2500 = CST240 + CST250MS.

CONCEPT•PLUS 2**Multi-purpose panelboards accessory modules****CONCEPT•PLUS 2 (Series 2)****Accessory modules with grey door ¹⁾**

Box size	Height (mm)	Pole cap	Cat. No. with escutcheon	Price \$
0	400	24 (1 row 24 way)	CPACC24G2	
0	400	48 (2 row 24 way)	CPACC48G2	
H	600	72 (3 row 24 way)	CPACC72G2	

Box size	Height (mm)	Cat. No. without escutcheon ²⁾	Price \$
0	400	CPACCSOG2	
H	600	CPACCSHG2	

Box size	Height (mm)	Cat. No. with blank escutcheon ²⁾	Price \$
0	400	CPACCSOGE2	
H	600	CPACCSHGE2	
1	700	CPACCS1GE2	
2	900	CPACCS2GE2	
3	1100	CPACCS3GE2	
4	1300	CPACCS4GE2	
5	1500	CPACCS5GE2	
6	1700	CPACCS6GE2	

Width = 585 mm, Depth = 185 mm includes door. (Door = 20 mm)

Height (mm)	Cat. No.	Price \$
94 mm	CPBGTS1	
194 mm	CPBGTS2	
294 mm	CPBGTS3	
494 mm	CPBGTSH	
594 mm	CPBGTS4	
994 mm	CPBGTS6	

Gear trays for Concept Plus must be 100 mm shorter than enclosure size.

Earth and neutral bar kit to suit accessory module

No. of ways	Cat. No.	Price \$
24	CEN24	
36	CEN36	
48	CEN48	
60	CEN60	
72	CEN72	
84	CEN84	
96	CEN96	

Includes 2 bars mounting supports and fasteners.

Notes: ¹⁾ For orange enclosure replace G with O e.g. CPACC24G2 with CPACC24O2
²⁾ Gear tray not included.

CONCEPT•PLUS**Multi-purpose panelboards options and accessories**

2

Description	Cat. No.	Price \$
Emergency lighting test kits (supplied loose) ¹⁾²⁾		
Rotary control switch (wired)	CPELK1W	
Rotary control switch (unwired)	CPELK1	
Key operated control switch (unwired)	CPELK2	
External lighting control (time clock, DIN contactor, bypass-supplied loose) ²⁾		
2 N/O 20A, 1 CH timer TAL371MP (mini)	CPEXTLKC	
2 N/O 20A, 1 CH timer TAL371P	CPEXTLK1	
2x 2 N/O 20A, 2 CH timer TAL372P	CPEXTLK2	
Surge protection (SPD, 3P MCB, wiring loom) ²⁾		
SPD- 3PH 4P Type 2 40kA	CPSPD404P	
IP52B sealing kit		
Grey	CPIP52G	
Orange	CPIP52O	
Door rubber (11.7M roll)	CPDRUBBER	
Safety Service Enclosure ²⁾³⁾		
1 Pole	SSE1	
2 Pole	SSE2	
3 Pole	SSE3	
Gland Plate options		
Open end-cap required for gland-plate Charcoal	CPECS	
Open end-cap required for gland-plate Orange	CPECSO	
Gland plate removable Aluminum 3mm	CPGPA	
Gland plate removable Brass 3mm	CPGPB	
Gland plate removable Bakelite 5mm	CPGPBL5	
Gland plate removable Steel 3mm	CPGPS	
Gland plate removable Steel Orange 3mm	CPGPSO	
Door handles options		
Flush CL001 (std)	CPDHANDLECL001	
Flush 92268	CPDHANDLE92268	
Flush Pad lockable	CPDHANDLEPADLCK	
Flush NSW PWD E lock	CPDHANDLEELOCK	
Flush Non-locking	CPDHANDLENOLOCK	
Door Accessories		
Spare Key (set of 2)- CL001	KEYCL001	
Spare Key (set of 2)- 92268	KEY92268	
Spare Hinge Pin- White Delrin	CPDHPD	
Spare Hinge Pin- Steel	CPDHPS	

Notes: ¹⁾ Kits include control switch, timer, 24A 4P N/C contactor, labels and wiring diagram to AS2293.1

²⁾ Can be field fitted utilising horizontal DIN knockouts at top of board.

³⁾ Safety service enclosure mechanically separates MCB from remainder of switchboard.

CONCEPT•PLUS**Multi-purpose panelboards options and accessories**

Description		Cat. No.	Price \$
Main Switch- top mount Isolator			
Main Switch kit	3P- 160A	EVA3160H	
Suits NC & GB DIN chassis	3P- 250A	EVA3250H	
	4P- 250A	EVA4250H	
NC Chassis IP2x back cover	3P	NCBC	
	4P	NCBC4	
GB Chassis IP2x back cover	3P	GBSPP3P	
	4P	GBSPP4P	
Main Switch kit Suits CD DIN chassis	3P- 160A	CDT160MS	
	3P- 250A	CDT250MS	
Main Switch kit suits CT SAFET chassis	3P- 160A	CST160MS	
	3P- 250A	CST250MS	
Blue cover to suit 160A and 250A isolator (ea)		1LS2VS	

**Main Switch- MCCB connection kits- S160, E/S250 TEMBREAK2 MCCB
 (includes connection tags, shrouds and bracket)**

Suits CD DIN chassis- direct connect	3P	CD250CKT2	
Suits NC DIN chassis (200A Direct connect) ¹⁾	Top feed	3P	NCCK200CP
	Bottom feed	4P	NCCK200CP4P
		3P	NCCK200CPBF
	4P	NCCK200CPBF4P	
Suits GB DIN chassis (200A Direct connect) ¹⁾	Top feed	3P	GBCK200CP
	Bottom feed	4P	GBCK200CP4P
		3P	GBCK200CPBF
	4P	GBCK200CPBF4P	
Suits NC DIN chassis (250A Tag connect) ²⁾	Top feed	3P	NCCK250CP
	Bottom feed	4P	NCCK250CP4P
		3P	NCCK250CPBF
	4P	NCCK250CPBF4P	
Suits GB DIN chassis (250A Tag connect) ²⁾	Top feed	3P	GBCK250CP
	Bottom feed	4P	GBCK250CP4P
		3P	GBCK250CPBF
	4P	GBCK250CPBF4P	
Spacer for DIN rail beside MCCB. 2 reqd per rail		D11S	
Support bracket for MCCB	Top feed	3 pole	CPBS250
	Bottom feed	4 pole	CPBS2504P
		3 pole	CPBS250BF
	4 pole	CPBS250BF4P	

- Notes:** ¹⁾ MCCB mounts through top horizontal escutcheon slot and connects directly to chassis with spacers, move chassis down 1 pole space to fit.
²⁾ MCCB mounts through top horizontal escutcheon slot and connects to chassis with busbar, move chassis down 7 pole spaces to fit. 108mm spacing from centre of chassis and MCCB connection points.

CONCEPT•PLUS**Multi-purpose panelboards options and accessories**

2

Description	Cat. No.	Price \$
Escutcheon Hinge kit ¹⁾	CPESC	
Floor mount Plinth (100mm Height) ²⁾	CPPLINTH	
Main Switch- Chassis mount Isolator	80A- CD or NC chassis DINTMS803	
	100A- NC chassis DINTMS1003	
	100A- CT chassis SAFET63100NA	
Feeder MCB/ MCCB	125A 3Pole DINT10H3125C	
	160A 3 Pole S160NJ3160	
Other main switches refer to NHP	REFER NHP	
Flush surround kit (supplied loose) 45mm width		
	Size 1 CPBFK1	
	Size 2 CPBFK2	
	Size 3 CPBFK3	
	Size 4 CPBFK4	
	Size 5 CPBFK5	
	Size 6 CPBFK6	
White liners (QTY 2 required per enclosure)		
	Size H CPWILH2	
	Size 0 CPWIL02	
	Size 1 CPWIL12	
Convert interior of board without having to respray	Size 2 CPWIL22	
	Size 3 CPWIL32	
	Size 4 CPWIL42	
	Size 5 CPWIL52	
	Size 6 CPWIL62	

Notes: ¹⁾ QTY 1 required for size 1-4 enclosure, QTY 2 required for size 5-6 enclosure.

²⁾ Plinth is design for bottom cable entry, if panelboard is free standing additional support is required.

CONCEPT•PLUS**Multi-purpose panelboards options and accessories**

Description	Cat. No.	Price \$
Pole Fillers		
DIN-T CD Chassis	DTPF	
SAFE-T CT Chassis	SAFETPF	
Tee-Off caps		
DIN-T NC 18mm Chassis	NC250TOPC	
DIN-T NC 27mm Chassis	NC250HTOPC	
DIN-T NC4 18mm Chassis	NC400TOPC	
DIN-T NC4 27mm Chassis	NC400HTOPC	
DIN-T GB Chassis	GBTOC	
DIN-T CD Chassis	CD250TOPC	
SAFE-T CT Chassis	TH250TOPC	
Split Chassis Kits (supplied loose) ¹⁾		
DIN-T - CD Chassis	STKCD	
CST SAFE-T 250A Chassis	STK250NDTH	
Touch up Paint- spray can 150g		
Charcoal	392.00001	
Grey	392.35554	
Orange	392.35555	
Bright White	392.00002	
Schedule Card holder -A4	CPA4CH	
Schedule Card- A4	CPSCHEDULECARD	
Fault current limiters	REFER NHP	
Load shedding	REFER NHP	
Cable ducting	REFER NHP	
Special colors-doors	REFER NHP	
Energy metering	REFER NHP	

Notes: ¹⁾ Instructions and template for installation included.

CONCEPT•PREMIER**Suits Din-T and Safe-T MCBs, E125, S125 and S160, S250 MCCBs**

2

- Standard AS/NZS 3439-3
- IP 66 rated enclosure
- 1.6 mm fully welded construction
- 316 Stainless steel option
- 7 modular sizes 600 mm to 2000 mm
- Very generous amount of wiring room
- Accessory module
- Type tested busbar/chassis system
- Removable gland plates (with gaskets)
- 3 point door locking on sizes 1000 mm and above
- T handle door lock
- Flush handle door lock (series 2)
- Australian made
- Commercial, industrial and heavy industrial applications

**Application**

The CONCEPT•PREMIER range of Panelboards provides a unique enclosure system for NHP Din-T and Safe-T MCBs and E125, S125 and S160, S250 MCCBs.

Features

- Two-tone colour scheme, make a colour change by simply changing the door colour
- The door is field changeable from right to left hinged and is totally independent of the escutcheon
- Gloss white hinged escutcheon has been dished to allow a wide range of accessories to fit under the door
- D handles fitted to the lift-off escutcheon to allow easy fitting and removal
- Knockouts provided in the escutcheon for up to 18 modules of standard DIN rail equipment (Din-T & Safe-T Panelboards only)
- Removable gland plates aid on-site installation of cable and trunking systems
- Compact main switch with a fully enclosed rating of 160 A and 250 A (Din-T and Safe-T Panelboards only)
- Mount up to a CA 6-170 contactor behind the escutcheon or a CA 6-420 in an accessory module without an escutcheon
- Dual earth and neutral bars, circuit identification and schedule cards supplied standard
- 30 % Larger gland plate opening in series 2

New series 2
 Available Mid 2013
 Flush door handle
 NC Chassis
 30 % larger
 Glandplate
 opening

CONCEPT•PREMIER**Suits Din-T and Safe-T MCBs, E125, S125 and S160,
S250 MCCBs****Technical data**

Material type:	1.6 mm steel, polyester powder coated 1.6 mm 316 Stainless steel option
Colour	Base – Charcoal gloss
(AS 2700-1995):	Door – N42 Storm Grey or X15 Orange (other colours refer NHP) Escutcheon – Bright white gloss
Protection degree:	IP 30 – without door IP 66 – with door
Busbar ratings:	SafeT - 250 A CT (355 A option) Din-T - 250 A CD (355 A option) Din-T - 250 A NC (400 A option) Din-T - 250 A GB S125 MCCB - 630 A XA (800 A option)
Main Switch (options):	Safe-T 100 A non-auto (chassis mount Safe-T) Din-T M/S 80/100 A (chassis mount Din-T) 160 A, 250 A, 400 A, 630 A, & 800 A 3 pole 415 V AC (top mount)
Neutral and earth bars:	Din-T & Safe-T Panelboards - (dual bars) 2 x 8 mm studs & 2 screw tunnel terminals (16 mm) MCCBs Panelboards - 2 x 10 mm studs, 8 x 8 mm studs & 1 screw tunnel terminals (35 mm)

CONCEPT•PREMIER

The premium panelboard suits Din-T MCBs

2

**CONCEPT•PREMIER****Din-T – Surface mount with grey door**

Suits Din-T MCBs (DIN) refer to section one

Main Switch	Pole capacity	Box size	Height (mm)	Cat. No.	Price \$
-	18	1	800	CPD 18G	
	24	1	800	CPD 24G	
	36	2	1000	CPD 36G	
	48	2	1000	CPD 48G	
	60	3	1200	CPD 60G	
	72	4	1400	CPD 72G	
	84	4	1400	CPD 84G	
160 A	96	5	1600	CPD 96G	
	18	1	800	CPD 18M160G ¹⁾	
	24	1	800	CPD 24M160G	
	36	2	1000	CPD 36M160G ¹⁾	
	48	2	1000	CPD 48M160G ¹⁾	
250 A	60	3	1200	CPD 60M160G ¹⁾	
	18	1	800	CPD 18M250G ¹⁾	
	24	1	800	CPD 24M250G ¹⁾	
	36	2	1000	CPD 36M250G ¹⁾	
	48	2	1000	CPD 48M250G	
	60	3	1200	CPD 60M250G ¹⁾	
	72	4	1400	CPD 72M250G ¹⁾	
	84	4	1400	CPD 84M250G ¹⁾	
	96	5	1600	CPD 96M250G ¹⁾	

Width = 640 mm, Depth = 240 mm includes door. (Door = 20 mm)

Notes: ¹⁾ Main switches are supplied loose. i.e. CPD 24 M250 G = CPD 24G + CDT250MS.

- Larger main switches and other options and accessories available.
- Refer NHP for delivery confirmation regarding types with main switches.

CONCEPT•PREMIER

The premium panelboard suits Din-T MCBs



2

CONCEPT•PREMIER**Din-T – Surface mount with orange door**

Suits Din-T MCBs (DIN) refer to section one

Main Switch	Pole capacity	Box size	Height (mm)	Cat. No. ²⁾	Price \$
-	18	1	800	CPD 180	
	24	1	800	CPD 240	
	36	2	1000	CPD 360	
	48	2	1000	CPD 480	
	60	3	1200	CPD 600	
	72	4	1400	CPD 720	
	84	4	1400	CPD 840	
	96	5	1600	CPD 960	
160 A	18	1	800	CPD 18M1600 ¹⁾	
	24	1	800	CPD 24M1600 ¹⁾	
	36	2	1000	CPD 36M1600 ¹⁾	
	48	2	1000	CPD 48M1600 ¹⁾	
	60	3	1200	CPD 60M1600 ¹⁾	
250 A	18	1	800	CPD 18M2500 ¹⁾	
	24	1	800	CPD 24M2500 ¹⁾	
	36	2	1000	CPD 36M2500 ¹⁾	
	48	2	1000	CPD 48M2500 ¹⁾	
	60	3	1200	CPD 60M2500 ¹⁾	
	72	4	1400	CPD 72M2500 ¹⁾	
	84	4	1400	CPD 84M2500 ¹⁾	
96	5	1600	CPD 96M2500 ¹⁾		

Width = 640 mm, Depth = 240 mm includes door. (Door = 20 mm)

Notes: ¹⁾ Main switches are supplied loose. i.e. CPD 24 M250 O = CPD 240 + CDT250MS.²⁾ Enclosures with orange base replace "O" with "OO" e.g. CPD36OO.

- Larger main switches and other options and accessories available.

- Refer NHP for delivery confirmation regarding types with main switches.

CONCEPT•PREMIER SS

The premium panelboard suits Din-T MCBs

2

**CONCEPT•PREMIER****Din-T – Surface mount with stainless steel door**

Suits Din-T MCBs (DIN) refer to section one

Main Switch	Pole capacity	Box size	Height (mm)	Cat. No.	Price \$
-	18	1	800	CPD 18SS	
	24	1	800	CPD 24SS	
	36	2	1000	CPD 36SS	
	48	2	1000	CPD 48SS	
	60	3	1200	CPD 60SS ²⁾	
	72	4	1400	CPD 72SS ²⁾	
	84	4	1400	CPD 84SS ²⁾	
160 A	96	5	1600	CPD 96SS ²⁾	
	18	1	800	CPD 18M160SS ¹⁾	
	24	1	800	CPD 24M160SS ¹⁾	
	36	2	1000	CPD 36M160SS ¹⁾	
	48	2	1000	CPD 48M160SS ¹⁾	
250 A	60	3	1200	CPD 60M160SS ¹⁾	
	18	1	800	CPD 18M250SS ¹⁾	
	24	1	800	CPD 24M250SS ¹⁾	
	36	2	1000	CPD 36M250SS ¹⁾	
	48	2	1000	CPD 48M250SS ¹⁾	
	60	3	1200	CPD 60M250SS ¹⁾	
	72	4	1400	CPD 72M250SS ¹⁾	
84	4	1400	CPD 84M250SS ¹⁾		
	96	5	1600	CPD 96M250SS ¹⁾	

Width = 640 mm, Depth = 240 mm includes door. (Door = 20 mm)

Notes: ¹⁾ Main switches are supplied loose. i.e. CPD 24 M250 SS = CPD 24SS + CDT250MS.²⁾ Made to order.

- Stainless steel panelboards are fully assembled from stocked components.
- Larger main switches and other options and accessories available.
- Refer NHP for delivery confirmation regarding types with main switches.

CONCEPT•PREMIER

The premium panelboard suits Din-T MCBs
C/W isolation chassis

NEW
Grizz-Bar
Isolation
chassis



2

CONCEPT•PREMIER**Din-T – Surface mount with grey door**

Suits Din-T MCBs (DIN) refer to section one

Main Switch	Pole capacity	Box size	Height (mm)	Cat. No. ³⁾	Price \$
-	24	1	800	CPG 24G ²⁾	
	36	2	1000	CPG 36G ²⁾	
	48	2	1000	CPG 48G ²⁾	
	60	3	1200	CPG 60G ²⁾	
	72	4	1400	CPG 72G ²⁾	
	84	4	1400	CPG 84G ²⁾	
	96	5	1600	CPG 96G ²⁾	
160 A	24	1	800	CPG 24M160G ¹⁾	
	36	2	1000	CPG 36M160G ¹⁾	
	48	2	1000	CPG 48M160G ¹⁾	
	60	3	1200	CPG 60M160G ¹⁾	
250 A	24	1	800	CPG 24M250G ¹⁾	
	36	2	1000	CPG 36M250G ¹⁾	
	48	2	1000	CPG 48M250G ¹⁾	
	60	3	1200	CPG 60M250G ¹⁾	
	72	4	1400	CPG 72M250G ¹⁾	
	84	4	1400	CPG 84M250G ¹⁾	
	96	5	1600	CPG 96M250G ¹⁾	

Width = 640 mm, Depth = 240 mm includes door. (Door = 20 mm)

Notes: ¹⁾ Main switches are supplied loose. i.e. CPG 24 M250 G = CPG 24G + EVA3250H.²⁾ Made to order.

- Larger main switches and other options and accessories available.

- Refer NHP for delivery confirmation regarding types with main switches.

³⁾ For padlock mechanism model, add **LM** to end of Cat. No., e.g. CPG 24G **LM**.

CONCEPT•PREMIER

The premium panelboard suits Din-T MCBs
C/W isolation chassis

2

NEW
Grizz-Bar
Isolation
chassis

**CONCEPT•PREMIER**

Din-T – Surface mount with orange door

Suits Din-T MCBs (DIN) refer to section one

Main Switch	Pole capacity	Box size	Height (mm)	Cat. No. ³⁾	Price \$
-	24	1	800	CPG 24O ²⁾	
	36	2	1000	CPG 36O ²⁾	
	48	2	1000	CPG 48O ²⁾	
	60	3	1200	CPG 60O ²⁾	
	72	4	1400	CPG 72O ²⁾	
	84	4	1400	CPG 84O ²⁾	
	96	5	1600	CPG 96O ²⁾	
160 A	24	1	800	CPG 24M160O ¹⁾	
	36	2	1000	CPG 36M160O ¹⁾	
	48	2	1000	CPG 48M160O ¹⁾	
	60	3	1200	CPG 60M160O ¹⁾	
250 A	24	1	800	CPG 24M250O ¹⁾	
	36	2	1000	CPG 36M250O ¹⁾	
	48	2	1000	CPG 48M250O ¹⁾	
	60	3	1200	CPG 60M250O ¹⁾	
	72	4	1400	CPG 72M250O ¹⁾	
	84	4	1400	CPG 84M250O ¹⁾	
	96	5	1600	CPG 96M250O ¹⁾	

Width = 640 mm, Depth = 240 mm includes door. (Door = 20 mm)

Notes: ¹⁾ Main switches are supplied loose. i.e. CPG 24 M250 O = CPG 24O + EVA3250H.

²⁾ Made to order.

- Larger main switches and other options and accessories available.

- Refer NHP for delivery confirmation regarding types with main switches.

³⁾ For padlock mechanism model, add **LM** to end of Cat. No., e.g. CPG 24O LM.

CONCEPT•PREMIER

The premium panelboard suits Din-T MCBs

400 A
ChassisMade
to
order

2

CONCEPT•PREMIER**Din-T – Surface mount with grey door**

Suits Din-T MCBs (DIN) refer to section one

Main Switch	Pole capacity	Box size	Height (mm)	Cat. No.	Price \$
400 A Isolator Socomec SLB400	48	4	1400	CPD 48M400G	
	60	5	1600	CPD 60M400G	
	72	5	1600	CPD 72M400G	
	84	6	1800	CPD 84M400G	
	96	6	1800	CPD 96M400G	
300 A Isolator Terasaki S400NN	48	4	1400	CPD 48M300G	
	60	5	1600	CPD 60M300G	
	72	5	1600	CPD 72M300G	
	84	6	1800	CPD 84M300G	
	96	6	1800	CPD 96M300G	
300 A MCCB Terasaki S400CJ	48	4	1400	CPD 48MCCB300G	
	60	5	1600	CPD 60MCCB300G	
	72	5	1600	CPD 72MCCB300G	
	84	6	1800	CPD 84MCCB300G	
	96	6	1800	CPD 96MCCB300G	

Notes: 400 NC chassis universal feed.

CONCEPT•PREMIER 2

The premium panelboard suits Din-T MCBs

2



Series 2
NC chassis
flush handle




Available
mid 2013

**CONCEPT•PREMIER****Din-T – Surface mount with grey door**

Suits Din-T MCBs (DIN) refer to section one

Main Switch	Pole capacity	Box size	Height (mm)	Cat. No.	Price \$
-	18	1	800	CPD 18G2	
-	24	1	800	CPD 24G2	
-	36	2	1000	CPD 36G2	
-	48	2	1000	CPD 48G2	
-	60	3	1200	CPD 60G2	
-	72	4	1400	CPD 72G2	
-	84	4	1400	CPD 84G2	
-	96	5	1600	CPD 96G2	
160 A	18	1	800	CPD 18M160G2 ¹⁾	
160 A	24	1	800	CPD 24M160G2 ¹⁾	
160 A	36	2	1000	CPD 36M160G2 ¹⁾	
160 A	48	2	1000	CPD 48M160G2 ¹⁾	
160 A	60	3	1200	CPD 60M160G2 ¹⁾	
250 A	18	1	800	CPD 18M250G2 ¹⁾	
250 A	24	1	800	CPD 24M250G2 ¹⁾	
250 A	36	2	1000	CPD 36M250G2 ¹⁾	
250 A	48	2	1000	CPD 48M250G2 ¹⁾	
250 A	60	3	1200	CPD 60M250G2 ¹⁾	
250 A	72	4	1400	CPD 72M250G2 ¹⁾	
250 A	84	4	1400	CPD 84M250G2 ¹⁾	
250 A	96	5	1600	CPD 96M250G2 ¹⁾	

Width = 640 mm, Depth = 240 mm includes door. (Door = 20 mm)

Notes: ¹⁾ Main switches are supplied loose. i.e. CPD 24 M250 G = CPD 24G + EVA3250H.

- Larger main switches and other options and accessories available.
- Refer NHP for delivery confirmation regarding types with main switches.

CONCEPT•PREMIER 2

The premium panelboard suits Din-T MCBs



Series 2
NC chasis
flush handle




Available
mid 2013

2

CONCEPT•PREMIER**Din-T – Surface mount with orange door**

Suits Din-T MCBs (DIN) refer to section one

Main Switch	Pole capacity	Box size	Height (mm)	Cat. No.	Price \$
	18	1	800	CPD 1802	
	24	1	800	CPD 2402	
	36	2	1000	CPD 3602	
	48	2	1000	CPD 4802	
	60	3	1200	CPD 6002	
	72	4	1400	CPD 7202	
	84	4	1400	CPD 8402	
	96	5	1600	CPD 9602	
160 A	18	1	800	CPD 18M16002 ¹⁾	
	24	1	800	CPD 24M16002 ¹⁾	
	36	2	1000	CPD 36M16002 ¹⁾	
	48	2	1000	CPD 48M16002 ¹⁾	
	60	3	1200	CPD 60M16002 ¹⁾	
250 A	18	1	800	CPD 18M25002 ¹⁾	
	24	1	800	CPD 24M25002 ¹⁾	
	36	2	1000	CPD 36M25002 ¹⁾	
	48	2	1000	CPD 48M25002 ¹⁾	
	60	3	1200	CPD 60M25002 ¹⁾	
	72	4	1400	CPD 72M25002 ¹⁾	
	84	4	1400	CPD 84M25002 ¹⁾	
	96	5	1600	CPD 96M25002 ¹⁾	

Width = 640 mm, Depth = 240 mm includes door. (Door = 20 mm)

Notes: ¹⁾ Main switches are supplied loose. i.e. CPD 24 M250 O = CPD 240 + EVA3250H.

- Enclosures with orange base replace "O" with "OO" e.g. CPD36OO.
- Larger main switches and other options and accessories available.
- Refer NHP for delivery confirmation regarding types with main switches.

CONCEPT•PREMIER 2 SS

The premium panelboard suits Din-T MCBs

2

Series 2
NC chassis
flush handle



Available
mid 2013

CONCEPT•PREMIER**Din-T – Surface mount with stainless steel door**

Suits Din-T MCBs (DIN) refer to section one

Main Switch	Pole capacity	Box size	Height (mm)	Cat. No.	Price \$
-	18	1	800	CPD 18SS2	
	24	1	800	CPD 24SS2	
	36	2	1000	CPD 36SS2	
	48	2	1000	CPD 48SS2	
	60	3	1200	CPD 60SS2 ²⁾	
	72	4	1400	CPD 72SS2 ²⁾	
	84	4	1400	CPD 84SS2 ²⁾	
	96	5	1600	CPD 96SS2 ²⁾	
160 A	18	1	800	CPD 18M160SS2 ¹⁾	
	24	1	800	CPD 24M160SS2 ¹⁾	
	36	2	1000	CPD 36M160SS2 ¹⁾	
	48	2	1000	CPD 48M160SS2 ¹⁾	
	60	3	1200	CPD 60M160SS2 ¹⁾	
250 A	18	1	800	CPD 18M250SS2 ¹⁾	
	24	1	800	CPD 24M250SS2 ¹⁾	
	36	2	1000	CPD 36M250SS2 ¹⁾	
	48	2	1000	CPD 48M250SS2 ¹⁾	
	60	3	1200	CPD 60M250SS2 ¹⁾	
	72	4	1400	CPD 72M250SS2 ¹⁾	
	84	4	1400	CPD 84M250SS2 ¹⁾	
96	5	1600	CPD 96M250SS2 ¹⁾		

Width = 640 mm, Depth = 240 mm includes door. (Door = 20 mm)

Notes: ¹⁾ Main switches are supplied loose. i.e. CPD 24 M250 SS2 = CPD 24SS2 + EVA3250H.²⁾ Made to order.

- Larger main switches and other options and accessories available.

- Refer NHP for delivery confirmation regarding types with main switches.

CONCEPT•PREMIER 2

The premium panelboard suits Din-T MCBs
C/W isolation chassis

Series 2
NC chassis
flush handle



Available
mid 2013



2

CONCEPT•PREMIER**Din-T – Surface mount with grey door****Suits Din-T MCBs (DIN) refer to section one**

Main Switch	Pole capacity	Box size	Height (mm)	Cat. No.	Price \$
–	24	1	800	CPG 24G2 ²⁾	
	36	2	1000	CPG 36G2 ²⁾	
	48	2	1000	CPG 48G2 ²⁾	
	60	3	1200	CPG 60G2 ²⁾	
	72	4	1400	CPG 72G2 ²⁾	
	84	4	1400	CPG 84G2 ²⁾	
	96	5	1600	CPG 96G2 ²⁾	
160 A	24	1	800	CPG 24M160G2 ¹⁾	
	36	2	1000	CPG 36M160G2 ¹⁾	
	48	2	1000	CPG 48M160G2 ¹⁾	
	60	3	1200	CPG 60M160G2 ¹⁾	
250 A	24	1	800	CPG 24M250G2 ¹⁾	
	36	2	1000	CPG 36M250G2 ¹⁾	
	48	2	1000	CPG 48M250G2 ¹⁾	
	60	3	1200	CPG 60M250G2 ¹⁾	
	72	4	1400	CPG 72M250G2 ¹⁾	
	84	4	1400	CPG 84M250G2 ¹⁾	
	96	5	1600	CPG 96M250G2 ¹⁾	

Width = 640 mm, Depth = 240 mm includes door. (Door = 20 mm)

Notes: ¹⁾ Main switches are supplied loose. i.e. CPG 24 M250 G2 = CPG 24G2 + EVA3250H.

²⁾ Made to order.

- Larger main switches and other options and accessories available.

- Refer NHP for delivery confirmation regarding types with main switches.

CONCEPT•PREMIER 2

The premium panelboard suits Din-T MCBs
C/W isolation chassis

2

Series 2
NC chassis
flush handle



Available
mid 2013

CONCEPT•PREMIER

Din-T – Surface mount with orange door

Suits Din-T MCBs (DIN) refer to section one

Main Switch	Pole capacity	Box size	Height (mm)	Cat. No.	Price \$	
-	24	1	800	CPG 24O2 ²⁾		
	36	2	1000	CPG 36O2 ²⁾		
	48	2	1000	CPG 48O2 ²⁾		
	60	3	1200	CPG 60O2 ²⁾		
	72	4	1400	CPG 72O2 ²⁾		
	84	4	1400	CPG 84O2 ²⁾		
	96	5	1600	CPG 96O2 ²⁾		
	160 A	24	1	800	CPG 24M160O2 ¹⁾	
		36	2	1000	CPG 36M160O2 ¹⁾	
48		2	1000	CPG 48M160O2 ¹⁾		
60		3	1200	CPG 60M160O2 ¹⁾		
250 A	24	1	800	CPG 24M250O2 ¹⁾		
	36	2	1000	CPG 36M250O2 ¹⁾		
	48	2	1000	CPG 48M250O2 ¹⁾		
	60	3	1200	CPG 60M250O2 ¹⁾		
	72	4	1400	CPG 72M250O2 ¹⁾		
	84	4	1400	CPG 84M250O2 ¹⁾		
	96	5	1600	CPG 96M250O2 ¹⁾		

Width = 640 mm, Depth = 240 mm includes door. (Door = 20 mm)

Notes: ¹⁾ Main switches are supplied loose. i.e. CPG 24 M250 O2 = CPG 24O2 + EVA3250H.

²⁾ Made to order.

- Larger main switches and other options and accessories available.

- Refer NHP for delivery confirmation regarding types with main switches.

CONCEPT•PREMIER**The premium panelboard suits Safe-T MCBs**

2

CONCEPT•PREMIER**Safe-T – Surface mount with grey door****Suits Safe-T MCBs (NEMA) refer to section one**

Main Switch	Pole capacity	Box size	Height (mm)	Cat. No.	Price \$	
-	24	1	800	CPS 24G ²⁾		
	36	2	1000	CPS 36G		
	48	3	1200	CPS 48G		
	60	4	1400	CPS 60G		
	72	5	1600	CPS 72G ²⁾		
	84	6	1800	CPS 84G ²⁾		
	96	6	1800	CPS 96G ²⁾		
	160 A	24	1	800	CPS 24M160G ¹⁾	
		36	2	1000	CPS 36M160G ¹⁾	
48		3	1200	CPS 48M160G ¹⁾		
60		4	1400	CPS 60M160G ¹⁾		
250 A	24	1	800	CPS 24M250G ¹⁾		
	36	2	1000	CPS 36M250G ¹⁾		
	48	3	1200	CPS 48M250G ¹⁾		
	60	4	1400	CPS 60M250G ¹⁾		
	72	5	1600	CPS 72M250G ¹⁾		
	84	6	1800	CPS 84M250G ¹⁾		
	96	6	1800	CPS 96M250G ¹⁾		

Width = 640 mm, Depth = 240 mm includes door. (Door = 20 mm)

Notes: ¹⁾ Main switches are supplied loose. i.e. CPS 24 M250 G = CPS 24G + EVA3250H.²⁾ Made to order.

- Larger main switches and other options and accessories available.

- Refer NHP for delivery confirmation regarding types with main switches.

CONCEPT•PREMIER**The premium panelboard suits Safe-T MCBs**

2

CONCEPT•PREMIER**Safe-T – Surface mount with orange door**

Suits Safe-T MCBs (NEMA) refer to section one

Main Switch	Pole capacity	Box size	Height (mm)	Cat. No.	Price \$
-	24	1	800	CPS 24O ²⁾	
	36	2	1000	CPS 36O ²⁾	
	48	3	1200	CPS 48O ²⁾	
	60	4	1400	CPS 60O ²⁾	
	72	5	1600	CPS 72O ²⁾	
	96	6	1800	CPS 96O ²⁾	
160 A	24	1	800	CPS 24M160O ¹⁾	
	36	2	1000	CPS 36M160O ¹⁾	
	48	3	1200	CPS 48M160O ¹⁾	
	60	4	1400	CPS 60M160O ¹⁾	
250 A	24	1	800	CPS 24M250O ¹⁾	
	36	2	1000	CPS 36M250O ¹⁾	
	48	3	1200	CPS 48M250O ¹⁾	
	60	4	1400	CPS 60M250O ¹⁾	
	72	5	1600	CPS 72M250O ¹⁾	
	96	6	1800	CPS 96M250O ¹⁾	

Width = 640 mm, Depth = 240 mm includes door. (Door = 20 mm)

Notes: ¹⁾ Main switches are supplied loose. i.e. CPS 24 M250 O = CPS 24O + EVA3250H.²⁾ Made to order.

- Larger main switches and other options and accessories available.

- Refer NHP for delivery confirmation regarding types with main switches.

CONCEPT•PREMIER CPX

The premium panelboard

Suits E125, S125 MCCBs

Series 2
Add 2 at end of
Cat. No.
Flush door handle
30 % larger gland
plate opening



The MCCB
panelboard

2

CONCEPT•PREMIER CPX

MCCB - Surface mount with grey door

Pole cap.	Box size	Height (mm)	Cat. No.	Price \$
18	2	1000	CPX18G ¹⁾	
24	2	1000	CPX24G ¹⁾	
36	3	1200	CPX36G ¹⁾	
42	4	1400	CPX42G	
48	4	1400	CPX48G	
60	5	1600	CPX60G	
72	6	1800	CPX72G	

CONCEPT•PREMIER CPX

MCCB - Surface mount with orange door

Pole cap.	Box size	Height (mm)	Cat. No.	Price \$
18	2	1000	CPX18O ¹⁾	
24	2	1000	CPX24O ¹⁾	
36	3	1200	CPX36O	
42	4	1400	CPX42O	
48	4	1400	CPX48O	
60	5	1600	CPX60O	
72	6	1800	CPX72O	

CONCEPT•PREMIER CPX

MCCB - Surface mount stainless steel

Pole cap.	Box size	Height (mm)	Cat. No.	Price \$
18	2	1000	CPX18SS	
24	2	1000	CPX24SS	
36	3	1200	CPX36SS	
42	4	1400	CPX42SS	
48	4	1400	CPX48SS	
60	5	1600	CPX60SS	
72	6	1800	CPX72SS	

Width = 640 mm, Depth = 240 mm includes door. (Door = 20 mm)

Notes: CPX panelboards are fully assembled from stocked components.

Cat. No. refers to panelboard suitable for E125, S125 MCCBs.

Refer to NHP for panelboard suitable for S160, S250 MCCBs.

¹⁾ Units stocked.

CONCEPT•PREMIER**The premium panelboard options and accessories****Accessory modules**

2

Box size	Height (mm)	Pole cap.	With escutcheon Cat. No. ¹⁾	Price \$
H	600	24	CPPACC24G	
H	600	48	CPPACC48G	

Box size	Height (mm)	Without escutcheon Cat. No. ^{1) 2)}	Price \$
H	600	CPPACCG	

Box size	Height (mm)	With blank escutcheon Cat. No. ^{1) 2)}	Price \$
H	600	CPPACCGE	
1	800	CPPACCS1GE	
2	1000	CPPACCS2GE	
3	1200	CPPACCS3GE	
4	1400	CPPACCS4GE	
5	1600	CPPACCS5GE	
6	1800	CPPACCS6GE	
7	2000	CPPACCS7GE	

Width = 640 mm Depth = 240 mm includes door (Door = 20 mm)

Gear trays to suit Accessory Module**White mounting plate**

Height (mm)	Cat. No.	Price \$
94	CPBGTS1	
194	CPBGTS2	
294	CPBGTS3	
494	CPBGTSH	
594	CPBGTS4	
994	CPBGTS6	

Gear trays for Concept Premier must be 200 mm shorter than enclosure size.

Earth and neutral bar kit to suit Accessory Module

No Ways	Cat. No.	Price \$
24	CEN24	
36	CEN36	
48	CEN48	
60	CEN60	
72	CEN72	
84	CEN84	
96	CEN96	

Includes 2 bars, mounting supports and fasteners.

Notes: ¹⁾ Replace "G" with "O" for orange door, replace "G" with "SS" for stainless steel.²⁾ Gear tray not included.

CONCEPT•PREMIER 2

The premium panelboard options and accessories

Series 2
available
mid 2013

Accessory modules

Box size	Height (mm)	Pole cap.	With escutcheon Cat. No. ¹⁾	Price \$
H	600	24	CPPACC24G2	
H	600	48	CPPACC48G2	

Box size	Height (mm)	Without escutcheon Cat. No. ¹⁾	Price \$
H	600	CPPACCG2	

Box size	Height (mm)	With blank escutcheon Cat. No. ¹⁾	Price \$
H	600	CPPACCGE2	
1	800	CPPACCS1GE2	
2	1000	CPPACCS2GE2	
3	1200	CPPACCS3GE2	
4	1400	CPPACCS4GE2	
5	1600	CPPACCS5GE2	
6	1800	CPPACCS6GE2	
7	2000	CPPACCS7GE2	

Width = 640 mm Depth = 240 mm includes door (Door = 20 mm)

Notes: ¹⁾ Replace "G" with "O" for orange door, replace "G" with "SS" for stainless steel.

CONCEPT•PREMIER**The premium panelboard options and accessories**

2

Options and accessories

Description		Cat. No.	Price \$
Emergency lighting kits	rotary control switch (unwired)	CPELK1	
	rotary control switch (wired loom)	CPELK1W	
	Key switch (unwired)	CPELK2	
	Size H	CPPFKH	
	Size 1	CPPFK1	
	Size 2	CPPFK2	
	Size 3	CPPFK3	
Flush kits (supplied loose) 45 mm width	Size 4	CPPFK4	
	Size 5	CPPFK5	
	Size 6	CPPFK6	
	Size 7	CPPFK7	
Weather-proof cover	Mild steel	Single width CPPWC Double width CPPWCD	
	Stainless steel	Single width CPPWCSS	
		Double width CPPWCDSS	
	Floor mounting plinth ²⁾ (100 mm)	Mild steel	Single width CPPPLINTHS Double width CPPPLINTHD
Stainless steel		Single width CPPPLINTHSSS	
		Double width CPPPLINTHDSS	
Wall mounting brackets		Mild steel	CPPWBMS
	Stainless steel	CPPWB	
Gland plates	Brass 3 mm	CPPGPB	
	Brass 5 mm	CPPGPB5	
	Aluminium 3 mm	CPPGPA	
	Aluminium 6 mm	CPPGPA6	
White liners ¹⁾ 2 required per board	Size H	CPPWILH	
	Size 1	CPPWIL1	
	Size 2	CPPWIL2	
	Size 3	CPPWIL3	
	Size 4	CPPWIL4	
	Size 5	CPPWIL5	
	Size 6	CPPWIL6	
Gland plate gasket	Series 1	305.00003	
	Series 2	TBA	

Notes: ¹⁾ Transforms interior of board white without respray.

²⁾ Plinth is designed for bottom cable entry, if panelboard is freestanding additional support is required.

CONCEPT•PREMIER

The premium panelboard

Options and accessories

Accessories

Description		Cat. No.		Price \$
Top mount main switch kit (supplied loose)	160 A 3 pole	CPD	CDT160MS	
		CPG, CPS	EVA3160H	
	250 A 3 pole	CPD	CDT250MS	
		CPG, CPS	EVA3250H	
Blue cover to suit 160 A and 250 A isolator			1LS2VS	
	CPD	CD chassis	STKCD	
Split chassis kits	CPS	CT chassis 250 A	STK250NDTH	
	CPS	CT chassis 355 A	STK300TH	
Connection kits	250 A MCCB to CD chassis		CD250CKT2	
	200 A MCCB to NC chassis (Direct)		NCCK200CPP	
	250 A MCCB to NC chassis (TAG)		NCCK250CPP	
	400 A MCCB to NC chassis (TAG)		NCCK400CPP	
400 A SLB to NC chassis (TAG)		NCCK4002CPP		
Support bracket to mount S250			CPPBS250	
Pole Fillers	Din-T		DTPF	
	Safe-T		SAFETPF	
	S 125		XAB2	
	S 250		XAB3	
Door handles (T handle)	CL001		CPPDCL001	
	92268		CPPD92268	
Tee-off plastic caps	CD-Din-T		CD250TOPC	
	NC-Din-T		NC250TOPC	
	GB-Din-T		GBTOC	
	Safe-T		TH250TOPC	
Spare Key (set of 2)	CL001		KEYCL001	
	92268		KEY92268	
NSW PWD E lock (series 1)			CPPPWDNSW	
Traffolite labelling available			REFER NHP	
Special paint colour			REFER NHP	
PVC wiring duct			REFER NHP	
			REFER PAGE	
kWh meter			1 - 42	-
IPP mounting kit			CPPIP66	

CONCEPT•TOUGH

The heavy-duty panelboard

Suits Din-T MCBs, E125, S125 and S160, S250 MCCBs

2

- Standard AS/NZS 3439.3
- IP 66 rated enclosure
- 2.0 mm fully welded construction
- 316 Stainless steel option
- 6mm Aluminium gland plates
- 4 modular sizes 500 mm to 2000 mm
- Very generous amounts of wiring room
- Type tested busbar/chassis system
- Removable gland plates (with gaskets)
- Lift-off hinged escutcheon
- Chrome hinges and door handle
- 3 point door locking
- Australian made
- Padlockable door handle
- Commercial, industrial and heavy industrial applications



Application

The CONCEPT•TOUGH range of Panelboards provides a unique enclosure system for NHP Din-T MCBs, E125, S125 and S160, S250 MCCBs.

Features

- The lift-off hinged door is totally independent of the escutcheon.
- Generous space between door and escutcheon to allow a wide range of accessories/locking facilities to fit behind the door.
- D handles fitted to the lift-off escutcheon to allow easy fitting and removal.
- Knockouts provided in the escutcheon for up to 18 modules of standard DIN rail equipment (Din-T Panelboards only)
- Removable gland plates aid on-site installation of cable and trunking systems.
- Compact main switch with a fully enclosed rating of 160 A and 250 A (Din-T Panelboards only).
- Large gland plates to allow for incoming/outgoing cables.
- Dual earth and neutral bars, circuit identification and two schedule cards supplied standard.
- 6 mm aluminum gland plate

CONCEPT•TOUGH**The heavy-duty panelboard****Suits Din-T MCBs, E125, S125 and S160, S250 MCCBs****Technical data**

Material type:	2.0 mm steel, polyester powder coated 6 mm Aluminium gland plates 2.0 mm 316 Stainless steel option	
Colour (AS 2700-1995):	Base – Orange gloss / Charcoal gloss Door – X15 Orange or N42 Storm Grey (other colours refer NHP) Escutcheon – Bright white gloss	
Protection degree:	IP 40 – without door IP 66 – with door	
Busbar ratings:	Din-T Panelboards	- 250 A CD chassis (355 A option) - 250 A NC chassis (400 A option)
	S 125 MCCBs Panelboard	- 630 A (std), 36 kA for 1 second - 800 A (optional)
Main switch (options):	Din-T M/S 80/100 A (chassis mount Din-T) 160 A, 250 A, 400 A, 630 A & 800 A 3 pole 415 V AC (top mount)	
Neutral and Earth bars:	Din-T Panelboards - (dual bars) 2 x 8 mm studs & 2 screw tunnel terminals (16 mm)	
	S 125 MCCBs Panelboard 2 x 10 mm studs, 8 x 8 mm studs & 1 screw tunnel terminals (35 mm) 400 A	

CONCEPT•TOUGH
**The heavy-duty panelboard
 Suits Din-T MCBs**


2

**CONCEPT•TOUGH
 Din-T - Surface mount orange**

Pole capacity	Box size	Height (mm)	Cat. No. ¹⁾	Price \$
18	2	1000	CTD180	
24	2	1000	CTD240	
36	2	1000	CTD360	
48	2	1000	CTD480	
60	3	1500	CTD600	
72	3	1500	CTD720	
84	3	1500	CTD840	
96	3	1500	CTD960	

**CONCEPT•TOUGH
 Din-T - Surface mount stainless steel-orange**

Pole capacity	Box size	Height (mm)	Cat. No. ¹⁾	Price \$
18	2	1000	CTD185SO	
24	2	1000	CTD245SO	
36	2	1000	CTD365SO	
48	2	1000	CTD485SO	
60	3	1500	CTD605SO	
72	3	1500	CTD725SO	
84	3	1500	CTD845SO	
96	3	1500	CTD965SO	

Delete "O" for raw stainless enclosure e.g. CTD185S.

**CONCEPT•TOUGH
 Accessory modules with orange doors**

Pole capacity	Box size	Height (mm)	Cat. No. ¹⁾	Price \$
0	1	500	CTACCO	
24	1	500	CTACC24HO ²⁾	
24	1	500	CTACC240	

Width = 800 mm, Depth = 300 mm includes door. (Door = 20 mm)

Notes: ¹⁾ CTD panelboard are fully assembled from stocked components.
 Correct box size when fitting 160 A or 250 A isolator.
 Made to order.

²⁾ 24 pole horizontal on DIN Rail (18P suit lock DIN, 3P suit STD DIN).

CONCEPT•TOUGH**The heavy-duty panelboard****Suits E125, S125 MCCBs**

2

CONCEPT•TOUGH**MCCB - Surface mount with orange door**

Main switch	Pole capacity	Box size	Height (mm)	Cat. No.	Price \$
-	18	2	1000	CTX180	
	24	2	1000	CTX240	
	36	3	1500	CTX360	
	48	3	1500	CTX480	
	60	3	1500	CTX600	
	72	4	2000	CTX720	
	400 A S400CJ	18	3	1500	CTX18M4000
24		3	1500	CTX24M4000	
36		3	1500	CTX36M4000	
48		4	2000	CTX48M4000	
60		4	2000	CTX60M4000	
	72	4	2000	CTX72M4000	

CONCEPT•TOUGH**MCCB - Surface mount stainless steel-orange**

Main switch	Pole capacity	Box size	Height (mm)	Cat. No.	Price \$
-	18	2	1000	CTX18SSO	
	24	2	1000	CTX24SSO	
	36	3	1500	CTX36SSO	
	48	3	1500	CTX48SSO	
	60	3	1500	CTX60SSO	
	72	4	2000	CTX72SSO	

Width = 800 mm, Depth = 300 mm includes door. (Door = 20 mm)

Delete "O" for raw stainless steel enclosure e.g. CTX18SS.

Notes: Made to order.

CTX panelboards are fully assembled from stocked components.

Cat. No. refers to Panelboard suitable for E125, S125 MCCB.

Refer to NHP for Panelboard suitable for S160, S250 MCCB.

Panelboard hardware

to suit the CONCEPT family of panelboards with Din-T or Safe-T MCBs

Earth and neutral bars - 165 A

No. tunnels	Numbering	Single screw Cat. No.	Price \$	Double screw Cat. No.	Price \$
18	1-18	TGPEN181S		TGPEN182S	
24	1-24	TGPEN241S		TGPEN242S	
30	1-30	-		TGPEN302S	
36	1-36	-		TGPEN362S	
42	1-42	-		TGPEN422S	
48	1-48	-		TGPEN482S	
60	1-60	-		TGPEN602S	
72	1-72	-		TGPEN722S	
84	1-84	-		TGPEN842S	
96	1-96	-		TGPEN962S	

Pole cap.(odd/even)	Numbering	Double screw odd numbers Cat. No.	Price \$	Double screw even numbers Cat. No.	Price \$
9	1-17 & 2-18	TGPEN92SODD		TGPEN92SEVE	
18	1-35 & 2-36	TGPEN182SODD		TGPEN182SEVE	
24	1-47 & 2-48	TGPEN242SODD		TGPEN242SEVE	
30	1-59 & 2-60	TGPEN302SODD		TGPEN302SEVE	
36	1-71 & 2-72	TGPEN362SODD		TGPEN362SEVE	
42	1-83 & 2-84	TGPEN422SODD		TGPEN422SEVE	
48	1-95 & 2-96	TGPEN482SODD		TGPEN482SEVE	

165 A bars - 2 x M8 studs & 2 x 25 mm tunnel terminals, remainder 2 screw 16 mm terminals

Earth and neutral bars - 300 A

No. tunnels	Numbering	Double screw Cat. No.	Price \$
18	1-18	CPEN18	
24	1-24	CPEN24	
36	1-36	CPEN36	
48	1-48	CPEN48	
60	1-60	CPEN60	
72	1-72	CPEN72	
84	1-84	CPEN84	
96	1-96	CPEN96	



Panelboard hardware

**to suit the CONCEPT family of panelboards
with Din-T or Safe-T MCBs**



Pole capacity	Numbering (odd/even)	Double screw odd numbers Cat. No.	Price \$	Double screw even numbers Cat. No.	Price \$
9	1-17 & 2-18	CPEN9ODD		CPEN9EVE	
18	1-35 & 2-36	CPEN18ODD		CPEN18EVE	
24	1-47 & 2-48	CPEN24ODD		CPEN24EVE	
30	1-59 & 2-60	CPEN30ODD		CPEN30EVE	
36	1-71 & 2-72	CPEN36ODD		CPEN36EVE	
48	1-95 & 2-96	CPEN48ODD		CPEN48EVE	

300 A bars - 2 x M10 & 2 x M8 studs and 6 x 25 mm tunnel terminals, remainder 2 screw 16 mm terminals.

(Studs suitable for 2 x 185 mm lugs and 50 mm and 70 mm lugs)

Earth and neutral bars - 400 A rated



Ways	(Hex head screws)	Tunnel terminals	Double screw even numbers Cat. No.	Price \$
8 way	2 x M10 & 8 x M8 studs	-	CPXEN8	
12 way	2 x M10 & 8 x M8 studs	4 x 35 mm ² tunnel term.	CPXEN12	
18 way	2 x M10 & 8 x M8 studs	10 x 35 mm ² tunnel term.	CPXEN18	
36 way	3 x M10 & 8 x M8 studs	28 x 35 mm ² tunnel term.	CPXEN36	

Extras

Description	Cat. No.	Price \$
Neutral bar extension - suits 165 A E/N bars - connection 2 x 185 mm lugs	NEB185	
Neutral bar extension - 300 A - suits 165 A E/N	NEB335	
Neutral bar mounting insulators (pair)	TGPINS	
Neutral bar insulated support (each)	CPBMN	
A4 Schedule card	CPSCHEDULECARD	
Schedule card holder (plastic)	CPSCHEDULEHOLD	
Touch-up paint charcoal spray can 150 g	392.00001	
Touch-up paint grey spray can 150 g	392.35554	
Touch-up paint orange spray can 150 g	392.35555	
Touch-up paint bright white spray can 150 g	392.00002	

NC Chassis

Concept Panelboard busbar chassis assemblies for Din-T MCBs



2

- Standard AS/NZS 3439-1
- Current rating 250 A and 400 A
- Encapsulated busbar (no insulation coating required)
- Withstand rating 250 A / 25 kA 0.1s (20 kA 0.3s)
- Withstand rating 400 A / 30 kA 0.1s (25 kA 0.3s)
- Busbar direct connect to 160 A & 250 A switch
- Top and bottom feed standard (top feed only pictured)
- Tee-offs 50 % capped
- IP 20 (maintained when fitted with 160 A & 250 A switch)
- IP 20 Connection kits to 250 A MCCB
- Interchangeable with CD chassis

Application

The Concept range of busbar chassis assemblies have been specifically designed for incorporation into the Concept family of panelboards, providing a secure mounting platform and connection system for the NHP Din-T range of MCBs. The busbars are fully enclosed therefore not requiring an insulated coating for electrical isolation. The new NC chassis are type tested and are mounted on a box section steel pan, powdercoated white.

CONCEPT Din-T - 250 chassis

Suits Din-T MCBs (18 mm pole pitch)

Pole capacity	Cut-out length (mm)	Pan height (mm) ²⁾	Cat. No. ¹⁾	250 A Price \$
12	111	134	NC212/183U	
18	165	188	NC218/183U	
24	219	242	NC224/183U	
30	273	296	NC230/183U	
36	327	350	NC236/183U	
42	381	404	NC242/183U	
48	435	458	NC248/183U	
54	489	512	NC254/183U	
60	543	566	NC260/183U	
72	651	674	NC272/183U	
78	705	728	NC278/183U	
84	759	782	NC284/183U	
96	867	890	NC296/183U	

Notes: ¹⁾ For top fed chassis delete "U" and replace with "TF" e.g. NCTF212183TF

²⁾ Add 40 mm for flared busbar at top and 56 mm for bottom of chassis.

For split chassis, order special chassis or order two top fed chassis and mount bottom chassis upside down and fit new label. See accessories for Cat. No.

OFF (line) side of MCB connects to chassis tee-off.

Combinations other than those listed above can be special ordered refer to NHP.

NC Chassis

Concept Panelboard busbar chassis assemblies for Din-T MCBs

CONCEPT Din-T - 400 A chassis

Suits Din-T MCBs (18 mm pole pitch)

Pole capacity	Cut-out length (mm)	Pan height (mm) ²⁾	Cat. No. ¹⁾	400 A Price \$
12	111	134	NC412/183U	
18	165	188	NC418/183U	
24	219	242	NC424/183U	
30	273	296	NC430/183U	
36	327	350	NC436/183U	
42	381	404	NC442/183U	
48	435	458	NC448/183U	
54	489	512	NC454/183U	
60	543	566	NC460/183U	
72	651	674	NC472/183U	
78	705	728	NC478/183U	
84	759	782	NC484/183U	
96	867	890	NC496/183U	
108	975	998	NC4108/183TF	

CONCEPT Din-T - 250 A chassis 4P

Suits Din-T 2P RCBOs (18 mm pole pitch)

Pole capacity	Cut-out 'C' length (mm)	Pan height (mm) ²⁾	Cat. No. ¹⁾	250 A Price \$
24	219	242	NC224/184U	
36	327	350	NC236/184U	
48	435	458	NC248/184U	
60	543	566	NC260/184U	
72	651	674	NC272/184U	

Chassis colours - Red, Black, White, Black, Blue, Black

CONCEPT Din-T - 250 A chassis 3P+N

Suits Din-T 4P MCBs (18 mm pole pitch)

Pole capacity	Cut-out 'C' length (mm)	Pan height (mm) ²⁾	Cat. No. ¹⁾	250 A Price \$
24	219	242	NC224183PNU	
48	435	458	NC248183PNU	
72	651	674	NC272183PNU	
96	887	890	NC296183PNU	

Notes: ¹⁾ For top fed chassis delete "U" and replace with "TF" e.g. NCTF212183TF

²⁾ Add 40 mm for flared busbar at top and 56 mm for bottom of chassis.

For split chassis, order special chassis or order two top fed chassis and mount bottom chassis upside down and fit new label. See accessories for Cat. No.

OFF (line) side of MCB connects to chassis tee-off.

Combinations other than those listed above can be special ordered refer to NHP.

NC Chassis

Concept Panelboard busbar chassis assemblies for Din-T MCBs

CONCEPT Din-T - 400 A chassis

Suits Din-T10H MCBs (27 mm pole pitch)

Pole capacity	Cut-out 'C' length (mm)	Pan height (mm) ²⁾	Cat. No. ¹⁾	400 A Price \$
6	84	107	NCH46/273U	
12	165	188	NCH412/273U	
18	244	267	NCH418/273U	
24	327	350	NCH424/273U	

CONCEPT Din-T - 400 A chassis

Suits Din-T MCBs and Din-T10H MCBs (27/18 mm pole pitch)

Pole capacity 27 mm	Pole capacity 18 mm	Cut-out 'C' length (mm)	Pan height (mm) ²⁾	Cat. No. ¹⁾	400 A Price \$
6	12	192	215	NCH46/1227/183U	
6	24	300	323	NCH46/2427/183U	
6	36	408	431	NCH46/3627/183U	
6	48	516	539	NCH46/4827/183U	
12	30	435	458	NCH412/3027/183U	
12	42	543	566	NCH412/4227/183U	
12	60	705	728	NCH412/6027/183U	

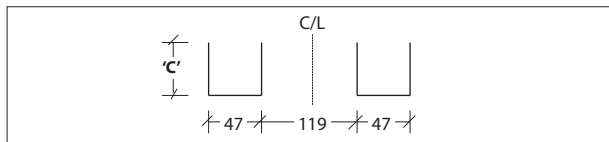
CONCEPT Din-T 250 A chassis 1P + N (DC)

Suits 2P Din-T DC MCBs (18 mm pitch)

Pole capacity	Cut-out 'C' length (mm)	Pan height (mm)	Cat. No.	Price \$
24	219	242	NC224182U	
36	327	350	NC236182U	
48	435	458	NC248182U	
60	543	566	NC260182U	

Chassis colours - Red and black.

Escutcheon critical cut-out dimensions



Notes: ¹⁾ For top fed chassis delete "U" and replace with "TF" e.g. NC224184TF.

²⁾ Add 55 mm for flared busbar at top and bottom of chassis.

4 pole and other special configurations available to special order refer NHP.
OFF (line) side of MCB connects to chassis tee-off.

Combinations other than those listed above can be special ordered refer to NHP.

NC Chassis

Concept Panelboard busbar chassis assemblies for Din-T MCBs

Accessories for NC chassis

Description	Cat. No.	250 A Price \$
Tee-off cap (18 mm tee-off)	NC250TOPC	
Tee-off cap (27 mm tee-off)	NC250HTOPC	
Busbar cap (each)	NCBBC	
3P back cover	NCBC	
4P back cover	NCBC4	
Label 24 pole (Red, White, Blue)	NCL243	
Label 24 pole (Custom-field modifiable)	NCL24C	
Label 18 pole (Red, White, Blue) 27 mm pitch	NCH123	
Connection kits		
S160, E/S 250 MCCB direct connect to NC Chassis	NCCK200	
S160, E/S 250 MCCB TAG connect to NC chassis	NCCK250	
E/S 400 MCCB TAG connect to NC chassis	NCCK400	
SLB 400 TAG connect to NC chassis	NCCK4002	
Support bracket to mount S250	NCS250GT	
Support bracket 400 A chassis NCCK400	CPPBNC400GT	

2

GB Isolation Chassis

Concept Panelboard busbar chassis assemblies for Din-T MCBs

2

- Standard AS/NZS 3439.1
- Current rating 250 A 3P & 4P
- Tee-Off isolator (AC20)
- Integrated and switchable 4th pole
- Padlocking option
- Enclosed busbar
- 1, 2, 3 & 4 pole toggle conversion kit
- Withstand rating 250 A l_{cw} 25 kA 0.1S and 10 kA 1.0S
- Withstand rating 250 A l_{cc} 63 kA- S250PE
- Busbar direct connect 160 A & 250 A switch
- IP 20 direct connect switch and MCCB connection kits
- Interchangeable with NC or CD chassis



NEW
Isolation
chassis



The Concept range of busbar chassis assemblies have been specifically designed for incorporation into the Concept family of panelboards, providing a secure mounting platform and connection system for the NHP Din-T range of MCBs. The busbars are fully enclosed therefore not requiring an insulated coating for electrical isolation. The new GB chassis has an isolation switch for each individual TEE-OFF, are type tested and are mounted on a box section steel pan, powdercoated white.

CONCEPT Din-T - 250 A chassis

Suits Din-T MCBs (18 mm pole pitch)

Connection	Pole capacity	Cut-out length (mm)	Bar Height (mm) ²⁾	Cat. No.	Price \$
Top Feed ¹⁾	12	110	140	GB212183TF	
	24	218	248	GB224183TF	
	36	326	356	GB236183TF	
	48	434	464	GB248183TF	
	60	542	572	GB260183TF	
	72	650	680	GB272183TF	
	84	758	788	GB284183TF	
	96	866	896	GB296183TF	
Universal Feed	12	110	140	GB212183U	
	24	218	248	GB224183U	
	36	326	356	GB236183U	
	48	434	464	GB248183U	
	60	542	572	GB260183U	
	72	650	680	GB272183U	
	84	758	788	GB284183U	
	96	866	896	GB296183U	

Notes: ¹⁾ For bottom feed replace TF with BF.

²⁾ Add 41 mm for busbar tags at top or bottom as applicable.
Chassis cannot be split, use a top feed and bottom feed in lieu.

GB Isolation Chassis

Concept Panelboard busbar chassis assemblies for Din-T MCBs

CONCEPT Din-T - 250 A chassis 4 pole Suits Din-T 2P RCBOs (18 mm pole pitch)

Connection	Pole capacity	Cut-out 'C' length (mm)	Pan Height (mm) ²⁾	Cat. No. ¹⁾	Price \$
Top Feed ¹⁾	24	218	248	GB224184TF	
	48	434	464	GB248184TF	
	72	650	680	GB272184TF	
	96	866	896	GB296184TF	
Universal Feed	24	218	248	GB224184U	
	48	434	464	GB248184U	
	72	650	680	GB272184U	
	96	866	896	GB296184U	

Chassis colours - Red, Black, White, Black, Blue, Black

CONCEPT Din-T - 250 A chassis 3PN Suits Din-T 4P MCBs (18 mm pole pitch)

Connection	Pole capacity	Cut-out 'C' length (mm)	Pan Height (mm) ²⁾	Cat. No. ¹⁾	Price \$
Top Feed ¹⁾	24	218	248	GB224183PNTF	
	48	434	464	GB248183PNTF	
	72	650	680	GB272183PNTF	
	96	866	896	GB296183PNTF	
Universal Feed	24	218	248	GB224183PNU	
	48	434	464	GB248183PNU	
	72	650	680	GB272183PNU	
	96	866	896	GB296183PNU	

Chassis colours - Red, White, Blue, Black

CONCEPT Din-T - 250 A chassis 1P + N (DC) Suits 2P Din-T DC MCBs (18 mm pole pitch)

Connection	Pole capacity	Cut-out 'C' length mm	Pan Height (mm) ²⁾	Cat. No.	Price \$
Top Feed ¹⁾	24	218	248	GB224182TF	
	48	434	464	GB248182TF	
	72	650	680	GB272182TF	
	96	866	896	GB296182TF	

Chassis colours - Red and Black

Notes: ¹⁾ For bottom feed replace TF with BF.

²⁾ Add 41 mm for busbar tags at top or bottom as applicable.

Chassis cannot be split, use a top feed and bottom feed in lieu.

GB Isolation Chassis

Concept Panelboard busbar chassis assemblies for Din-T MCBs

CONCEPT Din-T - 250 A chassis

Suits 1P Din-T MCBs (18 mm pole pitch)

Connection	Pole capacity	Cut-out 'C' length mm	Pan Height (mm) ²⁾	Cat. No.	Price \$
	24	218	248	GB224181TF	
Top	48	434	464	GB248181TF	
Feed ¹⁾	72	650	680	GB272181TF	
	96	866	896	GB296181TF	

Chassis colours - Red

Accessories for GB chassis

Description	Cat. No.	Price \$
Tee-off cap	GBTOC	
Busbar cap	GBBBC	
Padlock mechanism (factory fit)	GBLM	
Togglebar 1P	GBTB1	
Togglebar 2P	GBTB2	
Togglebar 3P	GBTB3	
Togglebar 4P	GBTB4	
Back cover 3P - Katko switch	GBSPP3P	
Back cover 4P - Katko switch	GBSPP4P	
Interpole barrier	GBIB	
Through terminal 100 A	DINTT100	
Label escutcheon 1-47 LH	GBL148L	
Label escutcheon 2-48 RH	GBL148R	
Label escutcheon 49-95 LH	GBL4996L	
Label escutcheon 50-96 RH	GBL4996R	
Label - R,W,B main bars 3P	GBPL3P	
Label - R, W, B, N main bar 4P	GBPL4P	
Label - blank pole label	GBUSL	
Connection kit 200 A 3P	GBCK200	
Connection kit 200 A 4P	GBCK2004P	
Connection kit 250 A 3P	GBCK250	
Connection kit 250 A 4P	GBCK2504P	

Notes: ¹⁾ For bottom feed replace TF with BF.

²⁾ Add 41 mm for busbar tags at top or bottom as applicable.

Chassis cannot be split, use a top feed and bottom feed in lieu.

CD Chassis

Concept-Plus and Concept-Premier busbar chassis assemblies for Din-T MCBs

- Standard AS/NZS 3439.1
- Current rating 250 A and 355 A
- Withstand rating 250 A / 20 kA for 0.2 sec (9 kA for 1 sec)
- Withstand rating 355 A / 25 kA for 0.3 sec (20 kA for 1 sec)
- Splayed busbar to suit 160 A & 250 A switch
- Top and bottom feed
- Tee-offs stripped and 50 % capped
- Top power feed stripped and capped
- Full 35 mm DIN rail, improved MCB mounting security
- Improved insulation coating



Application

The Concept range of busbar chassis assemblies have been specifically designed for incorporation into the Concept-Plus and Concept-Premier range of multipurpose panelboards, providing a secure mounting platform and connection system for the NHP Din-T range of MCBs. The busbars are fully dipped and type tested and are mounted on a box section steel pan, powder coated white.

CONCEPT Din-T - 250 A chassis Suits Din-T MCBs (18 mm pole pitch)

Pole capacity	Cut-out 'C' length (mm)	Pan height (mm) ¹⁾	Cat. No.	250 A Price \$
12	110	152	CD212/183U	
18	164	206	CD218/183U	
24	218	260	CD224/183U	
30	272	314	CD230/183U	
36	326	368	CD236/183U	
42	380	422	CD242/183U	
48	434	476	CD248/183U	
54	488	530	CD254/183U	
60	542	584	CD260/183U	
72	650	692	CD272/183U	
78	704	746	CD278/183U	
84	758	800	CD284/183U	
96	866	908	CD296/183U	

Notes: ¹⁾ Add 32.5 mm for flared busbar at top and bottom of chassis.
 4 pole and other special configurations available to special order refer NHP.
 'OFF' (line) side of MCB connects to chassis tee-off.
 Use insulated tool provided to disengage DIN clip when removing MCB from chassis. DIN clip can be removed and discarded when mounting MCB on CD chassis.

CD Chassis

Concept•Plus and Concept•Premier busbar chassis assemblies for Din-T MCBs

CONCEPT Din-T - 400 A chassis

Suits Din-T MCBs (18 mm pole pitch)

Pole capacity	Cut-out length (mm)	Pan height (mm) ¹⁾	Cat. No.	355 A Price \$
12	110	152	CD312/183U	
18	164	206	CD318/183U	
24	218	260	CD324/183U	
30	272	314	CD330/183U	
36	326	368	CD336/183U	
42	380	422	CD342/183U	
48	434	476	CD348/183U	
54	488	530	CD354/183U	
60	542	584	CD360/183U	
72	650	692	CD372/183U	
78	704	746	CD378/183U	
84	758	800	CD384/183U	
96	866	908	CD396/183U	

CONCEPT Din-T 355 A chassis

Suits Din-T and Din-T10H MCBs (27/18 mm pole pitch)

Pole cap. 27 mm	Pole cap. 18 mm	Cut-out length 'C' (mm)	Pan Height (mm)	Cat. No. ¹⁾	Price \$
6	12	191	228	CDH36/1227/183U	
6	24	299	380	CDH36/2427/183U	
6	36	407	488	CDH36/3627/183U	
12	30	434	471	CDH312/3027/183U	
12	42	542	579	CDH312/4227/183U	
12	60	704	741	CDH312/6027/183U	

Accessories CD chassis

Description	Cat. No.	Price \$
Split tariff kit 250/355 A (supplied loose)	STKCD	
Split tariff kit (supplied & fitted)	REFER NHP	
Plastic tee-off cap 250/355 A	CD250TOPC	

Notes: ¹⁾ Add 32.5 mm for flared busbar at top and bottom of chassis.
 4 pole and other special configurations available to special order refer NHP.
 'OFF' (line) side of MCB connects to chassis tee-off.
 Use insulated tool provided to disengage DIN clip when removing MCB from chassis. DIN clip can be removed and discarded when mounting MCB on CD chassis.

CT Chassis

Concept-Plus and Concept-Premier busbar chassis assemblies for Safe-T MCBs

- Standard AS/NZS 3439.1
- Current rating 250 A and 355 A
- Withstand rating 250 A / 20 kA for 0.2 sec
- Withstand rating 355 A / 20 kA for 1 sec
- Splayed busbar to suit 160 A & 250 A switch
- Top and bottom feed
- Tee-offs stripped and 50 % capped
- Top power feed stripped and capped
- 25 mm pole pitch, Safe-T MCBs
- Improved insulation coating



2

CONCEPT Safe-T - 250 & 355 A chassis Suits Safe-T MCBs

Pole capacity	Cut-out 'C' length (mm)	Pan height (mm) ¹⁾ ²⁾	Cat. No.	250 A Price \$
12	147	221	CT 212/253	
18	222	296	CT 218/253	
24	297	371	CT 224/253	
30	372	446	CT 230/253	
36	447	521	CT 236/253	
42	522	596	CT 242/253	
48	597	671	CT 248/253	
60	747	821	CT 260/253	
72	897	971	CT 272/253	
84	1047	1121	CT 284/253	
96	1197	1271	CT 296/253	

Notes: ¹⁾ Add 25 mm for flared busbar at top of chassis.

²⁾ Add 22 mm for straight busbar at bottom of chassis.

4 pole and other special configurations available to special order refer NHP.

CT Chassis

Concept-Plus and Concept-Premier busbar chassis assemblies for Safe-T MCBs

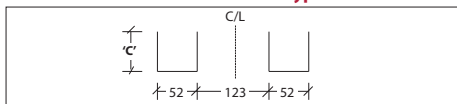
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Pole capacity	Cut-out 'C' length (mm)	Pan height (mm) ¹⁾ ²⁾	Cat. No.	355 A Price \$
12	147	221	CT 312/253	
18	222	296	CT 318/253	
24	297	371	CT 324/253	
30	372	446	CT 330/253	
36	447	521	CT 336/253	
42	522	596	CT 342/253	
48	597	671	CT 348/253	
60	747	821	CT 360/253	
72	897	971	CT 372/253	
84	1047	1121	CT 384/253	
96	1197	1271	CT 396/253	

Accessories CT chassis

Description	Cat. No.	Price \$
Split tariff kit 250 A (supplied loose)	STK250ND/TH	
Split tariff kit (supplied and fitted)	REFER NHP	
Plastic tee-off cap 250/355 A	TH250TOPC	

Escutcheon critical cut-out dimensions - CT type



Notes: ¹⁾ Add 25 mm for flared busbar at top of chassis.

²⁾ Add 22 mm for straight busbar at bottom of chassis.

4 pole and other special configurations available to special order refer NHP.

Panelboard DIN switch-fuse

Features

- Compact size suited for panelboard use
- Fuse covers are supplied standard
- Non-captive escutcheon mounting handle supplied standard



2

Ordering details

Description	Cat. No.	Price \$
160 A fuse switch 3 P	ISO 3160SFH	
200 mm extension shaft ¹⁾	L2000KT	

Technical data

Fuse switch ratings	ISO 3160 SFH
Rated insulation voltage, U_i (V)	1000
Rated impulse withstand voltage, U_{imp} (kV)	12
Rated thermal current, I_{th} (A)	160
Rated operational voltage, U_e (V)	690
Rated operational current, I_e (A)	
AC 21/22 415 V	160
AC 23 415 V	125
Rated fused short circuit current	
Back-up fuse (A)	160
RMS value (kA)	50
Peak value (kA)	11
Rated short circuit making capacity (kA)	11
Rated breaking capacity (A)	1000
Mechanical data	
Electrical endurance (no. of ops)	2000
Mechanical endurance (no. of ops)	20000
Terminals/bolt size Cu (mm ²)	6-70
Maximum terminal torque (Nm)	4.5
Fuse type	DIN size 00
Weight, less fuses (kg)	1.5

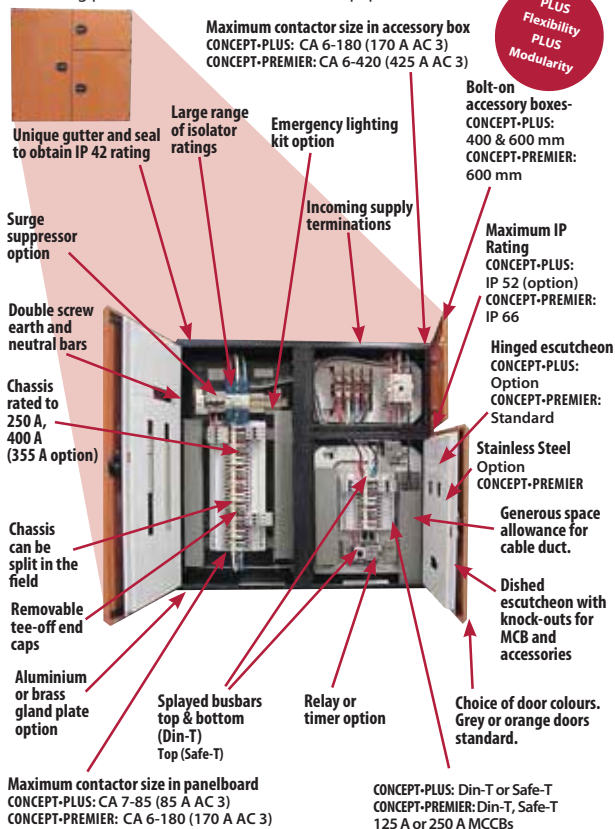
Notes: ¹⁾ Extension shaft required for CONCEPT•PREMIER panelboards.

Modular panelboards

2

Concept-Plus and Concept-Premier form a highly featured innovative range of panelboards for commercial and industrial applications. The widely accepted Concept-Plus can be used for a variety of indoor applications, while the Concept-Premier is suited to indoor or outdoor use. Application versatility is also increased because panelboards can be combined with accessory modules or simply bolted together to form custom modular constructions combining power distribution and control equipment.

PLUS
 Flexibility
 PLUS
 Modularity



*The above modular panelboard represents one possible combination of enclosures and equipment.

TemBreak 1 and 2 MCCBs

	Page
Introduction to TemBreak 2	3 - 2
Internal accessory installation TemBreak 1 and 2	3 - 8
Technical reference tables	3 - 12
MCCB types and setting ranges	3 - 16
MCCBs by amp rating	
T2SW Add on CT block for MCCBs	3 - 20
0.7 A - 12 A (XM30PB)	3 - 21
125 A	3 - 24
160 A / 250 A	3 - 42
400 A	3 - 69
630 A	3 - 85
630 A / 800 A	3 - 103
1000 A	3 - 113
1250 A	3 - 121
1600 A	3 - 122
2000 A	3 - 128
2500 A	3 - 129
3200 A	3 - 130
Accessories for MCCBs	
0.7 A - 12 A (XM30PB)	3 - 22
125 A	3 - 32
160 A - 250 A	3 - 59
400 A / 630 A	3 - 92
630 A / 800 A	3 - 115
1000 A / 1250 A / 1600 A	3 - 123
2000 A / 2500 A / 3200 A	3 - 131
Earth Leakage MCCBs	3 - 133
Switch disconnectors MCCBs	3 - 142
DC MCCBs	3 - 143
Plug-in MCCBs	3 - 146
TemBreak 2 and TemBreak 1 Cross Reference	3 - 148
TO / TG / TT, TemBreak 2, TemBreak 1 Cross Reference	Section 9

The TemBreak 1 & 2 product lines

TemBreak 2 Moulded Case Circuit Breakers

Rated current (I_n) from 12 A to 1600 A.

Breaking Capacity (I_{cu}) from 25 kA to 200 kA at 400/415 V AC.

3



Earth Leakage MCCB



250 A



1600 A

TemBreak 1 Moulded Case Circuit Breakers

Rated current (I_n) from 630 A to 3200 A.

Breaking Capacity (I_{cu}) from 50 kA to 125 kA at 400/415 V AC.



800 A



3200 A

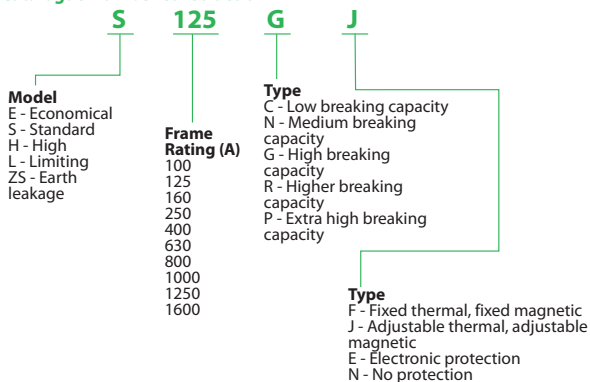
TemBreak 2

Easy selection guide – TemBreak 2 MCCBs

The TemBreak 2 range of products includes:

- Moulded Case Circuit Breakers (MCCBs)
- Earth Leakage MCCBs
- Switch-Disconnectors in the same compact moulded case frame sizes as MCCBs
- A comprehensive range of accessories which are common to MCCBs and Switch-Disconnectors. All internal accessories are common to all frame sizes.

Catalogue Number construction



About TemBreak 2

1. Field installable accessories



- Accessories can be fitted by the switchboard builder or added by the end-user. All internal accessories are common for TemBreak 2 MCCBs.
- Handles and motor operators can be rapidly fitted using the locking pegs. It takes less than 10 seconds to secure a handle or motor to the MCCB.
- All accessories are endurance tested to the same level as the host MCCB.

2. Higher kA ratings in Small Frame sizes

125 A Frame models now feature versions to 65 kA, while 250 A Frame models go to 200 kA.



3. Modular and Common sizes



- All current ratings up to 1600 A can be supplied in 9 frame sizes.
- 400 A and 630 A MCCB are a common size. (400 AF)
- The compact 125 A size offers the same features and performance but with reduced dimensions.
- 800/ 1000 are a common size
- 1250/ 1600 A common height and width
- 160/ 250 A common size

About TemBreak 2

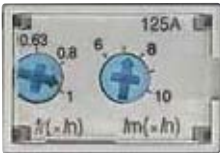
4. IP 65 or IP 55 variable depth handles

IP 55 or IP 65 on MCCBs
125 A to 1600 A.



3

5. Increased Thermal-Magnetic flexibility



Overload protection is adjustable between 63 % and 100 % of the rating.

Short-circuit protection is adjustable on all thermal magnetic models.

Short-circuit protection settings are suitable for motor starting on all models, including the compact 125 A and 250 A frames.

6. Electronic protection in a 250 A Frame

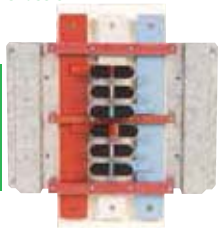


The adjustability of an electronic MCCB in a 250 A Frame MCCB. OCR Ratings range from 16 A to 250 A.

About TemBreak 2

7. 250 A Frame MCCBs:

12 A - 250 A on a common chassis



250 AF MCCBs are available ranging from:

- 12 A – 250 A @ 25, 30 kA (E/S 160-250)
- 32 A – 250 A @ 36, 65 kA (S160-250)
- 16 A – 250 A @ 70 kA (S250PE)

3

8. Compact Transfer Switches



A mechanical interlock is used with two MCCBs, and is compatible with motor operators and handles. An automatic changeover system can be assembled by a switchboard builder or end-user, from components. Alternatively, pre-assembled transfer switches are available.

Changeover pair with link interlock and motor operators



Viewed from side (250 A frame)

9. Transfer Switch Controller options



- Timer / Relay controller TLP2 – offers a simple system of logic control from easy to obtain NHP components
- Temlogic 2 electronic controller for transfer switches. (TL101)
- Suitable for Tembreak 1 and 2 MCCBs.

About TemBreak 2

10. Visual safety



Coloured indicators display the ON or OFF status. The indicators are fully covered if the breaker trips, so that black is the only visible colour.

11. Direct opening



Under the heading "Measures to minimise the risk in the event of failure", IEC 60204-1 Safety of Machinery-Electrical Equipment of Machinery includes the following recommendation:

- "-the use of switching devices having positive (or direct) opening operation."
- MCCBs, motors, auxiliaries, alarms (heavy duty) are all direct opening

12. ZS Integral Earth Leakage MCCB



The Terasaki earth leakage MCCB is contained within a standard 125/160/250/ 400/ 630/ 800 A frame size.

13. Metering MCCBs

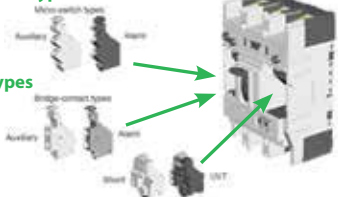


- TemBreak 2 metering & Modbus comms MCCBs 100 A to 1000 A
- 250 AF (16 A to 250 A) MCCB with Modbus energy metering output
- External meter display option for all metering MCCBs
- Choice of Ammeter only or multifunction energy metering display
- All new TemBreak 2 MCCB range extension to 800 A to 1600 A

Accessories to suit TemBreak 2, 125 - 1600 AF

Accessory fitting combinations

General purpose types



Heavy duty types

3





Standard TemBreak 2 MCCBs 125 A - 1600 A

Permissible combinations and locations

Accessories to suit TemBreak 2, 125 - 1600 AF

Accessory fitting combinations

Frame size (A)	125	160 and 250	400 and 630	800 and 1000	1250 and 1600
E	E125	E250	E400 E630		
S	S125 ZS125 ¹⁾	S160 S250 ZS250 ¹⁾	S400 S630 ZS630 ¹⁾	S800 S1000 ZS800 ¹⁾	S1250 S1600
H		H125 H160 H250	H400	H800	
L		L125 L160 L250	L400	L800	
AUX ALA SHT					
AUX ALA UVT					
AUX ALA SHT					
AUX ALA UVT					

-  Auxilliary Switch = ALA
-  Alarm Switch = ALA
-  Shunt Trip = SHT
-  Undervoltage Trip = UVT

Notes: ¹⁾ Shunts and UVTs cannot be installed in ZS ELCBs.

General purpose and heavy duty status indication switches cannot be mixed in the same MCCB.

It is not possible to install a shunt trip and an undervoltage trip in an MCCB as they occupy the same location. Undervoltage trips can provide remote tripping if necessary by wiring a normally closed contact or pushbutton in series with the protected supply.

Undervoltage trips with time delays require an external time delay controller which clips to the side of the MCCB.

Special 'EA' TemBreak 2 MCCBs 125 A - 250 A

Permissible combinations EA (extra auxiliary) version and locations

- Auxiliary contact blocks: Depending on the auxiliary type and MCCB size, up to 4 auxiliary switches can be fitted in the LEFT and RIGHT pockets.
- Alarm contact blocks: a maximum of 2 can be installed in an MCCB. One LEFT, one RIGHT.
- One Shunt Trip or one Under-Voltage Trip can be installed in the RIGHT side. Both cannot be mounted in an MCCB together as they occupy the same position. When auxiliaries or alarms are fitted in the RIGHT side, shunts and UVT's cannot be fitted.



For more specific information on internal accessory combinations and maximum allowable, refer to the table below.

Permissible combinations of EA MCCBs ¹⁾

MCCB type 3 - 4 pole	MCCB left side				MCCB right side					
	General purpose type		or	Heavy duty type		General purpose type		or	Heavy duty type	
	Auxiliary	Alarm		Auxiliary	Alarm	Auxiliary	Alarm		Auxiliary	Alarm
125 A	2	1	1	1	2	1	1	1	2	
160 / 250 A	2		2		2					
125 / 250 A					1 Shunt or 1 Under Voltage Trip					

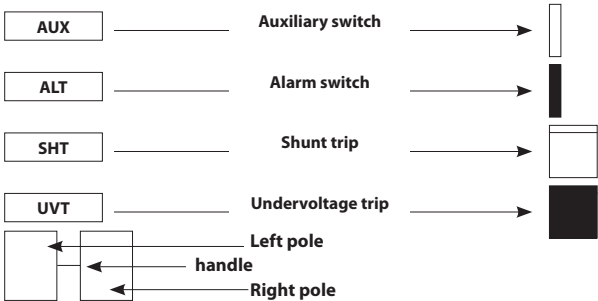
ZS Intergral Earth leakage MCCB - internal accessory fitting.

MCCB type 3 - 4 pole	MCCB left side				MCCB right side	
	General purpose type		or	Heavy duty type		
	Auxiliary	Alarm		Auxiliary		Alarm
125 A	2	1	1	1	Right side pocket area occupied by earth leakage circuitry. Shunts and UVT's cannot be installed.	
160 / 250 A	2		2			

Notes: ¹⁾ Certain MCCB models will be stocked with the extra auxiliary option. They are S125GJ, S160NJ (20 / 32 A) S160GJ, S250GJ. Other MCCB "EA" types are available on indent.

ZS integral Earth leakage MCCBs only accept auxiliaries and alarms. See table above for auxiliary and alarm options.

TemBreak 1 standard combinations of internally mounted accessories



UVT rating

A. Inst type

- AC 100 ~ 120 V
- AC 200 ~ 240 V
- AC 380 ~ 450 V
- DC 24 V
- DC 48 V
- DC 60 V
- DC 100 ~ 115 V
- DC 200 ~ 230 V

XM30PB

XS 125PJ
XS-125CJ
XS-125NJ
XH-125NJ

XS 160PJ
XS-250NJ
XH-250NJ

XS400
XH/XS400
XS630
XH/XS630
XS800
XH/XS800
XS1250
XS1600

XS2000
XS2500
XS3200

B. Time delay type

- AC 100 ~ 120 V
- AC 200 ~ 240 V
- AC 380 ~ 450 V

SHT rating

- AC 100 ~ 115 V
- AC 200 ~ 480 V
- AC 24 V
- AC 48 V
- DC 12 V
- DC 24 V
- DC 30 V
- DC 48 V
- DC 60 V
- DC 100 ~ 115 V
- DC 125
- DC 200 ~ 230 V

AUX					
ALT					
SHT					
UVT					
AUX ALM					
AUX SHT					
AUX UVT					
ALT SHT					
ALT UVT					
AUX ALT SHT					
AUX ALT UVT					

Notes: 2 pole type is the same as the 3 pole type with the centre pole omitted.
If provided with UVT for AC, use the UVT controller.







TemBreak 2 MCCB kA ratings 20 A - 630 A

Ampere Range	400/415 V Icu kA rating								
	25	30	36	50	65	70	85	125	200
12.5 – 125	25								
16 – 125	25								
15 – 100	65				65				
12.5 – 125			36	1)					
12.5 – 125					65				
12.5 – 125								125	
12.5 – 125									200
12.5 – 160	25								
12.5 – 160			36						
32 – 160					65				
100 – 160								125	
100 – 160									200
12.5 – 250	25								
160 – 250			36						
160 – 250					65				
16 – 250						70			
160 – 250								125	
16 – 250								125	
160 – 250									200
252 – 400	25								
160 – 400			36						
160 – 400				50					
100 – 400				50					
160 – 400						70			
100 – 400						70			
100 – 400							85		
100 – 400								125	
252 – 400									200
252 – 630			36						
252 – 630				50					
252 – 630					70				

Isolator switches	Short time rating for 0.3 seconds Icw (kA)
125	2
160	3
250	3
400	5
630	5

Colour Key

MCCB labels are similarly colour coded via a coloured rectangle around the catalogue number on the breaker.

 Motor Circuit Range - XM	 High kA range - H
 Economy Range - E	 Limitor Range - L
 Standard range - S	 Isolators/ Non-auto - N

Thermal Magnetic OCR	Electronic OCR	Catalogue Number
Yes	-	E125NJ
Yes	-	S125NF
Yes	-	S100GF
Yes	-	S125NJ
Yes	-	S125GJ/Z5125GJ
Yes	-	H125NJ
Yes	-	L125NJ
Yes	-	S160NF
Yes	-	S160NJ
Yes	-	S160GJ/ZS250GJ
Yes	-	H160NJ
Yes	-	L160NJ
Yes	-	E250NJ
Yes	-	S250NJ
Yes	-	S250GJ/Z5250GJ
-	Yes	S250PE
Yes	-	H250NJ
-	Yes	H250NE
Yes	-	L250NJ
Yes	-	E400NJ
Yes	-	S400CJ
Yes	-	S400NJ
-	Yes	S400NE
Yes	-	S400GJ/ ZS400GF
-	Yes	S400GE
-	Yes	S400PE
-	Yes	H400NE
-	Yes	L400NE
-	Yes	E630NE
-	Yes	S630CE
-	Yes	S630GE
-	-	S125NN
-	-	S160NN
-	-	S250NN
-	-	S400NN
-	-	S630NN

Notes: ¹⁾ 20-32 A trip unit versions rated 30 kA.
 A TemBreak 1 to TemBreak 2 cross reference can be found at the rear of this section.
 See page 3 - 12 for colour key.

TemBreak 1 XM Motor Circuit MCCBs to 12 A, & 630 A – 3000 A MCCBs







TemBreak 2 MCCB 400A to 1600A kA Ratings / XM30PB

Ampere Range	400/415 V I _{cu} kA rating									
	25	30	36	50	65	70	85	125	200	
0.7 - 12	85									
500 - 630				50						
396 - 800			36							
700 - 800				50						
396 - 800				50						
396 - 800	65					70				
252 - 800						70				
250 - 800								125		
250 - 800									200	
400 - 1000						70				
500 - 1250							85			
640 - 1600							85			

Isolator switches	Short time rating for 0.3 seconds I _{cw} (kA)
800	10
1000	10
1250	15
1600	20

TemBreak 1 MCCBs 2000A to 3200A

Ampere Range	400/415 V I _{cu} kA rating									
	25	30	36	50	65	70	85	125	200	
1000-2000							85			
1250-2500							85			
1600-3200							85			

	Motor Circuit Range - XM		High kA range - H
	Economy Range - E		Limiter Range - L
	Standard range - S		Isolators/ Non-auto - N

Thermal Magnetic	Electronic OCR	Catalogue Number
Hydraulic - mag	-	XM30PB
Yes	-	ZS630NF
Yes	-	S800CJ
Yes	-	ZS800NF
Yes	-	S800NJ
Yes	-	S800RJ
-	Yes	S800RE
-	Yes	H800NE
-	Yes	L800NE
-	Yes	S1000NE
-	Yes	S1250GE
-	Yes	S1600NE

3

	S800NN
	S1000NN
	S1250NN
	S1600NN

Thermal Magnetic	Electronic OCR	Catalogue Number
-	Yes	XS2000NE
-	Yes	XS2500NE
-	Yes	XS3200NE



630/800 AF MCCB



1250/1600 AF MCCB

MCCB types and setting ranges

MCCBs with a common colour have the same physical dimensions

Ampere Range	415 V kA		Thermal Magnetic Trip Unit Adjustment	
	I_{CU}	I_{CS}	Thermal I_R	Magnetic I_M
12.5 – 125	25	19	0.63 – 100%	6 – 10 or 12M
16 – 125	25	13	Fixed	Fixed
15 – 100	65	33	Fixed	Fixed
12.5 – 125	36	36	0.63 – 100%	6 – 10 or 12M
12.5 – 125	65	36	0.63 – 100%	6 – 10 or 12M
12.5 – 125	125	85	0.63 – 100%	6 – 10 or 12M
12.5 – 125	200	150	0.63 – 100%	6 – 10 or 12M
16 – 160	25	19	Fixed	Fixed
12.5 – 160 ³⁾	36	36	0.63 – 100%	6 – 12M
32 – 160	65	36	0.63 – 100%	6 – 12M
100 – 160	125	85	0.63 – 100%	6 – 12M
100 – 160	200	150	0.63 – 100%	6 – 12M
12.5 – 250	25	19	0.63 – 100%	6 – 10 or 12M
160 – 250	36	36	0.63 – 100%	6 – 10M
160 – 250	65	36	0.63 – 100%	6 – 10M
16 – 250	70	70	–	–
160 – 250	125	85	0.63 – 100%	6 – 10M
16 – 250	125	85	–	–
160 – 250	200	150	0.63 – 100%	6 – 10M
252 – 400	25	25	0.63 – 100%	6 – 12M
160 – 400	36	36	0.63 – 100%	6 – 12M
160 – 400	50	50	0.63 – 100%	6 – 12M
100 – 400	50	50	–	6 – 12M
160 – 400	70	50	0.63 – 100%	6 – 12M
100 – 400	70	50	–	–
160 – 400	85	85	–	–
100 – 400	125	85	–	–
100 – 400	200	150	–	–
252 – 630	36	36	–	–
252 – 630	50	50	–	–
252 – 630	70	50	–	–

Isolator switches	Short time rating for 0.3 seconds I_{cw} (kA)	Rated short-circuit making capacity I_{cm} (kA)
125	2	3.6
160	3	6
250	3	6
400	5	9
630	5	9

Notes: 1) The STD settings are not adjustable, however by selecting different curve types, the STD setting will vary between $2.5 - 10 \times I_R$: for 250/400 A MCCBs and $2.5 - 8 \times I_R$: for 630 A MCCBs.

3) 20-32 A trip unit versions rated 30 kA.

Electronic OCR Adjustment		Dimensions (mm)			
Range I_R	STD x I_R / INST x IR ¹⁾²⁾	Catalogue Number	H	W	D
-	-	E125NJ	155	90	68
-	-	S125NF	155	30	68
-	-	S100GF	155	60	68
-	-	S125NJ	155	90	68
-	-	S125GJ	155	90	68
-	-	H125NJ	165	105	103
-	-	L125NJ	165	105	103
-	-	S160NF	165	35	68
-	-	S160NJ	165	105	68
-	-	S160GJ	165	105	68
-	-	H160NJ	165	105	103
-	-	L160NJ	165	105	103
-	-	E250NJ	165	105	68
-	-	S250NJ	165	105	68
-	-	S250GJ	165	105	68
40 – 100%	2.5, 5, 10 / 13 or 14	S250PE	165	105	103
-	-	H250NJ	165	105	103
40 – 100%	2.5, 5, 10 / 13 or 14	H250NE	165	105	103
-	-	L250NJ	165	105	103
-	-	E400NJ	260	140	103
-	-	S400CJ	260	140	103
-	-	S400NJ	260	140	103
40 – 100%	2.5, 5, 10 / 13 or 14	S400NE	260	140	103
-	-	S400GJ	260	140	103
40 – 100%	2.5, 5, 10 / 13 or 14	S400GE	260	140	103
40 – 100%	2.5, 5, 10 / 13 or 14	S400PE	260	140	103
40 – 100%	2.5, 5, 10 / 13 or 14	H400NE	260	140	140
40 – 100%	2.5, 5, 10 / 13 or 14	L400NE	260	140	140
40 – 100%	2.5, 5, 8 / 10 or 14	E630NE	260	140	103
40 – 100%	2.5, 5, 8 / 10 or 14	S630CE	260	140	103
40 – 100%	2.5, 5, 8 / 10 or 14		260	140	103
		S125NN	155	90	68
		S160NN	165	105	68
		S250NN	165	105	68
		S400NN	260	140	103
		S630NN	260	140	103

Notes: ²⁾ The instantaneous settings are not adjustable, however by selecting different curve types, the INST instantaneous setting will vary from 13 or 14 x I_R ; for 400 A MCCBs and 10 or 14 x I_R for 630 A MCCBs. Refer curve examples & setting data in Section 9.

ZS ELCB / XM30PB / 800 A to 3200 A MCCB types and setting ranges

MCCBs with a common colour have the same physical dimensions

Ampere Range	415 V kA		Thermal Magnetic Trip Unit Adjustment		Electronic OCR Adjustment
	I _{CU}	I _{CS}	Thermal I _R	Magnetic I _M	Range I _R
0.7 - 12	85	85	-	-	-
12.5 - 125	65	36	0.63 - 100%	-	-
100 - 250	65	36	0.63 - 100%	-	-
250 - 400	70	-	-	6 - 12M	-
500 - 630	50	-	-	6 - 10M	-
396 - 800	36	36	0.63 - 100%	5 - 10M	-
396 - 800	50	50	0.63 - 100%	5 - 10M	-
700 - 800	50	-	-	6 - 10M	-
396 - 800	70	50	0.63 - 100%	5 - 10M	-
252 - 800	70	50	-	-	40 - 100%
250 - 800	125	94	-	-	40 - 100%
250 - 800	200	150	-	-	40 - 100%
400 - 1000	70	50	-	-	40 - 100%
500 - 1250	85	65	-	-	40 - 100%
640 - 1600	85	65	-	-	40 - 100%
1000-2000	85	64	-	-	50 - 100%
1250-2500	85	64	-	-	50 - 100%
1600-3200	85	64	-	-	50 - 100%

Isolator switches

	Short time rating for 0.3 seconds ICW (kA)	Rated short-circuit Making capacity ICM (kA)
800	10	17
1000	10	17
1250	15	32
1600	20	45

STD x I _R / INST x I _R (1)	Catalogue Number	H	Dimensions 3P (mm)		
			W	D	
-	XM30PB	148	78	97	
-	ZS125GJ	155	90	68	
-	ZS250GJ	165	105	68	
-	ZS400GF	260	140	103	
-	ZS630NF	273	210	103	
-	S800CJ	273	210	103	
-	S800NJ	273	210	103	
-	ZS800NF	273	210	103	
-	S800RJ	273	210	103	
2.5, 5, 10 / 12 or 14	S800RE	273	210	103	
2.5, 5, 10 / 12 or 14	H800NE	273	210	140	
2.5, 5, 10 / 12 or 14	L800NE	273	210	140	
2.5, 5, 10 / 10 or 14	S1000NE	273	210	103	
2.5, 5, 10 / 12 or 14	S1250GE	370	210	120	
2.5, 5, 10 / 12 or 14	S1600NE	370	210	140	
LSI Adjustable	XS2000NE	450	320	185	
LSI Adjustable	XS2500NE	450	320	185	
LSI Adjustable	XS3200NE	450	320	185	

	S800NN	273	210	103	
	S1000NN	273	210	103	
	S1250NN	370	210	120	
	S1600NN	370	210	140	



T2SW Add-on current and voltage metering blocks

Block dimensions (mm) excluding MCCB

	125 AF		250 AF		400/ 630 AF	
	3P	4P	3P	4P	3P	4P
Height ²⁾	85	85	85	85	86	86
Width	90	120	105	140	140	185
Depth ³⁾	66	66	66	66	88	88

Ordering details

Suit MCCB type	Pri-Poles	mary	T2SW block Cat. No.	Price \$	Optional load side terminal cover Cat. No.	Price \$
E125, S125	3	125 A	T2SW3P1251255K		T2SW3P125TC	
E125, S125	4	125 A	T2SW4P1251255K		T2SW4P125TC	
H125, E/S/ H16/25	3	150 A	T2SW3P2501505K		T2SW3P250TC	
H125, E/S/ H16/25	3	250 A	T2SW3P2502505K		T2SW3P250TC	
H125, E/S/ H16/25	4	150 A	T2SW4P2501505K		T2SW4P250TC	
H125, E/S/ H16/25	4	250 A	T2SW4P2502505K		T2SW4P250TC	
E/S/H400, E/S630	3	400 A	T2SW3P6304005K		T2SW3P630TC	
E/S/H400, E/S630	3	600 A	T2SW3P6306005K		T2SW3P630TC	
E/S/H400, E/S630	4	400 A	T2SW4P6304005K		T2SW4P630TC	
E/S/H400, E/S630	4	600 A	T2SW4P6306005K		T2SW4P630TC	

Suit MCCB type	Frame size	Voltage Poles	Total Amp & voltage terminals	terminal quantity	T2SW block Cat. No.
E125, S125	125	3	0 ¹⁾	6	T2SW3P1251255K
E125, S125	125	4	4 (3+N)	10	T2SW4P1251255K
H125, E/S/H/L 16/25	160, 2503	3	3	9	T2SW3P2501505K
H125, E/S/H/L 16/25	160, 2503	3	3	9	T2SW3P2502505K
H125, E/S/H/L 16/25	160, 2504	4 (3+N)	4 (3+N)	10	T2SW4P2501505K
H125, E/S/H/L 16/25	160, 2504	4 (3+N)	4 (3+N)	10	T2SW4P2502505K
E/S/H400, E/S630	400, 6303	3	3	9	T2SW3P6304005K
E/S/H400, E/S630	400, 6303	3	3	9	T2SW3P6306005K
E/S/H400, E/S630	400, 6304	4 (3+N)	4 (3+N)	10	T2SW4P6304005K
E/S/H400, E/S630	400, 6304	4 (3+N)	4 (3+N)	10	T2SW4P6306005K

Notes: ¹⁾ Voltage lugs supplied for mounting on external bars for 125 A 3 pole block.

²⁾ Height excludes connection bars

³⁾ Refer NHP for additional dimension data

TemBreak co-ordination motor protection Circuit breakers - XM30PB

85 kA**Current rating:** 0.7 – 12 A**Approvals and tests:** Standards: AS/NZS 3947-2 and IEC 60947-2**Interrupting capacity:** Symmetrical amps (kA RMS)**Trip unit:** Fixed hydraulic-magnetic

3

	Voltage	Icu kA	Ics kA
AC use	400/415	85	85

Dimensions (mm)

Poles	3
H	148
W	78
D (less toggle)	97
Weight (kg)	1.3

Amp rating NRC	Cat. No.	Price \$
0.7	XM30PB0.7 3P	
1.4	XM30PB1.4 3P	
2.0	XM30PB2.0 3P	
2.6	XM30PB2.6 3P	
4	XM30PB4 3P	
5	XM30PB5 3P	
8	XM30PB8 3P	
10	XM30PB10 3P	
12	XM30PB12 3P	

Notes: NRC: Nominal rated current.

Accessories to suit XM30PB

Internal accessories - factory fit

		Cat. No.	Price \$
Shunt trip	110 V AC SHT (100 – 115 V)	2H1931BAA	
	240 V AC SHT (200 – 480 V)	2H1931BBA	
	24 V DC SHT	2H1931BCA	
	48 V DC SHT	2H1931BDA	
	110 V DC SHT (100 – 115 V)	2H1931BEA	
	24 V AC SHT	2H1932BAD	
	48 V AC SHT	2H1932BBA	
	12 V DC SHT	2H1932BDA	
	125 V DC SHT	2H1932BGA	
	200 V DC SHT (200 – 230 V)	2H1932BHA	
Auxiliary switches	AUX SW right/left hand 1C	UXXB0001D	
	AUX SW right/left hand 2C	UXXB0003C	
Alarm switches	Alarm SW right/left hand	UXLB0006C	
Alarm & auxiliary switches	Alarm/AUX SW right/left hand 1C	UXLB0008C	

External accessories - user fit

		Cat. No.	Price \$
Solderless terminals	3 P solderless terminals (6)	TXBD0009A	
	IP55 Grey variable depth handle + 357 mm shaft	T1HS03R5GM	
Handle operators	T1HS escutcheon plate option: 100 mm ²	T2HSESC100	
	90 mm T pin shaft for T2HS - no flexi coupling	T2HS250SHAFT	
	IP65 Grey variable depth handle + 420 mm shaft	T1HP03R6BNA4	
	Padlock attachment for T2HP/HS mechanism	T1HP30PALK	
	IP55 direct mount fixed depth handle	TFJ21PB	
	Trapped Key interlock	Prosafe shot bolt lock HS handles xx code	TKNHPXX
Prosafe standard key xx code for above		TKNHPKEYXX	
Cam for T2HS handle shafts Key codes A to Z are available. Specify by changing the key code above.		14997702	
TemPlug	3 P Templug	UPX330PB 1)	
Terminal Cover	Line side terminal screw cover	XM30TSC	

Notes: 1) Price schedule 'T3' applies for this item.

CAPTIVE LOCK ATTACHMENTS

Securely locks off Terasaki Tembreak2 circuit breakers.

POWER PROTECTION



PP-TERASAKI-CAP-LOCK-CPB

- Three types: T2HL12CAP, T2HL25CAP, T2HL40CAP
- Also available for 1 Pole MCCBs
- Consists of a fully moulded front cover with built-in padlockable flap
- Off position padlockable as standard
- Knockout provided for ON position padlocking
- Internal accessory fitting not affected
- Locking not padlock size dependant
- Suits one lock up to 8 mm
- Accepts multiple padlock hasps
- XKA captive locks for MCCBs to 800 A also available
- Can be field fitted
- Suits MCCBs up to 630 A
- Suits ZS earth leakage MCCBs
- Accepts a compression seal

TemBreak 2 Thermal magnetic type E125NJ

25 kA

Current rating: 12.5 – 125 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:



3

	Voltage	Icu	Ics
AC use	380/415	25	19
DC use	250	25	19

Trip unit: Adjustable thermal (0.63 Ir to 100 % Ir) and adjustable magnetic

Dimensions (mm)

Poles	3
H	155
W	90
D (less toggle)	68
Toggle cut-out	104

Ampere Rating NRC	Adj. Ir ¹⁾ Min. – Max.	Adj. Im ¹⁾ Min. – Max.	Cat. No.	3 pole Price \$
20	12.5 – 20	120 – 240	E125 NJ 3 20	
32	20 – 32	192 – 384	E125 NJ 3 32	
50	32 – 50	300 – 600	E125 NJ 3 50	
63	40 – 63	378 – 756	E125 NJ 3 63	
100	63 – 100	600 – 1200	E125 NJ 3 100	
125	80 – 125	750 – 1250	E125 NJ 3 125	

Notes: ¹⁾ Adj. Ir: Adjustable thermal setting
 Adj. Im: Adjustable magnetic setting
 NRC: Nominal rated current
 Magnetic only MCCBs are available on request.
 For 4 pole MCCBs refer S125GJ type.

TemBreak 2 Thermal magnetic type S125NF

25 kA

Current rating: 16 – 125 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	230	25	13



3

Trip unit: Fixed thermal magnetic

Dimensions (mm)

Poles	1
H	155
W	30
D (less toggle)	68
Toggle cut-out	104

Ampere Rating	NRC	Ir	Im	Cat. No.	1 pole Price \$
16	16	16	208	S125 NF 1 16	
20	20	20	260	S125 NF 1 20	
25	25	25	325	S125 NF 1 25	
32	32	32	420	S125 NF 1 32	
40	40	40	520	S125 NF 1 40	
50	50	50	650	S125 NF 1 50	
63	63	63	820	S125 NF 1 63	
80	80	80	1040	S125 NF 1 80	
100	100	100	1300	S125 NF 1 100	
125	125	125	1550	S125 NF 1 125	



Optional terminal covers



Optional captive lock attachment

Notes: For Interpole Barriers, Terminal Covers and Padlock attachments refer to accessories pages.

Ir: thermal rating

Im: magnetic rating

NRC: Nominal rated current

S125NF will not accept rear connection studs. (S160NF types do)

TemBreak 2 Thermal magnetic type S100GF

65 kA

Current rating: 15 – 100 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	230	85	85
	380/415	65	33
DC use		40	40



Black TemBreak 2
MCCB

Trip unit: Fixed thermal magnetic

Dimensions (mm)

Poles	2
H	155
W	60
D (less toggle)	68
Toggle cut-out required 52 ¹⁾ or 104	

Accessories

Has mounting provision for any 1 (one) of the following: TemBreak 2 accessories UVT or Shunt or a combination of up to 2 Auxiliaries plus 1 Alarm.

Will accept standard TemBreak 2 external accessories such as: interpole barriers, terminal connection options, toggle locks, and 2 pole terminal covers.

Refer accessories pages. Will not accept motors or handles due to the 60 mm width of the MCCB.

Ampere Rating NRC	I _r	I _m	Cat. No.	2 pole Price \$
15	15	180	S100 GF 2 15	
20	20	240	S100 GF 2 20	
30	30	360	S100 GF 2 30	
40	40	480	S100 GF 2 40	
50	50	600	S100 GF 2 50	
60	60	720	S100 GF 2 60	
75	75	900	S100 GF 2 75	
100	100	1200	S100 GF 2 100	

Notes: ¹⁾ S100GF 2 Pole MCCBs require a 52 mm cut-out as the toggle area is 50 mm high.

I_r: thermal rating

I_m: magnetic rating

NRC: Nominal rated current

Magnetic only MCCBs are available on request.

TemBreak 2 Thermal magnetic type S125NJ

36 kA

Current rating: 12.5 – 125 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	380/400	36	36
DC use	250	25	19



3

Trip unit: Adjustable thermal (0.63 Ir to 100 % Ir) and adjustable magnetic

Dimensions (mm)

Poles	3
H	155
W	90
D (less toggle)	68
Toggle cut-out	104

Ampere Rating NRC	Adj. Ir ¹⁾ Min. – Max.	Adj. Im ¹⁾ Min. – Max.	Cat. No.	3 pole Price \$
20	12.5 – 20	120 – 240	S125 NJ 3 20	
32	20 – 32	192 – 384	S125 NJ 3 32	
50	32 – 50	300 – 600	S125 NJ 3 50	
63	40 – 63	378 – 756	S125 NJ 3 63	
100	63 – 100	600 – 1200	S125 NJ 3 100	
125	80 – 125	750 – 1250	S125 NJ 3 125	

Notes: ¹⁾ Adj. Ir: Adjustable thermal setting
 Adj. Im: Adjustable magnetic setting
 NRC: Nominal rated current
 Magnetic only MCCBs are available on request.
 For 4 pole MCCBs refer S125GT types.

TemBreak 2 Thermal magnetic type S125GJ

65 kA

Current rating: 12.5 – 125 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	380/400	65	36
DC use	250	40	40



Trip unit: Adjustable thermal (0.63 Ir to 100 % Ir) and adjustable magnetic

Poles	3	4
H	155	155
W	90	120
D (less toggle)	68	68
Toggle cut-out	104	104

3 Pole

Ampere Rating NRC	Adj. Ir ¹⁾ Min. – Max.	Adj. Im ¹⁾ Min. – Max.	Cat. No.	3 pole Price \$
20	12.5 – 20	120 – 240	S125 GJ 3 20 ²⁾	
32	20 – 32	192 – 384	S125 GJ 3 32 ²⁾	
50	32 – 50	300 – 600	S125 GJ 3 50 ²⁾	
63	40 – 63	378 – 756	S125 GJ 3 63 ²⁾	
100	63 – 100	600 – 1200	S125 GJ 3 100 ²⁾	
125	80 – 125	750 – 1250	S125 GJ 3 125 ²⁾	

4 Pole

Ampere Rating NRC	Adj. Ir ¹⁾ Min. – Max.	Adj. Im ¹⁾ Min. – Max.	Cat. No.	4 pole Price \$
20	12.5 – 20	120 – 240	S125 GJ 4 20 ²⁾	
32	20 – 32	192 – 384	S125 GJ 4 32 ²⁾	
50	32 – 50	300 – 600	S125 GJ 4 50 ²⁾	
63	40 – 63	378 – 756	S125 GJ 4 63 ²⁾	
100	63 – 100	600 – 1200	S125 GJ 4 100 ²⁾	
125	80 – 125	750 – 1250	S125 GJ 4 125 ²⁾	

- Notes:** ¹⁾ Adj. Ir: Adjustable thermal setting
 Adj. Im: Adjustable magnetic setting
²⁾ To obtain MCCBs that accept additional internal auxiliary circuits add "EA" to the above Cat. No.'s. E.g.: S125GJ3125EA. Otherwise leave blank. Refer NHP for availability. Refer page 3 - 9 for details.
 NRC: Nominal rated current
 Magnetic only MCCBs are available on request.

TemBreak 2 690V AC High Fault Interruption MCCB L125PJ

70 kA

Current rating: 12.5 – 125 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	690 V	70	33



3

Trip unit: Adjustable thermal (0.63 I_r to 100 % I_r) and adjustable magnetic
 Adjustable magnetic 6 I_m to 12 I_m, trip unit: 20 A to 100 A
 6 I_m to 10 I_m, trip unit: 125 A

Poles	3
H	165
W	105
D (less toggle)	103
Toggle cut-out	48
	105 on chassis ¹⁾

Ampere Rating NRC	Adj. I_r Min. – Max.	Adj. I_m Min. – Max.	Cat. No.	Price \$
20	12.5 – 20	120 – 240	L125 PJ 3 20	
32	20 – 32	192 – 384	L125 PJ 3 32	
50	32 – 50	300 – 600	L125 PJ 3 50	
63	40 – 63	378 – 756	L125 PJ 3 63	
100	63 – 100	600 – 1200	L125 PJ 3 100	
125	80 – 125	750 – 1250	L125 PJ 3 125	

Notes: ¹⁾ Not suitable for reverse connection either individually or on chassis.
 Suitable for general motor starting and power distribution applications.
 Refer to NHP for availability of 4 pole version.
 Adj. I_r: Adjustable thermal setting
 Adj. I_m: Adjustable magnetic setting
 NRC: Nominal rated current

TemBreak 2 Thermal magnetic type H125NJ

125 kA

Current rating: 12.5 – 125 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	380/415	125	85
DC use	250	40	40



Trip unit: Adjustable thermal (0.63 Ir to 100 % Ir) and adjustable magnetic

Dimensions (mm)

Poles	3	4
H	165	155
W	105	140
D (less toggle)	105	103
Toggle cut-out	104	104

*H125NJ is a 250 AF MCCB

3 Pole

Ampere Rating NRC	Adj. Ir ¹⁾ Min. – Max.	Adj. Im ¹⁾ Min. – Max.	Cat. No.	3 pole Price \$
20	12.5 – 20	120 – 240	H125 NJ 3 20	
32	20 – 32	192 – 384	H125 NJ 3 32	
50	32 – 50	300 – 600	H125 NJ 3 50	
63	40 – 63	378 – 756	H125 NJ 3 63	
100	63 – 100	600 – 1200	H125 NJ 3 100	
125	80 – 125	750 – 1250	H125 NJ 3 125	

4 Pole

Ampere Rating NRC	Adj. Ir ¹⁾ Min. – Max.	Adj. Im ¹⁾ Min. – Max.	Cat. No.	4 pole Price \$
20	12.5 – 20	120 – 240	H125 NJ 4 20	
32	20 – 32	192 – 384	H125 NJ 4 32	
50	32 – 50	300 – 600	H125 NJ 4 50	
63	40 – 63	378 – 756	H125 NJ 4 63	
100	63 – 100	600 – 1200	H125 NJ 4 100	
125	80 – 125	750 – 1250	H125 NJ 4 125	

Notes: ¹⁾ Adj. Ir: Adjustable thermal setting
 Adj. Im: Adjustable magnetic setting
 NRC: Nominal rated current

TemBreak 2 Thermal magnetic type L125NJ

200 kA

Current rating: 12.5 – 125 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	380/415	200	150
DC use	250	40	40



3

Trip unit: Adjustable thermal (0.63 Ir to 100 % Ir) and adjustable magnetic

Dimensions (mm)

Poles	3	4
H	165	165
W	105	140
D (less toggle)	103	103
Toggle cut-out	104	104

*L125NJ is a 250 AF MCCB

3 Pole

Ampere Rating NRC	Adj. Ir ¹⁾ Min. – Max.	Adj. Im ¹⁾ Min. – Max.	Cat. No.	3 pole Price \$
20	12.5 – 20	120 – 240	L125 NJ 3 20	
32	20 – 32	192 – 384	L125 NJ 3 32	
50	32 – 50	300 – 600	L125 NJ 3 50	
63	40 – 63	378 – 756	L125 NJ 3 63	
100	63 – 100	600 – 1200	L125 NJ 3 100	
125	80 – 125	750 – 1250	L125 NJ 3 125	

4 Pole

Ampere Rating NRC	Adj. Ir ¹⁾ Min. – Max.	Adj. Im ¹⁾ Min. – Max.	Cat. No.	4 pole Price \$
20	12.5 – 20	120 – 240	L125 NJ 4 20	
32	20 – 32	192 – 384	L125 NJ 4 32	
50	32 – 50	300 – 600	L125 NJ 4 50	
63	40 – 63	378 – 756	L125 NJ 4 63	
100	63 – 100	600 – 1200	L125 NJ 4 100	
125	80 – 125	750 – 1250	L125 NJ 4 125	

Notes: ¹⁾ Adj. Ir: Adjustable thermal setting
 Adj. Im: Adjustable magnetic setting
 NRC: Nominal rated current

Accessories to suit 125 A TemBreak 2



Internal accessories

Cat. No.

Price \$

Shunt trips Internal accessories are common for MCCBs 125 A to 630 A. All have screw terminals except those indicated below with wire leads.

For 2, 3 and 4 pole MCCBs

SH

110 V AC	T2SH00A10TA ¹⁾
230 – 240 V AC	T2SH00A20TA ¹⁾
400 – 415 V AC	T2SH00A40TA ¹⁾
12 V DC	T2SH00C01TA ¹⁾
24 V DC (Suits 24 V AC)	T2SH00D02TA ¹⁾
48 V DC	T2SH00D04TA ¹⁾
110 V DC	T2SH00D10TA ¹⁾
230 V DC	T2SH00D20TA ¹⁾

Undervolt- **Instantaneous operation**
age trips

UV

110 V AC	T2UV00A10NTA
200 – 240 V AC	T2UV00A20NTA
380 – 450 V AC	T2UV00A40NTA
24 V DC	T2UV00D02NTA
110 V DC	T2UV00D10NTA
230 V DC	T2UV00D20NTA

Time delayed operation (500 ms) – refer NHP

Auxiliary & Alarm switches **General type (2 A @ 240 V Inductive)**

AX AL

1 C/O Auxiliary	T2AX00M3STA
1 C/O Auxiliary – with 0.7 m wire leads	T2AX00M3SWA
1 C/O Alarm	T2AL00M3STA
1 C/O Alarm – with 0.7 m wire leads	T2AL00M3SWA

Heavy-duty type (4 A @ 240 V Inductive)

1 N/O Auxiliary	T2AX00B1STA
1 N/C Auxiliary	T2AX00B2STA
1 N/O Alarm	T2AL00B1STA
1 N/C Alarm	T2AL00B2STA

Micro switching type (very low voltages)

1 C/O Auxiliary	T2AX00M3RTA
1 C/O Alarm	T2AL00M3RTA

Notes: ¹⁾ Wire lead types available.

Accessories to suit 125 A TemBreak 2

External accessories		Cat. No.	Price \$	
Motor operators	Suits MCCB types E125, S125			
	110 V AC	T2MC12A10NB		
	230 – 240 V AC	T2MC12A24NB		
	24 V DC	T2MC12D02NB		
	48 V DC	T2MC12D04NB		
	110 V DC	T2MC12D10NB		
	MC	H125, L125		
		110 V AC	T2MC25A10NB	
		230 – 240 V AC	T2MC25A24NB	
		24 V DC	T2MC25D02NB	
48 V DC		T2MC25D04NB		
110 V DC		T2MC25D10NB		
Motor Accessories	Motor connection cable loom for electrical interlocking for transfer switches			
	T2MC12 cable 500 mm 125/250AF	T2MM25L05A		
	T2MC12 cable 1500 mm 125/250AF	T2MM25L15A		
	Motor options: Contact NHP for key locking and auto-reset.			
	MCCB identification labels	T12CAPLAB		



T2 HB Direct mounted handle

Door mounted escutcheon plate



T2 MC Motor operator



Variable depth T2HP handle



T2HS Variable depth handle

Accessories to suit 125 A TemBreak 2

External accessories		Cat. No.	Price \$	
<div style="background-color: green; color: white; padding: 5px; font-weight: bold; font-size: 24px; text-align: center;">3</div> Operating handles Direct mounting, fixed depth, IP 54	Suits MCCB types			
	E125, S125			
	Grey/black	T2HB12UR5BN		
	Red/yellow	T2HB12UR5RN		
	H125, L125			
	Grey/black	T2HB25UR5BN		
	Red/yellow	T2HB25UR5RN		
	Optional MCCB identification labels	T12CAPLAB		
	HB Door interlocking variable depth handle	E125, S125		
		Grey IP 55 handle + 357 mm shaft	T2HS12R5GM	
Red/ yellow IP 55 handle 357 mm shaft		T2HS12R5RM		
Escutcheon plate option: 100 mm ²		T2HSESC100		
90 mm T pin shaft for T2HS - no flexi coupling		T2HS250SHAFT		
HS		Grey/ black IP65 handle + 420 mm shaft	T2HP12R6BN	
		Red/ yellow IP65 handle + 420 mm shaft	T2HP12R6RN	
HP		Padlock attachment for T2HP/HS mechanism	T2HP25PALK	
		Optional MCCB identification labels	T12CAPLAB	
H125, L125 IP 55 handle + 357 mm shaft Red/ yellow IP 55 handle + 357 mm shaft Large escutcheon plate option: 100 mm ² 90 mm T pin shaft for T2HS - no flexi coupling Grey/ black IP 65 handle + 420 mm shaft Red/ yellow IP 65 handle + 420 mm shaft Padlock attachment for T2HP/ HS mechanism Optional MCCB identification labels		E125, S125		
	IP 55 handle + 357 mm shaft	T2HS25R5GM		
	Red/ yellow IP 55 handle + 357 mm shaft	T2HS25R5RM		
	Large escutcheon plate option: 100 mm ²	T2HSESC100		
	90 mm T pin shaft for T2HS - no flexi coupling	T2HS250SHAFT		
	Grey/ black IP 65 handle + 420 mm shaft	T2HP25R6BN		
	Red/ yellow IP 65 handle + 420 mm shaft	T2HP25R6RN		
	Padlock attachment for T2HP/ HS mechanism	T2HP25PALK		
	Optional MCCB identification labels	T12CAPLAB		



T2HS handle mechanism with T2HP25PALK mechanism lock



T2HS handle with T2HSESC100 escutcheon plate

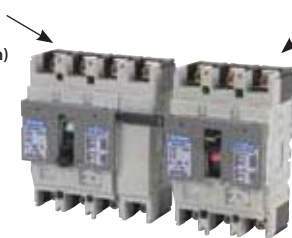
Accessories to suit 125 A TemBreak 2

External accessories

		Cat. No.	Price \$
Mechanical Interlocks	Link Interlock – suitable for manual or motorised operation. Will accept handles. Suitable for front or rear connect type MCCBs.		
Link type	Suits MCCB types E125, S125		
ML	Common 3 or 4 pole right side section	T2ML12RA	
	3 pole left side section	T2ML12L3A	
	4 pole left side section	T2ML12L4A	
	MCCB identification labels	T12CAPLAB	
	H125, L125		
	Common 3 or 4 pole right side section	T2ML25RA	
	3 pole left side section	T2ML25L3A	
	4 pole left side section	T2ML25L4A	
	MCCB identification labels	T12CAPLAB	

3

Left section 3 or 4 pole
(T2ML12L4A shown)



Common right section
(T2ML12RA shown)

Link interlock on MCCBs, T2ML



Link interlock on MCCBs with motors and electrical interlocking cable T2MM

Notes: Handles supplied with shaft
Refer to Section 5 if MCCB labels are required or refer to NHP.

Accessories to suit 125 A TemBreak 2

	External accessories	Cat. No.	Price \$	
MS	Slide type interlock	Manual operation, padlockable. Does not allow motors, handles or other front mounted accessories to be fitted.		
		Suitable for front or rear connection		
		E125, S125 MCCB types		
		3 pole	T2MS123SFA	
		4 pole	T2MS124SFA	
		H125, L125		
	3 pole	T2MS253LFA		
	4 pole	T2MS254LFA		
MW	Cable interlock	Allows an MCCB to be mounted horizontally, vertically or diagonally. Accepts Motors and handles.		
		Suitable for 3 or 4 pole MCCBs		
		E125, S125 MCCB types		
		Interlock kit less wire	T2MW12CA ¹⁾	
		MCCB identification labels	T12CAPLAB	
		H125, L125		
		Interlock kit less wire	T2MW25CA	
	MCCB identification labels	T12CAPLAB		
	Wire for above interlocks	T2MW00SA ²⁾		
	Wire 1.0 M			
	Wire 1.5 M	T2MW00LA ²⁾		



Slide interlock on
MCCBs, T2MS



Cable interlock on MCCBs, T2MW

Notes: ¹⁾ Order one interlock kit for each MCCB.
²⁾ One wire length will cover two MCCBs.

Accessories to suit 125 A TemBreak 2

External accessories		Cat. No.	Price \$
Terminal	Front connected MCCBs		
Covers Flush IP 20	Suits MCCB types E125, S125		
CS	1 pole cover set of 2	T2CS121SG	
	3 pole cover set of 2	T2CS123SG	
	4 pole cover set of 2	T2CS124SG	
	H125, L125		
	3 pole cover set of 2	T2CS253SG	
	4 pole cover set of 2	T2CS254SG	
Short terminal covers	E125, S125		
CF	3 pole cover set of 2, 22 mm long	T2CF123SSNBA	
	4 pole cover set of 2, 22 mm long	T2CF124SSNBA	
Standard terminal covers	E125, S125		
CF	1 pole cover set of 2, 40 mm long	T2CF121SLNG	
	2 pole cover set of 2, 40 mm long	T2CF122SLNG	
	3 pole cover set of 2, 40 mm long	T2CF123SLNG	
	4 pole cover set of 2, 40 mm long	T2CF124SLNG	
	H125, L125		
	3 pole cover set of 2, 40 mm long	T2CF253LLNG	
	4 pole cover set of 2, 40 mm long	T2CF254LLNG	



T2CS Flush IP20 Cover



T2CF Short terminal



Single pole terminal cover



T2CF Standard terminal covers



T2RC Rear connect terminal cover

Accessories to suit 125 A TemBreak 2

External accessories		Cat. No.	Price \$
CR Terminal covers rear connect 3 Terminal and cover locking clip	Suits MCCB types		
	E125, S125		
	3 pole cover set of 2	T2CR123SG	
	4 pole cover set of 2	T2CR124SG	
	H125, L125		
	3 pole cover set of 2	T2CR253SG	
	4 pole cover set of 2	T2CR254SG	
	A clip that provides additional terminal cover position locking also allows a sealing device to be fitted.		
	All sizes 125, 250, 400, 630 AF	T2CF00L	
BA Interpole Barriers ^{1) 2)}	Suits MCCB types		
	E125, S125		
	Interpole barrier (Qty 2)	T2BA123SHA	
	H125, L125		
	Interpole barrier (Qty 2)	T2BA253LHA	
HL Toggle locks	Non Captive: Fits up to 3 padlocks or a multiple lock device		
	2, 3 and 4 pole E/S125 lock	T2HL25B	
	1 pole S125NF lock	UXKB0013A	
	Captive: Allows a single padlock or multiple padlock device		
	E125, S125		
	For 3/4 pole MCCBs 1 x 8 mm hole	T2HL12CAP	
For 1 pole MCCBs, 1 x 8 mm hole	T2HLS125NFCAP		
H125, L125			
	Lock with one 8 mm hole	T2HL25CAP	



T2CF locking clip



Non captive lock attachment



Inter pole barriers



Captive lock attachment

- Notes:** 1) Line side interpole barriers or terminal covers must be installed with MCCBs.
 2) Interpole Barriers are supplied with MCCBs as standard; 2 barriers with 3 pole MCCBs, and 3 barriers with 4 pole MCCBs.

Accessories to suit 125 A TemBreak 2

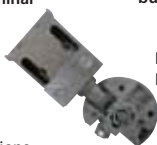
External accessories		Cat. No.	Price \$
ProSafe lock option ¹⁾	Allen-Bradley ProSafe locks can be used with T2HS variable depth handles. Refer NHP for direct mounting handle options.		
Suits MCCB types E/S/H/L 125			
TKN	Prosafe shot bolt lock HS handles xx code	TKNHPXX	
	Prosafe standard key xx code for above	TKNNHPKEYXX	
	Cam for T2HS handle shafts Key codes A to Z are available. Specify by changing the key code above.	14997702	
Extention Busbars	E125, S125		
	1 set of 2 of straight bars	T2FB251BA	
	3 pole set of 6 straight bars	T2FB123BA	
	4 pole set of 8 straight bars	T2FB124BA	
	H125, L125		
	1 set of straight terminal bars	T2FB251BA	
Tunnel clamp terminals	E125, S125		
	3 pole set of 6 terminals 50 mm ²	T2FW12S3A	
	4 pole set of 8 terminals 50 mm ²	T2FW12S4A	
	H125, L125		
	3 pole set of 6 terminals 35 - 120 mm ²	T2FW25L3B	
	4 pole set of 8 terminals 35 - 120 mm ²	T2FW25L4B	



T2FW Tunnel clamp terminals and optional T2CS terminal cover



T2FB Attached busbar



ProSafe key Interlock and cam

Notes: ¹⁾ Contact NHP for lock options.

Accessories to suit 125 A TemBreak 2

External accessories		Cat. No.	Price \$
Rear connect terminal studs	Suits MCCB types E125, S125 ¹⁾		
	3 pole kit, set of 6 studs	T2RP123SA	
	4 pole kit, set of 8 studs	T2RP124SA	
	H125, L125		
RP	3 pole kit, set of 6 studs	T2RP253LA	
	4 pole kit, set of 8 studs	T2RP254LA	
TemPlug	Suits MCCB types TemPlug MCCB line-side plug-in attachment E125, S125		
	UP		
	3 pole TemPlug	T2UPX3125	
	H125, L125		
	3 pole TemPlug (65 kA limit)	T2UPXE3250	
	Templugs suit 6.3 mm busbar as standard, 10 mm types indent		
OCR sealing cover	125/250 A thermal magnetic	T2SF25NTA	
SF			
PM	Plug-in MCCBs (refer rear of section 3)		
DR	Draw-out MCCBs (refer NHP)		



T2RP Rear connect studs



T2UPX Templug



T2SF OCR Seal kit. Suitable for a compression seal device.



T2CR Rear connect term cover

Notes: ¹⁾ 125 A rear connect studs will not fit to S125NF single pole MCCBs. S160NF single pole MCCBs will accept rear studs.

Accessories to suit 125 A TemBreak 2

External accessories		Cat. No.	Price \$
Pole fillers	Suits MCCB types E/S/H/L125		
PF	Pole filler 1 strip for a 46 mm high cut-out ¹⁾	DTPF	
	Pole filler, 30 mm wide for a 104 mm cut-out	XAB2	
DIN Rail Adaptor	Allows a 125 AF MCCB to be mounted on standard 35 mm DIN rail E125, S125		
DA	Metal DIN rail adaptor	T2DA12A	
Door flange	Provides an attractive panel cut-out surround for MCCBs or motors Suits MCCB types E/S/H/L125		
DF	MCCB IP 30 gland and gasket	T2DF25A	
	MOTOR IP 30 gland and gasket	T2DM25A	
Door mounting flush plate	A kit that allows an MCCB to be mounted directly onto a door		
FP	3 pole kit E125, S125	T2FP12S3B	
	4 pole kit E125, S125	T2FP12S4A	
Wire lead terminal block	125/250 AF left side	T2TF25LGA	
TF	125/250 AF right side	T2TF25RGA	

T2PF

Pole fillers



T2DF/DM

Door flange



T2TF

Wire lead terminal block

T2DA
DIN rail
adaptor

Notes: ¹⁾ 1 strip is 8 off, 9 mm segments. Order 2 strips for each 125 A MCCB.

TemBreak 2 Thermal magnetic type S160NF

25 kA

Current rating: 16 – 160 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
	230	25	19
AC use	125	15	8
DC use	125	15	–



Trip unit: Fixed thermal and magnetic

Dimensions (mm)

Poles	1
H	165
W	35
D (less toggle)	68
Toggle cut-out	104

Ampere Rating	NRC	Ir	Im	Cat. No.	1 pole Price \$
16	16	16	160	S160 NF 1 16	
20	20	20	200	S160 NF 1 20	
25	25	25	250	S160 NF 1 25	
32	32	32	320	S160 NF 1 32	
40	40	40	400	S160 NF 1 40	
50	50	50	500	S160 NF 1 50	
63	63	63	630	S160 NF 1 63	
80	80	80	800	S160 NF 1 80	
100	100	100	1000	S160 NF 1 100	
125	125	125	1250	S160 NF 1 125	
160	160	160	1600	S160 NF 1 160	



Optional terminal covers



Optional captive lock attachment

Notes: For Shunt Trips, Interpole Barriers and Terminal Covers refer to accessories pages.

Ir: thermal rating

Im: magnetic rating

NRC: Nominal rated current

S160NF will accept rear terminal studs.

TemBreak 2 Thermal magnetic type S160NJ

30 / 36 kA

Current rating: 12.5 – 160 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

20 – 32 A:

	Voltage	Icu	Ics
AC use	380/415	30	25
DC use	250	40	40

50 – 250 A:

	Voltage	Icu	Ics
AC use	380/415	36	36
DC use	250	40	40



3

Trip unit: Adj thermal (0.63 I_r to 100 % I_r) and adj magnetic

Dimensions (mm)

Poles	3
H	165
W	105
D (less toggle)	68
Toggle cut-out	104

3 Pole

Ampere Rating NRC	I _r ¹⁾ Min. – Max.	I _m ¹⁾ Min. – Max.	Cat. No.	3 pole Price \$
20	12.5 – 20	120 – 240	S160 NJ 3 20²⁾	
32	20 – 32	192 – 384	S160 NJ 3 32²⁾	
50	32 – 50	300 – 600	S160 NJ 3 50	
63	40 – 63	378 – 756	S160 NJ 3 63	
100	63 – 100	600 – 1200	S160 NJ 3 100	
125	80 – 125	750 – 1500	S160 NJ 3 125	
160	100 – 160	960 – 2080	S160 NJ 3 160	

Notes: ¹⁾ Adj. I_r: Adjustable thermal setting - Adj. I_m: Adjustable magnetic setting

²⁾ To obtain MCCBs that accept additional internal auxiliary circuits add "EA" to the above Cat. No.'s. E.g.: S125GJ3125EA.

Some types are stocked. Refer to NHP for availability. Refer page 3 - 9 for details.

NRC: Nominal rated current

Magnetic only MCCBs are available on request.

TemBreak 2 Thermal magnetic type S160GJ

65 kA

Current rating: 32 – 160 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	380/415	65	36
DC use	250	40	40



Trip unit: Adjustable thermal (0.63 I_n to 100 % I_n) and adjustable magnetic

Dimensions (mm)

Poles	3	4
H	165	165
W	105	140
D (less toggle)	68	68
Toggle cut-out	104	104

3 Pole

Ampere Rating NRC	Adj. Ir ¹⁾ Min. – Max.	Adj. Im ¹⁾ Min. – Max.	Cat. No. ²⁾	3 pole Price \$
50	32 – 50	300 – 600	S160 GJ 3 50	
63	40 – 63	378 – 756	S160 GJ 3 63	
100	63 – 100	600 – 1200	S160 GJ 3 100	
125	80 – 125	750 – 1500	S160 GJ 3 125	
160	100 – 160	960 – 2080	S160 GJ 3 160 ²⁾	

4 Pole

Ampere Rating NRC	Adj. Ir ¹⁾ Min. – Max.	Adj. Im ¹⁾ Min. – Max.	Cat. No. ²⁾	4 pole Price \$
50	32 – 50	300 – 600	S160 GJ 4 50	
63	40 – 63	378 – 756	S160 GJ 4 63	
100	63 – 100	600 – 1200	S160 GJ 4 100	
125	80 – 125	750 – 1500	S160 GJ 4 125	
160	100 – 160	960 – 2080	S160 GJ 4 160 ²⁾	

Notes: ¹⁾ Adj. Ir: Adjustable thermal setting
 Adj. Im: Adjustable magnetic setting
²⁾ To obtain MCCBs that accept additional internal auxiliary circuits add "EA" to the above Cat. No.'s. E.g.: S160GJ3160EA. Otherwise leave blank.
 NRC: Nominal rated current
 Magnetic only MCCBs are available on request.

TemBreak 2 Thermal magnetic type H160NJ

125 kA

Current rating: 100 – 160 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	380/415	125	85
DC use	250	40	40



3

Trip unit: Adjustable thermal (0.63 I_r to 100 % I_r) and adjustable magnetic (6 I_m to 13 I_m)

Dimensions (mm)

Poles	3	4
H	165	165
W	105	140
D (less toggle)	103	103
Toggle cut-out	104	104

3 Pole

Ampere Rating NRC	Adj. Ir ¹⁾ Min. – Max.	Adj. Im ¹⁾ Min. – Max.	Cat. No.	3 pole Price \$
160	100 – 160	960 – 2080	H160 NJ 3 160	

4 Pole

Ampere Rating NRC	Adj. Ir ¹⁾ Min. – Max.	Adj. Im ¹⁾ Min. – Max.	Cat. No.	4 pole Price \$
160	100 – 160	960 – 2080	H160 NJ 4 160	

Notes: ¹⁾ Adj. Ir: Adjustable thermal setting
 Adj. Im: Adjustable magnetic setting
 NRC: Nominal rated current

TemBreak 2 Thermal magnetic type L160NJ

200 kA

Current rating: 100 – 160 A

Approvals and Tests: Standards AS/NZS 3947-2
and IEC 60947-2

Interrupting capacity:



3

	Voltage	Icu	Ics
AC use	380/415	200	150
DC use	250	40	40

Trip unit: Adjustable thermal ($0.63 I_r$ to $100\% I_r$)
and adjustable magnetic ($6 I_m$ to $13 I_m$)

Dimensions (mm)

Poles	3	4
H	165	165
W	105	140
D (less toggle)	103	103
Toggle cut-out	104	104

3 Pole

Ampere Rating NRC	Adj. Ir ¹⁾ Min. – Max.	Adj. Im ¹⁾ Min. – Max.	Cat. No.	3 pole Price \$
160	100 – 160	960 – 2080	L160 NJ 3 160	

4 Pole

Ampere Rating NRC	Adj. Ir ¹⁾ Min. – Max.	Adj. Im ¹⁾ Min. – Max.	Cat. No.	4 pole Price \$
160	100 – 160	960 – 2080	L160 NJ 4 160	

Notes: ¹⁾ Adj. Ir: Adjustable thermal setting
Adj. Im: Adjustable magnetic setting
NRC: Nominal rated current

TemBreak 2 Thermal magnetic type E250NJ

25 kA

Current rating: 12.5 – 250 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	230	25	19
DC use	250	25	–



3

Trip unit: Adjustable thermal (0.63 I_n to 100 % I_n) and adjustable magnetic

Dimensions (mm)

Poles	3
H	165
W	105
D (less toggle)	68
Toggle cut-out	104

Ampere Rating NRC	Adj. I _r ¹⁾ Min. – Max.	Adj. I _m ¹⁾ Min. – Max.	Cat. No.	3 pole Price \$
20	12.5 – 20	120 – 240	E250 NJ 3 20	
32	20 – 32	192 – 384	E250 NJ 3 32	
50	32 – 50	300 – 600	E250 NJ 3 50	
63	40 – 63	378 – 756	E250 NJ 3 63	
100	63 – 100	600 – 1200	E250 NJ 3 100	
125	80 – 125	750 – 1500	E250 NJ 3 125	
160	100 – 160	960 – 2080	E250 NJ 3 160	
250	160 – 250	1500 – 2500	E250 NJ 3 250	

Notes: ¹⁾ Adj. I_r: Adjustable thermal setting
 Adj. I_m: Adjustable magnetic setting
 NRC: Nominal rated current
 Magnetic only MCCBs are available on request.

TemBreak 2 Thermal magnetic type S250NJ

36 kA

Current rating: 160 – 250 A

Approvals and Tests: Standards AS/NZS 3947-2
and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	380/415	36	36
DC use	250	40	40



Trip unit: Adjustable thermal ($0.63 I_r$ to $100\% I_r$) and adjustable magnetic ($6 I_m$ to $10 I_m$)

Dimensions (mm)

Poles	3	4
H	165	165
W	105	140
D (less toggle)	68	68
Toggle cut-out	104	104

3 Pole

Ampere Rating NRC	Adj. I_r ') Min. – Max.	Adj. I_m ') Min. – Max.	Cat. No.	3 pole Price \$
250	160 – 250	1500 – 2500	S250 NJ 3 250	

4 Pole

Ampere Rating NRC	Adj. I_r ') Min. – Max.	Adj. I_m ') Min. – Max.	Cat. No.	4 pole Price \$
250	160 – 250	1500 – 2500	S250 NJ 4 250	

Notes: '1) Adj. I_r : Adjustable thermal setting
Adj. I_m : Adjustable magnetic setting
NRC: Nominal rated current
Magnetic only MCCBs are available on request.
For smaller amp trip units in the same 36 kA frame size, refer S160NJ MCCBs.

TemBreak 2 Thermal magnetic type S250GJ

65 kA

Current rating: 160 – 250 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	380/415	65	36
DC use	250	40	40



3

Trip unit: Adjustable thermal (0.63 I_r to 100 % I_r) and adjustable magnetic (6 I_m to 10 I_m)

Dimensions (mm)

Poles	3	4
H	165	165
W	105	140
D (less toggle)	68	68
Toggle cut-out	104	104

3 Pole

Ampere Rating NRC	Adj. I _r ¹⁾ Min. – Max.	Adj. I _m ¹⁾ Min. – Max.	Cat. No. ²⁾	3 pole Price \$
250	160 – 250	1500 – 2500	S250 GJ 3 250	

4 Pole

Ampere Rating NRC	Adj. I _r ¹⁾ Min. – Max.	Adj. I _m ¹⁾ Min. – Max.	Cat. No. ²⁾	4 pole Price \$
250	160 – 250	1500 – 2500	S250 GJ 4 250	

Fixed low magnetic and standard magnetic only types

Ampere Rating NRC	Adj. I _r ¹⁾ Min. – Max.	Fixed magnetic	Cat. No. ²⁾	3 pole Price \$
250	160 – 250	750 A	S250 GJ 3 SO23160	
250	160 – 250	1000 A	S250 GJ 3 250M1000	
250	Magnetic trip only	2500 A	S250 GJ3 250MAG	

Notes: ¹⁾ Adj. I_r: Adjustable thermal setting

Adj. I_m: Adjustable magnetic setting

²⁾ To obtain MCCBs that accept additional internal auxiliary circuits add 'EA' to the above Cat. Nos. E.g.: S250GJ3250EA. Otherwise leave blank.

NRC: Nominal rated current

For smaller amp trip units in the same 65 kA frame size, refer S160GJ MCCBs.

MCCBs with Electronic Overcurrent Relays

TemBreak 2 Moulded Case Circuit Breakers to 1600 A are available with electronic overcurrent relays 250 A to 1600 A. Current ratings range from 16 A to 1600 A. The overcurrent relays are easy to adjust – simply select the current rating via a dial adjustment, and depending on the application, a dial selectable pre-set characteristic curve can also be selected.

STANDARD Overcurrent Relay

Features:

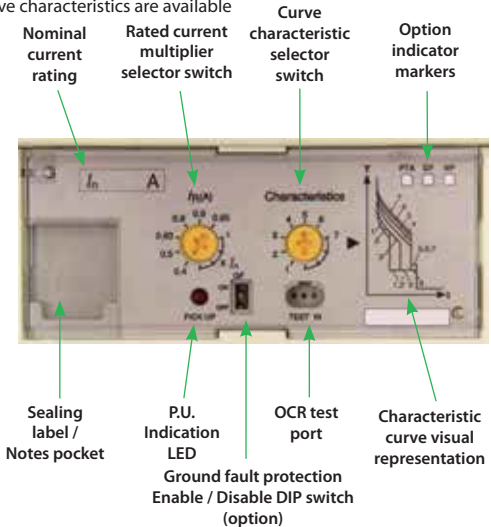
- Electronic overcurrent protection, for general and selectivity applications
- The number of characteristic curves will vary depending on the MCCB type
- Long Time, Short Time & Instantaneous trip times vary depending on the characteristic curve selected
- Base current I_r is adjustable from 40 % – 100 % of the nominal rated current I_n .
(dial settings are via incremental steps)

OCR Options:

- Ground fault trip on 400-1600 A models
- Neutral pole protection for 4 pole MCCBs
- Pre-trip alarm
- Special curve characteristics are available

Right:

Typical OCR adjustment and setting detail shown on electronic MCCBs (400/630 A shown)



Notes: Additional ELECTRONIC MCCB setting information can be found in Section 9.

TemBreak 2 Electronic type S250PE

70 kA

Current rating: 16 – 250 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	380/415	70	70

Overcurrent relay:

- Electronic, for general and selectivity applications
- 5 dial selectable characteristic curves suited for a variety of applications
- Base current I_r is adjustable from 40 % – 100 % of the nominal rated current I_n .

OCR Options:

- Neutral pole protection for 4 pole MCCBs only
- Pre-trip alarm

Dimensions (mm)

Poles	3	4
H	165	165
W	105	140
D (less toggle)	103	103
Toggle cut-out	104	104



3

TemBreak 2 Electronic type S250PE

3 Pole

Ampere Rating NRC	Adj. Ir Min. – Max.	Cat. No. ¹⁾	Price \$
40	16 – 40	S250 PE 3 40	
125	50 – 125	S250 PE 3 125	
250	100 – 250	S250 PE 3 250	

4 Pole

Ampere Rating NRC	Adj. Ir Min. – Max.	Cat. No. ¹⁾	Price \$
40	16 – 40	S250 PE 4 40	
125	50 – 125	S250 PE 4 125	
250	100 – 250	S250 PE 4 250	

Price Adder – For OCR options.

Ampere Rating NRC	Adj. Ir ¹⁾ Min. – Max.	Cat. No. ¹⁾	Price \$
3 P OCR options:	PTA ²⁾	S250 PE 3 AP 3	
	PTA ²⁾	S250 PE 4 AP 4	
4 P OCR options:	NP ²⁾	S250 PE 4 AN 4	
	PTA + NP ²⁾	S250 PE 4 APN 4	

Notes: ¹⁾ The STD and Instantaneous pickup current (I_{sd} & I_i) settings are not individually adjustable, however by selecting different curve types and different I_r settings the values will vary. Curve 1 & 2 $I_{sd} = 2.5 \times I_r$, curve 3 $I_{sd} = 5 \times I_r$, curves 4 – 5 $I_{sd} = 10 \times I_r$, I_r dial setting 0.4 – 0.9 $I_i = 14 \times I_r$ and I_r dial setting 0.95 – 1.0 $I_i = 10 \times I_r$. Refer curve examples and setting data in Section 9. NRC = Nominal rated current, I_r = Current adjustment dial setting, STD = Short Time Delay, INST = instantaneous

²⁾ To order a MCCB with the above options insert the required option after the pole to make up the Cat. No. E.g.: S250PE 4 APN 250 is a S250PE 4 Pole 250 A MCCB c/w Pre-trip Alarm and Neutral Protection.

TemBreak 2 Thermal magnetic type H250NJ

125 kA

Current rating: 100 – 250 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	380/415	125	85
DC use	250	40	40



3

Trip unit: Adjustable thermal ($0.63 I_r$ to $100\% I_r$) and adjustable magnetic ($6 I_m$ to $10 I_m$)

Dimensions (mm)

Poles	3	4
H	165	165
W	105	140
D (less toggle)	103	103
Toggle cut-out	104	104

3 Pole

Ampere Rating NRC	Adj. I _r Min. – Max.	Adj. I _m Min. – Max.	Cat. No.	3 pole Price \$
250	160 – 250	1500 – 2500	H250 NJ 3 250	

4 Pole

Ampere Rating NRC	Adj. I _r Min. – Max.	Adj. I _m Min. – Max.	Cat. No.	4 pole Price \$
250	160 – 250	1500 – 2500	H250 NJ 4 250	

TemBreak 2 Electronic MCCB with Energy Metering Output S250PE_AC

70 kA

Current rating: 16 – 250 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	415	70	70

MCCB Standard features:

- Electronic, for metering, selectivity, motor starting or general use
- 7 dial selectable characteristic suited to different applications
- Base current I_R adjustable from 40% - 100% of current I_n .
- STD setting $2.5 - 10 (x I_R)^2$
- INST setting $14 (Max 13 x I_n)^2$
- Energy (multifunction) metering output, A, V, P, kW, kWh, E, Pf, F
- Trip event log, Alarm event log
- Modbus RTU 485 communications output
- External door mounting meter option (T2ED not incl. in below pricing)
- Neutral Pole protection option for 4 pole MCCBs only (AN)
- Pre-Trip Alarm (AP) option

Dimensions (mm)

Poles	3
H	165
W	105
D (less toggle)	103
Toggle cut-out	48
	105 on chassis

Ampere Rating	NRC	Adj. I_R Min. – Max.	Cat. No. ¹⁾	T2ED 3 pole Price \$	4 pole Price \$
40		16 - 40	S250 PE 3 40 AC		
			S250 PE 4 40 AC		
125		50 - 125	S250 PE 3 125 AC		
			S250 PE 4 125 AC		
250		100 - 250	S250 PE 3 250 AC		
			S250 PE 4 250 AC		

Notes: ¹⁾ The STD and Instantaneous pickup currents (I_{sd} & I_i) settings are not individually adjustable, however by selecting different curve types and different I_R settings the values will vary. Curve 1 & 2 $I_{sd} = 2.5 x I_R$, curve 3 $I_{sd} = 5 x I_R$, curve 4 - 7 $I_{sd} = 10 x I_R$. I_R dial setting 0.4 – 0.9 $I_i = 14 x I_R$ and I_R dial setting 0.95 – 1.0 $I_i = 13 x I_R$. Refer curve examples & setting data in section 9.

²⁾ To order a MCCB with the above options add the required amp rating to the end of the catalogue number to complete it. Eg: S250PE 4 AN 250 is a S250PE 4 Pole 250 A MCCB c/w Neutral Protection.

NRC = Nominal rated current, I_R = Current adjustment dial setting,

STD = Short Time Delay, INST = instantaneous

For additional information on installation, options and applications refer Section 9, Part C



T2ED

3 pole Price \$ 4 pole Price \$

TemBreak 2 Electronic type H250NE

125 kA

Current rating: 16 – 250 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	380/415	125	85



3

Overcurrent relay:

- Electronic, for general and selectivity applications
- 5 dial selectable characteristic curves suited for a variety of applications
- Base current I_r is adjustable from 40 % – 100 % of the nominal rated current I_n .

OCR Options:

- Neutral pole protection for 4 pole MCCBs only
- Pre-trip alarm

Dimensions (mm)

Poles	3	4
H	165	165
W	105	140
D (less toggle)	103	103
Toggle cut-out	104	104

TemBreak 2 Electronic type H250NE

3 Pole

Ampere Rating NRC	Adj. Ir Min. – Max.	Cat. No. ¹⁾	3 pole Price \$
40	16 - 40	H250 NE 3 40	
125	50 – 125	H250 NE 3 125	
250	100 – 250	H250 NE 3 250	

4 Pole

Ampere Rating NRC	Adj. Ir Min. – Max.	Cat. No. ¹⁾	4 pole Price \$
40	16 - 40	H250 NE 4 40	
125	50 - 125	H250 NE 4 125	
250	100 – 250	H250 NE 4 250	

Price Adder – For OCR options.

Ampere Rating NRC	Adj. Ir ¹⁾ Min. – Max.	Cat. No. ¹⁾	3 pole Price \$	4 pole Price \$
3 P OCR options:	PTA ²⁾	H250 NE 3 AP 3		
4 P OCR options:	PTA ²⁾	H250 NE 4 AP 3		
	NP ²⁾	H250 NE 4 AN 3		
	PTA + NP ²⁾	H250 NE 4 APN 3		

Notes: (for pages 3 - 56 and 3 - 57)

- ¹⁾ The STD and Instantaneous pickup currents (I_{sd} & I_i) settings are not individually adjustable, however by selecting different curve types and different IR settings the values will vary. Curve 1 & 2 $I_{sd} = 2.5 \times I_{R}$, curve 3 $I_{sd} = 5 \times I_{R}$, curve 4 - 5 $I_{sd} = 10 \times I_{R}$. I_{R} dial setting 0.4 – 0.9 $I_i = 14 \times I_{R}$ and I_{R} dial setting 0.95 – 1.0 $I_i = 13 \times I_{R}$. Refer curve examples & setting data in section 9.

- ²⁾ To order a MCCB with the above options add the required amp rating to the end of the catalogue number to complete it. Eg: H250NE 4 AN 250 is a H250NE 4 Pole 250 A MCCB c/w Neutral Protection.

NRC = Nominal rated current, IR = Current adjustment dial setting,

STD = Short Time Delay, INST = instantaneous

For additional information on installation, options and applications refer Section 9, Part C catalogue or NHP.

TemBreak 2 Electronic MCCB with Energy Metering Output H250NE_AC

125 kA

Current rating: 16 – 250 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	415	125	85

MCCB Standard features:

- Electronic, for metering, selectivity, motor starting or general use
- 7 dial selectable characteristic suited to different applications
- Base current I_r adjustable from 40% - 100% of current I_n
- STD setting 2.5 – 10 (x I_R)²
- INST setting 14 (Max 13 x I_n)²
- Energy (multifunction) metering output, A, V, P, kW, kWh, E, Pf, F
- Trip event log, Alarm event log
- Modbus RTU 485 communications output
- External door mounting meter option (T2ED not incl. in below pricing)
- Neutral Pole protection options for 4 pole MCCBs only (AN)
- Pre-Trip Alarm (AP) option

Dimensions (mm)

Poles	3
H	165
W	105
D (less toggle)	103
Toggle cut-out	48
	105 on chassis

Ampere Rating NRC	Adj. I _r Min. – Max.	Cat. No. 1)	3 pole Price \$	4 pole Price \$
40	16 - 40	H250 NE 3 40 AC		
		H250 NE 4 40 AC		
125	50 - 125	H250 NE 3 125 AC		
		H250 NE 4 125 AC		
250	100 - 250	H250 NE 3 250 AC		
		H250 NE 4 250 AC		



3



T2ED

Notes: See page 3 - 56 for notes.

TemBreak 2 Thermal magnetic type L250NJ

200 kA

Current rating: 100 – 250 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	380/415	200	150
DC use	250	40	40



Trip unit: Adjustable thermal (0.63 I_r to 100 % I_r) and adjustable magnetic (6 I_m to 10 I_m)

Dimensions (mm)

Poles	3	4
H	165	165
W	105	140
D (less toggle)	103	103
Toggle cut-out	104	104

3 Pole

Ampere Rating NRC	Adj. I _r ¹⁾ Min. – Max.	Adj. I _m ¹⁾ Min. – Max.	Cat. No.	3 pole Price \$
250	160 – 250	1500 – 2500	L250 NJ 3 250	

4 Pole

Ampere Rating NRC	Adj. I _r ¹⁾ Min. – Max.	Adj. I _m ¹⁾ Min. – Max.	Cat. No.	4 pole Price \$
250	160 – 250	1500 – 2500	L250 NJ 4 250	

Notes: ¹⁾ Adj. I_r: Adjustable thermal setting
 Adj. I_m: Adjustable magnetic setting
 NRC: Nominal rated current

Accessories to suit 160 – 250 AF TemBreak 2

External accessories		Cat. No.	Price \$
Shunt trips	Internal accessories are common for MCCBs 125 A to 630 A. All have screw terminals except those indicated below with wire leads as standard		
	For 2, 3 and 4 pole MCCBs		
SH	110 V AC	T2SH00A10TA ¹⁾	
	230 – 240 V AC	T2SH00A20TA ¹⁾	
	400 – 415 V AC	T2SH00A40TA ¹⁾	
	12 V DC	T2SH00D01TA ¹⁾	
	24 V DC (Suits 24 V AC)	T2SH00D02TA ¹⁾	
	48 V DC	T2SH00D04TA ¹⁾	
	110 V DC	T2SH00D10TA ¹⁾	
	230 V DC	T2SH00D20TA ¹⁾	
		For 1 pole S160NF MCCBs	
	110 V AC	T2SH16A10WA	
	230 – 240 V AC	T2SH16A20WA	
	24 V DC	T2SH16D02WA	
	110 V DC	T2SH16D10WA	
	230 V DC	T2SH16D20WA	
Undervoltage trips	Instantaneous operation		
UV	110 V AC	T2UV00A10NTA	
	200 – 240 V AC	T2UV00A20NTA	
	380 – 450 V AC	T2UV00A40NTA	
	24 V DC	T2UV00D02NTA	
	110 V DC	T2UV00D10NTA	
	230 V DC	T2UV00D20NTA	
	Time delayed operation (500 ms) - refer NHP		
Auxiliary & alarm switches	General type (2 A @ 240 V Inductive)		
AX	1 C/O Auxiliary	T2AX00M3STA	
	1 C/O Auxiliary – with 0.7 m wire leads	T2AX00M3SWA	
	1 C/O Alarm	T2AL00M3STA	
	1 C/O Alarm – with 0.7 m wire leads	T2AL00M3SWA	
AL	Heavy-duty type (4 A @ 240 V Inductive)		
	1 N/O Auxiliary	T2AX00B1STA	
	1 N/C Auxiliary	T2AX00B2STA	
	1 N/O Alarm	T2AL00B1STA	
	1 N/C Alarm	T2AL00B2STA	
	Micro switching type (very low voltages)		
	1 C/O Auxiliary	T2AX00M3RTA	
	1 C/O Alarm	T2AL00M3RTA	

Notes: ¹⁾ Wire lead types available.

Accessories to suit 160 – 250 AF TemBreak 2

External accessories		Cat. No.	Price \$
Motor operators	Suits MCCB types S/H/L160, E/S/H/L250		
MC	110 V AC	T2MC25A10NB	
	230 – 240 V AC	T2MC25A24NB	
	24 V DC	T2MC25D02NB	
	48 V DC	T2MC25D04NB	
	110 V DC	T2MC25D10NB	
Motor Accessories	Motor connection cable loom for electrical interlocking		
	T2MC 25 cable 500 mm, 250AF only	T2MM25L05A	
	T2MC 25 cable 1500 mm, 250AF only	T2MM25L15A	
	Motor options: Contact NHP for key locking and auto-reset.		
	MCCB identification labels	T25CAPLAB	

T2SH
Shunt trip



T2AX
T2AL
Auxiliary &
Alarm
switches



T2UV
Undervoltage
trip



T2MC
Motor operators
250 A motor
fitted to MCCB

Accessories to suit 160 – 250 AF TemBreak 2

External accessories	Cat. No.	Price \$
Operating handles	Suits MCCB types S/H/L160, E/S/H/L250	
Direct mounting, fixed depth, IP 54	Grey/black	T2HB25UR5BN
	Red/yellow	T2HB25UR5RN
	MCCB identification labels	T25CAPLAB
HB		
Door interlocking variable depth handle	S/H/L160, E/S/H/L250	
	Grey IP 55 handle + 357 mm shaft	T2HS25R5GM
	Red/ yellow IP 55 handle + 357 mm shaft	T2HS25R5RM
	Large escutcheon plate option: 100 mm ²	T2HSESC100
	90 mm T pin shaft for T2HS - no flexi coupling	T2HS250SHAFT
HS HP	Grey/ black IP 65 handle + 420 mm shaft	T2HP25R6BN
	Red/ yellow IP 65 handle + 420 mm shaft	T2HP25R6RN
	Padlock attachment for T2HP/HS mechanism	T2HP25PALK
	MCCB identification labels	T25CAPLAB



T2HS variable depth handle IP 55



T2HP Variable depth handle IP 65



Operating handles Direct mounting, fixed depth, IP 54



Mechanism Padlock attachment

Accessories to suit 160 – 250 AF TemBreak 2

External accessories		Cat. No.	Price \$
Mechanical Interlocks	Link Interlock – suitable for manual or motorised operation. Will accept handles. Suitable for front or rear connect type MCCBs		
Link type	S/H/L160, E/S/H/ L250		
ML	Common 3 or 4 pole right side section	T2ML25RA	
	3 pole left side section	T2ML25L3A	
	4 pole left side section	T2ML25L4A	
	MCCB identification labels	T25CAPLAB	

3

Left section 3 or 4 pole
(T2ML25L4A shown)

Common right section
(T2ML25RA shown)



Link interlocked 250 A MCCBs



T2HS handle with optional T2HSESC100 escutcheon plate

Accessories to suit 160 – 250 AF TemBreak 2

External accessories		Cat. No.	Price \$
Slide type interlock	Manual operation, padlockable. Does not allow motors, handles or other front mounted accessories to be fitted.		
	Suitable for front or rear connection		
	S160, E250, S250		
MS	3 pole	T2MS253SFA	
	4 pole	T2MS254SFA	
	H160, L160, H250, L250		
	3 pole	T2MS253LFA	
	4 pole	T2MS254LFA	
Cable interlock	Allows an MCCB to be mounted horizontally, vertically or diagonally. Accepts Motors and handles.		
	Suitable for 3 or 4 pole MCCBs		
	S/H/L160, E/S/H/L250		
MW	Interlock kit less wire	T2MW25CA ¹⁾	
	Wire for above interlocks	T2MW00SA ²⁾	
	Wire 1.0 M	T2MW00LA ²⁾	
	Wire 1.5 M	T2MW00LA ²⁾	
	MCCB identification labels	T2SCAPLAB	

T2MW
Cable interlock



T2MS
Slide type



Notes: ¹⁾ Order one interlock kit for each MCCB.

²⁾ Order one wire length for each pair of interlocked MCCBs.

Accessories to suit 160 – 250 AF TemBreak 2

External accessories		Cat. No.	Price \$
Terminal Covers Flush IP 20 FC CS	Suits MCCB types S/H/L160, E/S/H/L250		
	1 pole cover set of 2	T2CS161SG	
	3 pole cover set of 2	T2CS253SG	
	4 pole cover set of 2	T2CS254SG	
Short terminal covers FC CF	S160, E250, S250 – except S250-PE		
	3 pole cover set of 2, 30 mm long	T2CF253SSNBA	
	4 pole cover set of 2, 30 mm long	T2CF254SSNBA	
Standard terminal covers FC CF	S160, E250, S250 – except S250-PE		
	1 pole cover set of 2, 55 mm long	T2CF161SLNG	
	3 pole cover set of 2, 55 mm long	T2CF253SLNG	
	4 pole cover set of 2, 55 mm long	T2CF254SLNG	
	H/L160, S250-PE, H/L250		
	3 pole cover set of 2, 55 mm long	T2CF253LLNG	
4 pole cover set of 2, 55 mm long	T2CF254LLNG		



T2CF Standard term covers



Single pole terminal cover



T2CF Short terminal covers



T2CS Flush IP 20 Cover



T2RC Rear connect term cover

Refer NHP for
new 160/250 A
wide covers

Accessories to suit 160 – 250 AF TemBreak 2

External accessories	Cat. No.	Price \$
Terminal covers	Rear Connect MCCBs S/H/L160, E/S/H/L250	
CR	3 pole cover set of 2	T2CR253SG
	4 pole cover set of 2	T2CR254SG
Terminal locking clip	A clip that provides additional terminal cover position locking, and cover also allows a lead seal to be fitted	
	All sizes 125, 250, 400, 630 AF	T2CF00L
Interpole Barriers ^{1) 2)}	Suits MCCB types S160, E250, S250 – except S250-PE	
BA	Interpole barrier (Qty 2)	T2BA253SHA
	H/L160, S250-PE, H/L250	
	Interpole barrier (Qty 2)	T2BA253LHA
Toggle locks	Non Captive: Fits up to 3 padlocks or a multiple lock device All 250 AF MCCBs (1 - 4 pole)	
HL	Lock with 5 mm x 16.5 mm slot	T2HL25B
	Captive: Allows a single padlock or multiple padlock device Suits 3/4 pole 250 AF MCCBs	
	Lock with one 8 mm holes	T2HL25CAP
	For 1 pole MCCBs, 1 x 8 mm hole	T2HLS160NFCAP



T2CF locking clip

Non captive lock attachment
T2HL25BInter pole barriers
T2BAT2HL25CAP Captive lock
attachment

Notes: ¹⁾ Line side interpole barriers or terminal covers must be installed with MCCBs.

²⁾ Interpole Barriers are supplied with MCCBs as standard; 2 barriers with 3 pole MCCBs, and 3 barriers with 4 pole MCCBs.

Accessories to suit 160 – 250 AF TemBreak 2

External accessories		Cat. No.	Price \$	
3	TKN	ProSafe handle lock option 1)	Allen-Bradley ProSafe locks can be used with T2HS variable depth handles. Refer NHP for direct mounting handle options.	
		Suits MCCB types E/S/H/L 160 - 250		
		Prosafe shot bolt lock HS handles xx code	TKNHP_	
		Prosafe standard key xx code for above	TKNNHPKEY_	
		Cam for T2HS handle shafts Key codes A to Z are available. Specify by changing the key code above.	14997702	
Attached Busbar	FB	S/H/L160, E/S/H/L250		
		2 straight terminal bars	T2FB251BA	
		3 Pole, set of 6, flanged bar set	T2FB253BA	
		3 Pole, set of 6, flanged bar set 2)	TXJD0050B	
Tunnel clamp terminals	FW	S160, E/S250 NJ/GJ		
		3 Pole, set of 6 clamps 35 -120 mm ²	T2FW25S3B	
		4 Pole, set of 8 clamps 35 -120 mm ²	T2FW25S4B	
		H/L160 NJ - S250PE/H250NJ/NE		
		3 Pole, set of 6 clamps 35 -120 mm ²	T2FW25L3B	
		3 Pole, set of 8 clamps 35 -120 mm ²	T2FW25L4B	

T2FW Tunnel terminals



T2CS Flush cover shown

TXJD Attached busbar (flanged)



ProSafe key Interlock and cam

Notes: 1) Contact NHP for lock options.
2) TemBreak 1 version will fit TemBreak 2.

Accessories to suit 160 – 250 AF TemBreak 2

External accessories	Cat. No.	Price \$
Rear connect terminal studs	Suits MCCB types S160, E250, S250 ¹⁾ Not S250PE	
	3 pole kit, set of 6 studs	T2RP253SB
	4 pole kit, set of 8 studs	T2RP254SB
RP	H160, L160, H250, L250, S250PE	
	3 pole kit, set of 6 studs	T2RP253LA
	4 pole kit, set of 8 studs	T2RP254LA
TemPlug	Suits MCCB types TemPlug MCCB line-side plug-in attachment	
	S160, E/S/250	
UP	3 pole TemPlug	T2UPX3250
	S250PE	
	3 pole TemPlug	T2UPXE3250
	Templugs suit 6.3 mm busbar (10 mm bar option)	
OCR sealing cover	250 A thermal magnetic	T2SF25NTA
SF	250 A electronic	T2SF25NEA
Electronic OCR checker	230 V AC	TNS2
PM	Plug-in MCCBs (refer rear of section 3)	
DR	Draw-out MCCBs	

3

Now available - Refer NHP



T2RP
T2RP rear connect studs



T2UP
T2UP Templug



T2SF
OCR sealing kit.
Suitable for a compression sealing device.

Notes: ¹⁾ S160NF single pole MCCBs will accept T2RP25 rear connect studs.

Accessories to suit 160 – 250 AF TemBreak 2

External accessories		Cat. No.	Price \$
Pole fillers	Suits MCCB types S/H/L160, E/S/H/L250		
PF	Pole filler 1 strip for a 46 mm high cut-out 1)	DTPF	
	Pole filler 35 mm wide for a 104 mm cut-out	XAB3	
Door flange	Provides an attractive panel cut-out surround for MCCBs or motors		
DF	Suits MCCB sizes S/H/L160, E/S/H/L250		
	MCCB IP 30 gland and gasket	T2DF25A	
	MOTOR IP 30 gland and gasket	T2DM25A	
Door mounting flush plate	A kit that allows an MCCB to be mounted directly onto a door		
FP	S160, E250, S250 – except for S250PE		
	3 pole kit	T2FP25S3B	
	4 pole kit	T2FP25S4A	
Wire lead terminal block	250 AF left side	T2TF25LGA	
TF	250 AF right sideblock	T2TF25RGA	



T2PF
Pole fillers



T2TF
Wire lead terminal block



T2DF/DM
Door flange

Notes: 1) Order 2 strips per MCCB.

TemBreak 2 Thermal magnetic type E400NJ

25 kA

Current rating: 252 – 400 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	380/415	25	25
DC use	250	25	19



3

Trip unit: Adjustable thermal ($0.63 I_r$ to $100\% I_r$) and adjustable magnetic ($6 I_m$ to $13 I_m$)

Dimensions (mm)

Poles	3
H	260
W	140
D (less toggle)	103

3 Pole

Ampere Rating NRC	Adj. I_r ¹⁾ Min. – Max.	Adj. I_m ¹⁾ Min. – Max.	Cat. No.	3 pole Price \$
400	250 – 400	2400 – 4800	E400 NJ 3 400	

Notes: ¹⁾ Adj. I_r : Adjustable thermal setting
 Adj. I_m : Adjustable magnetic setting
 NRC: Nominal rated current
 Magnetic only MCCBs are available on request.

TemBreak 2 Thermal magnetic type S400CJ

36 kA

Current rating: 160 – 400 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	380/415	36	36
DC use	250	40	40



Trip unit: Adjustable thermal (0.63 I_r to 100 % I_r) and adjustable magnetic (6 I_m to 12 I_m)

Dimensions (mm)

Poles	3
H	260
W	140
D (less toggle)	103

3 Pole

Ampere Rating NRC	Adj. I _r ¹⁾ Min. – Max.	Adj. I _m ¹⁾ Min. – Max.	Cat. No.	3 pole Price \$
250	160 – 250	1500 – 3000	S400 CJ 3 250	
400	250 – 400	2400 – 4800	S400 CJ 3 400	

Notes: ¹⁾ Adj. I_r: Adjustable thermal setting
 Adj. I_m: Adjustable magnetic setting
 NRC: Nominal rated current
 Magnetic only MCCBs are available on request.

TemBreak 2 Thermal magnetic type S400NJ

50 kA

Current rating: 160 – 400 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	380/415	50	50
DC use	250	40	40



3

Trip unit: Adjustable thermal (0.63 I_r to 100 % I_r) and adjustable magnetic (6 I_m to 12 I_m)

Dimensions (mm)

Poles	3	4
H	260	260
W	140	185
D (less toggle)	103	103

3 Pole

Ampere Rating NRC	Adj. I _r ¹⁾ Min. – Max.	Adj. I _m ¹⁾ Min. – Max.	Cat. No.	3 pole Price \$
250	160 – 250	1500 – 3000	S400 NJ 3 250	
400	250 – 400	2400 – 4800	S400 NJ 3 400	

4 Pole

Ampere Rating NRC	Adj. I _r ¹⁾ Min. – Max.	Adj. I _m ¹⁾ Min. – Max.	Cat. No.	4 pole Price \$
250	160 – 250	1500 – 3000	S400 NJ 4 250	
400	250 – 400	2400 – 4800	S400 NJ 4 400	

Notes: ¹⁾ Adj. I_r: Adjustable thermal setting
 Adj. I_m: Adjustable magnetic setting
 NRC: Nominal rated current
 Magnetic only MCCBs are available on request.

TemBreak 2 Electronic type S400NE

50 kA

Current rating: 100 – 400 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	380/415	50	50



Overcurrent relay:

- Electronic, for general and selectivity applications
- 7 dial selectable characteristic curves suited for a variety of applications
- Base current I_r is adjustable from 40 % – 100 % of the nominal rated current I_n .
- STD setting 2.5 – 10 ($\times I_r$)¹⁾
- INST setting 13 – 14 ($\times I_r$)¹⁾

OCR Options:

- Refer S400GE

Dimensions (mm)

Poles	3	4
H	260	260
W	140	185
D (less toggle)	103	103

3 Pole

Ampere Rating NRC	Adj. I_r Min. – Max.	Cat. No.	3 pole Price \$
250	100 – 250	S400 NE 3 250	
400	160 – 400	S400 NE 3 400	

4 Pole

Ampere Rating NRC	Adj. I_r Min. – Max.	Cat. No.	4 pole Price \$
250	100 – 250	S400 NE 4 250	
400	160 – 400	S400 NE 4 400	

Notes: ¹⁾ For additional information on OCR setting and options refer section 9 or Part C catalogue.

TemBreak 2 Thermal magnetic type S400GJ

70 kA

Current rating: 250 – 400 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	380/415	70	50
DC use	250	TBA	



3

Trip unit: Adjustable thermal ($0.63 I_r$ to $100\% I_r$) and adjustable magnetic ($6 I_m$ to $12 I_m$)

Dimensions (mm)

Poles	3	4
H	260	260
W	140	185
D (less toggle)	103	103

3 Pole

Ampere Rating NRC	Adj. I_r ¹⁾ Min. – Max.	Adj. I_m ¹⁾ Min. – Max.	Cat. No.	3 pole Price \$
250	160 – 250	1500 – 3000	S400 GJ 3 250	
400	250 – 400	2400 – 4800	S400 GJ 3 400	

4 Pole

Ampere Rating NRC	Adj. I_r ¹⁾ Min. – Max.	Adj. I_m ¹⁾ Min. – Max.	Cat. No.	4 pole Price \$
250	160 – 250	1500 – 3000	S400 GJ 4 250	
400	250 – 400	2400 – 4800	S400 GJ 4 400	

Notes: ¹⁾ Adj. I_r: Adjustable thermal setting
 Adj. I_m: Adjustable magnetic setting
 NRC: Nominal rated current
 Magnetic only MCCBs are available on request.

TemBreak 2 Electronic type S400GE

70 kA

Current rating: 100 – 400 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	380/415	70	50



Overcurrent relay:

- Electronic, for general and selectivity applications
- 7 dial selectable characteristic curves suited for a variety of applications
- Base current I_r is adjustable from 40 % – 100 % of the nominal rated current I_n .
- STD setting 2.5 – 10 ($\times I_r$)¹⁾
- INST setting 13 – 14 ($\times I_r$)¹⁾

OCR Options:

- Ground fault trip (400 A OCR only)
- Neutral pole protection for 4 pole MCCBs ONLY
- Pre-trip alarm

Dimensions (mm)

Poles	3	4
H	260	260
W	140	185
D (less toggle)	103	103

Notes: ¹⁾ Add overcurrent relay sensor AMP rating where “+” is shown.

TemBreak 2 Electronic type S400GE

3 Pole

Ampere Rating NRC	Adj. Ir Min. – Max.	Cat. No.	3 pole Price \$
250	100 – 250	S400 GE 3 250	
		S400 GE 3 400	

4 Pole

Ampere Rating NRC	Adj. Ir Min. – Max.	Cat. No.	4 pole Price \$
250	100 – 250	S400 GE 4 250	
		S400 GE 4 400	

S400GE with additional protection options

Description	Cat. No.	Price \$
3 P OCR options:	PTA ¹⁾	S400 GE 3 AP 400
	GF ¹⁾²⁾	S400 GE 3 AG 400
	PTA + GF ¹⁾²⁾	S400 GE 3 APG 400
4 P OCR options:	PTA ¹⁾	S400 GE 4 AP 400
	NP ¹⁾	S400 GE 4 AN 400
	PTA + NP ¹⁾	S400 GE 4 APN 400
	GF + NP ¹⁾	S400 GE 4 AGN 400

Notes: ¹⁾ For additional information on OCR setting and options refer section 9 or Part C catalogue.

²⁾ Where a neutral is present, a 4th Neutral pole CT is required for 3 pole GF MCCBs, and must be ordered separately using Cat. No.: T2GB40N04A. Refer page 3 - 100.

TemBreak 2 Electronic XOW Metering MCCBs S400GE_X1L / X1S

70 kA

Current rating: 100 – 400 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	415	70	50



3

XOW Over Current Relay:

- Ammeter or Energy Metering types
- Adjustable LSI setting for grading applications
- Base current adjustable from 40% - 100% of I_n

MCCB Standard features:

S400GE_X1L

- Ammeter, Adjustable LSI
- Trip event log, Alarm event log, Test function

S400GE_X1S

- Energy (multifunction) meter: A, V, P, kW, kWh, E, Pf, F, H
- Adjustable LSI
- Backlit LCD display
- Ground fault, Pre trip alarm, Phase rotation & Neutral pole protection
- Trip and Alarm event log, Test function, Trip indication contact output
- Modbus RTU 485 communications
- External door mounting meter option (T2ED not incl. in below pricing)



Dimensions (mm)

Poles	3	4
H (less attached busbar)	260	260
W	140	185
D (less toggle)	103	103



T2ED

	Ampere Rating	Ir Adj. NRC	Min.	Max.	Cat. No. 1)	3 pole Price \$	4 pole Price \$
MCCB with ammeter	250	100	250	400	S400 GE 3 250 X1L		
					S400 GE 4 250 X1L		
	400	160	400	400	S400 GE 3 400 X1L		
					S400 GE 4 400 X1L		
MCCB with energy meter	250	100	250	400	S400 GE 3 250 X1S		
					S400 GE 4 250 X1S		
	400	160	400	400	S400 GE 3 400 X1S		
					S400 GE 4 400 X1S		

Notes: NRC: Nominal rated current, Ir: Current adjustment dial setting, STD= Short Time Delay, INST = instantaneous
 For additional information on installation, options and applications refer Section 9, Part C catalogue or NHP.

TemBreak 2 690 V AC High Fault Interruption MCCB L400PE

70 kA

Current rating: 100 – 400 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	690	70	50



3

Over Current Relay:

- Electronic, for general & selectivity applications
- 7 dial selectable characteristic curves suited for a variety of applications
- Base current I_R is adjustable from 40% - 100% of the nominal rated current I_n
- STD setting $2.5 - 10 (x I_R)^1$
- INST setting $14 (Max 13 x I_n)^1$

Dimensions (mm)

Poles	3
H (less attached busbar)	260
W	140
D (less toggle)	140

3 Pole

Ampere Rating NRC	Adj. I_R Min. – Max.	Cat. No.	3 pole Price \$
250	100 – 250	L400 PE 3 250 RC	
400	252 – 400	L400 PE 3 400 RC	

Notes: NRC = Nominal rated current, I_R = Current adjustment dial setting, STD = Short Time Delay, INST = instantaneous

¹⁾ The STD and Instantaneous pickup currents (I_{sd} & I_i) settings are not individually adjustable, however by selecting different curve types and different I_R settings the values will vary. Curves 1 & 2 $I_{sd} = 2.5 x I_R$, curve 3 $I_{sd} = 5 x I_R$, curves 4 - 7 $I_{sd} = 10 x I_R$.

I_R dial setting 0.4 – 0.9 $I_i = 14 x I_R$ and I_R dial setting 0.95 – 1.0 $I_i = 13 x I_R$.
 Not suitable for reverse connection either individually or on a chassis.
 Suitable for general motor starting and power distribution applications.
 Refer NHP for 4 pole version availability.
 Refer NHP for additional information.

TemBreak 2 Electronic type S400PE

85 kA

Current rating: 100 – 400 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	380/415	85	85



Overcurrent relay:

- Electronic, for general and selectivity applications
- 7 dial selectable characteristic curves suited for a variety of applications
- Base current I_r is adjustable from 40 % – 100 % of the nominal rated current I_n .
- STD setting 2.5 – 10 (x I_r)¹⁾
- INST setting 13 – 14 (x I_r)¹⁾

OCR Options:

- Ground fault trip (400 A OCR only)
- Neutral pole protection for 4 pole MCCBs ONLY
- Pre-trip alarm

Notes: ¹⁾ Add overcurrent relay sensor AMP rating where "+" is shown.

TemBreak 2 Electronic type S400PE

Dimensions (mm)

Poles	3	4
H	260	260
W	140	185
D (less toggle)	103	103

3 Pole

Ampere Rating NRC	Adj. Ir Min. – Max.	Cat. No.	3 pole Price \$
250	100 – 250	S400 PE 3 250	
400	160 – 400	S400 PE 3 400	

4 Pole

Ampere Rating NRC	Adj. Ir Min. – Max.	Cat. No.	4 pole Price \$
250	100 – 250	S400 PE 4 250	
400	160 – 400	S400 PE 4 400	

Price Adder – For OCR options

Description	Cat. No.	Price \$
3 P OCR options:	PTA ¹⁾	S400 PE 3 AP +
	GF ¹⁾ ²⁾	S400 PE 3 AG 400
	PTA + GF ¹⁾ ²⁾	S400 PE 3 APG 400
4 P OCR options:	PTA ¹⁾	S400 PE 4 AP +
	NP ¹⁾	S400 PE 4 AN +
	PTA + NP ¹⁾	S400 PE 4 APN +
	GF + NP ¹⁾	S400 PE 4 AGN 400

Notes: ¹⁾ For additional information on OCR setting and options refer section 9 or Part C catalogue.

²⁾ Where a neutral is present, a 4th Neutral pole CT is required for 3 pole GF MCCBs, and must be ordered separately using Cat. No.: T2GB40N04A. Refer to page 3 - 100.

TemBreak 2 Electronic type H400NE

125 kA

Current rating: 100 – 400 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	380/415	125	85



Overcurrent relay:

- Electronic, for general and selectivity applications
- 7 dial selectable characteristic curves suited for a variety of applications
- Base current I_r is adjustable from 40 % – 100 % of the nominal rated current I_n .
- STD setting 2.5 – 10 ($\times I_r$) ¹⁾
- INST setting 13 – 14 ($\times I_r$) ¹⁾

OCR Options:

- Ground fault trip (400 A OCR only)
- Neutral pole protection for 4 pole MCCBs
- Pre-trip alarm

Notes: ¹⁾ Add overcurrent relay sensor AMP rating where “+” is shown.

TemBreak 2 Electronic type H400NE

Dimensions (mm)

Poles	3	4
H	260	260
W	140	185
D (less toggle)	140	140

3 Pole

Ampere Rating NRC	Adj. Ir Min. – Max.	Cat. No.	3 pole Price \$
250	100 – 250	H400 NE 3 250	
400	160 – 400	H400 NE 3 400	

4 Pole

Ampere Rating NRC	Adj. Ir Min. – Max.	Cat. No.	4 pole Price \$
250	100 – 250	H400 NE 4 250	
400	160 – 400	H400 NE 4 400	

Price Adder – For OCR options

Description	Cat. No.	Price \$
3 P OCR options:	PTA ¹⁾	H400 NE 3 AP +
	GF ¹⁾²⁾	H400 NE 3 AG 400
	PTA + GF ¹⁾²⁾	H400 NE 3 APG 400
4 P OCR options:	PTA ¹⁾	H400 NE 4 AP +
	NP ¹⁾	H400 NE 4 AN +
	PTA + NP ¹⁾	H400 NE 4 APN +
	GF + NP ¹⁾	H400 NE 4 AGN 400

Notes: ¹⁾ For additional information on OCR setting and options refer section 9 or Part C catalogue.

²⁾ Where a neutral is present, a 4th Neutral pole CT is required for 3 pole GF MCCBs, and must be ordered separately using Cat. No.: T2GB40N04A. Refer to page 3 - 100.

TemBreak 2 Electronic XOW Metering MCCBs H400NE_X1L / X1S

125 kA

Current rating: 100 – 400 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	415	125	85

XOW Over Current Relay:

- Ammeter or Energy Metering types
- Adjustable LSI setting for grading applications
- Base current adjustable from 40% - 100% of I_n

MCCB Standard features:

H400NE_X1L

- Ammeter, Adjustable LSI
- Trip event log, Alarm event log, Test function

H400NE_X1S

- Energy (multifunction) meter: A, V, P, kW, kWh, E, Pf, F, H
- Adjustable LSI
- Backlit LCD display
- Ground fault, Pre trip alarm, Phase rotation & Neutral pole protection
- Trip and Alarm event log, Test function, Trip indication contact output
- Modbus RTU 485 communications
- External door mounting meter option (T2ED not incl. in below pricing)

Dimensions (mm)

Poles	3	4
H (less attached busbar)	260	260
W	140	185
D (less toggle)	103	103



T2ED

	Ampere Rating	Ir Adj. NRC	Min.	Max.	Cat. No.	3 pole Price \$	4 pole Price \$
MCCB with ammeter	250	100	250	400	H400 NE 3 250 X1L		
					H400 NE 4 250 X1L		
	400	160	400	400	H400 NE 3 400 X1L		
					H400 NE 4 400 X1L		
MCCB with energy meter	250	100	250	400	H400 NE 3 250 X1S		
					H400 NE 4 250 X1S		
	400	160	400	400	H400 NE 3 400 X1S		
					H400 NE 4 400 X1S		

Notes: NRC: Nominal rated current, Ir: Current adjustment dial setting, STD= Short Time Delay, INST = instantaneous
For additional information on installation, options and applications refer Section 9, Part C catalogue or NHP.



New
metering
MCCB

TemBreak 2 Electronic type L400NE

200 kA

Current rating: 100 – 400 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	380/415	200	150



3

Overcurrent relay:

- Electronic, for general and selectivity applications
- 7 dial selectable characteristic curves suited for a variety of applications
- Base current I_r is adjustable from 40 % – 100 % of the nominal rated current I_n .
- STD setting 2.5 – 10 ($\times I_r$)¹⁾
- INST setting 13 – 14 ($\times I_r$)¹⁾

OCR Options:

- Ground fault trip (400 A OCR only)
- Neutral pole protection for 4 pole MCCBs
- Pre-trip alarm

Notes: ¹⁾ Add Over Current Relay sensor AMP rating where "+" is shown.

TemBreak 2 Electronic type L400NE

Dimensions (mm)

Poles	3	4
H	260	260
W	140	185
D (less toggle)	140	140

3 Pole

Ampere Rating NRC	Adj. Ir Min. – Max.	Cat. No. ¹⁾	3 pole Price \$
250	100 – 250	L400 NE 3 250	
400	160 – 400	L400 NE 3 400	

4 Pole

Ampere Rating NRC	Adj. Ir Min. – Max.	Cat. No. ¹⁾	4 pole Price \$
250	100 – 250	L400 NE 4 250	
400	160 – 400	L400 NE 4 400	

Price Adder – For OCR options.

Description	Cat. No.	3 pole Price \$
3 P OCR options:	PTA ²⁾	L400 NE 3 AP +
	GF ²⁾ ³⁾	L400 NE 3 AG 400
	PTA + GF ²⁾ ³⁾	L400 NE 3 APG 400
4 P OCR options:	PTA ²⁾	L400 NE 4 AP +
	NP ²⁾	L400 NE 4 AN +
	PTA + NP ²⁾	L400 NE 4 APN +
	GF + NP ²⁾	L400 NE 4 AGN 400

- Notes:** ¹⁾ Add Over Current Relay sensor AMP rating where “+” is shown.
²⁾ For additional information on OCR setting and options refer section 9 or Part C catalogue.
³⁾ Where a neutral is present, a 4th Neutral pole CT is required for 3 pole GF MCCBs, and must be ordered separately using Cat. No.: T2GB40N04A. Refer to page 3 - 100.

Valid until August 2014



THINK PRODUCTS AND SOLUTIONS. THINK NHP.

NHP's Products Team is backed by years of experience from dedicated engineers and specialists, focused on providing Australasia's most comprehensive product range and project solutions.

Products Team

As well as extensive application, technical and product knowledge, our high quality Products Teams are determined to provide customised motor starters and controllers to specification, by listening to you and your needs.

Together with NHP's Service Team, NHP is able to offer assistance with commissioning and site maintenance work.

Think Products and Solutions. Think NHP.

TemBreak 2 Electronic type E630NE

36 kA

Current rating: 252 – 630 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	380/415	36	36



Overcurrent relay:

- Electronic, for general and selectivity applications
- 6 dial selectable characteristic curves suited for a variety of applications
- Base current I_r is adjustable from 40 % – 100 % of the nominal rated current I_n .
- STD setting 2.5 – 8 ($\times I_r$) ¹⁾
- INST setting 10 – 14 ($\times I_r$) ¹⁾

OCR Options:

- Ground fault trip

Dimensions (mm)

Poles	3
H	260
W	140
D (less toggle)	103

3 Pole

Ampere Rating NRC	Adj. I _r Min. – Max.	Cat. No.	3 pole Price \$
630	252 – 630	E630 NE 3 630	

Notes: ¹⁾ The STD and instantaneous pickup current (I_{sd} & I_i) settings are not individually adjustable, however by selecting different curve types and different I_r settings the values will vary. Curve 1 & 2 $I_{sd} = 2.5 \times I_{R}$, curve 3 $I_{sd} = 5 \times I_{R}$, curve 4 - 6 $I_{sd} = 8 \times I_{R}$, I_{R} dial setting 0.4 – 0.63 $I_i = 14 \times I_{R}$, 0.8 $I_i = 12 \times I_{R}$, 0.85 - 0.9 $I_i = 12 \times I_{R}$, 0.95 – 1.0 $I_i = 10 \times I_{R}$. Refer curve examples and setting data in Section 9.
 NRC = Nominal rated current, I_{R} = Current adjustment dial setting, STD = Short Time Delay, INST = instantaneous

TemBreak 2 Electronic type S630CE

50 kA

Current rating: 252 – 630 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	380/415	50	50



3

Overcurrent relay:

- Electronic, for general and selectivity applications
- 6 dial selectable characteristic curves suited for a variety of applications
- Base current I_r is adjustable from 40 % – 100 % of the nominal rated current I_n .
- STD setting 2.5 – 8 ($\times I_r$)¹⁾
- INST setting 10 – 14 ($\times I_r$)¹⁾

OCR Options:

- Refer S630GE

Dimensions (mm)

Refer page 3 - 86

3 Pole

Ampere Rating NRC	Adj. I_r Min. – Max.	Cat. No.	3 pole Price \$
630	252 – 630	S630 CE 3 630	

4 Pole

Ampere Rating NRC	Adj. I_r Min. – Max.	Cat. No.	4 pole Price \$
630	252 – 630	S630 CE 4 630	

Notes: ¹⁾ The STD and instantaneous pickup currents (I_{sd} & I_i) settings are not individually adjustable, however by selecting different curve types and different I_r settings the values will vary. Curve 1 & 2 $I_{sd} = 2.5 \times I_{r}$, curve 3 $I_{sd} = 5 \times I_{r}$, curve 4 - 6 $I_{sd} = 8 \times I_{r}$. I_r dial setting 0.4 – 0.63 $I_i = 14 \times I_{r}$, 0.8 $I_i = 12 \times I_{r}$, 0.85 - 0.9 $I_i = 12 \times I_{r}$, 0.95 – 1.0 $I_i = 10 \times I_{r}$. Refer curve examples and setting data in Section 9.
 NRC = Nominal rated current, I_r = Current adjustment dial setting, STD = Short Time Delay, INST = instantaneous

Valid until August 2014

T1HS / T2HS HANDLES

For Terasaki moulded case circuit breakers
up to 1600 A.

NHP

POWER PROTECTION



PP-TERASAKI-THS HANDLE - CPB

- IP55 rated plastic handle
- Long variable depth shaft supplied standard
- Heavy duty metal locking lever standard
- Internal door interlocking components are all metal
- All handles mount in a 31-37 mm hole
- Short lever handles on MCCBs to 250 A, longer types 400 - 1600 A
- 105 mm² or 130 mm² escutcheon plates are optional
- Handles are padlockable in the OFF position as standard
- ON padlocking optional via on site handle modification
- Accepts up to three 4 - 8 mm locks or multi lock devices
- Door opens when handle is switched to OFF position
- Door will not open when handle is padlocked OFF
- Door defeat function standard
- Padlock option for handle mechanism mounted on MCCB
- Door defeat non functional when padlocked OFF
- All handle mechanisms allow MCCB dial setting viewing and access
- For IP 65 applications T1HP/T2HP handles are available
- ON indication flag on handle mechanism
- Prosafe trapped key interlock options

 **TERASAKI**
Innovators in Protection Technology

TemBreak 2 Electronic type S630GE

70 kA

Current rating: 252 – 630 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	380/415	70	50



3

Overcurrent relay:

- Electronic, for general and selectivity applications
- 7 dial selectable characteristic curves suited for a variety of applications
- Base current I_r is adjustable from 40 % – 100 % of the nominal rated current I_n .
- STD setting 2.5 – 8 ($\times I_r$) ¹⁾
- INST setting 10 – 14 ($\times I_r$) ¹⁾

OCR Options:

- Ground fault trip
- Neutral pole protection for 4 pole MCCBs ONLY
- Pre-trip alarm

Notes: ¹⁾ The STD and instantaneous pickup currents (I_{sd} & I_i) settings are not individually adjustable, however by selecting different curve types and different I_r settings the values will vary. Curve 1 & 2 $I_{sd} = 2.5 \times I_{R}$, curve 3 $I_{sd} = 5 \times I_{R}$, curve 4 - 6 $I_{sd} = 8 \times I_{R}$. I_{R} dial setting 0.4 – 0.63 $I_i = 14 \times I_{R}$, 0.8 $I_i = 12 \times I_{R}$, 0.85 - 0.9 $I_i = 12 \times I_{R}$, 0.95 – 1.0 $I_i = 10 \times I_{R}$. Refer curve examples and setting data in Section 9.
 NRC = Nominal rated current, I_{R} = Current adjustment dial setting, STD = Short Time Delay, INST = instantaneous

TemBreak 2 Electronic type S630GE

Dimensions (mm)

Refer page 3 - 86

3 Pole

Ampere Rating NRC	Adj. Ir Min. – Max.	Cat. No.	3 pole Price \$
630	252 – 630	S630 GE 3 630	

4 Pole

Ampere Rating NRC	Adj. Ir Min. – Max.	Cat. No.	4 pole Price \$
630	252 – 630	S630 GE 4 630	

MCCB price with OCR option fitted.

Description	Cat. No.	Price \$
3 P OCR options:	PTA ¹⁾	S630 GE 3 AP 630
	GF ¹⁾²⁾	S630 GE 3 AG 630
	PTA + GF ¹⁾²⁾	S630 GE 3 APG 630
4 P OCR options:	PTA ¹⁾	S630 GE 4 AP 630
	NP ¹⁾	S630 GE 4 AN 630
	PTA + NP ¹⁾	S630 GE 4 APN 630
	GF + NP ¹⁾	S630 GE 4 AGN 630

Notes: ¹⁾ To order a MCCB with the above options insert the required option after the pole to make up the Cat. No. E.g.: S630GE 3 AG 630 is a S630GE 3 Pole 630 A MCCB c/w Ground Fault protection.

²⁾ Where a neutral is present, a 4th Neutral pole CT is required for 3 pole GF MCCBs and must be ordered separately using Cat. No.: T2GB40N06A. Refer to page 3 - 100.

TemBreak Electronic XOW Metering MCCBs S630GE_X1L / X1S

70 kA

Current rating: 252 – 630 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	415	70	50



XOW Over Current Relay:

- Ammeter or Energy Metering types
- Adjustable LSI setting for grading applications
- Base current adjustable from 40% - 100% of I_n

MCCB Standard features:

S630PE_X1L

- Ammeter, Adjustable LSI
- Trip event log, Alarm event log, Test function

S630PE_X1S

- Energy (multifunction) meter: A, V, P, kW, kWh, E, Pf, F, H
- Adjustable LSI
- Backlit LCD display
- Ground fault, Pre trip alarm, Phase rotation & Neutral pole protection
- Trip and Alarm event log, Test function, Trip indication contact output
- Modbus RTU 485 communications
- External door mounting meter option (T2ED not incl. in below pricing)



Dimensions (mm)

Poles	3	4
H (less attached busbar)	260	260
W	140	185
D (less toggle)	103	103



T2ED

	Ampere Rating	I _r Adj. NRC	Min. Max.	Cat. No.	3 pole Price \$	4 pole Price \$
MCCB with ammeter	630	252	630	S630 GE 3 630 X1L		
				S630 GE 4 630 X1L		
MCCB with energy meter	630	252	630	S630 GE 3 630 X1S		
				S630 GE 4 630 X1S		

Notes: NRC: Nominal rated current, I_r: Current adjustment dial setting, STD= Short Time Delay, INST = instantaneous
 For additional information on installation, options and applications refer Section 9, Part C catalogue or NHP.

Accessories to suit 400 / 630 AF TemBreak 2



3

External accessories

Cat. No.

Price \$

Shunt trips Internal accessories are common for MCCBs 125 A to 630 A. All have screw terminals except those indicated below with wire leads as standard

For 3 and 4 pole MCCBs

SH	110 V AC	T2SH00A10TA ¹⁾
	230 – 240 V AC	T2SH00A20TA ¹⁾
	400 – 415 V AC	T2SH00A40TA ¹⁾
	12 V DC	T2SH00D01TA ¹⁾
	24 V DC (Suits 24 V AC)	T2SH00D02TA ¹⁾
	48 V DC	T2SH00D04TA ¹⁾
	110 V DC	T2SH00D10TA ¹⁾
	230 V DC	T2SH00D20TA ¹⁾

Undervoltage trips **Instantaneous operation**

UV	110 V AC	T2UV00A10NTA
	200 – 240 V AC	T2UV00A20NTA
	380 – 450 V AC	T2UV00A40NTA
	24 V DC	T2UV00D02NTA
	110 V DC	T2UV00D10NTA
	230 V DC	T2UV00D20NTA

Time delayed operation (500 ms) – refer NHP

Auxiliary & Alarm switches **General type (2 A @ 240 V Inductive)**

AX	1 C/O Auxiliary	T2AX00M3STA
	1 C/O Auxiliary – with 0.7 m wire leads	T2AX00M3SWA
	1 C/O Alarm	T2AL00M3STA
	1 C/O Alarm – with 0.7 m wire leads	T2AL00M3SWA

Heavy-duty type (4 A @ 240 V Inductive)

AL	1 N/O Auxiliary	T2AX00B1STA
	1 N/C Auxiliary	T2AX00B2STA
	1 N/O Alarm	T2AL00B1STA
	1 N/C Alarm	T2AL00B2STA

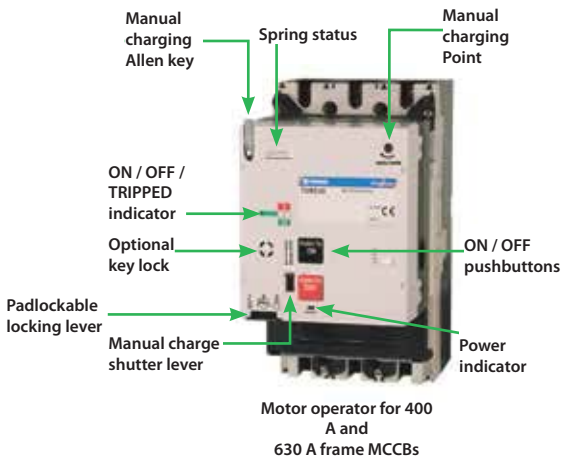
Micro switching type (very low voltages)

	1 C/O Auxiliary	T2AX00M3RTA
	1 C/O Alarm	T2AL00M3RTA

Notes: ¹⁾ Wire lead types available.

Accessories to suit 400 / 630 AF TemBreak 2

External accessories		Cat. No.	Price \$
Motor operators	Suits MCCB types E400, S400, H400, L400, E630, S630		
	110 – 240 V AC	T2MC40A10NB	
	24 – 48 V DC	T2MC40D02NB	
	110 V DC	T2MC40D10NB	
MC	Motor connection cable loom for Electrical interlocking		
	T2MC40 cable 600 mm. 400AF only	T2MM40L06A	
	T2MC40 cable 2100 mm. 400AF only	T2MM40L21A	
	Motor options: Contact NHP for key locking and auto-reset.		
	MCCB identification labels	T40CAPLAB	



Accessories to suit 400 / 630 AF TemBreak 2

External accessories	Cat. No.	Price \$
Operating handles	Suits MCCB types E400, S400, H400, L400, E630, S630	
Direct mounting, fixed depth, IP 54	Grey/black	T2HB40UR5BN
	Red/yellow	T2HB40UR5RN
	MCCB identification labels	T40CAPLAB
HB		
Door interlocking variable depth handles	E400, S400, H400, L400, E630, S630	
	Grey IP55 handle + 320 mm shaft	T2HS40R5GM
	Red/yellow IP55 handle + 320 mm shaft	T2HS40R5RM
	Large escutcheon plate option: 100 mm ²	T2HSESC100
	390mm T pin shaft for T2HS - no flexi coupling	T2HS400SHAFT
	Grey/black IP65 handle + 445 mm shaft	T2HP40R6BN
	Red/yellow IP65 handle + 445 mm shaft	T2HP40R6RN
	Padlock attachment for T2HP/HS mechanism	T2HP40PALK
	MCCB identification labels	T40CAPLAB



T2HP40 Variable depth handle



T2HP40PALK Mechanism padlock attachment



T2HS handle with optional escutcheon plate, type T2HSESC100



T2HB fixed depth "direct mount" handle

Notes: Handles supplied with key locks available on request for T2HP handles.

Accessories to suit 400 / 630 AF TemBreak 2

External accessories		Cat. No.	Price \$
Mechanical Interlocks	Link Interlock – suitable for motorised operation. Suitable for front or rear contact MCCBs		
Link type	E400, S400, H400, L400, E630, S630 ¹⁾		
ML	Common 3 or 4 pole right side section	T2ML40RB	
	3 pole left side section	T2ML40L3B	
	4 pole left side section	T2ML40L4B	
	MCCB identification labels	T40CAPLAB	
MH	Link Interlock – suitable for manual handle operation only. Suitable for front or rear contact MCCBs		
	E400, S400, H400, L400, E630, S630		
	Common 3 or 4 pole right side section	T2MLH40RB	
	3 pole left side section	T2MLH40L3B	
	4 pole left side section	T2MLH40L4B	
	MCCB identification	T40CAPLAB	

3

Left section 3 or 4 pole
(T2ML40L3B shown)

Common right side
section T2ML40RB



T2ML Interlock for motorised operation

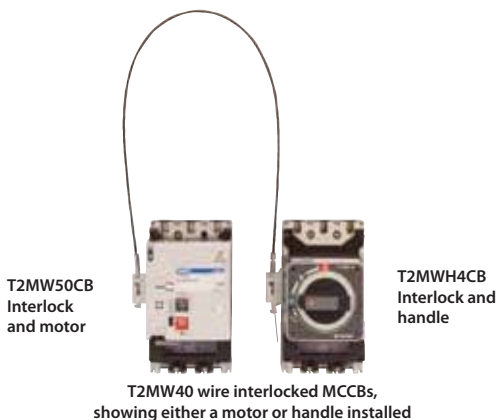
Notes: Refer to Section 5 if MCCB labels are required or refer to NHP.

¹⁾ A handle or motor must be fitted in addition to the interlock.

Accessories to suit 400 / 630 AF TemBreak 2

External accessories		Cat. No.	Price \$
Slide type interlock	Manual operation, padlockable. Does not allow motors, handles or other front mounted accessories to be fitted.		
	Suitable for front or rear connection E400, S400, E630, S630		
MS	3 pole	T2MS403SFA	
	4 pole	T2MS404SFA	
Cable interlock	Allows an MCCB to be mounted horizontally, vertically or diagonally. Suitable for 3 or 4 pole MCCBs E400, S400, H400, L400, E630, S630 ¹⁾		
MW	Interlock kit less wire for motorised operation	T2MW40CB	
	Interlock kit less wire for manual handle operation	T2MWH40CB	
	Wire for above interlocks Wire 1.0 M	T2MW00SA ²⁾	
	Wire 1.5 M	T2MW00LA ²⁾	
	MCCB identification labels	T40CAPLAB	
MB	Rear walking beam interlock (NHP factory fit)	T2MB403	
		T2MB404	

T2MB availability to be announced.



Notes: ¹⁾ A handle or motor must be fitted in addition to the interlock.
²⁾ Use one wire length for each MCCB pair.

Accessories to suit 400 / 630 AF TemBreak 2

External accessories	Cat. No.	Price \$
Standard terminal covers FC	E400, S400, H400, L400, E630, S630 ²⁾	
	3 pole cover set of 2, 180 mm wide	T2CF403SWNG ¹⁾
	3 pole cover set of 2, 140 mm wide	T2CF403SLNG ¹⁾
CF	4 pole cover set of 2, 185 mm wide	T2CF404SLNG
	4 pole cover set of 2, 238 mm wide	T2CF404SWNG

3



T2CF Wide cover shown at top of MCCB



T2CF Narrow cover



T2CF403SWNG Wide cover suitable for flanged bar connection.

T2CF403SLNG

Narrow covers include as standard:

- Locking clip for seal device
- IP 20 inserts with knock outs



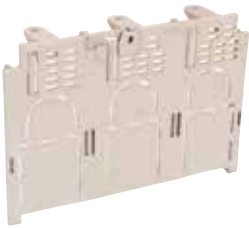
T2CF403SLNG Narrow cover, which is the same width as the MCCB.

Notes: ¹⁾ For 400/630 A MCCBs, 'Flush' and 'rear' covers are the same item.
²⁾ Locking clip T2FOOL tool supplied standard.

Accessories to suit 400 / 630 AF TemBreak 2

External accessories	Cat. No.	Price \$
Terminal covers ³⁾	Rear Connect/ or flush front connect cover. E400, S400, H400, L400, E630, S630	
CS/CR	3 pole cover set of 2	T2CR403SG
	4 pole cover set of 2	T2CR404SG
Terminal cover locking clip	A clip that provides additional terminal cover position locking, and also allows a lead seal to be fitted All sizes 125, 250, 400, 630 AF	T2CF00L
Interpole Barriers ^{1) 2)}	E400, S400, E630, S630, h400, l400	
	Interpole barrier (Qty 2)	T2BA403SHA

BA



T2CR / T2CS

Flush cover with 'knock-outs' for optional rear connect use.



T2CF00L

Locking clip



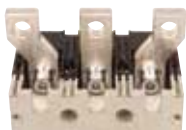
T2BA

Interpole barriers

- Notes:** 1) Line side interpole barriers or terminal covers must be installed with MCCBs.
 2) Interpole Barriers are supplied with MCCBs as standard; 2 barriers with 3 pole MCCBs, and 3 barriers with 4 pole MCCBs.
 3) For 400/630 A MCCBs, "flush" and "rear" covers are the same item.

Accessories to suit 400 / 630 AF TemBreak 2

External accessories		Cat. No.	Price \$
ProSafe lock option	ProSafe locks can be mounted with T2HS variable depth handle operation. Refer NHP for direct mounting handle options.		
TKN	Suits MCCB types E/S/H/L 400 - 630		
	Prosafes shot bolt lock HS handles xx code	TKNHP_	
	Prosafes standard key xx code for above	TKNNHPKEY_	
	Cam for T2HS handle shafts Key codes A to Z are available. Specify by changing the key code above.	14997702	
Toggle locks	Non Captive: Fits up to 3 padlocks or a multiple lock device E400, S400, H400, L400, E630, S630		
HL	Lock with three 8 mm holes	T2HL40A	
	Captive: Allows a single padlock or multiple padlock device E400, S400, H400, L400, E630, S630		
	Lock with two 8 mm holes	T2HL40CAP	
Attached Busbar	E400, S400, H400, L400, E630, S630		
FB	3 Pole, set of 6, wide bar, 400 A	2H1384DAA	
	3 Pole, set of 6, wide bar set, 630 A	T2FB463BA	
	4 Pole, set of 8, wide bar set, 630 A	T2FB464BA	
Tunnel clamp terminals	E400, S400, H400, L400, E630, S630		
FW	3 Pole, set of 6 clamps 240 mm ²	T2FW40L3A	
	4 Pole, set of 8 clamps 240 mm ²	T2FW40L4A	



T2FB Attached flat bar



T2FW Tunnel clamp terminals

T2HL Toggle lock
(captive)T2HL Toggle lock
(non-captive)

Accessories to suit 400 / 630 AF TemBreak 2

External accessories		Cat. No.	Price \$
3 RP	Rear connect terminal studs	Suits MCCB types E400, S400	
		3 pole kit, set of 6 studs	T2RP403SA
		4 pole kit, set of 8 studs	T2RP404SA
		Suits MCCB types H400, L400	
		3 pole kit, set of 6 studs	T2RP403LA
		4 pole kit, set of 8 studs	T2RP404LA
		Suits MCCB types E630, S630	
		3 pole kit, set of 6 studs	T2RP463SA
	4 pole kit, set of 8 studs	T2RP464SA	
UP	TemPlug	Suits MCCB types TemPlug MCCB line-side plug-in attachment	
		E400, S400	
		3 pole TemPlug	T2UPX3400
		E630, S630	
		3 pole TemPlug	T2UPX3630
	Templugs suit 6.3 mm busbar (10 mm optional)		
GB	External neutral CT	400 A CT	T2GB40N04A
		630 A CT	T2GB40N06A
PM	Electronic OCR checker	110 V AC	TNS2110V
		230 V AC	TNS2240V
DR	Plug-in MCCB (refer rear of section 3)		
	Draw-out MCCB		

Now available - Refer NHP



T2RP rear connect studs

T2UPX3400
400 A TemplugT2UPX3630
630 A Templug

Accessories to suit 400 / 630 AF TemBreak 2

External accessories		Cat. No.	Price \$
Door flange	Provides an attractive panel cut-out surround for MCCBs or motors		
	Suits MCCB sizes E400, S400, H400, L400, E630, S630		
DF	MCCB IP 30 gland and gasket	T2DF40A	
	MOTOR IP 30 gland and gasket	T2DM40A	
Door mounting flush plate	A kit that allows an MCCB to be mounted directly onto a door		
	E400, S400, E630, S630		
FP	3 pole kit	T2FP40S3A	
	4 pole kit	T2FP40S4A	
Wire lead terminal block	left side	T2TF40LGA	
	right side	T2TF40RGA	
TF			
OCR Sealing cover	400AF - 1600AF OCR Covers have sealing as standard.	-	
SF			

TNS
Electronic OCR checker



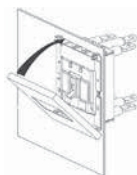
T2DF/DM
Door flange



T2TF
Wire lead terminal block



T2FP
Door mounting flush plate



Valid until August 2014

MOULDED CASE CIRCUIT BREAKERS

NHP

2000 A to 3200 A

POWER PROTECTION



PP-TERASAKI-MCCB 3200A-CPB

- Current limiting
- True RMS monitoring
- I2t switch to assist in obtaining selectivity
- Powerful interrupting capacities
- Icw for 0.5 sec of 38 kA
- Limitation of system damage
- Electronic trip unit with long, short and instantaneous adjustments
- Adjustment range 50 - 100 % of nominal current rating
- Standards AS/NZS 3947-2

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TemBreak 2 Thermal magnetic type S800CJ

36 kA

Current rating: 630 – 800 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	415	36	36
DC use	250	50	50



3

Trip unit:

- Adjustable thermal: 63% I_r to 100% I_r
- Adjustable magnetic: 5 to 10 x I_m

Dimensions (mm)

Poles	3
H	273
W	210
D (less toggle)	103

3 Pole

Ampere Rating NRC	Adj. I _r Min. – Max.	Adj. I _m Min. – Max.	Cat. No.	3 pole Price \$
630	396 - 630	3150 - 6300	S800 CJ 3 630	
800	504 - 800	4000 - 8000	S800 CJ 3 800	

Notes: Magnetic only available on application.
For additional information on applications refer section 9 or Part C catalogue.

NRC: Nominal rated current

Adj. I_r: Adjustable thermal setting

Adj. I_m: Adjustable magnetic setting

Replaces: XS630CJ and XS800NJ for applications up to 36 kA. Note: check exact ratings or dimensions to suit your application requirement .

TemBreak 2 Thermal magnetic type S800NJ

50 kA

Current rating: 630 – 800 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	I _{cu}	I _{cs}
AC use	415	50	50
DC use	250	50	50



Trip unit:

- Adjustable thermal: 63% I_r to 100% I_r
- Adjustable magnetic: 5 to 10 x I_m

Dimensions (mm)

Poles	3	4
H	273	273
W	210	280
D (less toggle)	103	103

3 Pole

Ampere Rating NRC	Adj. I _r Min. – Max.	Adj. I _m Min. – Max.	Cat. No.	3 pole Price \$
630	396 - 630	3150 - 6300	S800 NJ 3 630	
800	504 - 800	4000 - 8000	S800 NJ 3 800	

4 Pole

Ampere Rating NRC	Adj. I _r Min. – Max.	Adj. I _m Min. – Max.	Cat. No.	3 pole Price \$
630	396 - 630	3150 - 6300	S800 NJ 4 630	
800	504 - 800	4000 - 8000	S800 NJ 4 800	

Notes: Magnetic only available on application.

For additional information on applications refer section 9 or Part C catalogue.

NRC: Nominal rated current

Adj. I_r: Adjustable thermal setting

Adj. I_m: Adjustable magnetic setting

Replaces: XS630NJ and XS800NJ. Note: check exact ratings or dimensions to suit your application requirement.

TemBreak 2 Thermal magnetic type S800RJ

70 kA

Current rating: 630 – 800 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	415	70	50
DC use	250	50	50



3

Trip unit:

- Adjustable thermal: 63% I_r to 100% I_r
- Adjustable magnetic: 5 to 10 x I_m

Dimensions (mm)

Poles	3	4
H	273	273
W	210	280
D (less toggle)	103	103

Ampere

Rating	Adj. Ir Min. – Max.	Adj. Ir Min. – Max.	Cat. No. 1)	3 pole Price \$	4 pole Price \$
630	396 - 630	3150 - 6300	S800 RJ 3 630		
			S800 RJ 4 630		
800	504 - 800	4000 - 8000	S800 RJ 3 800		
			S800 RJ 4 800		

Notes: Magnetic only available on application.

For additional information on applications refer section 9 or Part C catalogue.

NRC: Nominal rated current

Adj. Ir: Adjustable thermal setting

Adj. Im: Adjustable magnetic setting

Replaces: XH630SE and XH800SE. Note: check exact ratings or dimensions to suit your application requirement .

TemBreak 2 Electronic type S800NE

50 kA

Current rating: 252 – 800 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	415	50	50



Over Current Relay:

- Electronic, for general & selectivity applications
- 7 dial selectable characteristic curves suited for a variety of applications
- Base current I_r is adjustable from 40% - 100% of the nominal rated current I_n
- STD setting 2.5 – 10 ($\times I_r$)¹⁾
- INST setting 14 (Max 12 $\times I_n$)¹⁾

Dimensions (mm)

Poles	3	4
H	273	273
W	210	280
D (less toggle)	103	103

Ampere Rating NRC	Adj. I_r Min. – Max.	Cat. No.	3 pole Price \$	4 pole Price \$
630	252 - 630	S800 NE 3 630		
		S800 NE 4 630		
800	320 - 800	S800 NE 3 800		
		S800 NE 4 800		

Notes: ¹⁾ The STD and Instantaneous pickup currents (I_{sd} & I_i) settings are not individually adjustable, however by selecting different curve types and different I_r settings the values will vary. Curves 1 & 2 $I_{sd} = 2.5 \times I_r$, curve 3 $I_{sd} = 5 \times I_r$, curves 4 - 7 $I_{sd} = 10 \times I_r$. I_r dial setting 0.4 – 0.8 $I_i = 14 \times I_r$ and I_r dial setting 0.9 – 1.0 $I_i = 12 \times I_r$.

NRC: Nominal rated current

Adj. I_r : Adjustable thermal setting

Adj. I_m : Adjustable magnetic setting

Replaces: XS630SE and XS800SE. Note: check exact ratings or dimensions to suit your application requirement.

TemBreak 2 Electronic type S800RE

70 kA

Current rating: 252 – 800 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	415	70	50

Over Current Relay:

- Electronic, for general & selectivity applications
- 7 dial selectable characteristic curves suited for a variety of applications
- Base current I_R is adjustable from 40% - 100% of the nominal rated current I_n
- STD setting $2.5 - 10 (x I_R)^2$
- INST setting $14 (\text{Max } 12 x I_n)^2$

OCR options:

- Ground Fault Trip
- Neutral Pole protection
- Pre-Trip Alarm

Dimensions (mm)

Poles	3	4
H	273	273
W	210	280
D (less toggle)	103	103

Ampere Rating NRC	Adj. Ir Min. – Max.	Cat. No. ¹⁾	3 pole Price \$	4 pole Price \$
630	252 - 630	S800 RE 3 630		
		S800 RE 4 630		
800	320 - 800	S800 RE 3 800		
		S800 RE 4 800		
Price Adder for OCR options. Add to above MCCB price		MCCB Cat. No. with option	3 pole Price \$	4 pole Price \$
3 P OCR options:		PTA ³⁾	S800 RE 3 AP #	
		GF ³⁾	S800 RE 3 AG #	
		PTA + GF ³⁾	S800 RE 3 APG #	
4 P OCR options:		PTA ³⁾	S800 RE 4 AP #	
		AP ³⁾	S800 RE 4 AN #	
		PTA + NP ³⁾	S800 RE 4 APN #	
		GF + NP ³⁾	S800 RE 4 AGN #	

Notes: ¹⁾ “#” add OCR trip unit rating where shown with OCR options.

²⁾ The STD and Instantaneous pickup currents (I_{sd} & I_i) settings are not individually adjustable, however by selecting different curve types and different I_R settings the values will vary. Curve 1 & 2 $I_{sd} = 2.5 x I_R$, curve 3 $I_{sd} = 5 x I_R$, curve 4 - 7 $I_{sd} = 10 x I_R$.

I_R dial setting 0.4 – 0.8 $I_i = 14 x I_R$ and I_R dial setting 0.9 – 1.0 $I_i = 12 x I_R$.

³⁾ To order a MCCB with the above options insert the required amp rating after the option to make up the Cat. No. Eg: S800RE 4 AGN 800 is an S800RE 4 Pole 800 A MCCB c/w Neutral Protection and Ground Fault protection.

For additional information on OCR settings, options and applications refer section 9 or part C catalogue.

Replaces: XH630SE and XH800SE. Note: check exact ratings or dimensions to suit your application requirement.

TemBreak 2 Electronic XOW Metering MCCBs S800RE_X1L/X1S

70 kA

Current rating: 320 – 800 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage		Icu	Ics
AC use	415	70	50	

XOW Over Current Relay:

- Ammeter or Energy Metering types
- Adjustable LSI setting for grading applications
- Base current adjustable from 40% - 100% of I_n

MCCB Standard features:

S800RE_X1L

- Ammeter, Adjustable LSI
- Trip event log, Alarm event log, Test function

S800RE_X1S

- Energy (multifunction) meter: A, V, P, kW, kWh, E, Pf, F, H
- Adjustable LSI
- Backlit LCD display
- Ground fault, Pre trip alarm, Phase rotation & Neutral pole protection
- Trip and Alarm event log, Test function, Trip indication contact output
- Modbus RTU 485 communications
- External door mounting meter option (T2ED not incl. in below pricing)

Dimensions (mm)

Poles	3	4
H	273	273
W	210	280
D (less toggle)	103	103



T2ED

	Ampere Rating NRC	Ir Adj. Min.-Max.	Cat. No. 1)	3 pole Price \$	4 pole Price \$
MCCB with ammeter	800	320 - 800	S800 RE 3 800 X1L		
			S800 RE 4 800 X1L		
MCCB with energy meter	800	320 - 800	S800 RE 3 800 X1S		
			S800 RE 4 800 X1S		

Notes: NRC: Nominal rated current

Adj. Ir: Adjustable thermal setting

Adj. Im: Adjustable magnetic setting

For additional information on OCR settings, options and applications refer section 9 or part C catalogue.



TemBreak 2 Electronic type H800NE

125 kA

Current rating: 252 – 800 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	415	125	94

Over Current Relay:

- Electronic, for general & selectivity applications
- 7 dial selectable characteristic curves suited for a variety of applications
- Base current I_r is adjustable from 40% - 100% of the nominal rated current I_n
- STD setting $2.5 - 10 (x I_r)^2$
- INST setting $14 (Max 12 x I_n)^2$
- **OCR Options:**
- Ground Fault Trip
- Neutral Pole protection
- Pre-Trip Alarm

Dimensions (mm)

Poles	3	4
H	273	273
W	210	280
D (less toggle)	103	103

Ampere Rating NRC	Adj. I_r Min. – Max.	Cat. No. ¹⁾	3 pole Price \$	4 pole Price \$
630	252 - 630	H800 NE 3 630		
		H800 NE 4 630		
800	320 - 800	H800 NE 3 800		
		H800 NE 4 800		
Price Adder for OCR options. Add to above MCCB price		MCCB Cat. No. with option	3 pole Price \$	4 pole Price \$
3 P OCR options:	PTA ³⁾	H800 NE 3 AP #		
	GF ³⁾	H800 NE 3 AG #		
	PTA + GF ³⁾	H800 NE 3 APG #		
4 P OCR options:	PTA ³⁾	H800 NE 4 AP #		
	AP ³⁾	H800 NE 4 AN #		
	PTA + NP ³⁾	H800 NE 4 APN #		
	GF + NP ³⁾	H800 NE 4 AGN #		

Notes: ¹⁾ "#" add OCR trip unit rating where shown with OCR options.

²⁾ The STD and Instantaneous pickup currents (I_{sd} & I_i) settings are not individually adjustable, however by selecting different curve types and different I_r settings the values will vary. Curve 1 & 2 $I_{sd} = 2.5 x I_r$, curve 3 $I_{sd} = 5 x I_r$, curve 4 - 7 $I_{sd} = 10 x I_r$.
 I_r dial setting 0.4 – 0.8 $I_i = 14 x I_r$ and I_r dial setting 0.9 – 1.0 $I_i = 12 x I_r$.

³⁾ To order a MCCB with the above options insert the required amp rating after the option to make up the Cat. No. Eg: H800NE 4 AGN 800 is an H800NE 4 Pole 800 A MCCB c/w Neutral Protection and Ground Fault protection.

For additional information on OCR settings, options and applications refer section 9 or part C catalogue.

Replaces: TL630NE and TL800NE. Note: check exact ratings or dimensions to suit your application requirement.

TemBreak 2 Electronic XOW Metering MCCBs H800NE_X1L/X1S

125 kA

Current rating: 320 – 800 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	415	125	94

XOW Over Current Relay:

- Ammeter or Energy Metering types
- Adjustable LSI setting for grading applications
- Base current adjustable from 40% - 100% of I_n

MCCB Standard features:

H800NE_X1L

- Ammeter, Adjustable LSI
- Trip event log, Alarm event log, Test function

H800NE_X1S

- Energy (multifunction) meter: A, V, P, kW, kWh, E, Pf, F, H
- Adjustable LSI
- Backlit LCD display
- Ground fault, Pre trip alarm, Phase rotation & Neutral pole protection
- Trip and Alarm event log, Test function, Trip indication contact output
- Modbus RTU 485 communications
- External door mounting meter option ((T2ED not incl. in below pricing)

Dimensions (mm)

Poles	3	4
H	273	273
W	210	280
D (less toggle)	140	140



T2ED

	Ampere Rating NRC	Ir Adj. Min.-Max.	Cat. No.	3 pole Price \$	4 pole Price \$
MCCB with ammeter	800	320 - 800	H800 NE 3 800 X1L		
			H800 NE 4 800 X1L		
MCCB with energy meter	800	320 - 800	H800 NE 3 800 X1S		
			H800 NE 4 800 X1S		

Notes: NRC: Nominal rated current

Adj. Ir: Adjustable thermal setting

Adj. Im: Adjustable magnetic setting

For additional information on OCR settings, options and applications refer section 9 or part C catalogue.



New
metering
MCCB

TemBreak 2 Electronic type L800NE

200 kA

Current rating: 252 – 800 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	415	200	150

Over Current Relay:

- Electronic, for general & selectivity applications
- 7 dial selectable characteristic curves suited for a variety of applications
- Base current I_r is adjustable from 40% - 100% of the nominal rated current I_n
- STD setting $2.5 - 10 (x I_r)^2$
- INST setting $14 (Max 12 x I_n)^2$

OCR options:

- Ground Fault Trip
- Neutral Pole protection
- Pre-Trip Alarm

Dimensions (mm)

Poles	3	4
H	273	273
W	210	280
D (less toggle)	140	140

Ampere Rating NRC	Adj. I_r Min. – Max.	Cat. No. ¹⁾	3 pole Price \$	4 pole Price \$
630	252 - 630	L800 NE 3 630		
		L800 NE 4 630		
800	320 - 800	L800 NE 3 800		
		L800 NE 4 800		
Price Adder for OCR options. Add to above MCCB price		MCCB Cat. No. with option	3 pole Price \$	4 pole Price \$
3 P OCR options:		PTA ³⁾	L800 NE 3 AP #	
		GF ³⁾	L800 NE 3 AG #	
		PTA + GF ³⁾	L800 NE 3 APG #	
4 P OCR options:		PTA ³⁾	L800 NE 4 AP #	
		AP ³⁾	L800 NE 4 AN #	
		PTA + NP ³⁾	L800 NE 4 APN #	
		GF + NP ³⁾	L800 NE 4 AGN #	

Notes: ¹⁾ “#” add OCR trip unit rating where shown with OCR options.

²⁾ The STD and Instantaneous pickup currents (I_{sd} & I_i) settings are not individually adjustable, however by selecting different curve types and different I_r settings the values will vary. Curve 1 & 2 $I_{sd} = 2.5 x I_r$, curve 3 $I_{sd} = 5 x I_r$, curve 4 - 7 $I_{sd} = 10 x I_r$. I_r dial setting 0.4 - 0.8 $I_i = 14 x I_r$ and I_r dial setting 0.9 - 1.0 $I_i = 12 x I_r$.

³⁾ To order a MCCB with the above options insert the required amp rating after the option to make up the Cat. No. Eg: L800NE 4 AGN 800 is an L800NE 4 Pole 800 A MCCB c/w Neutral Protection and Ground Fault protection.

For additional information on OCR settings, options and applications refer section 9 or part C catalogue.

TemBreak 2 690V AC High Fault Interruption MCCB L800PE

70 kA

Current rating: 252 – 800 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	690	70	50



Rear connect only

Over Current Relay:

- Electronic, for general & selectivity applications
- 7 dial selectable characteristic curves suited for a variety of applications
- Base current I_R is adjustable from 40% - 100% of the nominal rated current I_n
- STD setting $2.5 - 10 (x I_R)^1$
- INST setting $14 (Max 12 x I_n)^1$

Dimensions (mm)

Poles	3
H	273
W	210
D (less toggle)	140

3 Pole

Ampere Rating NRC	Adj. Ir Min. – Max.	Cat. No.	3 pole Price \$
630	252 - 630	L800 PE 3 630 RC	
800	320 - 800	L800 PE 3 800 RC	

Notes: ¹⁾ The STD and Instantaneous pickup currents (I_{sd} & I_i) settings are not individually adjustable, however by selecting different curve types and different I_R settings the values will vary. Curves 1 & 2 $I_{sd} = 2.5 x I_R$, curve 3 $I_{sd} = 5 x I_R$, curves 4 - 7 $I_{sd} = 10 x I_R$.
 I_R dial setting 0.4 - 0.9 $I_i = 14 x I_R$ and I_R dial setting 0.95 - 1.0 $I_i = 13 x I_R$.
 Not suitable for reverse connection either individually or on a chassis.
 Suitable for general motor starting and power distribution applications
 Refer NHP for 4 pole version availability.
 Refer NHP for additional information.
 NRC: Nominal rated current
 Adj. Ir: Adjustable thermal setting
 Adj. Im: Adjustable magnetic setting
MCCBs are rear connect or plug-in only.

TemBreak 2 Electronic type

S1000SE (50 kA) and S1000NE (70 kA)

50 / 70 kA

Current rating: 400 – 1000 A

Approvals and Tests: Standards AS/NZS 3947-2
and IEC 60947-2

Interrupting capacity:

	Voltage	S1000SE		S1000NE	
		Icu	Ics	Icu	Ics
AC use	415	50	38	70	50



Reduced
frame size

3

Over Current Relay:

- Electronic, for general & selectivity applications
- 7 dial selectable characteristic curves suited for a variety of applications
- Base current I_R is adjustable from 40% - 100% of the nominal rated current I_n
- STD setting $2.5 - 10 (x I_R)^1$
- INST setting $14 (Max 12 x I_n)^1$

Dimensions (mm)

Poles	3	4
H	273	273
W	210	280
D (less toggle)	103	103

OCR Options:

- Ground Fault Trip
- Neutral Pole protection
- Pre-Trip Alarm

Ampere Rating NRC	Adj. I_R Min. – Max.	Cat. No.	3 pole Price \$	4 pole Price \$
1000	400 - 1000	S1000 SE 3 1000		
		S1000 SE 4 1000		
1000	400 - 1000	S1000 NE 3 1000		
		S1000 NE 4 1000		

Price Adder for OCR options. Add to above MCCB price		MCCB Cat. No. with option	3 pole Price \$	4 pole Price \$
3 P OCR options:	PTA ²⁾	S1000 NE 3 AP #		
	GF ²⁾	S1000 __ 3 AG #		
	PTA + GF ²⁾	S1000 NE 3 APG #		
4 P OCR options:	PTA ²⁾	S1000 NE 4 AP #		
	NP ²⁾	S1000 NE 4 AN #		
	PTA + NP ²⁾	S1000 NE 4 APN #		
	GF + NP ²⁾	S1000 __ 4 AGN #		

Notes: ¹⁾ 1. The STD and Instantaneous pickup currents (I_{sd} & I_i) settings are not individually adjustable, however by selecting different curve types and different I_R settings the values will vary. Curve 1 & 2 $I_{sd} = 2.5 x I_R$, curve 3 $I_{sd} = 5 x I_R$, curve 4 - 6 $I_{sd} = 8 x I_R$. I_R dial setting 0.4 – 0.63 $I_i = 14 x I_R$ and I_R dial setting 0.8 – 1.0 $I_i = 10 x I_R$.

²⁾ To order a MCCB with the above options insert the required amp rating after the option to make up the Cat. No. Eg: S1000NE 4 AGN 1000 is an S1000NE 4 Pole 1000 A MCCB c/w Neutral Protection and GF.
Replaces: XH800SE and XS1250SE 1000A.

TemBreak 2 Electronic XOW Metering MCCBs S1000NE_X1L/X1S

70 kA

Current rating: 400 - 1000 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	Icu	Ics
AC use	415	70	50

XOW Over Current Relay:

- Ammeter or Energy Metering types
- Adjustable LSI setting for grading applications
- Base current adjustable from 40% - 100% of I_n

MCCB Standard features:

S1000NE_X1L

- Ammeter, Adjustable LSI
- Trip event log, Alarm event log, Test function

S1000NE_X1S

- Energy (multifunction) meter: A, V, P, kW, kWh, E, Pf, F, H
- Adjustable LSI
- Backlit LCD display
- Ground fault, Pre trip alarm, Phase rotation & Neutral pole protection
- Trip and Alarm event log, Test function, Trip indication contact output
- Modbus RTU 485 communications
- External door mounting meter option (T2ED not incl. in below pricing)

Dimensions (mm)

Poles	3	4
H	273	273
W	210	280
D (less toggle)	103	103



	Ampere Rating NRC	Ir Adj. Min.-Max.	Cat. No.	3 pole Price \$	4 pole Price \$
MCCB with ammeter	1000	400 - 1000	S1000 NE 3 1000 X1L		
			S1000 NE 4 1000 X1L		
MCCB with energy meter	1000	400 - 1000	S1000 NE 3 1000 X1S		
			S1000 NE 4 1000 X1S		

Notes: NRC: Nominal rated current

Adj. Ir: Adjustable thermal setting

Adj. Im: Adjustable magnetic setting

For additional information on OCR settings, options and applications refer section 9 or part C catalogue.



New
metering
MCCB

Accessories for 800 - 1000 A MCCBs



Internal accessories		Cat. No.	Price \$
Shunt trips	Internal accessories are common for MCCBs 800 A to 1600 A. All have screw terminals except those indicated below with wire leads as indicated.		
	For 3 and 4 pole MCCBs		
SH	110 V AC	T2SH00A10TA	
	230 – 240 V AC	T2SH00A20TA	
	400 – 415 V AC	T2SH00A40TA	
	12 V DC	T2SH00D01TA	
	24 V DC (suits 24 V AC)	T2SH00D02TA	
	48 V DC	T2SH00D04TA	
	110 V DC	T2SH00D10TA	
	230 V DC	T2SH00D20TA	
Undervoltage trips	Instantaneous operation		
UV	110 V AC	T2UV80A10NTA	
	200 – 240 V AC	T2UV80A20NTA	
	380 – 450 V AC	T2UV80A40NTA	
	24 V DC	T2UV80D02NTA	
	110 V DC	T2UV80D10NTA	
	230 V DC	T2UV80D20NTA	
	Time delay types are available – refer NHP for details.		
Auxiliary & Alarm switches	General type (2 A @ 240 V Inductive)		
AX	1 C/O Auxiliary with terminals	T2AX00M3STA	
	1 C/O 1 st Auxiliary with 700 mm leads	T2AX00M3SWA	
	1 C/O 2 nd Auxiliary with 700 mm leads	T2AX00M4SWA	
	1 C/O 3 rd Auxiliary with 700 mm leads	T2AX00M5SWA	
	1 st , 2 nd , 3 rd aux have different numbered wire leads, otherwise identical.		
AL	1 C/O Alarm	T2AL00M4STA	
	1 C/O Alarm with 700 mm wire leads	T2AL00M5SWA	
	Heavy-duty type (4 A @ 240 V Inductive)		
AL	1 N/O Auxiliary	T2AX00B1STA	
	1 N/C Auxiliary	T2AX00B2STA	
	1 N/O Alarm	T2AL00B1STA	
	1 N/C Alarm	T2AL00B2STA	
	Micro switching type (very low voltages and currents)		
AL	1 C/O Auxiliary	T2AX00M3RTA	
	1 C/O Alarm	T2AL00M3RTA	

Accessories for 800 - 1000 A MCCBs

External accessories	Cat. No.	Price \$
Operating handles	Suits MCCB types 800 - 1000AF	
Direct mounting, fixed depth, IP 54	Grey/black IP 54	T2HB80UR5BN
	Red/yellow IP 54	T2HB80UR5RN
HB		
Door interlocking	800 A to 1000 A	
variable depth handles	T2HS compact handle	
	Grey IP65 handle + 320 mm shaft	T2HS80F6BM
	Red/yellow IP65 handle + 320 mm shaft	T2HS80F6RM
HS	METAL compact handle	
	Silver IP 65 handle + 320 mm shaft	T2HP80R6ME
	T2HP square handle	
	Grey, IP 65 handle + 445 mm shaft	T2HP80R6BN
HP	Red/yellow, IP 65 handle + 445 mm shaft	T2HP80R6RN
	Handle options	
	Large escutcheon plate option: 100 mm ²	T2HSESC100
	390 mm T pin shaft for T2HS - no flexi coupling	T2HS400SHAFT
	Handle shaft CAM for trapped key interlock	1499 7702
	MCCB/handle mech padlock attachment	T2HP80PALK
	MCCB identification labels	T80CAPLAB
External Neutral CT	S800, S1000	
	Optional neutral CT, Ground Fault MCCBs 800 A	T2GB40N08A
GB	Optional neutral CT, Ground Fault MCCBs 1000 A	T2GBX6N10A



T2HB fixed depth
"direct mount" handle



T2HS handle

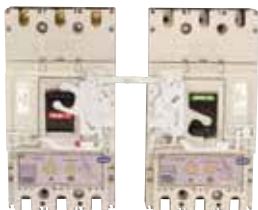


T2HP handle

Accessories for 800 – 1000 A MCCBs

External accessories	Cat. No.	Price \$
Mechanical Interlock	Link Interlock – suitable for manual or motorised operation. Will accept handles. Suitable for front or rear connect type MCCBs.	
	Suits MCCB types 800 A to 1000 A	
ML	3 or 4 pole right side section	T2ML80RA
	3 pole left side section	T2ML80L3A
	4 pole left side section	T2ML80L4A
	Slide type - manual operation, padlockable. Does not allow motors, handles or other front mounted accessories to be fitted. Suitable for front or rear connection.	
	S800, S1000	
MS	3 pole	T2MS803SFA
	4 pole	T2MS804SFA
	H800	
	3 pole	T2MS803LFA
	4 pole	T2MS804LFA
	Cable interlock – allows an MCCB can be mounted horizontally, vertically or diagonally. Accepts Motors and handles. Suitable for 3 or 4 pole MCCBs	
	800 A to 1000 A	
ML	Interlock kit less wire	T2MW80CA
	Wire for above interlocks	
	Wire 1.0 m	T2MW00SA
	Wire 1.5 m	T2MW00LA
MB	Rear walking beam interlock	
	S800 3P	T2MB803
	S800 4P	T2MB804
	S1000 3P	T2MB103
	S1000 4P	T2MB104

MB interlock availability to be announced.



Link interlock



Cable interlock

Accessories for 800 - 1000A MCCBs

External accessories		Cat. No.	Price \$
Terminal covers - front connected MCCBs Rear connect terminal covers RC CR	Suits MCCB types		
	S800, S1000		
	3 pole cover set of 2	T2CR803SG	
	4 pole cover set of 2	T2CR804SG	
	H800		
	3 pole cover set of 2	T2CR803LG	
Terminal covers for plug in base CB	S800, S1000, H800		
	3 pole cover set	T2CB803G	
	4 pole cover set	T2CB804G	
Extended terminal covers FC CF	Terminal covers are the same width as the MCCB		
	S800, S1000, H800		
	3 pole cover set	T2CF803SLNG	
Terminal cover locking clip	800 A to 1000 A		
	A clip that provides additional terminal cover locking, and also allows a lead seal to be fitted	T2CF00LA	
Interpole Barriers ^{1) 2)}	S800, S1000, H800		
	Interpole barrier (Qty 2)	T2BA403SHA	



Terminal covers (T2CR)



T2CR Terminal covers



Extended terminal covers FC



Terminal cover locking clip



Interpole barriers

- Notes:** 1) Line side interpole barriers or terminal covers must be installed with MCCBs.
 2) Interpole Barriers are supplied with MCCBs as standard; 2 barriers with 3 pole MCCBs, and 3 barriers with 4 pole MCCBs.

Accessories for 800 - 1000 A MCCBs

	External accessories	Cat. No.	Price \$
	Toggle locks	Non Captive: Fits up to 3 padlocks or a multiple lock device	
		Suits MCCB types 800 A, 1000 A	
HL	Lock with 5 mm x 16.5 mm slot	T2HL40A	
	Captive: Allows a single padlock or multiple padlock device 800 A, 1000 A (Availability to be announced)		
	Lock with single 8 mm hole	T2HL80CAP	
	Motor operators	800 - 1000 A	
	110 - 240 V AC	T2MC80A10NA	
	24 - 48 V DC	T2MC80D10NA	
	Electrical interlocking connector between motor operators		
MC	0.6 m connector 400 AF to 1000 A	T2MM40L06A	
	2.1 m connector 400 AF to 1000 A	T2MM40L21A	
	0.6 m connector 125-250 AF to 1000 A	T2MM40S06A	
	2.1 m connector 125-250 AF to 1000 A	T2MM40S21A	
	1. Motor options: Contact NHP for key locking and auto reset.		
	Rear connect terminal studs	S800 for line and load terminals	
	3 pole kit, set of 6 studs	T2RP803SA	
	4 pole kit, set of 8 studs	T2RP804SA	
	H800 for line terminals		
	3 pole kit, set of 6 studs	T2RP803LA	
	4 pole kit, set of 8 studs	T2RP804LA	
RP	S1000 for line and load terminals		
	3 pole kit, set of 6 studs	T2RPX03SA	
	4 pole kit, set of 8 studs	T2RPX04SA	
	Door Flange	Provides an attractive panel cut-out surround for MCCBs or MOTORS 800 to 1000 A	
FW	MCCB IP 30 gland and gasket	T2FW40L3A	
	MOTOR IP 30 gland and gasket	T2FW40L4A	
	Wire Lead Terminal Block	MCCB mounted terminal block connected to internal accessories. This accessory is a FACTORY FIT ITEM.	
TF	Terminal block and wiring loom RIGHT side	T2TF40RGA	
	Terminal block and wiring loom LEFT side	T2TF40LGA	

Accessories for 800 - 1000 A MCCBs

External accessories ^{1) 2)}		Cat. No.	Price \$
UP	TemPlug MCCB line-side plug in attachment		
	Suits MCCB types S800		
	3 pole TemPlug	T2UPX3800	
	S1000		
PM	3 pole TemPlug	T2UPX31000	
	Plug in MCCB base kit. Includes MCCB plugs and other parts for converting an MCCB to a plug in MCCB. Mounting bases are ordered separately. MCCB conversion kits:		
	S800, S1000		
	3 pole kit	REFER NHP	
	4 pole kit	REFER NHP	
	Plug in bases, IP20, includes rear insulation screen. The base includes terminal studs which are suitable for front or rear connection. Interpole barriers can be used with these bases, but not terminal covers. Plug in mounting bases:		
	S800, S1000		
	3 pole kit	T2PM80A3A	
	4 pole kit	T2PM80A4A	
	Control wiring plugs and sockets for plug in MCCBs		
	3 pin plug for aux/alarms – MCCB side	2H6959CAA1	
	3 pin plug for shunt/UVT – MCCB side	2H6959CBA1	
	3 pin socket for panel mount base	T2TP003A	
	Extension bars		
3 pole kit	T2PF803HA		
4 pole kit	T2PF804HA		



TemPlug



Plug in MCCBs



Plug in MCCBs



Plug in MCCBs

Notes: ¹⁾ Up to 4 control wiring plug kits can be used in a base.

²⁾ Internal accessories are used with the above plugs and sockets

TemBreak 2 Electronic type S1250SE (50 kA) and S1250GE (85 kA)

50 / 85 kA

Current rating: 500 – 1250 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	S1250SE		S1250GE	
		I _{cu}	I _{cs}	I _{cu}	I _{cs}
AC use	415	50	38	85	65



Over Current Relay:

- Electronic, for general & selectivity applications
- 7 dial selectable characteristic curves suited for a variety of applications
- Base current I_R is adjustable from 40% - 100% of the nominal rated current I_N
- STD setting 2.5 – 10 (x I_R)¹⁾
- INST setting 14 (Max 12 x I_n)¹⁾

OCR Options:

- Ground Fault Trip
- Neutral Pole protection
- Pre-Trip Alarm

Dimensions (mm)

Poles	3	4
H	370	370
W	210	280
D (less toggle)	120	120

Ampere Rating NRC	Adj. I _R Min. – Max.	Cat. No.	3 pole Price \$	4 pole Price \$
1250	500 - 1250	S1250 SE 3 1250		
		S1250 SE 4 1250		
1250	500 - 1250	S1250 GE 3 1250		
		S1250 GE 4 1250		

Price Adder for OCR options. Add to above MCCB price		MCCB Cat. No. with option	3 pole Price \$	4 pole Price \$
3 P OCR options:	PTA ²⁾	S1250 GE 3 AP #		
	GF ²⁾	S1250 __ 3 AG #		
	PTA + GF ²⁾	S1250 GE 3 APG #		
4 P OCR options:	PTA ²⁾	S1250 GE 4 AP #		
	NP ²⁾	S1250 GE 4 AN #		
	PTA + NP ²⁾	S1250 GE 4 APN #		
	GF + NP ²⁾	S1250 __ 4 AGN #		

Notes: ¹⁾ The STD and Instantaneous pickup currents (I_{sd} & I_i) settings are not individually adjustable, however by selecting different curve types and different I_R settings the values will vary. Curve 1 & 2 I_{sd} = 2.5 x I_R, curve 3 I_{sd} = 5 x I_R, curve 4 - 6 I_{sd} = 8 x I_R. I_R dial setting 0.4 – 0.63 I_i = 14 x I_R and I_R dial setting 0.8 – 1.0 I_i = 10 x I_R.

²⁾ To order a MCCB with the above options insert the required amp rating after the option to make up the Cat. No. Eg: S1250GE 4 AGN 1250 is an S1250GE 4 Pole 1250 A MCCB c/w Neutral Protection and GF.

Replaces: XS1250SE.

TemBreak 2 Electronic type S1600SE (50 kA) and S1600NE (85 kA)

50 / 85 kA

Current rating: 640 – 1600 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity:

	Voltage	S1600SE		S1600NE	
		Icu	Ics	Icu	Ics
AC use	415	50	38	85	65



Over Current Relay:

- Electronic, for general & selectivity applications
- 7 dial selectable characteristic curves suited for a variety of applications
- Base current I_r is adjustable from 40% - 100% of the nominal rated current I_n
- STD setting $2.5 - 10 (x I_r)^1$
- INST setting $14 (Max 12 x I_n)^1$
- **OCR Options:**
- Ground Fault Trip
- Neutral Pole protection
- Pre-Trip Alarm

Dimensions (mm)

Poles	3	4
H	370	370
W	210	280
D (less toggle)	140	140

Ampere Rating NRC	Adj. I_r Min. – Max.	Cat. No.	3 pole Price \$	4 pole Price \$
1600	640 - 1600	S1600 SE 3 1600		
		S1600 SE 4 1600		
1600	640 - 1600	S1600 NE 3 1600		
		S1600 NE 4 1600		

Price Adder for OCR options. Add to above MCCB price	MCCB Cat. No. with option	3 pole Price \$	4 pole Price \$
3 P OCR options:	PTA ²⁾	S1600 NE 3 AP #	
	GF ²⁾	S1600 __ 3 AG #	
	PTA + GF ²⁾	S1600 NE 3 APG #	
4 P OCR options:	PTA ²⁾	S1600 NE 4 AP #	
	AP ²⁾	S1600 NE 4 AN #	
	PTA + NP ²⁾	S1600 NE 4 APN #	
	GF + NP ²⁾	S1600 __ 4 AGN #	

Notes: ¹⁾ The STD and Instantaneous pickup currents (I_{sd} & I_i) settings are not individually adjustable, however by selecting different curve types and different I_r settings the values will vary. Curve 1 & 2 $I_{sd} = 2.5 x I_r$, curve 3 $I_{sd} = 5 x I_r$, curve 4 - 6 $I_{sd} = 8 x I_r$. I_r dial setting 0.4 – 0.63 $I_i = 14 x I_r$ and I_r dial setting 0.8 – 1.0 $I_i = 10 x I_r$.

²⁾ To order a MCCB with the above options insert the required amp rating after the option to make up the Cat. No. Eg: S1600NE 4 AGN 1600 is an S1600NE 4 Pole 1600 A MCCB c/w Neutral Protection and GF.

Replaces: XS1600SE.

Accessories for 1250 - 1600 A MCCBs



Internal accessories		Cat. No.	Price \$
Shunt trips	Internal accessories are common for MCCBs 800 A to 1600 A. All have screw terminals except those indicated below with wire leads as indicated.		
	For 3 and 4 pole MCCBs		
SH	110 V AC	T2SH00A10TA	
	230 – 240 V AC	T2SH00A20TA	
	400 – 415 V AC	T2SH00A40TA	
	12 V DC	T2SH00D01TA	
	24 V DC (suits 24 V AC)	T2SH00D02TA	
	48 V DC	T2SH00D04TA	
	110 V DC	T2SH00D10TA	
	230 V DC	T2SH00D20TA	
Undervoltage trips	Instantaneous operation		
UV	110 V AC	T2UV80A10NTA	
	200 – 240 V AC	T2UV80A20NTA	
	380 – 450 V AC	T2UV80A40NTA	
	24 V DC	T2UV80D02NTA	
	110 V DC	T2UV80D10NTA	
	230 V DC	T2UV80D20NTA	
	Time delay types are available – refer NHP for details.		
Auxiliary & Alarm switches	General type (2 A @ 240 V Inductive)		
AX	1 C/O Auxiliary with terminals	T2AX00M3STA	
	1 C/O 1 st Auxiliary with 700 mm leads	T2AX00M3SWA	
	1 C/O 2 nd Auxiliary with 700 mm leads	T2AX00M4SWA	
	1 C/O 3 rd Auxiliary with 700 mm leads	T2AX00M5SWA	
	1 st , 2 nd , 3 rd aux have different numbered wire leads, otherwise identical.		
AL	1 C/O Alarm	T2AL00M4STA	
	1 C/O Alarm with 700 mm wire leads	T2AL00M5SWA	
	Heavy-duty type (4 A @ 240 V Inductive)		
AL	1 N/O Auxiliary	T2AX00B1STA	
	1 N/C Auxiliary	T2AX00B2STA	
	1 N/O Alarm	T2AL00B1STA	
	1 N/C Alarm	T2AL00B2STA	
	Micro switching type (very low voltages and currents)		
AL	1 C/O Auxiliary	T2AX00M3RTA	
	1 C/O Alarm	T2AL00M3RTA	

Accessories for 1250 - 1600 A MCCBs

External accessories	Cat. No.	Price \$
Operating handles	Suits MCCB types 1250 - 1600 A	
Direct mounting, fixed depth, IP 54	Grey/black IP 54	T2HBX6UR5BN
	Red/yellow IP 54	T2HBX6UR5RN
HB		
Door interlocking variable depth handles	1250 - 1600 A	
	T2HS compact handle	
	Grey IP65 handle + 320 mm shaft	T2HSX6F6GM
	Red/yellow IP65 handle + 320 mm shaft	T2HSX6F6RM
HS	METAL compact handle	
	Silver IP 65 handle + 320 mm shaft	T2HPX6R6ME
	T2HP square handle	
	Grey, IP 65 handle + 445 mm shaft	T2HPX6R6BN
HP	Red/yellow, IP 65 handle + 445 mm shaft	T2HPX6R6RN
	Handle options	
	Large escutcheon plate option: 100 mm ²	T2HSESC100
	390 mm T pin shaft for T2HS - no flexi coupling	T2HS400SHAFT
	Handle shaft CAM for trapped key interlock	1499 7702
	MCCB/handle mech padlock attachment	T2HPX6PALK
	MCCB identification labels	TX6CAPLAB



T2HB fixed depth
"direct mount" handle



T2HS handle



T2HP handle

Accessories for 1250 - 1600 A MCCBs

External accessories		Cat. No.	Price \$
Mechanical Interlock	Rear cable interlock – allows an MCCB can be mounted horizontally, vertically or diagonally. Accepts motors and handles. Suitable for 3 or 4 pole MCCBs		
MW	Suits MCCB types 1250 - 1600 A		
	Interlock kit less wire – Factory fit item	T2MWX6CA	
	Wire for above interlocks		
	Wire 1.0 m	T2MW00S	
	Wire 1.5 m	T2MW00L	
MS	Slide type - manual operation, padlockable. Does not allow motors, handles or other front mounted accessories to be fitted. Suitable for front or rear connection.		
	S1250, S1600		
	3 pole	T2MSX63SFA	
	4 pole	T2MSX64SFA	
MB	Rear walking beam interlock – allows 2 MCCBs to be interlocked side by side. Combinations of 3 and 4 pole types are possible.		
	1250 - 1600 A		
	For 3 pole S1250	T2MBX33P	
	For 4 pole S1250 Factory fit only	T2MBX34P	
	For 3 pole S1600	T2MBX63P	
	For 4 pole S1600 Factory fit only	T2MBX64P	

Accessories for 1250 - 1600A MCCBs

External accessories		Cat. No.	Price \$
Terminal covers - front connected MCCBs	Terminal covers are the same width as the MCCB		
Extended terminal covers FC	Suits MCCB types S1250		
	3 pole cover	T2CFX33SLNG	
	4 pole cover	T2CFX34SLNG	
	Terminal covers are not available for S1600 MCCBs		
3	CR		
Terminal cover locking clip	800 A to 1600 A		
	A clip that provides additional terminal cover locking, and also allows a lead seal to be fitted	T2CF00LA	
Interpole Barriers ^{1) 2)}	S1250, S1600		
	Interpole barrier (Qty 2)	T2BA40SHA	
	BA		
External Neutral CT	S1250, S1600		
	Optional neutral CT, Ground Fault MCCBs	T2GBX6N12A	
	Optional neutral CT, Ground Fault MCCBs	T2GBX6N16A	
	GB		



Extended terminal covers FC



Terminal cover locking clip

- Notes:** 1) Line side interpole barriers or terminal covers must be installed with MCCBs.
 2) Interpole Barriers are supplied with MCCBs as standard; 2 barriers with 3 pole MCCBs, and 3 barriers with 4 pole MCCBs.

Accessories for 1250 - 1600A MCCBs

External accessories		Cat. No.	Price \$
Toggle locks	Non Captive: Fits up to 3 padlocks or a multiple lock device		
	Suits MCCB types 1250 A, 1600 A		
HL	Lock with three 8 mm holes	T2HLX6A	
	Captive: Allows a single padlock or multiple padlock device 1250 A, 1600 A		
	Lock with two 8 mm holes	T2HLX6CAP	
Motor operators	1250 A, 1600 A		
MC	110 V AC	T2MCX6A10NA	
	240 V AC	T2MCX6A24NA	
	24 V DC	T2MCX6D02NA	
Rear connect terminal studs	1250 A, 1600 A (factory fit only)		
RP	3 pole kit, set of 6 studs (1250 A)	T2RPX33SB	
	4 pole kit, set of 8 studs (1250 A)	T2RPX34SB	
	3 pole kit, set of 6 studs (1600 A)	T2RPX63SB	
	4 pole kit, set of 8 studs (1600 A)	T2RPX64SB	



T2RP rear connect studs



T2HLX6A



Rear connect terminal studs fitted



Motor operator fitted to MCCB

TemBreak 1 series Electronic XS2000NE

85 kA

Current rating: 1000 – 2000 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity: Symmetrical amps (kA RMS)



3

	Voltage	Icu kA	Ics kA
AC use	400/415 ¹⁾	85	64

Trip unit:

Adjustable long, short and instantaneous trip

LTD adjustment: I₁: 0.8 – 1 t: 5 – 30 s
 STD adjustment: I₂: 2 – 10 t: 0.1 – 0.3 s
 Instantaneous Adj: I₃: 3 – 12 NRC

OCR options: Pre-trip alarm, fault indication and contacts, ground fault trip

Dimensions (mm)

Poles	3	4
H ²⁾	450	450
W	320	429
D (less toggle)	185	185
Weight (kg)	55.0	67

Amp rating	Min.	Max.	Cat. No.	Price \$
NRC				
3 Pole				
2000	1000	2000	XS2000NE 20003 RC	
4 Pole				
2000	1000	2000	XS2000NE 20004 RC	
Ground Fault Trip MCCBs ³⁾				
3 Pole				
2000	1000	2000	XS2000NE 20003L	
4 Pole				
2000	1000	2000	XS2000NE 20004L	

Notes: ¹⁾ 415 V Icu rating to IEC 60947-2.

²⁾ H excludes attached busbar.

³⁾ GF MCCBs require a 4th Neutral CT to be ordered for 3 and 4 pole MCCB applications. (If a neutral is present) Refer accessories.

NRC: Nominal rated current

TemBreak 1 series Electronic XS2500NE

85 kA

Current rating: 1250 – 2500 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity: Symmetrical amps (kA RMS)

	Voltage	Icu kA	Ics kA
AC use	400/415 ¹⁾	85	64



3

Trip unit: Adjustable long, short and instantaneous settings

LTD adjustment: I₁: 0.8 – 1 t: 5 – 30 s
 STD adjustment: I₂: 2 – 10 t: 0.1 – 0.3 s
 Instantaneous Adj: I₃: 3 – 12 NRC

OCR options: Pre-trip alarm, fault indication and contacts, ground fault trip

Dimensions (mm)

Poles	3	4
H ²⁾	450	450
W	320	429
D (less toggle)	185	185
Weight (kg)	66.0	78

Amp rating

NRC	Min.	Max.	Cat. No.	Price \$
3 Pole				
2500	1250	2500	XS2500NE 2500 RC3	
4 Pole				
2500	1250	2500	XS2500NE 2500 RC4	
Ground Fault Trip MCCBs ²⁾3)				
3 Pole				
2500	1250	2500	XS2500SE 25003L	
4 Pole				
2500	1250	2500	XS2500SE 25004L	

Notes: ¹⁾ 415 V Icu rating to IEC 60947-2.

²⁾ H excludes attached busbar.

³⁾ GF MCCBs require a 4th Neutral CT to be ordered for 3 and 4 pole MCCB applications. (If a neutral is present) Refer accessories.

NRC: Nominal rated current.

TemBreak 1 series Electronic XS3200NE

85 kA

Current rating: 1600 – 3200 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity: Symmetrical amps (kA RMS)



3

	Voltage	Icu kA	Ics kA
AC use	400/415	85	64
I _{CW} for 0.5 sec		38	

Trip unit: Adjustable long, short and instantaneous settings

LTD adjustment: I₁: 0.8 – 1 t: 5 – 30 s
 STD adjustment: I₂: 2 – 10 t: 0.1 – 0.3 s
 Instantaneous Adj: I₃: 3 – 12 NRC

OCR options: Pre-trip alarm, fault indication with relay contact

Dimensions (mm)

Poles	3
H ¹⁾	450
W	320
D (less toggle)	185
Weight (kg)	66.0

3 Pole

Amp rating

NRC	Min.	Max.	Cat. No.	3 pole Price \$
3200	1600	3200	XS3200NE32003 RC	

Notes: ¹⁾ H excludes attached busbar.
 NRC: Nominal rated current.

Accessories to suit 2000 – 3200 AF

Internal accessories - factory fit		Cat. No.	Price \$
Shunt trips	110 V AC/DC (110–115 V)	2H1526BAA	
	240 V AC (200–480 V)	2H1527BAA	
	12 V DC	2H1528BAA	
	24 V DC	2H1529BAA	
	48 V DC	2H1530BAA	
	200 V DC (200–230 V)	2H1531BAA	
	415 V AC	2H1541BAB	
	24 V AC	2H1532BAA	
	48 V AC	2H1533BAA	
Undervoltage trips	AC coil ¹⁾	2H1509BAA	
	100–230 V DC coil ²⁾	2H1510BAA	
	24 V DC coil ²⁾	2H1511BAA	
	48 V DC coil ²⁾	2H1512BAA	
	60 V DC coil ²⁾	2H1513BAA	
	110 V AC instantaneous controller	UXUB0013B	
	240 V AC instantaneous controller	UXUB0014B	
	440 V AC instantaneous controller	UXUB0015B	
Auxiliary switches	110 V AC time delay controller	UXUB0016B	
	240 V AC time delay controller	UXUB0017B	
	440 V AC time delay controller	UXUB0018B	
	200–230 V DC controller	UXUB0038B	
	AUX SW right hand 1C	UXXB0013C	
	AUX SW right hand 2C	UXXB0014C	
Alarm switch	AUX SW right hand 3C	UXXB0015C	
	AUX SW right hand 4C	UXXB0016C	
	AUX SW right hand 5C	UXXB0017C	
	AUX SW right hand 6C	UXXB0018C	
	ALT SW right hand	UXLB0012C	
Alarm & auxiliary switch	ALT/AUX right hand 1C	UXLB0019D	
	ATL/AUX right hand 2C	UXLB0020C	
	ATL/AUX right hand 3C	UXLB0021C	
	ATL/AUX right hand 5C	UXLB0023C	

Notes: ¹⁾ An AC UVT controller is required for 100–440 V AC.

²⁾ A DC UVT controller is needed for 200–230 V DC operation.
None required for 24–110 V DC.

Accessories to suit 2000 – 3200 AF

3

Internal accessories - factory fit		Cat. No.	Price \$
Ground fault trip (GFT)	An option for all 2000-2500 A types	LSIG	
Optional ext. 4th CTs	2000 A 4th CT	UXOY0006A	
	2500 A 4th CT	UXOY0007A	
Fault indication with contacts	An option for all 2000-3200 A types	FI	
Fault indication	LED's mounted at top of OCR	FILED	
Pre-trip alarm	An option for all 2000-3200 A types	LSIP	

External accessories - most user fit		Cat. No.	Price \$
Front connect busbar (factory fit)	3 P attached busbars XS2000 (6 in kit) ¹⁾	TXRD0003A	
	4 P attached busbars XS2000 (8 in kit) ¹⁾	TXRD0004A	
	Mounting bolts ¹⁾	TXRD0005A	
Motor operators	110 V AC motor	UXMB0006B	
	240 V AC motor	UXMB0008B	
	110 V DC motor	UXMB0009B	
Mechanical interlocks (factory fit)	3 P rear mechanical interlock	UXKC0012A	
	4 P rear mechanical interlock	UXKC0013A	
	Interlock wire (cable style interlock)	UXKC0020A	
	Interlock mechanism - cable type ²⁾	UXKC0025B	
Handle operator	Direct mount handle mechanism ³⁾	XFE10	
	Handle extension	UXHB0001B	
Toggle locks factory fit	Blocks toggle activation (non captive)	UXKB0001A	
Accessory lead terminal	Accessory lead block (factory fit)	UXYD0001A	
	Terminal bolt (6 in kit)	UXYD0002A	
OCR sealing kit	Tamperproof cover for OCR adjustment dials	XS2000OCRSK	

- Notes:** ¹⁾ When an XS2000NE MCCB is configured for "front connection", the Front Connect busbar kits TXRD0003A & 4A already include mounting screws for the FC terminals.
 The TXRD0005A mounting bolts, which also include spacers, are required to mount the MCCB itself. TXRD0005A is always required for FC 2000A MCCBs, but not RC.
- ²⁾ Order one interlock mechanism per breaker.
- ³⁾ Extension shaft handle not available.

Integral Earth Leakage Moulded Case Circuit Breakers

ZS Earth Leakage Circuit Breakers 125 A and 250 A

The ZS earth leakage MCCB from Terasaki offers machine or personnel protection within a standard 125 A, 160 / 250 A MCCB frame size. The ZS earth leakage MCCB also maintains the full functionality of a standard thermal-magnetic overload / short circuit protection device.

Features

- Thermal/ magnetic MCCB
- Standard 125 A or 250 A frame
- Thermal magnetic trip unit ratings:
12 A - 125 A (125 AF), 100 - 250 A (250 AF)
- Fixed magnetic characteristic
- 65 kA fault interruption rating @ 400 / 415 V
- Complies with AS 2081:2011



Earth Leakage features

- Switching utilisation voltage up to 550 V AC (160 V AC minimum)
- Suitable for use at 40 / 50 / 60 Hz (except for the 3 A setting @ 40 Hz)
- 3 or 4 pole types
- Yellow earth leakage TRIP indication flag
- Grey TEST button
- Green 'Power ON' LED
- Adjustable thermal characteristic dial setting from 63 - 100 % of I_R
- Adjustable earth leakage ranges: 30 mA, 100 mA, 300 mA, 500 mA, 1 A, 3 A
- Trip time selection: 0, 60, 200, 400, 700 mS or NT (No Trip)
- 30 mA trip time defaults to a less than 300 mS trip time as per AS/NZS standard requirements
- Built-in dielectric test disconnection test plug
- Remote trip function (standard)
- Harmonics inhibition (standard)
- Pre trip alarm unit (TCU) with maintained cause of trip output, just prior to and after ELT

Options and accessory fitting

- Accepts auxiliaries and alarm switches
- Will not accept shunts and under voltage trips
- Accepts all external accessories, except mechanical interlocks
- ZS 125/250 A MCCBs can be installed on standard XA, XB, XC chassis
- ZS 250 can be fitted to HC Chassis
- Seal label available for sealing the residual current dial setting area for use at 30 mA (Catalogue number of label sheet T12CAPLAB)
- Captive padlock attachment that includes a dial sealing feature
- ZS ELCBs with unswitched or switched neutral poles are available

Notes: Fault interruption and other performance data for ZS125-250GJ ELCBs, is the same as the standard S125-250GJ MCCBs, except:

- Rated to an operational voltage of 550 V AC maximum
- Magnetic characteristic is fixed

Earth Leakage Circuit Breaker ZS125GJ/ ZS250GJ

65 kA

Current rating: 20 – 250 A

Approvals and Tests: AS/NZS 3947-2, IEC 60947-2,
Annex B, EN/IEC 60755
AS 2081:2011 compliance

Operating voltage: 200 - 580 V 50/60 Hz

Interrupting capacity:

	Voltage	Icu kA	Ics kA
AC use	380/415	65	36
DC use	250 V	40	40



Trip unit: Adjustable thermal ($0.63 I_r$ to $100\% I_r$) and fixed magnetic

Earth leakage characteristic: Type 'A' - suitable for AC and residual pulsating DC currents.

Earth leakage adjustments: - 30 mA, 100 mA, 300 mA, 500 mA, 1 A, 3 A.
- NT τ , 0, 60, 200, 400, 700 mS
- 30 mA time setting non adjustable for instant trip

Neutral pole option:

ZS ELCBs are available with switched or unswitched (or 'solid neutral') neutral poles. Many general distribution applications can use switched neutral types, whereas for UPS and some other uses, an unswitched neutral pole is preferred.

Earth Leakage Circuit Breaker ZS125GJ

Dimensions (mm)

Poles	3	4
H	155	155
W	90	120
D (less toggle)	68	68
Toggle cut-out	104	104

3 Pole

Amp rating NRC	Adj. I _r ¹⁾ Min. – Max.	Fixed I _m ¹⁾ (Amps)	Cat. No. ²⁾	3 pole Price \$
20	12 - 20	240	ZS125 GJ 3 20	
32	20 - 32	384	ZS125 GJ 3 32	
50	32 - 50	600	ZS125 GJ 3 50	
63	40 - 63	756	ZS125 GJ 3 63	
100	63 - 100	1200	ZS125 GJ 3 100	
125	80 - 125	1250	ZS125 GJ 3 125	

4 Pole - switched neutral type

Amp rating NRC	Adj. I _r ¹⁾ Min. – Max.	Fixed I _m ¹⁾ (Amps)	Cat. No. ²⁾	4 pole Price \$
20	12 - 20	240	ZS125 GJ 4 20 ²⁾	
32	20 - 32	384	ZS125 GJ 4 32 ²⁾	
50	32 - 50	600	ZS125 GJ 4 50 ²⁾	
63	40 - 63	756	ZS125 GJ 4 63 ²⁾	
100	63 - 100	1200	ZS125 GJ 4 100 ²⁾	
125	80 - 125	1250	ZS125 GJ 4 125 ²⁾	

4 Pole - solid neutral type

Amp rating NRC	Adj. I _r ¹⁾ Min. – Max.	Fixed I _m ¹⁾ (Amps)	Cat. No.	4 pole Price \$
20	12 - 20	240	ZS125GJ 420 SN	
32	20 - 32	384	ZS125GJ 432 SN	
50	32 - 50	600	ZS125GJ 450 SN	
63	40 - 63	756	ZS125GJ 463 SN	
100	63 - 100	1200	ZS125GJ 4100 SN	
125	80 - 125	1250	ZS125GJ 4125 SN	

Notes: ¹⁾ NRC: Nominal rated current. Adj. I_r: Adjustable thermal setting
 Fixed I_m: Fixed magnetic setting NT: No Trip

Earth Leakage Circuit Breaker ZS250GJ



Dimensions (mm)

Poles	3	4
H	165	165
W	105	140
D (less toggle)	68	68
Toggle cut-out	104	104

3 Pole

Amp rating	Adj. I _r ¹⁾ Min. – Max.	Fixed I _m ¹⁾ (Amps)	Cat. No.	Price \$
160	100-160	1760	ZS250 GJ 3 160	
250	160-250	2750	ZS250 GJ 3 250	

4 Pole

160	100-160	1760	ZS250 GJ 4 160	
			ZS250 GJ 4 160 SN	
250	160-250	2750	ZS250 GJ 4 250	
			ZS250 GJ 4 250 SN	

Notes: ¹⁾ Unswitched (solid neutral) type.

Integral Earth Leakage Circuit Breaker ZS 400 A - 800 A

The ZS 400 – 800A Earth Leakage Circuit Breaker from Terasaki offers machine protection within a standard 400 A, 630 / 800 A MCCB frame size.

The full functionality of a standard thermal-magnetic overload / short circuit protection MCCB is maintained.

Standard Features

- AS/NZS 60947.6, JIS Standards compliance
- Thermal/magnetic MCCB
- 3 or 4 pole 400 A, 630/800 A 3 pole only
- Switching utilisation up to 110 to 440 V AC
- Suitable for use at 40/50/60 Hz
- Trip unit ratings: 250 A – 400 A (400 AF),
500 A – 800 A (800AF)
- Fixed thermal setting, adjustable magnetic setting
- 70 kA / 50kA fault interruption rating 400 AF / 800 AF
- Harmonics inhibition
- Megger / Dielectric test voltage: 500 V DC Maximum



3

Earth Leakage features

- Yellow ground fault TRIP indication flag
- Grey TEST button
- Green 'Power ON' LED
- Adjustable thermal characteristic dial setting from 63 - 100 % of IR
- Adjustable earth leakage ranges: 100 mA, 200 mA, 500 mA,
- Trip time selection: Fixed
- Type "AC" earth leakage device suitable for AC currents

Options, Internal and external accessories

- Accessories are a customer fit.
- Auxiliaries & Alarms can be used. The quantities refer to standard MCCB quantity configurations
- Cannot fit Shunt & UVTs
- Standard MCCB external accessories can be installed, except for T2ML link and T2MW wire interlocks. T2MS slide interlocks can be installed
- Will fit to XC and HC chassis

Integral Earth Leakage Circuit Breaker ZS 400 A - 800 A

Settings & Features:



- Earth leakage (RCD) Test button
- Earth leakage tripped indicator flag
- Current sensitivity
- Trip button

Rated breaking capacities (Ics kA):

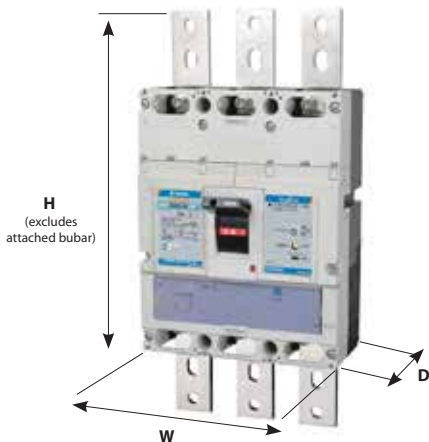
ZS ELCB model & kA Rating (Ics)

Voltage range	ZS400GF	ZS630NF	ZS800NF
AC440 V	70	50	50
AC100/240 V	100	85	85

Overcurrent relay ratings and adjustment:

Trip mechanism type	Thermal magnetic all types		
ZS400NF/GF	trip unit ampere ratings:	250, 300, 350, 400 A	fixed thermal / Adj mag 6 -12 x I _n
ZS630NF		500 A, 600 A, 630 A, 700, 800 A	fixed thermal / Adj mag 5 -10 x I _n
ZS800NF			fixed thermal / Adj mag 5 -10 x I _n

Integral Earth Leakage Circuit Breaker ZS 400 A - 800 A



Dimensions

Outline Dimensions (mm)	ZS400GF	ZS630NF	ZS800NF
H	260	273	273
W	140 3P / 185 4P	210 3P	210 3P
D	103	103	103

Integral Earth Leakage Circuit Breaker ZS 400GF

70 kA

Current rating: 250 – 400 A

Approvals and Tests: AS/NZS 3947-2, IEC 60947-2,
AS/NZS 2081: 2011, JIS C 8201

Operating voltage: 110 – 440 V 50/60 Hz

Interrupting capacity:

3

AC use	Voltage Icu	Icu
	380/415	70

New 400AF
ZS ELCB



Trip unit: Fixed thermal, adjustable magnetic 6 to 12 x I_n

Earth leakage characteristic: Type "AC" - suitable for AC currents.

Earth leakage adjustments: 100 mA, 200 mA, 500 mA

Fixed operating time: 0.1 second maximum

Options:

TemBreak 2, 400 A internal and external accessories can be installed, except for shunts, UVTs, Trip Control Units, T2ML / MW Interlocks.

Neutral Pole

ZS ELCBs are available with switched neutral poles.

Dimensions

Poles	3	4
H (less attached busbars)	260	260
W	140	185
D (less toggle)	103	103

Ampere Rating NRC	Fixed I _r ¹⁾ Amps	Adj. I _i ¹⁾ Amps	Cat. No.	3 Pole Price \$	4 Pole Price \$
250	250	1500 - 3000	ZS400 GF 3 250	3900.00	
			ZS400 GF 4 250		4600.00
300	300	1800 - 3600	ZS400 GF 3 300	3900.00	
			ZS400 GF 4 300		4600.00
350	350	2100 - 4200	ZS400 GF 3 350	4150.00	
			ZS400 GF 4 350		4800.00
400	400	2400 - 4800	ZS400 GF 3 400	4300.00	
			ZS400 GF 4 400		4950.00

Notes: ¹⁾ NRC: Nominal rated current, Fixed I_r: Fixed thermal setting, Adj. Fixed I_i: Adjustable magnetic setting,

Integral Earth Leakage Circuit Breaker ZS630NF and ZS800NF

50 kA

Current rating: 500 – 800 A

Approvals and Tests: AS/NZS 3947-2, IEC 60947-2,
AS/NZS 2081: 2011, JIS C8201

Operating voltage: 110 – 440 V 50/60 Hz

Interrupting capacity:

AC use	Voltage Icu	Icu
	380/415	50



3

Trip unit: Fixed thermal, adjustable magnetic 5 to 10 x I_n

Earth leakage characteristic: Type "AC" - suitable for AC currents.

Earth leakage adjustments: 100 mA, 200 mA, 500 mA

Fixed operating time: 0.1 second maximum

Options:

TemBreak 2, 630 - 800 A internal and external accessories can be installed, except for shunts, UVTs, Trip Control Units, T2ML / MW Interlocks

Neutral Pole

ZS ELCBs are available with switched neutral poles.

Dimensions

Poles	3	4
H (less attached busbars)	273	273
W	210	280
D (less toggle)	103	103

Ampere Rating NRC	Fixed I _r ¹⁾ Amps	Adj. I _i ¹⁾ Amps	Cat. No.	Price \$
500	500	2500 - 5000	ZS630 NF 3 500	4920.00
600	600	3000 - 6000	ZS630 NF 3 600	5200.00
630	630	3150 - 6300	ZS630 NF 3 630	5200.00
700	700	3500 - 7000	ZS800 NF 3 700	5900.00
800	800	4000 - 8000	ZS800 NF 3 800	6200.00

Notes: ¹⁾ NRC: Nominal rated current, Fixed I_r: Fixed thermal setting, Adj. Fixed I_i: Adjustable magnetic setting,

TemBreak 2 MCCB Switch Disconnectors (non-auto MCCBs)

Current rating: 125 – 2500 A

Approvals: Standards AS/NZS 3947-2 and IEC 60947-2

- Accepts MCCB internal and external accessories
- No overcurrent protection (isolator only)
- Suitable for use as a panelboard or switchboard isolator switch
- AC 23 and DC 22 rated to IEC 60947-3
- Rated impulse withstand voltage $U_{imp} = 8$ kV



3

3 Pole

Amp rating NRC	Short time rating kA for 0.3 sec (Icw)	Rated short-circuit making capacity (Icm)(kA)	Cat. No.	3 pole Price \$
125	2	3.6	S125NN3	
160	3	6	S160NN3	
250	3	6	S250NN3	
400	5	9	S400NN3	
630	5	9	S630NN3	
800	10	15	S800NN3	
1250	15	32	S1250NN3	
1600	20	45	S1600NN3	
2000 ¹⁾	35	90	XS2000NN3RC	
2500 ¹⁾	35	90	XS2500NN3RC	

4 Pole

Amp rating NRC	Short time rating kA for 0.3 sec (Icw)	Rated short-circuit making capacity (Icm)(kA)	Cat. No.	4 pole Price \$
125	2	3.6	S125NN4	
160	3	6	S160NN4	
250	3	6	S250NN4	
400	5	9	S400NN4	
630	5	9	S630NN4	
800	10	15	S800NN4	
1250	15	32	S1250NN4	
1600	20	45	S1600NN4	
2000 ¹⁾	35	90	XS2000NN4RC	
2500 ¹⁾	35	90	XS2500NN4FC	

Notes: ¹⁾ TemBreak 1 MCCBs

Refer Part C catalogue for additional technical details and dimensions. UVTs and shunts are operated by the MCCBs trip lever which remains fitted in MCCB Switch disconnectors (Non Auto MCCBs)

Moulded Case Circuit Breakers

TemBreak DC rated MCCBs

- Special "ND" models for 350 V to 600 V DC use ¹⁾
- Thermal magnetic and Magnetic only types
- 3 and 4 pole types
- 125 A – 2500 A
- Will accept standard accessories on sizes to 630 A
- Will accept standard external accessories for sizes 800 - 2500 A
- Refer NHP for internal accessory fitting for types XS800 - XS2500



3

DC MCCBs to 800 A

Ampere frame	Trip unit / OCR Sensor ratings (Amps)	Poles ²⁾	OCR type	Cat. No.	Price \$
125 AF	20, 32, 50, 63, 100, 125	3	Therm Mag	S125ND3_ _ _	
125 AF	20, 32, 50, 63, 100, 125	4	Therm Mag	S125ND4_ _ _	
250 AF	20, 32, 50, 63, 100, 125, 160	3	Therm Mag	S160ND3_ _ _	
250 AF	20, 32, 50, 63, 100, 125, 160	4	Therm Mag	S160ND4_ _ _	
250 AF	250	3	Therm Mag	S250ND3250	
250 AF	250	4	Therm Mag	S250ND4250	
400 AF	400	3	Therm Mag	S400ND3400	
800 AF	630	4	Therm Mag	S800ND4630	
800 AF	800	4	Therm Mag	S800ND4800	

All MCCBs are indent.

**New MCCBs
to 1000 V DC
available**

Notes: ¹⁾ All standard thermal magnetic MCCBs are rated to switch DC currents up to 250 V DC.

²⁾ Connect poles in series for 350 V DC and above.

The time constant (L/R) of the circuit should be less than 2 ms at or below rated current, less than 7 ms for short circuit equal and below 10 kA, less than 15 ms for short circuits over 10 kA, the connections should be as shown in the diagrams on following page.

Moulded Case Circuit Breakers

Ratings

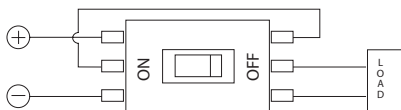
DC Breaking capacity (kA)			Poles 1)	OCR type	Current adjust.	Cat. No.
350 V	500 V	600 V				
10	–	–	3	Therm Mag	63-100 % I _r	S125ND
10	7.5	5	4	Therm Mag	63-100 % I _r	S125ND
10	–	–	3	Therm Mag	63-100 % I _r	S160ND
10	7.5	5	4	Therm Mag	63-100 % I _r	S160ND
10	–	–	3	Therm Mag	63-100 % I _r	S250ND
10	7.5	5	4	Therm Mag	63-100 % I _r	S250ND
20	15	15	3	Therm Mag	63-100 % I _r	S400ND
30	20	20	3	Therm Mag	50-100 % I _r	S800ND

Ampere rating	Device type	Part Prefix	DC Utilisation voltage
20 - 2500	MCCB	S125 - 2500 ND	600 V
250 - 800	MCCB	PVS 400 - 800 ND	750 V
250 - 800	MCCB	PVS 400 - 800 NDH	1000 V
160 - 800	Isolator	PVS 160 - 800 NNL	800 V
160 - 800	Isolator	PVS 400 - 800 NNH	1000 V

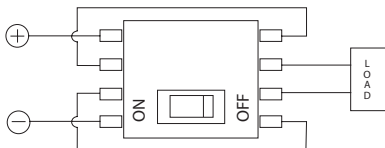
3 and 4 pole series connection

The following wiring connection diagrams should be followed to obtain the kA switching rating levels indicated in the table above.

3 pole in series



4 pole in series



Notes: 1) Connect poles in series for 350 V DC and above.

The time constant (L/R) of the circuit should be less than 2 ms at or below rated current, less than 7 ms for short circuit equal and below 10 kA, less than 15 ms for short circuits over 10 kA, the connections should be as shown in the diagrams on following page.

DC magnetic types 630 A – 2500 A

- Ampere range 630 – 2500 A
- 3 pole
- Special shunt and UVT available for sizes 1250 A to 1600 A
- Magnetic adjustment range 4 - 8 x I_m



3 pole

Amp rating NRC	Trip Unit Type	3 Pole Cat. No. ^{2) 3)}	3 pole Price \$
1000 ⁴⁾	Thermal Magnetic	XS1000ND10003FC	
1250	Magnetic only	XS1250ND12503FC ²⁾³⁾	
1600	Magnetic only	XS1600ND16003FC ¹⁾³⁾	
2000	Magnetic only	XS2000ND20003RC	
2500	Magnetic only	XS2500ND25003RC	

Notes: ¹⁾ 3 pole sizes stocked.

²⁾ Mounting details for DC Applications series are identical to those for the same frame size Standard series (i.e. for XS1000ND refer to XS800NJ, XS1250ND and XS1600ND refer to XS1600NE, XS2000ND and XS2500ND refer to XS2500NE).

³⁾ For 1250 A and 1600 A DC MCCBs some internal accessories may differ from standard AC types. Information is as follows. Internal accessories are a FACTORY fit.

a) Auxiliaries and alarms - Same as standard AC MCCB type

b) Shunt trips are type: 2H2438BAA - 110 V DC or 2H2439BDA - 220 V DC

c) Under voltage trips are type: 2H3776CBB - 110 V DC or 2H3776CCB - 220 V DC + barrier 2H3748EBA

⁴⁾ Thermal/magnetic adjustment down to 630 amps.

NRC: Nominal rated current.

All TemBreak thermal magnetic MCCBs can be used for DC applications


Plug in MCCBs: 125 – 630 AF TemBreak 2

External accessories

Plug-in MCCBs ¹⁾

A range of MCCBs are stocked with a rear mounted pre-fitted plug-in section that plugs into the panel mounted base section. The panel mounted base section is ordered separately. The TemBreak 2 plug-in bases include a safety interlock system where the MCCB must be switched OFF to allow MCCB removal. The plug-in base allows for the fitting of up to 4 terminal blocks when auxiliaries, alarms, shunts or UVTs are used. Rear connect terminal covers can be used on the front of the MCCB for IP 20 ingress protection. Standard MCCB conversion to plug-in – NHP can convert standard MCCB to plug-in use.

MCCBs complete with base plug (3 pole types below are stocked) ¹⁾

	MCCB Ampere Rating NRC	400/415 V ⁴⁾ kA rating	3 pole Cat. No.	Price \$
	20	36 kA	S125NJ320PM	
	32	36 kA	S125NJ332PM	
	50	65 kA	S125GJ350PM	
	63	65 kA	S125GJ363PM	
	100	65 kA	S125GJ3100PM	
	125	65 kA	S125GJ3125PM	
	160	65 kA	S160GJ3160PM	
PM	250	65 kA	S250GJ3250PM	
	400	70 kA	S400GE3400PM	
	630 (530 A) ²⁾	70 kA	S630GE3630PM	
MCCB panel mounting bases				
	3 pole kit for 125 AF ³⁾		T2PM12A3A	
	4 pole kit for 125 AF ³⁾		T2PM12A4A	
	3 pole kit for 160/250 AF ³⁾		T2PM25A3A	
	4 pole kit for 160/250 AF ³⁾		T2PM25A4A	
	3 pole kit for 400/630 AF ³⁾		T2PM40A3A	
	4 pole kit for 400/630 AF ³⁾		T2PM40A4A	
	Control wiring terminals for plug-in MCCBs ³⁾ ⁴⁾ ⁵⁾			
	3 pin plug for aux/alarm - MCCB side		2H6959CAA1	
	3 pin plug for shunt/UVT - MCCB side		2H6959CBA1	
	3 pin socket for panel mount section		T2TP003A	

Notes: ¹⁾ Other MCCBs not listed can be supplied on request or converted to plug-in, refer next page.

²⁾ S630 MCCBs when used with a plug-in base must be derated to 530 A.

³⁾ Up to 4 control wiring plug and socket sets can be used in a base.

⁴⁾ Control wiring kits include pin lugs for internal accessories.

⁵⁾ Internal accessories must be ordered separately.


⁶⁾ TemBreak 2 MCCBs types E/S/H/L can be converted for plug-in use.

Accessories to suit 125 – 630 AF TemBreak 2

FC connection bars — 'L' shaped terminal bar set

	Cat. No.	Price \$
S125		
3 pole kit of 3 bars	T2PF123BA	
4 pole kit of 4 bars	T2PF124BA	
S160, S250		
3 pole kit of 3 bars	T2PF253BA	
4 pole kit of 4 bars	T2PF254BA	
S400, S630		
3 pole kit of 3 bars	T2PF403BA	
4 pole kit of 4 bars	T2PF404BA	

Plug in MCCB kits Suits MCCB types

	Cat. No.	Price \$	
 <p>"S.....PM" MCCB with plugs fitted</p> <p>MCCB</p>	E125, S125		
	3 pole kit (base not included)	2H6843CAB	
	4 pole kit (base not included)	2H6844CAB	
	S160, E/S 250		
	3 pole kit (base not included)	2H6845CAA	
	4 pole kit (base not included)	2H6846CAA	
	H/L 125-160-250 (not S250PE/H250NE)		
	3 pole kit (base not included)	2H6940CAB	
	4 pole kit (base not included)	2H6941CAB	
	S250PE, H250NE		
	3 pole kit (base not included)	2H6940CBA	
	4 pole kit (base not included)	2H6941CBA	
	E400, S400 (not for H/L400)		
	3 pole kit (base not included)	2H6847CAAK	
	4 pole kit (base not included)	2H6848CAAK	
S630			
3 pole kit (base not included)	2H7234CAAK		
4 pole kit (base not included)	2H7235CAAK		



T2PM base + MCCB



Plug and socket for internal accessories

TemBreak 2 & TemBreak 1 MCCB cross reference

TemBreak 2 MCCB



3

Ampere Range	TemBreak 2 415 V kA		Thermal-Mag. Adjustable	Electronic Adjustment	TemBreak 2 Catalogue Number
	Icu	Ics			
12.5 – 125	25	19	Yes	–	E125NJ
16 – 125	25	13	No	–	S125NF
15 – 100	65	33	No	–	S100GF
12.5 – 125	36	36	Yes	–	S125NJ
12.5 – 125	65	36	Yes	–	S125GJ
12.5 – 125	125	85	Yes	–	H125NJ
12.5 – 125	200	150	Yes	–	L125NJ
16 – 160	25	19	No	–	S160NF
12.5 – 160	36	36	Yes	–	S160NJ
32 – 160	65	36	Yes	–	S160GJ
100 – 160	125	85	Yes	–	H160NJ
100 – 160	200	150	Yes	–	L160NJ
12.5 – 250	25	19	Yes	–	E250NJ
160 – 250	36	36	Yes	–	S250NJ
160 – 250	65	36	Yes	–	S250GJ
16 – 250	70	70	–	Yes	S250PE
160 – 250	125	85	Yes	–	H250NJ
16 – 250	125	85	–	Yes	H250NE
160 – 250	200	150	Yes	–	L250NJ
100 – 400	25	25	Yes	–	E400NJ
160 – 400	36	36	Yes	–	S400CJ
160 – 400	50	50	Yes	–	S400NJ
100 – 400	50	50	–	Yes	S400NE
160 – 400	70	50	Yes	–	S400GJ
100 – 400	70	50	–	Yes	S400GE
100 – 400	85	85	–	Yes	S400PE
100 – 400	125	85	–	Yes	H400NE
100 – 400	200	150	–	Yes	L400NE
252 – 630	36	36	–	Yes	E630NE
252 – 630	50	50	–	Yes	S630CE
252 – 630	70	50	–	Yes	S630GE

Notes: The above equivalents are approximate only. Physical sizes may vary slightly as well as kA ratings.

TemBreak 2 & TemBreak 1 MCCB cross reference

TemBreak 1 MCCB



To obtain stocked TemBreak 1 MCCBs
125 - 400 A Refer Section 6 or refer NHP

TemBreak 1 – approximate equivalent Primary equivalent 1, secondary 2, third 3, / & 415 V kA rating

1		2		3	
XS125CJ	18 kA	XS125NJ	25 kA	XE225NC	18 kA
XS125CS	14 kA	XS125NS	25 kA	-	
XH125NJ	50 kA	-	-	-	
XS125NJ	25 kA	XS125CJ	18 kA	XE225NC	18 kA
XH125NJ	50 kA	TL100NJ	85 kA	XH125PJ	50 kA
TL30F	120 kA	TL100F	120 kA	TL100NJ	85 kA
TL225B	180 kA	-	-	-	
-		-		-	
XS250NJ	25 kA	XH160PJ	50 kA	XE225NC	18 kA
XH250NJ	50 kA	XH250PJ	85 kA	XH160PJ	50 kA
TL250NJ	85 kA	TL225F	120 kA	TL100F	120 kA
TL225B	180 kA	TL100C	180 kA	-	
XS250NJ	25 kA	XE225NC	18 kA	-	
XS250NJ	25 kA	-	-	-	
XH250NJ	50 kA	TL250NJ	85 kA	-	
XH400SE	65 kA	XS400SE	50 kA	-	
TL250NJ	85 kA	XH250PJ	65 kA	-	
TL400NE	85 kA	TL225F	120 kA	-	
TL225B	180 kA	-	-	-	
XS400CJ	35 kA	-	-	-	
XS400CJ	35 kA	-	-	-	
XS400NJ	50 kA	-	-	-	
XS400SE	50 kA	XH400SE	65 kA	XH400PE	65 kA
XH400PJ	65 kA	-	-	-	
XH400SE	65 kA	XH400PE	65 kA	TL400NE	85 kA
TL400NE	85 kA	-	-	-	
TL400NE	85 kA	TL630NE	125 kA	-	
-		-		-	
XS630CJ	42 kA	XS630NJ	50 kA	-	
XS630SE	50 kA	XS630NJ	50 kA	-	
XH630SE	65 kA	XH630PE	65 kA	XS630PJ	85 kA

Notes: MCCBs with the same colours have the same outline dimensions, though in the case of 400 AF & 630 AF, main terminal heights vary.

TemBreak 2 & TemBreak 1 MCCB cross reference

TemBreak 2 MCCB



Isolators - Short time rating for 0.3 seconds Icw (kA)

Ampere Range	TemBreak 2 415 V kA		Thermal-Mag Adjustable	Electronic Adjustment	TemBreak 2 Catalogue Number
	Icu	Ics			
125	2	-	-	-	S125NN
160	3	-	-	-	S160NN
250	3	-	-	-	S250NN
400	5	-	-	-	S400NN
630	5	-	-	-	S630NN

TemBreak 1 MCCB



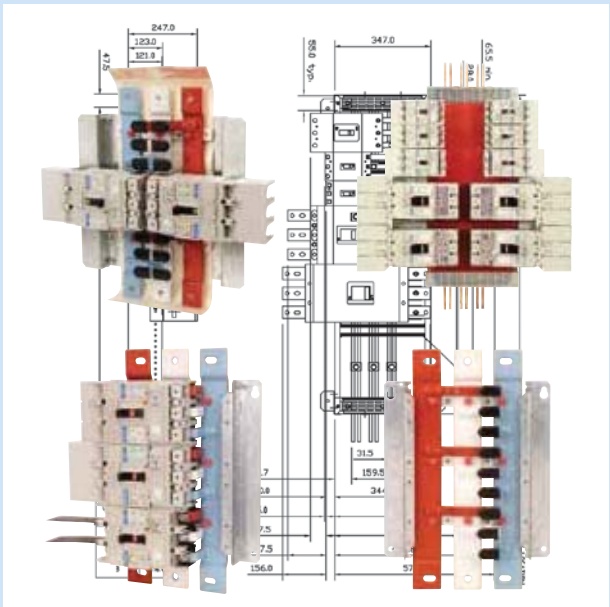
TemBreak 1 – approximate equivalent Primary equivalent 1, secondary 2, third 3, / & 415 V kA rating

	1	2	3
XS125NN	1.8 kA	-	-
XS250NN	4 kA	XE250NNC	3 kA
XS250NN	4 kA	-	-
XS400NN	5 kA	-	-
XS630NN	10 kA	XS800NN	10 kA

Notes: The above equivalents are approximate only. Physical sizes may vary slightly as well as kA ratings.

Chassis assemblies for the TemBreak range

	Page
Chassis assemblies overview	4 – 2
XA / XB, PXB series	4 – 3
XB SS series	4 – 7
XC series	4 – 9
Chassis to suit 125 - 250 AF MCCBs	4 – 11
Terminal covers	4 – 12
HC High-current chassis	
- to suit TemBreak 2 125 – 630 AF MCCBs	4 – 15
- to suit TemBreak 1 630 – 1250 AF MCCBs	



Moulded Case Circuit Breaker Chassis Systems

General features of TemWay XA, XB, PXB, XC chassis

- 36 and 40 kA ratings on standard TemWay XA, XB, PXB chassis
- 50 and 65 kA ratings on TemWay XC chassis
- XC 1000 A chassis are now stocked with 400 A and 250 A tee off combinations
- A range of TemWay 4 pole XA and XB chassis, suitable for earth leakage MCCBs
- A simplified range of single sided chassis for 250 AF MCCBs, 20 – 250 A
- Suitable for 690 V AC applications



General features of heavy current "HC" chassis

- For MCCBs, 20 - 1250 A
- Compact single sided version
- Common configurations of HC chassis now stocked - fully assembled for quick delivery
- 11 box sizes – more economical sizing to suit applications and save cost
- Suitable for 690 V AC applications

4

Testing

Both TemWay and HC Chassis have been unconditionally type tested (no MCCBs fitted) in Australia, at the short time withstand ratings shown in the table below.

Chassis ratings

Chassis Type	Description	Main bar rating (A)	Fault current level lcv rating	MCCB frame size	MCCB type
XA	Double sided	630, 800 A	36 kA 1 sec. / 40 kA 0.5 sec.	125 AF	E/S/ZS125 12A-125A
XB	Double sided	800 A	36 kA 1 sec. / 40 kA 0.5 sec.	250 AF	E/S/ZS250 NJ/GJ 12 A-250 A
XBSS	Single sided Left or right sided	800 A	36 kA 1 sec. / 40 kA 0.5 sec.	250 AF	E/S/ZS250 NJ/GJ 12 A-250 A
PXB	Double sided	800 A	36 kA 1 sec. / 40 kA 0.5 sec.	250 AF	S250PE, or a mix of 250 AF sizes
XC	Double sided	1000 A	50 kA 1 sec. / 65 kA 0.5 sec.	250 AF, 400 AF	E/S/ZS160-250 up to E/S400
HC	Double sided or single sided left or right	1250 A, 1600 A, 2200 A	65 kA 1 Sec.	250 AF to 1250 AF	E/S160 up to XS1250SE

XA / XB Chassis for 125 - 250 AF MCCBs

3 pole, double sided

Features

- Complies with AS/NZS 3439, AS/NZS 3000 - 2007
- Suits TemBreak MCCBs 125-250 A
- Top and bottom fed
- Busbars fully insulated
- Side mounting rail now standard for quicker mounting on all chassis
- XA and XB chassis now rated up to : 36 kA for 1 second
40 kA for 0.5 seconds

XA 630 and XA 800

Suits E125, S125, ZS125 MCCBs

No. Poles	Cutout ¹⁾ Height (mm)	Pan Height (mm)	Cat. No.	630 A Price \$	Cat. No.	800 A Price \$
6	92	90	XA6306U		XA8006U	
12	182	180	XA63012U		XA80012U	
18	272	270	XA63018U		XA80018U	
24	362	360	XA63024U		XA80024U	
30	452	450	XA63030U		XA80030U	
36	542	540	XA63036U		XA80036U	
42	632	630	XA63042U		XA80042U	
48	722	720	XA63048U		XA80048U	
60	902	900	XA63060U		XA80060U	
72	1082	1080	XA63072U		XA80072U	

XB 800

Suits S160, S250NJ, S250GJ, ZS250 MCCBs (not S250PE)

No. Poles	Cutout ¹⁾ Height (mm)	Pan Height (mm)	Cat. No.	800 A Price \$
6	107	105	XB8006U	
12	212	210	XB80012U	
18	317	315	XB80018U	
24	422	420	XB80024U	
30	527	525	XB80030U	
36	632	630	XB80036U	
42	737	735	XB80042U	
48	842	840	XB80048U	
60	1052	1050	XB80060U	
72	1262	1260	XB80072U	

Notes: ¹⁾ The length of the escutcheon cut-out
For XB chassis with Form 3bih separation, refer NHP.

PXB Chassis for 250AF electronic / thermal magnetic MCCBs

3 pole, double sided

Features

- Complies with AS/NZS 3439, AS/NZS 3000 - 2007
- Suitable for MCCBs 12 A - 250 A
- Suits either all electronic or a mix of electronic and thermal magnetic MCCBs
- Top and bottom fed
- Busbars fully insulated
- PXB chassis rated: 36 kA for 1 second
40 kA for 0.5 seconds



PXB80018U
chassis shown

PXB 800

Suits S250PE electronic, S160, E250, S250, ZS250 thermal mag. MCCBs

No. of Poles	Cutout Height ¹⁾ (mm)	Pan Height ²⁾ (mm)	800 A Cat. No.	Price \$
6	107	105	PXB8006U	
12	212	210	PXB80012U	
18	317	315	PXB80018U	
24	422	420	PXB80024U	
30	527	525	PXB80030U	
36	632	630	PXB80036U	
42	737	735	PXB80042U	
48	842	840	PXB80048U	
60	1052	1050	PXB80060U	
72	1262	1260	PXB80072U	

PXB Chassis showing add-on brackets for mounting thermal magnetic MCCBs



PXB chassis details

Fitting S250PE Electronic MCCBs

The PXB chassis has extra long tee offs to accommodate 103 mm deep S250PE electronic MCCBs. An S250PE MCCB will not mount onto a standard XB chassis.

Fitting S250PE electronic, S160, E250 and S250 thermal magnetic MCCBs

The PXB chassis caters for a mix of 103 mm deep S250PE and 68mm deep thermal magnetic S160, E250, S250 MCCBs. The chassis comes as standard with add-on metal brackets & screws, to allow shallower 68 mm deep MCCBs to be installed in any position on the chassis. The total quantity of 3 pole brackets supplied equals the number of 3 pole tee off sets.

- Notes:**
- 1) The length of the escutcheon cut-out.
 - 2) Busbars extend 50 mm beyond the pan length at the top and bottom on XA, XB, XC chassis.

XA / XB Chassis for 125 - 250AF MCCBs

4 pole, double sided

Features

- Complies with AS/NZS 3439, AS/NZS 3000 - 2007
- Suits TemBreak MCCBs 125-250 A
- Top and bottom fed
- Busbars fully insulated
- Side mounting rail now standard for quicker mounting on all chassis
- XA and XB chassis now rated up to : 36 kA for 1 second
40 kA for 0.5 seconds



XA 630 and XA 800

Suits E125, S125, ZS125 MCCBs

800A chassis shown ³⁾

No. Poles	Cutout ¹⁾ Height (mm)	Pan Height (mm)	Cat. No.	630 A Price \$
8	122	150	XA6308U4POLE	
16	242	270	XA63016U4POLE	
24	362	390	XA63024U4POLE	
32	482	510	XA63032U4POLE	
40	602	630	XA63040U4POLE	
48	722	750	XA63048U4POLE	
56	842	850	XA63056U4POLE	
64	962	990	XA63064U4POLE	

No. Poles	Cutout ¹⁾ Height (mm)	Pan Height (mm)	Cat. No. ²⁾	800 A Price \$
8	122	150	XA8008U4POLE	
16	242	270	XA80016U4POLE	
24	362	390	XA80024U4POLE	
32	482	510	XA80032U4POLE	
40	602	630	XA80040U4POLE	
48	722	750	XA80048U4POLE	
56	842	850	XA80056U4POLE	
64	962	990	XA80064U4POLE	

Notes: ¹⁾ The length of the escutcheon cut-out.

²⁾ XB Chassis main bars are rated at 800 A, while for XA chassis it is an option.

³⁾ XA and XB 4 pole chassis have a common pan width. 630A chassis use 4 main bars while 800 A have 5 main bars (2 neutral bars).

XA / XB Chassis for 125 - 250AF MCCBs

4 pole, double sided

XB 800**Suits S160, S250NJ, S250GJ, ZS250 MCCBs (not S250PE)**

No. Poles	Cutout ¹⁾ Height (mm)	Pan Height (mm)	Cat. No.	800 A Price \$
8	142	175	XB8008U4POLE	
16	282	315	XB80016U4POLE	
24	422	455	XB80024U4POLE	
32	562	595	XB80032U4POLE	
40	702	735	XB80040U4POLE	
48	842	875	XB80048U4POLE	

Notes: ¹⁾ The length of the escutcheon cut-out.

XB SS Chassis for 125 - 250 AF MCCBs

3 pole, single sided

Features

- Single sided MCCB mounting
- Different chassis for left or right side MCCB mounting
- Complies with AS/NZS 3439, AS/NZS 3000 - 2007
- Suits TemBreak, 160 / 250 A Frame MCCBs
- Current ratings of MCCBs range 12 A to 250 A
- Top and bottom fed
- Busbars fully insulated
- Side mounting rail now standard for quicker mounting on all chassis
- XA and XB chassis now rated up to : 36 kA for 1 second
40 kA for 0.5 seconds



Single Sided Chassis

Suits **S160NJ, E250NJ, S250NJ, S160GJ, S250GJ, ZS250 MCCBs**
(not S250PE)

XB SSL 800

LEFT hand single sided 3 pole (MCCB loadside connections at LEFT)

No. Poles	Cutout ¹⁾ Height (mm)	Pan Height (mm)	Cat. No. ²⁾	800 A Price \$
3	107	105	XBSSL 800 3U	
6	212	210	XBSSL 800 6U	
9	317	315	XBSSL 800 9U	
12	422	420	XBSSL 800 12U	
15	527	525	XBSSL 800 15U	
18	632	630	XBSSL 800 18U	
21	737	735	XBSSL 800 21U	
24	842	840	XBSSL 800 24U	
30	1052	1050	XBSSL 800 30U	
36	1262	1260	XBSSL 800 36U	

Notes: ¹⁾ The length of the escutcheon cut-out.

²⁾ Busbars extend 50 mm beyond the pan length at the top and bottom on XA, XB, XC chassis.

XB SS Chassis for 125 - 250 AF MCCBs

3 pole, single sided

XB SSR 800

RIGHT hand single sided 3 pole (MCCB loadside connections at RIGHT)

No. Poles	Cutout ¹⁾ Height (mm)	Pan Height (mm)	Cat. No. ²⁾	800 A Price \$
3	107	105	XBSSR 800 3U	
6	212	210	XBSSR 800 6U	
9	317	315	XBSSR 800 9U	
12	422	420	XBSSR 800 12U	
15	527	525	XBSSR 800 15U	
18	632	630	XBSSR 800 18U	
21	737	735	XBSSR 800 21U	
24	842	840	XBSSR 800 24U	
30	1052	1050	XBSSR 800 30U	
36	1262	1260	XBSSR 800 36U	

4

- Notes:**
- 1) The length of the escutcheon cut-out.
 - 2) Busbars extend 50 mm beyond the pan length at the top and bottom on XA, XB, XC chassis.

XC Chassis for 160 / 250 A - 400 A MCCBs

3 pole, double sided

Features

- Complies with AS/NZS 3439, AS/NZS 3000 - 2007
- Suits TemBreak MCCB amp ratings 20 A - 400 A
- Top and bottom fed
- Busbars fully insulated
- Side mounting rail now standard for quicker mounting on all chassis
- XC chassis now rated up to : 50 kA for 1 second
65 kA for 0.5 second
- Now stocked with combinations of 250 A and 400 A tee offs 40 kA for 0.5 seconds



XC 1000

Suits S160, E250, S250NJ, S250GJ, ZS250 MCCBs²⁾ (not S250PE)

No. Poles	Cutout ¹⁾ Height (mm)	Pan Height (mm)	Cat. No.	1000 A Price \$
6	107	170	XC10006U	
12	212	275	XC100012U	
18	317	380	XC100018U	
24	422	485	XC100024U	
30	527	590	XC100030U	
36	632	695	XC100036U	
42	737	800	XC100042U	
48	842	905	XC100048U	

4

Notes: ¹⁾ The length of the escutcheon cut-out

²⁾ XC chassis can be custom built for alternate combinations of 250 A MCCBs, and up to 2 x 400 AF MCCBs, and ZS125 (125 AF) ELCBs.
630 A MCCB mounting is not possible.

XC Chassis for 160 / 250 A - 400 A MCCBs

3 pole, double sided

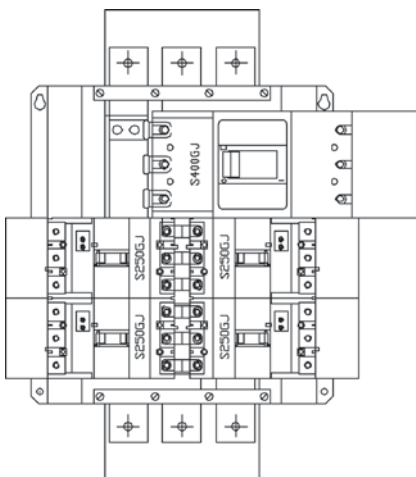
XC 1000 Chassis

Suits 250 A and 400 A MCCBs ¹⁾ (not S250PE)

As an alternative to a larger high current chassis, where only up to 2 x 400 A and up to 12 x 68 mm deep 250 A MCCBs need to be installed, the configurations of stocked XC chassis below can be used.

Pan Height (mm)	Chassis configured for MCCBs below ¹⁾ ²⁾	Cat. No.	1000 A Price \$
415	1 x 400 A and 4 x 250 A	XC10001X4R12U	
625	1 x 400 A and 8 x 250 A	XC10001X4R24U	
835	1 x 400 A and 12 x 250 A	XC10001X4R36U	
555	2 x 400 A and 4 x 250 A	XC10002X4R12U	
765	2 x 400 A and 8 x 250 A	XC10002X4R24U	
975	2 x 400 A and 12 x 250 A	XC10002X4R36U	

4



Notes: ¹⁾ XC chassis can be custom built for alternate combinations of 250 A MCCBs, and up to 2 x 400 AF MCCBs, and ZS125 (125 AF) ELCBs.
630 A MCCB mounting is not possible.

²⁾ 400 A MCCB right side mounted as standard. LH mounting optional to special order.

Chassis

to suit 125 – 250 AF MCCBs

TemWay chassis ratings and cut-out detail

Chassis Type	Amps	(Icw) kA short time with-stand	Standard Chassis suits MCCBs ¹⁾
XA	630	36 kA for 1 sec	E125, S125NJ, S125GJ, ZS125
	630	40 kA for 0.5 sec	
	800	36 kA for 1 sec	
	800	40 kA for 0.5 sec	
XB / XBSS	800	36 kA for 1 sec	S160NJ, E250NJ, S250NJ, ZS250 S160GJ, S250GJ
	800	40 kA for 0.5 sec	
PXB	800	36 kA for 1 sec	S250PE or a mix of 250 AF sizes.
	800	40 kA for 0.5 sec	
XC	800	50 kA for 1 sec	S160NJ/GJ, E250NJ (400 A MCCBs ²⁾) S250NJ/GJ, ZS250
	800	65 kA for 0.5 sec	

Testing

TemWay chassis have been unconditionally type tested (without MCCBs fitted) at the above short time kA ratings (Icw).

MCCB dimensions (mm)

	H	W	D
E125, S125NJ/GJ, ZS125			
1 pole	155	30	68
3 pole	155	90	68
S160, S250NJ/GJ, ZS250			
1 pole	165	40	68
3 pole	165	105	68

MCCB dimensions (mm)

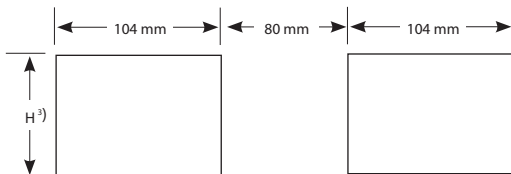
	H	W	D
E400, S400			
1 pole	-	-	-
3 pole	260	140	103

Escutcheon cut-out dimensions (mm)

Applicable to:

TemBreak 2 MCCBs: E/S 125/160/250 AF/400 AF

TemBreak 1 MCCBs: XS/XH 125/250 AF



- Notes:**
- 1) TemBreak 1, XS/XH MCCBs can be fitted to the above chassis.
 - 2) Refer XC chassis ordering page in this section for special XC chassis that accept 400 A MCCBs.
 - 3) For height dimensions for MCCB cut-out refer to "H" in the charts above.

Terminal cover options for TemWay XA, XB, XBSS and XC Chassis

Installation considerations

- MCCBs on the chassis are to be reverse connected, that is, connect the 'bottom' of breaker to the chassis tee offs
- Terminal or interpole barriers or "other adequate insulation material" must be fitted at MCCB load side, (top of MCCB) which is the gas venting end of the MCCB

Load Side

Terminal or interpole barriers below:

Line Side

Optional covers below:

4

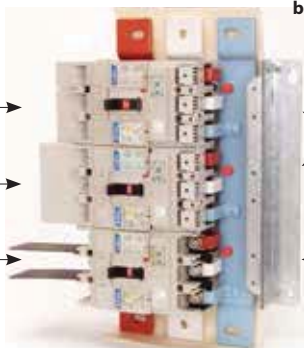
T2CF Short terminal cover

T2CF Standard terminal cover

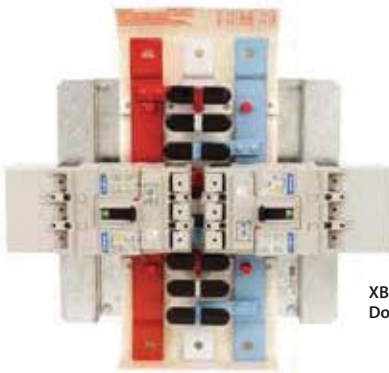
T2BA Interpole barriers

T2CS flush terminal cover (optional)

No cover (optional)






XB5SL8009U
Single Sided Chassis





XB80018U
Double Sided Chassis

Terminal cover selection

20 A - 1250 A MCCBs

	Suit MCCB types	Cover length	Cat. No.	Price \$
Flush IP 20 covers (FC) 	E125, S125			
	1 pole cover - set of 2	-	T2CS121SG	
	2 pole cover - set of 2	-	T2CS122SG	
	3 pole cover - set of 2	-	T2CS123SG	
	4 pole cover - set of 2	-	T2CS124SG	
	H125, S160, H160, E250, S250, H250			
	1 pole cover - set of 2	-	T2CS251SG	
	3 pole cover - set of 2	-	T2CS253SG	
	4 pole cover - set of 2	-	T2CS254SG	
	E400, S400, H400, E630, S630			
3 pole cover set - RC cov c/w cut-outs		T2CR403SG		
4 pole cover set - RC cov c/w cut-outs		T2CR404SG		
Start terminal covers (FC) 	E125, S125			
	3 pole cover set of 2	22 mm	T2CF123SSNBA	
	4 pole cover set of 2	22 mm	T2CF124SSNBA	
	S160, E250, S250 – except S250PE			
	3 pole cover set of 2	30 mm	T2CF253SSNBA	
	4 pole cover set of 2	30 mm	T2CF254SSNBA	
Extended terminal covers (FC) 	E125, S125			
	1 pole cover – set of 2	40 mm	T2CF121SLNG	
	3 pole cover – set of 2	40 mm	T2CF123SLNG	
	4 pole cover – set of 2	40 mm	T2CF124SLNG	
	S160, E250NJ, S250NJ, S250GJ (not S250PE)			
	1 pole cover – set of 2	55 mm	T2CF161SLNG	
	3 pole cover – set of 2	55 mm	T2CF253SLNG	
	4 pole cover – set of 2	55 mm	T2CF254SLNG	
	H125, H160, S250PE, H250			
	3 pole cover – set of 2	55 mm	T2CF253LLNG	
	4 pole cover – set of 2	55 mm	T2CF254LLNG	
	E400, S400, H400, E630, S630			
	3 pole cover – narrow – set of 2	80 mm	T2CF403SLNG	
	3 pole cover – wide – set of 2	110 mm	T2CF403SWNG	
XS630, XH630, XS800, XH800				
3 pole cover – set of 2	130 mm	2H1417DAB		
400/630 A narrow and wide terminal cover options shown	IP20 pole insert - order 1 per terminal		2A1787DBA	
	XS1250			
	3 pole cover – set of 2	130 mm	2H1419DAB	
	IP20 pole insert - order 1 per terminal		2A1787DBA	

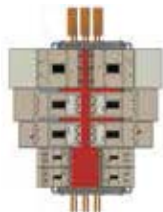
Terminal cover selection

	Suit MCCB types	Cat. No.	Price \$
Rear Connect terminal covers (RC) 	E125, S125		
	3 pole cover – set of 2	T2CR123SG	
	4 pole cover – set of 2	T2CR124SG	
	H125, S160, H160, E250, S250, H250		
	3 pole cover – set of 2	T2CR253SG	
	4 pole cover – set of 2	T2CR254SG	
	E400, S400, H400, E630, S630		
	3 pole cover – set of 2	T2CR403SG	
	XS630, XH630, XS800, XH800		
	3 pole cover – set of 2	UXPD0013C	
	XS630, XH630, XS800, XH800		
4 Terminal cover locking clip	A clip that provides terminal cover locking, and allows a seal device to be fitted.	T2CF00L	
Interpole Barriers 	E125, S125		
	Interpole barrier – set of 2	T2BA123SHA	
	S160, E250NJ, S250NJ, S250GJ (not S250PE)		
	Interpole barrier – set of 2	T2BA253SHA	
	H125, H160, S250PE, H250		
	Interpole barrier – set of 2	T2BA253LHA	
	E400, S400, E630, S630		
	Interpole barrier – set of 2	T2BA403SHA	
	XS630, XH630, XS800, XH800, XS1250		
	Interpole barrier – 1 only	UXQH0004B	

HC High Current chassis for 250 AF to 1250 AF MCCBs

Features

- Double sided 3 pole MCCB chassis
- Compact single sided chassis 3 or 4 pole
- 1250 A, 1600 A or 2200 A rated main bars
- 11 enclosure sizes for economical chassis sizing
- Front connect tags supplied as standard
- Complies with AS/NZS 3439, AS/NZS 3000 - 2007
- Form of separation 4bih. AS/NZS 3439.1 : 2000 (Annex ZF)
- Circuit breakers are reverse fed as standard
- 4th pole neutral bars 100 % rated
- Accepts MCCBs rated 12 A to 1250 A
- Ordering: choose from pre-assembled types, or custom assembly



Stocked assembled chassis selection - Suit MCCB amp frames shown below:

Main bar

rating (A)	Chassis Size	800 A 6 units	630 A 5 units	400 A 4 units	250 A 3 units	Cat. No.	Price \$
1600 A DS	-		2 x 630	2 x 400	4 x 250	HCSTD1DS16153	
1600 A DS	-		4 x 630	-	8 x 250	HCSTD2DS16243	
1600 A SS left	-		1 x 630	1 x 400	2 x 250	HCSTD3SSL16153	
1600 A SS right	-		1 x 630	1 x 400	2 x 250	HCSTD4SSR16153	
1600 A SS left	-		1 x 630	1 x 400	4 x 250	HCSTD5SSL16213	
1600 A SS right	-		1 x 630	1 x 400	4 x 250	HCSTD6SSR16213	
2200 A SS left	1 x 800	1 x 800	1 x 630	1 x 400	3 x 250	HCSTD7SSL22243	
2200 A SS right	1 x 800	1 x 800	1 x 630	1 x 400	3 x 250	HCSTD8SSR22243	



Example of a single side HC chassis with MCCBs and terminal covers fitted

Standard T2CF front connect terminal covers

T2CR rear connect terminal covers

HC High Current chassis for 250 AF to 1250 AF MCCBs

Chassis box selection – for custom assembly

Chassis Size	Main bar rating (A)	Icw kA rating (1 sec)	MCCB unitspace	Overall height (mm) ¹⁾	Cat. No.	Price \$
1	1250 A (2 x 10 x 20 mm bars)	65	15 U	610	HC12153	
2			18 U	718	HC12183	
3			21 U	826	HC12213	
4			24 U	934	HC12243	
5			27 U	1042	HC12273	
6			30 U	1150	HC12303	
7			33 U	1258	HC12333	
8			36 U	1366	HC12363	
9			39 U	1474	HC12393	
10			42 U	1582	HC12423	
11			45 U	1690	HC12453	
1	1600 A (2 x 10 x 30 mm bars)	65	15 U	610	HC16153	
2			18 U	718	HC16183	
3			21 U	826	HC16213	
4			24 U	934	HC16243	
5			27 U	1042	HC16273	
6			30 U	1150	HC16303	
7			33 U	1258	HC16333	
8			36 U	1366	HC16363	
9			39 U	1474	HC16393	
10			42 U	1582	HC16423	
11			45 U	1690	HC16453	
1	2200 A (2 x 10 x 50 mm bars)	65	15 U	610	HC22153	
2			18 U	718	HC22183	
3			21 U	826	HC22213	
4			24 U	934	HC22243	
5			27 U	1042	HC22273	
6			30 U	1150	HC22303	
7			33 U	1258	HC22333	
8			36 U	1366	HC22363	
9			39 U	1474	HC22393	
10			42 U	1582	HC22423	
11			45 U	1690	HC22453	

- Notes:** 1) Height excludes extended and attached busbar
- Overall chassis depth when MCCBs are fitted is 269 mm
 - Refer next page for chassis Tee Off details
 - For detailed dimensions, refer to the chassis technical catalogue
 - For an ordering form, refer to the chassis technical catalogue
 - HC chassis' are not compatible with TemBreak 1, 125 A - 400 A MCCBs

HC High current MCCB chassis MCCB

HC Chassis TEE OFFs ¹⁾

Frame	MCCB Amp Frame (A)	MCCB width	Single sided Cat. No. Right load	Single sided Cat. No. Left load	Double sided Cat. No.	Price \$
S160 / 250	250	3 U	HCR250	HCL250	HCD250	
H125 / S250PE	250	3 U	HCR250P	HCL250P	HCD250P	
E/S400-630 Narrow	400-630	4 U	HCRN630	HCLN630	HCDN630	
E/S400-630 Wide	400-630	5 U	HCRW630	HCLW630	HCDW630	
XS/XH630-800	630-800	6 U	HCR800	HCL800	HCD800	
XS1250 Right hand load	1250	6 U	HCR1250	-	HCR1250	
XS1250 Left hand load	1250	6 U	-	HCL1250	HCL1250	

Ordering notes

- 1) Add tee offs as required to the chassis enclosure to complete the chassis components list.
- 2) Note: If MCCB below 32 A and a kA rating above 30 kA are required, use H125NJ320 and H125NJ332 with 250 A Tee Off Catalogue Number above.
- 3) 400 A MCCBs fitted with a same width narrow cover are 4 units in width.
- 4) 630 A MCCBs fitted with a 'wide' width cover are 5 units in width.
- 5) For ordering, use order from chassis catalogue or contact NHP.
- 6) All MCCBs to be reverse fitted on chassis.

MCCBs:

800 A

630 A

400 A

250 A

250 A



Example:

Single sided chassis

Chassis components

Quantity

Chassis box 1600 A, less tee offs	HC16183	1
800 A left load tee off set	HCL800	1
630 A left load tee off set	HCLW630	1
400 A left load tee off set	HCLN630	1
250 A left load tee off set	HCL250	1
250 A left load tee off set	HCL250	1

Testing

The HC chassis has been unconditionally type tested (no MCCBs fitted) in Australia, at a short time rating of 65 kA for 1 second.

Notes: 1) Refer to NHP for HC chassis with new TemBreak 2 800 A - 1250 A MCCBs. Bottom or top extended main bar are optional. For MCCB terminal cover selection use refer pages 4 - 13 and 4 - 14

Chassis to suit:

TemBreak 2 125 A - 630 AF, TemBreak 1 630 A - 1250 A

400 / 630 A terminal covers

Terminal covers for 400 A and 630 AF MCCBs can be supplied as wide or narrow types, depending on the size of conductors to be connected to the MCCB. Generally for 400 A rated MCCBs, a narrow cover can be used for its smaller conductors, while a wide cover is used for the 630 A size.

A 630 A MCCB using a T2CF403SWNG wide cover is 5 units of width (Narrow cover optional)



5 Units wide: MCCB + wide cover

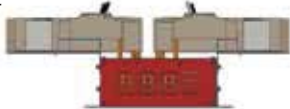
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A 400 A MCCB using a T2CF-403SLNG narrow (same width as MCCB) cover is 4 units wide (Wide cover optional)

4 Units wide: MCCB + narrow cover

HC Chassis MCCB mounting brackets

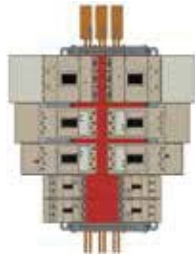
Metal extension brackets are attached to the side of HC chassis to cover rear of fitted MCCBs and terminal covers



HC Chassis configuration types – 2 examples



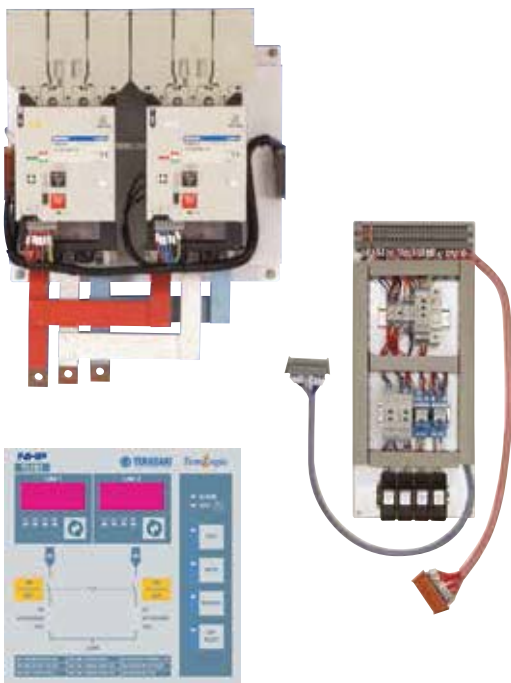
HC Chassis with 250 A Frame MCCBs Double sided, 3 pole, 1250 A main bars



HC Chassis with 250 A – 800 A MCCBs Double sided, 3 pole, 2200 A main bars

MCCB transfer switches and controllers

	Page
Terasaki	
Transfer switch types	5 - 2
Transfer switch selection	5 - 7
Transfer switch component ordering	5 - 12
Logic panel selection	5 - 28
Transfer switch options	5 - 34
Accessories to suit 125 - 630 AF MCCB	5 - 36



5

TemBreak
Transfer Switches

TemBreak 2 transfer switches are available from 20 A to 630 A, and consist of mechanically interlocked circuit breakers, with or without a motor fitted. The transfer switches can be either 'link' interlocked, or cable interlocked. Link types are pictured below.

Transfer switches can be ordered as pre-assembled and wired units, or in broken down component form, for user assembly. A common loadside busbar kit is an option.

Basic types

MTS



5

BTS



TemBreak

The standard arrangement of MCCBs

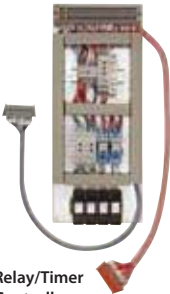
ATS



Changeover logic panel / Controller

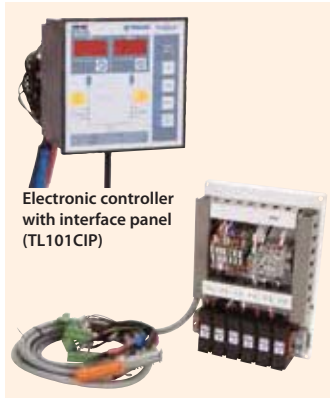
+

5



Relay/Timer Controller (TLP2)

OR



Electronic controller with interface panel (TL101CIP)

- MTS** = Manual transfer switch: no motors and no logic panel
- BTS** = Basic transfer switch: MCCBs have motors, but no logic panel
- ATS** = BTS and logic panel

TemBreak

TemBreak 1 transfer switches

TemBreak 1 transfer switches are factory assembled, and range from 400 A to 2500 A. The switches are interlocked via rear mounted walking beam interlock, or are available with a rod or cable interlock in sizes 400 A to 2500 A. Common loadside busbars (CLSBB) are an option.

A basic transfer switch fitted with motors, can be coupled with a TemLogic control panel TL101 electronic controller or TLP1 relay controller that will automatically changeover to a standby power supply in the event of power failure. The transfer switches are fitted with a mechanical interlock so as to prevent both breakers from being switched to the ON position at the same time.

Basic types

MTS



BTS



TemBreak

The standard arrangement of MCCBs:

ATS

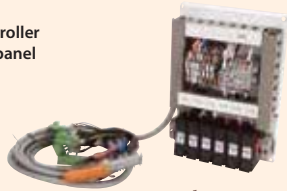


Logic panel

+



Electronic controller plus interface panel (TL101CIP)



5

OR



Relay/timer logic panel type controller Cat. No. TLP1



An Interconnection wire loom is also required to connect between the TL101 interface panel and terminals on the transfer switch. Cat. No. TLP2L1CABLE

- MTS** = Manual transfer switch: no motors and no logic panel
- BTS** = Basic transfer switch: MCCBs have motors mounted on them, no logic panel
- ATS** = BTS and logic panel

TemBreak 1 and 2 transfer switch ordering

Type definition

MTS = Manual Transfer Switch

BTS = Basic Transfer Switch

ATS = Automatic Transfer Switch (consists of a BTS and controller)



TemBreak 2, MCCB transfer switches can be ordered in a number of ways:

1. Pre-Assembled

Pre-assembled BTS transfer switches using a link interlock, up to 630 A.

2. Components

Components for complete user assembly. This is applicable to TemBreak 2 transfer switches to 630 A, using either link or cable interlocks, in manual or basic transfer switch configuration.

3. Manual Transfer Switches to 630 A

TemBreak 2, manual transfer switches to 630 A are not assembled by NHP. The user orders the components.

4. 630 A – 2500 A Transfer Switches

5

Larger TemBreak 1, 630 A – 2500 A transfer switches, both automatic and manual types are pre-assembled to customer order by NHP.

5. Change-Over Controllers

Transfer switch change-over controllers, either electronic or relay logic, are ordered separately by the user for all above types, except where a completely enclosed transfer switch is being assembled by NHP.

Standards conformity

Product: TemBreak MCCB based automatic Transfer Switches

Terasaki confirm that the TemBreak MCCB based automatic Transfer Switches have been designed and comply with the international standard IEC 60947.6.1, and the Australian New Zealand standards AS/NZS 3947.6.1 and AS/NZS 3000 - 2007, for a utilisation class of AC31B for the following MCCB types:

E125, S125, H125, L125, S160, H160, L160, E250, S250, H250, L250, E400, S400, H400, L400, E630, S630, XS630, XH630, XS800, XH800, XS1250, XS1600, XS2000, XS2500

Class CB means: ATSE (Automatic Transfer Switching Equipment) provided with over-current releases and the main contacts of which are capable of making and are intended for breaking short-circuit currents.

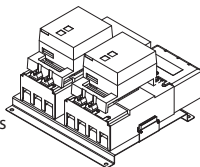
TemBreak

Basic Transfer Switches (BTS)

3 or 4 pole

Features / options:

- Motor driven MCCBs
- 3 or 4 pole types
- Front mounting link interlock used
- Pre-assembled and wired on a mounting plate
- Automatic changeover controller option
- A choice of Relay-Logic, or electronic controllers
- Common load side busbar option
- Conforms to AS/NZS 60947.6.1



BTS selection chart and catalogue numbers

MCCBs used	Amp range	400 V kA Icu	3 or 4 Pole outline dimensions (mm)			3 pole BTS Cat. No.	4 pole BTS Cat. No.
			H	W	D		
S125NJ	40-63	36 ¹⁾	260	305	180	BTSS1NJ6333	BTSS1GJ6344
S125NJ	63-100	36 ¹⁾				BTSS1NJ10033	BTSS1GJ10044
S125NJ	80-125	36 ¹⁾				BTSS1NJ12533	BTSS1GJ12544
S125GJ	40-63	65				BTSS1GJ6333	BTSS1GJ6344
S125GJ	63-100	65				BTSS1GJ10033	BTSS1GJ10044
S125GJ	80-125	65				BTSS1GJ12533	BTSS1GJ12544
S160NJ	40-63	36 ¹⁾	279	340	180	BTSS16NJ6333	BTSS16GJ6344
S160NJ	63-100	36 ¹⁾				BTSS16NJ10033	BTSS16GJ10044
S160NJ	100-160	36 ¹⁾				BTSS16NJ16033	BTSS16GJ16044
S250NJ	160-250	36 ¹⁾				BTSS2NJ25033	BTSS2GJ25044
S160GJ	100-160	65				BTSS16GJ16033	BTSS16GJ16044
S250GJ	160-250	65				BTSS2GJ25033	BTSS2GJ25044
S250PE	50-125	70	279	340	215	BTSS2PE12533	BTSS2PE12544
S250PE	100-250	70				BTSS2PE25033	BTSS2PE25044
S400NJ	160-250	50	360	415	244	BTSS4NJ25033	BTSS4NJ25044
S400NJ	250-400	50				BTSS4NJ40033	BTSS4NJ40044
S400GJ	160-250	70				BTSS4GJ25033	BTSS4GJ25044
S400GJ	250-400	70				BTSS4GJ40033	BTSS4GJ40044
S400NE	100-250	50				BTSS4NE25033	BTSS4NE25044
S400NE	160-400	50				BTSS4NE40033	BTSS4NE40044
S400GE	100-250	70				BTSS4GE25033	BTSS4GE25044
S400GE	160-400	70				BTSS4GE40033	BTSS4GE40044
S630CE	315-630	50	360	415	244	BTSS6CE63033	BTSS6CE63044
S630GE	315-630	70				BTSS6GE63033	BTSS6GE63044

Notes: Transfer switches are stocked off the shelf in sizes 125 A to 630 A in some sizes, while others are made to order. Contact NHP for availability.

Refer following pages for information on TLP2 logic and TL101 electronic changeover controllers.

Wire interlocks must be used for transfer switches combining MCCBs of different frame size (different heights).

¹⁾ 4 Pole types are 65 kA rated.

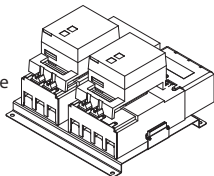
TemBreak

Basic Transfer Switches (BTS)

3 or 4 pole combination types

Features / options:

- Motor driven MCCBs
- 3 or 4 pole MCCB combinations
- Front mounting link interlock used
- Pre-assembled and wired on a mounting plate
- Automatic changeover controller option
- A choice of Relay-Logic, or electronic controllers
- Common load side busbar option
- Conforms to AS/NZS 60947.6.1



BTS selection chart and catalogue numbers

MCCBs used	Amp range	400 V kA Icu	3 or 4 Pole outline dimensions (mm)			3 : 4 pole BTS Cat. No.	4 : 3 pole BTS Cat. No.
			H	W	D		
S125GJ	40-63	65	260	305	180	BTSS1GJ6334	BTSS1GJ6343
S125GJ	63-100	65				BTSS1GJ10034	BTSS1GJ10043
S125GJ	80-125	65				BTSS1GJ12534	BTSS1GJ12543
S160GJ	40-63	65	279	340	180	BTSS16GJ6334	BTSS16GJ6343
S160GJ	63-100	65				BTSS16GJ10034	BTSS16GJ10043
S160GJ	100-160	65				BTSS16GJ16034	BTSS16GJ16043
S250GJ	160-250	65	279	340	215	BTSS2GJ25034	BTSS2GJ25043
S250PE	50-125	70				BTSS2PE12534	BTSS2PE12543
S250PE	100-250	70				BTSS2PE25034	BTSS2PE25043
S400NJ	160-250	50	360	415	244	BTSS4NJ25034	BTSS4NJ25043
S400NJ	250-400	50				BTSS4NJ40034	BTSS4NJ40043
S400GJ	160-250	70				BTSS4GJ25034	BTSS4GJ25043
S400GJ	250-400	70	BTSS4GJ40034	BTSS4GJ40043			
S400NE	100-250	50	BTSS4NE25034	BTSS4NE25043			
S400NE	160-400	50	BTSS4NE40034	BTSS4NE40043			
S400GE	100-250	70	BTSS4GE25034	BTSS4GE25043			
S400GE	160-400	70	BTSS4GE40034	BTSS4GE40043			
S630CE	315-630	50	BTSS6CE63034	BTSS6CE63043			
S630GE	315-630	70	BTSS6GE63034	BTSS6GE63043			

Notes: Transfer switches are stocked off the shelf in sizes 125 A to 630 A in some sizes, while others are made to order. Contact NHP for availability.

Refer following pages for information on TLP2 logic and TL101 electronic changeover controllers.

Transfer switch 'kits' are also available for quick on-site assembly of the above transfer switches. Refer following pages.

Wire interlocks must be used for transfer switches combining MCCBs of different frame size (different heights).

TemBreak

Manual transfer switches

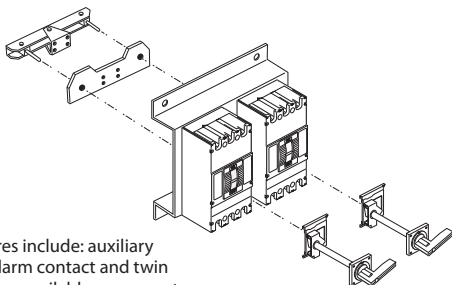
3 and 4 pole

Features / options:

- 3 or 4 pole types
- Rear walking beam interlock used
- Pre-assembled and wired on a mounting plate
- Will accept handles
- Common load side busbar option
- Conforms to AS/NZS 60947.6.1

MTS selection chart and catalogue numbers

MCCBs used	Ampere range	Inter-rupting capacity (400 V)		Overall dimensions (mm)			3 pole MTS Cat. No. ³⁾	4 pole MTS Cat. No. ³⁾
		Icu	Ics	W	H ¹⁾	D		
XS630NJ	250-400	50	25	550	433	182	MS6N433	MS6N444
XS630NJ	400-630	50	25	550	433	182	MS6N633	MS6N644
XS630SE	315-630	50	25	550	433	182	MS6S633	MS6S644
XH630SE	315-630	65	33	550	433	182	MH6S633	MH6S644
XS800NJ	500-800	50	25	550	433	182	MS8N833	MS8N844
XS800SE	400-800	50	25	550	433	182	MS8S833	MS8S844
XH800PE	400-800	65	50	550	433	182	MH8P833	MH8P844
XS1250SE	500-1000	85	65	553	570	198	MS12S1033	MS12S1044
XS1250SE	625-1250	85	65	553	550	198	MS12S1233	MS12S1244
XS1600SE	800-1600	100	75	553	570	198	MS16S1633	MS16S1644
XS2000SE	1000-2000	85	64	774	450	361	MS20E2033	MS20E2044
XS2500SE	1250-2500	85	64	774	450	361	MS25E2533	MS25E2544



Optional features include: auxiliary contacts, trip alarm contact and twin handle operation available on request. Specify when ordering.

- Notes:** ¹⁾ Height includes attached busbar on MCCBs 630 A and above.
²⁾ Detailed dimensions including 4 pole types refer catalogue Part C.
³⁾ Ordering sheet refer catalogue Part C.
 All units are POA.

Transfer switches using 125 - 400 A MCCB are TemBreak 2 types, and are sold in component form. Refer component selection pages in this section.

TemBreak

Basic transfer switches (BTS) with motor 3 and 4 pole

Features / options:

- Motor driven MCCBs
- 3 or 4 pole types
- Rear walking beam interlock used
- Pre-assembled and wired on a mounting plate
- Automatic changeover controller option
- A choice of Relay-Logic, or electronic controllers
- Common load side busbar option
- Conforms to AS/NZS 60947.6.1



Application notes:

- When a TL101CIP electronic controller plus interface panel is used with a TemBreak 1 transfer switch, an interconnection wire loom consisting of 2 cables is also required. This wire loom connects between the interface panel and the standard terminals on the transfer switch. The Cat. No. of the interconnection cable is "TLP2L1CABLE". The cables are 0.5 m long. Longer cable lengths are an option up to 2 metres. Refer page 5 - 32.
- When TLP1 relay controllers are used, an interconnection cable is not required.
- TLP2 relay controllers for TemBreak 2 transfer switches cannot be used with Tembreak 1 transfer switches.

5

BTS selection chart and catalogue numbers

MCCBs used	Ampere range	Inter-rupting capacity (400 V)		Overall (3 pole) ¹⁾ dimensions (mm)			3 pole BTS Cat. No. ⁴⁾	4 pole BTS Cat. No. ⁴⁾
		Icu	Ics	W	H ¹⁾	D		
XS630NJ	250-400	50	25	550	433	341	BS6N433	BS6N444
XS630NJ	400-630	50	25	550	433	341	BS6N633	BS6N644
XS630SE	315-630	50	25	550	433	341	BS6S633	BS6S644
XH630SE	315-630	65	33	550	433	341	BH6S633	BH6S644
XS800NJ	500-800	50	25	550	433	341	BS8N833	BS8N844
XH800SE	400-800	65	33	550	433	341	BH8S833	BH8S844
XS800SE	400-800	50	25	550	433	341	BS8S833	BS8S844
XS1250SE	500-1000	85	65	553	530	300	BS12S1033	BS12S1044
XS1250SE	625-1250	85	65	553	530	300	BS12S1233	BS12S1244
XS1600SE	800-1600	100	75	553	570	320	BS16S1633	BS16S1644
XS2000SE	1000-2000	85	64	774	490	361 ²⁾	BS20E2033	BS20E2044
XS2500SE	1250-2500	85	64	774	490	361 ²⁾	BS25E2533	BS25E2544

Notes: 1) Height includes attached busbar on sizes 630 A and above.

2) Depth does not include rear connect busbars.

3) Detailed dimensions 3/4 pole refer catalogue Part C.

4) Ordering sheet refer catalogue Part C.

All units are POA.

Valid until August 2014

TL101 AUTOMATIC TRANSFER SWITCH SYSTEM

High level functionality and ease of use.

NHP

POWER PROTECTION



PP-TERASAKI-ATS-CPB

COMPLETE AUTOMATIC TRANSFER SWITCH SOLUTIONS



AUTOMATIC TRANSFER SWITCH CONTROLLER



INTERFACE PANEL



TRANSFER SWITCH

'PLUG 'N PLAY' STYLE INSTALLATION

Terasaki TemLogic 2 TL101 automatic transfer switch controller

- Genuine 144 x 144 mm controller solution
- User friendly display and menu selection
- Large selection of functions and options as standard

Terasaki TemLogic 2 to TemBreak interface panel

- The optional TemBreak interface panel provides a safe link between the Terasaki TemLogic 2 TL101 controller and a temBreak 1 or 2 MCCB transfer switch.
- The TemBreak interface panel comes complete with 'plug 'n' play style connectors, eliminating the need for separate control and power wiring.

Terasaki TemBreak 1 or 2 transfer switch

- Large range of amp-frame sizes available
- Enclosed types and options
- Selection of mechanical interlocks
- Suitable for TemBreak 1 or 2 125-2500 A

TERASAKI
Innovators in Protection Technology

TemBreak

Basic transfer switches – Component ordering

125 A (E125, S125) MCCBs fitted with a LINK interlock ¹⁾ ²⁾ ³⁾

Item	Description	Comment
1	Left and right side MCCBs	MCCB depth 68 mm ¹⁾
2	Link mechanical Interlock	For 3 or 4 pole MCCB right side For 3 pole MCCB left side For 4 pole MCCB left side
3	Left & right side 1 C/O alarm switches	Wire type alarm
4	Left & right side 2 C/O auxiliary switches	Wire type auxiliary
5	240 V AC Motor operator	Other voltages available
6	Interlock connection wire	For motor electrical interlocking ⁴⁾
7	WAGO male connector Left	For TLP2 / TL101 controllers only
8	WAGO male connector Right	For TLP2 / TL101 controllers only
9	Optional 3P:3P mounting plate	With pre threaded mounting holes
10	Optional 4P:4P / 4P:3P mounting plate	With pre threaded mounting holes

125 A (H125, L125) MCCBs fitted with a LINK interlock ¹⁾ ²⁾ ³⁾

1	Left and right side MCCBs	MCCB depth 103 mm ¹⁾
2	Link mechanical interlock	For 3 or 4 pole MCCB right side For 3 pole MCCB left side For 4 pole MCCB left side
3	Left & right side 1 C/O alarm switches	Wire type alarm
4	Left & right side 2 C/O auxiliary switches	Wire type auxiliary
5	240 V AC Motor operator	Other voltages available
6	Interlock connection wire	For motor electrical interlocking ⁴⁾
7	WAGO male connector - Left	For TLP2 / TL101 controllers only
8	WAGO male connector - Right	For TLP2 / TL101 controllers only
9	Optional 3 & 4P mounting plate	With pre threaded mounting holes

- Notes:**
- 1) The left and right side MCCBs have to be the same depth for correct interlocking function.
 - 2) Where E / S and H / L MCCBs of a different height need to be interlocked, a Cable Interlock must be used. Refer following pages.
 - 3) MCCB marker and capacity size labels can be ordered for mounting on motors etc. Use ratings label sheet Cat. No. T25CAPLAB.
 - 4) One electrical interlock wiring loom is required between motors on motorised transfer switches.

TemBreak

Manual and basic transfer switches – Component ordering

Component quantity	BTS	Cat. No.
2		E125, S125NJ/GJ
1		T2ML12RA
1		T2ML12L3A
1		T2ML12L4A
2		T2AL00M3SWA
4		T2AX00M3SWA
2		T2MC12A24NB
1		T2MM25L05A
1		231-612-019-000
1		231-642-019-000
1		T2SB123334
1		T2SB124344
2		H125NJ, L125NJ
1		T2ML125RA
1		T2ML125L3A
1		T2ML125L4A
2		T2AL00M3SWA
4		T2AX00M3SWA
2		T2MC25A24NB
1		T2MM25L05A
1		231-612-019-000
1		231-642-019-000
1		T2SB2533344344

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TemBreak

Basic transfer switches – Component ordering

160 A and 250 A MCCBs fitted with a LINK interlock ¹⁾ ²⁾ ³⁾

Item	Description	Comment ²⁾ ³⁾
1	Left or right side MCCBs	MCCB depth 68 mm ¹⁾
		MCCB depth 103 mm ¹⁾
2	Link mechanical interlock	For 3 or 4 pole MCCB right side For 3 pole MCCB left side For 4 pole MCCB left side
3	Left & right side 1 C/O alarm switches	Wire type alarm
4	Left & right side 2 C/O auxiliary switches	Wire type auxiliary
5	240 V AC Motor operator	Other voltages available
6	Interlock connection wire	For motor electrical interlocking ⁴⁾
7	WAGO male connector - Left	For TLP2 / TL101 controllers only
8	WAGO male connector - Right	For TLP2 / TL101 controllers only
9	Optional 3 & 4P mounting plate	With pre threaded mounting holes

5

- Notes:**
- ¹⁾ The left and right side MCCBs have to be the same depth for correct interlocking function.
 - ²⁾ Where E / S and H / L MCCBs of a different height need to be interlocked, a Cable Interlock must be used. Refer following pages.
 - ³⁾ MCCB marker and capacity size labels can be ordered for mounting on motors etc. Use ratings label sheet Cat. No. T25CAPLAB.
 - ⁴⁾ One electrical interlock wiring loom is required between motors on motorised transfer switches.

TemBreak

Manual and basic transfer switches – Component ordering

Component quantity	BTS	Cat. No.
2		S160NJ / GJ ES250NJ / GJ
2		H160,S250PE H250NJ / NE
1		T2ML25RA
1		T2ML25L3A
1		T2ML25L4A
2		T2AL00M3SWA
4		T2AX00M3SWA
2		T2MC25A24NB
1		T2MM25L05A
1		231-612-019-000
1		231-642-019-000
1		T2SB253334344

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TemBreak

Basic transfer switches – Component ordering

400 A MCCBs fitted with a LINK interlock

Item	Description	Comment ^{1) 2)}
1	Left and right side MCCBs	MCCB depth 103 mm ¹⁾
		MCCB depth 140 mm ¹⁾
2	Link mechanical interlock (For motorised MCCBs)	For 3 or 4 pole MCCB right side For 3 pole MCCB left side For 4 pole MCCB left side
3	Link mechanical interlock (for MCCBs with handles)	For 3 or 4 pole MCCB right side For 3 pole MCCB left side For 4 pole MCCB right side
4	Left & right side 1 C/O alarm switches	Wire type alarm
5	Left & right side 2 C/O auxiliary switches	Wire type auxiliary
6	240 V AC Motor operator	Other voltages available
7	Interlock connection wire	For motor electrical interlocking
8	WAGO male connector - Left	For TLP2 / TL101 controllers only
9	WAGO male connector - Right	For TLP2 / TL101 controllers only
10	Optional 3P: 3P mounting plate	With pre threaded mounting holes
11	Optional 4P: 4P / 4P: 3P mounting plate	With pre threaded mounting holes



- Notes:** ¹⁾ Where E / S and H / L MCCBs of a different height need to be interlocked, a Cable Interlock must be used. Refer following pages.
²⁾ MCCB marker and capacity size labels can be ordered for mounting on motors etc. Refer to page 5 - 36.

TemBreak
**Manual and basic transfer switches –
 Component ordering**

Component quantity BTS	Cat. No.
2	E400NJ S400CJ S400NJ S400NE S400GJ S400GE
2	H400NE L400NE
1	T2ML40RB
1	T2ML40L3B
1	T2ML40L4B
–	T2MLH40RB
–	T2MLH40L3B
–	T2MLH40L4B
2	T2AL00M3SWA
4	T2AX00M3SWA
2	T2MC40A10NB
1	T2MM40L06A
1	231-612-019-000
1	231-642-019-000
1	T2TSB403334MP
1	T2TSB404344MP

TemBreak

Basic transfer switches – Component ordering

630 A MCCBs fitted with a LINK interlock ²⁾ ³⁾

Item	Description	Comment
1	Left and right side MCCBs	MCCB depth 103 mm ¹⁾
2	Link mechanical interlock ⁵⁾ ⁶⁾ (For motorised MCCBs)	For 3 or 4 pole MCCB right side For 3 pole MCCB left side For 4 pole MCCB left side
3	Link mechanical interlock (For MCCBs with handles)	For 3 or 4 pole MCCB right side For 3 pole MCCB left side For 4 pole MCCB right side
3	Left & right side 1 C/O auxiliary switches	Wire type alarm
4	Left & right side 2 C/O auxiliary switches	Wire type auxiliary
5	240 V AC Motor operator	Other voltages available
6	Interlock connection wire	For motor electrical interlocking ⁴⁾
7	WAGO male connector - Left	For TLP2 / TL101 controllers only
8	WAGO male connector - Right	For TLP2 / TL101 controllers only
9	Optional 3P: 3P mounting plate	With pre threaded mounting holes
10	Optional 4P: 4P / 4P: 3P mounting plate	With pre threaded mounting holes

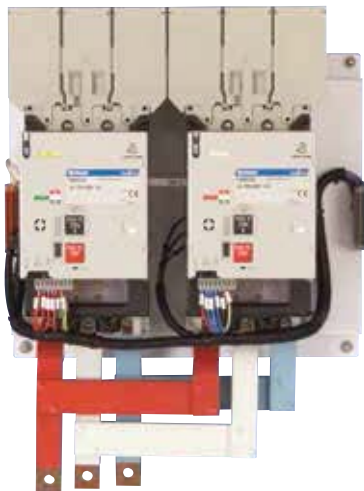
- Notes:**
- ¹⁾ The Left and Right side MCCBs have to be the same depth for correct interlocking function.
 - ²⁾ Where E / S and H / L MCCBs of a different height need to be interlocked, a Cable Interlock must be used. Refer following pages.
 - ³⁾ MCCB marker and capacity size labels can be ordered for mounting on motors etc. Use ratings label sheet Cat. No. T40CAPLAB.
 - ⁴⁾ One electrical interlock wiring loom is required between motors on motorised transfer switches.
 - ⁵⁾ 400 A / 630 A link interlocks must use handles for manual transfer switches.
 - ⁶⁾ An alternative interlock type is the manual 'slide interlock', which does not require a handle to be fitted. Refer S630 Accessories in Section 3.

TemBreak

Manual and basic transfer switches – Component ordering

Component quantity	BTS	Cat. No.
2		E630NE
		S630CE / GE
1		T2ML40RB
1		T2ML40L3B
1		T2ML40L4B
–		T2MLH40RB
–		T2MLH40L3B
–		T2MLH40L4B
2		T2AL00M3SWA
4		T2AX00M3SWA
2		T2MC40A10NB
1		T2MM40L06A
1		231-612-019-000
1		231-642-019-000
1		T2TSB403334MP
1		T2TSB404344MP

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TemBreak

Manual and basic transfer switches – Component ordering

125 A (E125, S125) MCCBs fitted with a CABLE interlock ²⁾³⁾

Item	Description	Comment
1	Left and right side MCCBs	MCCB depth 68 mm ¹⁾
2	Cable mechanical interlock	For 3 or 4 pole MCCBs 1.0 m length of cable - option 1 1.5 m length of cable - option 2
3	Left & right side 1 C/O alarm switch	Wire type alarm
4	Left & right side 2 C/O auxiliary switches	Wire type auxiliary
5	240 V AC Motor operator	Other voltages available
6	Interlock connection wire	For motor electrical interlocking ⁴⁾
7	WAGO male connector - Left	For TLP2 / TL101 controllers only
8	WAGO male connector - Right	For TLP2 / TL101 controllers only
9	Optional 3P:3P mounting plate	With pre threaded mounting holes
10	Optional 4P:4P / 4P:3P mounting plate	With pre threaded mounting holes

125 A (E125, S125) MCCBs fitted with a CABLE interlock ²⁾³⁾

Item	Description	Comment
1	Left and right side MCCBs	MCCB depth 103 mm ¹⁾
2	Cable mechanical interlock	For 3 or 4 pole MCCBs 1.0 m length of cable - option 1 1.5 m length of cable - option 2
3	Left & right side 1 C/O alarm switches	Wire type alarm
4	Left & right side 2 C/O auxiliary switches	Wire type auxiliary
5	240 V AC Motor operator	Other voltages available
6	Interlock connection wire	For motor electrical interlocking ⁴⁾
7	WAGO male connector - Left	For TLP2 / TL101 controllers only
8	WAGO male connector - Right	For TLP2 / TL101 controllers only
9	Optional 3P:3P mounting plate	With pre threaded mounting holes
10	Optional 4P:4P / 4P:3P mounting plate	With pre threaded mounting holes

- Notes:**
- 1) Where E / S and H / L MCCBs of a different height need to be interlocked, a Cable Interlock must be used.
 - 2) MCCB marker and capacity size labels can be ordered for mounting on motors etc. Use ratings label sheet Cat. No. T25CAPLAB.
 - 3) Using TemBreak 2 MCCBs and by using a cable interlock, any combination of frame size or poles can be interlocked.
 - 4) One electrical interlocking connection wire is required between motors on motorised transfer switches. Cat. No. T2MM.
Refer alternate lengths, 160/250 A motor accessories in Section 3.

TemBreak
**Manual and basic transfer switches –
Component ordering**

Component quantity		Cat. No.
MTS	BTS	
2	2	E125NJ, S125NJ / GJ
1	1	T2MW12CA
1	1	T2MW00SA
1	1	T2MW00LA
-	2	T2AL00M3SWA
-	4	T2AX00M3SWA
-	2	T2MC12A24NB
-	1	T2MM25L15A
-	1	231-612-019-000
-	1	231-642-019-000
1	1	T2SB123334
1	1	T2SB124344

Component quantity		Cat. No.
MTS	BTS	
2	2	H125NJ, L125NJ
1	1	T2MW25CA
1	1	T2MW00SA
1	1	T2MW00LA
-	2	T2AL00M3SWA
-	4	T2AX00M3SWA
-	2	T2MC25A24NB
-	1	T2MM25L15A
-	1	231-612-019-000
-	1	231-642-019-000
1	1	T2SB253334
1	1	T2SB254344

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TemBreak

Manual and basic transfer switches – Component ordering

160 A and 250 A MCCBs fitted with a CABLE interlock ²⁾³⁾

Item	Description	Comment
1	Left or right side MCCBs	MCCB depth 68 mm ¹⁾
		MCCB depth 103 mm ¹⁾
2	Cable mechanical interlock	For 3 or 4 pole MCCBs 1.0 m length of cable - option 1 1.5 m length of cable - option 2
3	Left & right side 1 C/O alarm switch	Wire type alarm
4	Left & right side 2 C/O auxiliary switches	Wire type auxiliary
5	240 V AC Motor operator	Other voltages available
6	Interlock connection wire	For motor electrical interlocking ⁴⁾
7	WAGO male connector - Left	For TLP2 / TL101 controllers only
8	WAGO male connector - Right	For TLP2 / TL101 controllers only
9	Optional 3P:3P mounting plate	With pre threaded mounting holes
10	Optional 4P:4P / 4P:3P mounting plate	With pre threaded mounting holes

5



- Notes:**
- ¹⁾ Where E / S and H / L MCCBs of a different height need to be interlocked, a Cable Interlock must be used.
 - ²⁾ MCCB marker and capacity size labels can be ordered for mounting on motors etc. Use ratings label sheet Cat. No. T25CAPLAB.
 - ³⁾ Using TemBreak 2 MCCBs and by using a cable interlock, any combination of frame size or poles can be interlocked.
 - ⁴⁾ One electrical interlocking connection wire is required between motors on motorised transfer switches. Cat. No. T2MM.

TemBreak
**Manual and basic transfer switches –
Component ordering**

Component quantity		Cat. No.
MTS	BTS	
2	2	S160NJ / GJ ES250NJ / GJ
2	2	H160, S250PE H250NJ / NE
1 1 1	1 1 1	T2MW25CA T2MW00SA T2MW00LA
-	2	T2AL00M3SWA
-	4	T2AX00M3SWA
-	2	T2MC25A24NB
-	1	T2MM25L15A
-	1	231-612-019-000
-	1	231-642-019-000
1	1	T2SB253334
1	1	T2SB254344

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TemBreak

Manual and basic transfer switches – Component ordering

400 A MCCBs fitted with a CABLE interlock ²⁾³⁾

Item	Description	Comment
1	Left and right side MCCBs	MCCB depth 103 mm ¹⁾
	* 400/ 630 A interlocks must use a motor or handle operator	
		MCCB depth 140 mm ¹⁾
2	Cable mechanical interlock ^{5) 6)}	For 3 or 4 pole MCCBs with motors For 3 or 4 pole MCCBs with handles 1.0 m length of cable - option 1 1.5 m length of cable - option 2
3	Left & right side 1 C/O alarm switch	Wire type alarm
4	Left & right side 2 C/O auxiliary switches	Wire type auxiliary
5	240 V AC Motor operator	Other voltages available
6	Interlock connection wire	For motor electrical interlocking ⁴⁾
7	WAGO male connector - Left	For TLP2 / TL101 controllers only
8	WAGO male connector - Right	For TLP2 / TL101 controllers only
9	Optional 3P:3P mounting plate	With pre threaded mounting holes
10	Optional 4P:4P / 4P:3P mounting plate	With pre threaded mounting holes

- Notes:**
- 1) Where E / S and H / L MCCBs of a different height need to be interlocked, a Cable Interlock must be used. .
 - 2) MCCB marker and capacity size labels can be ordered for mounting on motors etc. Use ratings label sheet Cat. No. T40CAPLAB..
 - 3) Using TemBreak 2 MCCBs and by using a cable interlock, any combination of frame size or poles can be interlocked.
 - 4) One electrical interlocking connection wire is required between motors on motorised transfer switches. Cat. No. T2MM.
Refer alternate lengths for 400/630 A motor accessories in Section 3.
 - 5) 400 A and 630 A interlocks must use handles for manual transfer switches.
 - 6) An alternative interlock type is a manual "slide interlock", which does not require a handle to be fitted. Slide interlocks will not allow handles or motors to be fitted. Refer 400/630 A accessories in Section 3 for further information.

TemBreak
**Manual and basic transfer switches –
 Component ordering**

MTS	Component quantity	BTS	Cat. No.
2		2	E400NJ S400CJ S400NJ S400NE S400GJ S400GE
2		2	H400NJ / NE L400NJ / NE
-		1	T2MW40CB
-		1	T2MWH40CB
1		1	T2MW00SA
1		1	T2MW00LA
-		2	T2AL00M3SWA
-		4	T2AX00M3SWA
-		2	T2MC40A10NB
-		1	T2MM40L21A
-		1	231-612-019-000
-		1	231-642-019-000
1		1	T2TSB403334MP
1		1	T2TSB404344MP



TemBreak

Manual and basic transfer switches – Component ordering

630 A MCCBs fitted with a CABLE interlock ²⁾³⁾

Item	Description	Comment
1	Left and right side MCCBs	MCCB depth 103 mm ¹⁾
2	Cable mechanical interlock ^{5) 6)}	For 3 or 4 pole MCCBs with motors For 3 or 4 pole MCCBs with handles 1.0 m length of cable - option 1 1.5 m length of cable - option 2
3	Left & right side 1 C/O alarm switches	Wire type alarm
4	Left & right side 2 C/O auxiliary switches	Wire type auxiliary
5	240 V AC Motor operator	Other voltages available
6	Interlock connection wire	For motor electrical interlocking ⁴⁾
7	WAGO male connector - Left	For TLP2 / TL101 controllers only
8	WAGO male connector - Right	For TLP2 / TL101 controllers only
9	Optional 3P:3P mounting plate	With pre threaded mounting holes
10	Optional 4P:4P / 4P:3P mounting plate	With pre threaded mounting holes

5

- Notes:**
- ¹⁾ Where E / S and H / L MCCBs of a different height need to be interlocked, a Cable Interlock must be used. .
 - ²⁾ MCCB marker and capacity size labels can be ordered for mounting on motors etc. Use ratings label sheet Cat. No. T40CAPLAB..
 - ³⁾ Using TemBreak 2 MCCBs and by using a cable interlock, any combination of frame size or poles can be interlocked.
 - ⁴⁾ One electrical interlocking connection wire is required between motors on motorised transfer switches. Cat. No. T2MM.
Refer alternate lengths for 400/630 A motor accessories in Section 3.
 - ⁵⁾ 400 A and 630 A interlocks must use handles for manual transfer switches.
 - ⁶⁾ An alternative interlock type is a manual "slide interlock", which does not require a handle to be fitted. Slide interlocks will not allow handles or motors to be fitted. Refer 400/630 A accessories in Section 3 for further information.

TemBreak

Manual and basic transfer switches – Component ordering

MTS	Component quantity	BTS	Cat. No.
2		2	E630NE S630CE / GE
1		1	T2MW00CB
1		1	T2MWH40CB
1		1	T2MW00SA
1		1	T2MW00LA
-		2	T2AL00M3SWA
-		4	T2AX00M3SWA
-		2	T2MC40A10NB
-		1	T2MM40L21A
-		1	231-612-019-000
-		1	231-642-019-000
1		1	T2TSB403334MP
1		1	T2TSB404344MP

5



TemBreak

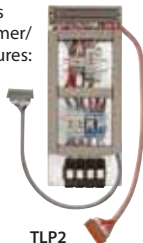
Automatic transfer switches (ATS)

Logic controller for Tembreak 2

Timer / Relay logic controller

NHP offers a choice of electromagnetic (relay) logic panels with various options, or a PLC controller type. The basic timer/relay logic controller includes the following standard features:

- Voltage and phase sequence sensing relay
- Time delay normal to emergency and back
- Common power supply relays
- Normal supply phase sequence relay
- Control wiring terminals
- A 4 position mode selector switch is provided loose (Manual / Automatic / Test / Off) - SSW5
- Optional PLC logic panel (TLPC2)



TLP2
Relay/timer
Controller panel

TLP logic controller and options

Description	Cat. No. ¹⁾	Price \$
Logic Panel for Tembreak 2 ATS	TLP2	

Option ¹⁾²⁾	Description	Cat. No. ¹⁾	Price \$
2	Emergency supply phase sequence and voltage sensing relays	EPSR / EVSR	
3	Emergency supply frequency relay	EFR	
4	Engine run-on time delay	ERTD	
5	Engine start time delay	ESTD	
6	Inhibit return control (Prevents auto-return to normal from emergency)	IRC	
7	Cranking limiter time delay	CLTD	
8	Additional mode selection 'Normal supply'	SSW2	
9	Additional contacts for remote indication of mode switch position (includes option 8)	SSW3	
10	Alarm lock-out relay. (Prevents breaker closure after overload or short circuit trip)	ALR	
13	Mains stability timer	MST	
14	Surge protection – single phase	SPD1	
15	Surge protection – 3 phase	SPD3	

Notes: ¹⁾ NHP has limited the number of gear tray plates to three (3) standard sizes, which cover all optional features.

- ²⁾ NHP stock basic TLP2 logic panels. All others are built to order. Standard and custom logic panel ordering sheet, refer Catalogue Part C. Due to component and wiring differences, TemBreak 1 logic panels are not configured to work with TemBreak 2 Transfer Switches and vice versa.

Do not use TLP1 with TemBreak 2 Motor operators otherwise motor burnout will occur. Use TLP2 for TemBreak 2.

TemBreak

Automatic transfer switches (ATS)

Logic controller for Tembreak 1

Timer / Relay logic controller

NHP offers a choice of electromagnetic (relay) logic panels with various options, or a PLC controller type. The basic timer/ relay logic controller includes the following standard features:

- Voltage and phase sequence sensing relay
- Time delay normal to emergency and back
- Common power supply relays
- Normal supply phase sequence relay
- Control wiring terminals
- A 4 position mode selector switch is provided loose (Manual / Automatic / Test / Off) - SSW1
- Optional PLC logic panel (TLPC1)



TLP logic controller and options

Description	Cat. No. ¹⁾	Price \$
Logic Panel for Tembreak 1 ATS	TLP1	

Option ¹⁾ / ²⁾	Description	Cat. No. ¹⁾	Price \$
2	Emergency supply phase sequence and voltage sensing relays	EPSR / EVSR	
3	Emergency supply frequency relay	EFR	
4	Engine run-on time delay	ERTD	
5	Engine start time delay	ESTD	
6	Inhibit return control (Prevents auto-return to normal from emergency)	IRC	
7	Cranking limiter time delay	CLTD	
8	Additional mode 'Normal supply'	SSW2	
9	Additional contacts for remote indication of mode switch position (includes option 8)	SSW3	
10	Alarm lock-out relay (Prevents breaker closure after MCCB trip.)	ALR	
11	Changeover time delay (required for ACB C/O switch)	COTD	
13	Mains stability timer	MST	
14	Surge protection – single phase	SPD1	
15	Surge protection – 3 phase	SPD3	

Notes: ¹⁾ NHP has limited the number of gear tray plates to three (3) standard sizes, which cover all optional features.

²⁾ NHP stock basic TLP1 logic panels. All others are built to order.

Standard and custom logic panel ordering sheet, refer catalogue Part C.

Do not use TLP1 with TemBreak 2 Motor operators otherwise motor burnout will occur. Use TLP2 for TemBreak 2.

TemLogic

TL101 Transfer switch controller

The TemLogic2 TL101 automatic transfer switch controller will control and supervise the primary and secondary power of an installation and initiate transferring of the mains to a back-up source in the event of main source interruption. The changeover from one power source to the other can be fully automatic or manually operated. The logic controller includes all necessary features to monitor energy distribution systems or generating sets, and transfer equipment, such as motorised circuit breakers.



The TL101 is simply programmed from the front panel with visual LED indication or can be pre-programmed by NHP. The circuit breakers can be manually controlled using the function keys on the front face of the controller.

TL101 Provides:

Control of minimum voltage, maximum voltage, phase loss, asymmetry, minimum frequency, maximum frequency, with independent enable and delay.

Front panel operation and display

Refer Part C Section 8 or TL101 manual.

Technical features

- Flush mount 144 mm² housing
- Plug-in removable connections
- Phase to phase voltage measure inputs: 80-800 V AC
- Voltage transformer programming
- True RMS voltage measure
- Frequency measurement 45-65 Hz
- Control functions: phase sequence, phase loss, maximum/minimum voltage, asymmetry, maximum/minimum frequency
- Two displays for voltage/frequency viewing
- 8 digital programming inputs/ 7 relay programmable outputs
- RS 232 interface (refer NHP for RS 485)
- Modbus communication ¹⁾

FOR
TEMBREAK 1
& TEMBREAK 2
TRANSFER
SWITCHES

5

Notes: ¹⁾ Modbus communications: A 24 V DC power supply is needed.

TemLogic

TL101 Transfer switch controller

Interface panel

The interface panel provides short circuit protection via fuses between the transfer switch and TL101 controller. The interface panel comes complete with pre-terminated cable looms, enabling fast 'plug 'n' play' electrical connection between system components.

Ordering details - controller and interface panel

Heading	Cat. No.	Price \$
TemLogic2 TL101 controller only	TL101240V	
TemLogic2 TL101 controller plus interface panel ²⁾	TL101CIP	
TL102 controller plus interface panel. RS 485 comms included.	TL102CIP	
TemBreak 1 Transfer switch inter-connection cable (0.5 m standard length or refer next page)	TLP2L1LCABLE ¹⁾	

Notes: ¹⁾ This cable is used to connect between a TL101 electronic controller interface panel (LTLP2 or LTLP2S) and a standard TemBreak 1 transfer switch. Refer page 5 - 33 for a features comparison table between TLP1, TLP2 & TL101.

²⁾ Modbus communications: A 24 V DC power supply is needed.

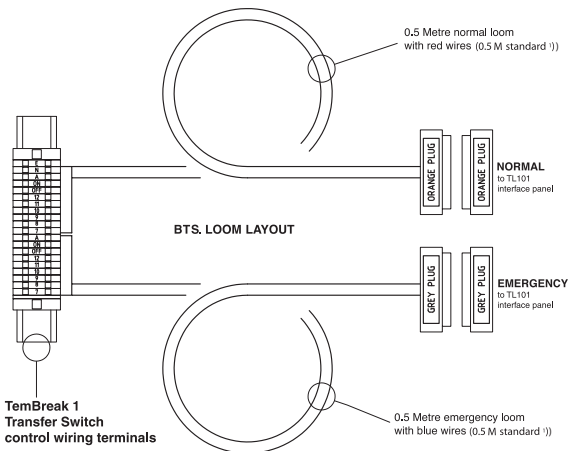
TemBreak Basic Transfer Switch (BTS)

Inter-connection cable for Tembreak 1 transfer switches using TLP1 controllers

TLP2L1CABLE

For use with a TL101 CIP (electronic controller and interface panel) when used with a TemBreak 1 transfer switch.

The connector cable connects to the standard BTS control wiring terminals.



Red and blue cable lengths	Cat. No.	Price \$
0.5 m (standard)	TLP2L1CABLE	
1.0 m	TLP2L1CABLE10	
1.5 m	TLP2L1CABLE15	
2.0 m	TLP2L1CABLE20	
2.5 m	TLP2L1CABLE25	
3.0 m	TLP2L1CABLE30	

Notes: ¹⁾ Alternate interconnecting cable lengths are available on application. Refer NHP catalogue numbers for the alternate lengths indicated above.

TemLogic

Temlogic controller types For Tembreak 1 and 2 transfer switches

This page is a cross reference of features and options. For more specific information on each controller type, refer to the previous pages.

CONTROLLER TYPES Features and options cross reference ¹⁾

Standard and optional features	Cat. No.	Relay/Timer controller to suit TemBreak 1 MCCBs	Relay/Timer controller to suit TemBreak 2 MCCBs	Electronic controller unit to suit TemBreak 1 or 2 MCCBs
		TLP1	TLP2	TL101
Normal voltage sensing phase failure relay	(NVSR)	✓	✓	✓
Time delay emergency to normal	(TDEN)	✓	✓	✓
Time delay normal to emergency	(TDNE)	✓	✓	✓
Common power supply relay	(CPSR)	✓	✓	✓
2 Emergency supply phase sequence relay	(EPSR)	0	0	✓
Emergency supply voltage sensing relay	(EVSr)	0	0	✓
3 Emergency supply frequency relay	(EFR)	0	0	✓
4 Engine run-on time delay	(ERTD)	0	0	✓
5 Engine start time delay	(ESTD)	0	0	✓
6 Inhibit return control	(IRC)	0	0	✓
7 Cranking limiter time delay	(CLTD)	0	0	–
8 Additional mode selection 'Normal supply'	(SSW2)	0	0	✓
9 Additional contacts for remote indication of mode switch position	(SSW3)	0	0	✓
10 Alarm lock-out relay	(ALR)	0	0	✓
11 Changeover time delay	(COTD)	0	0	✓
13 Mains stability timer	(MST)	0	0	✓
Interface with building management system		– ¹⁾	– ¹⁾	✓
Load shedding control		–	–	✓
14 Surge protection single phase (SPD1)		0	0	0
15 Surge protection 3 phase (SPD3)		0	0	0
16 Modbus communications		–	–	TL102 required (RS485)

✓ = Standard,

0 = Optional

– = Not available

Notes: ¹⁾ PLC logic panels: TLPC2 and TLPC1 are available as options. Refer NHP. NHP PLC logic panels are ideally suited to BMS applications due to the multiple I/O of the PLC providing status to the BMS.


**Basic Transfer Switches (BTS) and
Manual Transfer Switches (MTS)**
Options and accessories
Common loadside busbars – for connection to BOTTOM of MCCBs ²⁾
Tembreak 2: 250 – 630 A, Tembreak 1: 630 – 1250 A
3 pole CLSBB

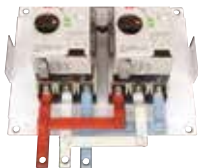
Busbar Amp Rating	Dimensions (mm)			3 pole set Cat. No.
	H	W	D	
250 A ¹⁾	349	340	176	T2CLSBB25033
400 A ¹⁾	485	415	248	T2CLSBB40033
630 A ¹⁾	505	415	248	T2CLSBB63033
630/800 A	633	550	341	CLSBB63033
1000/1250	950	553	301	CLSBB125033

4 pole CLSBB

Busbar Amp Rating	Dimensions (mm)			4 pole set Cat. No.
	H	W	D	
250 A ¹⁾	349	340	176	T2CLSBB25044
400 A ¹⁾	485	460	248	T2CLSBB40044
630 A ¹⁾	505	460	248	T2CLSBB63044
630/800 A	633	690	341	CLSBB63044
1000/1250	950	693	301	CLSBB125044

3 & 4 pole combination CLSBB

Busbar Amp Rating	Dimensions (mm)			4 P and 3 P set Cat. No.
	H	W	D	
250 A ¹⁾	349	340	176	T2CLSBB25043
400 A ¹⁾	485	415	248	T2CLSBB40043
630 A ¹⁾	505	415	248	T2CLSBB63043
630/800 A	633	550/690	341	-
1000/1250	950	553/693	301	-



250 A Transfer switch
Common loadside bars
(for MCCB loadside only)



400 – 630 A Transfer switch
Common loadside bars
(for MCCB loadside only)

Notes: ¹⁾ Do not fit TemBreak 1 transfer switches.

²⁾ Bars not designed for MCCB top mounting. Refer NHP for options.

Automatic transfer switches

Interlocked and enclosed types

Cable mechanical interlocked MCCBs

TemBreak 1 types

The cable wire is supplied. Please specify length.

TemBreak 2 types

Any combination of 125 – 630 A can be interlocked by a cable interlock.



125 A and 250 A MCCBs shown.
(S125NJ / H250NJ)



Interlocked 3 pole types
MCCB to MCCB: 2000 A and 400 A

Enclosed automatic transfer switches, free-standing or wall mounted

Enclosed automatic transfer switches are assembled to order from stock components on a fast-track delivery system. The basic transfer switch section and associated logic panel are housed inside a pre-specified enclosure. A mode selector is supplied as standard and optional indicator lights may be mounted externally on the cabinet door.

Standard features include:

- IP 65 rated enclosure
- Common loadside busbars
- Standard 240 V control (other voltage on application)
- Neutral and earth bars

Optional features:

- Busbar flags for large cable termination
- Pushbuttons or other front controls



Enclosed transfer switch

Cable interlocking for vertical / horizontal / diagonal mounting

5

TemBreak Accessories

to suit 125 - 630 AF MCCBs External accessories

MCCB rating labels

Can be used to identify the MCCBs ratings and type when a motor or interlock is fitted to an MCCB.



Accessory label sheets - stocked

A4 sheets with multiple small catalogue number and rating labels for TemBreak2 MCCBs

125 AF	T12CAPLAB	
160/250 AF	T25CAPLAB	
400/630 AF	T40CAPLAB	

MCCB types	Left side Marker label Cat. No.	Rights side Marker label Cat. No.	Per label Price \$
E125NJ	2H4322SAB	2H4324SAA	
S125NJ	2H4223SAB	2H4218SAA	
S125GJ	2H4223SAB	2H4219SAA	
H125NJ	2H4299SAA	2H4307SAA	
L125NJ	2H4300SAA	2H4308SAA	
S160NJ	2H4227SAB	2H4221SAB	
S160GJ	2H4227SAB	2H4222SAB	
H160NJ	2H4299SAA	2H4307SAA	
L160NJ	2H4300SAA	2H4308SAA	
E250NJ	2H4224SAB	2H4220SAA	
S250NJ	2H4227SAB	2H4221SAB	
S250GJ	2H4227SAB	2H4222SAB	
S250PE	2H4277SAB	2H6972SAA	
H250NJ	2H4299SAA	2H4307SAA	
H250NE	2H4299SAA	2H6973SAA	
L250NJ	2H4300SAA	2H4308SAA	
E400NJ	2H5161SAB	2H5162SAA	
E400CJ	2H5153SAB	2H5331SAA	
S400NJ	2H5153SAB	2H5154SAA	
S400GJ	2H5153SAB	2H5155SAA	
S400GE	2H5153SAB	2H6198SAA	
E630NE	2H5161SAB	2H6871SAA	
S630CE	2H5153SAB	2H6872SAA	
S630GE	2H5153SAB	2H6873SAA	

Isolator switches

S125NN	2H4645SAB	2H4648SAB	
S160NN	2H4650SAC	2H4653SAB	
S250NN	2H4650SAC	2H4653SAB	
S400NN	2H5364SAC	2H5365SAB	
S630NN	2H5364SAC	2H5365SAB	

TemBreak 1, 630 A - 1600 A and 1000 V mining MCCBs

	Page
Selection and location guide for MCCBs	6 - 2
2013 stocking guide for 125 A - 400 A TemBreak 1 MCCBs	6 - 3
MCCBs and accessories	
VS125NJ 1000 V MCCB	6 - 5
VS250NJ 1000 V MCCB	6 - 6
TL100EM 1000 V MCCB	6 - 7
XV400NE 1000 V MCCB	6 - 9
XS/XH630/800	6 - 13
XV630/800 1000 V MCCB	6 - 24
XS1250SE	6 - 28
XV1250NE 1000 V MCCB	6 - 30
XS1600SE	6 - 31
TL630NE	6 - 32
TL800NE	6 - 33
TL1250NE	6 - 34



TemBreak 1 – selection and location guide

Amps	kA	OCR Type	Base current adj.	TemBreak Cat. No.	CPB Sect.
0.7-12	85	Hydraulic/magnetic	Fixed	XM30PB	3
16-125	14	Thermal magnetic	Fixed	XS125CS	-
16-125	25	Thermal magnetic	Fixed	XS125NS	-
12.5-125	18	Thermal magnetic	63-100 %	XS125CJ	-
12.5-125	25	Thermal magnetic	63-100 %	XS125NJ	-
12.5-125	50	Thermal magnetic	63-100 %	XH125NJ	-
12.5-125	50	Thermal magnetic	63-100 %	XH125PJ	-
100-250	25	Thermal magnetic	63-100 %	XS250NJ	-
100-250	50	Thermal magnetic	63-100 %	XH250NJ	-
160-250	65	Thermal magnetic	63-100 %	XH250PJ	-
160-400	35	Thermal magnetic	63-100 %	XS400CJ	-
160-400	50	Thermal magnetic	63-100 %	XS400NJ	-
250-400	65	Thermal magnetic	63-100 %	XH400PJ	-
80-400	50	Electronic	50-100 %	XS400SE	-
80-400	65	Electronic	50-100 %	XH400SE	-
125-400	65	Electronic	50-100 %	XH400PE	-
250-630	42	Thermal magnetic	63-100 %	XS630CJ	-
250-630	50	Thermal magnetic	63-100 %	XS630NJ	6
250-630	85	Thermal magnetic	63-100 %	XH630PJ	6
315-630	50	Electronic	50-100 %	XS630SE	6
315-630	65	Electronic	50-100 %	XH630SE	6
315-630	65	Electronic	50-100 %	XH630PE	6
500-800	50	Thermal magnetic	63-100 %	XS800NJ	6
500-800	85	Thermal magnetic	63-100 %	XH800PJ	6
400-800	50	Electronic	50-100 %	XS800SE	6
400-800	65	Electronic	50-100 %	XH800SE	6
400-800	65	Electronic	50-100 %	XH800PE	6
500-1250	85	Electronic	50-100 %	XS1250SE	6
800-1600	100	Electronic	50-100 %	XS1600SE	6
1000-2000	85	Electronic	50-100 %	XS2000NE	3
1250-2500	85	Electronic	50-100 %	XS2500NE	3
12.5-100	85	Thermal magnetic	63-100 %	TL100NJ	-
100-250	85	Thermal magnetic	63-100 %	TL250NJ	-
200-400	85	Electronic	50-100 %	TL400NE	-
315-630	125	Electronic	50-100 %	TL630NE	6
400-800	125	Electronic	50-100 %	TL800NE	6
500-1250	125	Electronic	50-100 %	TL1250NE	6
630-2500	20-40	Magnetic	63-100 %	XS-ND	3
15-100	10	Thermal magnetic	Fixed	TL100EM	6
80-400	12.5	Electronic	50-100 %	XV400NE	6
200-630	18	Electronic	50-100 %	XV630PE	6
400-800	18	Electronic	50-100 %	XV800PE	6
200-1250	20	Electronic	50-100 %	XV1250NE	6

Notes: TemBreak 1 and 2 cross reference chart, refer section 3.

2014 stocking guide: 125 A - 400 A TemBreak 1 MCCBs

This table can be used as a guide for situations where an older TemBreak 1 MCCB must be used. TemBreak 1 consists of the 'TemBreak' and 'TemBreak PLUS' series of MCCBs.

The breakers marked 'stocked' can be used to replace those others which are not stocked. The stocked types will typically have a higher kA rating. ²⁾

MCCBs contained in CPB section 6: Standard MCCBs

Amps	kA rating	OCR type	Base current adjustment	TB1 type stocked in 2014	MCCB type Cat. No.
12.5	85	Therm Mag	Fixed	stocked	XM30PB
16-125	14	Therm Mag	Fixed	use XS125NS	XS125CS
16-125	25	Therm Mag	Fixed	stocked	XS125NS
12.5-125	18	Therm Mag	63-100 %	use XH125NJ	XS125CJ
12.5-125	25	Therm Mag	63-100 %	use XH125NJ	XS125NJ
12.5-125	50	Therm Mag	63-100 %	stocked	XH125NJ
12.5-125	50	Therm Mag	63-100 %	use XH125NJ ²⁾	XH125PJ
125-225	18	Therm Mag	Fixed	use E250NJ ²⁾	XE225NC
100-160	50	Therm Mag	63-100 %	use XH250NJ/160 ²⁾	XH160PJ
100-250	25	Therm Mag	63-100 %	stocked	XS250NJ
100-250	50	Therm Mag	63-100 %	stocked	XH250NJ
100-250	65	Therm Mag	63-100 %	use S400GJ/250 ¹⁾	XH250PJ
160-400	35	Therm Mag	63-100 %	use XS400NJ	XS400CJ
160-400	50	Therm Mag	63-100 %	stocked	XS400NJ
160-400	65	Therm Mag	63-100 %	use XH400SE ²⁾	XH400PJ
125-400	50	Electronic	50-100 %	use XH400SE	XS400SE
125-400	65	Electronic	50-100 %	stocked	XH400SE
125-400	65	Electronic	50-100 %	use XH400SE ²⁾	XH400PE
250-630	42	Therm Mag	63-100 %	use XS630NJ	XS630CJ
250-630	50	Therm Mag	63-100 %	stocked	XS630NJ
250-630	85	Therm Mag	63-100 %	stocked	XH630PJ
315-630	50	Electronic	50-100 %	stocked	XS630SE
315-630	65	Electronic	50-100 %	stocked	XH630SE
315-630	65	Electronic	50-100 %	stocked	XH630PE
12.5-100	85	Therm Mag	50-100 %	use H125NJ	TL100NJ
160-250	85	Therm Mag	50-100 %	use H250NJ ¹⁾	TL250NJ
200-400	85	Electronic	50-100 %	use S400PE	TL400NE

6

Notes: ¹⁾ TemBreak 2 MCCB. This is an electrical equivalent, though check the application as the physical size of the TemBreak 2 equivalent will be different.

²⁾ Ics ratings are lower on SE / NJ types compared to PE / PJ types. TemBreak 1 and 2 cross reference chart refer section 3.

2014 stocking guide: 125 A - 400 A TemBreak 1 MCCBs

Mining MCCBs

Amps	kA rating	OCR type	Base current adjustment	TB1 type stocked in 2014	MCCB type Cat. No.
15-100	10	Therm Mag	Fixed	stocked	TL100EM
80-400	12.5	Therm Mag	Fixed	stocked	XV400NE
200-630	18	Electronic	50-100 %	stocked	XV630PE
400-800	18	Electronic	50-100 %	stocked	XV800PE
200-1250	20	Electronic	50-100 %	stocked	XV1250NE

Non auto / switch disconnectors

Amps	kA rating	OCR type	Base current adjustment	TB1 type stocked in 2012	MCCB type Cat. No.
125	-	Non Auto	Fixed	use S125NN ¹⁾	XS125NN
250	-	Non Auto	Fixed	stocked	XS250NN
400	-	Non Auto	Fixed	use S400NN ¹⁾	XS400NN
630	-	Non Auto	Fixed	use S630NN ¹⁾	XS630NN

Notes: ¹⁾ TemBreak 2 MCCB. This is an electrical equivalent, though check the application as the physical size of the TemBreak 2 equivalent will be different.

1000V AC Mining MCCBs

VS125NJ

**6 kA****Current rating:** 12.5-125 A**Approvals and tests:** Standards AS/NZS 3947-2, and IEC60947-2**Interrupting capacity:**

	Voltage	Icu kA	Ics kA	Types
AC	1100	4	4	20 A, 32 A
use	1100	6	4	50 A, 63 A, 100 A, 125 A

Trip unit:**Adjustable thermal:** 63 % I_r to 100% I_r**Adjustable magnetic:** 6 x I_m to 12 x I_m for 20 – 100 A trip unit types
6 x I_m to 10 x I_m for 125 A trip unit types**Dimensions (mm)**

Poles	3
H	155
W	90
D (less toggle)	68



Amp rating	Adj. I _r		Adj. I _m		Cat. No.	Price \$
NRC	Min.	Max.	Min.	Max.		
20	12.5	20	120	240	VS125NJ320	
32	20	32	192	384	VS125NJ332	
50	32	50	300	600	VS125NJ350	
63	40	63	378	756	VS125NJ363	
100	63	100	600	1200	VS125NJ3100	
125	80	125	750	1250	VS125NJ3125	

6

Notes:

- The rear insulation barrier, interpole barriers, and terminal screw caps supplied with the MCCB, must be used for MCCB installation.
- Terminal covers are optional, though either terminal covers or interpole barriers **must be used** on the MCCB line-side.
- For internal and external accessory selection refer TemBreak 2 standard 125/250 AF accessories, section 3.
- NRC: Nominal rated current
- Adj. I_r: Adjustable thermal setting
- Adj. I_m: Adjustable magnetic setting
- **Replaces: TL100EM. Check exact ratings and dimensions to suit your application requirement.**

1000V AC Mining MCCBs VS250NJ

**6 kA****Current rating:** 100 – 250A**Approvals and tests:** Standards AS/NZS 3947-2, and IEC60947-2**Interrupting capacity:**

	Voltage	Icu kA	Ics kA
AC use	1100	6	4

Trip unit:**Adjustable thermal:** 63% I_r to 100% I_r**Adjustable magnetic:** 6 x I_m to 13 x I_m for 160 A trip unit types
6 x I_m to 10 x I_m for 250 A trip unit types**Dimensions (mm)**

Poles	3
H	165
W	105
D (less toggle)	68

Amp rating NRC	Adj. I _r		Adj. I _m		Cat. No.	Price \$
	Min.	Max.	Min.	Max.		
160	100	160	960	2080	VS250NJ3160	
250	160	250	1500	2500	VS250NJ3250	

Notes:

- The rear insulation barrier, interpole barriers, and terminal screw caps supplied with the MCCB, must be used for MCCB installation.
- Terminal covers are optional, though either terminal covers or interpole barriers **must be used** on the MCCB line-side.
- For internal and external accessory selection refer TemBreak 2 standard 125/250 AF accessories, section 3.
- NRC: Nominal rated current
- Adj. I_r: Adjustable thermal setting
- Adj. I_m: Adjustable magnetic setting

TemBreak 1000 V

mining circuit breakers TL100EM

50 kA**Current rating:** 15-100 A

Approvals and tests: Complies with AS 2184 /
AS/NZS 3947-2
Complies with IEC 60947-2

Interrupting capacity: 10 kA at 900 V AC (sym)
6.5 kA at 1100 V AC (sym) ¹⁾

Trip unit: Fixed

Thermal setting: Fixed 40 °C industrial
45 °C and 50 °C marine

Magnetic setting: Fixed**Dimensions (mm)**

Poles	3
H	165
W	105
D (less toggle)	125
Weight (kg)	3.2



Ampere rating	Cat. No.	Price \$
15	TL100EM 15 3K	
20	TL100EM 20 3K	
30	TL100EM 30 3K	
40	TL100EM 40 3K	
50	TL100EM 50 3K	
60	TL100EM 60 3K	
75	TL100EM 75 3K	
100	TL100EM 100 3K	

6

Refer previous
pages for new
VS125/250
1000 V MCCBs

Notes: ¹⁾ Ratings based upon IEC 60947-2.
TL100EM must use line-side terminal cover supplied with MCCB.

Accessories to suit TL100EM / F

Internal accessories

Description		Cat. No.	Price \$
Shunt trips	110 V AC sht (100-115 V)	7VF 2M1	
	240 V AC sht (200-480 V)	7VF 2M2-B	
	48 V DC sht	7VF 2M6	
	24 V DC sht	7VF 2M7	
Undervoltage trips	440 V AC	7UF 2D5B	
	110 V AC	7UF 2D6B	
	240 V AC	7UF 2D7B	
	110 V DC	7UF 2FD1	
	24 V DC	7UF 2FD2	
Auxiliary switches	AUX SW right hand 1C	7XA 2D31B	
	AUX SW left hand 1C	7XA 2D41B	
Alarm switches	ALT SW right hand	7AB 2D11B	

External accessories

Description		Cat. No.	Price \$
Rear connect studs	3 P RC studs (6)	7RC 2LE	
Handle operators	Door interlocking handle kit	TFH 22D	
	IP 55 handle kit (plastic)	TL100EMR5GM	
	IP 65 handle kit (plastic)	TL100EMR6BN ¹⁾	
	IP 65 handle kit (metal)	YASD22D	
	IP 55 direct mounting handle kit	TFJ 22LU	
Toggle locks	Toggle lock	7KB 3BA	
	Lock plate	UXKE0030A	

6

Notes: ¹⁾ 'HS' handle option Cat. No. TL100EMR5GM (IP 55).

TemBreak 1000 V

mining circuit breakers Electronic XV400NE

12.5 kA**Current rating: 80-400 A****Approvals and tests:** Standards AS/NZS 3947-2
Complies with IEC 60947-2**Interrupting capacity:** 12.5 kA at 1000/1100 V AC,
(IEC 60947-2)**Trip unit:**

Trip unit:	Fixed		
LTD adjustment:	I _t : 0.8-1	t:	5-30 s
STD adjustment:	I _t : 2-10	t:	0.1-0.3 s
INST adjustment:	I _t : 3-12		
Instantaneous Adj:	I _t : 0.7-1	t:	fixed at 40 s (sep control power req.)

Dimensions (mm)

Poles	3
H	260
W	140
D (Less toggle)	103
Weight (kg)	5.0

**Amp rating**

NRC	ASR Min.	ASR Max.	Cat. No.	Price \$
160	80	160	XV400NE 160 3K ²⁾	
250	125	250	XV400NE 250 3K ²⁾	
400	200	400	XV400NE 400 3K ²⁾	

XV400 MINING BREAKERS MUST USE LINE-SIDE TERMINAL COVERS, TERMINAL BOLT COVERS and REAR INSULATION PLATES.
 All items supplied with breaker ¹⁾ ³⁾

- Notes:** ¹⁾ Applicable for front connect MCCBs. Contact NHP for rear connect details.
²⁾ For FAULT INDICATION option add 'FI' and nominate control voltage.
³⁾ Installation and incoming connection information is supplied with each MCCB or can be requested from NHP.
 NRC: Nominal rated current
 ASR: Adjustable setting range
 Overcurrent trip combinations: (specify combinations req.)
 LSI - standard,
 LS - optional,
 LSIP - optional (pre-trip alarm).
 Special current ratings available on indent, refer NHP.

Accessories to suit 400 AF

Internal accessories

Description		Cat. No.	Price \$
Shunt trips	110 V AC/DC (100 - 115 V)	2H1305BAA	
	240 V AC (200 - 480 V)	2H1306BAA	
	12 V DC	2H1307BAA	
	24 V DC	2H1308BAA	
	48 V DC	2H1309BAA	
	24 V AC	2H1311BAA	
Undervoltage trips	AC coil ¹⁾	2H1492BAA	
	100-230 V DC coil ²⁾	2H1493BAA	
	24 V DC coil ²⁾	2H1494BAA	
	48 V DC coil ²⁾	2H1495BAA	
	60 V DC coil ²⁾	2H1496BAA	
	110 V AC instantaneous controller	UXUB0013B	
	240 V AC instantaneous controller	UXUB0014B	
	440 V AC instantaneous controller	UXUB0015B	
	110 V AC time delay controller	UXUB0016B	
	240 V AC time delay controller	UXUB0017B	
440 V AC time delay controller	UXUB0018B		
	200-230 V DC controller	UXUB0038B	
Auxiliary switches	AUX SW right hand 1C	UXXB0004D	
	AUX SW right hand 2C	UXXB0005D	
	AUX SW right hand 3C	UXXB0006D	
Alarm switch	ALT SW right hand	UXLB0009D	
	ALT/AUX SW right hand 1C	UXLB0013D	
Alarm & auxiliary switch	ALT/AUX SW right hand 2C	UXLB0014D	
Pre-trip alarm	For electronic OCR MCCBs only	Pre-trip alarm	
Fault indication & contacts	Side of breaker mounted module. Electronic MCCBs only	FI	

Notes: Footnotes, refer to page 6 - 12.

Accessories to suit 400 AF

External accessories

Description		Cat. No.	Price \$
Attached busbars	3 P attached busbars (6 in kit)	2H1384DAA	
	4 P attached busbars (8 in kit)	2H1385DAA	
Screw tunnel terminals	3 P solderless terminals (6 in kit)	2H2012DAB	
	4 P solderless terminals (8 in kit)	2H2012DBB	
Rear connect studs	3 P RC studs (6 in kit)	UXRC0006C	
	4 P RC studs (8 in kit)	UXRC0007C	
Motor operators (XMC4)	110 V AC motor ¹¹⁾	UXMC0001B	
	110 V DC motor ¹¹⁾	UXMC0003B	
	24 V DC motor ¹¹⁾	UXMC0004B	
	240 V AC motor ¹¹⁾	UXMC0005B	
	Motor base support ¹¹⁾	UXMD0001B	
Mechanical interlocks	3 P mechanical interlock ³⁾	UXKC0001B	
	3/4 P mechanical interlock ⁴⁾	UXKC0002B	
	4 P mechanical interlock ⁵⁾	UXKC0003B	
Cable mechanical interlocks	Interlock cable (wire)	UXKC0020A	
	Cable interlock mechanism ⁶⁾	UXKC0021B	
Handle operators	IP 55 grey vari-depth handle + 320 mm shaft	T1HS40R5GM	
	T1HS escutcheon plate option: 100 mm ²	T2HSESC100	
	390 mm T pin shaft for T1HS - no flexi coupling	T2HS400SHAFT	
	IP 65 grey vari-depth handle + shaft	T1HP40R6BNA4	
	IP 65 vari-depth metal handle + shaft	YASD34	
	Padlock attachment for T2HP/HS mechanism	T1HP40PALK	
	IP 55 direct mount fixed depth handle ⁷⁾	TFJ34XU	
	T1HS handle shaft cam for Prosafe and Fortress locks	1499 7702	
Toggle locks	Toggle lock – non captive (Padlockable)	2H1956BAA	
	Toggle -lock – captive (Padlockable)	XKA4	
	Resin for XKA4	LOCTITE 480	

Notes: Footnotes, refer to page 6 - 12.

Accessories to suit 400 AF

External accessories

Description		Cat. No.	Price \$
Terminal covers	3 P front connecting terminal cover - busbar connect type	2H1413DAB	
	4 P front connecting terminal cover - busbar connect type	2H1414DAB	
	3 P front connecting terminal cover - cable connect type	2H1415DAB	
	4 P front connecting terminal cover - cable connect type	2H1416DAB	
	IP 20 protective cover - busbar connect type ⁸⁾	2A1787DBA	
	IP 20 protective cover - cable connect type ⁸⁾	2A1788DAA	
	3 P rear connecting terminal cover	UXPD0011B	
	4 P rear connecting terminal cover	UXPD0012A	
Accessory lead terminal	Accessory lead terminal	UXYD0001A	
	Terminal and bolt ⁹⁾	UXYD0002A	
TemPlugs ¹³⁾	3 P TemPlug 400 A ¹²⁾	UPX3440	
Interpole barrier	Interpole barrier ¹⁰⁾	UXQH0004B	
OCR sealing kit	Tamperproof cover for OCR adjustment dials	XS400CRSK	

6

- Notes:**
- 1) An AC UVT controller is required for 100-440 V AC.
 - 2) A DC UVT controller is needed for 200-230 V DC operation. None required for 24-110 V DC.
 - 3) For 3 P circuit breakers without motors.
 - 4) For 4 P circuit breakers without motors or 3 P circuit breakers with motors.
 - 5) For 4 P circuit breakers with motors.
 - 6) Order one interlock mechanism for each circuit breaker.
 - 7) Flush plate included.
 - 8) 6 pieces required for 3 P / 8 pieces required for 4 P.
 - 9) Specify quantity required (up to 6 pieces).
 - 10) Order individually.
 - 11) Order a motor base support for each motor : UXMD0001B.
 - 12) [Price Schedule T3](#) applies to TemPlug.
 - 13) Not to be used with 1000V mining MCCB type XV400.

MCCB isolating switch

Non-auto MCCB, XS800NN

- Accepts MCCB accessories
- Standards AS/NZS 3947-2 and IEC 60947-2
- Motor or motorised circuit isolation - no overcurrent protection
- Will accept auxiliaries, UVTs & shunt trips ²⁾



Ordering details

Ampere rating	Short time rating (kA)	3 pole Cat. No. ¹⁾	Price \$
630/800	10 kA for 0.3 sec	XS800NN3	

Dimensions (mm)

Ampere rating	Height ³⁾	Width		Depth	Weight (kg)	
		3 P	4 P		3 P	4 P
630/800	273	210	280	103	9.00	12.2



- Notes:**
- ¹⁾ Additional technical details, refer to Part C.
 - ²⁾ UVTs & shunts are operated by the MCCBs trip lever which is fitted in non-auto MCCBs.
 - ³⁾ Height excludes attached busbar.

TemBreak 1 series

Current limiting thermal magnetic type XS630NJ

50 kA

Current rating: 250 – 630 A

Approvals and Tests: Standards: AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity: Symmetrical amps (kA RMS)

	Voltage	Icu kA	Ics kA
AC use	400/415	50	25
DC use	250	40	–



Trip unit: Adjustable thermal adjustable magnetic

OCR options: Special calibrated or disabled thermal trip

Dimensions (mm)

Poles	3
H ¹⁾	273
W	210
D (less toggle)	103
Weight (kg)	9.6
4 pole	

3 Pole

Amp rating

NRC	ASR Min.	ASR Max.	Cat. No.	3 pole Price \$
400	250	400	XS630NJ 400 3	
630	400	630	XS630NJ 630 3	

Notes: ¹⁾ H excludes attached busbar.
 Magnetic only available on application.
 NRC: Nominal rated current.
 ASR: Adjustable setting range.
 Specify for DC rating.

TemBreak PLUS PowerBreaker Ics = 50 kA

Thermal magnetic type XH630PJ

85 kA

Current rating: 250 – 630 A

Approvals and Tests: Standards: AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity: Symmetrical amps (kA RMS)

	Voltage	Icu kA	Ics kA
AC use	400	100	50
	415	85	50
DC use	250	40	–



Trip unit: Adjustable thermal adjustable magnetic

OCR options: Special calibrated or disabled thermal trip

Dimensions (mm)

Poles	3
H ¹⁾	273
W	210
D (less toggle)	103
Weight (kg)	9.6
4 pole on indent	

3 Pole

Amp rating

NRC	ASR Min.	ASR Max.	Cat. No.	3 pole Price \$
400	250	400	XH630PJ 400 3	
630	400	630	XH630PJ 630 3	

6

Notes: ¹⁾ H excludes attached busbar
 Magnetic only available on application.
 NRC: Nominal rated current.
 ASR: Adjustable setting range.

TemBreak PLUS selectivity series

Electronic type XS630SE

50 kA

Current rating: 315 – 630 A

Approvals and Tests: Standards: AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity: Symmetrical amps (kA RMS)

	Voltage	Icu kA	Ics kA
AC use	400/415	50	25



Trip unit:

Electronic trip unit: Adjustable long, short and instantaneous trip.

Trip unit:	Fixed.	
LTD adjustment:	I ₁ : 0.8 – 1	t: 5 – 30 s
STD adjustment:	I ₂ : 2 – 10	t: 0.1 – 0.3 s
Instantaneous Adj:	I ₃ : 3 – 12	NRC

OCR options: Pre-trip alarm, fault indication and contacts, ground fault trip

Dimensions (mm)

Poles	3	4
H ¹⁾	273	273
W	210	280
D (less toggle)	103	103
Weight (kg)	9.6	12.2

3 Pole

Amp rating				3 pole
NRC	ASR Min.	ASR Max.	Cat. No.	Price \$
630	315	630	XS630SE 630 3	

4 Pole

Amp rating				4 pole
NRC	ASR Min.	ASR Max.	Cat. No.	Price \$
630	315	630	XS630SE 630 4	

Ground Fault Trip MCCB²⁾

3 Pole

Amp rating				3 pole
NRC	ASR Min.	ASR Max.	Cat. No.	Price \$
630	315	630	XS630SE 6303LSIG	

4 Pole

Amp rating				4 pole
NRC	ASR Min.	ASR Max.	Cat. No.	Price \$
630	315	630	XS630SE 6304LSIG	

Notes: ¹⁾ H excludes attached busbar.

²⁾ GF MCCBs require a 4th Neutral CT to be ordered for 3 and 4 pole MCCB applications. (If a neutral is present) Refer accessories.

NRC: Nominal rated current. ASR: Adjustable setting range.

TemBreak PLUS selectivity series

Electronic type XH630SE

65 kA

Current rating: 315 – 630 A

Approvals and Tests: Standards: AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity: Symmetrical amps (kA RMS)



	Voltage	Icu kA	Ics kA
AC use	400/415	65	33

Trip unit:

Electronic trip unit: Adjustable long, short and instantaneous trip.

Trip unit:	Fixed.	
LTD adjustment:	I ₁ : 0.8 – 1	t: 5 – 30 s
STD adjustment:	I ₂ : 2 – 10	t: 0.1 – 0.3 s
Instantaneous Adj:	I ₃ : 3 – 12	NRC

OCR options: Pre-trip alarm, fault indication and contacts, ground fault trip

Dimensions (mm)

Poles	3	4
H ¹⁾	273	273
W	210	280
D (less toggle)	103	103
Weight (kg)	9.6	12.2

3 Pole

Amp rating				3 pole
NRC	ASR Min.	ASR Max.	Cat. No.	Price \$
630	315	630	XH630SE 630 3	

4 Pole

Amp rating				4 pole
NRC	ASR Min.	ASR Max.	Cat. No.	Price \$
630	315	630	XH630SE 630 4	

Ground Fault Trip MCCB²⁾

3 Pole

Amp rating				3 pole
NRC	ASR Min.	ASR Max.	Cat. No.	Price \$
630	315	630	XH630SE6303LSIG	

4 Pole

Amp rating				4 pole
NRC	ASR Min.	ASR Max.	Cat. No.	Price \$
630	315	630	XH630SE6304LSIG	

Notes: ¹⁾ H excludes attached busbar.

²⁾ GF MCCBs require a 4th Neutral CT to be ordered for 3 and 4 pole MCCB applications. (If a neutral is present) Refer accessories.
 NRC: Nominal rated current. ASR: Adjustable setting range.

Valid until August 2014

THERMAL/MAGNETIC CIRCUIT BREAKERS

NHP

Terasaki thermal/magnetic circuit breakers offer superior protection when harmonics exist in a network.

POWER PROTECTION

DO NOT UNDER RATE



PP-TERASAKI/MCCB>CPB

Terasaki thermal/magnetic circuit breakers:

- Respond directly to the heat produced by the true RMS value of the load current
- Ensure protection irrespective of the harmonic distortion any future loads may cause
- Protect up to the infinite harmonic
- Are suitable for DC applications

 **TERASAKI**
Innovators in Protection Technology

TemBreak 1 series

Current limiting thermal magnetic type XS800NJ

50 kA

Current rating: 500 – 800 A

Approvals and Tests: Standards: AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity: Symmetrical amps (kA RMS)

	Voltage	Icu kA	Ics kA
AC use	400/415 ¹⁾	50	25
DC use	250	40	



Trip unit: Adjustable thermal adjustable magnetic

OCR options: Special calibrated or disabled thermal trip

Dimensions (mm)

Poles	3	4
H ¹⁾	273	273
W	210	280
D (less toggle)	103	103
Weight (kg)	9.7	12.2

3 Pole

Amp rating

NRC	ASR Min.	ASR Max.	Cat. No.	3 pole Price \$
800	500	800	XS800NJ 800 3	

4 Pole

Amp rating

NRC	ASR Min.	ASR Max.	Cat. No.	4 pole Price \$
800	500	800	XS800NJ 800 4	

6

Notes: ¹⁾ H excludes attached busbar.

NRC: Nominal rated current.

ASR: Adjustable setting range.

Magnetic only available on application.

Specify for DC rating.

TemBreak PLUS PowerBreaker Ics = 50 kA

Thermal magnetic type XH800PJ

85 kA

Current rating: 500 – 800 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity: Symmetrical amps (kA RMS)



	Voltage	Icu kA	Ics kA
AC use	400	100	50
	415	85	50
DC use	250	40	–

Trip unit: Adjustable thermal adjustable magnetic

OCR options: Special calibrated or disabled thermal trip

Dimensions (mm)

Poles	3	4
H ¹⁾	273	273
W	210	280
D (less toggle)	103	103
Weight (kg)	9.7	12.2

3 Pole

Amp rating

NRC	ASR Min.	ASR Max.	Cat. No.	3 pole Price \$
800	500	800	XH800PJ 800 3P	

4 Pole

Amp rating

NRC	ASR Min.	ASR Max.	Cat. No.	4 pole Price \$
800	500	800	XH800PJ 800 4P	

Notes: ¹⁾ H excludes attached busbar.
 Magnetic only available on application.
 NRC: Nominal rated current.
 ASR: Adjustable setting range.

TemBreak PLUS selectivity series

Electronic type XS800SE

50 kA

Current rating: 400 – 800 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity: Symmetrical amps (kA RMS)



	Voltage	Icu kA	Ics kA
AC use	400/415	50	25

Trip unit:

Electronic trip unit: Adjustable long, short and instantaneous trip.

Trip unit:	Fixed.		
LTD adjustment:	I ₁ : 0.8 – 1	t:	5 – 30 s
STD adjustment:	I ₂ : 2 – 10	t:	0.1 – 0.3 s
Instantaneous Adj:	I ₃ : 3 – 12		NRC

OCR options: Pre-trip alarm, fault indication and contacts, ground fault trip

Dimensions (mm)

Poles	3	4
H ¹⁾	273	273
W	210	280
D (less toggle)	103	103
Weight (kg)	9.7	12.2

3 Pole

Amp rating

NRC	ASR Min.	ASR Max.	Cat. No.	3 pole Price \$
800	400	800	XS800SE 800 3	

4 Pole

Amp rating

NRC	ASR Min.	ASR Max.	Cat. No.	4 pole Price \$
800	400	800	XS800SE 800 4	

Ground Fault Trip MCCB²⁾

3 Pole

Amp rating

NRC	ASR Min.	ASR Max.	Cat. No.	3 pole Price \$
800	400	800	XS800SE8003LSIG	

4 Pole

Amp rating

NRC	ASR Min.	ASR Max.	Cat. No.	4 pole Price \$
800	400	800	XS800SE8004LSIG	

Notes: ¹⁾ H excludes attached busbar.

²⁾ GF MCCBs require a 4th Neutral CT to be ordered for 3 and 4 pole MCCBs. (If a neutral is present) Refer accessories.

NRC: Nominal rated current.

ASR: Adjustable setting range.

TemBreak PLUS selectivity series

Electronic type XH800SE

65 kA

Current rating: 400 – 800 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity: Symmetrical amps (kA RMS)



	Voltage	Icu kA	Ics kA
AC use	400/415	65	33

Trip unit:

Electronic trip unit: Adjustable long, short and instantaneous trip.

Trip unit:	Fixed.	
LTD adjustment:	I ₁ : 0.8 – 1	t: 5 – 30 s
STD adjustment:	I ₂ : 2 – 10	t: 0.1 – 0.3 s
Instantaneous Adj:	I ₃ : 3 – 12	NRC

OCR options: Pre-trip alarm, fault indication and contacts, ground fault trip

Dimensions (mm)

Poles	3	4
H ¹⁾	273	273
W	210	280
D (less toggle)	103	103
Weight (kg)	9.7	12.2

3 Pole

Amp rating

NRC	ASR Min.	ASR Max.	Cat. No.	3 pole Price \$
800	400	800	XH800SE 800 3	

4 Pole

Amp rating

NRC	ASR Min.	ASR Max.	Cat. No.	4 pole Price \$
800	400	800	XH800SE 800 4	

Ground Fault Trip MCCB²⁾

3 Pole

Amp rating

NRC	ASR Min.	ASR Max.	Cat. No.	3 pole Price \$
800	400	800	XH800SE8003LSIG	

4 Pole

Amp rating

NRC	ASR Min.	ASR Max.	Cat. No.	4 pole Price \$
800	400	800	XH800SE8004LSIG	

Notes: ¹⁾ H excludes attached busbar.

²⁾ GF MCCBs require a 4th Neutral CT to be ordered for 3 and 4 pole MCCB applications. (If a neutral is present) Refer accessories.

NRC: Nominal rated current.

ASR: Adjustable setting range.

TemBreak PLUS PowerBreaker Ics = 50 kA

Electronic type XH800PE

65 kA

Current rating: 400 – 800 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity: Symmetrical amps (kA RMS)



	Voltage	Icu kA	Ics kA
AC use	400/415	65	50
DC use	250 V	40	-

Trip unit:

Electronic trip unit: Adjustable long, short and instantaneous trip.

Trip unit:	Fixed.		
LTD adjustment:	I ₁ : 0.8 – 1	t:	5 – 30 s
STD adjustment:	I ₂ : 2 – 10	t:	0.1 – 0.3 s
Instantaneous Adj:	I ₃ : 3 – 12		NRC

OCR options: Pre-trip alarm, fault indication and contacts, ground fault trip

Dimensions (mm)

Poles	3	4
H ¹⁾	273	273
W	210	280
D (less toggle)	103	103
kg	9.7	12.2

3 Pole

Amp rating

NRC	ASR Min.	ASR Max.	Cat. No.	Price \$
800	400	800	XH800PE 800 3	

4 Pole

Amp rating

NRC	ASR Min.	ASR Max.	Cat. No.	Price \$
800	400	800	XH800PE 800 4	

Notes: 1) H excludes attached busbar.
 NRC: Nominal rated current.
 ASR: Adjustable setting range.

TemBreak 1000 V mining circuit breakers Electronic XV630PE, XV800PE

18 kA**Current rating: 200-800 A****Approvals and tests:** Standards AS 2184, AS/NZS 3947-2
Complies with IEC 60947-2**Interrupting capacity:** 18 kA at 1000 V AC ¹⁾ (IEC 60947-2)
12.5 kA at 1100 V AC ²⁾**Trip unit:**

Trip unit:	Fixed		
LTD adjustment:	I _t : 0.8-1	t: 5-30 s	
STD adjustment:	I _t : 2-10	t: 0.1-0.3	
INST adjustment:	I _t : 3-12		
PTA adjustment:	I _p : 0.7-1	t: fixed at 40 s (sep. control power req.)	
or GFT adjustment:	I _c : 0.1-0.4	t: 0.1, 0.2, 0.3, 0.4 or 0.8 s	

**Dimensions (mm)**

Poles	3
H ³⁾	273
W	210
D (Less toggle)	103
Weight (kg)	11.00

Amp rating

NRC	ASR Min.	ASR Max.	Cat. No.	Price \$
400	200	400	XV630PE 400 3K ⁴⁾	
630	315	630	XV630PE 630 3K ⁴⁾	
800	400	800	XV800PE 800 3K ⁴⁾	

**XV630/800 MINING BREAKERS MUST USE
either line-side terminal covers
OR
interpole barriers, and a rear
insulation plate
(All supplied with breaker) ⁵⁾**

- Notes:** ¹⁾ Actual test voltage 1105 V.
²⁾ Actual test voltage 1165 V.
³⁾ H excludes attached busbar.
⁴⁾ For FAULT INDICATION option add 'FI' and nominate control voltage.
⁵⁾ Installation and incoming connection information can be found with each new MCCB, or by contacting NHP.
 NRC: Nominal rated current.
 ASR: Adjustable setting range.
 Overcurrent trip combinations: (specify combinations req.)
 LSI - standard,
 LS - optional,
 LSIP - optional (pre-trip alarm).

Accessories

to suit 630-800 AF

Internal accessories

Description		Cat. No.	Price \$
Shunt trips	110 V AC/DC	2H1515BAA	
	240 V AC	2H1516BAA	
	12 V DC	2H1517BAA	
	24 V DC	2H1518BAA	
	48 V DC	2H1519BAA	
	200 V DC	2H1520BAA	
	24 V AC	2H1521BAA	
	48 V AC	2H1522BAA	
	Undervoltage trips	AC coil ¹⁾	2H1503BAA
100-230 V DC coil ²⁾		2H1504BAA	
24 V DC coil ²⁾		2H1505BAA	
48 V DC coil ²⁾		2H1506BAA	
60 V DC coil ²⁾		2H1507BAA	
110 V AC instantaneous controller		UXUB0013B	
240 V AC instantaneous controller		UXUB0014B	
440 V AC instantaneous controller		UXUB0015B	
110 V AC time delay controller		UXUB0016B	
240 V AC time delay controller		UXUB0017B	
440 V AC time delay controller		UXUB0018B	
Undervoltage trips	200-230 V DC controller	UXUB0038B	
	AUX SW right hand 1C	UXXB0007D	
	AUX SW right hand 2C	UXXB0008D	
	AUX SW right hand 3C	UXXB0009D	
Alarm switch	ALT SW right hand	UXLB0010D	
Alarm & auxiliary switches	ALT/AUX SW right hand 1C	UXLB0015D	
	ALT/AUX SW right hand 2C	UXLB0016D	
Pre-trip alarm	For electronic OCR MCCBs only	Add LSIP	
Fault indication & contacts	Side of breaker mounted module.	Add - then FI	
	Electronic MCCBs only		
Earth fault, with optional 4th external CTs	Earth fault, electronic breakers only (4th CTs optional, add price below)	Add LSIG	
	630 A 4th CT	UXOY0001A	
	800 A 4th CT	UXOY0002A	

Notes: Footnotes, refer to page 6 - 26.

Accessories to suit 630 – 800 AF

External accessories - user fit		Cat. No.	Price \$
Screw tunnel terminals	3 P solderless terminals for 630 AF (6 in kit)	TXLD0005A	
	4 P solderless terminals for 630 AF (8 in kit)	TXLD0006A	
Rear connect studs	3 P rear connect studs, 630/800 AF (6 in kit)	UXRC0008B	
	4 P rear connect studs, 630/800 AF (8 in kit)	UXRC0009B	
Motor operators (XMD6) ²⁾	110 V AC motor	2H1299CAC	
	110 V DC motor	2H1301CAC	
	24 V DC motor	2H1302CAC	
	240 V AC motor	2H1303CAC	
Motor operators (XMC6) ²⁾	110 V AC motor	UXMC0006B	
	110 V DC motor	UXMC0008B	
	24 V DC motor	UXMC0009B	
	240 V AC motor	UXMC0010B	
	Motor base support	UXMD0002B	
Mechanical interlocks (Factory fit)	3 P mechanical interlock rear mounting	UXKC0004A	
	4 P mechanical interlock rear mounting	UXKC0005A	
	Interlock cable (wire)	UXKC0020A	
	Cable interlock mechanism ¹⁾	UXKC0022B	
Handle operators	IP 55 Grey variable depth handle + 357mm shaft	T1HS80R5GM	
	T1HS escutcheon plate option: 100 mm ²	T2HSESC100	
	390 mm T pin shaft for T2HS - no flexi coupling	T2HS400SHAFT	
	IP 65 Grey variable depth handle + 420 mm shaft	T1HP80R6BNA4	
	Padlock attachment for T1HP/HS mechanism	T1HP80PALK	
	IP 55 direct mount fixed depth handle	TFJ36XU	
Handle extension	Extends length of toggle	UXKB0002A	
Toggle & handle locks	Toggle lock – non captive (Padlockable)	UXKB0002A	
	Toggle lock – captive (Padlockable)	XKA6	
	Resin for XKA6	LOCTITE 480	

Notes: ¹⁾ Order one interlock mechanism for each circuit breaker.

²⁾ XMC6 motors are used on all transfer switches as standard, and require a motor base support along with the motor when ordered. XMD6 motors offer superior ON/OFF/TRIPPED status indication and can be fitted to transfer switches on request. XMD6 motors do not require a motor base support.

Yellow and red handles available.

Accessories to suit 630 – 800 AF

External accessories - user fit		Cat. No.	Price \$
Terminal covers	3 P front connecting terminal cover	2H1417DAB	
	4 P front connecting terminal cover	2H1418DAB	
	IP 20 protective cover ¹⁾	2A1787DBA	
	3 P rear connecting terminal cover	UXPD0013C	
	4 P rear connecting terminal cover	UXPD0014B	
Accessory lead terminal	Accessory terminal block	UXYD0001A	
	Terminal and bolt	UXYD0002A	
Plug-in breaker parts 3 pole	Aux. connection block (MCCB) side	UXYC0005A	
	Aux. connection block (panel) side	UXYB0004A	
	Mounting bolts	TXLD0016A	
	Tulip block (6) 630 ²⁾	TXLD0012A	
	Tulip block (6) 800 ²⁾	2A3308DAA	
	Mounting base	XDM6-3	
Plug-in breaker parts 4 pole	Aux. connection block (MCCB) side	UXYC0005A	
	Aux. connection block (panel) side	UXYB0004A	
	Mounting bolts	TXLD0016A	
	Tulip block (8) 630 ²⁾	TXLD0013A	
	Tulip block (8) 800 ²⁾	2A3308DBA	
	Mounting bolts	XDM6-4	
TemPlug	TemPlug 800 A rated ³⁾	UPX3800	
Interpole barrier	Interpole barrier	UXQH0004B	
OCR sealing kit	Tamperproof cover for OCR adjustment dials	XS630OCRSK	
ProSafe shot bolt interlock	Prosafe shot bolt lock HS handles xx code	TKNHPPX	
	Prosafe standard key xx code for above	TKNNHPKEYX_	
	Cam for T2HS handle shafts Key codes A to Z are available. Specify by changing the key code above.	14997702	

Notes: ¹⁾ 6 pieces required for 3 P / 8 pieces required for 4 P.

²⁾ Specify quantity required (up to 6 pieces).

³⁾ Price Schedule T3 applies to TemPlug.

TemBreak PLUS selectivity series

Electronic type XS1250SE

85 kA

Current rating: 500 – 1250 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity: Symmetrical amps (kA RMS)

	Voltage	Icu kA	Ics kA
AC use	400 V	85	65
	415 V	65	49



Trip unit:

Electronic trip unit: Adjustable long, short and instantaneous trip.

Trip unit: Fixed.

LTD adjustment: I₁: 0.8 – 1 t: 5 – 30 s

STD adjustment: I₂: 2 – 10 t: 0.1 – 0.3 s

Instantaneous Adj: I₃: 3 – 12 NRC

OCR options: Pre-trip alarm, fault indication and contacts, ground fault trip

Dimensions (mm)

Poles	3	4
H ¹⁾	370	370
W	210	280
D (less toggle)	120	120
Weight (kg)	22	28

Notes: ¹⁾ H excludes attached busbar.

3 Pole

Amp rating				3 pole
NRC	ASR Min.	ASR Max.	Cat. No.	Price \$
1000	500	1000	XS1250SE 1000 FC3	
1250	625	1250	XS1250SE 1250 FC3	

4 Pole

Amp rating				4 pole
NRC	ASR Min.	ASR Max.	Cat. No.	Price \$
1000	500	1000	XS1250SE 1000 FC4	
1250	625	1250	XS1250SE 1250 FC4	

Ground Fault Trip MCCBs ¹⁾**3 Pole**

Amp rating				3 pole
NRC	ASR Min.	ASR Max.	Cat. No.	Price \$
1000	500	1000	XS1250SE 10003LG	
1250	625	1250	XS1250SE 12503LG	

4 Pole

Amp rating				4 pole
NRC	ASR Min.	ASR Max.	Cat. No.	Price \$
1000	500	1000	XS1250SE 10004LG	
1250	625	1250	XS1250SE 12504LG	

Notes: ¹⁾ GF MCCBs require a 4th Neutral CT to be ordered for 3 and 4 pole MCCB applications. (If a neutral is present) Refer accessories.

NRC: Nominal rated current.

ASR: Adjustable setting range.

TemBreak 1000 V mining circuit breakers

Electronic XV1250NE

20 kA**Current rating:** 200-1250 A**Approvals and tests:** Standards AS/NZS 3947-2,
IEC 60947-2**Interrupting capacity:** 20 kA at 1000/1100 V AC
(IEC 60947-2)**Trip unit:**

Trip unit:	Fixed		
LTD adjustment:	I_t : 0.8-1	t:	5-30 s
STD adjustment:	I_t : 2-10	t:	0.1-0.3 s
INST adjustment:	I_t : 3-12		
PTA adjustment:	I_t : 0.7-1	t:	fixed at 40 s (sep control power req.)
or GFT adjustment:	I_t : 0.1-0.4	t:	0.1, 0.2, 0.3, 0.4 or 0.8 s

**Dimensions (mm)**

Poles	3
H ¹⁾	370
W	210
D (Less toggle)	120
Weight (kg)	22.0
4 pole	POA

6

Amp rating NRC	ASR Min.	ASR Max.	Cat. No.	Price \$
400	200	400	XV1250NE 400 3 K ²⁾	
800	400	800	XV1250NE 800 3 K ²⁾	
1000	500	1000	XV1250NE1000 3 K ²⁾	
1250	630	1250	XV1250NE1250 3 K ²⁾	

XV1250 MINING BREAKERS MUST USE either line-side terminal covers OR interpole barriers, and a rear insulation plate (All supplied with breaker)³⁾

- Notes:** 1) H excludes attached busbar.
 2) For FAULT INDICATION option add "FI" and nominate control voltage.
 3) Installation information is supplied with MCCBs or refer NHP prior to purchase.

NRC: Nominal rated current.

ASR: Adjustable setting range.

Overcurrent trip combinations: (specify combinations req.)

LSI - standard,

LS - optional,

LSIP - pre-trip alarm,

LSIG - trip indicators - optional.

TemBreak PLUS selectivity series

Electronic type XS1600SE

100 kA

Current rating: 800 – 1600 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity: Symmetrical amps (kA RMS)



	Voltage	Icu kA	Ics kA
AC use	400 V	100	75
	415 V	85	64

Trip unit:

Electronic trip unit: Adjustable long, short and instantaneous trip

Trip unit:	Fixed.	
LTD adjustment:	I ₁ : 0.8 – 1	t: 5 – 30 s
STD adjustment:	I ₂ : 2 – 10	t: 0.1 – 0.3 s
Instantaneous Adj:	I ₃ : 3 – 12	NRC

OCR options: Pre-trip alarm, fault indication and contacts, ground fault trip

Dimensions (mm)

Poles	3	4
H ¹⁾	370	370
W	210	280
D (less toggle)	140	140
Weight (kg)	27	35

3 Pole

Amp rating

NRC	ASR Min.	ASR Max.	Cat. No.	3 pole Price \$
1600	800	1600	XS1600SE 1600 FC3	

4 Pole

Amp rating

NRC	ASR Min.	ASR Max.	Cat. No.	4 pole Price \$
1600	800	1600	XS1600SE 1600 FC4	

Ground Fault Trip MCCBs ²⁾

3 Pole

Amp rating

NRC	ASR Min.	ASR Max.	Cat. No.	3 pole Price \$
1600	800	1600	XS1600SE 16003LG	

4 Pole

Amp rating

NRC	ASR Min.	ASR Max.	Cat. No.	4 pole Price \$
1600	800	1600	XS1600SE 16004LG	

Notes: ¹⁾ H excludes attached busbar.

²⁾ GF MCCBs require a 4th Neutral CT to be ordered for 3 and 4 pole MCCB applications. (If a neutral is present) Refer accessories.

NRC: Nominal rated current.

ASR: Adjustable setting range.

TemBreak PLUS LimitorBreaker Ics = 70 kA

Electronic type
TL630NE

125 kA

Current rating: 315 – 630 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity: Symmetrical amps (kA RMS)



	Voltage	Icu kA	Ics kA
AC use	400 V	125	70

Trip unit:

Electronic trip unit: Adjustable long, short and instantaneous trip

Trip unit:	Fixed.	
LTD adjustment:	I ₁ : 0.8 – 1	t: 5 – 30 s
STD adjustment:	I ₂ : 2 – 10	t: 0.1 – 0.3 s
Instantaneous Adj:	I ₃ : 3 – 12	NRC

OCR options: Pre-trip alarm, fault indication and contacts, ground fault trip

Dimensions (mm)

Poles	3
H ¹⁾	370
W	210
D (less toggle)	140
Weight (kg)	25.8
4 pole	

6 3 Pole Amp rating

NRC	ASR Min.	ASR Max.	Cat. No.	3 pole Price \$
630	315	630	TL630NE 630 3	

Ground Fault Trip MCCBs ²⁾

NRC	ASR Min.	ASR Max.	Cat. No.	3 pole Price \$
630	315	630	TL630NE3LSIG	

Notes: ¹⁾ H excludes attached busbar.

²⁾ GF MCCBs require a 4th Neutral CT to be ordered for 3 and 4 pole MCCB applications. (If a neutral is present) Refer accessories.

NRC: Nominal rated current.

ASR: Adjustable setting range.

Accessories, refer to page 6 - 35.

TemBreak PLUS LimitorBreaker Ics = 70 kA

Electronic type
TL800NE

125 kA

Current rating: 400 – 800 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity: Symmetrical amps (kA RMS)

	Voltage	Icu kA	Ics kA
AC use	400/415	125	70



Trip unit:

Electronic trip unit: Adjustable long, short and instantaneous trip

Trip unit:	Fixed.	
LTD adjustment:	I ₁ : 0.8 – 1	t: 5 – 30 s
STD adjustment:	I ₂ : 2 – 10	t: 0.1 – 0.3 s
Instantaneous Adj:	I ₃ : 3 – 12	NRC

OCR options: Pre-trip alarm, fault indication and contacts, ground fault trip

Dimensions (mm)

Poles	3
H ¹⁾	370
W	210
D (less toggle)	140
Weight (kg)	25.8
4 pole	

3 Pole

Amp rating

NRC	ASR Min.	ASR Max. ²⁾	Cat. No.	3 pole Price \$
800	400	800	TL800NE 800 3	

Ground Fault Trip MCCBs²⁾

3 Pole

Amp rating

NRC	ASR Min.	ASR Max.	Cat. No.	3 pole Price \$
800	400	800	TL800NE3LSIG	

Notes: ¹⁾ H excludes attached busbar.

²⁾ GF MCCBs require a 4th Neutral CT to be ordered for 3 and 4 pole MCCB applications. (If a neutral is present) Refer accessories.

NRC: Nominal rated current.

ASR: Adjustable setting range.

Accessories, refer to page 6 - 35.

TemBreak PLUS LimitorBreaker Ics = 65 kA

Electronic type
TL1250NE

125 kA

Current rating: 500 – 1250 A

Approvals and Tests: Standards AS/NZS 3947-2 and IEC 60947-2

Interrupting capacity: Symmetrical amps (kA RMS)



	Voltage	Icu kA	Ics kA
AC use	400/415	125	65

Trip unit:

Electronic trip unit: Adjustable long, short and instantaneous trip

Trip unit: Fixed.

LTD adjustment: I₁: 0.8 – 1 t: 5 – 30 s

STD adjustment: I₂: 2 – 10 t: 0.1 – 0.3 s

Instantaneous Adj: I₃: 3 – 12 NRC

OCR options: Pre-trip alarm, fault indication and contacts, ground fault trip

Dimensions (mm)

Poles	3
H ¹⁾	370
W	210
D (less toggle)	140
Weight (kg)	26
4 pole	

6

3 Pole

Amp rating

NRC	ASR Min.	ASR Max.	Cat. No.	3 pole Price \$
1000	500	1000	TL1250NE 1000 3 FC	
1250	625	1250	TL1250NE 1250 3 FC	

Ground Fault Trip MCCBs²⁾

3 Pole

Amp rating

NRC	ASR Min.	ASR Max.	Cat. No.	3 pole Price \$
1000	500	1000	TL1250NE 1000 3 LG	
1250	625	1250	TL1250NE 1250 3 LG	

Notes: ¹⁾ H excludes attached busbar.

²⁾ GF MCCBs require a 4th Neutral CT to be ordered for 3 and 4 pole MCCB applications. (If a neutral is present) Refer accessories.

NRC: Nominal rated current.

ASR: Adjustable setting range.

Accessories, refer to page 6 - 35.

Accessories to suit 1250 – 1600 AF

	Internal accessories - factory fit	Cat. No.	Price \$
Shunt trips	110 V AC/DC (110-115 V)	2H1197BAA	
	240 V AC (200-480 V)	2H1198BAA	
	12 V DC	2H1199BAA	
	24 V DC	2H1200BAA	
	48 V DC	2H1201BAA	
	200 V DC (200-230 V)	2H1202BAA	
	24 V AC	2H1203BAB	
	48 V AC	2H1204BAA	
Undervoltage trips	AC coil ¹⁾	2H1208BAA	
	100-230 V DC coil ²⁾	2H1209BAA	
	24 V DC coil ²⁾	2H1210BAA	
	48 V DC ²⁾	2H1211BAA	
	60 V DC ²⁾	2H1212BAA	
	110 V AC instantaneous controller	UXUB0013B	
	240 V AC instantaneous controller	UXUB0014B	
	440 V AC instantaneous controller	UXUB0015B	
Auxiliary switches	110 V AC time delay controller	UXUB0016B	
	240 V AC time delay controller	UXUB0017B	
	440 V AC time delay controller	UXUB0018B	
	200-230 V DC controller	UXUB0038B	
	AUX SW right hand 1C / 3 P	UXXB0010D	
	AUX SW right hand 2C / 3 P	UXXB0011D	
	AUX SW right hand 3C / 3 P	UXXB0012D	
	AUX SW right hand 1C / 4 P	UXXB0023D	
Alarm switches	AUX SW right hand 2C / 4 P	UXXB0024D	
	AUX SW right hand 3C / 4 P	UXXB0025D	
Alarm & auxiliary switches	ALT SW right hand / 3 P	UXLB0011D	
	ALT SW right hand / 4 P	UXLB0024D	
	ALT/AUX right hand 1C / 3 P	UXLB0017D	
	ALT/AUX right hand 2C / 3 P	UXLB0018D	
	ALT/AUX right hand 2C / 4 P	UXLB0025D	
	ALT/AUX right hand 1C / 4 P	UXLB0026D	

Notes: ¹⁾ An AC UVT controller is required for 100–440 V AC.

²⁾ A DC UVT controller is needed for 200-230 V DC operation.
None required for 24–110 V DC.

Accessories to suit 1250 – 1600 AF

Internal accessories - factory fit		Cat. No.	Price \$
Fault indication & contacts	An option for all 1250-1600 A types Add then voltage	FI	
Fault indication	LED's mounted at top of OCR	FILED	
Pre-Trip alarm	An option for all 1250-1600 A types Add	LSIP	
Ground fault trip (GFT) Optional ext. 4th CT's	An option for all 1250-1600 A types Add	LSIG	
	1000 A 4th CT	UXOY0003A	
	1250 A 4th CT	UXOY0004A	
	1600 A 4th CT	UXOY0005A	

External accessories - factory fit		Cat. No.	Price \$
Rear connect tags	3 P rear connect studs (6 in kit) 1250 A	2H1959DAB	
	4 P rear connect studs (8 in kit) 1250 A	2H1959DBB	
	3 P rear connect studs (6 in kit) 1600 A	2H1960DAA	
	4 P rear connect studs (8 in kit) 1600 A	2H1960DBA	
Motor operators (XMD9)	110 V AC motor - user fit	2H1191CAB	
	110 V DC motor - user fit	2H1193CAB	
	24 V DC motor - user fit	2H1194CAB	
	240 V AC motor - user fit	2H1195CAB	
Mechanical interlocks	3 P mech l/lock / 1250 A rear connect	UXKC0006D	
	4 P mech l/lock / 1250 A rear connect	UXKC0007D	
	3 P mech l/lock / 1600 A rear connect	UXKC0026C	
	4 P mech l/lock / 1600 A rear connect	UXKC0027C	
	Interlock cable (wire)	UXKC0020A	
	Interlock mechanism 1250 A Cable type ¹⁾	UXKC0023B	
	Interlock mechanism 1600 A Cable type ¹⁾	UXKC0024B	

Notes: ¹⁾ Order one interlock mechanism for each breaker.

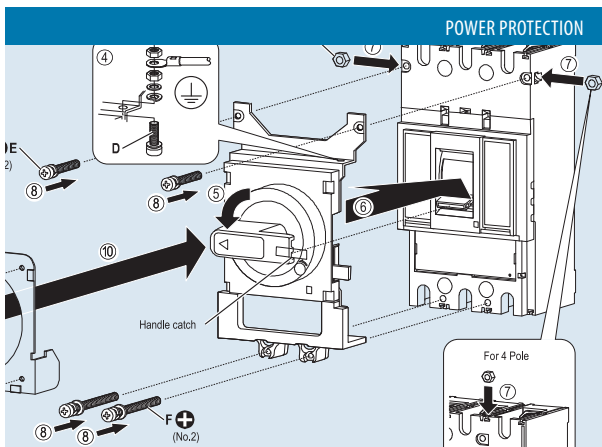
Accessories to suit 1250 – 1600 AF

External accessories - user fit		Cat. No.	Price \$
Handle operators	IP 55 Grey ext. handle + 320 mm shaft ¹⁾	T1HSX6R5GM	
	T1HS escutcheon plate option: 100 mm ²	T2HSESC100	
	390 mm T pin shaft for T2HS - no flexi coupling	T2HS400SHAFT	
	IP 65 Grey variable depth handle + shaft	T1HPX6R6BNA4	
	Padlock attachment for T1HP/HS mechanism	T1HPX6PALK	
	IP 55 direct mount fixed depth handle	TFJ38XU	
	Prosafe shot bolt lock HS handles xx code	TKNHP_	
	Prosafe standard key xx code for above	TKNHPKEY_	
	Cam for T2HS handle shafts Key codes A to Z are available. Specify by changing the key code above.	14997702	
Handle extension	Handle extension	2A2272BAB	
Toggle & handle locks	Toggle lock – non captive (Padlockable)	UXKB0003A	
	3 P FC terminal cover / 1250 ⁵⁾	2H1419DAB	
Terminal covers	4 P FC terminal cover / 1250 ⁵⁾	2H1420DAB	
	IP 20 protective cover ²⁾	2A1787DBA	
Accessory lead terminal	Accessory terminal block	UXYD0001A	
	Terminal and bolt ³⁾	UXYD0002A	
Interpole barrier	Interpole barrier ⁴⁾	UXQH0004B	
OCR sealing kit	Tamperproof cover for OCR adjustment dials	XS1250OCRSK	

- Notes:** ¹⁾ Yellow and red handles available.
²⁾ 6 pieces required for 3 P / 8 pieces required for 4 P.
³⁾ Specify quantity required (up to 6 pieces).
⁴⁾ Individual barrier (not a set).
⁵⁾ Use interpole barriers for 1600 A MCCBs.

APPLICATION, INSTALLATION AND INSTRUCTION GUIDES

NHP



For Terasaki TemBreak 2 MCCBs and accessories

Installation sheets

Accessories listed below can be found in NHP Price List Catalogue Part C.

Internal accessories

- Auxiliary switches
- Alarm switches
- Shunt trips
- Undervoltage trips

External accessories

- Operating handles
- Motor operators
- Mechanical interlocks
- Interpole barriers
- Terminal covers
- Flush plates
- TemPlug
- Plug-in MCCB bases
- Toggle locks and locking devices
- Rear connection terminal studs
- Tunnel clamp terminals
- Attached flat bar



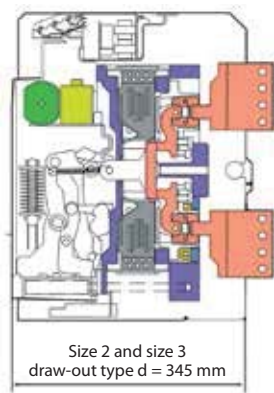
TemPower 2 Air Circuit Breakers and Arc Detection Relays

	Page
Introduction, standards	7 - 2
Stocked AR ACBs	7 - 4
Standard accessories	7 - 6
ACB ordering information	7 - 9
Specifications	7 - 10
Main power circuit terminal specifications	7 - 11
Performance specification of AR and AR-H ACB	7 - 12
Overcurrent Release (OCR) Specification	7 - 16
Tripping options	7 - 26
Serial communication options	7 - 30
TemRelay external alarm module	7 - 32
TemVision remote monitoring and control	7 - 32
TemPower Rack remote racking	7 - 33
NHP Servicing	7 - 34
Retrofitting and installation kits	7 - 35
Dimensions	7 - 37
Providing solutions	7 - 38
Arc detecting relay system	7 - 39
Arc D-Tect ordering information	7 - 44



TemPower Introduction

Meeting the requirements of contemporary switchboard manufacturers, consultants and end users, the TemPower 2 ACB boasts an attractive range of features including fast fault clearing times, advanced digital Overcurrent Relay (OCR) options and a small, compact design that maintains high Ampere Interrupting Capacities (AIC).



Maximum power from minimum volume

3 Pole model



Standard series	800 - 2000 A	2500 - 3200 A	4000 A	5000 - 6300 A
High fault series	1600 - 2000 A	1600 - 3200 A		
	Size AR2	Size AR3	Size AR4	Size AR6

Notes: Measurements on 3 pole model show in mm.

TemPower Standards and certifications

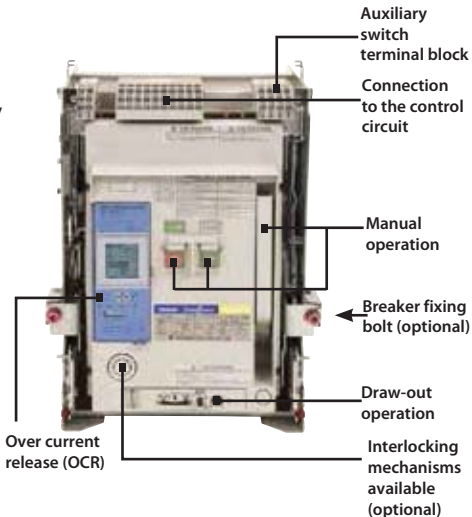
Based Standards

AS 3947-2	Australian Standard
IEC 60947-2	International Electrotechnical Commission
EN60947-2	European Standard
JIS C8372	Japanese Industrial Standard
NEMA PUB NO.SG3	National Electrical Manufacturers Association
ANSI C37.13	American National Standard Institute

Certification and Authorisation

ASTA, UK	ASTA Certification Services
NK, Japan	Nippon Kaiji Kyokai
LR, UK	Lloyd's Register of Shipping
ABS, USA	American Bureau of Shipping
GL, Germany	Germanischer Lloyd
BV, France	Bureau Veritas

For easy wiring access, control voltage, auxiliary and position switch terminals are all mounted at the front on the ACB body. Due to a general increase in the level of harmonics in modern power distribution systems, the neutral phase is fully rated as standard on 4P models.



TemPower Stocked ACBs

Stocked ACBs are kept on the shelf in a standard pre-built configuration providing fast customer delivery. ACB bodies (withdrawable part) and carriages (fixed part) are ordered separately according to the required carriage terminal configuration.

Stocked ACB specification

- Approvals and test: IEC 60947, A.S.T.A. certified
- AR-S type ACB body, 3 pole
- TemPro PLUS overcurrent release (type AGR21BL-PG) (240 V AC control voltage)
- Adjustable 'LSI'+GF protection standard (GF comes set enabled as default ²⁾)
- Single trip indicator contact for 'LSI+GF' standard
- MODBUS communications facility (data monitoring as standard)
- Ground fault ready (external 4th CT required, see below) ¹⁾
- 240 V AC continuous rated shunt trip
- 7 C/O auxiliary switch
- IP 41 door flange
- ON/OFF push button covers are padlockable as standard
- Position padlock facility (locks ACB inside carriage in 'connected' or 'test' position)

Description	Current rating (A)	400/415 V interrupting capacity (kA)	ACB body Cat. No.	Price \$
AR-S ACB body	1250	65	ARB2123STD	
	1600	65	ARB2163STD	
	2000	65	ARB2203STD	
	2500	85	ARB3253STD	
	3200	85	ARB3323STD	
	4000	100	ARB4403STD	



Notes: The above specification is fixed. If different accessories are required (e.g. UVT, OCR, different shunt voltage) please contact NHP sales to place a fully manufactured order.

'LSI+GF': long time delayed trip, short time delayed trip, instantaneous trip, ground fault trip

¹⁾ This function provides ground fault protection to TN-C or TN-S power distribution systems on the load side.

²⁾ The ground fault protection setting is set to enabled as default. If GF is not required GF must be set to OFF by the user before ACB energisation.

TemPower Stocked ACBs

Stocked ACB carriage specification ¹⁾

- 3 pole carriage to suit standard ACB body

Description	Suits ACB Body Cat. No.	Terminal arrangement		ACB carriage Cat. No.	Price \$
		Top	Bottom		
AR-S ACB Carriage		Horizontal	Horizontal	ARC2123HHSTD	
		Vertical	Vertical	ARC2123VVSTD	
ARB2123STD		Horizontal	Vertical	ARC2123HVSTD	
		Vertical	Horizontal	ARC2123VHSTD	
ARB2163STD		Horizontal	Horizontal	ARC2203HHSTD	
		Vertical	Vertical	ARC2203VVSTD	
ARB2203STD		Horizontal	Vertical	ARC2203HVSTD	
		Vertical	Horizontal	ARC2203VHSTD	
ARB3253STD		Horizontal	Horizontal	ARC3323HHSTD	
		Vertical	Vertical	ARC3323VVSTD	
ARB3323STD		Horizontal	Vertical	ARC3323HVSTD	
		Vertical	Horizontal	ARC3323VHSTD	
ARB4403STD		Vertical	Vertical	ARC4403VVSTD	

Notes: ¹⁾ The stock carriages are suitable for use with the NHP 'stock body' shown on the previous page. If you require a different ACB specification to that listed on the previous page please contact NHP sales to place a fully manufactured order.

TemPower Standard accessories

Ground fault 4th CT

The external ground fault 4th CT is required to be fitted to the switchboard neutral bar when the ground fault protection function used.



Description	Rated Pri. current	Suits ACB type	4th CT Cat. No.	Price \$
Ground fault 4th CT	1250 A	ARB2123STD	XCW0840LS13	
	1600 A	ARB2163STD	XCW0840LS16	
	2000 A	ARB2203STD	XEC1640LS20	
	2500 A	ARB3253STD	XEC1640LS25	
	3200 A	ARB3323STD	XEC1640LS32	
	4000 A	ARB4403STD	XEC1640LS40	

Stocked ACB instruction manual

- Customer to specify required quantity at time of order (not supplied as standard)

Description	Cat. No.	Price \$
TemPro Plus (AGR21B) Installation manual	ARAGR21BMANUAL	
TemPro Premier (AGR31B) Installation manual	ARAGR31BMANUAL	

TemPower Standard accessories

These items are factory fit / NHP service:

Item	Description	Price \$
Motor operator	A motor is used to remotely charge / close the ACB (specify voltage)	
Shunt trip (continuously rated)	Allows remote opening of the ACB (specify voltage)	
Under voltage trip (UVT)	Trips the ACB during an undervoltage (specify voltage) (single phase)	
Trapped key I/lock	Rockwell or Fortress type Prosafe	
Mech. Interlock – 2 way	Cable interlock. /per ACB	
Mech. Interlock – 3 way	Cable interlock. /per ACB	
Door interlock	Prevents enclosure door being opened unless ACB is isolated	
Fixing bolts for ACB	Holds the breaker firmly inside the carriage.	
Off position padlock facility	Allows the ACB to be padlocked in the OFF position	
Cycle counter	A 5 digit counter of the ACBs ON-OFF cycles	
Auxiliary contacts	10C changeover contacts.	
Position switch	A contact set that switches to indicate the ACB status in a carriage	
Storage draw-out handle	Draw-out handle that is stored inside the ACB body	

Notes: TEMPro PREMIER pricing is POA. Please contact NHP estimating with required specification.

TemPower

Standard accessories

These items can be fitted by the customer:

Item	Description	Cat. No.	Price \$
Interpole barrier	Suits 3P 800 A - 2000 A AR ACB	1H1894BAA	
Interpole barrier	Suits 3P 2500 A, 3200 A AR ACB	1H1895BAA	
Interpole barrier	Suits 3P 4000 A AR ACB	1H1896BAA	
Standard door flange	IP41 front surround for ACB	1H2243BAA	
IP 55 door cover	A clear plastic hinged door cover	1H2300CAD	
Padlock main safety shutters	Suits 3/4P 800 A-3200 A AR ACB	1H1627CAA	
Padlock main safety shutters	Suits 3/4P 4000 A AR ACB	1H2022CAA	
Lifting lugs	Attachable lifting brackets for ACB bodies only	1A3430BAB	
Lifting truck	Available for lifting an ACB	ARACBTRUCK	
OCR checker	Hand held secondary injection test unit	AROCRCHECKER	
Test jumper	5 m lead for maintenance purpose	1H1615BAA	



OCR checker



IP 41 door flange



IP 55 door cover



Lifting lugs



Interpole barriers



Test jumper

Notes: TEMPro PREMIER pricing is POA. Please contact NHP estimating with required specification.

TemPower ACB ordering information

ACBs can be manufactured to suit specific customer requirements.

About TEMPOWER 2 AR ACB Ordering: TemPower 2 AR ACBs are locally assembled by NHP along with many variations and options available to suit specific end user applications. The listing below represents typical specifications to be considered at the time of ordering:

1. **ACB type and current rating** (AR, 1250 A)
2. **Number of poles** (3 P or 4 P)
3. **Main circuit and control circuit voltage and frequency** (AC)
4. **Operating temperatures** (40 degree C ambient)
5. **Type of mounting.** (Draw out type ACB is available, fixed is available)
6. **Terminal arrangements.** For example rear connect vertical main terminals. Front connect terminals are also an option.
7. **Type of charging.** Manual lever (standard) or motor operated is chosen then the operating voltage has to be specified.
8. **The OCR** (overcurrent relay or 'release').
The OCR type needs to be chosen depending on the requirements for installation. NHP / Terasaki have as standard "LSI" OCRs for MODBUS communications facilities in all ACBs. The control voltage must be specified at the time of order.
9. **Electrical tripping devices:** Other options such as Shunt trips, Under voltage releases, or capacitor trips need to be considered.
10. **Other accessories**, some of which are:
 - ON-OFF cycle counter
 - Auxiliary switch type (7 C is standard)
 - Key lock devices – standard or Trap key interlock etc.
 - Mechanical interlocks
 - IP 55 Cover
 - OFF padlock
 - Door flange
11. Contact your NHP sales office for any other special requirements such as service or repair, retrofitting, spare parts, test reports etc.
12. **Prices:** Contact your NHP sales office for a pricing of non standard equipment.

An AR ordering sheet is available covering the above ordering process.

Refer NHP.



*Temp*Power Specifications

Rated from 200 A to 6300 A NHP can provide a withdrawable Terasaki Air Circuit Breaker (ACB) designed to meet the stringent demands of the industrial and marine market.

The **AR** series is available in four frame sizes:

- frame size 1 which ranges from 200 to 2000 A (AR2)
- frame size 2 which ranges from 2500 to 3200 A (AR3)
- frame size 3 which is rated at 4000 A (AR4)
- frame size 4 which is rated at 5000 to 6300 A (AR6)



Tempower

Main power circuit terminals specifications

Main circuit configuration is available in either horizontal or vertical form, a combination of both, or front connected. Refer to the table below, which indicates which terminal types are available for different ACB types. Specification of the desired terminal configuration should be made at the time of ordering the ACB or carriage. A cross 'x' below, indicates a configuration that is unavailable.

AR-S standard series

Ampere rating (A)	ACB type	ACB mounting method	Horizontal terminals	Vertical terminals	Front connect terminals
800 A	AR208S	Draw-out	✓	✓	✓
1250 A	AR212S	Draw-out	✓	✓	✓
1600 A	AR216S	Draw-out	✓	✓	✓
2000 A	AR220S	Draw-out	✓	✓	✓
2500 A	AR325S	Draw-out	✓	✓	✓
3200 A	AR332S	Draw-out	✓	✓	✓
4000 A	AR440S	Draw-out	x	✓	x

AR-H high kA series

Ampere rating (A)	ACB type	ACB mounting method	Horizontal terminals	Vertical terminals	Front connect terminals
1600 A	AR216H	Draw-out	✓	✓	x
2000 A	AR220H	Draw-out	✓	✓	x
1600 A	AR316H	Draw-out	✓	✓	x
2000 A	AR320H	Draw-out	✓	✓	x
2500 A	AR325H	Draw-out	✓	✓	x
3200 A	AR332H	Draw-out	✓	✓	x

AR650 / AR663

Ampere rating (A)	ACB type	ACB mounting method	Horizontal terminals	Vertical terminals	Front connect terminals
5000 A	AR650	Draw-out	x	✓	x
6300 A	AR663	Draw-out	x	✓	x



Performance specification of the AR ACB

AR-S TemPower 2 -STANDARD		AR208S	AR212S	AR216S
Rated current (In) ^{1) 2)}	(A)	800	1250	1600
Number of poles ^{3) 4)}		3 & 4	3 & 4	3 & 4
Current transformer ratings (Ict)	(A)	200	200	200
		400	400	400
		800	800	800
			1250	1250
Insulation voltage (Ui) (V 50/60 Hz)	(V AC)	1000	1000	1000
Operational voltage (Ue) (V 50/60 Hz)	(V AC)	690	690	690
Impulse voltage (Uimp)	(kV)	12	12	12
Breaking capacity kA IEC, AS ^{5) 7)}	690 V	50	50	50
	440 V	65 ⁶⁾	65 ⁶⁾	65 ⁶⁾
Making capacity (kA peak) IEC, AS	690 V	105	105	105
	440 V	143	143	143
Rated short time withstand (Icw)	1 Sec	65	65	65
	3 Sec	50	50	50
Total breaking time	Sec	0.03	0.03	0.03
Motor charging time (max)	Sec	10	10	10
Closing time (max)	Sec	0.08	0.08	0.08
Latching current	(kA)	65	65	65

7

- Notes:**
- 1) Values in open air at 40° C (45° C for marine applications).
 - 2) Values of AR208S, AR212S, AR216S for draw-out type with horizontal terminals, values of the other ACBs for draw-out type with vertical terminals.
 - 3) For 2 pole ACBs use outside poles of 3 pole ACB.
 - 4) 4 Pole ACBs without Neutral phases protection can not apply IT earthing system.
 - 5) Contact NHP for the details.
 - 6) For 500 V AC.
 - 7) Please contact NHP for DC applications.
- When the INST trip function is set to NON, the MCR function should be enabled, otherwise, the rated breaking capacity is reduced to the rated latching current.



AR220S	AR325S	AR332S	AR440S	AR650S	AR663S
2000	2500	3200	4000	5000	6300
3 & 4	3 & 4	3 & 4	3 & 4	3 & 4	3 & 4
200	200	200	4000	5000	6300
400	400	400			
800	800	800			
1250	1250	1250			
1600	1600	1600			
2000	2000	2000			
	2500	3200			
1000	1000	1000	1000	1000	1000
690	690	690	690	690	690
12	12	12	12	12	12
50	65	65	75	85	85
65 ⁶⁾	85 ⁶⁾	85 ⁶⁾	100	120	120
105	143	143	165	187	187
143	187	187	220	264	264
65	85	85	100	120	120
50	65	65	85	85	85
0.03	0.03	0.03	0.03	0.05	0.05
10	10	10	10	10	10
0.08	0.08	0.08	0.08	0.08	0.08
65	85	85	100	120	120

TempPower

Performance specification of the AR-H ACB

A 'High Fault' series of AR ACB is available (the AR-H) on INDENT. For applications that require a larger breaking capacity than the standard series.

AR-H TempPower 2-HIGH FAULT		AR216H	AR220H
Rated current (In)	(A)	1600	2000
Number of poles		3 & 4	3 & 4
Current transformer ratings (Ict)	(A)	200	200
		400	400
		800	800
		1250	1250
		1600	1600
2000			
AC Insulation voltage (Ui)	(V AC)	1000	1000
Operational voltage	(V AC)	690	690
Impulse voltage (Uimp)	(kV)	12	12
Breaking capacity ^{1) 2)} kA IEC, AS (Ics = Icu) [kA sym rms]	690 V	55	55
	440 V	80	80
Making capacity (kA peak) IEC, AS	690 V	121	121
	440 V	176	176
Rated short time withstand (Icw)	1 Sec	80	80
	3 Sec	55	55
Total breaking time	Sec	0.03	0.03
Motor charging time	Sec	10	10
Closing time (max)	Sec	0.08	0.08
Latching current	(kA)	65	65

Notes: ¹⁾ Contact NHP for the details.

²⁾ Please contact NHP for DC applications.



AR316H	AR320H	AR325H	AR332H
1600	2000	2500	3200
3 & 4	3 & 4	3 & 4	3 & 4
200	200	200	200
400	400	400	400
800	800	800	800
1250	1250	1250	1250
1600	1600	1600	1600
	2000	2000	2000
		2500	2500
			3200
1000	1000	1000	1000
690	690	690	690
12	12	12	12
85	85	85	85
100	100	100	100
187	187	187	187
220	220	220	220
100	100	100	100
75	75	75	75
0.03	0.03	0.03	0.03
10	10	10	10
0.08	0.08	0.08	0.08
85	85	85	85

TempPower Overcurrent Release (OCR) specification

Boasting an impressive range of standard features and specialised options, the Terasaki overcurrent release range is suitable for commercial, industrial and marine applications. The Terasaki OCR is divided into two performance ranges; the **TEMPro PLUS** and **TEMPro PREMIER**.

TEMPro PLUS (Type AGR-21B)

Featuring a backlit liquid crystal display (LCD) for easy visual identification and a soft rubber key activated scrolling menu system the **TEMPro PLUS** can display ¹⁾:

- Phase currents I_1, I_2, I_3 (accuracy + 2.5 %)
- Fault current value
- Tripping delay time
- The maximum phase current
- Cause of fault (LTD, STD, INST, GF ²⁾)

Providing adjustable LSI and GF ³⁾ protection featuring **MODBUS communications** plus a built-in current meter as standard, the **TEMPro PLUS** is perfect for basic and mid range applications.



Notes: ¹⁾ Trip variables can be viewed after an event via the LCD providing control power is constantly available.

²⁾ LTD-Long time delay trip, STD-Short time delay trip, INST-Instantaneous trip, GF-Unrestricted ground fault (not available for 'S' curve model OCR).

³⁾ This function provides ground fault protection to TN-C or TN-S power distribution systems on the load side.

TempPower Overcurrent Release (OCR) specification

TEMPro PREMIER (Type AGR-31B)

The **TEMPro PREMIER** is an advanced OCR that offers the same LCD appearance and protective functions as the **TEMPro PLUS**. In addition to the current meter measurements listed above the **TEMPro PREMIER** has an inbuilt energy analyser which indicates:

- Phase currents I_1, I_2, I_3 (accuracy + 1.5 %)
- Line voltages (V) V_{12}, V_{23}, V_{31} ¹⁾
- Phase voltage (V) V_{1N}, V_{2N}, V_{3N} (accuracy + 1.0 %)
- Active power (kW) (accuracy + 2.5 %)
- Demanded active power (kW)
- Electric energy (kWh) (accuracy + 3.0 %)
- Power factor ($\cos \phi$) (accuracy + 2.5 %)
- Frequency (Hz) (accuracy + 0.5 Hz)
- Fault current value
- Tripping delay time
- The maximum phase current
- Cause of fault (LTD, STD, INST, GF²⁾)

Furthermore the **TEMPro PREMIER** is available with a range of optional features that make it ideal for use in specialised applications.

Field test facility

Type AGR-21B/31B OCRs are equipped with a field test function to verify the long time delay, short time delay, instantaneous and ground fault trip features without the need for tripping of the ACB.



- Notes:** ¹⁾ Line voltage and phase voltage cannot be displayed at the same time.
²⁾ LTD-Long time delay trip, STD-Short time delay trip, INST-Instantaneous trip, GF-Unrestricted ground fault (not available for 'S' curve model OCR).

TemPower

TEMPro PLUS and PREMIER appearance

OCR control voltage: Confirm the terminal connections to match the indicated control voltage. Refer to page 9 - 51 for terminal designations.

OCR protection curve: Can be 'L'-general feeder protection, 'R'-IEC 60255 conforming or 'S' - generator protection types. Curve type must be specified at the time of order.

OCR type: TemPro PLUS (AGR21B) or TemPro Premier (AGR31B)

Alarm contact indication: Standard trip contact indicator is LSI+GF. This is a single contact indicator. Other contact indicators such as individual GF, pre-trip alarm, system alarm and motor spring charge is available on special request.

Unrestricted Ground fault: If coloured in black it means this function is available. It does not indicate if the function is on or off, confirm this by checking the OCR GF setting (SET 2).

Special functions:
Must be requested at time of order.
REF: Restricted earth fault
NP: Neutral phase protection
OH: Contact temperature alarm
Zone: Zone interlocking
RP: Reverse power

Modbus & signaling options:
Data Monitor: Interrogate variables
Remote open: The ACB can trip / open via a Modbus command.

Backlit LCD for easy viewing. The LCD flashes on and off when alarm / trip event occurs

Soft rubber keys for menu navigation

Easy identification of the CT rated current and the set rated current



Test port for secondary injection test. Requires ANU-1 OCR checker

Notes: Indicative picture only

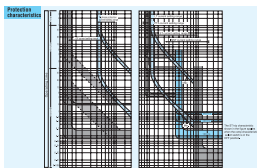


TEMPro application protection curves

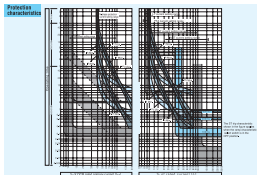
The TEMPro PLUS and TEMPro PREMIER OCR range is available in three model variations:

- **Standard protection curve, or 'L' type** – designed for general feeder applications and will achieve most selectivity and protection requirements.
- **High selectivity curve or 'R' type** - offers 3 curve characteristics to IEC60255 and is used when selectivity can not be achieved with other system protective devices (i.e. fuses or other relays).
- **Generator protection curve or 'S' type** – Specifically designed for generator and marine applications.

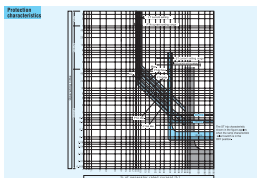
It is recommended that all general feeder circuits be protected by the 'L' type unless the results of a selectivity study indicate that an 'R' type is required to discriminate with another system protective device. **The application curve type must be specified at the time of order.**



L type is designed for General Feeder installations.



R type is used for high selectivity applications and offers 3 curve characteristics to IEC 60255.



S type is best utilised for generator and marine power protection.



TEMPro PLUS and TEMPro PREMIER

Standard protection features

TEMPro PLUS and TEMPro PREMIER have adjustable LSI - long time delay, short time delay, INSTANTANEOUS and GF as standard. This provides an adjustable time delay on overload and also the I²t ramp characteristic which is essential to provide selectivity when grading with other protective devices such as downstream fuses and upstream relays. The standard 'LSI' curve provides more than **five million combinations** of unique time current characteristics.

Standard feature	Description	Application curve		
		L	R	S
LTD trip	Adjustable overload protection area trip	✓	✓	✓
STD trip	Adjustable short circuit protection area trip (with intentional delay)	✓	✓	✓
INST trip	Adjustable short circuit protection area trip (with NO intentional delay)	✓	✓	✓
GF trip ¹⁾	Adjustable unrestricted earth fault protection (GF) (requires external 4th CT for 3 pole model)	✓	✓	X
Single Alarm contact indicator	As standard the single contact alarm indicator is available that indicates when the LTD trip, STD trip, INST/MCR trip or the GF trip function is activated.	✓	✓	✓
MODBUS I/F	MODBUS communication interface allows monitoring of available data variables. ACB control is non standard, refer to communications page.	✓	✓	✓
Backlit LCD with current meter TEMPro PLUS	Displays phase currents I ₁ , I ₂ , I ₃ and I _{GF} , fault current values, tripping time delay, the maximum phase current and the cause of fault (LTD, STD, INST, GF) TEMPro PLUS ONLY	✓	✓	✓
Backlit LCD with energy analyser TEMPro	Displays phase currents I ₁ , I ₂ , I ₃ and I _{GF} , Line voltages (V) V ₁₂ , V ₂₃ , V ₃₁ , Phase voltage (V) V _{1N} , V _{2N} , V _{3N} , Active power (kW), Demanded active power (kW), Electric energy (kWh), Power factor (cos Ø), Frequency (Hz) TEMPro PREMIER ONLY	✓	✓	✓

7

Notes: ¹⁾ This function provides ground fault protection to TN-C or TN-S power distribution systems on the load side.

✓ = standard X = not available

TemPower

TEMPro PLUS and TEMPro PREMIER

Specialised optional features

TEMPro OCRs can be 'optioned up' with specialised application functions to suit customer requirements.

Please indicate what special application functions are required at the time of order as all are factory installed.

Standard feature	Description	Application curve		
		L	R	S
System Alarm	Activates if an internal fault exists within the OCR. System alarm can be monitored remotely via the MODBUS communications interface.	✓	✓	✓
Pre trip alarm	Activates if the monitored load current reaches the user set indication threshold. Useful for load shedding applications. This alarm is available via the MODBUS interface only.	✓	✓	✓
N-Phase protection 4 pole ACB ONLY	In 3-phase, 4-wire systems that contain harmonic distortion, the 3rd harmonic may cause large currents to flow through the neutral conductor. The N-phase protection function (NP) is available on 4 pole ACBs and prevents the neutral conductor from sustaining damage or burnout due to these large currents. The NP trip pickup current can be set between 40% and 100% of the OCR rated primary current for L and R-characteristics. This protection function is not available for special 'generator protection' 'S' type OCRs, and is available on an INDENT basis.		✓	✓
Zone interlocking (TemPro Premier ONLY)	The zone-selective interlock (ZSI) capability permits tripping of the ACB upstream of and nearest to a fault point in the shortest operating time, irrespective of the short time delay trip time setting, and minimizes thermal and mechanical damage to the power distribution line. ZSI cannot be fitted with a UVT.		✓	✓
Phase rotation protection	This function detects the negative-phase current occurring due to reverse phase or phase loss and prevents burnout of a motor or damage to equipment.		✓	✓
Contact over heat protection (TemPro Premier only)	This function monitors the temperature of the ACBs main contacts. An alarm indicates when the temperature exceeds 155 °C. Continuous monitoring of the contact temperature provides valuable input for preventative and predictive maintenance programs.		✓	✓

Notes: All special application functions are available on an indent basis. For further information on special application functions please contact NHP.
 ✓ = standard ✗ = not available



TEMPro PLUS and TEMPro PREMIER

Specialised optional features

Standard feature	Description	Application curve		
		L	R	S
Undervoltage alarm function (TemPro Premier only)	<p>This function monitors the main circuit voltage, and gives an alarm on the LCD and an output signal via an alarm contact when the voltage drops below the setting voltage. The alarm is activated when the main circuit voltage drops below the setting voltage (selectable from 40 %, 60 % or 80 % of the rated main circuit voltage [Vn]), and is deactivated when the main circuit voltage rises to the recovery setting voltage (selectable from 80 %, 85 %, 90 % or 95 % of the rated main circuit voltage [Vn]).</p> <p>Note 1: The undervoltage alarm function is disabled unless the main circuit voltage has once risen to the recovery setting voltage or higher.</p> <p>Note 2: If the undervoltage alarm function is used in conjunction with the undervoltage trip device, an alarm may occur after the ACB trips open depending on the alarm setting voltage.</p>	✓	✓	✓
Reverse power trip function RPT	<p>(TemPro Premier AGR-31BS only.)</p> <p>The RPT function protects 3-phase generators running in parallel against reverse power. The RPT pickup current can be set in seven levels: 4 % thru 10 % of the generator rated power.</p>	✓	✓	✓

Notes: All special application functions are available on an indent basis.
 For further information on special application functions please contact NHP.
 ✓ = standard ✗ = not available

Valid until August 2014



CORP-PROJECTS-ADS-CFB

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When it comes to Major Projects, our staff involvement is always driven by long term results, actively seeking to support you with the right product and technical solutions before, during and after project completion.

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TEMPro PLUS and TEMPro PREMIER Specifications

Standard features

OCR type	Cat. No.	Application protection curve ¹⁾	LCD monitoring	Basic protection ²⁾		
				LTD	STD	INST
TEMPro PLUS	AGR-21B-L-PG	'L'	Current meter (A)	✓		✓
	AGR-21B-R-PG	'R'	Current meter (A)	✓		✓
	AGR-21B-S-PS	'S'	Current meter (A)	✓		✗
TEMPro PREMIER	AGR-31B-L-PG	'L'	Energy analyser	✓		✓
	AGR-31B-R-PG	'R'	Energy analyser	✓		✓
	AGR-31B-S-PS	'S'	Energy analyser	✓		✗

OCR control power

If the control power is not supplied or is lost, each function operates as follows:

Function when no power

LT, ST, INST, RPT

GF

MCR

PTA

1-channel PTA

Alarm contact output from OCR

LCD/ COMMUNICATIONS

Field test facility & MODBUS

7

- Notes:**
- ¹⁾ L/R/S refers to the application protection curve, please specify at time of ordering.
 - ²⁾ LTD-Long time delay trip, STD-Short time delay trip, INST-Instantaneous trip, GF-Unrestricted ground fault, (load side GF).
 - ³⁾ Trip variables can be viewed after an event via the LCD providing control power is constantly available.
The OCR does not require control power to operate as a protective device, however it is recommended.
Refer to the table above to see how absence or loss of control power affects the operation of the OCR.
 - ⁴⁾ RPT- Reverse power trip. AGR-31BS-PS becomes AGR-31BS-PR with RPT.
 - ⁵⁾ This function provides ground fault protection to TN-C or TN-S power distribution systems on the load side.
- ✓ = Standard, ✗ = Not available, OPT = Optional



Single contact indicator (LTD) STD/INST, GF	Modbus Facility (data monitoring only)	RPT ⁴⁾	Control power ³⁾
✓	✓	X	Required
✓	✓	X	Required
✓	✓	X	Required
✓	✓	X	Required
✓	✓	X	Required
✓	✓	X	Required

Operation

Operates normally.

Operates normally.

When the CT rated primary current (ICT) is less than 800 A and the GF pick-up current is set to 10 %, the GF becomes inoperative.

Operates as INST.

Is inoperative. (Has a 40 ms operation)

Is inoperative.

No display when no other power source is available. Communications is disabled.

Is inoperative.

TemPower

Tripping options - Shunt trip coil

The TEMPOWER 2 AR ACB has two methods of remote tripping of the main contacts:

- Shunt trip coil
- Undervoltage Trip (UVT) Device

Shunt trip coil

The shunt trip coil is available in three varieties;

- single shunt - short time rated (STR) and should be wired in series with a N/C auxiliary contact.
- single shunt - which is continuously rated (CR)
- double shunt - which is short time rated and should be wired in series with a N/C auxiliary contact.

Shunt coils are available in different voltages and are factory fit accessories / NHP service site visit. Below is a basic list of shunt coils, for voltages not shown on this list please contact your NHP representative.



Rated Voltage	Single shunt coil		
	(CR)	Double shunt coil	Single shunt (STR)
AC 110 V	✓	X	i
AC 220 V	i	X	i
AC 240 V	✓	i	i
DC 24 V	✓	i	i
DC 48 V	✓	X	i
DC 100 V	✓	X	i
DC 110 V	i	X	i

Continuously rated shunt trip and undervoltage trip can not be fitted to the same ACB. However, the STR shunt trip can be used together with an undervoltage trip.

7

Notes: Double shunts require a special wiring loom to be fitted during manufacture. UVT cannot be fitted with a double shunt.

✓ - Stocked X - Not available

i Available on indent only.

TemPower Tripping options

Continuously-rated shunt trip device (CR)

Type	Rated voltage (V)	Operational voltage (V)	Max. excitation current (A)	Opening time (max.) (ms)
AVR-1C	AC 100	AC 70 - 110	0.48	40
	AC 110	AC 77 - 121	0.39	
	AC 120	AC 84 - 132	0.37	
	AC 200	AC 140 - 220	0.24	
	AC 220	AC 154 - 242	0.19	
	AC 240	AC 168 - 264	0.18	
	DC 24	DC 16.8 - 26.4	1.65	
	DC 30	DC 21 - 33	1.33	
	DC 48	DC 33.6 - 52.8	0.86	
	DC 100	DC 70 - 110	0.39	
	DC 110	DC 77 - 121	0.37	
	DC 125	DC 87.5 - 137.5	0.31	
	DC 200	DC 140 - 220	0.19	
	DC 220	DC 154 - 242	0.18	

Tripping options - Undervoltage Trip (UVT) Device

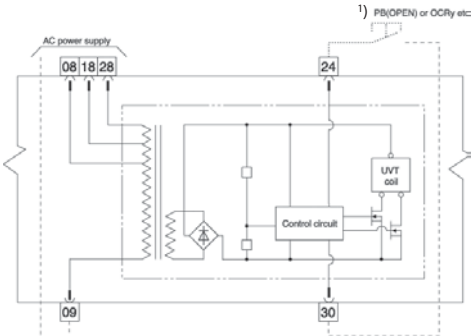
Can be used to shunt trip the ACB

The Undervoltage Trip Device (UVT) monitors a single phase and trips the ACB when the control voltage drops below the opening voltage. When the control voltage is restored to the pick-up voltage, the ACB can be closed. The pick-up voltage is fixed to 85 % of the rated voltage. The UVT device is available in an instantaneous or a 500 ms time delay version. Please refer to NHP for available monitoring voltages.

When a shunt facility is required to remotely open the ACB, a N/O push button or relay contact can be wired between control terminals 24 and 30 to remotely open the ACB main contacts. This is the recommended method of remotely opening the ACB because it uses the UVTs fail safe coil to 'trip' the main contacts. Alternatively a single shunt (STR) can be fitted together with the UVT coil. The UVT is a separate controller and coil that is not the same as the UV alarm.

Single Phase Monitoring

Undervoltage trip control circuit (for AC)



7

Notes: --- Customer wiring

1) 1 PB and wiring to be supplied by user. Tripping signal PB contact must be rated for 48 V DC/5 mA. Apply tripping signal for at least 80 ms.

If a separate shunt trip facility is required (i.e. not using UVT trip terminals 24 and 30 as described above), a short time rated (STR) device can be provided.

TemPower Tripping options

Type of UVT Control Device	Rated voltage 50/60Hz (V)	Operational voltage (V)	Pick-up Voltage (V)	Coil Excitation Current (A)	Power Consumption (VA)	
					Normal	Reset
AUR-1CS	AC 100	35 – 70	85			
AUR-1CD	AC 110	38.5 – 77	93.5			
	AC 120	42 – 84	102			
	AC 200	70 – 140	170			
	AC 220	77 – 154	187			
	AC 240	84 – 168	204	0.1	8	10
	AC 380	133 – 266	323			
	AC 415	133 – 266	352			
	AC 440	154 – 308	374			
	DC 24 ¹⁾	8.4 – 16.8	20.4			
	DC 48 ¹⁾	16.8 – 33.6	40.8			
	DC 100 ¹⁾	35 – 70	85			

Notes: ¹⁾ Special specification.

If a separate shunt trip facility is required (i.e. not using UVT trip terminals 24 and 30 as described above), a short time rated (STR) device can be provided.

TemPower Communications facility

As standard the TEMPro PLUS and TEMPro PREMIER are equipped with a MODBUS communications facility conforming to the following network interface I/O specifications:

	TEMPro OCR
Protocol	MODBUS
Transmission standard	RS-485
Transmission method	Two wire (half duplex)
Topology	Multi drop bus
Transmission rate	19.2 kbps maximum
Transmission distance	1.2 km max. (at 19.2 kbps)
Data format	Modbus-RTU
Maximum number of data nodes	32

The standard MODBUS communications facility enables variable monitoring only. ACB control (OPEN / CLOSE) over the MODBUS link requires an additional communications interface.

Communications options

NHP offers additional external communications interfaces for other protocols such as Profibus®, DeviceNet™ and Ethernet. Furthermore ACBs fitted with the TEMPro range of OCRs can be remotely monitored and controlled via the TemVision Pro touch screen ¹⁾.

Description (required per ACB) ¹⁾	Cat. No.	Price \$
Profibus® monitor & control Interface	ARCOMMSMODPRO	
DeviceNet™ monitor & control Interface	ARCOMMSMODDEV	
Ethernet monitor & control Interface	ARCOMMSMOD2ETH	



Notes: ¹⁾ ACBs must be fitted with a remote tripping device and charging motor. For TemVision Pro information, refer to NHP.

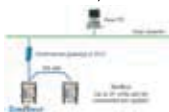
TemPower

Monitored and communicated variables

Data variable	Description	TEMPro PLUS	TEMPro PREMIER
max./min. reset	Recorded max./min. variable	✓	✓
open/close status	Indicates the state of the main contacts	✓	✓
diagnosis - system alarm status	Is the system alarm active?	✓	✓
OL pickup status	Is the overload status true?	✓	✓
STD pickup status	Is the short time delay status true?	✓	✓
INST pickup status	Is the Instant status true?	✓	✓
GFT pickup status	Is the UREF status true?	✓	✓
Line side earth fault status ¹⁾	Is the status true?	X	✓
current - Ia	Phase current A (A)	✓	✓
current - Ib	Phase current B (A)	✓	✓
current - Ic	Phase current C (A)	✓	✓
current - IN	(A) (4P ACB as a special spec.)	✓	✓
current - Ig	Phase current GF (A)	✓	✓
line voltage - Vab	-	X	✓
line voltage - Vbc	-	X	✓
line voltage - Vca	-	X	✓
power factor - Pf	-	X	✓
frequency - F	Supply frequency	X	✓
fault trip time	Speed of trip	✓	✓
diagnosis - MHT disconnect status	Is tripping coil connected?	✓	✓
active power - P	(kW)	X	✓
total real energy - EP (High-High)	(kWh)	X	✓
maximum current - I	Maximum phase current recorded	✓	✓
maximum current - Iinst	Maximum inst. current recorded	✓	✓
maximum active power - Pmax	(kW)	X	✓
fault current value	(A)	✓	✓
maximum voltage	Maximum voltage recorded	X	✓

All communications cabling should conform to the MODBUS standard. At a minimum the cabling should be shielded, of twisted pair construction and be AWG 24.

Typical MODBUS communication network



Notes: ¹⁾ Restricted earth fault model only, not standard.

TemPower TemRelay external alarm module

The TemRelay external alarm module provides individual trip/alarm indication from the OCR as well as monitoring basic variables. The TemRelay connects to ACBs via the RS485 interface.



TemVision remote monitoring and control

The TemVision Pro series of touch screens is for remote monitoring and control of Terasaki ACBs on a 2-wire half-duplex RS485 network via the MODBUS protocol.

Features

- Monitoring of variables from the OCR such as:
 - On/off and trip status
 - Phase currents
 - Line voltages ¹⁾
 - Active power (kW) ¹⁾
 - Reactive power (kVar) ¹⁾
 - Power factor ¹⁾
 - Power consumption (kWh) ¹⁾
- On/off control of ACBs
- Trip indication and history of trip events
- Maintenance mode
- View and change protection settings
- Password protection



TemVision Pro 6" screen
Maximum 6 ACBs



TemVision Max 10" screen
Maximum 15 ACBs

Description	Cat. No.	Price \$
TemRelay	TEMRELAY	
TemVision Pro	TEMVISIONPRO	
TemVision Max	TEMVISIONMAX	

Notes: ¹⁾ TEMPro Premier only.



TemPower Rack remote racking device for AR ACBs

NHP have developed a remote racking device for Terasaki AR ACBs to help improve operator safety in switchrooms.

Features

- Racks ACBs between connected, test and isolated positions
- Remote operation of ACB on/off controls
- Controlled by a pendant attached to a 10 metre lead
- Integrated lifting trolley for ACB bodies
- Rechargeable battery power supply
- Requires no modification to ACBs - can be used on existing installations



Scan the QR code
to view the
TemPower
Rack video.

7

Description	Cat. No.	Price \$
TemPower Rack unit	ARTEMPOWERRACK	

TemPower

TemPower 2 AR ACB service life and maintenance

		AR2125	AR2165	AR2205	AR3255	AR3325	AR4405
Endurance in number of ON/OFF cycles ¹⁾	Mechanical	With maintenance 30000	30000	25000	20000	20000	15000
		Without maintenance 15000	15000	12000	10000	10000	8000
Electrical Without maintenance	AC 460 V	12000	12000	10000	7000	7000	3000
	AC 690 V	10000	10000	7000	5000	5000	2500

NHP ACB servicing

NHP offers a wide range of ACB preventative maintenance and servicing programs to keep your ACB fully operational. Offered services include:

- Trip unit calibration and secondary injection testing.
- ACB scheduled maintenance and servicing including contact restoration / replacement, parts lubrication, arc chute restoration, mechanical and electrical functional testing.
- On site commissioning and application support (field service).
- Full service reports are provided.

7

For further information on the available services and pricing please contact the NHP service department.



Notes: ¹⁾ Expected service life based on endurance test. The service life of ACB depends on the working and environmental conditions. Refer to NHP for the AR ACB "Maintenance, Inspection and Parts Replacement" guide for further information.

TemPower Retrofitting kits and installation kits

When replacing an obsolete air circuit breaker it is almost always necessary to modify the existing busbar alignment, mounting position and door cut-out. Retrofit kits and installation kits provide a cost effective third party solution that allows you to install a completely new Terasaki AR Air Circuit Breaker into many of the popular older brands cubicle with minor re-work and down time.

Retrofit kit: this is the remaking of connections etc. within the existing carriage to suit the new ACB. Typically the existing carriage remains in an altered form.

Installation kit: duplicates the connection and fixing points of the original ACB. The existing carriage is fully removed. Switchboard isolation is required.

Retrofit and installation kits can be purchased from NHP subject to our limitations of liability statement. For further details please contact NHP.

The table below shows the existing / obsolete ACB details (column 1), the Terasaki AR ACB body and carriage replacement (column 2), and either retrofit or installation kit type (column 3). Before selecting a retrofit or installation kit it is important to fully understand the specification of the existing/obsolete ACB .

Existing / Obsolete air circuit breaker	Terasaki AR ACB equivalent frame size ¹⁾	Kit type	Cat. No.	Price \$
Terasaki AT12, 3P, V/V	AR212S, 3P	Installation	CONTACT NHP	
Terasaki AT12, 3P, H/H	AR212S, 3P (HH T&B)	Installation	CONTACT NHP	
Terasaki AT16, 3P, V/V	AR216S, 3P (VV T&B)	Installation	CONTACT NHP	
Terasaki AT16, 3P, H/H	AR216S, 3P (HH T&B)	Installation	CONTACT NHP	
Terasaki AT20, 3P, V/V	AR220S, 3P (VV T&B)	Installation	CONTACT NHP	
Terasaki AT25, 3P, V/V	AR325S, 3P (VV T&B)	Installation	CONTACT NHP	
Terasaki AT32, 3P, V/V	AR332S, 3P (VV T&B)	Installation	CONTACT NHP	
Nilsen NAB1 D8 3P	AR208S, 3P (HV T&B)	Retrofit	CONTACT NHP	
Nilsen NAB1 D12 3P	AR212S, 3P (HH T&B)	Retrofit	CONTACT NHP	
Nilsen NAB1 D16 3P	AR216S, 3P (HH T&B)	Retrofit	CONTACT NHP	
Nilsen NAB1 D20 3P	AR220S, 3P (HH T&B)	Retrofit	CONTACT NHP	

Notes: ¹⁾ VV = vertical; HH = horizontal, T&B = top terminal and bottom terminal.

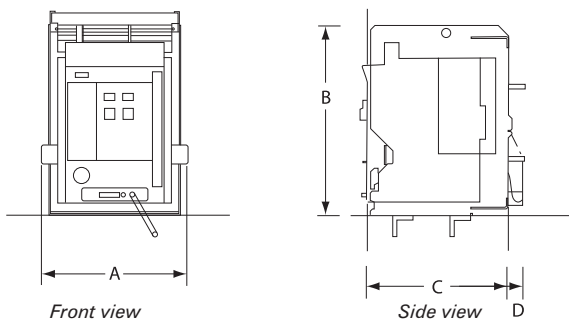


Retrofitting kits and installation kits

Existing / Obsolete Air circuit breaker	Terasaki AR ACB equivalent frame size ¹⁾	Kit type	Cat. No.	Price \$
Nilsen NAB1 D25 3P	AR325S, 3P (HH T&B)	Retrofit	CONTACT NHP	
Nilsen NAB1 D31 3P	AR332S, 3P (HH T&B)	Retrofit	CONTACT NHP	
Nilsen NAB1 D40 3P	AR440S, 3P (HH T&B)	Retrofit	CONTACT NHP	
Nilsen NAB2 CBM 3P	AR212S, 3P (VV T&B)	Retrofit	CONTACT NHP	
NAB2 3P Jig Set	Required for use for Nilsen NAB2 Kit	Retrofit	CONTACT NHP	
Nilsen AB5/AB7 3P	AR208S, 3P (HH T&B)	Retrofit	CONTACT NHP	
Nilsen AB5/AB7 3P	AR216S, 3P (HH T&B)	Retrofit	CONTACT NHP	
Nilsen AB5/AB7 3P	AR332S, 3P (HH T&B)	Retrofit	CONTACT NHP	
Unelec C9/8W 3P	AR208S, 3P (VV T&B)	Retrofit	CONTACT NHP	
Unelec C9/12W 3P	AR212S, 3P (VV T&B)	Retrofit	CONTACT NHP	
Unelec C9/16W 3P	AR216S, 3P (VV T&B)	Retrofit	CONTACT NHP	
Unelec C9/20W 3P	AR220S, 3P (VV T&B)	Retrofit	CONTACT NHP	
Unelec C9/31W 3P	AR332S, 3P (HH T&B)	Retrofit	CONTACT NHP	
AEG 1600A 3P	AR216S, 3P (HH T&B)	Retrofit	CONTACT NHP	
Hundtwebr LH16 3P	AR216S, 3P (VV T&B)	Retrofit	CONTACT NHP	
Hundtwebr LH20 3P	AR220S, 3P (VV T&B)	Retrofit	CONTACT NHP	
Hawker CNP/16W 3P	AR216S, 3P (HH T&B)	Retrofit	CONTACT NHP	
Hawker CNP/20W 3P	AR220S, 3P (HH T&B)	Retrofit	CONTACT NHP	

Notes: ¹⁾ VV = vertical; HH = horizontal, T&B = top terminal and bottom terminal. As highlighted in the table above not all kit types are available ex-stock. All INDENT kits have a 4-6 week lead time from the receipt of a customer purchase order.

TemPower Outline dimensions



TemPower 2 draw-out type – 3 and 4 pole outline dimensions (mm)

Cat. No.	AR220S/				AR332S/ AR320H/				AR663										
	AR212S	AR216S	AR220H/	AR325S	AR316H	AR440S	AR650												
No. of Poles	3 P	4 P	3 P	4 P	3 P	4 P	3 P	4 P	3 P	4 P									
Draw-out type	A	354	439	354	439	460	580	460	580	631	801	799	1035	799	1034				
	B	460		460		460		460		460		460	460	460	460				
	C	345		345		345		345		375		380	380	380	380				
	D	40		40		40		40		53		60	60	60	60				
Approx. Body & Weights (kg)	Body & carriage		73	86	76	90	79	94	105	125	105	125	139	176	200	260	220	285	
	Front & rear connect with-drawable¹⁾	Body only		45	51	46	52	46	52	56	68	56	68	71	92	125	160	140	180
		Carriage only		28	35	30	38	33	42	49	57	49	57	68	84	75	100	80	105

Notes: ¹⁾ Weights are based on normal specifications with the OCR and standard accessories.

TemPower

Our customers' needs

Providing solutions



Switchboard builder

- Compact size for high packing density
- Zero arc space required for clearance
- Low temperature dissipation
- Built in trip supervision circuit
- Fully rated neutral as standard
- Vertical, horizontal and front terminal connections are available
- Uniform panel cut out size
- Easy access to control, auxiliary and position switch terminals
- Detailed product training available by NHP application engineers
- Manufactured in Australia, allowing for fast delivery and local technical support



Consultant

- Approvals and test: IEC 60947, AS3947-2 and A.S.T.A. certified
- Time Current Characteristics to IEC 60255-3 (SI, VI, EI curves)
- Restricted and Unrestricted ground fault protection in one relay
- LSI characteristic curves as standard
- True r.m.s. protection up to 19th harmonic
- Sophisticated undervoltage/phase failure protection
- Integral reverse power protection and load shedding relay
- Only Terasaki can offer $I_{cw} = 100 \text{ kA/ 1 second}$ in a small 3200 A frame size
- TemPower 2 ACB suffers no loss in performance when tripped through an external protection relay
- Super fast clearance times under fault

7



End user

- System alarms that indicate tripping coil health
- Built in relay tester - can check on line without tripping ACB
- Contact temperature monitoring options
- Fault diagnosis - type of fault, magnitude, tripping time & trip history
- High making capacity for operator safety
- Communication to B.M.S. or S.C.A.D.A. system
- Main contacts can be changed within 15 minutes per pole
- Full technical support and ACB commissioning available via NHP
- Product servicing available from Australia's only Terasaki trained and certified ACB technicians

Arc D-Tect

D1000 Arc Fault Protection system



Efficient protection of high, medium and low voltage switchgear

A continuous supply of power is important in modern energy infrastructure and most production facilities. Wherever electrical energy is generated and distributed, arc flash faults and accidents are likely to occur. An arc protection system is an efficient way to maximise the safety and minimise the damages.



SELCO's D1000 arc protection system is designed to dramatically reduce the effects of arc flash faults in high, medium and low voltage switchgear.

Fast protection is essential

An arc-fault in a switchboard or control gear develops within milliseconds and leads to the discharge of enormous amounts of energy. An arc fault is the result of a rapid release of energy due to an arcing fault between phase bus bars. If the arc flash is allowed to develop the result is that the massive energy discharge burns the bus bars, vaporising the copper and thus causing an explosion. Finally this may cause extensive material damage and jeopardise the safety of operational personnel.



An arc protection system operates much faster than conventional protection relays and thus damages caused by an arc flash fault can be kept at a minimum level. As a general guideline, an arc will not cause any damage if it is eliminated within 35ms. If the arc is allowed to continue and last 100ms some damage will occur. An arc fault lasting 500ms may cause severe damage to the installation and will require extensive repair.

A short arc time is critical in order to avoid damage to personnel and material. It is therefore of vital importance that the source leading to the arc flash time is minimised and the power is disconnected as fast as possible – SELCO's D1000 arc protection system is the solution to this problem.

Arc D-Tect

Arc detecting relay system

D1000 Functionality

The D1000 arc protection system is an advanced and fast arc protection system, offering the following features and functionality:

- Compact unit - arc fault and overcurrent protection
- High speed arc fault detection less than 1ms
- Over-current protection with detection within 1ms
- Combines optical fibre and point sensors
- Real-time event logging
- Self-supervision of sensors and protection unit
- Easy installation and configuration via USB



D1000 Arc flash protection unit

The D1000 is a stand-alone and high speed arc protection unit for electrical power distribution systems. D1000 supports both point and fibre sensor technologies for arc flash detection and supports up to six sensors. The sensors can be combined in any combination, depending on the application and requirements.

Easy configuration

The D1000 is easy to install and set-up and in case any changes are needed this is easily done via the USB interface accessible from the front. The built-in user-friendly menu system is embedded in the D1000 unit and activates automatically when the unit is connected to a PC.

The built-in light sensor on the front makes it easy to adjust and verify that all sensors are correctly installed and equally sensitive. With the TRIP LEVEL adjustment on the front plate the sensitivity to light can be adjusted. The light range is 10-25,000 lux enabling use of sensors under different light conditions, indoor light, sunlight etc.



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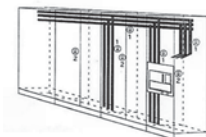
In small installations, the calibration TEST sensor can be used as a single arc detecting sensor, providing additional protection without added cost. Setup of the overcurrent detection, is easily done through the USB interface.

Arc D-Tect

Arc detecting relay system

Easy installation

The D1000 system is easy to install and made to implement in new switchgear installations as well as retrofit projects. Both the D1000 unit and sensors are quick and easy to install. A general guideline is to mount 1-2 sensors per cubicle or chamber. It is important to cover all horizontal/vertical busbars (1) as well as breaker compartments (2) and drawers. Example is shown below: D1000 relays can be linked (up to 4 relays) to provide expanded installation and sensing requirements.



Flexible and efficient sensors

A1000 point sensor

The point sensor is a light-sensitive element based on phototransistor technology. It detects visible light radiation which is captured at the cylindrical top. The A1000 point sensor has a detection area of up to 2 m with a characteristic of $180^\circ \times 360^\circ$. The A1000 supports self supervision, and a clear blinking built-in LED indicates that the sensor is active. If the sensor reaches the trigger level the LED will light up constantly. The A1000 sensor is supplied with a 10 m shielded cable. 6 sensors maximum.



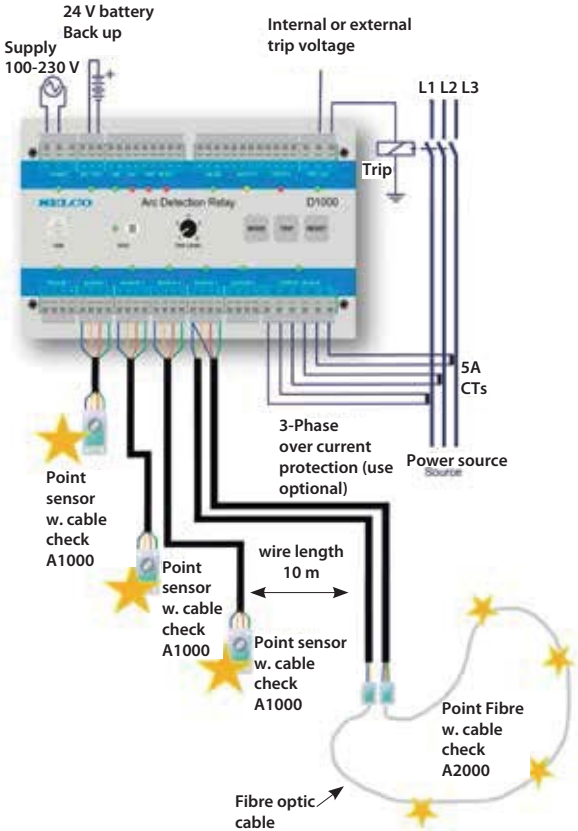
A2000 fibre sensor

The A2000 fibre sensor is a light sensitive element based on optical fibre technology. The A2000 fibre sensor is a fully flexible fibre with a detection angle of 360° throughout the length of the fibre. The detection radius is up to 2 meters. The fibre sensor is ideal to install in electrical cabinets with drawer sections. Allows the same coverage as approximately 6 x A1000 point sensors. The fibre optic cable is available in 5 m or 8 m lengths. There is also another 10 m of wire cable attached to each end. The wire cable can be extended up to 50 m at each end.



Arc D-Tect Arc detecting relay system

D1000 - wiring and installation



7

Arc D-Tect

Arc detecting relay system

D1000 Arc Protection Unit	D1000.0010
Voltage Supply	85 -240 V AC 100 -250 V DC 24 V Battery – Lead acid gel cell
Trip coil output	IGBT switch, 200µs on-time, 2s pulsed (configurable)
Trip coil voltage range	24-600 V DC 24-440 V DC
Signal contacts	Online, Service, Tripped
Sensitivity	10 – 25000 lux, Trip level adj. 1-9
Current inputs	3-phase 5 A (75 A/1 sec)
Burden	<0.25 VA/inputs at 5 A
Current range	1.5-3.0 x In (7.5-15 A)
Response time	Less than 1ms (arc fault) Less than 1ms (overcurrent)
Number of detectors	Up to 6
System expansion	Up to 4 x D1000 units via Link connection
Interface	USB
Power consumption	<3W
Ambient temperature	-25 to + 70 °C
Dimensions (WxHxD)	200x130x52 mm
Mounting	35 mm DIN Rail or screw-in
A1000 Sensor	A1000.0010
Type	Point sensor
Detection area	180° x 360° - 2 m
Length	10 m shielded cable
Circuit check	Built-in – LED for visual feedback
Dimensions (WxHxD)	32x52x21 mm
A2000 Sensor	A2000.0020
Type	Fibre optical sensor
Detection area	360°
Length	5 m flexible fibre optic cable (plus 10 m of wiring cable)
Circuit check	Built-in – LED for visual feedback
Dimensions (WxHxD)	32x52x21 mm
A2000 Sensor	A2000.0010
Type	Fibre optical sensor
Detection area	360°
Length	8 m flexible fibre optic cable (plus 10 m of wiring cable)
Circuit check	Built-in – LED for visual feedback
Dimensions (WxHxD)	32x52x21 mm
Approvals/standards	
EMC standards	EN60255-26
Enclosure	IP 20

Arc D-Tect

D1000 Arc-fault protection system

New Product

Catalogue Numbers and ordering

	Cat. No.	Price \$
D1000 Arc protection unit	D1000 0010	
A1000 Arc point sensor 10 m	A1000 0010	
A2000 Arc fibre cable sensor 5 m	A2000 0020	
A2000 Arc fibre cable sensor 8 m	A2000 0010	
D1000 DIN rail mounting clips	D1000DINCLIPS	



Built-in overcurrent protection



Extended coverage with links input



Efficient self-supervision

Notes: Old sensor types ADR/ A0200/ A0300 can be used with the new D1000 relay. Refer NHP for connection details.

Earth Leakage Relays

	Page
Earth leakage relays	
Surface mounting type TZS series	8 - 2
DIN Rail mounting type RD3A series	8 - 4
DIN Rail mounting type RD1B series	8 - 5
Panel mounting type RD1DF series	8 - 6
Panel mounting type RD1EP series	8 - 7
Panel mounting type RD3E2 series	8 - 8
Panel mounting type RD1G2 series	8 - 10
Mining earth leakage relay	
Panel mount mining relays, DSRM72 and DSR48T Series	8 - 12
Remote current transformer (toroid) TD and DSR Series	8 - 14
Accessories	8 - 15



TZS series

Features

- Adjustable time range 0.3 - 2 s
- Sensitivity (adj.) 30 mA - 1 amp.
- Immune to false tripping via harmonics
- High vibration withstand
- Output C/O contact
- Indication - LED
- Reset function - electrical



TZS relay

Mounting	Voltage	Adj. sensitivity	Adj. time range	Cat. No.	Price \$
Surface	120/240 V AC	30 mA-1 amp	0.3-2 s	TZS AD120240V	
Surface	400/440 V AC	30 mA-1 amp	0.3-2 s	TZS AD415440V	
Surface	24 V AC	30 mA-1 amp	0.3-2 s	TZS AD24VAC	
Flush (collar only)	-	-	-	TPD OSZ	

Tripping times

Rated operating time (sec)	Operating time range (sec)	Non-operating time range (sec)
0.3	0.2 - 0.36	0.15
0.5	0.4 - 0.6	0.38
1	0.8 - 1.2	0.7 - 1.25
2	1.3 - 2.0	0.7 - 1.25

Standard features

Earth leakage detection	current operated type
Internally mounted contact	1 C/O
Earth leakage indication	LED
Reset function (electrical)	Yes
Test button	Yes
Remote reset (power source)	1 VA
Dimensions (mm) W/H/D	60/104/78
Weight (kg) (relay only)	0.22

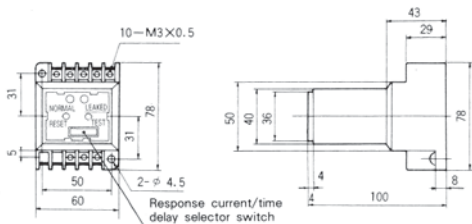
8 Toroidal CT - ZCT only (remote, add to relay)

Max. cable 2 wire	Max. cable 4 wire	Internal diameter	Cat. No.	Price \$
8 mm ²	5.5 mm ²	15 mm	TZS-15	
30 mm ²	22 mm ²	24 mm	TZS-24	
100 mm ²	80 mm ²	40 mm	TZS-40	
325 mm ²	250 mm ²	68 mm	TZS-68	
850 mm ²	600 mm ²	100 mm	TZS-100	

Notes: Refer page 9 - 68 for AS/NZS requirements when using earth leakage relays.

TZS series

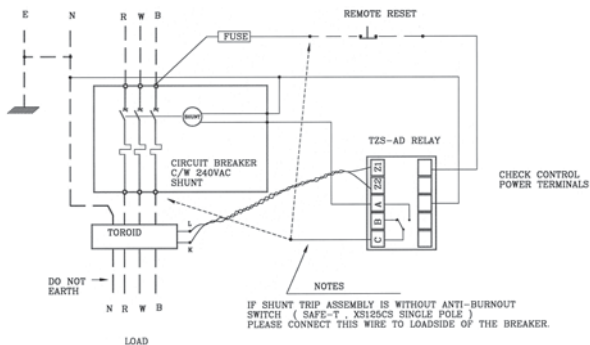
Outline dimensions (mm)



Rating of output contact

	Resistance load cos $\phi = 1$	Inductive load cos $\phi = 0.4$ (L/R=7 ms)	Min. load
120/230 V AC	6 A	3.5 A	10 mA at 5 V DC
30 V DC	6 A	3 A	10 mA at 5 V DC

Connection diagram - Residual current relay



Notes: For 415 V AC or 440 V AC contact NHP for availability.
 The output contacts remain until the RESET button is operated.
 Should the control power supply fail the contacts automatically reset.

DIN rail mount RD series RD3A

- Standard AS 60947-2 (Annex M)
- Core balance earth leakage relay
- Adjustable $I\Delta n$ up to 30 amps
- Adjustable trip time up to 5 s
- Harmonic filter
- 2 wire toroid connection
- Field selectable negative/positive security
- Instantaneous display as percentage $I\Delta n$
- DIN rail mounting (2 module)



RD3A

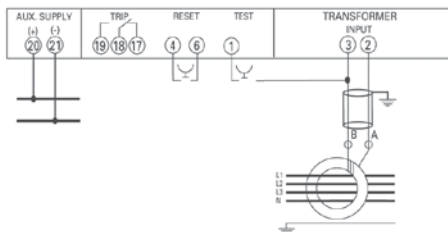
RD relays in conjunction with a ring current transformer (toroid) provide earth leakage protection of electrical distribution systems and electrical equipment.

Features

- Adjustable: 0, 0.15, 0.25, 0.5, 1, 2.5, 5 sec
- Adjustable trip current: .03, .05, .075, 0.1, 0.15, 0.2, 0.3 A in 3 ranges x 1, x 10, x 100
- Automatic reset option
- Trip: one changeover contact (5 A - 250 V AC cos 1.0, 5 A - 30 V DC)
- Local reset/test and remote reset/test ¹⁾
- LED indication: green (healthy), red (tripped), yellow ($\%I\Delta n$ 20 %, 40 %, 60 %)
- IP 50 Front cover, IP 20 terminals
- Test buttons checks relay function and toroid connections

Auxiliary Voltage	Cat. No.	Price \$
24 V AC	RD3AF1N (24 V AC)	
110 V AC	RD3AF12 (110 V AC)	
240 V AC	RD3AF14 (240 V AC)	
415 V AC	RD3AF15 (415 V AC)	
24 - 150 V DC	RD3AF1H (24-150 V DC)	

Wiring diagram – RD3A



Notes: ¹⁾ Remote test on AC versions only.
 Refer page 9 - 68 for AS/NZS requirements when using earth leakage relays.

DIN rail mount RD series RD1B

- Standard AS 60947-2 (Annex M)
- Core balance earth leakage relay
- Adjustable I Δ n up to 30 amps
- Adjustable trip time up to 5 s
- Harmonic filter
- 2 wire toroid connection
- Field selectable negative/positive security
- Instantaneous display as percentage I Δ n
- DIN rail mounting (4 module)



RD1B

RD relays in conjunction with a ring current transformer (toroid) provide earth leakage protection of electrical distribution systems and electrical equipment.

Features

- Adjustable: 0, 0.15, 0.25, 0.5, 1, 2.5, 5 sec
- Adjustable trip current: .03, .05, .075, 0.1, 0.15, 0.2, 0.3 A in 3 ranges x 1, x 10, x 100
- Automatic reset option
- Trip: one changeover contact (5 A - 250 V AC cos 1.0, 5 A - 30 V DC)
- Local reset/test and remote reset/test ¹⁾
- Changeover contact - selectable between alarm preset 50 % I Δ n and second trip contact
- Field selectable - high or low harmonic filter circuit
- LED indication: green (healthy), red (tripped), yellow (%I Δ n 20 %, 30%, 40 %, 50 %)
- IP 40 Front cover, IP 20 terminals
- Test buttons checks relay function and toroid connections

Auxiliary Voltage	Cat. No.	Price \$
110 V AC	RD1B212	
240 V AC	RD1B214	
415 V AC	RD1B215	
24 - 150 V DC	RD1B21H	

Wiring diagram – RD1B



Notes: ¹⁾ Remote test on AC versions only.
 Refer page 9 - 68 for AS/NZS requirements when using earth leakage relays.

Panel mount RD series

RD1DF

- Standard AS 60947-2 (Annex M)
- Core balance earth leakage relay
- Adjustable $I_{\Delta n}$ up to 30 amps
- Adjustable trip time up to 5 sec
- Harmonic filter
- 2 wire toroid connection
- Field selectable negative/positive security



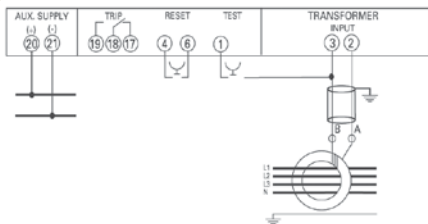
RD1D

Features

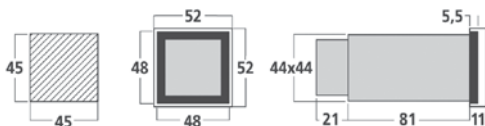
- Panel mounting 48 mm
- Adjustable: 0, 0.15, 0.25, 0.5, 1.0, 2.5, 5 sec
- Adjustable trip current: .03, .05, .075, 0.1, 0.15, 0.2, 0.3 A, in 3 ranges x 1, x 10, x 100
- Automatic reset option
- Trip - one changeover contact (5 A - 250 V AC cos 1.0, 5 A - 30 V DC)
- Local and remote reset/test
- LED indication: green (healthy), red (tripped)
- IP 40 Front cover, IP 20 terminals
- Test buttons checks relay function and toroid connections

Auxiliary Voltage	Cat. No.	Price \$
110 V AC	RD1DF12	
240 V AC	RD1DF14	
415 V AC	RD1DF15	

Wiring diagram



Dimensions (mm)



Panel mount RD series

RD1EP

- Standard AS 60947-2 (Annex M)
- Core balance earth leakage relay
- Adjustable $I_{\Delta n}$ up to 30 amps
- Adjustable trip time up to 5 sec
- Harmonic filter
- 2 wire toroid connection
- Field selectable negative/positive security



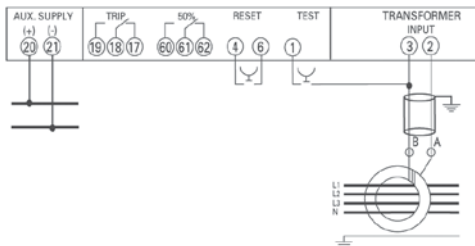
RD1E

Features

- Panel mounting 72 mm
- Adjustable: 0, 0.15, 0.25, 0.5, 1.0, 2.5, 5 sec
- Adjustable trip current: .03, .05, .075, 0.1, 0.15, 0.2, 0.3 A in 3 ranges x 1, x 10, x 100
- Changeover contact-selectable between alarm pre-set 50 % $I_{\Delta n}$ and extra trip contact (5 A - 250 V AC cos 1.0, 5A - 30 V DC)
- Trip - one changeover contact (5 A - 250 V AC, cos 1.0, 5 A - 30 V DC)
- Local and remote reset/test ¹⁾
- LED indication: green (healthy), red (tripped), yellow (% $I_{\Delta n}$ 20 %, 30%, 40 %, 50 %)
- IP 40 Front cover, IP 20 terminals
- Test buttons checks relay function and toroid connections

Auxiliary Voltage	Cat. No.	Price \$
110 V AC	RD1EP212	
240 V AC	RD1EP214	
415 V AC	RD1EP215	
24 - 150 V DC	RD1EP21H	

Wiring diagram



Notes: ¹⁾ Remote test on AC versions only.
 Refer page 9 - 68 for AS/NZS requirements when using earth leakage relays.

Panel mount RD series

RD3E2

- Standard AS 60947-2 (Annex M)
- Core balance earth leakage relay
- Adjustable $I\Delta n$ up to 30 amps
- Adjustable trip time up to 5 sec
- Field selectable negative/positive security
- Instantaneous digital display
- 2 wire toroid connection
- Monitor function ¹⁾



RD3E2

Technical data

Aux. voltage	110, 240 & 415 V AC 50/60 HZ or 24 - 150 V DC
Contact rating	5 A - 250 V AC cos 1.0; 3 A - 250 V AC cos 0.4; 5 A - 30 V DC
Pre trip alarm	50 % $I\Delta n$
Indication	Digital display - 3 digits
Test	Tests relay function and toroid connections
IP rating	IP 40 front frame; IP 20 terminals
Operating temperature	-25 °C to +55 °C

Features

- Panel mounting 72 mm
- Adjustable time: 0, 0.15, 0.25, 0.5, 1.0, 2.5, 5, sec
- Adjustable trip current-.03, .05, .075, 0.1, 0.15, 0.2, 0.3 A, in 3 ranges x 1, x 10 x 100
- Digital indication of residual current - 3 digits
- N/O contact-selectable between alarm pre-set 50 % $I\Delta n$ and extra trip contact
- Trip - one changeover contact
- Local and remote reset/test ²⁾

Auxiliary Voltage	Cat. No.	Price \$
110 V	RD3E212B	
240 V	RD3E217B	
415 V	RD3E218B	
24 - 150 V DC	RD3E21HB	

Notes: ¹⁾ Relay can operate as an earth leakage relay or as a digital meter with trip contacts and current setting disabled. This monitor function is ideal when first selecting the current settings and monitoring the installation.

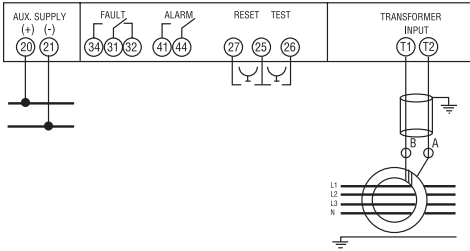
²⁾ Remote test on AC version only.

Refer page 9 - 68 for AS/NZS requirements when using earth leakage relays.

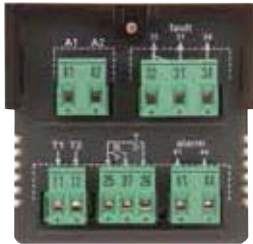
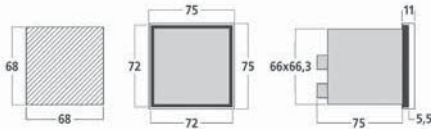
Panel mount RD series RD3E2

Wiring diagram – RD3E2

S 291/107



Dimensions (mm)



Rear view RD3E21

Panel mount RD series

RD1G2

- Standard AS 60947-2 (Annex M)
- Core balance earth leakage relay
- Adjustable sensitivity 30 mA to 30 A
- Adjustable trip time up to 5 sec
- Field selectable negative/positive security
- Reduced depth housing
- 2 wire toroid connection
- Continuous permanent test toroid connections
- Harmonic filter
- Pre trip alarm



Technical data

Aux. voltage	110 V AC, 240 V AC or 415 V AC 50/60 Hz
Contact rating	5 A-250 V AC cos 1.0; 3 A-250 V AC cos 0.4; 5 A-30 V DC
Indication	Supply healthy – green LED
	Relay tripped – red LED
	% I _{Δn} – LEDS 20, 30, 40 and 50 %
Test	Test button: Tests integrity of relay internal trip circuit
	Permanent test: Continuously monitors toroid connections and trip circuit
IP rating	IP 40 front frame; IP 20 terminals
Operating temperature	-5 °C to +55 °C

Features

- Panel mounting 96 mm
- Adjustable time delay - 0, 0.15, 0.25, 0.5, 1.0, 2.5, 5 sec
- Adjustable trip current - 0.03, 0.05, 0.75, 0.1, 0.15, 0.2, 0.3 A in range x 1, x 10, x 100
- Field selectable negative/positive security
- Trip – 1 changeover contact
- Local and remote reset/test
- Changeover contact selectable between alarm preset 50 % I_{Δn} and extra trip contact

Auxiliary Voltage	Cat. No.	Price \$
110 V AC	RD1G212	
240 V AC	RD1G214	
415 V AC	RD1G215	

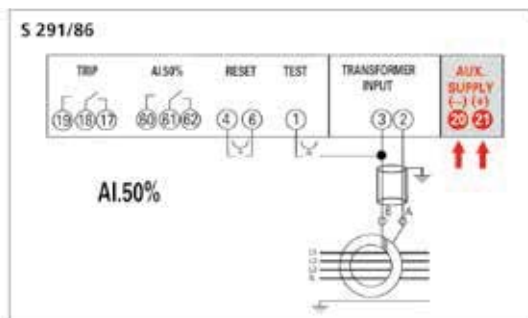
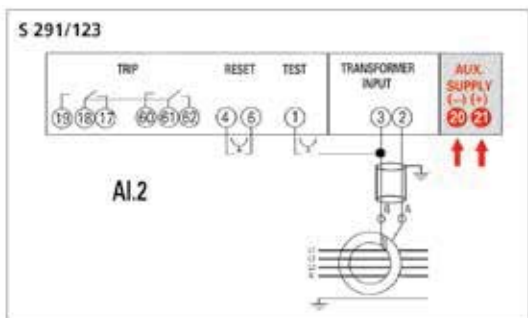
Notes: Refer page 9 - 68 for AS/NZS requirements when using earth leakage relays.

Panel mount RD series RD1G2

Dimensions (mm) RD1G2



Wiring diagram – RD1G2



Panel mount mining relay series

DSRM72 and DSR48T

- Standard AS/NZS 2081:2011
- Core balance earth leakage relay
- Adjustable sensitivity 0.03 A – 0.5 A
- Adjustable trip time 0.05 sec – 0.5 sec
- Separate test unit for circuit integrity testing
- Four wire toroid connection
- Field selectable negative/positive security
- Field selectable function of outputs
- Harmonic filter



Technical data (DSRM72)

Aux. voltage	240 V or 110 V AC 50/60 Hz, 24 V DC
Contact rating	5 A-250 V AC cos 1; 3 A 250 V AC cos 0.4; 5 A 30 V DC
Indication	Supply healthy – green LED
	Power fail - Changeover contact
	Relay tripped – red LED
	Toroid fault – flashing red LED
Test	% I Δ n – LEDs 20, 30, 40 and 50 %
	Internal relay test button on unit.
IP rating	Circuit integrity test using external DSR48T.
Operating temperature	IP 40 front frame; IP 20 terminals
	-10 °C to +60 °C

Features

- Units supplied complete with separate test device DSR48T
- Panel mounting 72 mm
- Adjustable trip current -7 steps: 0.03, 0.06, 0.1, 0.2, 0.3, 0.4 & 0.5
- Adjustable trip time -7 steps: 0.05, 0.1, 0.15, 0.2, 0.3, 0.4 & 0.5
- Choice of output contacts 2 x AL or 1 x AL + 1 x Power Fail
- Negative/Positive security
- Complies with standard AS/NZS 2081:2011
- Latching contact

Auxiliary Voltage		Cat. No.	Price \$
110 V AC	Kit ¹⁾	DSRM110V ¹⁾	
240 V AC	Kit ¹⁾	DSRM240V ¹⁾	
24 V DC	Relay only	DSRM7224 ²⁾	
110 V AC	Relay only	DSRM72110	
240 V AC	Relay only	DSRM72240	
110 V AC	Test unit	DSR48TD110	
240 V AC	Test unit	DSR48TD240	

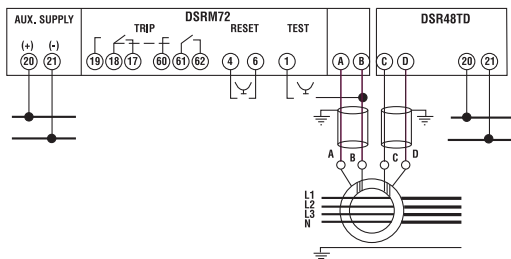
Notes: ¹⁾ Part number is made up of 1 x relay & 1 x test unit.

²⁾ Can be used with AC test unit.

Panel mount mining relay series DSRM72 and DSR48T

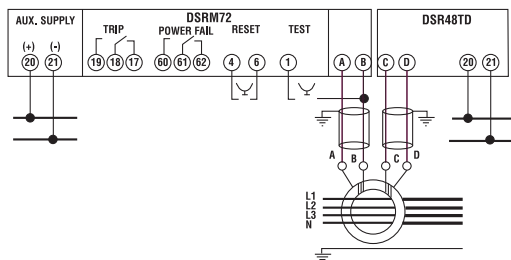
A1.2

A1.2



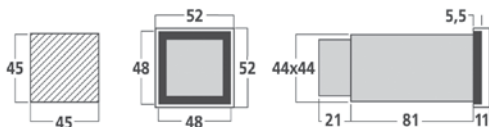
A1.aux

A1.aux

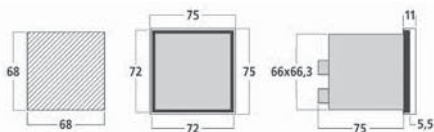


For correct working according to AS/NZS 2081:2011 the device shall be set as positive security Ne.

DSR48TD - Test device



DSRM72 - Relay

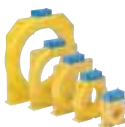


Remote toroids

Type TD Series

TD series

Only TD type toroids are to be used in conjunction with the NHP range of RD residual current relays. Care should be taken to select a toroid size closest to the diameter of the cables being protected. Also ensure the minimum possible distance between the toroid and relay to ensure maximum accuracy.

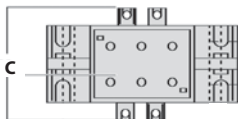
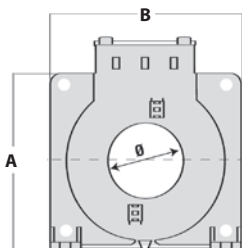


Closed core toroids (2 wire)

Min. IΔn (A) ¹⁾	Nom. In (A)	Max. In (A) ²⁾	Internal diameter (mm)	Overall dimensions (mm)			Cat. No.	Price \$
				A	B	C		
0.03	65	390	28	59	59	47	TDGA2	
0.03	70	420	35	113	92	56	TDGB2	
0.03	90	540	60	112	105	56	TDGH2	
0.03	170	1020	80	160	125	56	TDGC2	
0.1	250	1500	110	198	165	56	TDGD2	
0.3	250	1500	140	234	200	56	TDGE2	
0.3	400	2400	210	323	290	64	TDGF2	

Open (split) core toroids (2 wire)

Min. IΔn (A) ¹⁾	Nom. In (A)	Max. In (A) ²⁾	Internal diameter (mm)	Overall dimensions (mm)			Cat. No.	Price \$
				H	W	D		
0.5	250	1500	110	214	235	79	TDAA2	
0.5	250	1500	150	259	275	79	TDAB2	
1.0	630	3780	310	386	400	30	TDAC2	



- Notes:**
- Lowest value of IΔn to be set on relay with this toroid connected.
 - Values shown are valid only for conductors passing exactly in the middle of the toroid.

Remote toroids

Type DSR Series

DSR series

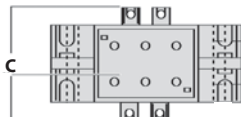
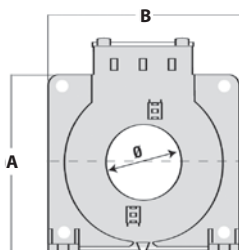
Only the DSR type toroids are to be used in conjunction with the NHP range of DSRM mining relays. The four wire toroid is vital for compliance to AS/NZS 2081:2011.

Closed core toroids (4 wire)

Min. IΔn (A) ¹⁾	Nom. In (A)	Max. In (A) ²⁾	Internal diameter (mm)	Overall dimensions (mm)			Cat. No.	Price \$
				A	B	C		
0.03	70	420	35	113	92	56	DSR35DEL	
0.03	170	1020	80	160	125	56	DSR80DEL	
0.1	250	1500	110	198	165	56	DSR110DEL	
0.3	250	1500	140	234	200	56	DSR140DEL	
0.3	400	2400	210	323	290	64	DSR210DEL	

Accessories

	Cat. No.	Price \$
IP 65 - Front cover to suit 48 x 48 panel mount relay	RD4848C	
IP 65 - Front cover to suit 72 x 72 panel mount relay	RD7272C	
IP 65 - Front cover to suit 96 x 96 panel mount relay	RD9696C	
72 x 72 mm to 96 x 96 mm adapter plate	RD7296A	



- Notes:**
- Lowest value of IΔn to be set on relay with this toroid connected.
 - Values shown are valid only for conductors passing exactly in the middle of the toroid.

Valid until August 2014

TL101 TRANSFER SWITCH CONTROLLER

NHP

The soft touch TL101 controller automatically or manually switches a load from a main line to an emergency supply in the event of a power failure.

POWER PROTECTION

PP-TERASAKI-EARTH LEAKAGE LOCK-CPB



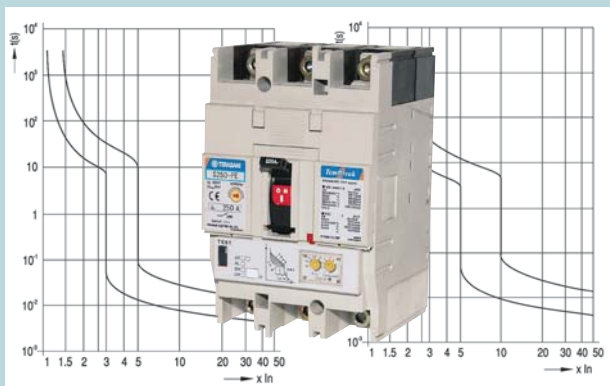
- Genuine 144 x 144 mm controller solution
- User friendly display and menu selection
- Large selection of functions and options as standard

TemLogic

TERASAKI
Innovators in Protection Technology

Technical reference data

	Page
Din-T MCB: Ratings table	9 - 2
Din-T MCB: Effects of frequency	9 - 3
Din-T MCB: Time current curves	9 - 4
Din-T MCB: B, C and D curve definitions	9 - 7
Din-T MCB: Temperature compensation curves	9 - 8
DC current circuit breaker selection table	9 - 9
MCB Fuse-fault current limiting	9 - 10
Selectivity/Cascade: MCB & MCCB	9 - 11
Watts loss – MCCBs	9 - 21
Short circuit current calculator	9 - 22
Short circuit co-ordination	9 - 24
Motor circuit: application tables	9 - 38
Motor starting: Motor rated currents	9 - 45
MCCB 380/415 V clearance requirements	9 - 47
Electrical mathematical formulae	9 - 50
TemBreak 2 Electronic OCR & MCCBs	9 - 51
MCCB Cross reference	9 - 67
RCD/Earth Leakage applications and AS/NZS Standards	9 - 68
IP Ratings chart	9 - 70
NHP Technical News publications	9 - 71



Din-T MCB

Features

Description	Din-T 6 2 to 63 A			Din-T 10 0.5 to 63 A				Din-T 15 6 to 63 A				Din-T 10H 80 to 125 A			
	1	2	3	1	2	3	4	1	2	3	4	1	2	3	4
No. of poles	1	2	3	1	2	3	4	1	2	3	4	1	2	3	4
Protected poles	1	2	3	1	2	3	4	1	2	3	4	1	2	3	4
Width (mm)	18	36	54	18	36	54	72	18	36	54	72	27	54	81	108
Depth (mm) ⁴⁾	68			68				68				70			
Rated voltage	240/415 V AC			240/415 V AC				240/415 V AC				240/415 V AC			
Max. current In	63 A			63 A				63 A				125 A			
Calibration temp. °C	30			30				40				40			
No. of operations															
220 V In COS=0.9	10000			10000				4000				4000			
415 V In COS=0.9	10000			10000				4000				4000			
Insulation resistance	>10 Mohm			>10 Mohm				>10 Mohm				>10 Mohm			
Dielectric rigidity	>2.5 kV			>2.5 kV				>2.5 kV				>2.5 kV			
Terminal capacity															
line mm ²	35			35				35				70			
load mm ²	35			35				35				70			

DC application ³⁾

Description	Din-T 6 2 to 63 A			Din-T 10 0.5 to 63 A				Din-T 15 6 to 63 A				Din-T 10H 80 to 125 A			
	1	2	3	1	2	3	4	1	2	3	4	1	2	3	4
Max. voltage	48	110 ¹⁾	--	48	110 ¹⁾	--	--	48	110 ¹⁾	--	--	125 ¹⁾	250 ²⁾	--	--
No. operations at T _{≤15} ms	10000			10000				10000				40000			
Short circuit kA at T _{≤15} ms	20	25	-	25	30	-	-	25	30	-	-	10	-	10	-

Notes: DC magnetic trip current is approximately 40 % higher than 50/60 Hz.

¹⁾ Series connection 2 pole MCB.

²⁾ Series connection 4 pole MCB.

³⁾ For DC switching at 250 V and 500 V DC refer latest edition of Part C catalogue for ratings information.

⁴⁾ Depth measurement, excluding toggle.

Effects of frequency on the tripping characteristic Din-T 6, 10, 10H, 15

All the MCBs are designed to work at frequencies of 50 - 60 Hz, therefore to work at different values, consideration must be given to the variation of tripping characteristics. The thermal tripping does not change with variation of the frequency but the magnetic tripping values can be up to 50 % higher than the ones at 50-60 Hz.

Tripping characteristics according to IEC 60898

60 Hz	100 Hz	200 Hz	300 Hz	400 Hz
1	1.1	1.2	1.4	1.5

Power losses Din-T 6, 10, 10H, 15

The power losses are calculated by measuring the voltage drop between the incoming and the outgoing terminals of the device at rated current.

Power loss per pole

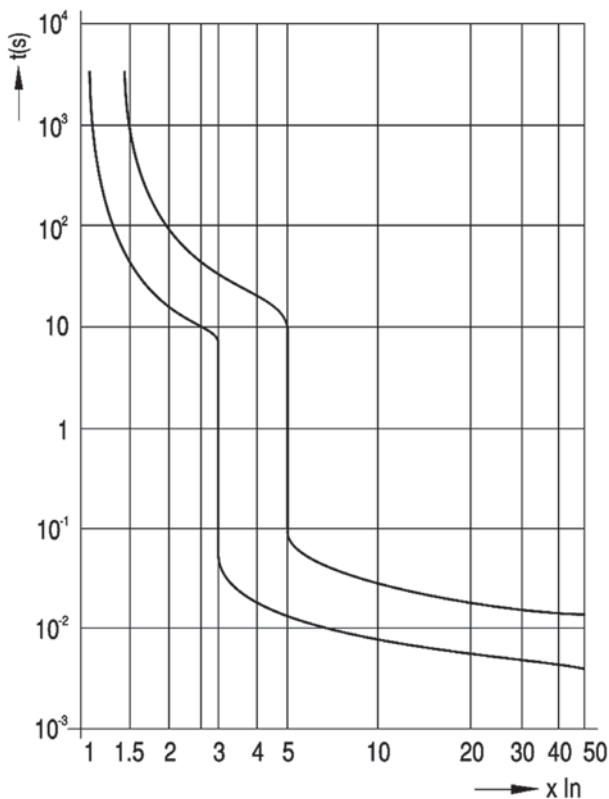
In (A)	Voltage drop (V)	Energy Loss (W)	Resistance (Mohm)
0.5	2.230	1.115	4458.00
1	1.270	1.272	1272.00
2	0.620	1.240	310.00
3	0.520	1.557	173.00
4	0.370	1.488	93.00
6	0.260	1.570	43.60
8	0.160	1.242	19.40
10	0.160	1.560	15.60
13	0.155	2.011	11.90
16	0.162	2.586	10.10
20	0.138	2.760	6.90
25	0.128	3.188	5.10
32	0.096	3.072	3.00
40	0.100	4.000	2.50
50	0.090	4.500	1.80
63	0.082	5.160	1.30
80	0.075	6.000	0.90
100	0.075	7.500	0.75
125	0.076	9.500	0.60

Din-T time current curves Din-T 6 and 10

Tripping characteristics according to IEC 60898

Din-T 10 B Curve devices

Curve B (3 – 5 x I_n)

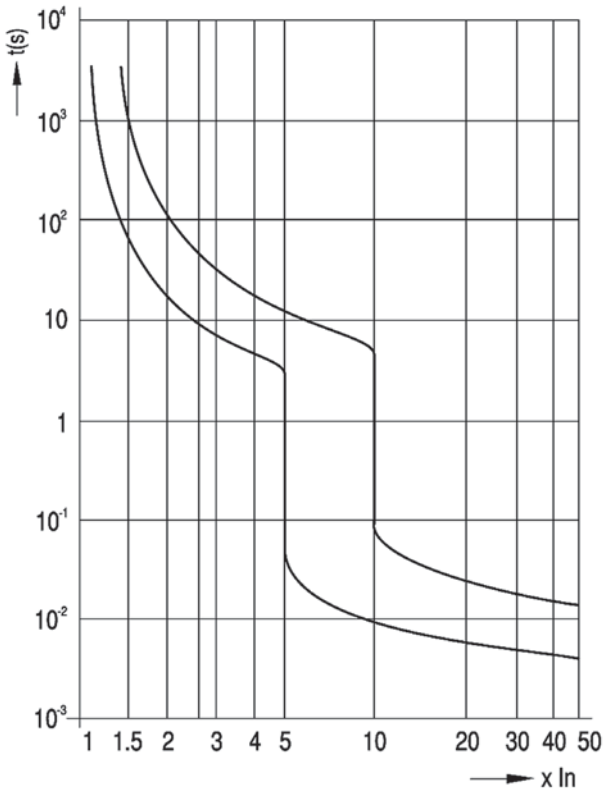


Din-T time current curves Din-T 6 and 10

Tripping characteristics according to IEC 60898

Din-T 6, 10, 10H, 15, DC

Curve C (5 – 10 x I_n)

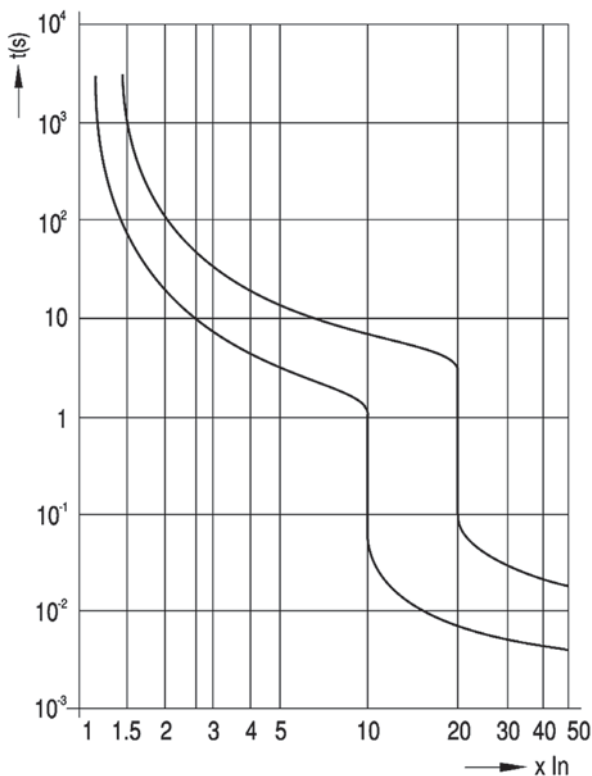


Din-T time current curves Din-T 6 and 10

Tripping characteristics according to IEC 60898

Din-T 6, 10, 10H, 15

Curve D (10 – 20 x I_n)



Characteristics according to EN 60898

Miniature circuit breakers are intended for the protection of wiring installations against both overloads and short-circuits in **domestic** or **commercial** wiring installations, where operation is possible by **uninstructed** people.

Magnetic release

An electromagnet with plunger ensures instantaneous tripping in the event of short-circuit. The NHP Din-T range has 3 different types, following the current for instantaneous release: types B, C and D curve.

Icn (A)	Test current	Tripping time	Applications
B	3 x In 5 x In	0.1 < t < 45 s (In ≤ 32 A) 0.1 < t < 90 s (In > 32 A) as: t < 0.1 s	Only for resistive loads such as: - electrical heating - water heater - stoves
C	5 x In 10 x In	0.1 < t < 15 s (In ≤ 32 A) 0.1 < t < 30 s (In > 32 A) t < 0.1 s	Usual loads such as: - lighting - socket outlets - small motors
D	10 x In 20 x In	0.1 < t < 4 s (In ≤ 32 A) 0.1 < t < 8 s (In > 32 A) t < 0.1 s	Control and protection of circuits having important transient inrush currents (large motors)

Thermal release

The release is initiated by a bimetal strip in the event of overload. The standard defines the range of releases for specific overload values. Reference ambient temperature is 30 °C.

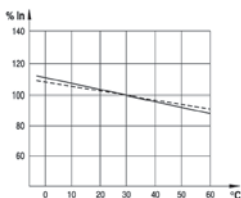
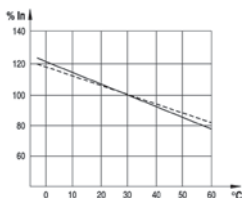
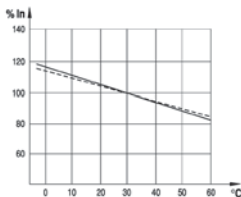
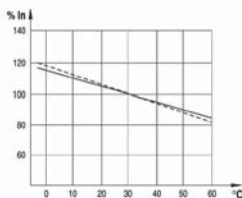
Test current	Tripping time
1.13 x In	t ≥ 1 h (In ≤ 63 A) t ≥ 2 h (In > 63 A)
1.45 x In	t < 1 h (In ≤ 63 A) t < 2 h (In > 63 A)
2.55 x In	1 s < t < 60 s (In ≤ 32 A) 1 s < t < 120 s (In > 32 A)

Temperature compensation curves

Din-T 6, 10, 10H and 15

Influence of ambient temperature

The thermal calibration of the MCBs was carried out at an ambient temperature of 30 °C . Ambient temperatures different from the calibrated temperature influence the bimetal and this results in earlier or later thermal tripping (see curves).

0.5 - 6 A

10 A

16 - 40 A

50 - 63 A


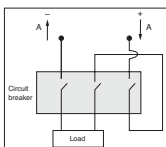
DC current circuit breaker selection table

Circuit Breaker Type	Rated Current (A)	48 V 1 pole Icu (kA)	110 V 2 poles in series Icu (kA)	250 V 1 pole Icu (kA)	500 V 2 poles in series Icu (kA)
Din-T 6	0.5.....63 A	20	25	-	-
Din-T 10	0.5.....63 A	25	30	-	-
Din-T DC	0.5.....63 A	-	-	6	6
Din-T 15	6.....25 A	25	30	-	-
Din-T 10H	80.....125 A	10	10	-	-
Safe-T	6.....100 A	-	5	-	-

MCCB type ²⁾³⁾	24/48/ 60 V	125 V	250 V	kA Rating below		
				350 V	500 V	600 V
S160NF 1 pole	15	15	-			
ES125/NJ	25	25	25			
SHL125NJ/GJ	50	40	40			
E250NJ	25	25	25			
SHL160/250 ²⁾	50	40	40			
E400NJ	25	25	25			
SHL400NJ/GJ ³⁾	50	40	40			
XS630NJ	50	40	40	30	20	20
S/XS800NJ/RJ	50	40	40	30	20	20
XS1000ND ¹⁾	-	40	40	30	20	20
XS1250ND	-	40	40	30	20	20
XS1600ND	-	40	40	30	20	20
XS2000ND ¹⁾	-	40	40	30	20	20
XS2500ND ¹⁾	-	40	40	30	20	20

Refer to section 3
for 'ND' DC
MCCB's rated
to 600 V DC at
20 A - 800 A

THE FOLLOWING CONNECTION
DIAGRAM SHOULD BE APPLIED.



Notes for MCCB only:

For voltage levels up to and including 250 V DC standard MCCBs may be used, with two poles connected in series. For voltage levels greater than 250 V DC, three poles are to be connected in series as shown.

The time constant (L/R) of the circuit should be:

- less than 2 ms at rated current
- less than 2.5 ms for overload (2.5 x I_n)
- less than 7 ms for short circuit ≤ 10 kA
- less than 15 ms for short circuit > 10 kA

Notes: ¹⁾ Magnetic trip only, without overload protection. Available on indent only.

²⁾ Thermal Magnetic types only can be used on DC.

³⁾ MCCBs not suitable for 12 V DC.

Miniature circuit breakers and fuse-fault current limiters co-ordination chart

Circuit breaker Type	kA	Rating amps	Minimum fuse amps ¹⁾	Maximum fuse – Amps			
				50 kA		63 kA	
				BS 88	DIN	BS 88	DIN
Safe-T	6	6-10	50	160 ²⁾	160	125 ²⁾	125
	6	16-25	63	200 ²⁾	200	160 ²⁾	160
	6	32	80	200 ²⁾	200	160 ²⁾	160
	6	40-50	100	200 ²⁾	200	160 ²⁾	160
	6	63-100	160	200 ²⁾	200	160 ²⁾	160
SRCB	6	10	50	160	160	125	125
	6	16-20	63	200	200	160	160
Din-T	6	2-25	20-63	200	200	160	160
DTCB6	6	32-63	100	200	200	160	160
DTCB10 & DTCB15 ³⁾	10, 15	0.5-6	20	250	250	200	200
	10, 25	10	25	250	250	200	200
	10, 25	16	35	250	250	200	200
	10, 20-25	20-32	63	250	250	200	200
	10, 20-15	40-63	100	250	250	200	200
DSRCB & DSRCBH (RCBO)	10	10	25	250	250	200	200
	10	16	35	250	250	200	200
	10	20-32	63	250	250	200	200
Din-T10H	10	80	160	200	200	160	160
	10	100	200	200	200	160	160
	10	125	250	250	250	–	–
E125, S125	18/30	16-125	250	400	400	355	355

Notes: ¹⁾ Minimum fuse size is based on grading under overload of one MCB with onset of fuses. Where a single set of fuses protects more than one MCB, the minimum fuse size shall be increased to allow for load biasing effects.

²⁾ Maximum fuse size based on testing to AS 3439.1 clause 8.2.3.

³⁾ For specific kA ratings applicable to MCBs, refer page 1-23 ratings chart. Tables based on the following maximum pre-arcing I_{2t} for both BS 88 and DIN fuses:

125 A - 0.4 x 105, 160 A - 0.62 x 105, 200 A - 1.2 x 105, 250 A - 2.1 x 105.

Suitable fuses include NHP, GEC, Siemens and Bovara-Crady.

Fuses with higher current ratings may be used provided I_{2t} values are equal to, or less than the levels above. Semi-conductor fuses have very low I_{2t} values and may suit some applications.

Attention is also drawn to AS 3000 clause 7.10.4.4 regarding the use of fault current limiters in installations containing fire and smoke control equipment, evacuation equipment and lifts.

Selectivity (discrimination) and cascade

Selectivity

The principle of Selectivity (Discrimination) is based upon an analysis of several circuit breaker characteristics. These include time-current (tripping) curves, peak-let-through current (I_{peak}) and energy let-through (I_{lt}).

The figures stated give the maximum selectivity level with the two nominated breakers in series under short-circuit conditions. For an indication on selectivity under overloads refer to the circuit breaker tripping/characteristic curves, or use the NHP TemCurve selectivity analysis software package.

Selectivity can be enhanced beyond the breaking capacity of the downstream breaker provided it is backed up by an appropriately selected upstream breaker, which should not trip (unlatch) under the stated short circuit current.

Cascade

Cascading is achieved by using an upstream device to assist (back-up) a downstream device in clearing a fault current. This principal is necessary should the downstream device be required to clear a prospective short circuit current greater than the devices' breaking capacity.

In most cascading applications it is generally necessary for the upstream breaker to trip (unlatch), as well as the downstream breaker to give adequate back-up protection. As such, cascade is commonly used in feeding and protecting non-essential loads, such as basic lighting.

For more information on selectivity and cascading please refer to the latest NHP Part C catalogue.

Cascade / back-up applications

Upstream: MCB

Downstream: MCB

Voltage 400/415 V, I_{cc} max. in kA

Downstream: MCBs		Upstream: MCBs		
Series	In (A)	Din-T 10 0.5 ... 63 A	Din-T 15 < 40 A	Din-T 15 50 ... 63 A
Din-T 6	0.5 ... 63	10	20	15
Din-T 10	0.5 ... 63	–	20	15

Voltage 220/440 V, I_{cc} max. in kA

Downstream: MCBs		Upstream: MCBs		
Series	In (A)	Din-T 10 0.5 ... 63 A	Din-T 15 0.5 ... 63 A	Din-T 15 80 ... 125 A
Din-T 6	0.5 ... 63	30	30	–
Din-T 10	0.5 ... 63	–	30	–
Din-T 10	0.5 ... 63	–	35	–

Selectivity MCB to MCB: Thermal Magnetic

MCBs	MCBs	Upstream C curve	Din-T 6, 10, 15							Din-T 10H		
			10 A	16 A	20 A	25 A	32 A	40 A	50 A	63 A	80 A	100 A
Down- stream B curve Din-T 10	In (A)	(kA below)							C Curve			
	6	0.07	0.10	0.15	0.18	0.23	0.27	0.35	0.45	1.5	1.6	1.7
	10	-	-	0.15	0.18	0.23	0.27	0.35	0.45	1	1.1	1.2
	16	-	-	-	-	0.23	0.27	0.35	0.45	1	1.1	1.2
	20	-	-	-	-	0.23	0.27	0.35	0.45	1	1.1	1.2
	25	-	-	-	-	-	0.27	0.35	0.45	0.9	1.1	1.1
	32	-	-	-	-	-	0.27	0.35	0.45	0.9	1	1
	40	-	-	-	-	-	-	-	-	-	0.9	0.9
	50	-	-	-	-	-	-	-	-	-	-	-
63	-	-	-	-	-	-	-	-	-	-	-	

MCBs	MCBs	Upstream C curve	Din-T 6, 10, 15							Din-T 10H		
			10 A	16 A	20 A	25 A	32 A	40 A	50 A	63 A	80 A	100 A
Down- stream C curve Din-T 6 Din-T 10 Din-T 15	In (A)	(kA below)							C Curve			
	6	0.07	0.10	0.15	0.18	0.23	0.27	0.35	0.45	1	1.1	1.2
	10	-	-	0.15	0.18	0.23	0.27	0.35	0.45	1	1.1	1.2
	16	-	-	-	-	-	0.27	0.35	0.45	1	1.1	1.2
	20	-	-	-	-	-	0.27	0.35	0.45	1	1.1	1.1
	25	-	-	-	-	-	0.27	0.35	0.45	0.9	1	1.1
	32	-	-	-	-	-	-	0.35	0.45	0.9	0.9	1
	40	-	-	-	-	-	-	-	0.45	-	-	0.9
	50	-	-	-	-	-	-	-	-	-	-	-
63	-	-	-	-	-	-	-	-	-	-	-	

Cascade / back-up applications -

Upstream: MCB

Downstream: MCB

Voltage 400/415 V, I_{cc} max. in kA

Downstream: MCBs		Upstream: MCBs		
Series	In (A)	Din-T 10 0.5 ... 63 A	Din-T 15 < 40 A	Din-T 15 50 ... 63 A
Din-T 6	0.5...63	10	20	15
Din-T 10	0.5...63	-	20	15

Voltage 220/240 V, I_{cc} max. in kA

Downstream: MCBs		Upstream: MCBs		
Series	In (A)	Din-T 10 0.5 ... 63 A	Din-T 15 0.5 ... 63 A	Din-T 15 80 ... 125 A
Din-T 6	0.5...63	20	22	16
Din-T 10	≤ 32	-	50	-
Din-T 15	≥ 40	-	35	-

Back-up protection with MCBs (DSRCD)

		Din-T 6	Din-T 10	Din-T 15	Din-T 10H
	(A)	(kA)	(kA)	(kA)	(kA)
RCCB 2 Poles 240 V (DSRCD)	16	20	20	20	10
	25	20	20	20	10
	40	20	20	20	10
	63	20	20	20	10
	80	-	-	-	10
	100	-	-	-	10
RCCB 4 Poles 415 V (DSRCD)	25	10	10	10	10
	40	10	10	10	10
	63	10	10	10	10
	80	-	-	-	10
	100	-	-	-	10

Back-up protection with fuses gG (DSRCD)

		16 A	25 A	32 A	40 A	50 A	63 A	80 A	100 A
	(A)	(kA)	(kA)	(kA)	(kA)	(kA)	(kA)	(kA)	(kA)
RCCB 2 Poles 240 V (DSRCD)	16	100	100	80	50	40	25	16	10
	25	100	100	80	50	40	25	16	10
	40	100	100	80	50	40	25	16	10
	63	100	100	80	50	40	25	16	10
	80	100	100	80	50	40	25	16	10
	100	100	100	80	50	40	25	16	10
RCCB 4 Poles 415 V (DSRCD)	25	100	100	80	50	40	25	16	10
	40	100	100	80	50	40	25	16	10
	63	100	100	80	50	40	25	16	10
	80	100	100	80	50	40	25	16	10
	100	100	100	80	50	40	25	16	10

Selectivity and Cascade tables @ 400/415 V - MCCBs and MCBs

Downstream MCB			Upstream MCCBs										
Current Range kA (A)	(RMS)		25 kA E125NJ				36 kA S125NJ				65 kA S125GJ-ZS125GJ		
			63	80	100	125	63	80	100	125	63		
DTCB6	≤20	6	25 /25	25 /25	25 /25	25 /25	25 /25	25 /25	25 /25	25 /25	25 /25	25 /25	35 /35
	25 & 32		20 /25	20 /25	20 /25	20 /25	20 /25	20 /25	20 /25	20 /25	20 /25	20 /25	20 /25
	40		- /25	20 /25	20 /25	20 /25	- /25	20 /25	20 /25	20 /25	20 /25	- /25	
	50 & 63		- /25	- /25	20 /25	20 /25	- /25	- 2/5	20 /25	20 /25	20 /25	- /25	
DINT10, DSRCBH & DSRCB	≤32	10	25 /25	25 /25	25 /25	25 /25	30 /36	30 /36	30 /36	30 /36	30 /36	30 /50	
	40		2 /25	20 /25	20 /25	20 /25	- /25	20 /25	20 /25	20 /25	20 /25	- /25	
	50 & 63		2 /25	- /25	20 /25	20 /25	- 25	- /25	20 /25	20 /25	20 /25	- /25	
DIN-T10H	80	10			4 /25	4 /25				4 /25	4 /25		
	100					4 /25				4 /25			
	125												
DIN-T15	≤32	15	25 /25	25 /25	25 /25	25 /25	30 /36	30 /36	30 /36	30 /36	30 /36	30 /50	
	40		- /25	20 /25	20 /25	20 /25	- /25	20 /25	20 /25	20 /25	20 /25	- /25	
	50 & 63		- /25	- /25	20 /25	20 /25	- /25	- /25	20 /25	20 /25	20 /25	- /25	
SAFE-T & SRCB	≤63	6	- /10	3 /10	3 /10	3 /10	- /10	3 /10	3 /10	3 /10	3 /10	- /10	

Downstream MCB			Upstream MCCBs												
Current Range kA (A)	(RMS)		25 kA E250NJ					36 kA S250NJ			65 kA S250GJ-ZS250GJ			63	
			63	80	100	160	200	250	160	200	250	160	200		250
DTCB6	≤20	6	25 /25	25 /25	25 /25	25 /25	25 /25	25 /25	36 /36	36 /36	36 /36	36 /36	36 /36	36 /36	36 /36
	25 & 32		25 /25	25 /25	25 /25	25 /25	25 /25	25 /25	30 /30	30 /30	30 /30	30 /30	30 /30	30 /30	- /30
	40		- /25	20 /25	25 /25	25 /25	25 /25	25 /25	30 /30	30 /30	30 /30	30 /30	30 /30	30 /30	30 /30
	50 & 63		- /25	- /25	25 /25	25 /25	25 /25	25 /25	30 /30	30 /30	30 /30	30 /30	30 /30	30 /30	- /30
DINT10, DSRCBH & DSRCB	≤32	10	25 /25	25 /25	25 /25	25 /25	25 /25	25 /25	36 /36	36 /36	36 /36	40 /65	40 /65	40 /65	40 /65
	40		- /25	20 /25	25 /25	25 /25	25 /25	25 /25	30 /30	30 /30	30 /30	30 /30	30 /30	30 /30	- /30
	50 & 63		- /25	- /25	25 /25	25 /25	20 /25	25 /25	30 /30	30 /30	30 /30	30 /30	30 /30	30 /30	- /30
DIN-T10H	80	10			15 /25	15 /25	15 /25	15 /25	15 /25	15 /25	15 /25	15 /25	15 /25	15 /25	
	100					15 /25	15 /25	15 /25	15 /25	15 /25	15 /25	15 /25	15 /25		
	125					- /25	15 /25	15 /25	- /25	15 /25	15 /25	- /25	15 /25	15 /25	
DIN-T15	≤32	15	25 /25	25 /25	25 /25	25 /25	25 /25	25 /25	36 /36	36 /36	36 /36	40 /65	40 /65	40 /65	40 /65
	40		- /25	25 /25	25 /25	25 /25	25 /25	25 /25	30 /30	30 /30	30 /30	30 /30	30 /30	30 /30	- /30
	50 & 63		- /25	- /25	25 /25	25 /25	25 /25	25 /25	30 /30	30 /30	30 /30	30 /30	30 /30	30 /30	- /30

Notes: XX Selectivity YY Cascade

& 125 kA H125NJ			36 kA S160NJ						65 kA S160GJ			& 125 kA H160NJ		
80	100	125	63	80	100	125	160	63	80	100	125	160		
35 /35	35 /35	35 /35	36 /36	36 /36	36 /36	36 /36	36 /36	36 /36	36 /36	36 /36	36 /36	36 /36		
20 /25	20 /25	20 /25	30 /30	30 /30	30 /30	30 /30	30 /30	30 /30	30 /30	30 /30	30 /30	30 /30		
20 /25	20 /25	20 /25	- /30	30 /30	30 /30	30 /30	30 /30	- /30	30 /30	30 /30	30 /30	30 /30		
- /25	20 /25	20 /25	- /30	- /30	30 /30	30 /30	30 /30	- /30	- /30	30 /30	30 /30	30 /30		
30 /50	30 /50	30 /50	36 /36	36 /36	36 /36	36 /36	36 /36	40 /65	40 /65	40 /65	40 /65	40 /65		
25 /25	25 /25	25 /25	- /30	30 /30	30 /30	30 /30	30 /30	- /30	30 /30	30 /30	30 /30	30 /30		
- /25	25 /25	25 /25	- /30	- /30	30 /30	30 /30	30 /30	- /30	- /30	30 /30	30 /30	30 /30		
	4 /25	4 /25			15 /15	15 /15	15 /15			15 /15	15 /15	15 /15		
		4 /25				15 /15	15 /15				15 /15	15 /15		
							15 /15					15 /15		
30 /50	30 /50	30 /50	36 /36	30 /36	30 /36	30 /36	30 /36	40 /65	40 /65	40 /65	40 /65	40 /65		
20 /25	25 /25	25 /25	- /30	30 /30	30 /30	30 /30	30 /30	- /30	30 /30	30 /30	30 /30	30 /30		
- /25	25 /25	25 /25	- /30	- /30	30 /30	30 /30	30 /30	- /30	- /30	30 /30	30 /30	30 /30		
3 /10	3 /10	3 /10												

70 kA S250PE			& 125 kA H250NJ- H250NE			36 kA S400CJ				50 kA S400NJ - S400NE				70 kA S400GE			
80	100	125	160	200	250	100	200	250	400	100	200	250	400	100	200	250	400
36/36	36/36	36/36	36/36	36/36	36/36												
30/30	30/30	30/30	30/30	30/30	30/30												
30/30	30/30	30/30	30/30	30/30	30/30												
- /30	30/30	30/30	30/30	30/30	30/30												
40/65	40/65	40/65	40/65	40/65	40/65	36/36	36/36	36/36	36/36	40/50	40/50	40/50	40/50	40/65	40/65	40/65	40/65
30/30	30/30	30/30	30/30	30/30	30/30	30/30	30/30	30/30	30/30	30/30	30/30	30/30	30/30	30/30	30/30	30/30	30/30
- /30	30/30	30/30	30/30	30/30	30/30	30/30	30/30	30/30	30/30	30/30	30/30	30/30	30/30	30/30	30/30	30/30	30/30
	15/15	15/15	15/15	15/15	15/15	10/10	10/10	10/10	10/10	10/10	10/10	10/10	10/10	10/10	10/10	10/10	10/10
		15/15	15/15	15/15	15/15	10/10	10/10	10/10	10/10	10/10	10/10	10/10	10/10	10/10	10/10	10/10	10/10
						- /10	10/10	10/10	10/10	- /10	10/10	10/10	10/10	- /10	10/10	10/10	10/10
40/65	40/65	40/65	40/65	40/65	40/65	36/36	36/36	36/36	36/36	40/50	40/50	40/50	40/50	40/65	40/65	40/65	40/65
- /30	30/30	30/30	30/30	30/30	30/30	30/30	30/30	30/30	30/30	30/30	30/30	30/30	30/30	30/30	30/30	30/30	30/30
- /30	30/30	30/30	30/30	30/30	30/30	30/30	30/30	30/30	30/30	30/30	30/30	30/30	30/30	30/30	30/30	30/30	30/30

Selectivity & Cascade Tables

@ 400 / 415 V

Upstream MCCBs 1)

Down-stream MCCB	kA (RMS)	S250PE	H250NE	S400NE	S400GE	S400PE	H400NE	L400NE	E630NE	S630CE
		70	125	50	70	85	125	200	36	50
E125NJ	25	25 / 50	25 / 65	25 / 36	25 / 50	25 / 50	25 / 65	25 / 85	25 / 36	25 / 36
S125NJ	36	36 / 65	36 / 85	36 / 50	36 / 65	36 / 65	36 / 85	36 / 125	36 / 36	36 / 50
S125GJ	65	65 / 70	65 / 125	50 / 50	65 / 70	65 / 85	65 / 125	65 / 150	36 / 36	50 / 50
ZS125GJ										
H125NJ	125	70 / 70	125 / 125	50 / 50	70 / 70	85 / 85	125 / 125	125 / 200	36 / 36	50 / 50
S160NJ	36	- / 65	- / 85	36 / 50	36 / 65	36 / 65	36 / 85	36 / 125	36 / 36	36 / 50
S160GJ	65	- / 70	- / 125	50 / 50	65 / 70	65 / 85	65 / 125	65 / 150	36 / 36	50 / 50
H160NJ	125	- / 70	- / 125	- / 50	- / 70	- / 85	125 / 125	125 / 200	36 / 36	50 / 50
E250NJ	25	- / 50	- / 85	25 / 36	25 / 50	25 / 50	25 / 65	25 / 85	25 / 36	25 / 36
S250NJ	36	- / 65	- / 85	36 / 50	36 / 65	36 / 65	36 / 85	36 / 125	36 / 36	36 / 50
S250GJ	65	- / 70	- / 125	50 / 50	65 / 70	65 / 85	65 / 125	65 / 150	36 / 36	50 / 50
ZS250GJ										
S250PE	70		- / 125	- / 50	- / 70	- / 85	70 / 125	70 / 150	36 / 36	50 / 50
H250NJ	125			- / 50	- / 70	- / 85	125 / 125	125 / 200	36 / 36	50 / 50
H250NE	125			- / 50	- / 70	- / 85	125 / 125	125 / 200	36 / 36	50 / 50
E400NJ	25			- / 36	- / 50	- / 50	- / 65	- / 85	10 / 36	10 / 36
S400CJ	36			- / 50	- / 65	- / 65	- / 70	- / 100	10 / 36	10 / 50
S400NE	50				- / 50	- / 70	- / 50	- / 50	10 / 36	10 / 50
S400NJ	50				- / 70	- / 70	- / 85	- / 125	10 / 36	10 / 50
S400GJ/GE	70					- / 85	- / 125	- / 150	10 / 36	10 / 50
S400PE	85					- / 85	- / 125	- / 150	10 / 36	10 / 50
H400NE	125					- / 85			10 / 36	10 / 50
E630NE	36									
E630CE	50									
S630GE	70									
XS630CJ	42									
XS630NJ	65									
XS630PJ	85									
XS630SE	50									
XH630SE	65									
XH630PE	65									
XS800NJ	65									
XS800SE	50									
XJ800PJ	85									
XH800SE	65									
XH800PE	65									
XS1250SE	65									
XS1600SE	85									

Notes:  XX Selectivity  YY Cascade

Selectivity & Cascade Tables

@ 400 / 415 V

XS630SE	XH630SE	S630GE	TL630NE	XS800SE	XH800SE	TL800NE	XS1250SE	TL1250NE	XS1600SE	XS2000NE	XS2500NE	XS3200NE
50	65	70	125	50	65	125	85	125	100	85		
25 / 36	25 / 50	25 / 50	25 / 25	25 / 36	25 / 36	25 / 36	25 / 25	25 / 25	25 / 25	25 / 25	25 / 25	
36 / 50	36 / 65	36 / 65	36 / 36	36 / 50	36 / 36	36 / 36	36 / 36	36 / 36	36 / 36	36 / 36	36 / 36	
50 / 50	65 / 65	65 / 70	65 / 65	50 / 50	65 / 65	65 / 65	65 / 65	65 / 65	65 / 65	65 / 65	65 / 65	
50 / 50	50 / 65	70 / 70	70 / 125	50 / 50	65 / 65	65 / 125	85 / 85	85 / 125	100 / 100	85 / 85		
36 / 50	36 / 50	36 / 50	36 / 36	36 / 50	36 / 65	36 / 36	36 / 36	36 / 36	36 / 36	36 / 36	36 / 36	
50 / 50	50 / 65	65 / 70	65 / 65	50 / 50	50 / 65	50 / 65	65 / 65	65 / 65	65 / 65	65 / 65	65 / 65	
50 / 50	50 / 65	70 / 70	70 / 125	50 / 50	50 / 65	50 / 125	85 / 85	85 / 125	100 / 100	85 / 85		
25 / 36	25 / 50	25 / 50	25 / 25	25 / 36	25 / 50	25 / 50	25 / 25	25 / 25	25 / 25	25 / 25	25 / 25	
36 / 50	36 / 65	36 / 65	36 / 36	36 / 50	36 / 65	36 / 65	36 / 36	36 / 36	36 / 36	36 / 36	36 / 36	
50 / 50	50 / 65	65 / 70	65 / 65	50 / 50	50 / 65	50 / 65	65 / 65	65 / 65	65 / 65	65 / 65	65 / 65	
50 / 50	50 / 65	70 / 70	70 / 70	50 / 50	65 / 65	50 / 70	70 / 70	70 / 70	70 / 70	70 / 70	70 / 70	
50 / 50	50 / 65	70 / 70	70 / 125	50 / 50	50 / 65	50 / 125	85 / 85	85 / 125	100 / 100	85 / 85		
50 / 50	50 / 65	70 / 70	70 / 125	50 / 50	65 / 65	50 / 125	85 / 85	85 / 125	100 / 100	85 / 85		
10 / 36	10 / 50	10 / 50	10 / 36	25 / 36	25 / 50	25 / 36	25 / 36	25 / 36	25 / 36	25 / 36	25 / 25	
10 / 50	10 / 65	10 / 65	10 / 50	25 / 50	25 / 65	25 / 50	36 / 50	36 / 50	36 / 50	36 / 50	36 / 36	
10 / 50	10 / 50	10 / 50	10 / 50	25 / 50	25 / 50	25 / 50	50 / 50	50 / 50	50 / 50	50 / 50	50 / 50	
10 / 50	10 / 65	10 / 70	10 / 65	25 / 50	25 / 65	25 / 65	50 / 65	50 / 65	50 / 65	50 / 65	50 / 50	
10 / 50	10 / 65	10 / 70	10 / 70	25 / 50	25 / 65	25 / 70	70 / 70	70 / 70	70 / 70	70 / 85	70 / 70	
10 / 50	10 / 65	10 / 70	10 / 85	25 / 50	25 / 65	25 / 85	70 / 85	85 / 85	85 / 85	85 / 85	85 / 85	
10 / 50	10 / 65	10 / 70	10 / 125	25 / 50	25 / 65	25 / 125	85 / 85	85 / 125	85 / 100	85 / 85		
				25 / 36	25 / 36	25 / 36	36 / 36	36 / 36	36 / 36	36 / 36	36 / 36	
				25 / 50	25 / 50	25 / 50	50 / 50	50 / 50	50 / 50	50 / 50	50 / 50	
							70 / 70	70 / 70	70 / 70	70 / 70	70 / 70	
							30 / 42	30 / 42	30 / 42	30 / 42	35 / 42	
							30 / 65	30 / 65	30 / 65	30 / 65	35 / 65	
							30 / 85	30 / 85	30 / 85	30 / 85	35 / 85	
							30 / 65	30 / 65	30 / 85	30 / 85	30 / 85	
							30 / 65	30 / 65	30 / 85	30 / 85	30 / 85	
							30 / 65	30 / 65	30 / 85	30 / 85	30 / 85	
							15 / 65	15 / 65	20 / 65	35 / 65		
							15 / 50	15 / 50	20 / 50	35 / 50		
							15 / 85	15 / 85	20 / 85	35 / 85		
							15 / 65	15 / 65	20 / 65	35 / 65		
							15 / 65	15 / 65	20 / 65	35 / 65		
									20 / 65	35 / 65		
										35 / 85		

Notes: 1) Refer NHP for TemBreak 2 MCCB combinations not included above.

Cascade table

Upstream-Downstream MCCBs (Thermal magnetic upstream)

Cascade @ 380 - 415 V AC ¹⁾

Upstream MCCBs		E125NJ	S125NJ	S125GJ ZS- 125GJ	H125NJ	L125NJ	S160NJ	S160GJ	H160NJ	L160NJ	
DownstreamkA MCCBs (RMS)		25	36	65	125	200	36	65	125	200	
E125NJ	25	25	36	50	65	85	36	50	65	85	
S125NJ	36	-	36	65	85	125	36	65	85	125	
S125GJ	65	-	-	65	125	150	36	65	125	150	
H125NJ	125	-	-	65	125	200	36	65	125	200	
S160NJ	36	-	-	65	36	36	36	65	85	125	
S160GJ	65	-	-	-	-	-	-	65	125	150	
H160NJ	125	-	-	-	-	-	-	65	125	200	
E250NJ	25	-	-	-	-	-	-	25	25	25	
S250NJ	36	-	-	-	-	-	-	65	36	36	
S250GJ	65	-	-	-	-	-	-	-	-	-	
S250PE	70	-	-	-	-	-	-	-	-	-	
H250NJ	125	-	-	-	-	-	-	-	-	-	
E400NJ	25	-	-	-	-	-	-	-	-	-	
S400CJ	36	-	-	-	-	-	-	-	-	-	
S400NJ	50	-	-	-	-	-	-	-	-	-	
S400GJ	70	-	-	-	-	-	-	-	-	-	
H400NJ	125	-	-	-	-	-	-	-	-	-	

E250NJ	S250NJ	S250GJ ZS- 250GJ	H250NJ	L250NJ	S400CJ	S400NJ	S400GJ	H400NJ	L400NJ	XS- 800NJ
25	36	65	125	200	36	50	70	125	200	65
25	36	50	65	85	36	36	50	65	85	36
25	36	65	85	125	36	50	65	85	125	50
25	36	65	125	150	36	50	70	125	150	65
25	36	65	125	200	36	50	70	125	200	65
25	36	65	85	125	36	50	65	85	125	65
25	36	65	125	150	36	50	70	125	150	65
25	36	65	125	200	36	50	70	125	200	65
25	25	50	65	85	36	36	50	65	85	36
25	36	65	85	125	36	50	65	85	125	65
-	-	65	125	150	36	50	70	125	150	65
-	-	65	125	150	36	50	70	125	150	65
-	-	65	125	200	36	50	70	125	200	65
-	-	25	65	25	36	36	50	65	85	50
-	-	36	70	36	36	50	65	70	100	65
-	-	50	85	50	36	50	70	85	125	50
-	-	50	125	70	36	50	70	125	150	65
-	-	-	-	-	-	-	-	-	200	65

Application data Load-break / MCCB

Socomec load-break switch and TemBreak MCCB co-ordination chart

TemBreak MCCB

Socomec

Load-break switch

	MCCB	(kA) rms	MCCB	(kA) rms	MCCB	(kA) rms	MCCB	(kA) rms
SLB63	E125NJ	6.5	S125NJ	6.5	S125GJ ¹⁾	6.5	H125NJ	7.5
	E125NJ	22	S125NJ	22	S125GJ ¹⁾	22	H125NJ	30
SLB125	-	-	S160NJ	15	S160GJ	15	H160NJ	27
	E250NJ	15	S250NJ	15	S250GJ ¹⁾	15	H250NJ	26
SLB200	E125NJ	25	S125NJ	36	S125GJ ¹⁾	65	H125NJ	80
	-	-	S160NJ	30	S160GJ	30	H160NJ	80
	E250NJ	25	S250NJ	30	S250GJ ¹⁾	30	H250NJ	80
SLB250	E250NJ	25	S250NJ	30	S250GJ ¹⁾	30	H250NJ	50
	E400NJ	25	S400NJ	25	S400GJ	25	H400NJ	35
SLB315	E250NJ	25	S250NJ	36	S250GJ ¹⁾	65	H250NJ	100
	E400NJ	25	S400NJ	50	S400GJ	65	H400NJ	100
SLB400	E400NJ	25	S400NJ	50	S400GJ	65	H400NJ	100

TemBreak MCCB

Socomec

Load-break switch

	MCCB	(kA) rms	MCCB	(kA) rms	MCCB	(kA) rms
SLB630	E630NE	35	S630CE	35	TL630NE	24
SLB800	XS800NJ	40	XH800PJ	40	TL800NE	28
SLB1000	XS1250SE	45	XS1600SE	45	TL1250NE	45
SLB1250	XS1250SE	65	XS1600SE	75	TL1250NE	70
SLB1600	XS1600SE	75	XS2000NE	60	-	-
SLB2000	XS2000NE	60	XS2500NE	60	-	-
SLB2500	XS2500NE	60	-	-	-	-

Notes: ¹⁾ Ratings also apply for ZS125GJ and ZS250GJ.

Figures based on / valid for – 400/415 V AC

Application example:

All Socomec load-break switches can be used in higher prospective fault current level applications, due to the upstream Terasaki TemBreak MCCB reducing the peak let-through current.

Example: SLB250 can be used in a 30 kA application if there is an upstream S250NJ MCCB.

For other combinations please refer to NHP.

Watts loss for Terasaki MCCBs ¹⁾

C/B rating MCCBs	Amps	AC Watts	DC Watts
TemBreak 2 MCCBs			
E/S125 NJ - GJ, VS125NJ	125	38	34
S160 NJ - GJ, VS250NJ (160 A)	160	40	36
E/S250 NJ - GJ, VS250NJ	250	55	49
S250PE	250	82	73
E/S400 CJ - NJ - GJ	400	75	67
E/S400 NE - GE	400	70	62
E/S630 NE - CE - GE-PE	630	133	119
TemBreak 1 MCCBs			
XS/XH400SE, XV400NE	400	69	62
XS/XH630SE, XV630PE	630	109	97
XS800NJ	800	150	134
XS/XH800SE, XV800PE	800	151	134
XS1250SE, XV1250NE	1250	194	173
XS1600SE	1600	189	169
XS2000NE	2000	228	204
XS2500NE	2500	357	319
XS3200NE	3200	585	522

Notes: ¹⁾ Values are valid for the maximum ampere trip units per breaker type.
 (E.g. S125GJ : 125 A) The above watts losses are for 3 poles combined.

Downstream short-circuit current calculator

Calculation of a downstream short-circuit current is a function of the upstream short-circuit current (I_{sc0}), cross-section and length of the conductor. The following table provides information to calculate approximately the short-circuit current at a relevant point of the installation.

Line protection - copper conductor

mm ²		Length of the line in metres												
1.5														
2.5														
4														0.8
6														1.2
10										0.8	1.1	2.1		
16								0.8	1.0	1.3	1.7	3.3		
25							1.1	1.3	1.6	2.1	2.6	5.1		
35							1.5	1.8	2.2	3.0	3.7	7.2		
50						1.0	2.2	2.6	3.1	4.2	5.3	10		
70						1.4	3.0	3.6	4.4	5.9	7.4	14		
95		0.8	0.9	1.0	2.0	4.1	4.9	6.0	8.0	10	20			
120		0.9	1.0	1.2	1.3	2.5	5.2	6.2	7.5	10	13	25		
150	0.8	1.0	1.1	1.3	1.4	2.7	5.6	6.8	8.2	11	14	27		
185	1.0	1.2	1.3	1.5	1.7	3.2	6.7	8.0	9.7	13	16	32		
240	1.2	1.5	1.7	1.9	2.1	3.9	8.3	10	12	16	20	39		
300	1.4	1.7	2.0	2.2	2.5	4.7	10	12	14	19	24	47		
400	1.6	1.9	2.2	2.4	2.7	5.1	11	13	16	21	26	51		
500	1.7	2.1	2.4	2.7	3.0	5.7	12	14	17	23	29	57		
625	1.8	2.1	2.5	2.8	3.1	5.8	12	15	18	24	30	58		
2x95	1.2	1.4	1.6	1.8	2.1	3.9	8.2	9.9	12	16	20	39		
2x120	1.5	1.8	2.1	2.3	2.6	4.9	10	12	15	20	25	49		
2x150	1.6	2.0	2.3	2.5	2.8	5.4	11	14	16	22	28	54		
2x185	1.9	2.3	2.7	3.0	3.3	6.3	13	16	19	26	33	63		
2x240	2.4	2.9	3.3	3.7	4.2	7.9	17	20	24	32	41	79		
3x95	1.8	2.2	2.5	2.8	3.1	5.9	12	15	18	24	30	59		
3x120	2.3	2.7	3.1	3.5	3.9	7.4	16	19	23	30	38	74		
3x150	2.5	3.0	3.4	3.8	4.2	8.0	17	20	25	33	41	80		
3x185	2.9	3.5	4.0	4.5	5.0	9.5	20	24	29	39	49	95		
3x240	3.6	4.4	5.0	5.6	6.2	12	25	30	36	49	61	118		
I_{sc0} kA		Short-circuit current at the end of the cable												
100	94	93	92	91	90	83	70	66	62	55	49	33		
90	85	84	84	83	82	76	65	62	58	52	47	32		
80	76	76	75	74	74	69	60	57	54	48	44	31		
70	67	67	66	66	65	61	54	52	49	44	41	29		
60	58	57	57	57	56	54	48	46	44	40	37	27		
50	49	48	48	48	47	45	41	40	38	35	33	25		
40	39	39	39	39	38	37	34	33	32	30	28	22		
35	34	34	34	34	34	33	30	30	29	27	26	21		
30	29	29	29	29	29	28	27	26	25	24	23	19		
25	25	25	24	24	24	24	23	22	22	21	20	17		
20	20	20	20	20	20	19	18	18	18	17	17	14		
15	15	15	15	15	15	15	14	14	14	13	13	12		
10	9.9	9.9	9.9	9.9	9.9	9.8	9.6	9.5	9.4	9.2	9.1	8.3		
7	7.0	7.0	7.0	7.0	6.9	6.9	6.8	6.8	6.7	6.6	6.5	6.1		
5	5.0	5.0	5.0	5.0	5.0	5.0	4.9	4.9	4.9	4.8	4.8	4.5		
4	4.0	4.0	4.0	4.0	4.0	4.0	3.9	3.9	3.9	3.9	3.8	3.7		
3	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.9	2.9	2.9	2.8		
2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9		
1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		

9 Example

Cable with cross-section 95 mm² Cu, 45 m length, and short-circuit current at the transformer terminals of 30 kA. Estimated short-circuit current of **12 kA** at the end of the cable.

		0.9	1.3	1.6	3.1	6.2	7.8	9.4	13	16	31
1.0	1.3	1.6	2.1	2.6	5.1	10	13	16	21	26	51
1.6	2.1	2.5	3.4	4.2	8.2	16	21	25	34	42	82
2.5	3.1	3.8	5.1	6.4	12	25	31	38	51	64	123
4.1	5.2	6.3	8.4	11	21	41	52	63	84	106	205
6.6	8.3	10	13	17	33	66	83	100	135	170	329
10	13	16	21	26	51	103	130	157	211	265	514
14	18	22	30	37	72	144	182	219	295	371	719
21	26	31	42	53	103	205	259	314	422	530	
29	36	44	59	74	144	288	363	439	590	742	
39	49	60	80	101	195	390	493	596	801		
49	62	75	101	127	246	493	623	752			
54	68	82	110	138	268	536	677	818			
63	80	97	130	163	317	633	800	967			
79	100	120	162	203	394	789	996				
95	120	145	195	244	474	948					
103	130	157	211	265	514						
114	144	174	234	294	571						
117	147	178	240	301	584						
78	99	119	160	201	390	781	986				
99	125	150	202	254	493	986					
107	135	164	220	276	536						
127	160	193	260	327	633						
158	199	241	324	407	789						
117	148	179	240	302	585						
148	187	226	304	381	739						
161	203	245	330	415	804						
190	240	290	390	490	950						
237	299	361	486	610							
20	16	14	11	8.8	4.7	2.4	1.9	1.6	1.2	1.0	0.5
19	16	14	11	8.7	4.7	2.4	1.9	1.6	1.2	1.0	0.5
19	16	14	11	8.6	4.7	2.4	1.9	1.6	1.2	1.0	0.5
18	15	13	10	8.5	4.6	2.4	1.9	1.6	1.2	1.0	0.5
18	15	13	10	8.3	4.6	2.4	1.9	1.6	1.2	0.9	0.5
17	14	12	9.8	8.1	4.5	2.4	1.9	1.6	1.2	0.9	0.5
15	13	12	9.3	7.8	4.4	2.3	1.9	1.6	1.2	0.9	0.5
15	13	11	9.0	7.6	4.4	2.3	1.9	1.6	1.2	0.9	0.5
14	12	11	8.6	7.3	4.3	2.3	1.8	1.5	1.2	0.9	0.5
12	11	9.9	8.2	7.0	4.2	2.3	1.8	1.5	1.2	0.9	0.5
11	10	9.0	7.5	6.5	4.0	2.2	1.8	1.5	1.1	0.9	0.5
9.4	9.0	7.8	6.7	5.9	3.7	2.1	1.7	1.5	1.1	0.9	0.5
7.1	7.0	6.2	5.5	4.9	3.3	2.0	1.6	1.4	1.1	0.9	0.5
5.5	5.0	4.9	4.4	4.1	2.9	1.8	1.5	1.3	1.0	0.8	0.5
4.2	4.0	3.8	3.5	3.3	2.5	1.7	1.4	1.2	1.0	0.8	0.5
3.4	3.0	3.2	3.0	2.8	2.2	1.5	1.3	1.2	0.9	0.8	0.4
2.7	3.0	2.5	2.4	2.3	1.9	1.4	1.2	1.1	0.9	0.7	0.4
1.9	2.0	1.8	1.7	1.7	1.4	1.1	1.0	0.9	0.8	0.7	0.4
1.0	1.0	0.9	0.9	0.9	0.8	0.7	0.7	0.6	0.5	0.5	0.3

Correction coefficient

Voltage	K
230 V	0.58
660 V	1.65

- Values shorter than 0.8 m or longer than 1 km are not considered.

- All values are for voltage 400 V.

Short circuit co-ordination

What is co-ordination?

The motor starter consists of a combination of contactor, overload relay and short circuit protective device (SCPD) being either fuses or circuit breakers.

During motor starting and at normal loading, the overload relay protects both the motor and cables by tripping the contactor in a time inversely proportional to the current. However, under short circuit conditions, the response time would be too long and the fuses or circuit breaker must take over to interrupt the fault current therefore limiting energy passed through the starter components. When this is successfully achieved, the combination is said to be co-ordinated.

The primary function of co-ordination is to ensure that the selected components result in safe interruption of fault currents while minimising damage to the starter components themselves.

Why is co-ordination important?

Contactors are designed to switch loads frequently. They can carry the high starting currents of motors, but at short circuit levels, the extremely high current can force the contacts open due to electro- dynamic effects (it is this effect that is needed at normal operating currents to extinguish the arc quickly). Large short circuit currents can therefore lift the contacts possibly resulting in contact welding or further damage to the starter components.

The importance of selecting the correct SCPD is to minimise the effects of short circuits, provide safe interruption and a level of performance to meet the criteria for Type '2' co-ordination.

Precise contactor control

While the correct selection of SCPD is of prime importance to ensure reliable operation under short circuit conditions, there are other malfunctions which can occur in a control circuit that can create contact welding due to uncontrolled and repetitive switching of the coil circuit (this is referred to as 'contact chatter'). This is particularly important with high current contactors where the switching currents of the respective motors are particularly high.

The electronically controlled mechanism 'ECM' of the CA 6 contactors prevent uncontrolled switching under all voltage conditions by providing precise control over the magnet system, thus preventing contact chatter and minimising contact bounce. Contactors of the CA 5 series are provided with a delayed release mechanism to prevent contact chatter under low voltage conditions.

High performance contactors

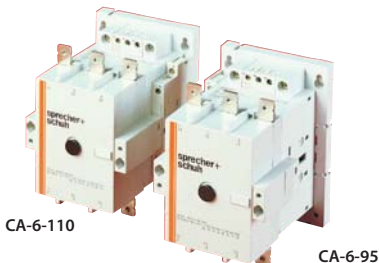
Under normal operating conditions all Sprecher + Schuh contactors offer high mechanical life (up to 10 million operations) with a contact life (electrical) up to 1.3 million under AC 3 conditions. Optimal performance is assured even under adverse conditions due to the design and selection of contactor components. This performance is evident in the design of the CA 6 contactor range which has enabled them to reach their full kilowatt potential under Type '2' conditions with both fuses and circuit breakers (refer co-ordination charts).



Terasaki 'TemBreak'
tested with
Sprecher + Schuh
contactors to
IEC 60947



The KTA 7 with CA 7 contactors.



CA-6-110

CA-6-95

Excellent design enables the CA 6 series contactors to reach their full potential under Type '2' conditions with both fuses and circuit breakers.

Valid until August 2014

TEMBREAK 2 - 2013 ADDITIONS



- 250A – 1600A MCCBs
- New 1000 A MCCB in a smaller 800 A Frame
- Ground Fault, Neutral pole, Phase Rotation, Pre Trip Alarm Protection
- Premium OCR - L S I Adjustable
 - Back-lit LCD display
 - Metering: I, U, P, W, Cos φ , F
 - Modbus communications
 - Intelligent fault analysis
- Basic 2 dial OCR types
- Thermal magnetic to 800 A
- Common internal accessories for 125 A to 1600 A MCCBs
- Metering block for 125 A - 630 A MCCBs



**NOW
AVAILABLE**

TemBreak

TERASAKI
Innovators in Protection Technology

Type 2 Short Circuit Coordination

Terasaki/Sprecher + Schuh

For DOL motor starting, 50/60 kA @ 400/415 V to AS/NZS 60947.4.1
 TemBreak MCCB circuit breakers

Sprecher + Schuh Thermal magnetic and Electronic overload relays.

TYPE 2
50/65 KA
415 V

Component Selection Table C64.0

Motor		Circuit Breaker	Contactors	Overload Relay	
Motor Kw	Motor Amp Ratings @ 400/415 V	Moulded Case Circuit Breaker	Contactors Type	Overload Relay Thermal Type	Ampere Setting Range
0.18	0.6	XM30PB / 0.7A	CA7-9	CT7N 23 A80	0.55 – 0.8
0.25	0.8	XM30PB / 1.4A	CA7-9	CT7N 23 B10	0.75 – 1.0
0.37	1.1	XM30PB / 1.4A	CA7-9	CT7N 23 B13	0.9 – 1.3
0.55	1.5	XM30PB / 2.0 A	CA7-9	CT7N 23 B20	1.4 – 2.0
0.75	1.8	XM30PB / 2.6A	CA7-9	CT7N 23 B25	1.8 – 2.5
1.1	2.6	XM30PB / 4A	CA7-16	CT7N 23 B32	2.3 – 3.2
1.5	3.4	XM30PB / 5A	CA7-16	CT7N 23 B40	2.9 – 4.0
2.2	4.8	XM30PB / 8A	CA7-16	CT7N 23 B63	4.5 – 6.3
3	6.5	XM30PB / 10A	CA7-23	CT7N 23 B75	5.5 – 7.5
4	8.2	XM30PB / 12A	CA7-23	CT7N 23 C10	7.2 – 10
5.5	11	S125GJ / 20A	CA7-30	CEP7 EEED	5.4 – 27
7.5	14	S125GJ / 20A	CA7-30	CT7N 37 C20	15 – 20
10	17	S125GJ / 20A	CA7-30	CT7N 37 C20	15 – 20
11	21	S125GJ / 32A	CA7-30	CT7N 37 C25	21 – 25
15	28	S125GJ / 50A	CA7-30	CT7N 37 C30	24.5 – 30
18.5	34	S125GJ / 50A	CA7-37	CT7N 37 C38	33 – 38
22	40	S125GJ / 63A	CA7-43	CT7N 43 C47	35 – 47
30	55	S125GJ / 100A	CA7-72	CT7N 85 C60	45 – 60
37	66	S125GJ / 100A	CA7-72	CT7N 85 C75	58 – 75
45	80	S125GJ / 125A	CA7-85	CT7N 85 C90	72 – 90
55	100	S125GJ / 125A	CA6-115	CEP 7 EEHF	30 – 150
75	130	S160GJ / 160A	CA6-140-EI	CEP 7 EEHF	30 – 150
90	155	S250GJ / 250A	CA6-140-EI	CEP 7 EEJF	40 – 200
110	200	S250GJ / 250A	CA6-180-EI	CEP 7 EEKG	60 – 300
132	225	S400GJ / 400A	CA6-420-EI	CEP 7 EEKG	60 – 300
150	250	S400GJ / 400A	CA6-420-EI	CEP 7 EEKG	60 – 300
160	270	S400GJ / 400A	CA6-420-EI	CEP 7 EEKG	60 – 300
185	325	S400GJ / 400A	CA6-420-EI	CEP 7 EELG	100 – 500
200	361	S400GJ / 400A	CA6-420-EI	CEP 7 EELG	100 – 500
220	383	S400GJ / 400A	CA6-630-EI	CEP 7 EEMH	120 – 600
250	425	S630GE / 630A	CA6-860-EI	CEP 7 EEMH	120 – 600
320	538	S630GE / 630A	CA6-860-EI	CEP 7 EEMH	120 – 600
400	700	XH800SE / 800A	CA6-860-EI	CEP 7 EENH	160 – 800

- Notes:**
- Thermal or electronic overload relays may be used.
 - XM30PB can be replaced with S125GJ/20 and CA7-23/CA7-30
 - Combinations based on the overload tripping before the circuit breaker at overload currents up to the motor locked rotor current.
 - Thermal magnetic MCCBs may be changed to electronic types if required.
 - Same 'look' handles can be used on XM30PB and S125-630 A MCCBs
 - S125GJ and S250GJ MCCBs can be changed to ZS125GJ and ZS250GJ earth leakage relay MCCBs if required.
 - Refer to NHP for other device combinations
 - The above combinations are designed for motors with an inrush of 7 x FLC for 5 seconds. The instant trip point of MCCBs must be considered when used with high inrush, high efficiency motors.

Type 2 Short Circuit Coordination

Terasaki/Sprecher + Schuh

For DOL motor starting, 50/60 kA @ 400/415 V to AS/NZS 60947.4.1

TemBreak MCCB circuit breakers

Sprecher + Schuh Electronic overload relays.

TYPE 2
50/65 KA
415 V

Component Selection Table C64.2

Motor		Circuit Breaker	Contactors	Overload Relay	
Motor Kw	Motor Amp Ratings @ 400/415 V	Moulded Case Circuit Breaker	Contactors Type	Overload Relay (Electronic)	Ampere Setting Range
0.18	0.6	XM30PB / 0.7A	CA7-9	CEP 7 EEBB	0.2 – 1.0
0.25	0.8	XM30PB / 1.4A	CA7-9	CEP 7 EEBB	0.2 – 1.0
0.37	1.1	XM30PB / 1.4A	CA7-9	CEP 7 EECB	1.0 – 5.0
0.55	1.5	XM30PB / 2.0 A	CA7-9	CEP 7 EECB	1.0 – 5.0
0.75	1.8	XM30PB / 2.6A	CA7-9	CEP 7 EECB	1.0 – 5.0
1.1	2.6	XM30PB / 4A	CA7-16	CEP 7 EECB	1.0 – 5.0
1.5	3.4	XM30PB / 5A	CA7-16	CEP 7 EECB	1.0 – 5.0
2.2	4.8	XM30PB / 8A	CA7-16	CEP 7 EEEB	5.4 – 27
3	6.5	XM30PB / 10A	CA7-23	CEP 7 EEEB	5.4 – 27
4	8.2	XM30PB / 12A	CA7-23	CEP 7 EEEB	5.4 – 27
5.5	11	S125GJ / 20A	CA7-30	CEP 7 EEED	5.4 – 27
7.5	14	S125GJ / 20A	CA7-30	CEP 7 EEED	5.4 – 27
10	17	S125GJ / 20A	CA7-30	CEP 7 EEED	5.4 – 27
11	21	S125GJ / 32A	CA7-30	CEP 7 EEED	5.4 – 27
15	28	S125GJ / 50A	CA7-30	CEP 7 EEFD	9.0 – 45
18.5	34	S125GJ / 50A	CA7-37	CEP 7 EEFD	9.0 – 45
22	40	S125GJ / 63A	CA7-43	CEP 7 EEFD	9.0 – 45
30	55	S125GJ / 100A	CA7-72	CEP 7 EEGE	18 – 90
37	66	S125GJ / 100A	CA7-72	CEP 7 EEGE	18 – 90
45	80	S125GJ / 125A	CA7-85	CEP 7 EEGE	18 – 90
55	100	S125GJ / 125A	CA6-115	CEP 7 EEHF	30 – 150
75	130	S160GJ / 160A	CA6-140-EI	CEP 7 EEHF	30 – 150
90	155	S250GJ / 250A	CA6-140-EI	CEP 7 EEJF	40 – 200
110	200	S250GJ / 250A	CA6-180-EI	CEP 7 EEKG	60 – 300
132	225	S400GJ / 400A	CA6-420-EI	CEP 7 EEKG	60 – 300
150	250	S400GJ / 400A	CA6-420-EI	CEP 7 EEKG	60 – 300
160	270	S400GJ / 400A	CA6-420-EI	CEP 7 EEKG	60 – 300
185	325	S400GJ / 400A	CA6-420-EI	CEP 7 EELG	100 – 500
200	361	S400GJ / 400A	CA6-420-EI	CEP 7 EELG	100 – 500
220	383	S400GJ / 400A	CA6-630-EI	CEP 7 EEMH	120 – 600
250	425	S630GE / 630A	CA6-860-EI	CEP 7 EEMH	120 – 600
320	538	S630GE / 630A	CA6-860-EI	CEP 7 EEMH	120 – 600
400	700	XH800SE / 800A	CA6-860-EI	CEP 7 EENH	160 – 800

- Notes:**
- Thermal or electronic overload relays may be used.
 - XM30PB can be replaced with S125GJ/20 and CA7-23/CA7-30
 - Combinations based on the overload tripping before the circuit breaker at overload currents up to the motor locked rotor current.
 - Electronic MCCBs may be changed to thermal magnetic types if required.
 - Same 'look' handles can be used on XM30PB and S125-630 A MCCBs.
 - S125GJ and S250GJ MCCBs can be changed to ZS125GJ and ZS250GJ earth leakage relay MCCBs if required.
 - Refer to NHP for other device combinations.
 - The above combinations are designed for motors with an inrush of 7 x FLC for 5 seconds. The instant trip point of MCCBs must be considered when used with high inrush, high efficiency motors.

Type 2 Short Circuit Coordination

Terasaki/Sprecher + Schuh

For DOL motor starting, 50/60 kA @ 400/415 V to AS/NZS 60947.4.1
 TemBreak MCCB circuit breakers

Sprecher + Schuh Electronic overload relays with communications and earth leakage.

TYPE 2
50/65 KA
415 V

Component Selection Table C64.11

Motor		Circuit Breaker	Contactor	Overload Relay	
Motor Kw	Motor Amp Ratings @ 400/415 V	Moulded Case Circuit Breaker	Contactor Type	Overload Relay (Electronic)	Ampere Setting Range
0.18	0.6	S125GJ / 20A	CA7-23	CEP7 C3-23-2	0.4 – 2.0
0.25	0.8	S125GJ / 20A	CA7-23	CEP7 C3-23-2	0.4 – 2.0
0.37	1.1	S125GJ / 20A	CA7-23	CEP7 C3-23-2	0.4 – 2.0
0.55	1.5	S125GJ / 20A	CA7-23	CEP7 C3-23-5	1.0 – 5.0
0.75	1.8	S125GJ / 20A	CA7-23	CEP7 C3-23-5	1.0 – 5.0
1.1	2.6	S125GJ / 20A	CA7-23	CEP7 C3-23-5	1.0 – 5.0
1.5	3.4	S125GJ / 20A	CA7-23	CEP7 C3-23-5	1.0 – 5.0
2.2	4.8	S125GJ / 20A	CA7-23	CEP7 C3-23-5	1.0 – 5.0
3	6.5	S125GJ / 20A	CA7-23	CEP7 C3 23-25	5.0 – 25
4	8.2	S125GJ / 20A	CA7-23	CEP7 C3 23-25	5.0 – 25
5.5	11	S125GJ / 20A	CA7-30	CEP7 C3 43-25	5.0 – 25
7.5	14	S125GJ / 20A	CA7-30	CEP7 C3 43-25	5.0 – 25
10	17	S125GJ / 20A	CA7-30	CEP7 C3 43-25	5.0 – 25
11	21	S125GJ / 32A	CA7-30	CEP7 C3 43-25	5.0 – 25
15	28	S125GJ / 50A	CA7-30	CEP7 C3 43-45	9.0 – 45
18.5	34	S125GJ / 50A	CA7-37	CEP7 C3 43-45	9.0 – 45
22	40	S125GJ / 63A	CA7-43	CEP7 C3 43-45	9.0 – 45
30	55	S125GJ / 100A	CA7-72	CEP7 C3 85-90	18 – 90
37	66	S125GJ / 100A	CA7-72	CEP7 C3 85-90	18 – 90
45	80	S125GJ / 125A	CA7-85	CEP7 C3 85-90	18 – 90
55	100	S125GJ / 125A	CA6-115	CEP7 C3 180 140	28 – 140
75	130	S160GJ / 160A	CA6-140-EI	CEP7 C3 180 140	28 – 140
90	155	S250GJ / 250A	CA6-140-EI	CEP7 C3 180 210	42 – 210
110	200	S250GJ / 250A	CA6-180-EI	CEP7 C3 420 302	60 – 302
132	225	S400GJ / 400A	CA6-420-EI	CEP7 C3 420 302	60 – 302
150	250	S400GJ / 400A	CA6-420-EI	CEP7 C3 420 302	60 – 302
160	270	S400GJ / 400A	CA6-420-EI	CEP7 C3 420 302	60 – 302
185	325	S400GJ / 400A	CA6-420-EI	CEP7 C3 420 420	84 – 420
200	361	S400GJ / 400A	CA6-420-EI	CEP7 C3 420 420	84 – 420
220	383	S400GJ / 400A	CA6-630-EI	CEP7 C3 860 630	125 – 630
250	425	S630GE / 630A	CA6-860-EI	CEP7 C3 860 630	125 – 630
320	538	S630GE / 630A	CA6-860-EI	CEP7 C3 860 630	125 – 630
400	700	XH800SE / 800A	CA6-860-EI	CEP7 C3 860 860	172 – 860

- Notes:**
- Thermal or electronic overload relays may be used.
 - S125GJ combinations can be replaced with XM30PB and smaller contactors if required.
 - Combinations based on the thermal overload relay tripping before the circuit breaker at overload currents up the motor locked rotor current.
 - Thermal magnetic MCCBs may be changed to electronic types if required.
 - Same look handles can be used on XM30PB and S125 - 630 A MCCBs.
 - Refer to NHP for other device combinations.
 - The above combinations are designed for motors with an inrush of 7 x FLC for 5 seconds.

The instant trip point of MCCBs must be considered when used with high inrush, high efficiency motors.

Type 2 Short Circuit Coordination

Terasaki/Sprecher + Schuh

For DOL motor starting, 50/60 kA @ 400/415 V to AS/NZS 60947.4.1

TemBreak MCCB circuit breakers

Sprecher + Schuh Thermal magnetic and electronic overload relays.

TYPE 2
85 KA
415 V

Component Selection Table C84.0

Motor		Circuit Breaker	Contactors	Overload Relay	
Motor Kw	Motor Amp Ratings @ 400/415 V	Moulded Case Circuit Breaker	Contactors Type	Overload Relay	Ampere Setting Range
0.18	0.6	XM30PB / 0.7A	CA7-9	CT7N 23 A80	0.55 – 0.8
0.25	0.8	XM30PB / 1.4A	CA7-9	CT7N 23 B10	0.75 – 1.0
0.37	1.1	XM30PB / 1.4A	CA7-9	CT7N 23 B13	0.9 – 1.3
0.55	1.5	XM30PB / 2.0 A	CA7-9	CT7N 23 B20	1.4 – 2.0
0.75	1.8	XM30PB / 2.6A	CA7-9	CT7N 23 B25	1.8 – 2.5
1.1	2.6	XM30PB / 4A	CA7-16	CT7N 23 B32	2.3 – 3.2
1.5	3.4	XM30PB / 5A	CA7-16	CT7N 23 B40	2.9 – 4.0
2.2	4.8	XM30PB / 8A	CA7-16	CT7N 23 B63	4.5 – 6.3
3	6.5	XM30PB / 10A	CA7-23	CT7N 23 B75	5.5 – 7.5
4	8.2	XM30PB / 12A	CA7-23	CT7N 23 C10	7.2 – 10
5.5	11	H125NJ / 20A	CA7-30	CEP7 EEED	5.4 – 27
7.5	14	H125NJ / 20A	CA7-30	CT7N 37 C20	15 – 20
10	17	H125NJ / 20A	CA7-30	CT7N 37 C20	15 – 20
11	21	H125NJ / 32A	CA7-30	CT7N 37 C25	21 – 25
15	28	H125NJ / 50A	CA7-30	CT7N 37 C30	24.5 – 30
18.5	34	H125NJ / 50A	CA7-37	CT7N 37 C38	33 – 38
22	40	H125NJ / 63A	CA7-43	CT7N 43 C47	35 – 47
30	55	H125NJ / 100A	CA7-72	CT7N 85 C60	45 – 60
37	66	H125NJ / 100A	CA7-72	CT7N 85 C75	58 – 75
45	80	H125NJ / 125A	CA7-85	CT7N 85 C90	72 – 90
55	100	H125NJ / 125A	CA6-115	CEP 7 EEHF	30 – 150
75	130	H160NJ / 160A	CA6-140-EI	CEP 7 EEHF	30 – 150
90	155	H250NJ / 250A	CA6-140-EI	CEP 7 EEJF	40 – 200
110	200	H250NJ / 250A	CA6-180-EI	CEP 7 EEKG	60 – 300
132	225	H400NE / 400A	CA6-420-EI	CEP 7 EEKG	60 – 300
150	250	H400NE / 400A	CA6-420-EI	CEP 7 EEKG	60 – 300
160	270	H400NE / 400A	CA6-420-EI	CEP 7 EEKG	60 – 300
185	325	H400NE / 400A	CA6-420-EI	CEP 7 EELG	100 – 500
200	361	H400NE / 400A	CA6-420-EI	CEP 7 EELG	100 – 500
220	383	H400NE / 400A	CA6-630-EI	CEP 7 EEMH	120 – 600
250	425	XH630PJ / 630A	CA6-860-EI	CEP 7 EEMH	120 – 600
320	538	XH630PJ / 630A	CA6-860-EI	CEP 7 EEMH	120 – 600
400	700	XH800PJ / 800A	CA6-860-EI	CEP 7 EENH	160 – 800

- Notes:**
- Thermal or electronic overload relays may be used.
 - XM30PB can be replaced with H125GJ and CA7-30 if required.
 - Combinations based on the thermal overloads relay tripping before the circuit breaker at overload currents up to the motor locked rotor current.
 - Thermal magnetic MCCBs may be changed to electronic types if required.
 - Same look handles can be used on XM30PB and S125 - 630 A MCCBs
 - Refer to NHP for other device combinations.
 - The above combinations are designed for motors with an inrush of 7 x FLC for 5 seconds. The instant trip point of MCCBs must be considered when used with high inrush, high efficiency motors.

Type 2 Short Circuit Coordination

Terasaki/Sprecher + Schuh

For DOL motor starting, 50/60 kA @ 400/415 V to AS/NZS 60947.4.1

TemBreak MCCB circuit breakers

Sprecher + Schuh Electronic overload relays.

TYPE 2
100 KA
415 V

Component Selection Table C14.3

Motor		Circuit Breaker	Contactor	Overload Relay	
Motor Kw	Motor Amp Ratings @ 400/415 V	Moulded Case Circuit Breaker	Contactor Type	Overload Relay	Ampere Setting Range
0.18	0.6	H125NJ / 20A	CA7-23	CEP 7 EEBB	0.2 – 1.0
0.25	0.8	H125NJ / 20A	CA7-23	CEP 7 EEBB	0.2 – 1.0
0.37	1.1	H125NJ / 20A	CA7-23	CEP 7 EECB	1.0 – 5.0
0.55	1.5	H125NJ / 20A	CA7-23	CEP 7 EECB	1.0 – 5.0
0.75	1.8	H125NJ / 20A	CA7-23	CEP 7 EECB	1.0 – 5.0
1.1	2.6	H125NJ / 20A	CA7-23	CEP 7 EECB	1.0 – 5.0
1.5	3.4	H125NJ / 20A	CA7-23	CEP 7 EECB	1.0 – 5.0
2.2	4.8	H125NJ / 20A	CA7-23	CEP 7 EEDB	3.2 – 16
3	6.5	H125NJ / 20A	CA7-23	CEP 7 EEDB	3.2 – 16
4	8.2	H125NJ / 20A	CA7-23	CEP 7 EEDB	3.2 – 16
5.5	11	H125NJ / 20A	CA7-30	CEP 7 EEED	5.4 – 27
7.5	14	H125NJ / 20A	CA7-30	CEP 7 EEED	5.4 – 27
10	17	H125NJ / 20A	CA7-30	CEP 7 EEED	5.4 – 27
11	21	H125NJ / 32A	CA7-30	CEP 7 EEED	5.4 – 27
15	28	H125NJ / 50A	CA7-30	CEP 7 EEFD	9.0 – 45
18.5	34	H125NJ / 50A	CA7-37	CEP 7 EEFD	9.0 – 45
22	40	H125NJ / 63A	CA7-43	CEP 7 EEFD	9.0 – 45
30	55	H125NJ / 100A	CA7-72	CEP 7 EEGE	18 – 90
37	66	H125NJ / 100A	CA7-72	CEP 7 EEGE	18 – 90
45	80	H125NJ / 100A	CA7-85	CEP 7 EEGE	18 – 90
55	100	H125NJ / 125A	CA6-115	CEP 7 EEHF	30 – 150
75	130	H125NJ / 125A	CA6-140-EI	CEP 7 EEHF	30 – 150
90	155	H250NJ / 250A	CA6-140-EI	CEP 7 EEJF	40 – 200
110	200	H250NJ / 250A	CA6-180-EI	CEP 7 EEKG	60 – 300
132	225	H400NE / 400A	CA6-420-EI	CEP 7 EEKG	60 – 300
150	250	H400NE / 400A	CA6-420-EI	CEP 7 EEKG	60 – 300
160	270	H400NE / 400A	CA6-420-EI	CEP 7 EEKG	60 – 300
185	325	H400NE / 400A	CA6-420-EI	CEP 7 EELG	100 – 500
200	361	H400NE / 400A	CA6-420-EI	CEP 7 EELG	100 – 500
220	383	H400NE / 400A	CA6-630-EI	CEP 7 EEMH	120 – 600
250	425	TL630NE / 630A	CA6-860-EI	CEP 7 EEMH	120 – 600
320	538	TL630NE / 630A	CA6-860-EI	CEP 7 EEMH	120 – 600
400	700	TL800NE / 800A	CA6-860-EI	CEP 7 EENH	160 – 800

- Notes:**
- Thermal or electronic overload relays may be used.
 - Combinations based on the overloads relay tripping before the circuit breaker at overload currents up to the motor locked rotor current.
 - Thermal magnetic MCCBs may be changed to electronic types if required.
 - Same 'look' handles can be used on all MCCBs.
 - Refer to NHP for other device combinations.
 - The above combinations are designed for motors with an inrush of 7 x FLC for 5 seconds. The instant trip point of MCCBs must be considered when used with high inrush, high efficiency motors.

Type 2 Short Circuit Coordination

Terasaki ZS ELCB/Sprecher + Schuh

For DOL motor starting, 50/60 kA @ 400/415 V to AS/NZS 60947.4.1

TemBreak MCCB circuit breakers

Sprecher + Schuh Electronic overload relays.

TYPE 2
50/65 KA
415 V

Component Selection Table EC64.3

Motor		Circuit Breaker	Contactor		Overload Relay	
Mo- tor Kw	Motor Amp Ratings @ 400/ 415 V	Moulded Case Circuit Breaker	Earth Fault Sensing Range	Type	Overload Relay	Ampere Setting Range
0.18	0.6	ZS125GJ / 20A	30mA – 3A	CA7-23	CEP 7 EEBB	0.2 – 1.0
0.25	0.8	ZS125GJ / 20A	30mA – 3A	CA7-23	CEP 7 EEBB	0.2 – 1.0
0.37	1.1	ZS125GJ / 20A	30mA – 3A	CA7-23	CEP 7 EECB	1.0 – 5.0
0.55	1.5	ZS125GJ / 20A	30mA – 3A	CA7-23	CEP 7 EECB	1.0 – 5.0
0.75	1.8	ZS125GJ / 20A	30mA – 3A	CA7-23	CEP 7 EECB	1.0 – 5.0
1.1	2.6	ZS125GJ / 20A	30mA – 3A	CA7-23	CEP 7 EECB	1.0 – 5.0
1.5	3.4	ZS125GJ / 20A	30mA – 3A	CA7-23	CEP 7 EECB	1.0 – 5.0
2.2	4.8	ZS125GJ / 20A	30mA – 3A	CA7-23	CEP 7 EEDB	3.4 – 16
3	6.5	ZS125GJ / 20A	30mA – 3A	CA7-23	CEP 7 EEDB	3.4 – 16
4	8.2	ZS125GJ / 20A	30mA – 3A	CA7-23	CEP 7 EEDB	3.4 – 16
5.5	11	ZS125GJ / 20A	30mA – 3A	CA7-30	CEP 7 EEED	5.4 – 27
7.5	14	ZS125GJ / 20A	30mA – 3A	CA7-30	CEP 7 EEED	5.4 – 27
10	17	ZS125GJ / 20A	30mA – 3A	CA7-30	CEP 7 EEED	5.4 – 27
11	21	ZS125GJ / 32A	30mA – 3A	CA7-30	CEP 7 EEED	5.4 – 27
15	28	ZS125GJ / 50A	30mA – 3A	CA7-30	CEP 7 EEFD	9.0 – 45
18.5	34	ZS125GJ / 50A	30mA – 3A	CA7-37	CEP 7 EEFD	9.0 – 45
22	40	ZS125GJ / 63A	30mA – 3A	CA7-43	CEP 7 EEFD	9.0 – 45
30	55	ZS125GJ / 100A	30mA – 3A	CA7-72	CEP 7 EEGE	18 – 90
37	66	ZS125GJ / 100A	30mA – 3A	CA7-72	CEP 7 EEGE	18 – 90
45	80	ZS125GJ / 125A	30mA – 3A	CA7-85	CEP 7 EEGE	18 – 90
55	100	ZS125GJ / 125A	30mA – 3A	CA6-115	CEP 7 EEHF	30 – 150
75	130	ZS250GJ / 160A	30mA – 3A	CA6-140-EI	CEP 7 EEHF	30 – 150
90	155	ZS250GJ / 250A	30mA – 3A	CA6-140-EI	CEP 7 EEJF	40 – 200
110	200	ZS250GJ / 250A	30mA – 3A	CA6-180-EI	CEP 7 EEKG	60 – 300
132	225	S400GE AG / 400A	$I_g = 0.2 \times I_n \text{ min.}$	CA6-420-EI	CEP 7 EEKG	60 – 300
150	250	S400GE AG / 400A	$I_g = 0.2 \times I_n \text{ min.}$	CA6-420-EI	CEP 7 EEKG	60 – 300
160	270	S400GE AG / 400A	$I_g = 0.2 \times I_n \text{ min.}$	CA6-420-EI	CEP 7 EEKG	60 – 300
185	325	S400GE AG / 400A	$I_g = 0.2 \times I_n \text{ min.}$	CA6-420-EI	CEP 7 EELG	100 – 500
200	361	S400GE AG / 400A	$I_g = 0.2 \times I_n \text{ min.}$	CA6-420-EI	CEP 7 EELG	100 – 500
220	383	S400GE AG / 400A	$I_g = 0.2 \times I_n \text{ min.}$	CA6-630-EI	CEP 7 EEMH	120 – 600
250	425	S630GE AG / 630A	$I_g = 0.2 \times I_n \text{ min.}$	CA6-860	CEP 7 EEMH	120 – 600
320	538	S630GE AG / 630A	$I_g = 0.2 \times I_n \text{ min.}$	CA6-860	CEP 7 EEMH	120 – 600
400	700	XH800SE 800 LSIG	$I_g = 0.2 \times I_n \text{ min.}$	CA6-860	CEP 7 EENH	160 – 800

- Notes:**
- Thermal or electronic overload relays may be used.
 - Combinations based on the thermal overloads relay tripping before the circuit breaker at overload currents up to the motor locked rotor current.
 - MCCBs 400 - 800 A have a Ground Fault option fitted. This will not sense small earth leakage (residual currents)
 - Refer to NHP for other device combinations.
 - The above combinations are designed for motors with an inrush of 7 x FLC for 5 seconds. The instant trip point of MCCBs must be considered when used with high inrush, high efficiency motors.

Type 2 Short Circuit Coordination

Terasaki ZS ELCB/Sprecher + Schuh

For DOL motor starting, 50/60 kA @ 400/415 V to AS/NZS 60947.4.1
 TemBreak MCCB circuit breakers

Sprecher + Schuh Electronic overload relays with communications and earth leakage.

TYPE 2
50/65 KA
415 V

Component Selection Table EC64.11

Motor		Circuit Breaker	Contactor		Overload Relay	
Mo- tor Kw	Motor Amp @ 400/ 415 V	Moulded Case Circuit Breaker	Earth Fault Sensing Range	Type	Overload Relay	Ampere Setting Range
0.18	0.6	ZS125GJ / 20A	30mA – 3A	CA7-23	CEP7 C3-23-2	0.4 – 2.0
0.25	0.8	ZS125GJ / 20A	30mA – 3A	CA7-23	CEP7 C3-23-2	0.4 – 2.0
0.37	1.1	ZS125GJ / 20A	30mA – 3A	CA7-23	CEP7 C3-23-2	0.4 – 2.0
0.55	1.5	ZS125GJ / 20A	30mA – 3A	CA7-23	CEP7 C3-23-5	1.0 – 5.0
0.75	1.8	ZS125GJ / 20A	30mA – 3A	CA7-23	CEP7 C3-23-5	1.0 – 5.0
1.1	2.6	ZS125GJ / 20A	30mA – 3A	CA7-23	CEP7 C3-23-5	1.0 – 5.0
1.5	3.4	ZS125GJ / 20A	30mA – 3A	CA7-23	CEP7 C3-23-5	1.0 – 5.0
2.2	4.8	ZS125GJ / 20A	30mA – 3A	CA7-23	CEP7 C3-23-5	1.0 – 5.0
3	6.5	ZS125GJ / 20A	30mA – 3A	CA7-23	CEP7 C3 23-25	5.0 – 25
4	8.2	ZS125GJ / 20A	30mA – 3A	CA7-23	CEP7 C3 23-25	5.0 – 25
5.5	11	ZS125GJ / 20A	30mA – 3A	CA7-30	CEP7 C3 43-25	5.0 – 25
7.5	14	ZS125GJ / 20A	30mA – 3A	CA7-30	CEP7 C3 43-25	5.0 – 25
10	17	ZS125GJ / 20A	30mA – 3A	CA7-30	CEP7 C3 43-25	5.0 – 25
11	21	ZS125GJ / 32A	30mA – 3A	CA7-30	CEP7 C3 43-25	5.0 – 25
15	28	ZS125GJ / 50A	30mA – 3A	CA7-30	CEP7 C3 43-45	9.0 – 45
18.5	34	ZS125GJ / 50A	30mA – 3A	CA7-37	CEP7 C3 43-45	9.0 – 45
22	40	ZS125GJ / 63A	30mA – 3A	CA7-43	CEP7 C3 43-45	9.0 – 45
30	55	ZS125GJ / 100A	30mA – 3A	CA7-72	CEP7 C3 85-90	18 – 90
37	66	ZS125GJ / 100A	30mA – 3A	CA7-72	CEP7 C3 85-90	18 – 90
45	80	ZS125GJ / 125A	30mA – 3A	CA7-85	CEP7 C3 85-90	18 – 90
55	100	ZS125GJ / 125A	30mA – 3A	CA6-115	CEP7 C3 180 140 28 – 140	
75	130	ZS250GJ / 160A	30mA – 3A	CA6-140-EI	CEP7 C3 180 140 42 – 140	
90	155*	ZS250GJ / 250A	30mA – 3A	CA6-140-EI	CEP7 C3 180 210 42 – 210	
110	200	ZS250GJ / 250A	30mA – 3A	CA6-180-EI	CEP7 C3 420 302 60 – 302	
132	225	S400GE AG / 400A I _g = 0.2 x I _n min.		CA6-420-EI	CEP7 C3 420 302 60 – 302	
150	250	S400GE AG / 400A I _g = 0.2 x I _n min.		CA6-420-EI	CEP7 C3 420 302 60 – 302	
160	270	S400GE AG / 400A I _g = 0.2 x I _n min.		CA6-420-EI	CEP7 C3 420 302 60 – 302	
185	325	S400GE AG / 400A I _g = 0.2 x I _n min.		CA6-420-EI	CEP7 C3 420 420 84 – 420	
200	361	S400GE AG / 400A I _g = 0.2 x I _n min.		CA6-420-EI	CEP7 C3 420 420 84 – 420	
220	383	S400GE AG / 400A I _g = 0.2 x I _n min.		CA6-630-EI	CEP7 C3 860 630 125 – 630	
250	425	S630GE AG / 630A I _g = 0.2 x I _n min.		CA6-860-EI	CEP7 C3 860 630 125 – 630	
320	538	S630GE AG / 630A I _g = 0.2 x I _n min.		CA6-860-EI	CEP7 C3 860 630 125 – 630	
400	700	XH800SE 800 LSIG I _g = 0.2 x I _n min.		CA6-860-EI	CEP7 C3 860 860 172 – 860	

- Notes:**
- CEP7 C3 overloads include DeviceNet comms, earth fault relay, and thermistor relay.
 - The CEP7 C3 inbuilt earth fault relay senses currents from 20 mA to 5 A. An external CT is required.
 - MCCBs 400 - 800 A have a Ground Fault option fitted. This will not sense small earth leakage (residual currents)
 - Combinations based on the thermal overloads relay tripping before the circuit breaker at overload currents up to the motor locked rotor current.
 - The above combinations are designed for motors with an inrush of 7 x FLC for 5 seconds. The instant trip point of MCCBs must be considered when used with high inrush, high efficiency motors.

Type 2 Short Circuit Coordination

TYPE 2
50 KA
690 V

Sprecher + Schuh

For DOL motor starting, 50/60 kA @ 690 V to AS/NZS 60947.4.1

Sprecher + Schuh KTA7 motor circuit breakers/ CEP 7 electronic overload relays

Component Selection Table C56.0

Motor Kw	Motor Amp Ratings @ 690 V AC	Circuit Breaker MPCB/ MCCB	Contactor Type	Overload Relay	Ampere Setting Range
0.37	0.63	KTA 7-25S-1A	CA7-9	KT7 overload or separate Relay	0.63 – 1.0
0.55	0.86	KTA 7-25S-1A	CA7-9	KT7 has adjustable O/L	0.63 – 1.0
0.75	1.1	KTA 7-25S-1.6A	CA7-9	KT7 has adjustable O/L	1.0 – 1.6
1.1	1.5	KTA 7-25S-1.6A	CA7-9	KT7 has adjustable O/L	1.0 – 1.6
1.5	2.1	KTA 7-25H-2.5A	CA7-9	KT7 has adjustable O/L	1.6 – 2.5
2.2	2.9	KTA 7-25H-4A	CA7-9	KT7 has adjustable O/L	2.5 – 4
3	3.8	KTA 7-25H-4A	CA7-12	KT7 has adjustable O/L	2.5 – 4
4	4.9	KTA 7-25H-6.3A	CA7-12	KT7 has adjustable O/L	4.0 – 6.3
5.5	6.6	KTA 7-25H-10A	CA7-16	KT7 has adjustable O/L	6.3 – 10
7.5	8.9	KTA 7-25H-10A	CA7-23	KT7 has adjustable O/L	6.3 – 10
10	12	KTA 7-25H-16A	CA7-23	KT7 has adjustable O/L	10 – 16
11	13	KTA 7-25H-16A	CA7-30	KT7 has adjustable O/L	10 – 16
15	17	KTA 7-45H-20A	CA7-30	KT7 has adjustable O/L	14.5 – 20
18.5	21	KTA 7-45H-25A	CA7-43	KT7 has adjustable O/L	18 – 25
22	24	KTA 7-45H-32A	CA7-60	KT7 has adjustable O/L	23 – 32

Notes: • The above combinations are designed for motors with an inrush of 7 x FLC for 5 seconds.

Type 2 Short Circuit Coordination

TYPE 2
50/65 KA
690 V

Socomec switch fuses/Sprecher + Schuh

For DOL motor starting, 50/60 kA @ 690 V to AS/NZS 60947.4.1

DIN Fuse links, SOCOMECS Switch Fuses

Sprecher + Schuh KTA7 Electronic overload relays

Component Selection Table F66D.1

Motor Kw	Motor Amp Ratings @ 690 V AC	Circuit Breaker		Contactor Type	Overload Relay	
		DIN gG Fuse Amps/Size	Switch-Fuse		Overload Relay (Electronic)	Ampere Setting Range
0.18	0.35	2 / 00C	SSF DN 63	CA7-9	CEP 7 EEBB	0.2 – 1.0
0.25	0.46	2 / 00C	SSF DN 63	CA7-9	CEP 7 EEBB	0.2 – 1.0
0.37	0.63	4 / 00C	SSF DN 63	CA7-9	CEP 7 EEBB	0.2 – 1.0
0.55	0.86	4 / 00C	SSF DN 63	CA7-9	CEP 7 EEBB	0.2 – 1.0
0.75	1.1	4 / 00C	SSF DN 63	CA7-9	CEP 7 EECB	1.0 – 5.0
1.1	1.5	6 / 00C	SSF DN 63	CA7-9	CEP 7 EECB	1.0 – 5.0
1.5	2.1	6 / 00C	SSF DN 63	CA7-9	CEP 7 EECB	1.0 – 5.0
2.2	2.9	10 / 00C	SSF DN 63	CA7-9	CEP 7 EECB	1.0 – 5.0
3	3.8	10 / 00C	SSF DN 63	CA7-9	CEP 7 EECB	1.0 – 5.0
4	4.9	16 / 00C	SSF DN 63	CA7-9	CEP 7 EECB	1.0 – 5.0
5.5	6.6	20 / 00C	SSF DN 63	CA7-12	CEP 7 EEEB	5.4 – 27
7.5	8.9	25 / 00C	SSF DN 63	CA7-16	CEP 7 EEEB	5.4 – 27
10	12	32 / 00C	SSF DN 63	CA7-23	CEP 7 EEEB	5.4 – 27
11	13	35 / 00C	SSF DN 63	CA7-30	CEP 7 EEED	5.4 – 27
15	17	50 / 00C	SSF DN 63	CA7-30	CEP 7 EEED	5.4 – 27
18.5	21	50 / 00C	SSF DN 63	CA7-37	CEP 7 EEED	5.4 – 27
22	24	63 / 00C	SSF DN 63	CA7-43	CEP 7 EEED	5.4 – 27
30	32	80 / 00	SSF DN 125	CA7-60	CEP 7 EEGE	18 – 90
37	39	100 / 00	SSF DN 125	CA7-72	CEP 7 EEGE	18 – 90
45	47	125 / 00	SSF DN 125	CA7-85	CEP 7 EEGE	18 – 90
55	57	125 / 00	SSF DN 125	CA6-95	CEP 7 EEHF	30 – 150
75	78	160 / 00	SSF DN 160	CA6-115	CEP 7 EEHF	30 – 150
90	94	200 / 1	SSF DN 250	CA6-110-EI	CEP 7 EEHF	30 – 150
110	114	224 / 1	SSF DN 250	CA6-140-EI	CEP 7 EEHF	30 – 150
132	135	250 / 1	SSF DN 250	CA6-140-EI	CEP 7 EEHF	30 – 150
160	163	300 / 2	SSF DN 400	CA6-180-EI	CEP 7 EEJF	40 – 200
200	203	400 / 2	SSF DN 400	CA6-210-EI	CEP 7 EEKG	60 – 300
220	220	400 / 2	SSF DN 400	CA6-300-EI	CEP 7 EEKG	60 – 300
250	252	425 / 3	SSF DN 630	CA6-300-EI	CEP 7 EEKG	60 – 300
315	312	500 / 3	SSF DN 630	CA6-420-EI	CEP 7 EELG	100 – 500
355	354	630 / 3	SSF DN 630	CA6-420-EI	CEP 7 EELG	100 – 500
400	397	630 / 3	SSF DN 630	CA6-420-EI	CEP 7 EELG	100 – 500

- Notes:**
- Thermal or electronic overload relays may be used.
 - Refer to NHP for other device combinations.
 - The above combinations are designed for motors with an inrush of 7 x FLC for 5 seconds.
 - The fuse maximum inrush current must be considered when used with high inrush, high efficiency motors.

Type 2 Short Circuit Coordination

TYPE 2
6.5-20 kA
1000 V

Terasaki/Sprecher + Schuh

For DOL motor starting, 6.5-20 kA @ 1000 V to AS/NZS 60947.4.1

TemBreak 1 Moulded Case Circuit Breakers

Sprecher + Schuh Electronic overload relays

Component Selection Table C21.0

	Motor	Circuit Breaker	Contactor	Overload Relay	
Motor Kw	Motor Amp Ratings @ 690 V AC	MPCB/ MCCB Circuit Breaker Type	Type	KT7 overload or separate Overload Relay	Ampere Setting Range
25	20	TL100EM403K	CA6 115 EI	CEF1-11	20 - 180
30	25	TL100EM503K	CA6 115 EI	CEF1-11	20 - 180
45	33	TL100EM603K	CA6 115 EI	CEP7 EE HF	30 - 150
55	40	TL100EM753K	CA6 105 EI	CEP7 EE HF	30 - 150
75	55	TL100EM1003K	CA6 140 EI	CEP7 EE HF	30 - 150
90	65	TL100EM1003K	CA6 170 EI	CEP7 EE HF	30 - 150
111	80	XV400NE2503K	CA6 210 EI	CEP7 EE HF	30 - 150
133	95	XV400NE2503K	CA6 250 EI	CEP7 EE HF	30 - 150
163	115	XV400NE2503K	CA6 300 EI	CEP7 EE HF	30 - 150
206	145	XV400NE2503K	CA6 420 EI	CEP7 EE JF	40 - 200
280	200	XV400NE4003K	CA5 450	CEP7 EE KG	60 - 300
355	250	XV400NE4003K	CA5 550	CEP7 EE KG	60 - 300
500	340	XV400NE4003K	CA5 700	CEP7 EE LG	100 - 500
550	380	XV630PE6303K	CA5 860	CEP7 EE LG	100 - 500

- Notes:**
- CEP7 overload add-on modules are available for Profibus, DeviceNet, Ethernet, Ground Fault, remote reset, jam protection, and a thermister protection relay. A CEP7 overload will accept one only add-on module.
 - CEF 1 CT overloads can replace CEP7 overloads if required.
 - For CEP7 C3 overload use, 1000 V rated CTs must be used.
 - Combinations based on the overload relay tripping before the circuit breaker at overload currents up to the motor locked rotor current.
 - Same 'look' handles can be used on MCCBs. Refer NHP for other device combinations.
 - The above combinations are designed for motors with an inrush of 7 x FLC for 5 seconds.
 The instant trip point of MCCBs must be considered when used with high inrush, high efficiency motors.



TEMCURVE 6 - CIRCUIT BREAKER SELECTIVITY APPLICATION SOFTWARE

The latest version of TemCurve 6 includes advanced new features making it a versatile application tool for use with Terasaki MCBs, MCCBs, ACBs, NHP fuses as well as generic IEC protection relay curves.



PP-TERASAKI-MCCB 3.200A-CPB

TemCurve 6 includes:

- Circuit line-diagrams
- Cable fault calculations
- TemCurve file sharing
- Distribution schematic
- Supply fault calculations
- Supply voltage options
- Catalogue data prints
- Time current curves
- Device photos
- User defined curves
- Motor start applications
- Internet update capability
- Energy let through curves
- Supply device type options
- Exports to AutoCad
- Circuit breaker setting detail
- Calculator



Motor circuit application table for DOL starting

Breaker type and current rating (A)

Motor Rating (kW)	Approx. FLC (Amps)	Din-T C & D curve	Safe-T	ZS125 E125 S125 H125 L125
0.37	1.1	4	6	
0.55	1.5	4	6	20
0.75	1.8	6	6	20
1.1	2.6	10	6	20
1.5	3.4	10	10	20
2.2	4.8	16	16	20
3.0	6.5	20	16	20
4	8.2	25	20	20
4.5	9	32	25	20
5.5	11	32	32	32
7.5	14	40	40	32
10	19	50	50	50
11	21	50	50	50
15	28	63	63	63
18.5	34	100 ¹⁾	80	100
22	40	125 ¹⁾	100	100
25	46	125 ¹⁾	100	100
30	55			125
37	66			125
45	80			125
55	100			
75	135			
90	160			
110	200			
132	230			
160	270			
185	320			
200	361			
220	380			
250	430			
280	480			
300	510			
375	650			
450	750			

Motor circuit application table for DOL starting

Breaker type and current rating (A)

ZS250			ZS800	
S160			S800CJ	
H160			S800NJ	
L160			S800RJ	
S250	ZS400	S800 (630 A)	S800NE	
E250	E400	ZS630	S800RE	
H250	S400	E630	H800NE	
L250	H400	S630	XS800NJ	S1000NE
	L400	XH630	XH800SE	S1250NE/1250
		XS630	XS800SE	XS1250SE/1000

160

160

160

160 250

250 250

250 250

400 400

400 400

400 400

400²⁾ 630400²⁾ 630630 800²⁾

630 800

630²⁾ 800630²⁾ 800800²⁾

1000

- Notes:**
- The DOL table is based on holding 125 % FLC continuously and 600 % FLC for 10 seconds. For non-standard drives consult NHP.
 - Lower circuit breaker ratings are possible in most applications. Refer to Type '2' co-ordination tables for specific circuit breaker/overload combinations.
 - Adjustable magnetic trips set to high. Thermal magnetic TemBreak adjustable 63 % – 100 % of NRC (nominal rated current).
 - Din-T MCBs are calibrated to IEC 60898 Curve 'C' & 'D'. Selected sizes of 'D' Curve are available from stock, refer NHP.

General motor circuit application table for reduced voltage starting

Breaker type and current rating, star-delta, auto-transformer resistor or reactance starting

Motor rating (kW)	Approx. FLC (Amps)	Din-T C & D curve	Safe-T	ZS125 E125 S125 H125 L125
0.37	1.1	4	6	
0.55	1.5	4	6	20
0.75	1.8	4	6	20
1.1	2.6	6	6	20
1.5	3.4	10	6	20
2.2	4.8	10	10	20
3.0	6.5	16	16	20
4	8.2	20	16	20
4.5	9	20	16	20
5.5	11	25	20	20
7.5	14	32	25	20
10	19	40	40	32
11	21	50	40	32
15	28	50	50	50
18.5	34	63	63	50
22	40	80 ¹⁾	63	63
25	46	100 ¹⁾	80	100
30	55	125 ¹⁾	100	100
37	66	125 ¹⁾		100
45	80			125
55	100			
75	135			
90	160			
110	200			
132	230			
160	270			
185	320			
200	361			
220	380			
250	430			
280	480			
300	510			
375	650			
450	750			

Notes: ¹⁾ 80, 100 and 125 amp refers to Din-T10H type.

²⁾ Electronic TemBreak MCCB only.

If co-ordination to IEC 60947-4-1 is required refer to co-ordination tables.

Reduced voltage table is based on holding 120 % FLC continuously and 350 % FLC for 20 seconds.

Din-T MCBs are calibrated to IEC 898 Curve 'C' & 'D'. Selected sizes of 'D' Curve are available from stock refer NHP.

General motor circuit application table for reduced voltage starting

ZS250			ZS800	
S160			S800CJ	
H160			S800NJ	
L160			S800RJ	
S250	ZS400	S800 (630 A)	S800NE	
E250	E400	ZS630	S800RE	
H250	S400	E630	H800NE	S1000NE
L250	H400	S630	XS800NJ	S1250NE/1250
	L400	XH630	XH800SE	XS1250SE/1000
		XS630	XS800SE	

160

160

160 250

160 250

250 250

250 250

250 250 400

400 400

400 400

400 400 800²⁾400²⁾ 630 800²⁾

630 800

630 800

630 800

630 800

800²⁾

1000

Motor circuit application table for DOL fire pump starting duty

Breaker type and current rating (A)

Motor rating (kW)	Approx. FLC (Amps)	Din-T C & D curve	Safe-T	XM30PB	ZS125
					E125
					S125
					H125
					L125
0.37	1.1	4	6	3.6	
0.55	1.5	6	6	3.6	
0.75	1.8	6	6	5	20
1.1	2.6	10	6	7.4	20
1.5	3.4	16	10	10	20
2.2	4.8	20	16	12	20
3	6.5	25	20		20
4	8.2	32	25		32
4.5	9	32	32		32
5.5	11	40	40		32
7.5	14	50	50		50
10	19	63	50		50
11	21	63	63		63
15	28	100 ¹⁾	80		100
18.5	34	125 ¹⁾	100		100
22	40				125
25	46				125
30	55				
37	66				
45	80				
55	100				
75	130				
90	155				
110	200				
132	225				
160	270				
185	320				
200	361				
220	380				
250	430				
280	480				
300	510				
375	650				
450	750				

Notes: ¹⁾ 80, 100 and 125 amp refers to Din-T10H type.

²⁾ Electronic TemBreak MCCB only.

DOL table is based on holding 125 % FLC continuously and 600 % FLC for at least 20 seconds.

Din-T MCBs are calibrated to IEC 60898 Curve 'C' & 'D'. Selected sizes of 'D' Curve are available from stock refer NHP.

Motor circuit application table for DOL fire pump starting duty

ZS250		ZS630	S800CJ	
S160			S800NJ	
H160			S800RJ	
L160	ZS400	ZS630	S800NE	
S250	E400	E630	S800RE	
E250	S400	S630	H800NE	S1000NE
H250	H400	XH630	ZS800	S1250NE/1250
L250	L400	XS630	XS800NJ	XS1250SE
			XH800SE	/1000
			XS800SE	
160				
160				
250	250			
250	250			
	400			
	400			
	400	630		
	400	630		
	400	630		
	400 ²⁾	630		
		630	800	
		630	800	
		630	800	
			800	
			800	
			800 ²⁾	1000
				1000

Motor starting table for DOL starting at 1000 V AC 50 Hz

Motor Size (kW)	Full Load Current Amperes (A)	MCCB	Voltage (V)
0.37-10	0.4-7.5	VS125NJ 20	1000
11.0	9.0	VS125NJ 20	1000
15-18.5	12-14.5	VS125NJ 32	1000
22-33	17-23	VS125NJ 50	1000
37-50	28-38	VS125NJ 50	1000
55-80	40-57	VS125NJ 63	1000
90-110	65-78	VS125NJ 100	1000
150	102	VS125NJ 160	1000
185-220	138-160	VS125NJ 250	1000
220-500	160-350	XV400NE/400K	1000



Sprecher + Schuh
1000 V CA 6 Contactor
 (Refer Part A for more information)

Rated outputs and standard values for rated operational currents of standard squirrel-cage motors

3 phase 4 pole 50/60 Hz motors ^{1) 2)}

kW ¹⁾	hp	230 V	400 -415 V	690 V	1000 V	1100 V
		A	A	A	A	A
0.18	0.3	1.2	0.6	0.4	0.3	0.24
0.37	0.5	1.95	1.1	0.6	0.4	0.4
0.55	0.75	2.7	1.5	0.9	0.6	0.56
0.75	1	3.2	1.8	1.2	1.0	0.7
1.1	1.5	4.6	2.6	1.6	1.1	0.92
1.5	2	6.3	3.4	2.1	1.5	1.3
2.2	3	9	4.8	2.9	2	1.85
3	4	12	6.5	4	2.7	2.5
4	5.5	15.5	8.2	5	3.4	3.2
4.5	6	17	9	5.7	4.4	3.5
5.5	7.5	20	11	6.6	6	4.3
7.5	10	27	14	9	7	5.6
10	13.5	36	19	12	7.6	7.5
11	15	39	21	13	9	8
15	20	52	28	17	12.1	10.5
18.5	25	63	34	22	15	13
22	30	75	40	25	18	15.5
25	35	83	46	28	22	18
30	40	100	55	35	23	21
37	50	122	65	40	27	25
45	60	147	80	49	34	30
55	75	180	100	59	42	37
75	100	240	130	79	54	50
90	125	290	155	95	66	60
110	150	350	200	114	80	73
132	180	410	225	135	90	85
160	220	500	270	160	117	105
185	250	570	325	185	135	120
200	270	625	361	200	150	130
220	300	675	380	220	160	142
250	340	775	430	250	200	160
280	380	830	480	280	225	180
300	410	920	505	300	235	195
315	430	980	535	315	240	200
375	500	1150	650	375	270	240
400	545	1225	665	400	290	255
475	645	1450	780	465	335	300
500	680	–	820	495	360	320
560	750	–	920	570	390	350
600	800	–	1000	610	420	390
670	900	–	1100	680	470	430
750	1000	–	1250	770	530	490
900	1200	–	1470	930	650	600

Notes: Refer to 9 - 46 for footnotes

Rated outputs and standard values for rated operational currents of standard squirrel-cage motors

Single phase motors

kW ¹⁾	hp	230 V
		A
0.37	0.5	4
0.55	0.75	5
0.75	1	6.3
1.1	1.5	9
1.5	2	12
1.8	2.5	15
2.2	3	18
3	4	23
4	5	28
5.5	7.5	41
6	8	42
7.5	10	52

- Notes:** ¹⁾ Standard values for standard squirrel-cage motors: Rated operational currents for motors with n = 1500 RPM (4 pole), possible deviation +_ 10 % depending on type and manufacturer, +_ 50 % for small motors. Deviation of rated operational currents for motors with other speeds (greater deviations for smaller motors):
 With n = 3000 rpm
 (2 pole): -2 %...-10 %
 With n = 1000 rpm
 (6 pole): +2 %...+10 %
 With n = 750 rpm
 (8 pole): +5 %...+20 %
- ²⁾ The power factor is usually around 0.8, but this varies with the size and speed of the motor.
 Efficiency ranges from 85 % in small motors to 90 % and over for large motors.

TemBreak MCCB clearance requirements at 380/415 V

Clearance requirements for MCCBs (phase to phase and earth).

When MCCBs are called upon to interrupt large short-circuits, ionised gas and arcing material is expelled from the vents, usually at the top of the MCCB.

This ionised gas is highly conductive and is also at an elevated temperature when it exits the MCCB via the arc vents. Care must be taken to avoid an arcing fault occurring due to the presence of the ionised gas.

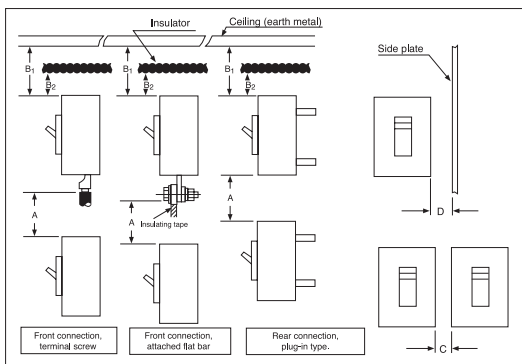
Therefore, incoming conductors must be insulated right up to the terminal opening of the MCCB. This also applies to the attached busbars supplied as a proprietary part with the MCCB.

Proprietary type interpole barriers may be used to achieve creepage and clearance requirements.

Conductors must not impede the flow of ionised gas.

Insulating distance from Line-End for 380/415 V

When earth metal is installed within proximity of the breakers the correct insulating distance must be maintained. This distance is necessary to allow the exhausted arc gases to disperse.



WARNING:

EXPOSED CONDUCTORS INCLUDING TERMINALS AT ATTACHED BUSBARS MUST BE INSULATED TO AVOID POSSIBLE SHORT-CIRCUITING OR EARTHING DUE TO FOREIGN MATTER COMING INTO CONTACT WITH THE CONDUCTORS.

Notes: When using the terminal bar (optional), the specified insulating distance must be maintained.

All dimensions in mm.

When earthed metal is installed within proximity of the breakers the correct insulating distance must be maintained (refer to Table 1 over the page). This distance is necessary to allow the exhausted arc gases to disperse.

TemBreak MCCB clearance requirements at 380/415 V

Insulation distance in mm (at 440 V AC Maximum) ¹⁾

TemBreak 2 MCCBs

Table 1 below illustrates the minimum clearance that must be maintained

- A Distance from lower breaker to open charging part of terminal on upper breaker (front connection) or the distance from lower breaker to upper breaker end (rear connection and plug-in type)
- B1 Distance from breaker end to ceiling (earthed metal)
- B2 Distance from breaker end to insulator
- C Clearance between breakers
- D Distance from breaker side to side plate (earthed metal)

Cat. No.	Type	A	B1	B2	C	D
E125	NJ	50	10	10	0	25
S125	NF	50	10	10	0	25
S125	NJ	50	10	10	0	25
S125	GJ	75	45	25	0	25
ZS125	GJ	75	45	25	0	25
H125	NJ	100	80	60	0	50
L125	NJ	100	80	60	0	50
S160	NF	50	40	30	0	25
S160	NJ	50	40	30	0	25
S160	GJ	100	80	60	0	25
H160	NJ	100	80	60	0	50
L160	NJ	100	80	60	0	50
E250	NJ	50	40	30	0	25
S250	NJ	50	40	30	0	25
S250	GJ	100	80	30	0	25
ZS250	GJ	100	80	30	0	25
S250	PE	100	80	60	0	50
H250	NJ	100	80	60	0	50
H250	NE	100	80	60	0	50
L250	NJ	100	80	60	0	50
E400	NJ	100	80	40	0	30
S400	CJ	100	80	40	0	30
S400	NJ	100	80	40	0	30
S400	GJ	100	80	40	0	30
S400	GE/ PE	100	80	40	0	30
H400	NJ	120	120	80	0	80
H400	NE	120	120	80	0	80
L400	NJ	120	120	80	0	80
L400	NE	120	120	80	0	80
E630	NE	120	100	80	0	80
S630	CE	120	100	80	0	80
S630	GE	120	100	80	0	80

Notes: ¹⁾ Insulate the exposed conductor until it overlaps the moulded case at the terminal, or the terminal cover. All dimensions in mm.

TemBreak MCCB clearance requirements at 380/415 V

Insulation distance in mm (at 440 V AC Maximum) ¹⁾

This table is valid for 380/415 V – TemBreak 1 MCCBs

Table below illustrates the minimum clearance that must be maintained

- A Distance from lower breaker to open charging part of terminal on upper breaker (front connection) or the distance from lower breaker to upper breaker end (rear connection and plug-in type)
- B1 Distance from breaker end to ceiling (earthed metal)
- B2 Distance from breaker end to insulator
- C Clearance between breakers
- D Distance from breaker side to side plate (earthed metal)

MCCB type	A	B1	B2	C	D
XM30PB	30	10	10	0	25
XH125NJ	75	45	25	0	25
XS250NJ	80	60	30	0	25
XH250NJ	100	60	30	0	25
XS400NJ XH400SE	100	70	40	0	30
XS630NJ XS630SE XS800NJ XS800SE	120	70	40	0	30
XH630SE XH800SE XH800PE	150	80	50	0	40
XS1250SE	150	70	40	0	30
XH630PJ XH800PJ XS1600SE XS2000NE XS2500NE	150	150	100	0	100

Notes: ¹⁾ Insulate the exposed conductor until it overlaps the moulded case at the terminal, or the terminal cover. All dimensions in mm.

Electrical formulae

– For obtaining kW, kVA, HP, and Amperes

Wanted	Alternating Current			
	Single-phase	Two-phase	Three-phase	Direct current
		Four-wire		
Kilowatts	$\frac{I \times E \times PF}{1000}$	$\frac{I \times E \times 2 \times PF}{1000}$	$\frac{I \times E \times 1.73 \times PF}{1000}$	$\frac{I \times E}{1000}$
kVA	$\frac{I \times E}{1000}$	$\frac{I \times E \times 2}{1000}$	$\frac{I \times E \times 1.73}{1000}$	$\frac{I \times E}{1000}$
Horse-power	$\frac{I \times E \times \% \text{ Eff.}}{\frac{x PF}{746}}$	$\frac{I \times E \times 2 \times \% \text{ Eff.} \times PF}{746}$	$\frac{I \times E \times 1.73 \times \% \text{ Eff.}}{\frac{x PF}{746}}$	$\frac{I \times E \times \% \text{ Eff.}}{746}$
Amperes from kVA	$\frac{kVA \times 1000}{E}$	$\frac{kVA \times 1000}{2 \times E}$	$\frac{kVA \times 1000}{1.73 \times E}$	$\frac{kVA \times 1000}{E}$

TemBreak

Electronic OCR adjustment setting

Configuring the STANDARD Over current relay

The standard TemBreak 2 OCR can be configured allowing the user to adjust the rated current (I_{Rated}) of the MCCB and select a predetermined tripping curve. This allows the user to tailor the MCCBs tripping characteristics to suit the requirements of the electrical load.

Setting the rated current

The TemBreak 2 MCCB OCR rated current is adjustable from 40 % - 100 % of the nominal rated current (I_n). The dial is adjustable in increments. It is not infinitely adjustable between setting indicators. This is a desirable feature where the demand of the protected electrical load increases over time. As the load demand increases, the rating of the breaker can be adjusted accordingly to meet the system requirements. For example, an S250PE TemBreak 2 MCCB can be configured to operate with an expected load of 125 A. The OCR can be set by rotating the rated current I_R (A) selector switch to '0.5'. This has the effect of setting the rated current of the S250PE to $I_{Rated} = I_n (250 \text{ A}) \times I_R (0.5) = 125 \text{ A}$.



Notes: Additional setting and options information can be found in the 2010 - 2011 Part C catalogue.

TemBreak

Electronic OCR adjustment setting

Curve selection

The predetermined curve characteristic dial on TemBreak 2 MCCBs simplifies the OCR tripping settings by reducing the number of often misunderstood variables that need to be specified. This enables users of various technical abilities to set the OCR to match the required electrical load and service application. For example if an electrical contractor was required to configure a 5400 A TemBreak 2 MCCB for use in a three phase Squirrel-cage motor application, curve 5 would be the correct setting as for most applications it provides class 10 general purpose motor protection.

Curve types provided as standard on TemBreak 2 electronic MCCBs:

250 A and 400 A MCCBs: 7 selectable curves 16 A – 400 A

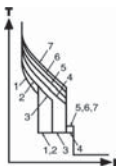
630 A: 6 selectable curves 252 A – 630 A (Curve type 7 not available)

800 - 1600 A 7 selectable curves 630 A - 1600 A.

Although each of the curves can be said to be targeted towards particular applications, the use of the curves can be extended to any other use where that curve suits. For example, curve 1 is ideal for many generator applications, though curve 1 can also be used for any other application that suits the curve.

General applications by curve type:

	Primary Application	Short circuit (SC)/ motor start type	Application 2	Application 3
Curve 1	Generator protection	Low level SC	Heating, resistive loads	Long cable runs
Curve 2	Generator protection	Low level SC	General, heating, resistive	Long cable runs
Curve 3	General distribution	Med. level SC	Long cable runs	Lighting
Curve 4	General distribution	Std. level SC	Various motor starting	Lighting
Curve 5	Motor start - standard run up time	Class 10	Transformers	Lighting
Curve 6	Motor start - longer run up time	Class 20	Capacitor switching	Lighting
Curve 7	Motor start - extra run up time	Class 30	Capacitor switching	-



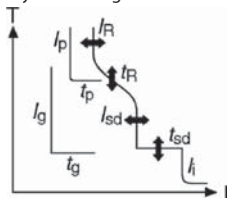
Notes: Curve 4 is the MCCB factory default setting for new MCCBs out of the box.

TemBreak

Electronic OCR adjustment setting

Curve comparison

The predetermined curve characteristic dial on TemBreak 2 MCCBs enables easy OCR configuration to match the electrical characteristics of the load.



Tabular representation

Curve selection dial ONLY








Characteristic curve selection dial position	LTD (sec)		STD Characteristics		
	200 % overload	600 % overload	In < 630 A	In ≥ 630 A	Delay (sec)
1	11	–	$2.5 \times I_R$	$2.5 \times I_R$	0.1
2	21	–	$2.5 \times I_R$	$2.5 \times I_R$	0.1
3	21	–	$5 \times I_R$	$5 \times I_R$	0.1
4	53	5	$10 \times I_R$	$8 \times I_R$	0.1
5	108	10	$10 \times I_R$	$8 \times I_R$	0.2
6	200	19	$10 \times I_R$	$8 \times I_R$	0.2
7	308	29 (Not applicable for 630 A)	$10 \times I_R$	$8 \times I_R$	0.2

I_R Selection dial position	I_R Selection dial ONLY INST (A)		Optional features		
	$I_n < 630 A$	$I_n > 630 A$			
0.40	$14 \times I_R$	$14 \times I_R$	PTA Pre Trip Alarm	$I_D \times I_R$	0.8
0.50	$14 \times I_R$	$14 \times I_R$		t_p (sec)	40
0.63	$14 \times I_R$	$14 \times I_R$	GFT Ground Fault Trip	$I_g \times I_n$	0.2
0.80	$14 \times I_R$	$10 \times I_R$		t_g (sec)	0.2
0.85	$14 \times I_R$	$10 \times I_R$	NP Neutral rotation	$I_N \times I_n$	1
0.90	$14 \times I_R$	$10 \times I_R$		t_N (sec)	$t_N = t_R \cdot 1.2$
0.95	$13 \times I_R$	$10 \times I_R$			
1.00	$13 \times I_R$	$10 \times I_R$			

- Notes:**
- The standard setting of I_n is 100 % of I_n . For any other setting, specify when ordering.
 - When neutral pole protection is installed the breaker must be set at 100 % of its I_n rating for the neutral protection to function. For other settings contact NHP.

TemBreak

Optional Functions

Curve	Application	Description	LTD	STD
1	Generator / heating / resistive loads (LOW short cct level) 	The characteristic curve features faster tripping times during overload situations & low level short circuit faults.	Fastest tripping time during an overload	Fastest tripping time during a low level short circuit
2	General distribution (LOW short cct level) 	Sharing the same short circuit tripping time characteristics as curve 1, curve 2 has greater tolerance to allow for overloads caused by small inrush currents.	Intermediate tripping time during an overload	Fastest tripping time during a low level short circuit
3	General distribution (MEDIUM short cct level) 	Featuring a shallower overload time trip curve and higher short circuit current protection characteristics than curve 2, curve 3 allows greater tolerance during overload and short circuit conditions.	Intermediate tripping time during an overload	Intermediate tripping time during a low level short circuit
4	General distribution (HIGH short cct level) 	Featuring a shallower overload time trip curve and a higher short circuit current protection characteristic than curve 3.	Slow tripping time during an overload	Slow tripping time (high tolerance) during a low level short circuit
5	Motor Protection Class 10 	Class 10 protection requires the overload detection element to trip the breaker in 10 seconds or less when a current of 600 % of its rated current is experienced. Use - general purpose motor applications, hermetic motors and submersible pumps.	Slow tripping time during an overload	Slow tripping time (high tolerance) during a low level short circuit
6	Motor Protection Class 20 	Class 20 protection requires the overload detection element to trip the breaker in 20 seconds or less when a current of 600 % of its rated current is experienced. Use - motors with difficult starting conditions.	Slow tripping time during an overload	Slow tripping time (high tolerance) during a low level short circuit
7	Motor Protection Class 30 	Class 30 protection requires the overload detection element to trip the breaker in 30 seconds or less when a current of 600 % of its rated current is experienced. Use - motors with difficult starting conditions that are driving high inertia loads.	Slowest tripping time during an overload	Slowest tripping time (high tolerance) during a low level short circuit

TemBreak

Optional functions

Pre-Trip Alarm (PTA)

An LED and volt-free output contact are activated after a time delay, $t_{p'}$ if the load current exceeds the preset threshold, I_p . The default time delay, t_p is set to 40 seconds and the load current threshold, $I_{p'}$ is 80% of the rated current.

For example a S250PE TemBreak 2 MCCB with a I_{Rated} setting of 125 A would have a pre-trip alarm threshold of $I_p (0.8) \times I_{Rated} (125) = 100$ A.

Ground Fault Trip (GF)

This function trips the MCCB after a time delay, t_g if the ground fault current exceeds the preset threshold, I_g . Ground fault protection can be enabled and disabled by operating a DIP switch on the OCR. The default time delay, t_g is set to 0.2 seconds and the load current threshold, I_g is 20 % of the nominal current.

For example, an S400GE TemBreak 2 MCCB with a nominal current (I_n) 400 A would have a ground fault trip threshold of $I_g (0.2) \times I_n (400 \text{ A}) = 80$ A.

When 3 pole GF MCCBs are used, a 4th neutral pole CT will be required. Refer MCCB accessories. 4 pole GF MCCBs do not require a 4th CT as the neutral pole protection CT is used. As a general note, 4 wire systems are used in Australia and New Zealand, and this is why a 4th CT is required for 3 and 4 pole applications.

The MCCB OCR facia showing GFT option below. A DIP switch allows the GFT to be switched OFF or ON, while a 'pick up' LED indicates that the 20 % of rated current activation point for GFT has been reached.



Neutral Protection (NP)

Neutral protection trips the MCCB after a time delay, t_N if the current in the neutral conductor exceeds the nominal current rating, I_N , of the MCCB. The time delay characteristic is identical to that of the overload time delay characteristic, therefore $t_N = t_R$. The load current threshold, I_N is 100 % of the nominal current.

For example a S250PE A TemBreak 2 MCCB with a nominal current, I_n , of 250 A would have neutral protection threshold of $I_N (1.0) \times I_n (250) = 250$ A.

TemBreak Optional functions

Option ordering

Optional functions must be specified at the time of order. Options can be selected by identifying the appropriate 'code' from the table below and appending this code after the MCCB type designation. For example, to select a 4 pole, 400 AF MCCB, front connect, with a nominal current (I_n) of 250 A, featuring a Pre-Trip Alarm (P) option the correct description would be: Cat. No. example: **S400GE3 AP 400** 3 Pole: with the pre-trip alarm option

Optional Functions

I_n	Poles	Code	Ground Fault (GF)	Neutral Protection (NP)	Pre-Trip Alarm (PTA)
250 A	3	AP	-	-	Yes
	4	AP	-	-	Yes
	4	AN	-	Yes	-
	4	APN	-	Yes	Yes
400 A	3	AP	-	-	Yes
	3	AG	Yes	-	-
	3	APG	Yes	-	Yes
	4	AP	-	-	Yes
	4	AN	-	Yes	-
	4	APN	-	Yes	Yes
630 - 1600 A	4	AGN	Yes	Yes	-
	3	AP	-	-	Yes
	3	AG	Yes	-	-
	3	APG	Yes	-	Yes
	4	AP	-	-	Yes
	4	AN	-	Yes	-
	4	APN	-	Yes	Yes
	4	AGN	Yes	Yes	-

TemBreak

Example 1: Generator Protection, Curve 1

Compared to a transformer, a generator has a limited short circuit capacity (say 4 times the full load rating). Therefore to avoid possible damage to the generator it is desirable to select a tripping characteristic curve that accommodates a generator's limitations.

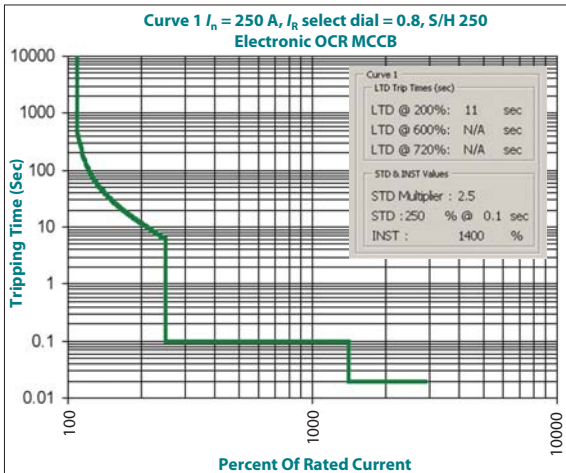
When configured for use in a generator application the characteristic curve features faster tripping times during overload situations and low level short circuit faults.

From the curve below, an S250 TemBreak 2 MCCB with a rated current of I_n (250 A) $\times I_R$ (0.8) = 200 A features:

- Approximate trip time of 11 seconds during a 200 % of rated current (400 A) overload
- Approximate trip time of 0.1 seconds during a 250 % of rated current (500 A) low level short circuit
- Instantaneous (no intentional delay) threshold of 1400 % of rated current (2800 A).



Generator Protection



Notes: The above curves are worked examples for an electronic MCCB with a 250 A rated overcurrent relay (OCR). The same curve and setting data will also apply to TemBreak 2 MCCBs with other ampere ratings.

TemBreak

Example 2: General Feeder LOW SCP, Curve 2

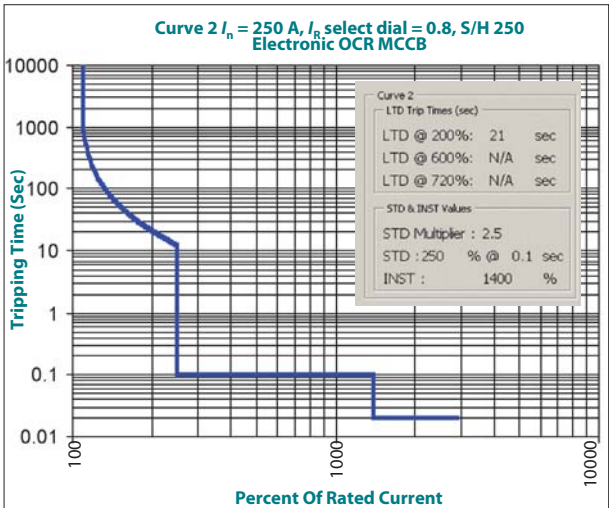
Sharing the same short circuit tripping time characteristics as the generator protection curve, the General Feeder LOW SCP curve 2 has greater tolerance to allow for overloads caused by small inrush currents.

From the curve below, an S250 TemBreak 2 MCCB with a rated current of I_N (250 A) $\times I_R$ (0.8) = 200 A features:

- Approximate trip time of 21 seconds during a 200 % of rated current (400 A) overload
- Approximate trip time of 0.1 seconds during a 250 % of rated current (500 A) low level short circuit
- Instantaneous (no intentional delay) threshold of 1400 % of rated current (2800 A).



General Feeder LOW SCP (SCP = Short circuit protection)



9

Notes: The above curves are worked examples for an electronic MCCB with a 250 A rated overcurrent relay (OCR). The same curve and setting data will also apply to TemBreak 2 MCCBs with other ampere ratings.

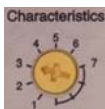
TemBreak

Example 3: General Feeder MEDIUM SCP, Curve 3

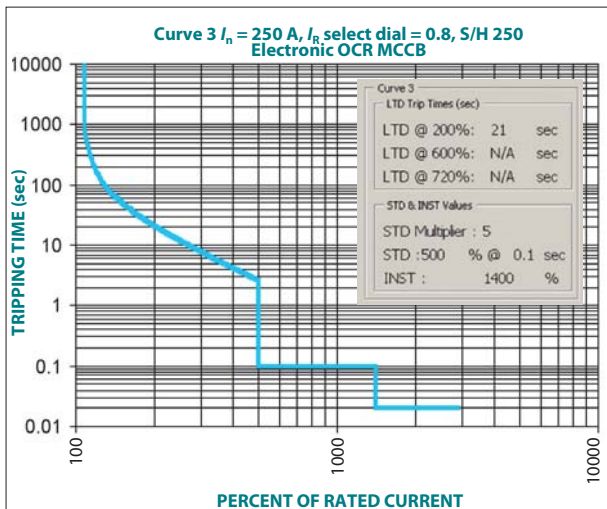
Featuring a shallower overload time trip curve and higher short circuit current protection characteristics than curve 2, curve 3 allows greater tolerance during overload and short circuit conditions.

From the curve below, an S250 TemBreak 2 MCCB with a rated current of I_n (250 A) $\times I_R$ (0.8) = 200 A features:

- Approximate trip time of 21 seconds during a 200 % of rated current (400 A) overload
- Approximate trip time of 0.1 seconds during a 500 % of rated current (1000 A) low level short circuit
- Instantaneous (no intentional delay) threshold of 1400 % of rated current (2800 A).



General Feeder MEDIUM SCP



Notes: The above curves are worked examples for an electronic MCCB with a 250 A rated overcurrent relay (OCR). The same curve and setting data will also apply to TemBreak 2 MCCBs with other ampere ratings.

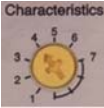
TemBreak

Example 4: General Feeder HIGH SCP, Curve 4

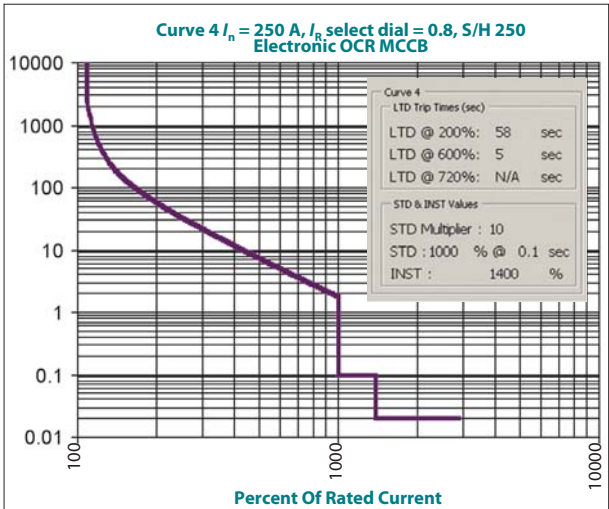
This curve contains a shallower overload time trip curve and a higher short circuit current protection characteristic compared to the previous curve 3.

From the curve below an S250 TemBreak 2 MCCB with a rated current of I_n (250 A) $\times I_R$ (0.8) = 200 A features:

- Approximate trip time of 58 seconds during a 200 % of rated current (400 A) overload
- Approximate trip time of 5 seconds during a 600 % of rated current (1200 A) overload
- Approximate trip time of 0.1 seconds during a 1000 % of rated current (2000 A) low level short circuit
- Instantaneous (no intentional delay) threshold of 1400 % of rated current (2800 A).



General Feeder HIGH SCP



9

Notes: The above curves are worked examples for an electronic MCCB with a 250 A rated overcurrent relay (OCR). The same curve and setting data will also apply to TemBreak 2 MCCBs with other ampere ratings.

TemBreak

Example 5: Motor Protection Class 10, Curve 5

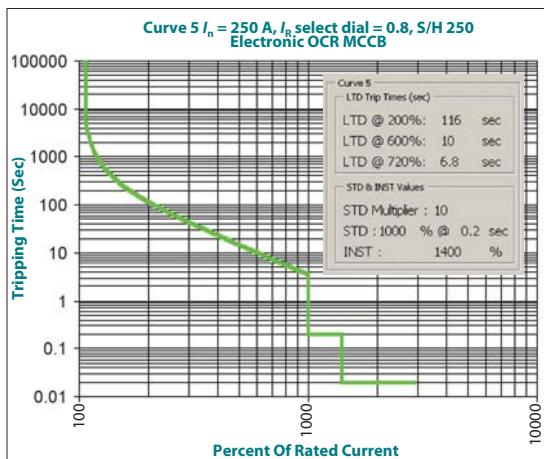
Class 10 protection requires the overload detection element to trip the breaker in 10 seconds or less when a current of 600 % of its rated current is experienced. Class 10 protection is commonly used for general purpose motor applications, hermetic motors and submersible pumps.

From the curve below an S250 TemBreak 2 MCCB with a rated current of I_n (250 A) $\times I_R$ (0.8) = 200 A features:

- Approximate trip time of 116 seconds during a 200 % of rated current (400 A) overload
- Approximate trip time of 10 seconds during a 600 % of rated current (1200 A) overload
- Approximate trip time of 6.8 seconds during a 720 % of rated current (1440 A) overload
- Approximate trip time of 0.2 seconds during a 1000 % of rated current (2000 A) low level short circuit
- Instantaneous (no intentional delay) threshold of 1400 % of rated current (2800 A).



Motor Protection Class 10



Notes: The above curves are worked examples for an electronic MCCB with a 250 A rated overcurrent relay (OCR). The same curve and setting data will also apply to TemBreak 2 MCCBs with other ampere ratings.

TemBreak

Example 6: Motor Protection Class 20, Curve 6

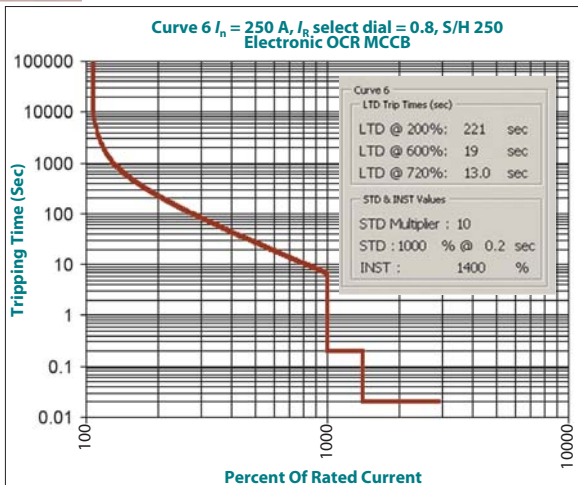
Class 20 protection requires the overload detection element to trip the breaker in 20 seconds or less when a current of 600 % of its rated current is experienced. Class 20 protection is typically reserved for motors with difficult starting conditions.

From the curve below an S250 TemBreak 2 MCCB with a rated current of I_n (250 A) $\times I_R$ (0.8) = 200 A features:

- Approximate trip time of 221 seconds during a 200 % of rated current (400 A) overload
- Approximate trip time of 19 seconds during a 600 % of rated current (1200 A) overload
- Approximate trip time of 13 seconds during a 720 % of rated current (1440 A) overload
- Approximate trip time of 0.2 seconds during a 1000 % of rated current (2000 A) low level short circuit
- Instantaneous (no intentional delay) threshold of 1400 % of rated current (2800 A).



Motor Protection Class 20



Notes: The above curves are worked examples for an electronic MCCB with a 250 A rated overcurrent relay (OCR). The same curve and setting data will also apply to TemBreak 2 MCCBs with other ampere ratings.

TemBreak

Example 7: Motor Protection Class 30, Curve 7

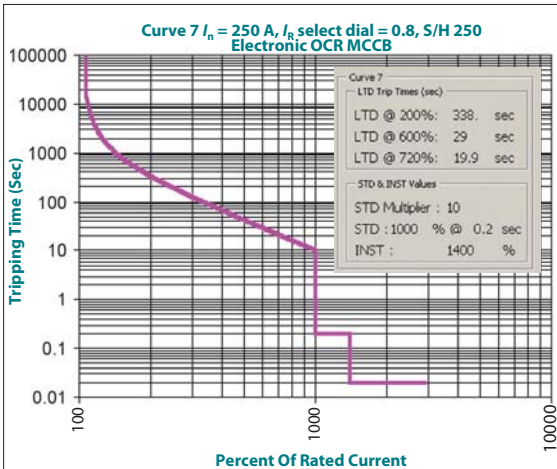
Class 30 protection requires the overload detection element to trip the breaker in 30 seconds or less when a current of 600 % of its rated current is experienced. Class 30 protection is typically reserved for motors with difficult starting conditions that are driving high inertia loads.

From the curve below an S250 TemBreak 2 MCCB with a rated current of I_n (250 A) $\times I_R$ (0.8) = 200 A features:

- Approximate trip time of 338 seconds during a 200 % of rated current (400 A) overload
- Approximate trip time of 29 seconds during a 600 % of rated current (1200 A) overload
- Approximate trip time of 19.9 seconds during a 720 % of rated current (1440 A) overload
- Approximate trip time of 0.2 seconds during a 1000 % of rated current (2000 A) low level short circuit
- Instantaneous (no intentional delay) threshold of 1400 % of rated current (2800 A).



Motor Protection Class 30



Notes: The above curves are worked examples for an electronic MCCB with a 250 A rated overcurrent relay (OCR). The same curve and setting data will also apply to TemBreak 2 MCCBs with other ampere ratings.

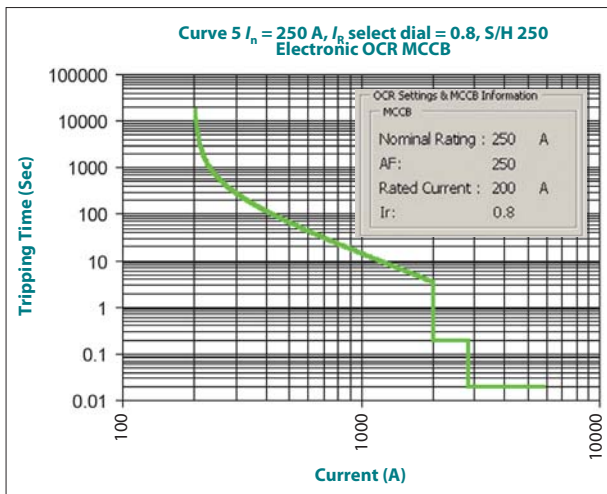
TemBreak

Example 8: Setting the Rated Current IR (A) Adjustment

The rated current value of the breaker can be adjusted from 40 % to 100 % of its nominal value. In this example an S250 TemBreak 2 MCCB OCR is initially set with a rated current of $I_n (250 \text{ A}) \times I_R (0.8) = 200 \text{ A}$.



Rated Current



9

Notes: See also example next page.

The above curves are worked examples for an electronic MCCB with a 250 A rated overcurrent relay (OCR). The same curve and setting data will also apply to TemBreak 2 MCCBs with other ampere ratings.

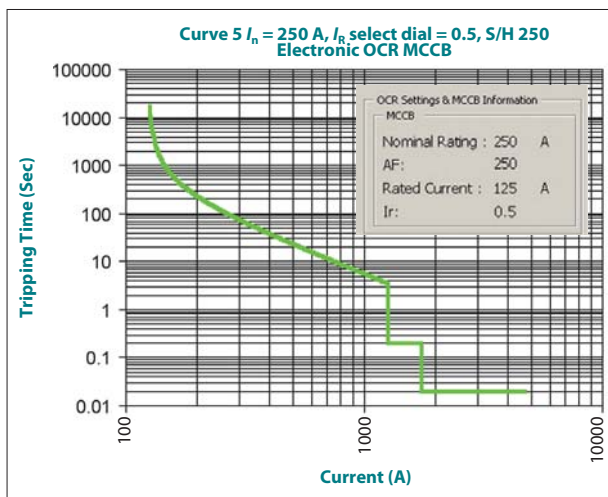
TemBreak

Example 9: Setting the Rated Current IR (A) Adjustment

The next example shows the OCR being set at '0.5' of I_R (A). This has the effect of changing the rated current of the breaker to I_n (250 A) $\times I_R$ (0.5) = 125 A . This change can be clearly seen in the curve movement.



Rated Current



Notes: The above curves are worked examples for an electronic MCCB with a 250 A rated overcurrent relay (OCR). The same curve and setting data will also apply to TemBreak 2 MCCBs with other ampere ratings.

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NHP

INTEGRAL EARTH LEAKAGE MCCBs

The innovative ZS earth leakage MCCB from Terasaki offers machine or personnel protection within a standard 125 A or 250 A MCCB frame size.

POWER PROTECTION



The ZS earth leakage MCCB offers the following features and options:

- Thermal magnetic MCCB
- 125 A or 250 A frame
- 65 kA as standard
- 3 or 4 pole types
- Adjustable thermal-curve dial
- Trip unit ratings: 12 A – 250 A
- 30, 100, 300, 500 mA, 1 A, 3 A settings
- 30 mA setting is non-adjustable, for near instant trip
- 0 sec to 700 ms selectable (100 mA – 3 A)
- Will fit existing XA, XB, XC Chassis
- Complies with AS2081:2011
- Yellow TEST button
- Green 'Power ON' LED
- 'No Trip' dial setting
- Remote trip function standard
- Harmonic inhibition standard

TemBreak

TERASAKI
Innovators in Protection Technology

REFER TO NHP FOR NEW
400 A - 800 A ZS SIZES

Terasaki MCCB Old Vs New cross reference

Amps	kA	TO/TG/TT MCCB	OCR type	Base current adj.	TempBreak Cat.No.	TempBreak Plus Cat.No.	2009/10 Tem- Break 2 & Tem- Break 1 com- bined range	400 V AC rat- ings kA
12.5-125	18	TO100BA	Adj. therm. fixed mag.	63-100 %	XS125CJ	-	E125NJ	25
12.5-125	30	TO100BH	Adj. therm. fixed mag.	63-100 %	XS125NJ	-	S125NJ	36
12.5-125	50	TG100B	Adj. therm. fixed mag.	63-100 %	XH125NJ¹⁾	-	S125GJ	65
125-225	18	TO225CB	Fixed therm. fixed mag.	Fixed	XE225NS	-	E250NJ	25
100-160 160-250	35	TO225BA	Adj. therm. fixed mag.	63-100 %	XS250NJ¹⁾	-	S160NJ S250NJ	36
100-160 160-250	50	TG225B	Adj. therm. fixed mag.	63-100 %	XH250NJ¹⁾	-	S160GJ S250GJ	65
160-250 250-400	35	TO400BA	Adj. therm. fixed mag.	63-100 %	XS400CJ	-	S400CJ	36
160-250 250-400	50	TG400B	Adj. therm. adj. mag.	63-100 %	XS400NJ¹⁾	-	S400NJ	50
125-250 200-400	50	TTE400	Electronic LSI	50-100 %	XS400NE	XS400SE	S400SE	50
125-250 200-400	65	TTE400	Electronic LSI	50-100 %	XH400NE	XH400SE¹⁾	S400GE	70
250-400 400-630	45	TO600BA	Adj. therm. adj. mag.	63-100 %	XS630CJ	-	XS630NJ	50
250-400 400-630	65	TG600B	Adj. therm. adj. mag.	63-100 %	XS630NJ¹⁾	-	XS630NJ	50
315-630	50	TTE630	Electronic	50-100 %	XS630NE	XS630SE¹⁾	S630CE	50
315-630	65	TTE630	Electronic	50-100 %	XH630NE	XH630SE¹⁾	S630GE	70
500-800	65	TO800BA	Adj. therm. adj. mag.	63-100 %	XS800NJ¹⁾	-	XS800NJ	50
500-800	85	TG800B	Adj. therm. adj. mag.	63-100 %	XS1250NE	XS1250SE¹⁾	XS1250SE	85
400-800	50	TTE800	Electronic	50-100 %	XS800NE	XS800SE¹⁾	XS800SE	50
400-800	65	TTE800	Electronic	50-100 %	XH800NE	XH800SE¹⁾	XH800SE	65
630- 1250	85	TO1000B TO1200B	Electronic	50-100 %	XS1250NE	XS1250SE¹⁾	XS1250SE	85
800- 1600	100	TO1600B	Electronic	50-100 %	XS1600NE	XS1600SE¹⁾	XS1600SE	100
1000- 2000	100	TTE2000 TO2000	Electronic	50-100 %	XS2000NE	- ¹⁾	XS2000NE	85
1250- 2500	100	TO2500	Electronic	50-100 %	XS2500NE	- ¹⁾	XS2500NE	85
1600- 3200	100	TO3200	Electronic	50-100 %	-	2009	XS3200NE	85
Introduction date:		1982	-	-	1990	2000	2006/07	

Notes: ¹⁾ Stocked

Earth Leakage Relay and Circuit Breaker based RCD device applications

Amongst the users of various earth leakage devices, there is sometimes confusion between the correct application of the more sophisticated adjustable earth leakage relays and circuit breaker RCCB or RCBO devices. It is necessary therefore to define the correct use of earth leakage devices covering the areas of general industrial equipment protection, personnel protection and their use in applications, such as in mining.

Din-Safe Relays, TZS Relays, and the new RD Series Relay



RD3A relay



TZS relay

1. Equipment Protection

Terasaki Earth Leakage relays are suitable for earth fault protection of equipment and limitation of touch voltages where automatic disconnection of supply is required.

Typically this is achieved by shunt tripping another protective device such as an upstream circuit breaker.

Earth leakage relays are used in particular where ground (earth) fault detection is required

or the Fault Loop Impedance is of such a level that the over-current device (circuit breaker) does not achieve automatic disconnection within the times prescribed in the Wiring Rules.

2. Personnel Protection

Earth leakage relays are NOT suitable for personnel protection against direct contact as specified in the Wiring Rules, e.g. for socket outlets and lighting circuits. For these applications an RCD (10 mA or 30 mA) must comply with the relevant standards (AS 3190, AS/NZS 61008 or AS/NZS 61009) and be approved by the relevant authorities. Terasaki earth leakage relays are not designed to meet the requirements of this approval.

For personnel protection Safe-T and Din-T devices such as the ELR relay, SRCB, SAFETRCB6, DSRCD, DSRCB, DSRCM & DSRCBH are all suitable. These are approved devices and meet the relevant standards.

Circuit breaker based RCD devices



Earth Leakage Relay and Circuit Breaker based RCD device applications

3. Mining Protection

Terasaki Earth Leakage Relays are suitable for mining applications, with the exception of coal and shale mine applications as governed by AS 2081:2011 - Electrical Equipment for coal and shale mines: "Earth Leakage protection for use on earth-fault current limited systems (IT systems)".

This is because Terasaki Earth Leakage Relays are not designed to comply with certain technical requirements of the above mining standard.

Terasaki Earth Leakage Relays that DO comply with AS 2081.3 and the DSRM72 relay.






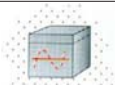
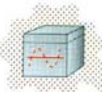
Circuit breaker based 10 mA and 30 mA RCD devices do not need to comply with AS 2081.3, as this standard accepts devices that meet the personnel protection standards: AS 3190, AS/NZS 61008 or AS/NZS 61009. As such the following Safe-T and Din-T devices are suitable: ELR relay, SRCB, SAFETRCB6, DSRCD, DSRCB, DSRCM & DSRCBH.

ZS earth leakage MCCBs also comply with the standard AS 2081:2011.

Protection grades against contact and foreign bodies - Ingress Protection (IP)



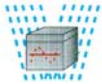


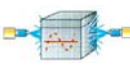



First Number Protection against solid objects

IP Tests

0		No protection.
1		Protected against solid objects up to 50 mm. (e.g. accidental touch by hands).
2		Protected against solid objects up to 12 mm (e.g. fingers).
3		Protected against solid objects over 2.5 mm (tools + small wires).
4		Protected against solid objects over 1 mm (tools + small wires).
5		Protected against dust - limited ingress permitted (no harmful deposit).
6		Totally protected against dust.

First Number Protection against solid objects

IP Tests

0		No protection.
1		Protected against vertical falling drops of water.
2		Protected against direct sprays of water up to 15° from the vertical.
3		Protected against spray of water up to 60° from the vertical.
4		Protected against water sprayed from all directions - limited ingress permissible.
5		Protected against low pressure jets of water from all directions - limited ingress permissible.
6		Protected against strong jets of water e.g. for use on shipdecks - limited ingress permissible.
7		Protected against the effects of immersion between 15 cm and 1 m.
8		Protected against long periods of immersion under pressure.

A quarterly NHP publication, the NHP technical news features a wide range of application and design criteria for the motor control, power distribution and numerous other product fields. Copies can be issued on request. NHP Technical news ranges from 4 to 8 pages.



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2. Contactors: Parallel/series connection, non standard frequencies
3. Contactors: Failure to open or close, flashover, coil burnout
4. Soft starters: Motor starting, loads, electronic soft starters
5. MCCB overcurrent relay types and applications
6. Contactors: AC and DC control
7. Fault Levels: At the point of supply and reducing factors – bars, cables etc.
8. IP ratings: Definition and applications
9. AC-1 to AC-23 (AC types only)
10. VSDs: Loads, Dynamic resistor and DC injection braking
11. Thermal and electronic overloads
12. Contactors: Operating curves and contact inspection
13. Slip ring motors, liquid resistance types and applications
14. DC contactor arc design, arcing and connection options
15. Selecting the right kind of motor starter for an application
16. AC, DC lamps, types and applications
17. Surge causes and diverters
18. PLCs: Control, mathematics, inputs and outputs
19. Conventional types and contactors with electronic coils
20. Enclosures and temperature rise
21. Electro-magnetic interference (EMI)
22. The need for safety, sensors, E stops and other devices
23. Torque and motor starters
24. Power Factor: Electricity supply degradation and solutions
25. Safety, RCD operating speed, and applications
26. Terminations: Control circuit Temp. rise, vibration, corrosion, developments
27. Switchboards: Design, venting, earthing, fault containment, control equipment
28. Electrical Equip: Ambient temp, current, voltage, impulse, ins ratings
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I	2A1788DAA	6 - 12	NT20138	
	2A2272BAB	6 - 37	NT20138	
I	2A3308DAA	6 - 27	NT20138	
I	2A3308DBA	6 - 27	NT20138	
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	2H...TBA	3 - 120	NT20138	
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I	2H1193CAB	6 - 36	NT20138	
	2H1194CAB	6 - 36	NT30141	
	2H1195CAB	6 - 36	NT30141	
	2H1197BAA	6 - 35	NT30141	
	2H1198BAA	6 - 35	NT30141	
I	2H1199BAA	6 - 35	NT30141	
	2H1200BAA	6 - 35	NT30141	
I	2H1201BAA	6 - 35	NT30141	
I	2H1202BAA	6 - 35	NT30141	
I	2H1203BAB	6 - 35	NT30141	
I	2H1204BAA	6 - 35	NT30141	
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	2H1931BBA	3 - 22	NT20138	
	2H1931BCA	3 - 22	NT20138	
I	2H1931BDA	3 - 22	NT20138	
	2H1931BEA	3 - 22	NT20138	
I	2H1932BAD	3 - 22	NT20138	
	2H1932BBA	3 - 22	NT20138	
	2H1932BDA	3 - 22	NT20138	
	2H1932BGA	3 - 22	NT20138	
	2H1932BHA	3 - 22	NT20138	
	2H1956BAA	6 - 11	NT30141	
	2H1959DAB	6 - 36	NT30141	
I	2H1959DBB	6 - 36	NT30141	
	2H1960DAA	6 - 36	NT20138	
I	2H1960DBA	6 - 36	NT30141	
	2H2012DAB	6 - 11	NT20138	
I	2H2012DBB	6 - 11	NT20138	
	2H4218SAA	5 - 36	NT20138	
	2H4219SAA	5 - 36	NT20138	
	2H4220SAA	5 - 36	NT20138	
	2H4221SAB	5 - 36	NT20138	
	2H4221SAB	5 - 36	NT20138	
	2H4222SAB	5 - 36	NT20138	
	2H4222SAB	5 - 36	NT20138	
	2H4223SAB	5 - 36	NT20138	
	2H4223SAB	5 - 36	NT20138	
	2H4224SAB	5 - 36	NT20138	
	2H4227SAB	5 - 36	NT20138	
	2H4227SAB	5 - 36	NT20138	
	2H4227SAB	5 - 36	NT20138	
	2H4227SAB	5 - 36	NT20138	
	2H4277SAB	5 - 36	NT20138	
	2H4299SAA	5 - 36	NT20138	
	2H4299SAA	5 - 36	NT20138	
	2H4299SAA	5 - 36	NT20138	
	2H4299SAA	5 - 36	NT20138	
	2H4300SAA	5 - 36	NT20138	
	2H4300SAA	5 - 36	NT20138	
	2H4300SAA	5 - 36	NT20138	
	2H4307SAA	5 - 36	NT20138	
	2H4307SAA	5 - 36	NT20138	
	2H4307SAA	5 - 36	NT20138	

CAT. NO.	PAGE	P.S.	PRICE \$
2H4308SAA	5 - 36	NT20138	
2H4308SAA	5 - 36	NT20138	
2H4308SAA	5 - 36	NT20138	
2H4322SAB	5 - 36	NT20138	
2H4324SAA	5 - 36	NT20138	
2H4645SAB	5 - 36	NT20138	
2H4648SAB	5 - 36	NT20138	
2H4650SAC	5 - 36	NT20138	
2H4650SAC	5 - 36	NT20138	
2H4653SAB	5 - 36	NT20138	
2H4653SAB	5 - 36	NT20138	
2H5153SAB	5 - 36	NT20138	
2H5153SAB	5 - 36	NT20138	
2H5153SAB	5 - 36	NT20138	
2H5153SAB	5 - 36	NT20138	
2H5153SAB	5 - 36	NT20138	
2H5153SAB	5 - 36	NT20138	
2H5153SAB	5 - 36	NT20138	
2H5154SAA	5 - 36	NT20138	
2H5155SAA	5 - 36	NT20138	
2H5161SAB	5 - 36	NT20138	
2H5161SAB	5 - 36	NT20138	
2H5162SAA	5 - 36	NT20138	
2H5331SAA	5 - 36	NT20138	
2H5364SAC	5 - 36	NT20138	
2H5364SAC	5 - 36	NT20138	
2H5365SAB	5 - 36	NT20138	
2H5365SAB	5 - 36	NT20138	
2H6198SAA	5 - 36	NT20138	
I 2H6843CAB	3 - 147	NT20138	
I 2H6844CAB	3 - 147	NT20138	
I 2H6845CAA	3 - 147	NT20138	
I 2H6846CAA	3 - 147	NT20138	
I 2H6847CAAK	3 - 147	NT20138	
I 2H6848CAAK	3 - 147	NT20138	
2H6871SAA	5 - 36	NT20138	
2H6872SAA	5 - 36	NT20138	
2H6873SAA	5 - 36	NT20138	
I 2H6940CAB	3 - 147	NT20138	
I 2H6940CBA	3 - 147	NT20138	
I 2H6941CAB	3 - 147	NT20138	
I 2H6941CBA	3 - 147	NT20138	
2H6959CAA1	3 - 120	NT20138	
2H6959CAA1	3 - 146	NT20138	
2H6959CBA1	3 - 120	NT20138	
2H6959CBA1	3 - 146	NT20138	
2H6972SAA	5 - 36	NT20138	
2H6973SAA	5 - 36	NT20138	
I 2H7234CAAK	3 - 147	NT20138	
I 2H7235CAAK	3 - 147	NT20138	

Valid until August 2014

I Available on indent only.

A Assembled to order.

	CAT. NO.	PAGE	P.S.	PRICE \$
3				
	305.00001	2 - 50	NT40143	
	392.00001	2 - 57	NT40143	
	392.00002	2 - 57	NT40143	
	392.35554	2 - 57	NT40143	
	392.35555	2 - 57	NT40143	
7				
I	7AB 2D11B	6 - 8	NT20138	
I	7KB 3BA	6 - 8	NT20138	
I	7MB 3BA1	6 - 8	NT20138	
	7RC 2LE	6 - 8	NT20138	
	7T1ST	1 - 9	NT10136	
I	7T 2M1	6 - 8	NT20138	
	7T2ST	1 - 9	NT10136	
I	7UF 2D5B	6 - 8	NT20138	
	7UF 2D6B	6 - 8	NT20138	
I	7UF 2D7B	6 - 8	NT20138	
I	7UF 2FD1	6 - 8	NT20138	
I	7UF 2FD2	6 - 8	NT20138	
	7VF 2M1	6 - 8	NT20138	
	7VF 2M2-B	6 - 8	NT20138	
I	7VF 2M6	6 - 8	NT20138	
I	7VF 2M7	6 - 8	NT20138	
	7XA 2D31B	6 - 8	NT20138	
	7XA 2D41B	6 - 8	NT20138	
I	7YD3	6 - 8	NT20138	
A				
	A1000 0010	7 - 44	NB20067	
	A2000 0010	7 - 44	NB20067	
I	A2000 0020	7 - 44	NB20067	
	ALR	5 - 28	NT30141	
	ALR	5 - 29	NT30141	
	ANU1AC200	7 - 8	NZ00150	
	ARACBTRUCK	7 - 8	NZ00150	
	ARAGR21BMANUAL	7 - 6	NZ00150	
	ARAGR31BMANUAL	7 - 6	NZ00150	
A	ARB2123STD	7 - 4	NT40143	
A	ARB2163STD	7 - 4	NT40143	
A	ARB2203STD	7 - 4	NT40143	
A	ARB3253STD	7 - 4	NT40143	
A	ARB3323STD	7 - 4	NT40143	
A	ARB4403STD	7 - 4	NT40143	
A	ARC2123HHSTD	7 - 5	NT40143	
A	ARC2123HVSTD	7 - 5	NT40143	
A	ARC2123VHSTD	7 - 5	NT40143	
A	ARC2123VVSTD	7 - 5	NT40143	
A	ARC2203HHSTD	7 - 5	NT40143	
A	ARC2203HVSTD	7 - 5	NT40143	
A	ARC2203VHSTD	7 - 5	NT40143	

	CAT. NO.	PAGE	P.S.	PRICE \$
A	ARC2203VVSTD	7 - 5	NT40143	
A	ARC3323HHSTD	7 - 5	NT40143	
A	ARC3323HVSTD	7 - 5	NT40143	
A	ARC3323VHSTD	7 - 5	NT40143	
A	ARC3323VVSTD	7 - 5	NT40143	
A	ARC4403VVSTD	7 - 5	NT40143	
I A	ARCOMMSMOD2ETH	7 - 30	NZ00150	
I A	ARCOMMSMODDEV	7 - 30	NZ00150	
I A	ARCOMMSMODPRO	7 - 30	NZ00150	
I A	ARTEMPOWERACK	7 - 33	NZ00150	
B				
I A	BH6S633	5 - 10	NZ00150	
I A	BH6S644	5 - 10	NZ00150	
I A	BH8S833	5 - 10	NZ00150	
I A	BH8S844	5 - 10	NZ00150	
I A	BS12S1033	5 - 10	NZ00150	
I A	BS12S1044	5 - 10	NZ00150	
I A	BS12S1233	5 - 10	NZ00150	
I A	BS12S1244	5 - 10	NZ00150	
I A	BS16S1633	5 - 10	NZ00150	
I A	BS16S1644	5 - 10	NZ00150	
I A	BS20E2033	5 - 10	NZ00150	
I A	BS20E2044	5 - 10	NZ00150	
I A	BS25E2533	5 - 10	NZ00150	
I A	BS25E2544	5 - 10	NZ00150	
I A	BS6N433	5 - 10	NZ00150	
I A	BS6N444	5 - 10	NZ00150	
I A	BS6N633	5 - 10	NZ00150	
I A	BS6N644	5 - 10	NZ00150	
I A	BS6S633	5 - 10	NZ00150	
A	BS8N833	5 - 10	NZ00150	
I A	BS8N844	5 - 10	NZ00150	
I A	BS8S833	5 - 10	NZ00150	
I A	BS8S844	5 - 10	NZ00150	
A	BTSS16GJ16033	5 - 7	NT20138	
I A	BTSS16GJ16034	5 - 8	NT20138	
I A	BTSS16GJ16044	5 - 7	NT20138	
I A	BTSS16GJ16044	5 - 7	NT20138	
I A	BTSS16NJ10033	5 - 7	NT20138	
A	BTSS16NJ16033	5 - 7	NT20138	
I A	BTSS16NJ6333	5 - 7	NT20138	
I A	BTSS1GJ10033	5 - 7	NT20138	
I A	BTSS1GJ10034	5 - 8	NT20138	
I A	BTSS1GJ10044	5 - 7	NT20138	
I A	BTSS1GJ10044	5 - 7	NT20138	
A	BTSS1GJ12533	5 - 7	NT20138	
I A	BTSS1GJ12534	5 - 8	NT20138	
I A	BTSS1GJ12544	5 - 7	NT20138	
I A	BTSS1GJ12544	5 - 7	NT20138	

Valid until August 2014

I Available on indent only.

A Assembled to order.

	CAT. NO.	PAGE	P.S.	PRICE \$
I A	BTSS1GJ6333	5 - 7	NT20138	
I A	BTSS1GJ6344	5 - 7	NZ00150	
I A	BTSS1GJ6344	5 - 7	NZ00150	
I A	BTSS1NJ10033	5 - 7	NT20138	
A	BTSS1NJ12533	5 - 7	NT20138	
I A	BTSS1NJ6333	5 - 7	NT20138	
A	BTSS2GJ25033	5 - 7	NT20138	
I A	BTSS2GJ25034	5 - 8	NT20138	
I A	BTSS2GJ25043	5 - 8	NT20138	
I A	BTSS2GJ25044	5 - 7	NT20138	
I A	BTSS2GJ25044	5 - 7	NT20138	
A	BTSS2NJ25033	5 - 7	NT20138	
I A	BTSS2PE12533	5 - 7	NT20138	
A	BTSS2PE25033	5 - 7	NT20138	
I A	BTSS2PE25044	5 - 7	NT20138	
I A	BTSS4GE25033	5 - 7	NT20138	
I A	BTSS4GE40033	5 - 7	NT20138	
I A	BTSS4GE40044	5 - 7	NT20138	
I A	BTSS4GJ25033	5 - 7	NT20138	
I A	BTSS4GJ25044	5 - 7	NT20138	
A	BTSS4GJ40033	5 - 7	NT20138	
I A	BTSS4GJ40034	5 - 8	NT20138	
I A	BTSS4GJ40043	5 - 8	NT20138	
I A	BTSS4GJ40044	5 - 7	NT20138	
I A	BTSS4NE25033	5 - 7	NT20138	
A	BTSS4NE25044	5 - 7	NT20138	
I A	BTSS4NE40033	5 - 7	NT20138	
I A	BTSS4NE40044	5 - 7	NT20138	
I A	BTSS4NJ25033	5 - 7	NT20138	
I A	BTSS4NJ25044	5 - 7	NT20138	
A	BTSS4NJ40033	5 - 7	NT20138	
I A	BTSS4NJ40034	5 - 8	NT20138	
I A	BTSS4NJ40044	5 - 7	NT20138	
A	BTSS6CE63033	5 - 7	NT20138	
I A	BTSS6CE63034	5 - 8	NT20138	
I A	BTSS6CE63044	5 - 7	NT20138	
A	BTSS6GE63033	5 - 7	NT20138	
I A	BTSS6GE63044	5 - 7	NT20138	
C				
	CA81210110VAC	1 - 56	NA10007	
	CA81210240VAC	1 - 56	NA10007	
	CA8121024VAC	1 - 56	NA10007	
	CA81210415VAC	1 - 56	NA10007	
	CA8510110VAC	1 - 56	NA10007	
	CA8510240VAC	1 - 56	NA10007	
	CA851024VAC	1 - 56	NA10007	
	CA8510415VAC	1 - 56	NA10007	
	CA8910110VAC	1 - 56	NA10007	
	CA8910240VAC	1 - 56	NA10007	

CAT. NO.	PAGE	P.S.	PRICE \$
CA891024VAC	1 - 56	NA10007	
CA8910415VAC	1 - 56	NA10007	
CA891048VAC	1 - 56	NA10007	
CD212/183U	2 - 65	NT40143	
CD218/183U	2 - 65	NT40143	
CD224/183U	2 - 65	NT40143	
CD230/183U	2 - 65	NT40143	
CD236/183U	2 - 65	NT40143	
CD242/183U	2 - 65	NT40143	
CD248/183U	2 - 65	NT40143	
A CD250CKT2	2 - 31	NT40143	
A CD250CKT2	2 - 51	NT40143	
CD250TOPC	2 - 51	NT40143	
CD250TOPC	2 - 66	NT40143	
CD254/183U	2 - 65	NT40143	
CD260/183U	2 - 65	NT40143	
CD272/183U	2 - 65	NT40143	
CD278/183U	2 - 65	NT40143	
CD284/183U	2 - 65	NT40143	
CD296/183U	2 - 65	NT40143	
I CD312/183U	2 - 66	NT40143	
CD318/183U	2 - 66	NT40143	
CD324/183U	2 - 66	NT40143	
I CD330/183U	2 - 66	NT40143	
CD336/183U	2 - 66	NT40143	
CD342/183U	2 - 66	NT40143	
CD348/183U	2 - 66	NT40143	
I CD354/183U	2 - 66	NT40143	
CD360/183U	2 - 66	NT40143	
CD372/183U	2 - 66	NT40143	
I CD378/183U	2 - 66	NT40143	
CD384/183U	2 - 66	NT40143	
CD396/183U	2 - 66	NT40143	
I A CDG 24G2	2 - 24	NT40143	
I A CDG 24M160G2	2 - 24	NT40143	
I A CDG 24M160O2	2 - 25	NT40143	
CDG 24M250G2	2 - 24	NT40143	
CDG 24M250O2	2 - 25	NT40143	
I A CDG 24O2	2 - 25	NT40143	
I A CDG 36G2	2 - 24	NT40143	
I A CDG 36M160G2	2 - 24	NT40143	
I A CDG 36M160O2	2 - 25	NT40143	
I A CDG 36M250G2	2 - 24	NT40143	
I A CDG 36M250O2	2 - 25	NT40143	
I A CDG 36O2	2 - 25	NT40143	
I A CDG 48G2	2 - 24	NT40143	
I A CDG 48M160G2	2 - 24	NT40143	
I A CDG 48M160O2	2 - 25	NT40143	
I A CDG 48M250G2	2 - 24	NT40143	

Valid until August 2014

I Available on indent only.

A Assembled to order.

	CAT. NO.	PAGE	P.S.	PRICE \$
I A	CDG 48M250O2	2 - 25	NT40143	
I A	CDG 48O2	2 - 25	NT40143	
I A	CDG 60G2	2 - 24	NT40143	
I A	CDG 60M160G2	2 - 24	NT40143	
	CDG 60M160O2	2 - 25	NT40143	
I A	CDG 60M250G2	2 - 24	NT40143	
I A	CDG 60M250O2	2 - 25	NT40143	
I A	CDG 60O2	2 - 25	NT40143	
I A	CDG 72G2	2 - 24	NT40143	
I A	CDG 72M250G2	2 - 24	NT40143	
I A	CDG 72M250O2	2 - 25	NT40143	
I A	CDG 72O2	2 - 25	NT40143	
I A	CDG 84G2	2 - 24	NT40143	
I A	CDG 84M250G2	2 - 24	NT40143	
I A	CDG 84M250O2	2 - 25	NT40143	
I A	CDG 84O2	2 - 25	NT40143	
I A	CDG 96G2	2 - 24	NT40143	
I A	CDG 96M250G2	2 - 24	NT40143	
	CDG 96M250O2	2 - 25	NT40143	
I A	CDG 96O2	2 - 25	NT40143	
	CDH312/3027/183U	2 - 66	NT40143	
	CDH312/4227/183U	2 - 66	NT40143	
	CDH312/6027/183U	2 - 66	NT40143	
	CDH36/1227/183U	2 - 66	NT40143	
	CDH36/2427/183U	2 - 66	NT40143	
	CDH36/3627/183U	2 - 66	NT40143	
I A	CDM36M160G	2 - 26	NT40143	
I A	CDM48M160G	2 - 26	NT40143	
I A	CDM60M160G	2 - 26	NT40143	
I A	CDM60M250G	2 - 26	NT40143	
I A	CDM72M250G	2 - 26	NT40143	
I A	CDM84M250G	2 - 26	NT40143	
I A	CDM96M250G	2 - 26	NT40143	
I A	CDMRFD250AG6	2 - 26	NT40143	
I A	CDMRFG	2 - 26	NT40143	
I A	CDMRFSM250AG6	2 - 26	NT40143	
A	CDT160MS	2 - 51	NT40143	
	CDT 18G2	2 - 18	NT40143	
	CDT 18M160G2	2 - 18	NT40143	
A	CDT 18M160O2	2 - 19	NT40143	
	CDT 18M250G2	2 - 18	NT40143	
	CDT 18M250O2	2 - 19	NT40143	
A	CDT 18O2	2 - 19	NT40143	
	CDT 24G2	2 - 18	NT40143	
	CDT 24M160G2	2 - 18	NT40143	
A	CDT 24M160O2	2 - 19	NT40143	
	CDT 24M250G2	2 - 18	NT40143	
	CDT 24M250O2	2 - 19	NT40143	
A	CDT 24MCCB160G2	2 - 22	NT40143	

CAT. NO.	PAGE	P.S.	PRICE \$
A CDT 24MCCB200G2	2 - 22	NT40143	
A CDT 24O2	2 - 19	NT40143	
A CDT250MS	2 - 51	NT40143	
CDT 36G2	2 - 18	NT40143	
CDT 36M160G2	2 - 18	NT40143	
A CDT 36M160O2	2 - 19	NT40143	
A CDT 36M250G2	2 - 18	NT40143	
A CDT 36M250O2	2 - 19	NT40143	
A CDT 36O2	2 - 19	NT40143	
A CDT 42MCCB160G2	2 - 22	NT40143	
A CDT 42MCCB200G2	2 - 22	NT40143	
CDT 48G2	2 - 18	NT40143	
CDT 48M160G2	2 - 18	NT40143	
A CDT 48M160O2	2 - 19	NT40143	
A CDT 48M250G2	2 - 18	NT40143	
A CDT 48M250O2	2 - 19	NT40143	
A CDT 48O2	2 - 19	NT40143	
A CDT 60G2	2 - 18	NT40143	
A CDT 60M160G2	2 - 18	NT40143	
CDT 60M160O2	2 - 19	NT40143	
A CDT 60M250G2	2 - 18	NT40143	
A CDT 60M250O2	2 - 19	NT40143	
A CDT 60MCCB160G2	2 - 22	NT40143	
A CDT 60MCCB200G2	2 - 22	NT40143	
A CDT 60O2	2 - 19	NT40143	
A CDT 72G2	2 - 18	NT40143	
A CDT 72M250G2	2 - 18	NT40143	
A CDT 72M250O2	2 - 19	NT40143	
A CDT 72O2	2 - 19	NT40143	
A CDT78MCCB160G2	2 - 22	NT40143	
A CDT78MCCB200G2	2 - 22	NT40143	
A CDT 84G2	2 - 18	NT40143	
A CDT 84M250G2	2 - 18	NT40143	
A CDT 84M250O2	2 - 19	NT40143	
A CDT 84O2	2 - 19	NT40143	
A CDT 96G2	2 - 18	NT40143	
A CDT 96M250G2	2 - 18	NT40143	
CDT 96M250O2	2 - 19	NT40143	
A CDT 96MCCB160G2	2 - 22	NT40143	
A CDT 96MCCB200G2	2 - 22	NT40143	
A CDT 96O2	2 - 19	NT40143	
A CDTE18G2	2 - 20	NT40143	
A CDTE18M160G2	2 - 20	NT40143	
A CDTE18M160O2	2 - 21	NT40143	
A CDTE18M250G2	2 - 20	NT40143	
A CDTE18M250O2	2 - 21	NT40143	
A CDTE18O2	2 - 21	NT40143	
A CDTE36G2	2 - 20	NT40143	
A CDTE36M160G2	2 - 20	NT40143	

Valid until August 2014

I Available on indent only.

A Assembled to order.

	CAT. NO.	PAGE	P.S.	PRICE \$
A	CDTE36M160O2	2 - 21	NT40143	
A	CDTE36M250G2	2 - 20	NT40143	
A	CDTE36M250O2	2 - 21	NT40143	
A	CDTE36O2	2 - 21	NT40143	
A	CDTE48G2	2 - 20	NT40143	
A	CDTE48M160G2	2 - 20	NT40143	
A	CDTE48M160O2	2 - 21	NT40143	
A	CDTE48M250G2	2 - 20	NT40143	
A	CDTE48M250O2	2 - 21	NT40143	
A	CDTE48O2	2 - 21	NT40143	
A	CDTE72G2	2 - 20	NT40143	
A	CDTE72M160G2	2 - 20	NT40143	
A	CDTE72M160O2	2 - 21	NT40143	
A	CDTE72M250G2	2 - 20	NT40143	
A	CDTE72M250O2	2 - 21	NT40143	
A	CDTE72O2	2 - 21	NT40143	
A	CDTE96G2	2 - 20	NT40143	
A	CDTE96M160G2	2 - 20	NT40143	
A	CDTE96M160O2	2 - 21	NT40143	
A	CDTE96M250G2	2 - 20	NT40143	
A	CDTE96M250O2	2 - 21	NT40143	
A	CDTE96O2	2 - 21	NT40143	
	CE4DT 14A2	1 - 42	NY80146	
	CE4DT 14A6	1 - 42	NY80146	
	CEN24	2 - 29	NT40143	
	CEN24	2 - 48	NT40143	
	CEN36	2 - 29	NT40143	
	CEN36	2 - 48	NT40143	
	CEN48	2 - 29	NT40143	
	CEN48	2 - 48	NT40143	
	CEN60	2 - 29	NT40143	
	CEN60	2 - 48	NT40143	
	CEN72	2 - 29	NT40143	
	CEN72	2 - 48	NT40143	
	CEN84	2 - 29	NT40143	
	CEN84	2 - 48	NT40143	
	CEN96	2 - 29	NT40143	
	CEN96	2 - 48	NT40143	
	CLSBB125033	5 - 34	NT30141	
I	CLSBB125044	5 - 34	NT30141	
	CLSBB63033	5 - 34	NT30141	
	CLSBB63044	5 - 34	NT30141	
	CLTD	5 - 28	NT30141	
	CLTD	5 - 29	NT30141	
A	CON 24 M160 G	2 - 15	NT40143	
A	CON 24 M160 O	2 - 15	NT40143	
A	CON 24 M250 G	2 - 15	NT40143	
I	A CON 24 M250 O	2 - 15	NT40143	
A	CON 36 M160 G	2 - 15	NT40143	

	CAT. NO.	PAGE	P.S.	PRICE \$
A	CON 36 M160 O	2 - 15	NT40143	
A	CON 36 M250 G	2 - 15	NT40143	
I	A CON 36 M250 O	2 - 15	NT40143	
A	CON 48 M160 G	2 - 15	NT40143	
A	CON 48 M160 O	2 - 15	NT40143	
A	CON 48 M250 G	2 - 15	NT40143	
I	A CON 48 M250 O	2 - 15	NT40143	
A	CON 60 M160 G	2 - 15	NT40143	
A	CON 60 M160 O	2 - 15	NT40143	
A	CON 60 M250 G	2 - 15	NT40143	
I	A CON 60 M250 O	2 - 15	NT40143	
	CONFK1	2 - 16	NT40143	
	CONFK2	2 - 16	NT40143	
I	CONFK3	2 - 16	NT40143	
I	CONFK4	2 - 16	NT40143	
	COTD	5 - 29	NT30141	
A	CPACC24G2	2 - 29	NT40143	
	CPACC48G2	2 - 29	NT40143	
	CPACC72G2	2 - 29	NT40143	
A	CPACCS1GE2	2 - 29	NT40143	
A	CPACCS2GE2	2 - 29	NT40143	
A	CPACCS3GE2	2 - 29	NT40143	
A	CPACCS4GE2	2 - 29	NT40143	
A	CPACCS5GE2	2 - 29	NT40143	
A	CPACCS6GE2	2 - 29	NT40143	
A	CPACCSHG2	2 - 29	NT40143	
	CPACCSHGE2	2 - 29	NT40143	
	CPACCSOG2	2 - 29	NT40143	
	CPACCSOGE2	2 - 29	NT40143	
	CPBFK1	2 - 30	NT40143	
	CPBFK2	2 - 30	NT40143	
	CPBFK3	2 - 30	NT40143	
	CPBFK4	2 - 30	NT40143	
	CPBFK5	2 - 30	NT40143	
I	CPBFK6	2 - 30	NT40143	
	CPBGTS1	2 - 29	NT40143	
	CPBGTS1	2 - 48	NT40143	
	CPBGTS2	2 - 29	NT40143	
	CPBGTS2	2 - 48	NT40143	
	CPBGTS3	2 - 29	NT40143	
	CPBGTS3	2 - 48	NT40143	
	CPBGTS4	2 - 29	NT40143	
	CPBGTS4	2 - 48	NT40143	
	CPBGTS6	2 - 29	NT40143	
	CPBGTS6	2 - 48	NT40143	
	CPBGTSH	2 - 29	NT40143	
	CPBGTSH	2 - 48	NT40143	
	CPBMN	2 - 57	NT40143	
	CPBS250	2 - 31	NT40143	

Valid until August 2014

I Available on indent only.

A Assembled to order.

	CAT. NO.	PAGE	P.S.	PRICE \$
A	CPD 18G	2 - 34	NT40143	
	CPD 18G2	2 - 40	NT40143	
	CPD 18M160G	2 - 34	NT40143	
	CPD 18M160G2	2 - 40	NT40143	
	CPD 18M160O	2 - 35	NT40143	
	CPD 18M160O2	2 - 41	NT40143	
	CPD 18M160SS	2 - 36	NT40143	
	CPD 18M160SS2	2 - 42	NT40143	
	CPD 18M250G	2 - 34	NT40143	
	CPD 18M250G2	2 - 40	NT40143	
	CPD 18M250O	2 - 35	NT40143	
	CPD 18M250O2	2 - 41	NT40143	
	CPD 18M250SS	2 - 36	NT40143	
	CPD 18M250SS2	2 - 42	NT40143	
A	CPD 18O	2 - 35	NT40143	
	CPD 18O2	2 - 41	NT40143	
A	CPD 18SS	2 - 36	NT40143	
	CPD 18SS2	2 - 42	NT40143	
A	CPD 24G	2 - 34	NT40143	
	CPD 24G2	2 - 40	NT40143	
A	CPD 24M160G	2 - 34	NT40143	
	CPD 24M160G2	2 - 40	NT40143	
	CPD 24M160O	2 - 35	NT40143	
	CPD 24M160O2	2 - 41	NT40143	
	CPD 24M160SS	2 - 36	NT40143	
	CPD 24M160SS2	2 - 42	NT40143	
	CPD 24M250G	2 - 34	NT40143	
	CPD 24M250G2	2 - 40	NT40143	
	CPD 24M250O	2 - 35	NT40143	
	CPD 24M250O2	2 - 41	NT40143	
	CPD 24M250SS	2 - 36	NT40143	
	CPD 24M250SS2	2 - 42	NT40143	
A	CPD 24O	2 - 35	NT40143	
	CPD 24O2	2 - 41	NT40143	
A	CPD 24SS	2 - 36	NT40143	
	CPD 24SS2	2 - 42	NT40143	
A	CPD 36G	2 - 34	NT40143	
	CPD 36G2	2 - 40	NT40143	
	CPD 36M160G	2 - 34	NT40143	
	CPD 36M160G2	2 - 40	NT40143	
	CPD 36M160O	2 - 35	NT40143	
	CPD 36M160O2	2 - 41	NT40143	
	CPD 36M160SS	2 - 36	NT40143	
	CPD 36M160SS2	2 - 42	NT40143	
	CPD 36M250G	2 - 34	NT40143	
	CPD 36M250G2	2 - 40	NT40143	
	CPD 36M250O	2 - 35	NT40143	
	CPD 36M250O2	2 - 41	NT40143	
	CPD 36M250SS	2 - 36	NT40143	

	CAT. NO.	PAGE	P.S.	PRICE \$
	CPD 36M250SS2	2 - 42	NT40143	
A	CPD 36O	2 - 35	NT40143	
	CPD 36O2	2 - 41	NT40143	
A	CPD 36SS	2 - 36	NT40143	
	CPD 36SS2	2 - 42	NT40143	
A	CPD 48G	2 - 34	NT40143	
	CPD 48G2	2 - 40	NT40143	
	CPD 48M160G	2 - 34	NT40143	
	CPD 48M160G2	2 - 40	NT40143	
	CPD 48M160O	2 - 35	NT40143	
	CPD 48M160O2	2 - 41	NT40143	
	CPD 48M160SS	2 - 36	NT40143	
	CPD 48M160SS2	2 - 42	NT40143	
A	CPD 48M250G	2 - 34	NT40143	
	CPD 48M250G2	2 - 40	NT40143	
	CPD 48M250O	2 - 35	NT40143	
	CPD 48M250O2	2 - 41	NT40143	
	CPD 48M250SS	2 - 36	NT40143	
	CPD 48M250SS2	2 - 42	NT40143	
A	CPD 48M300G	2 - 39	NT40143	
A	CPD 48M400G	2 - 39	NT40143	
A	CPD 48MCCB300G	2 - 39	NT40143	
A	CPD 48O	2 - 35	NT40143	
	CPD 48O2	2 - 41	NT40143	
A	CPD 48SS	2 - 36	NT40143	
	CPD 48SS2	2 - 42	NT40143	
A	CPD 60G	2 - 34	NT40143	
	CPD 60G2	2 - 40	NT40143	
	CPD 60M160G	2 - 34	NT40143	
	CPD 60M160G2	2 - 40	NT40143	
	CPD 60M160O	2 - 35	NT40143	
	CPD 60M160O2	2 - 41	NT40143	
I A	CPD 60M160SS	2 - 36	NT40143	
	CPD 60M160SS2	2 - 42	NT40143	
	CPD 60M250G	2 - 34	NT40143	
	CPD 60M250G2	2 - 40	NT40143	
	CPD 60M250O	2 - 35	NT40143	
	CPD 60M250O2	2 - 41	NT40143	
I A	CPD 60M250SS	2 - 36	NT40143	
	CPD 60M250SS2	2 - 42	NT40143	
A	CPD 60M300G	2 - 39	NT40143	
A	CPD 60M400G	2 - 39	NT40143	
A	CPD 60MCCB300G	2 - 39	NT40143	
A	CPD 60O	2 - 35	NT40143	
	CPD 60O2	2 - 41	NT40143	
I A	CPD 60SS	2 - 36	NT40143	
	CPD 60SS2	2 - 42	NT40143	
A	CPD 72G	2 - 34	NT40143	
	CPD 72G2	2 - 40	NT40143	

Valid until August 2014

I Available on indent only.

A Assembled to order.

	CAT. NO.	PAGE	P.S.	PRICE \$
	CPD 72M250G	2 - 34	NT40143	
	CPD 72M250G2	2 - 40	NT40143	
	CPD 72M250O	2 - 35	NT40143	
	CPD 72M250O2	2 - 41	NT40143	
I A	CPD 72M250SS	2 - 36	NT40143	
	CPD 72M250SS2	2 - 42	NT40143	
A	CPD 72M300G	2 - 39	NT40143	
A	CPD 72M400G	2 - 39	NT40143	
A	CPD 72MCCB300G	2 - 39	NT40143	
A	CPD 72O	2 - 35	NT40143	
	CPD 72O2	2 - 41	NT40143	
I A	CPD 72SS	2 - 36	NT40143	
	CPD 72SS2	2 - 42	NT40143	
A	CPD 84G	2 - 34	NT40143	
	CPD 84G2	2 - 40	NT40143	
	CPD 84M250G	2 - 34	NT40143	
	CPD 84M250G2	2 - 40	NT40143	
	CPD 84M250O	2 - 35	NT40143	
	CPD 84M250O2	2 - 41	NT40143	
I A	CPD 84M250SS	2 - 36	NT40143	
	CPD 84M250SS2	2 - 42	NT40143	
A	CPD 84M300G	2 - 39	NT40143	
A	CPD 84M400G	2 - 39	NT40143	
A	CPD 84MCCB300G	2 - 39	NT40143	
A	CPD 84O	2 - 35	NT40143	
	CPD 84O2	2 - 41	NT40143	
I A	CPD 84SS	2 - 36	NT40143	
	CPD 84SS2	2 - 42	NT40143	
A	CPD 96G	2 - 34	NT40143	
	CPD 96G2	2 - 40	NT40143	
	CPD 96M250G	2 - 34	NT40143	
	CPD 96M250G2	2 - 40	NT40143	
	CPD 96M250O	2 - 35	NT40143	
	CPD 96M250O2	2 - 41	NT40143	
I A	CPD 96M250SS	2 - 36	NT40143	
	CPD 96M250SS2	2 - 42	NT40143	
A	CPD 96M300G	2 - 39	NT40143	
A	CPD 96M400G	2 - 39	NT40143	
A	CPD 96MCCB300G	2 - 39	NT40143	
A	CPD 96O	2 - 35	NT40143	
	CPD 96O2	2 - 41	NT40143	
I A	CPD 96SS	2 - 36	NT40143	
	CPD 96SS2	2 - 42	NT40143	
	CPDHANDLE92268	2 - 16	NT40143	
	CPDHANDLE92268	2 - 30	NT40143	
	CPDHANDLECL001	2 - 16	NT40143	
	CPDHANDLECL001	2 - 30	NT40143	
	CPDHANDLEELOCK	2 - 16	NT40143	
	CPDHANDLEELOCK	2 - 30	NT40143	

	CAT. NO.	PAGE	P.S.	PRICE \$
I	CPDHANDLENOLOCK	2 - 16	NT40143	
I	CPDHANDLENOLOCK	2 - 30	NT40143	
I	CPDHANDLEPADLCK	2 - 16	NT40143	
I	CPDHANDLEPADLCK	2 - 30	NT40143	
	CPDRUBBER	2 - 30	NT40143	
	CPECS	2 - 30	NT40143	
A	CPELK1	2 - 16	NT40143	
A	CPELK1	2 - 30	NT40143	
A	CPELK1	2 - 50	NT40143	
A	CPELK1W	2 - 16	NT40143	
A	CPELK1W	2 - 30	NT40143	
A	CPELK1W	2 - 50	NT40143	
A	CPELK2	2 - 16	NT40143	
A	CPELK2	2 - 30	NT40143	
A	CPELK2	2 - 50	NT40143	
	CPEN18	2 - 56	NT40143	
	CPEN18EVE	2 - 57	NT40143	
	CPEN18ODD	2 - 57	NT40143	
	CPEN24	2 - 56	NT40143	
	CPEN24EVE	2 - 57	NT40143	
	CPEN24ODD	2 - 57	NT40143	
	CPEN30EVE	2 - 57	NT40143	
	CPEN30ODD	2 - 57	NT40143	
	CPEN36	2 - 56	NT40143	
	CPEN36EVE	2 - 57	NT40143	
	CPEN36ODD	2 - 57	NT40143	
	CPEN48	2 - 56	NT40143	
	CPEN48EVE	2 - 57	NT40143	
	CPEN48ODD	2 - 57	NT40143	
	CPEN60	2 - 56	NT40143	
	CPEN72	2 - 56	NT40143	
	CPEN84	2 - 56	NT40143	
	CPEN96	2 - 56	NT40143	
	CPEN9EVE	2 - 57	NT40143	
	CPEN9ODD	2 - 57	NT40143	
A	CPESC	2 - 30	NT40143	
	CPEXTLK1	2 - 31	NT40143	
	CPEXTLK2	2 - 31	NT40143	
	CPEXTLKC	2 - 31	NT40143	
I A	CPG 24G	2 - 37	NT40143	
A	CPG 24G2	2 - 43	NT40143	
I A	CPG 24M160G	2 - 37	NT40143	
A	CPG 24M160G2	2 - 43	NT40143	
	CPG 24M160O	2 - 38	NT40143	
A	CPG 24M160O2	2 - 44	NT40143	
	CPG 24M250G	2 - 37	NT40143	
A	CPG 24M250G2	2 - 43	NT40143	
	CPG 24M250O	2 - 38	NT40143	
A	CPG 24M250O2	2 - 44	NT40143	

Valid until August 2014

I Available on indent only.

A Assembled to order.

	CAT. NO.	PAGE	P.S.	PRICE \$
I	A CPG 24O	2 - 38	NT40143	
	A CPG 24O2	2 - 44	NT40143	
I	A CPG 36G	2 - 37	NT40143	
	A CPG 36G2	2 - 43	NT40143	
	CPG 36M160G	2 - 37	NT40143	
	A CPG 36M160G2	2 - 43	NT40143	
	CPG 36M160O	2 - 38	NT40143	
	A CPG 36M160O2	2 - 44	NT40143	
	CPG 36M250G	2 - 37	NT40143	
	A CPG 36M250G2	2 - 43	NT40143	
	CPG 36M250O	2 - 38	NT40143	
	A CPG 36M250O2	2 - 44	NT40143	
I	A CPG 36O	2 - 38	NT40143	
	A CPG 36O2	2 - 44	NT40143	
I	A CPG 48G	2 - 37	NT40143	
	A CPG 48G2	2 - 43	NT40143	
	CPG 48M160G	2 - 37	NT40143	
	A CPG 48M160G2	2 - 43	NT40143	
	CPG 48M160O	2 - 38	NT40143	
	A CPG 48M160O2	2 - 44	NT40143	
I	A CPG 48M250G	2 - 37	NT40143	
	A CPG 48M250G2	2 - 43	NT40143	
	CPG 48M250O	2 - 38	NT40143	
	A CPG 48M250O2	2 - 44	NT40143	
I	A CPG 48O	2 - 38	NT40143	
	A CPG 48O2	2 - 44	NT40143	
I	A CPG 60G	2 - 37	NT40143	
	A CPG 60G2	2 - 43	NT40143	
	CPG 60M160G	2 - 37	NT40143	
	A CPG 60M160G2	2 - 43	NT40143	
	CPG 60M160O	2 - 38	NT40143	
	A CPG 60M160O2	2 - 44	NT40143	
	CPG 60M250G	2 - 37	NT40143	
	A CPG 60M250G2	2 - 43	NT40143	
	CPG 60M250O	2 - 38	NT40143	
	A CPG 60M250O2	2 - 44	NT40143	
I	A CPG 60O	2 - 38	NT40143	
	A CPG 60O2	2 - 44	NT40143	
I	A CPG 72G	2 - 37	NT40143	
	A CPG 72G2	2 - 43	NT40143	
	CPG 72M250G	2 - 37	NT40143	
	A CPG 72M250G2	2 - 43	NT40143	
	CPG 72M250O	2 - 38	NT40143	
	A CPG 72M250O2	2 - 44	NT40143	
I	A CPG 72O	2 - 38	NT40143	
	A CPG 72O2	2 - 44	NT40143	
I	A CPG 84G	2 - 37	NT40143	
	A CPG 84G2	2 - 43	NT40143	
	CPG 84M250G	2 - 37	NT40143	

	CAT. NO.	PAGE	P.S.	PRICE \$
A	CPG 84M250G2	2 - 43	NT40143	
	CPG 84M250O	2 - 38	NT40143	
A	CPG 84M250O2	2 - 44	NT40143	
I A	CPG 84O	2 - 38	NT40143	
A	CPG 84O2	2 - 44	NT40143	
I A	CPG 96G	2 - 37	NT40143	
A	CPG 96G2	2 - 43	NT40143	
	CPG 96M250G	2 - 37	NT40143	
A	CPG 96M250G2	2 - 43	NT40143	
	CPG 96M250O	2 - 38	NT40143	
A	CPG 96M250O2	2 - 44	NT40143	
I A	CPG 96O	2 - 38	NT40143	
A	CPG 96O2	2 - 44	NT40143	
	CPGPA	2 - 30	NT40143	
	CPGPB	2 - 30	NT40143	
	CPGPS	2 - 30	NT40143	
	CPIP52G	2 - 30	NT40143	
A	CPPACC24G	2 - 48	NT40143	
	CPPACC24G2	2 - 49	NT40143	
	CPPACC48G	2 - 48	NT40143	
	CPPACC48G2	2 - 49	NT40143	
A	CPPACCG	2 - 48	NT40143	
	CPPACCG2	2 - 49	NT40143	
	CPPACCGE	2 - 48	NT40143	
	CPPACCGE2	2 - 49	NT40143	
A	CPPACCS1GE	2 - 48	NT40143	
	CPPACCS1GE2	2 - 49	NT40143	
A	CPPACCS2GE	2 - 48	NT40143	
	CPPACCS2GE2	2 - 49	NT40143	
A	CPPACCS3GE	2 - 48	NT40143	
	CPPACCS3GE2	2 - 49	NT40143	
A	CPPACCS4GE	2 - 48	NT40143	
	CPPACCS4GE2	2 - 49	NT40143	
A	CPPACCS5GE	2 - 48	NT40143	
	CPPACCS5GE2	2 - 49	NT40143	
A	CPPACCS6GE	2 - 48	NT40143	
	CPPACCS6GE2	2 - 49	NT40143	
A	CPPACCS7GE	2 - 48	NT40143	
	CPPACCS7GE2	2 - 49	NT40143	
	CPPBNC400GT	2 - 61	NT40143	
	CPPBS250	2 - 51	NT40143	
	CPPD92268	2 - 51	NT40143	
	CPPDCL001	2 - 51	NT40143	
	CPPE5100DTL	1 - 47	NT40143	
	CPPE5200DTL	1 - 47	NT40143	
	CPPE5300DTL	1 - 47	NT40143	
	CPPE5400DTL	1 - 47	NT40143	
	CPPE5500DTL	1 - 47	NT40143	
I	CPPFK1	2 - 50	NT40143	

Valid until August 2014

I Available on indent only.

A Assembled to order.

	CAT. NO.	PAGE	P.S.	PRICE \$
	CPPFK2	2 - 50	NT40143	
	CPPFK3	2 - 50	NT40143	
	CPPFK4	2 - 50	NT40143	
I	CPPFK5	2 - 50	NT40143	
	CPPFK6	2 - 50	NT40143	
	CPPFK7	2 - 50	NT40143	
I	CPPFKH	2 - 50	NT40143	
	CPPGPA	2 - 50	NT40143	
	CPPGPA6	2 - 50	NT40143	
	CPPGPB	2 - 50	NT40143	
	CPPGPB5	2 - 50	NT40143	
	CPPLINTH	2 - 30	NT40143	
	CPPPLINTHD	2 - 50	NT40143	
I	CPPPLINTHDSS	2 - 50	NT40143	
	CPPPLINTHS	2 - 50	NT40143	
	CPPPLINTHSSS	2 - 50	NT40143	
	CPPPWDNSW	2 - 51	NT40143	
	CPPWB	2 - 50	NT40143	
	CPPWBMS	2 - 50	NT40143	
	CPPWC	2 - 50	NT40143	
	CPPWCD	2 - 50	NT40143	
I	CPPWCDSS	2 - 50	NT40143	
	CPPWCSS	2 - 50	NT40143	
	CPPWIL1	2 - 50	NT40143	
	CPPWIL2	2 - 50	NT40143	
	CPPWIL3	2 - 50	NT40143	
	CPPWIL4	2 - 50	NT40143	
	CPPWIL5	2 - 50	NT40143	
	CPPWIL6	2 - 50	NT40143	
	CPPWIL7	2 - 50	NT40143	
	CPPWILH	2 - 50	NT40143	
A	CPS 24G	2 - 45	NT40143	
	CPS 24M160G	2 - 45	NT40143	
	CPS 24M160O	2 - 46	NT40143	
	CPS 24M250G	2 - 45	NT40143	
	CPS 24M250O	2 - 46	NT40143	
A	CPS 24O	2 - 46	NT40143	
A	CPS 36G	2 - 45	NT40143	
	CPS 36M160G	2 - 45	NT40143	
	CPS 36M160O	2 - 46	NT40143	
	CPS 36M250G	2 - 45	NT40143	
	CPS 36M250O	2 - 46	NT40143	
A	CPS 36O	2 - 46	NT40143	
A	CPS 48G	2 - 45	NT40143	
	CPS 48M160G	2 - 45	NT40143	
	CPS 48M160O	2 - 46	NT40143	
	CPS 48M250G	2 - 45	NT40143	
	CPS 48M250O	2 - 46	NT40143	
A	CPS 48O	2 - 46	NT40143	

	CAT. NO.	PAGE	P.S.	PRICE \$
A	CPS 60G	2 - 45	NT40143	
	CPS 60M160G	2 - 45	NT40143	
	CPS 60M160O	2 - 46	NT40143	
	CPS 60M250G	2 - 45	NT40143	
	CPS 60M250O	2 - 46	NT40143	
A	CPS 60O	2 - 46	NT40143	
A	CPS 72G	2 - 45	NT40143	
	CPS 72M250G	2 - 45	NT40143	
	CPS 72M250O	2 - 46	NT40143	
A	CPS 72O	2 - 46	NT40143	
A	CPS 84G	2 - 45	NT40143	
	CPS 84M250G	2 - 45	NT40143	
A	CPS 96G	2 - 45	NT40143	
	CPS 96M250G	2 - 45	NT40143	
	CPS 96M250O	2 - 46	NT40143	
A	CPS 96O	2 - 46	NT40143	
	CPSCHEDULECARD	2 - 57	NT40143	
	CPSCHEDULEHOLD	2 - 57	NT40143	
	CPTPSC1-100N	1 - 57	NE90129	
	CPTPSC1-12/230IR	1 - 57	NE90129	
	CPTPSC-12-230MOD	1 - 57	NE90129	
	CPTPSC1-25/230IR	1 - 57	NE90129	
	CPTPSC1-25N	1 - 57	NE90129	
	CPTPSC1-50N	1 - 57	NE90129	
	CPTPSC2-12/230IR	1 - 57	NE90129	
	CPTPSC2-25/230IR	1 - 57	NE90129	
	CPTPSC-25-230MOD	1 - 57	NE90129	
	CPTPSC4-12/400IR	1 - 57	NE90129	
	CPTPSC4-25/400IR	1 - 57	NE90129	
	CPTPSM1- 20/230 IR	1 - 59	NE90129	
	CPTPSM1- 20N	1 - 59	NE90129	
	CPTPSM1- 40/230 IR	1 - 59	NE90129	
	CPTPSM1- 40N	1 - 59	NE90129	
	CPTPSM-20-230MOD	1 - 59	NE90129	
	CPTPSM2- 20/230 IR	1 - 59	NE90129	
	CPTPSM2- 40/230 IR	1 - 59	NE90129	
	CPTPSM-40-230MOD	1 - 59	NE90129	
	CPTPSM4- 20/400 IR	1 - 59	NE90129	
	CPTPSM4- 40/400 IR	1 - 59	NE90129	
	CPWIL0	2 - 30	NT40143	
	CPWIL02	2 - 30	NT40143	
	CPWIL1	2 - 30	NT40143	
	CPWIL12	2 - 30	NT40143	
	CPWIL2	2 - 30	NT40143	
	CPWIL22	2 - 30	NT40143	
	CPWIL3	2 - 30	NT40143	
	CPWIL32	2 - 30	NT40143	
	CPWIL4	2 - 30	NT40143	
	CPWIL42	2 - 30	NT40143	

Valid until August 2014

I Available on indent only.

A Assembled to order.

	CAT. NO.	PAGE	P.S.	PRICE \$
	CPWIL5	2 - 30	NT40143	
	CPWIL52	2 - 30	NT40143	
	CPWIL6	2 - 30	NT40143	
	CPWIL62	2 - 30	NT40143	
	CPWILH	2 - 30	NT40143	
	CPWILH2	2 - 30	NT40143	
	A CPX18G	2 - 47	NT40143	
	I A CPX18O	2 - 47	NT40143	
	I A CPX18SS	2 - 47	NT40143	
	A CPX24G	2 - 47	NT40143	
	I A CPX24O	2 - 47	NT40143	
	I A CPX24SS	2 - 47	NT40143	
	A CPX36G	2 - 47	NT40143	
	I A CPX36O	2 - 47	NT40143	
	I A CPX36SS	2 - 47	NT40143	
	A CPX42G	2 - 47	NT40143	
	I A CPX42O	2 - 47	NT40143	
	I A CPX42SS	2 - 47	NT40143	
	I A CPX48G	2 - 47	NT40143	
	I A CPX48O	2 - 47	NT40143	
	I A CPX48SS	2 - 47	NT40143	
	I A CPX60G	2 - 47	NT40143	
	I A CPX60O	2 - 47	NT40143	
	I A CPX60SS	2 - 47	NT40143	
	I A CPX72G	2 - 47	NT40143	
	I A CPX72O	2 - 47	NT40143	
	I A CPX72SS	2 - 47	NT40143	
	CPXEN12	2 - 57	NT40143	
	CPXEN18	2 - 57	NT40143	
	CPXEN36	2 - 57	NT40143	
	CPXEN8	2 - 57	NT40143	
	I CSB08ST	2 - 4	NT30141	
	I CSB08SW	2 - 4	NT30141	
	CSB12FMPL	2 - 5	NT10135	
	CSB12FT	2 - 5	NT10135	
	CSB12FW	2 - 5	NT10135	
	CSB12ST	2 - 4	NT10135	
	CSB12SW	2 - 4	NT10135	
	CSB18FMPL	2 - 5	NT10135	
	CSB18FT	2 - 5	NT10135	
	CSB18FW	2 - 5	NT10135	
	CSB18ST	2 - 4	NT10135	
	CSB18SW	2 - 4	NT10135	
	CSB24FMPL	2 - 5	NT10135	
	CSB24FT	2 - 5	NT10135	
	CSB24FW	2 - 5	NT10135	
	CSB24ST	2 - 4	NT10135	
	CSB24SW	2 - 4	NT10135	
	CSB36FMPL	2 - 5	NT10135	

CAT. NO.	PAGE	P.S.	PRICE \$
CSB36FT	2 - 5	NT10135	
CSB36FW	2 - 5	NT10135	
CSB36ST	2 - 4	NT10135	
CSB36SW	2 - 4	NT10135	
CSPC1	2 - 2	NT30141	
A CST160MS	2 - 30	NT40143	
A CST 24G	2 - 27	NT40143	
A CST 24M160G	2 - 27	NT40143	
CST 24M160O	2 - 28	NT40143	
CST 24M250G	2 - 27	NT40143	
CST 24M250O	2 - 28	NT40143	
A CST 24O	2 - 28	NT40143	
A CST250MS	2 - 30	NT40143	
A CST 36G	2 - 27	NT40143	
A CST 36M160G	2 - 27	NT40143	
A CST 36M160O	2 - 28	NT40143	
CST 36M250G	2 - 27	NT40143	
CST 36M250O	2 - 28	NT40143	
A CST 36O	2 - 28	NT40143	
A CST 48G	2 - 27	NT40143	
A CST 48M160G	2 - 27	NT40143	
CST 48M250G	2 - 27	NT40143	
A CST 60G	2 - 27	NT40143	
A CST 60M160G	2 - 27	NT40143	
CST 60M160O	2 - 28	NT40143	
CST 60M250G	2 - 27	NT40143	
A CST 60M250O	2 - 28	NT40143	
A CST 60O	2 - 28	NT40143	
A CST 72G	2 - 27	NT40143	
CST 72M250G	2 - 27	NT40143	
CST 72M250O	2 - 28	NT40143	
A CST 72O	2 - 28	NT40143	
I A CST 96G	2 - 27	NT40143	
CST 96M250G	2 - 27	NT40143	
CST 96M250O	2 - 28	NT40143	
I A CST 96O	2 - 28	NT40143	
CT 212/253	2 - 67	NT40143	
CT 218/253	2 - 67	NT40143	
CT 224/253	2 - 67	NT40143	
CT 230/253	2 - 67	NT40143	
CT 236/253	2 - 67	NT40143	
CT 242/253	2 - 67	NT40143	
CT 248/253	2 - 67	NT40143	
CT 260/253	2 - 67	NT40143	
CT 272/253	2 - 67	NT40143	
CT 284/253	2 - 67	NT40143	
CT 296/253	2 - 67	NT40143	
I CT 312/253	2 - 68	NT40143	
I CT 318/253	2 - 68	NT40143	

Valid until August 2014

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A Assembled to order.

	CAT. NO.	PAGE	P.S.	PRICE \$
	CT 324/253	2 - 68	NT40143	
I	CT 330/253	2 - 68	NT40143	
	CT 336/253	2 - 68	NT40143	
I	CT 342/253	2 - 68	NT40143	
	CT 348/253	2 - 68	NT40143	
	CT 360/253	2 - 68	NT40143	
	CT 372/253	2 - 68	NT40143	
	CT 384/253	2 - 68	NT40143	
	CT 396/253	2 - 68	NT40143	
I A	CTACC24HO	2 - 54	NT40143	
I A	CTACC24O	2 - 54	NT40143	
I A	CTACCO	2 - 54	NT40143	
I A	CTD18O	2 - 54	NT40143	
I A	CTD18SSO	2 - 54	NT40143	
I A	CTD24O	2 - 54	NT40143	
I A	CTD24SSO	2 - 54	NT40143	
I A	CTD36O	2 - 54	NT40143	
I A	CTD36SSO	2 - 54	NT40143	
I A	CTD48O	2 - 54	NT40143	
I A	CTD48SSO	2 - 54	NT40143	
I A	CTD60O	2 - 54	NT40143	
I A	CTD60SSO	2 - 54	NT40143	
I A	CTD72O	2 - 54	NT40143	
I A	CTD72SSO	2 - 54	NT40143	
I A	CTD84O	2 - 54	NT40143	
I A	CTD84SSO	2 - 54	NT40143	
I A	CTD96O	2 - 54	NT40143	
I A	CTD96SSO	2 - 54	NT40143	
	CTES248RDCOLD	1 - 47	NT40143	
	CTES396RDCOLD	1 - 47	NT40143	
A	CTX18M400O	2 - 55	NT40143	
I A	CTX18O	2 - 55	NT40143	
I A	CTX18SSO	2 - 55	NT40143	
A	CTX24M400O	2 - 55	NT40143	
I A	CTX24O	2 - 55	NT40143	
I A	CTX24SSO	2 - 55	NT40143	
A	CTX36M400O	2 - 55	NT40143	
I A	CTX36O	2 - 55	NT40143	
I A	CTX36SSO	2 - 55	NT40143	
A	CTX48M400O	2 - 55	NT40143	
I A	CTX48O	2 - 55	NT40143	
I A	CTX48SSO	2 - 55	NT40143	
A	CTX60M400O	2 - 55	NT40143	
I A	CTX60O	2 - 55	NT40143	
I A	CTX60SSO	2 - 55	NT40143	
A	CTX72M400O	2 - 55	NT40143	
I A	CTX72O	2 - 55	NT40143	
I A	CTX72SSO	2 - 55	NT40143	

	CAT. NO.	PAGE	P.S.	PRICE \$
D	D1000 0010	7 - 44	NB20067	
	D1000DINCLIPS	7 - 44	NB20067	
	DCLD6	1 - 50	NT30141	
	DINT10H1100C	1 - 22	NT10136	
I	DINT10H1100D	1 - 22	NT10136	
	DINT10H1125C	1 - 22	NT10136	
	DINT10H1125D	1 - 22	NT10136	
	DINT10H180C	1 - 22	NT10136	
	DINT10H180D	1 - 22	NT10136	
	DINT10H2100C	1 - 22	NT10136	
I	DINT10H2100D	1 - 22	NT10136	
	DINT10H2125C	1 - 22	NT10136	
I	DINT10H2125D	1 - 22	NT10136	
	DINT10H280C	1 - 22	NT10136	
	DINT10H280D	1 - 22	NT10136	
	DINT10H3100C	1 - 22	NT10136	
	DINT10H3100D	1 - 22	NT10136	
	DINT10H3125C	1 - 22	NT10136	
	DINT10H3125C	2 - 31	NT10136	
	DINT10H3125D	1 - 22	NT10136	
	DINT10H380C	1 - 22	NT10136	
	DINT10H380D	1 - 22	NT10136	
	DINT10H4100C	1 - 22	NT10136	
I	DINT10H4100D	1 - 22	NT10136	
I	DINT10H4125C	1 - 22	NT10136	
I	DINT10H4125D	1 - 22	NT10136	
I	DINT10H480C	1 - 22	NT10136	
I	DINT10H480D	1 - 22	NT10136	
	DINT10H HS	1 - 40	NT10136	
	DINT10HTC	1 - 50	NT30141	
	DINTMS1001	1 - 38	NT10136	
	DINTMS1002	1 - 38	NT10136	
	DINTMS1003	1 - 38	NT10136	
	DINTMS1003	2 - 30	NT10136	
	DINTMS631	1 - 38	NT10136	
	DINTMS632	1 - 38	NT10136	
	DINTMS633	1 - 38	NT10136	
	DINTMS801	1 - 38	NT10136	
	DINTMS802	1 - 38	NT10136	
	DINTMS803	1 - 38	NT10136	
	DINTMS803	2 - 30	NT10136	
	DINTSHT110415U	1 - 39	NT30141	
	DINTSHT2460U	1 - 39	NT30141	
I	DINTT100	2 - 64	NT40143	
	DINTT100	2 - 64	NT40143	
A	DM15036	2 - 6	NT40143	
A	DM15054	2 - 6	NT40143	
A	DM15072	2 - 6	NT40143	

Valid until August 2014

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A Assembled to order.

	CAT. NO.	PAGE	P.S.	PRICE \$
I	DM150JK	2 - 6	NT40143	
I	DM150LD	2 - 6	NT40143	
A	DM150NAA	2 - 6	NT40143	
I A	DM150NAB	2 - 6	NT40143	
A	DM150NAC	2 - 6	NT40143	
A	DMWP12	2 - 8	NT40143	
A	DMWP24	2 - 8	NT40143	
A	DMWP36	2 - 8	NT40143	
	DMWPCS	2 - 8	NT40143	
	DMWPLD	2 - 8	NT40143	
A	DSLK	2 - 9	NT40143	
A	DSLK	2 - 10	NT40143	
	DSR110DEL	8 - 15	NT30141	
	DSR140DEL	8 - 15	NT30141	
	DSR210DEL	8 - 15	NT30141	
	DSR35DEL	8 - 15	NT30141	
	DSR48TD110	8 - 12	NT30141	
	DSR48TD240	8 - 12	NT30141	
	DSR80DEL	8 - 15	NT30141	
	DSRCB0610A	1 - 30	NT30141	
	DSRCB0630	1 - 30	NT30141	
	DSRCB0630P	1 - 31	NT30141	
	DSRCB10100A	1 - 30	NT30141	
	DSRCB1010A	1 - 30	NT30141	
	DSRCB1030	1 - 30	NT30141	
	DSRCB1030A	1 - 30	NT30141	
	DSRCB1030P	1 - 31	NT30141	
I	DSRCB16100A	1 - 30	NT30141	
	DSRCB1610A	1 - 30	NT30141	
	DSRCB1630	1 - 30	NT30141	
	DSRCB1630A	1 - 30	NT30141	
	DSRCB1630P	1 - 31	NT30141	
I	DSRCB20100A	1 - 30	NT30141	
	DSRCB2010A	1 - 30	NT30141	
	DSRCB2030	1 - 30	NT30141	
	DSRCB2030A	1 - 30	NT30141	
	DSRCB2030P	1 - 31	NT30141	
	DSRCB2530	1 - 30	NT30141	
	DSRCB2530A	1 - 30	NT30141	
	DSRCB2530P	1 - 31	NT30141	
	DSRCB3230	1 - 30	NT30141	
	DSRCB3230A	1 - 30	NT30141	
	DSRCB3230P	1 - 31	NT30141	
	DSRCB4030	1 - 30	NT30141	
	DSRCB4030A	1 - 30	NT30141	
	DSRCB4030P	1 - 31	NT30141	
I	DSRCBH0610A	1 - 29	NT30141	
	DSRCBH0630A	1 - 29	NT30141	
	DSRCBH1010A	1 - 29	NT30141	

CAT. NO.	PAGE	P.S.	PRICE \$
DSRCBH1030A	1 - 29	NT30141	
DSRCBH1610A	1 - 29	NT30141	
DSRCBH1630A	1 - 29	NT30141	
DSRCBH2010A	1 - 29	NT30141	
DSRCBH2030A	1 - 29	NT30141	
I DSRCBH2510A	1 - 29	NT30141	
DSRCBH2530A	1 - 29	NT30141	
I DSRCBH3210A	1 - 29	NT30141	
DSRCBH3230A	1 - 29	NT30141	
I DSRCBH4010A	1 - 29	NT30141	
DSRCBH4030A	1 - 29	NT30141	
DSRCBHTC	1 - 50	NT30141	
I DSRCBS0630B	1 - 28	NT30141	
DSRCBS0630C	1 - 28	NT30141	
I DSRCBS1030B	1 - 28	NT30141	
DSRCBS1030C	1 - 28	NT30141	
I DSRCBS1630B	1 - 28	NT30141	
DSRCBS1630C	1 - 28	NT30141	
I DSRCBS2030B	1 - 28	NT30141	
DSRCBS2030C	1 - 28	NT30141	
I DSRCBS2530B	1 - 28	NT30141	
DSRCBS2530C	1 - 28	NT30141	
I DSRCBS3230B	1 - 28	NT30141	
DSRCBS3230C	1 - 28	NT30141	
DSRCBSAX	1 - 40	NT10136	
DSRCBSAXAL	1 - 40	NT10136	
I DSRCBSAXALG	1 - 40	NT10136	
DSRCD240100	1 - 25	NT30141	
I DSRCD240100A	1 - 26	NT30141	
DSRCD24030	1 - 25	NT30141	
DSRCD240300	1 - 25	NT30141	
DSRCD24030A	1 - 26	NT30141	
DSRCD24030AI	1 - 25	NT30141	
DSRCD263100S	1 - 25	NT30141	
DSRCD26330	1 - 25	NT30141	
DSRCD263300S	1 - 25	NT30141	
I DSRCD26330A	1 - 26	NT30141	
DSRCD26330AI	1 - 25	NT30141	
DSRCD280100	1 - 25	NT30141	
I DSRCD280100A	1 - 26	NT30141	
DSRCD28030	1 - 25	NT30141	
I DSRCD280300	1 - 25	NT30141	
I DSRCD28030A	1 - 26	NT30141	
DSRCD4100100	1 - 25	NT30141	
DSRCD4100100S	1 - 25	NT30141	
DSRCD410030	1 - 25	NT30141	
DSRCD4100300	1 - 25	NT30141	
DSRCD4100300S	1 - 25	NT30141	
I DSRCD410030A	1 - 26	NT30141	

Valid until August 2014

I Available on indent only.

A Assembled to order.

	CAT. NO.	PAGE	P.S.	PRICE \$
I	DSRCD4100500	1 - 25	NT30141	
I	DSRCD4125500B	1 - 26	NT30141	
	DSRCD440100	1 - 25	NT30141	
	DSRCD44030	1 - 25	NT30141	
	DSRCD440300	1 - 25	NT30141	
	DSRCD44030A	1 - 26	NT30141	
	DSRCD44030AI	1 - 25	NT30141	
	DSRCD463100	1 - 25	NT30141	
I	DSRCD463100A	1 - 26	NT30141	
I	DSRCD463100B	1 - 26	NT40143	
	DSRCD463100S	1 - 25	NT30141	
	DSRCD46330	1 - 25	NT30141	
I	DSRCD463300BS	1 - 26	NT40143	
	DSRCD463300S	1 - 25	NT30141	
	DSRCD46330A	1 - 26	NT30141	
	DSRCD46330AI	1 - 25	NT30141	
I	DSRCD46330B	1 - 26	NT40143	
	DSRCD480100	1 - 25	NT30141	
I	DSRCD480100A	1 - 26	NT30141	
I	DSRCD48030	1 - 25	NT30141	
	DSRCDE24030	1 - 24	NT10136	
I	DSRCDE26330	1 - 24	NT10136	
I	DSRCDE44030	1 - 24	NT10136	
I	DSRCDE46330	1 - 24	NT10136	
	DSRCM321001PN	1 - 32	NT30141	
	DSRCM321003PN	1 - 32	NT30141	
	DSRCM323001PN	1 - 32	NT30141	
	DSRCM323003PN	1 - 32	NT30141	
	DSRCM32301PN	1 - 32	NT30141	
	DSRCM32303PN	1 - 32	NT30141	
	DSRCM631001PN	1 - 32	NT30141	
	DSRCM631003P	1 - 32	NT30141	
	DSRCM631003PN	1 - 32	NT30141	
	DSRCM633001PN	1 - 32	NT30141	
	DSRCM633003PN	1 - 32	NT30141	
	DSRCM63301PN	1 - 32	NT30141	
	DSRCM63303P	1 - 32	NT30141	
	DSRCM63303PN	1 - 32	NT30141	
	DSRM110V	8 - 12	NT30141	
	DSRM240V	8 - 12	NT30141	
	DSRM72110	8 - 12	NT30141	
	DSRM7224	8 - 12	NT30141	
	DSRM72240	8 - 12	NT30141	
	DTAUXAL	1 - 40	NT10136	
	DTAUXALG	1 - 40	NT10136	
	DTC2002240	1 - 52	NT30141	
	DTC2011240	1 - 52	NT30141	
	DTC202024	1 - 52	NT30141	
	DTC2020240	1 - 52	NT30141	

CAT. NO.	PAGE	P.S.	PRICE \$
DTC2020240L	1 - 54	NT30141	
DTC202024L	1 - 54	NT30141	
DTC2404240	1 - 52	NT30141	
DTC244012	1 - 52	NT30141	
DTC244024	1 - 52	NT30141	
DTC2440240	1 - 52	NT30141	
DTC2504240L	1 - 54	NT30141	
DTC254012L	1 - 54	NT30141	
DTC2540240L	1 - 54	NT30141	
I DTC404024	1 - 52	NT30141	
DTC4040240	1 - 52	NT30141	
DTC4040240L	1 - 54	NT30141	
I DTC634024	1 - 52	NT30141	
DTC6340240	1 - 52	NT30141	
DTC6340240L	1 - 54	NT30141	
DTCB10 1 01C	1 - 20	NT10136	
I DTCB10 1 01D	1 - 21	NT10136	
DTCB10 1 02C	1 - 20	NT10136	
DTCB10 1 02D	1 - 21	NT10136	
DTCB10 1 04C	1 - 20	NT10136	
DTCB10 1 04D	1 - 21	NT10136	
DTCB10 1 05C	1 - 20	NT10136	
I DTCB10 1 05D	1 - 21	NT10136	
DTCB10 1 06B	1 - 19	NT10136	
DTCB10 1 06C	1 - 20	NT10136	
DTCB10 1 06D	1 - 21	NT10136	
DTCB10 1 10B	1 - 19	NT10136	
DTCB10 1 10C	1 - 20	NT10136	
DTCB10 1 10D	1 - 21	NT10136	
I DTCB10 1 13C	1 - 20	NT10136	
I DTCB10 1 13D	1 - 21	NT10136	
DTCB10 1 16B	1 - 19	NT10136	
DTCB10 1 16C	1 - 20	NT10136	
DTCB10 1 16D	1 - 21	NT10136	
DTCB10 1 20B	1 - 19	NT10136	
DTCB10 1 20C	1 - 20	NT10136	
DTCB10 1 20D	1 - 21	NT10136	
DTCB10 1 25B	1 - 19	NT10136	
DTCB10 1 25C	1 - 20	NT10136	
DTCB10 1 25D	1 - 21	NT10136	
DTCB10 1 32B	1 - 19	NT10136	
DTCB10 1 32C	1 - 20	NT10136	
DTCB10 1 32D	1 - 21	NT10136	
DTCB10 1 40B	1 - 19	NT10136	
DTCB10 1 40C	1 - 20	NT10136	
DTCB10 1 40D	1 - 21	NT10136	
I DTCB10 1 50B	1 - 19	NT10136	
DTCB10 1 50C	1 - 20	NT10136	
DTCB10 1 50D	1 - 21	NT10136	

Valid until August 2014

I Available on indent only.

A Assembled to order.

	CAT. NO.	PAGE	P.S.	PRICE \$
I	DTCB10 1 63B	1 - 19	NT10136	
	DTCB10 1 63C	1 - 20	NT10136	
	DTCB10 1 63D	1 - 21	NT10136	
	DTCB10 2 01C	1 - 20	NT10136	
	DTCB10 2 01D	1 - 21	NT10136	
	DTCB10 2 02C	1 - 20	NT10136	
	DTCB10 2 02D	1 - 21	NT10136	
	DTCB10 2 04C	1 - 20	NT10136	
	DTCB10 2 04D	1 - 21	NT10136	
	DTCB10 2 05C	1 - 20	NT10136	
I	DTCB10 2 05D	1 - 21	NT10136	
	DTCB10 2 06B	1 - 19	NT10136	
	DTCB10 2 06C	1 - 20	NT10136	
	DTCB10 2 06D	1 - 21	NT10136	
	DTCB10 2 10B	1 - 19	NT10136	
	DTCB10 2 10C	1 - 20	NT10136	
	DTCB10 2 10D	1 - 21	NT10136	
I	DTCB10 2 13C	1 - 20	NT10136	
I	DTCB10 2 13D	1 - 21	NT10136	
I	DTCB10 2 16B	1 - 19	NT10136	
	DTCB10 2 16C	1 - 20	NT10136	
	DTCB10 2 16D	1 - 21	NT10136	
I	DTCB10 2 20B	1 - 19	NT10136	
	DTCB10 2 20C	1 - 20	NT10136	
	DTCB10 2 20D	1 - 21	NT10136	
I	DTCB10 2 25B	1 - 19	NT10136	
	DTCB10 2 25C	1 - 20	NT10136	
	DTCB10 2 25D	1 - 21	NT10136	
I	DTCB10 2 32B	1 - 19	NT10136	
	DTCB10 2 32C	1 - 20	NT10136	
	DTCB10 2 32D	1 - 21	NT10136	
I	DTCB10 2 40B	1 - 19	NT10136	
	DTCB10 2 40C	1 - 20	NT10136	
	DTCB10 2 40D	1 - 21	NT10136	
I	DTCB10 2 50B	1 - 19	NT10136	
	DTCB10 2 50C	1 - 20	NT10136	
	DTCB10 2 50D	1 - 21	NT10136	
I	DTCB10 2 63B	1 - 19	NT10136	
	DTCB10 2 63C	1 - 20	NT10136	
	DTCB10 2 63D	1 - 21	NT10136	
	DTCB10 3 01C	1 - 20	NT10136	
I	DTCB10 3 01D	1 - 21	NT10136	
	DTCB10 3 02C	1 - 20	NT10136	
I	DTCB10 3 02D	1 - 21	NT10136	
	DTCB10 3 04C	1 - 20	NT10136	
	DTCB10 3 04D	1 - 21	NT10136	
	DTCB10 3 05C	1 - 20	NT10136	
I	DTCB10 3 05D	1 - 21	NT10136	
I	DTCB10 3 06B	1 - 19	NT10136	

CAT. NO.	PAGE	P.S.	PRICE \$
DTCB10 3 06C	1 - 20	NT10136	
DTCB10 3 06D	1 - 21	NT10136	
DTCB10 3 10B	1 - 19	NT10136	
DTCB10 3 10C	1 - 20	NT10136	
DTCB10 3 10D	1 - 21	NT10136	
I DTCB10 3 13C	1 - 20	NT10136	
I DTCB10 3 13D	1 - 21	NT10136	
DTCB10 3 16B	1 - 19	NT10136	
DTCB10 3 16C	1 - 20	NT10136	
DTCB10 3 16D	1 - 21	NT10136	
DTCB10 3 20B	1 - 19	NT10136	
DTCB10 3 20C	1 - 20	NT10136	
DTCB10 3 20D	1 - 21	NT10136	
DTCB10 3 25B	1 - 19	NT10136	
DTCB10 3 25C	1 - 20	NT10136	
DTCB10 3 25D	1 - 21	NT10136	
DTCB10 3 32B	1 - 19	NT10136	
DTCB10 3 32C	1 - 20	NT10136	
DTCB10 3 32D	1 - 21	NT10136	
DTCB10 3 40B	1 - 19	NT10136	
DTCB10 3 40C	1 - 20	NT10136	
DTCB10 3 40D	1 - 21	NT10136	
I DTCB10 3 50B	1 - 19	NT10136	
DTCB10 3 50C	1 - 20	NT10136	
DTCB10 3 50D	1 - 21	NT10136	
DTCB10 3 63B	1 - 19	NT10136	
DTCB10 3 63C	1 - 20	NT10136	
DTCB10 3 63D	1 - 21	NT10136	
I DTCB10 4 01C	1 - 20	NT10136	
DTCB10 4 02C	1 - 20	NT10136	
I DTCB10 4 04C	1 - 20	NT10136	
I DTCB10 4 04D	1 - 21	NT10136	
DTCB10 4 06C	1 - 20	NT10136	
I DTCB10 4 06D	1 - 21	NT10136	
DTCB10 4 10C	1 - 20	NT10136	
I DTCB10 4 10D	1 - 21	NT10136	
I DTCB10 4 13C	1 - 20	NT10136	
I DTCB10 4 13D	1 - 21	NT10136	
DTCB10 4 16C	1 - 20	NT10136	
I DTCB10 4 16D	1 - 21	NT10136	
DTCB10 4 20C	1 - 20	NT10136	
I DTCB10 4 20D	1 - 21	NT10136	
DTCB10 4 25C	1 - 20	NT10136	
DTCB10 4 25D	1 - 21	NT10136	
DTCB10 4 32C	1 - 20	NT10136	
DTCB10 4 32D	1 - 21	NT10136	
DTCB10 4 40C	1 - 20	NT10136	
I DTCB10 4 40D	1 - 21	NT10136	
DTCB10 4 50C	1 - 20	NT10136	

Valid until August 2014

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A Assembled to order.

	CAT. NO.	PAGE	P.S.	PRICE \$
I	DTCB10 4 50D	1 - 21	NT10136	
	DTCB10 4 63C	1 - 20	NT10136	
	DTCB10 4 63D	1 - 21	NT10136	
	DTCB15 1 06C	1 - 23	NT10136	
	DTCB15 1 10C	1 - 23	NT10136	
I	DTCB15 1 13C	1 - 23	NT10136	
	DTCB15 1 16C	1 - 23	NT10136	
	DTCB15 1 20C	1 - 23	NT10136	
	DTCB15 1 25C	1 - 23	NT10136	
	DTCB15 1 32C	1 - 23	NT10136	
	DTCB15 1 40C	1 - 23	NT10136	
	DTCB15 1 50C	1 - 23	NT10136	
	DTCB15 1 63C	1 - 23	NT10136	
I	DTCB15 2 06C	1 - 23	NT10136	
	DTCB15 2 10C	1 - 23	NT10136	
I	DTCB15 2 13C	1 - 23	NT10136	
	DTCB15 2 16C	1 - 23	NT10136	
I	DTCB15 2 20C	1 - 23	NT10136	
I	DTCB15 2 25C	1 - 23	NT10136	
I	DTCB15 2 32C	1 - 23	NT10136	
I	DTCB15 2 40C	1 - 23	NT10136	
	DTCB15 2 50C	1 - 23	NT10136	
I	DTCB15 2 63C	1 - 23	NT10136	
	DTCB15 3 06C	1 - 23	NT10136	
	DTCB15 3 10C	1 - 23	NT10136	
I	DTCB15 3 13C	1 - 23	NT10136	
	DTCB15 3 16C	1 - 23	NT10136	
	DTCB15 3 20C	1 - 23	NT10136	
	DTCB15 3 25C	1 - 23	NT10136	
	DTCB15 3 32C	1 - 23	NT10136	
	DTCB15 3 40C	1 - 23	NT10136	
	DTCB15 3 50C	1 - 23	NT10136	
	DTCB15 3 63C	1 - 23	NT10136	
I	DTCB15 4 06C	1 - 23	NT10136	
I	DTCB15 4 10C	1 - 23	NT10136	
I	DTCB15 4 13C	1 - 23	NT10136	
I	DTCB15 4 16C	1 - 23	NT10136	
I	DTCB15 4 20C	1 - 23	NT10136	
I	DTCB15 4 25C	1 - 23	NT10136	
I	DTCB15 4 32C	1 - 23	NT10136	
I	DTCB15 4 40C	1 - 23	NT10136	
I	DTCB15 4 50C	1 - 23	NT10136	
I	DTCB15 4 63C	1 - 23	NT10136	
	DTCB6102C	1 - 14	NT10136	
	DTCB6102D	1 - 15	NT10136	
	DTCB6104C	1 - 14	NT10136	
	DTCB6104D	1 - 15	NT10136	
	DTCB6106C	1 - 14	NT10136	
	DTCB6106D	1 - 15	NT10136	

CAT. NO.	PAGE	P.S.	PRICE \$
DTCB6110C	1 - 14	NT10136	
DTCB6110D	1 - 15	NT10136	
DTCB6113C	1 - 14	NT10136	
DTCB6113D	1 - 15	NT10136	
DTCB6116C	1 - 14	NT10136	
DTCB6116D	1 - 15	NT10136	
DTCB6120C	1 - 14	NT10136	
DTCB6120D	1 - 15	NT10136	
DTCB6125C	1 - 14	NT10136	
DTCB6125D	1 - 15	NT10136	
DTCB6132C	1 - 14	NT10136	
DTCB6132D	1 - 15	NT10136	
DTCB6140C	1 - 14	NT10136	
DTCB6140D	1 - 15	NT10136	
DTCB6150C	1 - 14	NT10136	
DTCB6150D	1 - 15	NT10136	
DTCB6163C	1 - 14	NT10136	
DTCB6163D	1 - 15	NT10136	
DTCB6202C	1 - 14	NT10136	
DTCB6202D	1 - 15	NT10136	
DTCB6204C	1 - 14	NT10136	
DTCB6204D	1 - 15	NT10136	
DTCB6206C	1 - 14	NT10136	
DTCB6206D	1 - 15	NT10136	
DTCB6210C	1 - 14	NT10136	
DTCB6210D	1 - 15	NT10136	
I DTCB6213C	1 - 14	NT10136	
I DTCB6213D	1 - 15	NT10136	
DTCB6216C	1 - 14	NT10136	
DTCB6216D	1 - 15	NT10136	
DTCB6220C	1 - 14	NT10136	
DTCB6220D	1 - 15	NT10136	
DTCB6225C	1 - 14	NT10136	
DTCB6225D	1 - 15	NT10136	
DTCB6232C	1 - 14	NT10136	
DTCB6232D	1 - 15	NT10136	
DTCB6240C	1 - 14	NT10136	
DTCB6240D	1 - 15	NT10136	
DTCB6250C	1 - 14	NT10136	
DTCB6250D	1 - 15	NT10136	
DTCB6263C	1 - 14	NT10136	
DTCB6263D	1 - 15	NT10136	
DTCB6302C	1 - 14	NT10136	
DTCB6302D	1 - 15	NT10136	
DTCB6304C	1 - 14	NT10136	
DTCB6304D	1 - 15	NT10136	
DTCB6306C	1 - 14	NT10136	
DTCB6306D	1 - 15	NT10136	
DTCB6310C	1 - 14	NT10136	

Valid until August 2014

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A Assembled to order.

	CAT. NO.	PAGE	P.S.	PRICE \$
	DTCB6310D	1 - 15	NT10136	
I	DTCB6313C	1 - 14	NT10136	
I	DTCB6313D	1 - 15	NT10136	
	DTCB6316C	1 - 14	NT10136	
	DTCB6316D	1 - 15	NT10136	
	DTCB6320C	1 - 14	NT10136	
	DTCB6320D	1 - 15	NT10136	
	DTCB6325C	1 - 14	NT10136	
	DTCB6325D	1 - 15	NT10136	
	DTCB6332C	1 - 14	NT10136	
	DTCB6332D	1 - 15	NT10136	
	DTCB6340C	1 - 14	NT10136	
	DTCB6340D	1 - 15	NT10136	
	DTCB6350C	1 - 14	NT10136	
	DTCB6350D	1 - 15	NT10136	
	DTCB6363C	1 - 14	NT10136	
	DTCB6363D	1 - 15	NT10136	
I	DTCBD61102C	1 - 16	NT10136	
I	DTCBD61104C	1 - 16	NT10136	
	DTCBD61106C	1 - 16	NT10136	
	DTCBD61110C	1 - 16	NT10136	
	DTCBD61116C	1 - 16	NT10136	
	DTCBD61120C	1 - 16	NT10136	
	DTCBD6202C	1 - 16	NT10136	
I	DTCBD6204C	1 - 16	NT10136	
	DTCBD6206C	1 - 16	NT10136	
	DTCBD6210C	1 - 16	NT10136	
	DTCBD6216C	1 - 16	NT10136	
	DTCBD6220C	1 - 16	NT10136	
I	DTCBD6225C	1 - 16	NT10136	
I	DTCBD6232C	1 - 16	NT10136	
I	DTCBD6240C	1 - 16	NT10136	
I	DTCBD6302C	1 - 16	NT10136	
I	DTCBD6304C	1 - 16	NT10136	
	DTCBD6306C	1 - 16	NT10136	
	DTCBD6310C	1 - 16	NT10136	
	DTCBD6316C	1 - 16	NT10136	
	DTCBD6320C	1 - 16	NT10136	
I	DTCBD6325C	1 - 16	NT10136	
I	DTCBD6332C	1 - 16	NT10136	
I	DTCBD6340C	1 - 16	NT10136	
I	DTCBD6402C	1 - 16	NT10136	
I	DTCBD6404C	1 - 16	NT10136	
	DTCBD6406C	1 - 16	NT10136	
	DTCBD6410C	1 - 16	NT10136	
	DTCBD6416C	1 - 16	NT10136	
	DTCBD6420C	1 - 16	NT10136	
I	DTCBD6425C	1 - 16	NT10136	
I	DTCBD6432C	1 - 16	NT10136	

	CAT. NO.	PAGE	P.S.	PRICE \$
I	DTCBD6440C	1 - 16	NT10136	
	DTCBDC101C	1 - 17	NT10136	
	DTCBDC102C	1 - 17	NT10136	
	DTCBDC104C	1 - 17	NT10136	
I	DTCBDC105C	1 - 17	NT10136	
	DTCBDC106C	1 - 17	NT10136	
	DTCBDC110C	1 - 17	NT10136	
	DTCBDC116C	1 - 17	NT10136	
	DTCBDC120C	1 - 17	NT10136	
	DTCBDC125C	1 - 17	NT10136	
	DTCBDC132C	1 - 17	NT10136	
	DTCBDC140C	1 - 17	NT10136	
	DTCBDC150C	1 - 17	NT10136	
	DTCBDC163C	1 - 17	NT10136	
	DTCBDC201C	1 - 17	NT10136	
	DTCBDC202C	1 - 17	NT10136	
	DTCBDC204C	1 - 17	NT10136	
	DTCBDC206C	1 - 17	NT10136	
	DTCBDC210C	1 - 17	NT10136	
	DTCBDC216C	1 - 17	NT10136	
	DTCBDC220C	1 - 17	NT10136	
	DTCBDC225C	1 - 17	NT10136	
	DTCBDC232C	1 - 17	NT10136	
	DTCBDC240C	1 - 17	NT10136	
	DTCBDC250C	1 - 17	NT10136	
	DTCBDC263C	1 - 17	NT10136	
	DTCBDC410B	1 - 18	NT10136	
	DTCBDC416B	1 - 18	NT10136	
I	DTCBDC420B	1 - 18	NT10136	
I	DTCBE6106C	1 - 24	NT10136	
	DTCBE6110C	1 - 24	NT10136	
	DTCBE6116C	1 - 24	NT10136	
	DTCBE6120C	1 - 24	NT10136	
	DTCBE6125C	1 - 24	NT10136	
	DTCBE6132C	1 - 24	NT10136	
I	DTCBE6140C	1 - 24	NT10136	
I	DTCBE6150C	1 - 24	NT10136	
	DTCBE6163C	1 - 24	NT10136	
I	DTCBE6306C	1 - 24	NT10136	
I	DTCBE6310C	1 - 24	NT10136	
I	DTCBE6316C	1 - 24	NT10136	
I	DTCBE6320C	1 - 24	NT10136	
I	DTCBE6325C	1 - 24	NT10136	
I	DTCBE6332C	1 - 24	NT10136	
I	DTCBE6340C	1 - 24	NT10136	
I	DTCBE6350C	1 - 24	NT10136	
I	DTCBE6363C	1 - 24	NT10136	
	DTCF35	1 - 50	NT30141	
	DTC53212	1 - 44	NT30141	

Valid until August 2014

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A Assembled to order.

	CAT. NO.	PAGE	P.S.	PRICE \$
	DTCS3213	1 - 44	NT30141	
	DTCS3222	1 - 44	NT30141	
	DTCS3223	1 - 44	NT30141	
	DTHR	1 - 52	NT30141	
I	DTIS1012VAC	1 - 55	NT30141	
I	DTIS1012VDC	1 - 55	NT30141	
I	DTIS10240VAC	1 - 55	NT30141	
I	DTIS1024VAC	1 - 55	NT30141	
I	DTIS1024VDC	1 - 55	NT30141	
I	DTIS1048VAC	1 - 55	NT30141	
I	DTIS1112VAC	1 - 55	NT30141	
I	DTIS1112VDC	1 - 55	NT30141	
	DTIS11240VAC	1 - 55	NT30141	
I	DTIS1124VAC	1 - 55	NT30141	
I	DTIS1124VDC	1 - 55	NT30141	
I	DTIS113212VDC	1 - 55	NT30141	
I	DTIS1148VAC	1 - 55	NT30141	
I	DTIS123212VDC	1 - 55	NT30141	
	DTIS132PWR	1 - 55	NT30141	
I	DTIS2012VAC	1 - 55	NT30141	
	DTIS2012VDC	1 - 55	NT30141	
	DTIS20240VAC	1 - 55	NT30141	
I	DTIS2024VAC	1 - 55	NT30141	
I	DTIS2024VDC	1 - 55	NT30141	
I	DTIS2048VAC	1 - 55	NT30141	
	DTIS2CO	1 - 55	NT30141	
	DTIS2NO	1 - 55	NT30141	
	DTLCM	1 - 47	NT30141	
	DTLD	1 - 50	NT30141	
	DTLDH	1 - 50	NT40143	
	DTLDM	1 - 47	NT30141	
	DTLLA	1 - 47	NT30141	
	DTLLA10H	1 - 47	NT20138	
	DTLLAB	1 - 47	NT30141	
	DTLLABRH	1 - 47	NT30141	
	DTLLABULK	1 - 47	NT30141	
	DTLLARH	1 - 47	NT30141	
	DTLLARHBULK	1 - 47	NT30141	
	DTLLB	1 - 47	NT30141	
	DTLPF	1 - 47	NT30141	
	DTMD240VAC	1 - 41	NT40143	
	DTPB10L	1 - 44	NT30141	
	DTPB11	1 - 44	NT30141	
	DTPBS	1 - 42	NT30141	
	DTPC2	2 - 2	NT30141	
A	DTPC2LD	1 - 49	NT40143	
A	DTPC2LD	2 - 2	NT40143	
A	DTPC2LDCB	1 - 48	NT30141	
	DTPC2LDCBV	1 - 48	NT30141	

	CAT. NO.	PAGE	P.S.	PRICE \$
A	DTPC2LDRCBO	1 - 49	NT40143	
	DTPC4	2 - 2	NT30141	
A	DTPC4LD	1 - 49	NT40143	
A	DTPC4LD	2 - 2	NT40143	
A	DTPC4LDCB	1 - 48	NT30141	
	DTPC4LDCBV	1 - 48	NT30141	
	DTPC6	2 - 2	NT30141	
	DTPC8	2 - 2	NT30141	
	DTPF	1 - 50	NT30141	
	DTPF	2 - 16	NT30141	
	DTPF	2 - 31	NT30141	
	DTPF	2 - 51	NT30141	
	DTPF	3 - 41	NT30141	
	DTPF	3 - 68	NT30141	
	DTPLB	1 - 44	NT30141	
	DTPLL24	1 - 44	NT30141	
	DTPLL240	1 - 44	NT30141	
I	DTPLLCL	1 - 44	NT30141	
	DTPLLGR	1 - 44	NT30141	
	DTPLLOR	1 - 44	NT30141	
	DTPLLRD	1 - 44	NT30141	
	DTSHT110415V	1 - 39	NT30141	
	DTSHT2460V	1 - 39	NT30141	
	DTSP	1 - 50	NT30141	
	DTTAX16PN3	1 - 50	NT30141	
	DTTAX25PN	1 - 50	NT30141	
	DTTAX25SP	1 - 50	NT30141	
	DTTAX50PN	1 - 50	NT30141	
	DTTC35	1 - 50	NT30141	
	DTTC5	1 - 50	NT30141	
	DTTTLT35LPN	1 - 50	NT30141	
	DTTTLT35PN	1 - 50	NT30141	
	DTTTLT35SP	1 - 50	NT30141	
I	DTUVT12VDC	1 - 39	NT30141	
	DTUVT240VAC	1 - 39	NT30141	
	DTUVT24VDC	1 - 39	NT30141	
E	E125 NJ 3 100	3 - 24	NT20138	
	E125 NJ 3 125	3 - 24	NT20138	
	E125 NJ 3 20	3 - 24	NT20138	
	E125 NJ 3 32	3 - 24	NT20138	
	E125 NJ 3 50	3 - 24	NT20138	
	E125 NJ 3 63	3 - 24	NT20138	
	E250 NJ 3 100	3 - 47	NT20138	
	E250 NJ 3 125	3 - 47	NT20138	
	E250 NJ 3 160	3 - 47	NT20138	
	E250 NJ 3 20	3 - 47	NT20138	
	E250 NJ 3 250	3 - 47	NT20138	
	E250 NJ 3 32	3 - 47	NT20138	

Valid until August 2014

I Available on indent only.

A Assembled to order.

	CAT. NO.	PAGE	P.S.	PRICE \$
	E250 NJ 3 50	3 - 47	NT20138	
	E250 NJ 3 63	3 - 47	NT20138	
	E400 NJ 3 400	3 - 69	NT20138	
	E630 NE 3 630	3 - 86	NT20138	
	EFR	5 - 28	NT30141	
	EFR	5 - 29	NT30141	
	ELR24010	1 - 11	NT10136	
	ELR240100	1 - 11	NT10136	
	ELR24030	1 - 11	NT10136	
	ELR240300	1 - 11	NT10136	
	ELR44030	1 - 11	NT10136	
A	ELTK	1 - 56	NA40037	
A	ELTS	1 - 56	NA40037	
	EPSR / EVSR	5 - 28	NT30141	
	EPSR / EVSR	5 - 29	NT30141	
	ERTD	5 - 28	NT30141	
	ERTD	5 - 29	NT30141	
	ESTD	5 - 28	NT30141	
	ESTD	5 - 29	NT30141	
	EVA3160H	2 - 30	NT40143	
	EVA3160H	2 - 51	NT40143	
	EVA3250H	2 - 30	NT40143	
	EVA3250H	2 - 51	NT40143	
F				
	FI	3 - 132	NT30141	
	FI	6 - 10	NT20138	
	FI	6 - 25	NT20138	
	FI	6 - 36	NT30141	
	FILED	3 - 132	NT30141	
	FILED	6 - 10	NT20138	
	FILED	6 - 36	NT30141	
G				
	GB224184U	2 - 63	NT40143	
I	GB212183TF	2 - 62	NT40143	
	GB212183U	2 - 62	NT40143	
I	GB224181TF	2 - 64	NT40143	
I	GB224182TF	2 - 63	NT40143	
	GB224182TF	2 - 63	NT40143	
I	GB224183PNTF	2 - 63	NT40143	
	GB224183PNU	2 - 63	NT40143	
I	GB224183TF	2 - 62	NT40143	
	GB224183U	2 - 62	NT40143	
I	GB236183TF	2 - 62	NT40143	
	GB236183U	2 - 62	NT40143	
I	GB248181TF	2 - 64	NT40143	
I	GB248182TF	2 - 63	NT40143	
	GB248182TF	2 - 63	NT40143	
I	GB248183PNTF	2 - 63	NT40143	
	GB248183PNU	2 - 63	NT40143	

	CAT. NO.	PAGE	P.S.	PRICE \$
I	GB248183TF	2 - 62	NT40143	
	GB248183U	2 - 62	NT40143	
	GB248184U	2 - 63	NT40143	
I	GB260183TF	2 - 62	NT40143	
	GB260183U	2 - 62	NT40143	
I	GB272181TF	2 - 64	NT40143	
I	GB272182TF	2 - 63	NT40143	
	GB272182TF	2 - 63	NT40143	
I	GB272183PNTF	2 - 63	NT40143	
	GB272183PNU	2 - 63	NT40143	
I	GB272183TF	2 - 62	NT40143	
	GB272183U	2 - 62	NT40143	
	GB272184U	2 - 63	NT40143	
I	GB284183TF	2 - 62	NT40143	
	GB284183U	2 - 62	NT40143	
I	GB296181TF	2 - 64	NT40143	
I	GB296182TF	2 - 63	NT40143	
	GB296182TF	2 - 63	NT40143	
I	GB296183PNTF	2 - 63	NT40143	
	GB296183PNU	2 - 63	NT40143	
I	GB296183TF	2 - 62	NT40143	
	GB296183U	2 - 62	NT40143	
	GB296184U	2 - 63	NT40143	
	GBBBC	2 - 64	NT40143	
	GBIC	2 - 64	NT40143	
	GBIB	2 - 64	NT40143	
	GBL148L	2 - 64	NT40143	
	GBL148R	2 - 64	NT40143	
	GBL4996L	2 - 64	NT40143	
	GBL4996R	2 - 64	NT40143	
	GBLM	2 - 64	NT40143	
	GBPL3P	2 - 64	NT40143	
	GBPL4P	2 - 64	NT40143	
	GBSPP3P	2 - 64	NT40143	
	GBSPP4P	2 - 64	NT40143	
	GBTOC	2 - 51	NT40143	
	GBTB1	2 - 64	NT40143	
	GBTB2	2 - 64	NT40143	
	GBTB3	2 - 64	NT40143	
	GBTB4	2 - 64	NT40143	
	GBTOC	2 - 64	NT40143	
	GBUSL	2 - 64	NT40143	
H				
	H125 NJ 3 100	3 - 30	NT20138	
	H125 NJ 3 125	3 - 30	NT20138	
	H125 NJ 3 20	3 - 30	NT20138	
	H125 NJ 3 32	3 - 30	NT20138	
	H125 NJ 3 50	3 - 30	NT20138	
	H125 NJ 3 63	3 - 30	NT20138	

Valid until August 2014

I Available on indent only.

A Assembled to order.

	CAT. NO.	PAGE	P.S.	PRICE \$
I	H125 NJ 4 100	3 - 30	NT20138	
I	H125 NJ 4 125	3 - 30	NT20138	
I	H125 NJ 4 20	3 - 30	NT20138	
I	H125 NJ 4 32	3 - 30	NT20138	
I	H125 NJ 4 50	3 - 30	NT20138	
I	H125 NJ 4 63	3 - 30	NT20138	
	H160 NJ 3 160	3 - 45	NT20138	
I	H160 NJ 4 160	3 - 45	NT20138	
	H250 NE 3 125	3 - 56	NT20138	
	H250 NE 3 125 AC	3 - 57	NT20138	
	H250 NE 3 250	3 - 56	NT20138	
	H250 NE 3 250 AC	3 - 57	NT20138	
	H250 NE 3 40	3 - 56	NT20138	
	H250 NE 3 40 AC	3 - 57	NT20138	
I	H250 NE 3 AP 3	3 - 56	NT20138	
I	H250 NE 4 125	3 - 56	NT20138	
	H250 NE 4 125 AC	3 - 57	NT20138	
I	H250 NE 4 250	3 - 56	NT20138	
	H250 NE 4 250 AC	3 - 57	NT20138	
I	H250 NE 4 40	3 - 56	NT20138	
	H250 NE 4 40 AC	3 - 57	NT20138	
I	H250 NE 4 AN 3	3 - 56	NT20138	
I	H250 NE 4 AP 3	3 - 56	NT20138	
I	H250 NE 4 APN 3	3 - 56	NT20138	
	H250 NJ 3 250	3 - 53	NT20138	
I	H250 NJ 4 250	3 - 53	NT20138	
	H400 NE 3 250	3 - 81	NT20138	
I	H400 NE 3 250 X1L	3 - 82	NT20138	
I	H400 NE 3 250 X1S	3 - 82	NT20138	
	H400 NE 3 400	3 - 81	NT20138	
I	H400 NE 3 400 X1L	3 - 82	NT20138	
I	H400 NE 3 400 X1S	3 - 82	NT20138	
I	H400 NE 3 AG 400	3 - 81	NT20138	
I	H400 NE 3 AP +	3 - 81	NT20138	
I	H400 NE 3 APG 400	3 - 81	NT20138	
I	H400 NE 4 250	3 - 81	NT20138	
I	H400 NE 4 250 X1L	3 - 82	NT20138	
I	H400 NE 4 250 X1S	3 - 82	NT20138	
I	H400 NE 4 400	3 - 81	NT20138	
I	H400 NE 4 400 X1L	3 - 82	NT20138	
I	H400 NE 4 400 X1S	3 - 82	NT20138	
I	H400 NE 4 AGN 400	3 - 81	NT20138	
I	H400 NE 4 AN +	3 - 81	NT20138	
I	H400 NE 4 AP +	3 - 81	NT20138	
I	H400 NE 4 APN +	3 - 81	NT20138	
	H800 NE 3 630	3 - 109	NT20138	
	H800 NE 3 800	3 - 109	NT20138	
	H800 NE 3 800 X1L	3 - 110	NT20138	
	H800 NE 3 800 X1S	3 - 110	NT20138	

	CAT. NO.	PAGE	P.S.	PRICE \$
I	H800 NE 3 AG #	3 - 109	NT20138	
I	H800 NE 3 AP #	3 - 109	NT20138	
I	H800 NE 3 APG #	3 - 109	NT20138	
	H800 NE 4 630	3 - 109	NT20138	
	H800 NE 4 800	3 - 109	NT20138	
	H800 NE 4 800 X1L	3 - 110	NT20138	
	H800 NE 4 800 X1S	3 - 110	NT20138	
I	H800 NE 4 AGN #	3 - 109	NT20138	
I	H800 NE 4 AN #	3 - 109	NT20138	
I	H800 NE 4 AP #	3 - 109	NT20138	
I	H800 NE 4 APN #	3 - 109	NT20138	
	HC12153	4 - 16	NT40143	
	HC12183	4 - 16	NT40143	
	HC12213	4 - 16	NT40143	
	HC12243	4 - 16	NT40143	
	HC12273	4 - 16	NT40143	
	HC12303	4 - 16	NT40143	
	HC12333	4 - 16	NT40143	
	HC12363	4 - 16	NT40143	
	HC12393	4 - 16	NT40143	
	HC12423	4 - 16	NT40143	
	HC12453	4 - 16	NT40143	
	HC16153	4 - 16	NT40143	
	HC16183	4 - 16	NT40143	
	HC16213	4 - 16	NT40143	
	HC16243	4 - 16	NT40143	
	HC16273	4 - 16	NT40143	
	HC16303	4 - 16	NT40143	
	HC16333	4 - 16	NT40143	
	HC16363	4 - 16	NT40143	
	HC16393	4 - 16	NT40143	
	HC16423	4 - 16	NT40143	
	HC16453	4 - 16	NT40143	
	HC22153	4 - 16	NT40143	
	HC22183	4 - 16	NT40143	
	HC22213	4 - 16	NT40143	
	HC22243	4 - 16	NT40143	
	HC22273	4 - 16	NT40143	
	HC22303	4 - 16	NT40143	
	HC22333	4 - 16	NT40143	
	HC22363	4 - 16	NT40143	
	HC22393	4 - 16	NT40143	
	HC22423	4 - 16	NT40143	
	HC22453	4 - 16	NT40143	
	HCD250	4 - 17	NT40143	
	HCD250P	4 - 17	NT40143	
	HCD800	4 - 17	NT40143	
	HCDN630	4 - 17	NT40143	
	HCDW630	4 - 17	NT40143	

Valid until August 2014

I Available on indent only.

A Assembled to order.

CAT. NO.	PAGE	P.S.	PRICE \$
HCL1250	4 - 17	NT40143	
HCL1250	4 - 17	NT40143	
HCL250	4 - 17	NT40143	
HCL250P	4 - 17	NT40143	
HCL800	4 - 17	NT40143	
HCLN630	4 - 17	NT40143	
HCLW630	4 - 17	NT40143	
HCR1250	4 - 17	NT40143	
HCR1250	4 - 17	NT40143	
HCR250	4 - 17	NT40143	
HCR250P	4 - 17	NT40143	
HCR800	4 - 17	NT40143	
HCRN630	4 - 17	NT40143	
HCRW630	4 - 17	NT40143	
A HCSTD1DS16153	4 - 15	NT40143	
A HCSTD2DS16243	4 - 15	NT40143	
A HCSTD3SSL16153	4 - 15	NT40143	
A HCSTD4SSR16153	4 - 15	NT40143	
A HCSTD5SSL16213	4 - 15	NT40143	
A HCSTD6SSR16213	4 - 15	NT40143	
A HCSTD7SSL22243	4 - 15	NT40143	
A HCSTD8SSR22243	4 - 15	NT40143	
I			
IBC108P	1 - 43	NT40143	
IBC112P	1 - 43	NT40143	
IBC115P	1 - 43	NT40143	
IBC118P	1 - 43	NT40143	
IBC121P	1 - 43	NT40143	
IBC155P	1 - 43	NT40143	
IBCEC1	1 - 43	NT40143	
ICL102	1 - 43	NT40143	
ICL123	1 - 43	NT40143	
ICL153	1 - 43	NT40143	
ICL183	1 - 43	NT40143	
ICL213	1 - 43	NT40143	
ICL561F	1 - 43	NT40143	
ICL562	1 - 43	NT40143	
ICL563A	1 - 43	NT40143	
ICL564	1 - 43	NT40143	
ICL573	1 - 43	NT40143	
ICL573F	1 - 43	NT40143	
ICL62	1 - 43	NT40143	
ICLEC23	1 - 43	NT40143	
ICLEC4	1 - 43	NT40143	
ICLTOC	1 - 50	NT40143	
ILC 4EN	2 - 3	NT40143	
ILC 4S	2 - 3	NT40143	
A ILC4SLD	1 - 49	NT40143	
A ILC4SLD	2 - 3	NT40143	

CAT. NO.	PAGE	P.S.	PRICE \$
A ILC4SLD10H	1 - 49	NT40143	
A ILC4SLD10H	2 - 3	NT40143	
ILC4SLDCB1001P	1 - 48	NT40143	
ILC4SLDCB1001PD	1 - 48	NT40143	
ILC4SLDCB1003P	1 - 48	NT40143	
ILC4SLDCB1003PD	1 - 48	NT40143	
ILC4SLDCB1251P	1 - 48	NT40143	
ILC4SLDCB1251PD	1 - 48	NT40143	
ILC4SLDCB1253P	1 - 48	NT40143	
ILC4SLDCB1253PD	1 - 48	NT40143	
ILC4SLDCB1P	1 - 48	NT40143	
ILC4SLDCB1PD	1 - 48	NT40143	
ILC4SLDCB801P	1 - 48	NT40143	
ILC4SLDCB801PD	1 - 48	NT40143	
ILC4SLDCB803P	1 - 48	NT40143	
ILC4SLDCB803PD	1 - 48	NT40143	
ILC 8EN	2 - 3	NT40143	
ILC 8S	2 - 3	NT40143	
ILCSB	2 - 3	NT40143	
IRC	5 - 28	NT30141	
IRC	5 - 29	NT30141	
ISO 3160SFH	2 - 31	NB20064	
ISO 3160SFH	2 - 69	NB20064	
K			
KEY92268	2 - 16	NT40143	
KEY92268	2 - 30	NT40143	
KEY92268	2 - 51	NT40143	
KEYCL001	2 - 16	NT40143	
KEYCL001	2 - 30	NT40143	
KEYCL001	2 - 51	NT40143	
L			
I L125 NJ 3 100	3 - 31	NT20138	
I L125 NJ 3 125	3 - 31	NT20138	
I L125 NJ 3 20	3 - 31	NT20138	
I L125 NJ 3 32	3 - 31	NT20138	
I L125 NJ 3 50	3 - 31	NT20138	
I L125 NJ 3 63	3 - 31	NT20138	
I L125 NJ 4 100	3 - 31	NT20138	
I L125 NJ 4 125	3 - 31	NT20138	
I L125 NJ 4 20	3 - 31	NT20138	
I L125 NJ 4 32	3 - 31	NT20138	
I L125 NJ 4 50	3 - 31	NT20138	
I L125 NJ 4 63	3 - 31	NT20138	
L125 PJ 3 100	3 - 29	NT20138	
L125 PJ 3 125	3 - 29	NT20138	
L125 PJ 3 20	3 - 29	NT20138	
L125 PJ 3 32	3 - 29	NT20138	
L125 PJ 3 50	3 - 29	NT20138	
L125 PJ 3 63	3 - 29	NT20138	

Valid until August 2014

I Available on indent only.

A Assembled to order.

	CAT. NO.	PAGE	P.S.	PRICE \$
	L160 NJ 3 160	3 - 46	NT20138	
I	L160 NJ 4 160	3 - 46	NT20138	
I	L2000KT	2 - 69	NB20064	
I	L250 NJ 3 250	3 - 58	NT20138	
I	L250 NJ 4 250	3 - 58	NT20138	
I	L400 NE 3 250	3 - 84	NT20138	
I	L400 NE 3 400	3 - 84	NT20138	
I	L400 NE 3 AG 400	3 - 84	NT20138	
I	L400 NE 3 AP +	3 - 84	NT20138	
I	L400 NE 3 APG 400	3 - 84	NT20138	
I	L400 NE 4 250	3 - 84	NT20138	
I	L400 NE 4 400	3 - 84	NT20138	
I	L400 NE 4 AGN 400	3 - 84	NT20138	
I	L400 NE 4 AN +	3 - 84	NT20138	
I	L400 NE 4 AP +	3 - 84	NT20138	
I	L400 NE 4 APN +	3 - 84	NT20138	
	L400 PE 3 250	3 - 77	NT20138	
	L400 PE 3 400	3 - 77	NT20138	
	L800 NE 3 630	3 - 111	NT20138	
	L800 NE 3 800	3 - 111	NT20138	
I	L800 NE 3 AG #	3 - 111	NT20138	
I	L800 NE 3 AP #	3 - 111	NT20138	
I	L800 NE 3 APG #	3 - 111	NT20138	
	L800 NE 4 630	3 - 111	NT20138	
	L800 NE 4 800	3 - 111	NT20138	
I	L800 NE 4 AGN #	3 - 111	NT20138	
I	L800 NE 4 AN #	3 - 111	NT20138	
I	L800 NE 4 AP #	3 - 111	NT20138	
I	L800 NE 4 APN #	3 - 111	NT20138	
	L800 PE 3 630	3 - 112	NT20138	
	L800 PE 3 800	3 - 112	NT20138	
	LABLE148DT	1 - 47	NT40143	
	LABLE4996DT	1 - 47	NT40143	
	LB18	1 - 9	NT10136	
	LB3PH12	1 - 9	NZ00150	
	LB3PH18	1 - 9	NZ00150	
	LD12/15	2 - 9	NT40143	
	LD12/15	2 - 10	NT40143	
	LD15/18	2 - 9	NT40143	
	LD18/21	2 - 9	NT40143	
	LD18/21	2 - 10	NT40143	
	LD24	2 - 9	NT40143	
	LD6/8	2 - 9	NT40143	
	LD6/8	2 - 10	NT40143	
	LD9/12	2 - 9	NT40143	
	LE 73151753	2 - 31	NA30018	
	LOCTITE 480	6 - 11	NT10136	
	LOCTITE 480	6 - 26	NT10136	
	LSIG	3 - 132	NT30141	

CAT. NO.	PAGE	P.S.	PRICE \$
LSIG	6 - 25	NT20138	
LSIG	6 - 36	NT30141	
LSIP	3 - 132	NT30141	
LSIP	6 - 25	NT20138	
LSIP	6 - 36	NT30141	
M			
A M22IVS	1 - 42	NT40143	
MCEPCN5MFM	2 - 7	NB20054	
MCEPCN9MFM	2 - 7	NB20054	
I A MH6S633	5 - 9	NZ00150	
I A MH6S644	5 - 9	NZ00150	
I A MS12S1033	5 - 9	NZ00150	
I A MS12S1044	5 - 9	NZ00150	
I A MS12S1233	5 - 9	NZ00150	
I A MS12S1244	5 - 9	NZ00150	
I A MS16S1633	5 - 9	NZ00150	
I A MS16S1644	5 - 9	NZ00150	
I A MS20E2033	5 - 9	NZ00150	
I A MS20E2044	5 - 9	NZ00150	
I A MS25E2533	5 - 9	NZ00150	
I A MS25E2544	5 - 9	NZ00150	
I A MS6N433	5 - 9	NZ00150	
I A MS6N444	5 - 9	NZ00150	
I A MS6N633	5 - 9	NZ00150	
I A MS6N644	5 - 9	NZ00150	
I A MS6S633	5 - 9	NZ00150	
I A MS6S644	5 - 9	NZ00150	
I A MS8N833	5 - 9	NZ00150	
I A MS8N844	5 - 9	NZ00150	
I A MS8S833	5 - 9	NZ00150	
I A MS8S844	5 - 9	NZ00150	
MST	5 - 28	NT30141	
MST	5 - 29	NT30141	
N			
NC212/183U	2 - 58	NT40143	
NC218/183U	2 - 58	NT40143	
NC224182U	2 - 60	NT40143	
NC224183PNU	2 - 59	NT40143	
NC224/183U	2 - 58	NT40143	
NC224/184U	2 - 59	NT40143	
NC230/183U	2 - 58	NT40143	
NC236182U	2 - 60	NT40143	
NC236/183U	2 - 58	NT40143	
NC236/184U	2 - 59	NT40143	
NC242/183U	2 - 58	NT40143	
NC248182U	2 - 60	NT40143	
NC248183PNU	2 - 59	NT40143	
NC248/183U	2 - 58	NT40143	
NC248/184U	2 - 59	NT40143	

Valid until August 2014

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A Assembled to order.

	CAT. NO.	PAGE	P.S.	PRICE \$
	NC250HTOPC	2 - 61	NT40143	
	NC250TOPC	2 - 51	NT40143	
	NC250TOPC	2 - 61	NT40143	
	NC254/183U	2 - 58	NT40143	
	NC260182U	2 - 60	NT40143	
	NC260/183U	2 - 58	NT40143	
	NC260/184U	2 - 59	NT40143	
I	NC272183PNU	2 - 59	NT40143	
	NC272/183U	2 - 58	NT40143	
	NC272/184U	2 - 59	NT40143	
	NC278/183U	2 - 58	NT40143	
	NC284/183U	2 - 58	NT40143	
I	NC296183PNU	2 - 59	NT40143	
	NC296/183U	2 - 58	NT40143	
	NC4108/183TF	2 - 59	NT40143	
	NC412/183U	2 - 59	NT40143	
	NC418/183U	2 - 59	NT40143	
	NC424/183U	2 - 59	NT40143	
	NC430/183U	2 - 59	NT40143	
	NC436/183U	2 - 59	NT40143	
	NC442/183U	2 - 59	NT40143	
	NC448/183U	2 - 59	NT40143	
	NC454/183U	2 - 59	NT40143	
	NC460/183U	2 - 59	NT40143	
	NC472/183U	2 - 59	NT40143	
	NC478/183U	2 - 59	NT40143	
	NC484/183U	2 - 59	NT40143	
	NC496/183U	2 - 59	NT40143	
	NCBBC	2 - 61	NT40143	
	NCBC	2 - 61	NT40143	
	NCBC4	2 - 61	NT40143	
A	NCCK200	2 - 61	NT40143	
	NCCK200CP	2 - 31	NT40143	
	NCCK200CPP	2 - 51	NT40143	
A	NCCK250	2 - 61	NT40143	
	NCCK250CP	2 - 31	NT40143	
	NCCK250CPP	2 - 51	NT40143	
A	NCCK400	2 - 61	NT40143	
A	NCCK4002	2 - 61	NT40143	
	NCCK4002CPP	2 - 51	NT40143	
	NCCK400CPP	2 - 51	NT40143	
	NCH123	2 - 61	NT40143	
	NCH412/273U	2 - 60	NT40143	
	NCH412/3027/183U	2 - 60	NT40143	
	NCH412/4227/183U	2 - 60	NT40143	
	NCH412/6027/183U	2 - 60	NT40143	
	NCH418/273U	2 - 60	NT40143	
	NCH424/273U	2 - 60	NT40143	
	NCH46/1227/183U	2 - 60	NT40143	

CAT. NO.	PAGE	P.S.	PRICE \$
NCH46/2427/183U	2 - 60	NT40143	
NCH46/273U	2 - 60	NT40143	
NCH46/3627/183U	2 - 60	NT40143	
NCH46/4827/183U	2 - 60	NT40143	
NCL243	2 - 61	NT40143	
NCL24C	2 - 61	NT40143	
NCS250GT	2 - 61	NT40143	
NEB185	1 - 50	NT40143	
NEB185	2 - 57	NT40143	
NEB33S	2 - 57	NT40143	
NLC12FE	2 - 9	NT40143	
NLC12S	2 - 9	NT40143	
NLC15FE	2 - 9	NT40143	
NLC15S	2 - 9	NT40143	
NLC18FE	2 - 9	NT40143	
NLC18S	2 - 9	NT40143	
NLC21FE	2 - 9	NT40143	
NLC21S	2 - 9	NT40143	
NLC24S	2 - 9	NT40143	
NLC8FE	2 - 9	NT40143	
NLC8S	2 - 9	NT40143	
P			
PRE-TRIP ALARM	6 - 10	NT20138	
I PXB80012U	4 - 4	NT40143	
I PXB80018U	4 - 4	NT40143	
I PXB80024U	4 - 4	NT40143	
I PXB80030U	4 - 4	NT40143	
I PXB80036U	4 - 4	NT40143	
I PXB80042U	4 - 4	NT40143	
I PXB80048U	4 - 4	NT40143	
I PXB80060U	4 - 4	NT40143	
I PXB8006U	4 - 4	NT40143	
I PXB80072U	4 - 4	NT40143	
R			
RD1B212	8 - 5	NT30141	
RD1B214	8 - 5	NT30141	
RD1B215	8 - 5	NT30141	
I RD1B21H	8 - 5	NT30141	
I RD1DF12	8 - 6	NT30141	
RD1DF14	8 - 6	NT30141	
I RD1DF15	8 - 6	NT30141	
RD1EP212	8 - 7	NT30141	
RD1EP214	8 - 7	NT30141	
RD1EP215	8 - 7	NT30141	
RD1EP21H	8 - 7	NT30141	
RD1G212	8 - 10	NT30141	
I RD1G214	8 - 10	NT30141	
I RD1G215	8 - 10	NT30141	
RD3AF12 (110 V AC)	8 - 4	NT30141	

Valid until August 2014

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A Assembled to order.

	CAT. NO.	PAGE	P.S.	PRICE \$
	RD3AF14 (240 V AC)	8 - 4	NT30141	
	RD3AF15 (415 V AC)	8 - 4	NT30141	
	RD3AF1H (24-150 V DC)	8 - 4	NT30141	
	RD3AF1N (24 V AC)	8 - 4	NT30141	
	RD3E212B	8 - 8	NT30141	
	RD3E217B	8 - 8	NT30141	
	RD3E218B	8 - 8	NT30141	
	RD3E21HB	8 - 8	NT30141	
I	RD4848C	8 - 15	NT30141	
I	RD7272C	8 - 15	NT30141	
	RD7296A	8 - 15	NT30141	
I	RD9696C	8 - 15	NT30141	
S				
	S1000 NE 3 1000	3 - 113	NT20138	
	S1000 NE 3 800 X1L	3 - 114	NT20138	
	S1000 NE 3 800 X1S	3 - 114	NT20138	
I	S1000 NE 3 AG #	3 - 113	NT20138	
I	S1000 NE 3 AP #	3 - 113	NT20138	
I	S1000 NE 3 APG #	3 - 113	NT20138	
	S1000 NE 4 1000	3 - 113	NT20138	
	S1000 NE 4 800 X1L	3 - 114	NT20138	
	S1000 NE 4 800 X1S	3 - 114	NT20138	
I	S1000 NE 4 AGN #	3 - 113	NT20138	
I	S1000 NE 4 AN #	3 - 113	NT20138	
I	S1000 NE 4 AP #	3 - 113	NT20138	
I	S1000 NE 4 APN #	3 - 113	NT20138	
I	S100 GF 2 100	3 - 26	NT20138	
I	S100 GF 2 15	3 - 26	NT20138	
	S100 GF 2 20	3 - 26	NT20138	
	S100 GF 2 30	3 - 26	NT20138	
	S100 GF 2 40	3 - 26	NT20138	
	S100 GF 2 50	3 - 26	NT20138	
	S100 GF 2 60	3 - 26	NT20138	
	S100 GF 2 75	3 - 26	NT20138	
	S1250 GE 3 1250	3 - 121	NT20138	
I	S1250 GE 3 AG #	3 - 121	NT20138	
I	S1250 GE 3 AP #	3 - 121	NT20138	
I	S1250 GE 3 APG #	3 - 121	NT20138	
	S1250 GE 4 1250	3 - 121	NT20138	
I	S1250 GE 4 AGN #	3 - 121	NT20138	
I	S1250 GE 4 AN #	3 - 121	NT20138	
I	S1250 GE 4 AP #	3 - 121	NT20138	
I	S1250 GE 4 APN #	3 - 121	NT20138	
	S1250NN3	3 - 142	NT20138	
	S1250NN4	3 - 142	NT20138	
	S125 GJ 3 100	3 - 28	NT20138	
	S125 GJ 3 100PM	3 - 146	NT20138	
	S125 GJ 3 125	3 - 28	NT20138	
	S125 GJ 3 125PM	3 - 146	NT20138	

CAT. NO.	PAGE	P.S.	PRICE \$
S125 GJ 3 20	3 - 28	NT20138	
S125 GJ 3 32	3 - 28	NT20138	
S125 GJ 3 50	3 - 28	NT20138	
I S125 GJ 3 50PM	3 - 146	NT20138	
S125 GJ 3 63	3 - 28	NT20138	
S125 GJ 3 63PM	3 - 146	NT20138	
S125 GJ 4 100	3 - 28	NT20138	
S125 GJ 4 125	3 - 28	NT20138	
S125 GJ 4 20	3 - 28	NT20138	
S125 GJ 4 32	3 - 28	NT20138	
S125 GJ 4 50	3 - 28	NT20138	
S125 GJ 4 63	3 - 28	NT20138	
I S125ND3	3 - 143	NT20138	
I S125ND4	3 - 143	NT20138	
S125 NF 1 100	3 - 25	NT20138	
S125 NF 1 125	3 - 25	NT20138	
S125 NF 1 16	3 - 25	NT20138	
S125 NF 1 20	3 - 25	NT20138	
S125 NF 1 25	3 - 25	NT20138	
S125 NF 1 32	3 - 25	NT20138	
S125 NF 1 40	3 - 25	NT20138	
S125 NF 1 50	3 - 25	NT20138	
S125 NF 1 63	3 - 25	NT20138	
S125 NF 1 80	3 - 25	NT20138	
S125 NJ 3 100	3 - 27	NT20138	
S125 NJ 3 125	3 - 27	NT20138	
S125 NJ 3 20	3 - 27	NT20138	
S125 NJ 3 20PM	3 - 146	NT20138	
S125 NJ 3 32	3 - 27	NT20138	
S125 NJ 3 32PM	3 - 146	NT20138	
S125 NJ 3 50	3 - 27	NT20138	
S125 NJ 3 63	3 - 27	NT20138	
S125NN3	3 - 142	NT20138	
I S125NN4	3 - 142	NT20138	
S1600 NE 3 1250	3 - 122	NT20138	
I S1600 NE 3 AG #	3 - 122	NT20138	
I S1600 NE 3 AP #	3 - 122	NT20138	
I S1600 NE 3 APG #	3 - 122	NT20138	
S1600 NE 4 1250	3 - 122	NT20138	
I S1600 NE 4 AGN #	3 - 122	NT20138	
I S1600 NE 4 AN #	3 - 122	NT20138	
I S1600 NE 4 AP #	3 - 122	NT20138	
I S1600 NE 4 APN #	3 - 122	NT20138	
S1600NN3	3 - 142	NT20138	
S1600NN4	3 - 142	NT20138	
S160 GJ 3 100	3 - 44	NT20138	
S160 GJ 3 125	3 - 44	NT20138	
S160 GJ 3 160	3 - 44	NT20138	
S160 GJ 3 160PM	3 - 146	NT20138	

Valid until August 2014

I Available on indent only.

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	CAT. NO.	PAGE	P.S.	PRICE \$
	S160 GJ 3 50	3 - 44	NT20138	
	S160 GJ 3 63	3 - 44	NT20138	
I	S160 GJ 4 100	3 - 44	NT20138	
	S160 GJ 4 125	3 - 44	NT20138	
	S160 GJ 4 160	3 - 44	NT20138	
I	S160 GJ 4 50	3 - 44	NT20138	
I	S160 GJ 4 63	3 - 44	NT20138	
I	S160ND3	3 - 143	NT20138	
I	S160ND4	3 - 143	NT20138	
	S160 NF 1 100	3 - 42	NT20138	
	S160 NF 1 125	3 - 42	NT20138	
	S160 NF 1 16	3 - 42	NT20138	
	S160 NF 1 160	3 - 42	NT20138	
	S160 NF 1 20	3 - 42	NT20138	
	S160 NF 1 25	3 - 42	NT20138	
	S160 NF 1 32	3 - 42	NT20138	
	S160 NF 1 40	3 - 42	NT20138	
	S160 NF 1 50	3 - 42	NT20138	
	S160 NF 1 63	3 - 42	NT20138	
	S160 NF 1 80	3 - 42	NT20138	
	S160 NJ 3 100	3 - 43	NT20138	
	S160 NJ 3 125	3 - 43	NT20138	
	S160 NJ 3 160	2 - 31	NT20138	
	S160 NJ 3 160	3 - 43	NT20138	
	S160 NJ 3 20	3 - 43	NT20138	
	S160 NJ 3 32	3 - 43	NT20138	
	S160 NJ 3 50	3 - 43	NT20138	
	S160 NJ 3 63	3 - 43	NT20138	
	S160 NJ 4 100	3 - 43	NT20138	
	S160 NJ 4 125	3 - 43	NT20138	
	S160 NJ 4 160	3 - 43	NT20138	
	S160 NJ 4 20	3 - 43	NT20138	
I	S160 NJ 4 32	3 - 43	NT20138	
	S160 NJ 4 50	3 - 43	NT20138	
	S160 NJ 4 63	3 - 43	NT20138	
	S160NN3	3 - 142	NT20138	
	S160NN4	3 - 142	NT20138	
	S250 GJ 3 250	3 - 49	NT20138	
I	S250 GJ 3 250M1000	3 - 49	NT20138	
I A	S250 GJ 3 250MAG	3 - 49	NT20138	
	S250 GJ 3 250PM	3 - 146	NT20138	
	S250 GJ 3 SO23160	3 - 49	NT20138	
	S250 GJ 4 250	3 - 49	NT20138	
I	S250ND3	3 - 143	NT20138	
I	S250ND4	3 - 143	NT20138	
	S250NJ	2 - 31	NT20138	
	S250 NJ 3 250	3 - 48	NT20138	
	S250 NJ 4 250	3 - 48	NT20138	
	S250NN3	2 - 31	NT20138	

CAT. NO.	PAGE	P.S.	PRICE \$
S250NN3	3 - 142	NT20138	
S250NN4	3 - 142	NT20138	
S250 PE 3 125	3 - 52	NT20138	
S250 PE 3 125 AC	3 - 54	NT20138	
S250 PE 3 250	3 - 52	NT20138	
S250 PE 3 250 AC	3 - 54	NT20138	
S250 PE 3 40 AC	3 - 54	NT20138	
I S250 PE 3 AP 3	3 - 52	NT20138	
I S250 PE 4 125	3 - 52	NT20138	
I S250 PE 4 125 AC	3 - 54	NT20138	
S250 PE 4 250	3 - 52	NT20138	
I S250 PE 4 250 AC	3 - 54	NT20138	
I S250 PE 4 40 AC	3 - 54	NT20138	
I S250 PE 4 AN 4	3 - 52	NT20138	
I S250 PE 4 AP 4	3 - 52	NT20138	
I S250 PE 4 APN 4	3 - 52	NT20138	
S400 CJ 3 250	3 - 70	NT20138	
S400 CJ 3 400	3 - 70	NT20138	
S400 GE 3 250	3 - 75	NT20138	
S400 GE 3 250 X1L	3 - 76	NT20138	
S400 GE 3 250 X1S	3 - 76	NT20138	
S400 GE 3 400	3 - 75	NT20138	
S400 GE 3 400PM	3 - 146	NT20138	
S400 GE 3 400 X1L	3 - 76	NT20138	
S400 GE 3 400 X1S	3 - 76	NT20138	
S400 GE 3 AG 400	3 - 75	NT20138	
I S400 GE 3 AP 400	3 - 75	NT20138	
I S400 GE 3 APG 400	3 - 75	NT20138	
I S400 GE 4 250	3 - 75	NT20138	
S400 GE 4 250 X1L	3 - 76	NT20138	
S400 GE 4 250 X1S	3 - 76	NT20138	
S400 GE 4 400	3 - 75	NT20138	
I S400 GE 4 400 X1L	3 - 76	NT20138	
I S400 GE 4 400 X1S	3 - 76	NT20138	
S400 GE 4 AGN 400	3 - 75	NT20138	
I S400 GE 4 AN 400	3 - 75	NT20138	
I S400 GE 4 AP 400	3 - 75	NT20138	
I S400 GE 4 APN 400	3 - 75	NT20138	
S400 GJ 3 250	3 - 73	NT20138	
S400 GJ 3 400	3 - 73	NT20138	
I S400 GJ 4 250	3 - 73	NT20138	
S400 GJ 4 400	3 - 73	NT20138	
I S400ND3	3 - 143	NT20138	
S400 NE 3 250	3 - 72	NT20138	
S400 NE 3 400	3 - 72	NT20138	
S400 NE 4 250	3 - 72	NT20138	
S400 NE 4 400	3 - 72	NT20138	
S400 NJ 3 250	3 - 71	NT20138	
S400 NJ 3 400	3 - 71	NT20138	

Valid until August 2014

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A Assembled to order.

	CAT. NO.	PAGE	P.S.	PRICE \$
	S400 NJ 4 250	3 - 71	NT20138	
	S400 NJ 4 400	3 - 71	NT20138	
	S400NN3	2 - 31	NT20138	
	S400NN3	3 - 142	NT20138	
	S400NN4	3 - 142	NT20138	
I	S400 PE 3 250	3 - 79	NT20138	
	S400 PE 3 400	3 - 79	NT20138	
I	S400 PE 3 AG 400	3 - 79	NT20138	
I	S400 PE 3 AP +	3 - 79	NT20138	
I	S400 PE 3 APG 400	3 - 79	NT20138	
I	S400 PE 4 250	3 - 79	NT20138	
I	S400 PE 4 400	3 - 79	NT20138	
I	S400 PE 4 AGN 400	3 - 79	NT20138	
I	S400 PE 4 AN +	3 - 79	NT20138	
I	S400 PE 4 AP +	3 - 79	NT20138	
I	S400 PE 4 APN +	3 - 79	NT20138	
	S630 CE 3 630	3 - 87	NT20138	
	S630 CE 4 630	3 - 87	NT20138	
	S630 GE 3 630	3 - 90	NT20138	
	S630 GE 3 630PM	3 - 146	NT20138	
	S630 GE 3 630 X1L	3 - 91	NT20138	
	S630 GE 3 630 X1S	3 - 91	NT20138	
	S630 GE 3 AG 630	3 - 90	NT20138	
I	S630 GE 3 AP 630	3 - 90	NT20138	
I	S630 GE 3 APG 630	3 - 90	NT20138	
	S630 GE 4 630	3 - 90	NT20138	
I	S630 GE 4 630 X1L	3 - 91	NT20138	
I	S630 GE 4 630 X1S	3 - 91	NT20138	
	S630 GE 4 AGN 630	3 - 90	NT20138	
I	S630 GE 4 AN 630	3 - 90	NT20138	
I	S630 GE 4 AP 630	3 - 90	NT20138	
I	S630 GE 4 APN 630	3 - 90	NT20138	
	S630NN3	3 - 142	NT20138	
	S630NN4	3 - 142	NT20138	
	S800 CJ 3 630	3 - 103	NT20138	
	S800 CJ 3 800	3 - 103	NT20138	
I	S800ND4	3 - 143	NT20138	
	S800 NE 3 630	3 - 106	NT20138	
	S800 NE 3 800	3 - 106	NT20138	
	S800 NE 4 630	3 - 106	NT20138	
	S800 NE 4 800	3 - 106	NT20138	
	S800 NJ 3 630	3 - 104	NT20138	
	S800 NJ 3 800	3 - 104	NT20138	
	S800NN3	3 - 142	NT20138	
	S800NN4	3 - 142	NT20138	
	S800 RE 3 630	3 - 107	NT20138	
	S800 RE 3 800	3 - 107	NT20138	
	S800 RE 3 800 X1L	3 - 108	NT20138	
	S800 RE 3 800 X1S	3 - 108	NT20138	

	CAT. NO.	PAGE	P.S.	PRICE \$
I	S800 RE 3 AG #	3 - 107	NT20138	
I	S800 RE 3 AP #	3 - 107	NT20138	
I	S800 RE 3 APG #	3 - 107	NT20138	
	S800 RE 4 630	3 - 107	NT20138	
	S800 RE 4 800	3 - 107	NT20138	
I	S800 RE 4 800 X1L	3 - 108	NT20138	
I	S800 RE 4 800 X1S	3 - 108	NT20138	
I	S800 RE 4 AGN #	3 - 107	NT20138	
I	S800 RE 4 AN #	3 - 107	NT20138	
I	S800 RE 4 AP #	3 - 107	NT20138	
I	S800 RE 4 APN #	3 - 107	NT20138	
	S800 RJ 3 630	3 - 105	NT20138	
	S800 RJ 3 800	3 - 105	NT20138	
	S800 RJ 4 630	3 - 105	NT20138	
	S800 RJ 4 800	3 - 105	NT20138	
	SAFET6106	1 - 7	NT10136	
I	SAFET6106SHT	1 - 8	NT10136	
	SAFET6110	1 - 7	NT10136	
	SAFET61100	1 - 7	NT10136	
	SAFET61100NA	1 - 7	NT10136	
I	SAFET61100NASHT	1 - 8	NT10136	
I	SAFET61100SHT	1 - 8	NT10136	
I	SAFET6110SHT	1 - 8	NT10136	
	SAFET6116	1 - 7	NT10136	
	SAFET6116SHT	1 - 8	NT10136	
	SAFET6120	1 - 7	NT10136	
	SAFET6120SHT	1 - 8	NT10136	
	SAFET6125	1 - 7	NT10136	
	SAFET6125SHT	1 - 8	NT10136	
	SAFET6132	1 - 7	NT10136	
	SAFET6132SHT	1 - 8	NT10136	
	SAFET6140	1 - 7	NT10136	
I	SAFET6140SHT	1 - 8	NT10136	
	SAFET6150	1 - 7	NT10136	
I	SAFET6150SHT	1 - 8	NT10136	
	SAFET6163	1 - 7	NT10136	
	SAFET6163NA	1 - 7	NT10136	
I	SAFET6163NASHT	1 - 8	NT10136	
I	SAFET6163SHT	1 - 8	NT10136	
	SAFET6180	1 - 7	NT10136	
I	SAFET6180SHT	1 - 8	NT10136	
	SAFET6206	1 - 7	NT10136	
I	SAFET6206SHT	1 - 8	NT10136	
	SAFET6210	1 - 7	NT10136	
I	SAFET62100	1 - 7	NT10136	
I	SAFET62100NA	1 - 7	NT10136	
I	SAFET62100NASHT	1 - 8	NT10136	
I	SAFET62100SHT	1 - 8	NT10136	
I	SAFET6210SHT	1 - 8	NT10136	

Valid until August 2014

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	CAT. NO.	PAGE	P.S.	PRICE \$
	SAFET6216	1 - 7	NT10136	
I	SAFET6216SHT	1 - 8	NT10136	
	SAFET6220	1 - 7	NT10136	
I	SAFET6220SHT	1 - 8	NT10136	
I	SAFET6225	1 - 7	NT10136	
I	SAFET6225SHT	1 - 8	NT10136	
	SAFET6232	1 - 7	NT10136	
I	SAFET6232SHT	1 - 8	NT10136	
	SAFET6240	1 - 7	NT10136	
I	SAFET6240SHT	1 - 8	NT10136	
	SAFET6250	1 - 7	NT10136	
I	SAFET6250SHT	1 - 8	NT10136	
	SAFET6263	1 - 7	NT10136	
I	SAFET6263NA	1 - 7	NT10136	
I	SAFET6263NASHT	1 - 8	NT10136	
I	SAFET6263SHT	1 - 8	NT10136	
	SAFET6280	1 - 7	NT10136	
I	SAFET6280SHT	1 - 8	NT10136	
	SAFET6306	1 - 7	NT10136	
I	SAFET6306SHT	1 - 8	NT10136	
	SAFET6310	1 - 7	NT10136	
	SAFET63100	1 - 7	NT10136	
	SAFET63100NA	1 - 7	NT10136	
	SAFET63100NA	2 - 30	NT10136	
	SAFET63100NASHT	1 - 8	NT10136	
	SAFET63100SHT	1 - 8	NT10136	
	SAFET6310SHT	1 - 8	NT10136	
	SAFET6316	1 - 7	NT10136	
	SAFET6316SHT	1 - 8	NT10136	
	SAFET6320	1 - 7	NT10136	
	SAFET6320SHT	1 - 8	NT10136	
	SAFET6325	1 - 7	NT10136	
	SAFET6325SHT	1 - 8	NT10136	
	SAFET6332	1 - 7	NT10136	
	SAFET6332SHT	1 - 8	NT10136	
	SAFET6340	1 - 7	NT10136	
	SAFET6340SHT	1 - 8	NT10136	
	SAFET6350	1 - 7	NT10136	
	SAFET6350SHT	1 - 8	NT10136	
	SAFET6363	1 - 7	NT10136	
	SAFET6363NA	1 - 7	NT10136	
	SAFET6363NASHT	1 - 8	NT10136	
	SAFET6363SHT	1 - 8	NT10136	
	SAFET6380	1 - 7	NT10136	
	SAFET6380SHT	1 - 8	NT10136	
I	SAFET6406	1 - 7	NT10136	
I	SAFET6406SHT	1 - 8	NT10136	
I	SAFET6410	1 - 7	NT10136	
I	SAFET64100	1 - 7	NT10136	

	CAT. NO.	PAGE	P.S.	PRICE \$
I	SAFET64100NA	1 - 7	NT10136	
I	SAFET64100NASHT	1 - 8	NT10136	
I	SAFET64100SHT	1 - 8	NT10136	
I	SAFET6410SHT	1 - 8	NT10136	
I	SAFET6416	1 - 7	NT10136	
I	SAFET6416SHT	1 - 8	NT10136	
	SAFET6420	1 - 7	NT10136	
I	SAFET6420SHT	1 - 8	NT10136	
I	SAFET6425	1 - 7	NT10136	
I	SAFET6425SHT	1 - 8	NT10136	
	SAFET6432	1 - 7	NT10136	
I	SAFET6432SHT	1 - 8	NT10136	
I	SAFET6440	1 - 7	NT10136	
I	SAFET6440SHT	1 - 8	NT10136	
	SAFET6450	1 - 7	NT10136	
	SAFET6450SHT	1 - 8	NT10136	
	SAFET6463	1 - 7	NT10136	
I	SAFET6463NA	1 - 7	NT10136	
I	SAFET6463NASHT	1 - 8	NT10136	
I	SAFET6463SHT	1 - 8	NT10136	
	SAFET6480	1 - 7	NT10136	
I	SAFET6480SHT	1 - 8	NT10136	
	SAFETLCK 12	1 - 9	NT10136	
	SAFETLCK 24	1 - 9	NT10136	
	SAFE-TPC1	2 - 2	NT10136	
	SAFE-TPC23	2 - 2	NT10136	
	SAFETPF	1 - 9	NT10136	
	SAFETPF	2 - 10	NT10136	
	SAFETPF	2 - 31	NT10136	
	SAFETPF	2 - 51	NT10136	
	SPD1	5 - 28	NT30141	
	SPD1	5 - 29	NT30141	
	SPD3	5 - 28	NT30141	
	SPD3	5 - 29	NT30141	
I	SRCB 1010	1 - 10	NT10136	
	SRCB 1030	1 - 10	NT10136	
	SRCB 1610	1 - 10	NT10136	
	SRCB 1630	1 - 10	NT10136	
	SRCB 2010	1 - 10	NT10136	
	SRCB 2030	1 - 10	NT10136	
	SRCBHA	1 - 10	NT10136	
	SRCBLCK 12	1 - 10	NT10136	
	SRCBLCK 24	1 - 10	NT10136	
	SRCBWA	1 - 10	NT10136	
	SSW2	5 - 28	NB20052	
	SSW2	5 - 29	NB20052	
	SSW3	5 - 28	NB20052	
	SSW3	5 - 29	NB20052	
	STK250ND/TH	2 - 31	NT40143	

Valid until August 2014

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A Assembled to order.

	CAT. NO.	PAGE	P.S.	PRICE \$
	STK250NDTH	2 - 51	NT40143	
	STK250ND/TH	2 - 68	NT40143	
	STK300TH	2 - 31	NT40143	
	STK300TH	2 - 51	NT40143	
	STKCD	2 - 16	NT40143	
	STKCD	2 - 51	NT40143	
	STKCD	2 - 66	NT40143	
T				
	T12CAPLAB	3 - 33	NZ00150	
	T12CAPLAB	3 - 34	NZ00150	
	T12CAPLAB	3 - 34	NZ00150	
	T12CAPLAB	3 - 34	NZ00150	
	T12CAPLAB	3 - 35	NZ00150	
	T12CAPLAB	3 - 35	NZ00150	
	T12CAPLAB	3 - 36	NZ00150	
	T12CAPLAB	3 - 36	NZ00150	
	T12CAPLAB	5 - 36	NZ00150	
	T1HP03R6BNA4	3 - 22	NT20138	
A	T1HP30PALK	3 - 22	NT10136	
A	T1HP40PALK	6 - 11	NT10136	
	T1HP40R6BNA4	6 - 11	NT20138	
A	T1HP80PALK	6 - 26	NT10136	
	T1HP80R6BNA4	6 - 26	NT20138	
A	T1HPX6PALK	6 - 37	NT10136	
	T1HPX6R6BNA4	6 - 37	NT20138	
	T1HS03R5GM	3 - 22	NT20138	
	T1HS40R5GM	6 - 11	NT20138	
A	T1HS80R5GM	6 - 26	NT20138	
A	T1HSX6R5GM	6 - 37	NT20138	
	T25CAPLAB	3 - 60	NZ00150	
	T25CAPLAB	3 - 61	NZ00150	
	T25CAPLAB	3 - 61	NZ00150	
	T25CAPLAB	3 - 62	NZ00150	
	T25CAPLAB	3 - 63	NZ00150	
	T25CAPLAB	5 - 36	NZ00150	
	T2AL00B1STA	3 - 32	NT20138	
	T2AL00B1STA	3 - 59	NT20138	
	T2AL00B1STA	3 - 92	NT20138	
	T2AL00B1STA	3 - 115	NT20138	
	T2AL00B1STA	3 - 123	NT20138	
	T2AL00B2STA	3 - 32	NT20138	
	T2AL00B2STA	3 - 59	NT20138	
	T2AL00B2STA	3 - 92	NT20138	
	T2AL00B2STA	3 - 115	NT20138	
	T2AL00B2STA	3 - 123	NT20138	
	T2AL00M3RTA	3 - 32	NT20138	
	T2AL00M3RTA	3 - 59	NT20138	
	T2AL00M3RTA	3 - 92	NT20138	
	T2AL00M3RTA	3 - 115	NT20138	

CAT. NO.	PAGE	P.S.	PRICE \$
T2AL00M3RTA	3 - 123	NT20138	
T2AL00M3STA	3 - 32	NT20138	
T2AL00M3STA	3 - 59	NT20138	
T2AL00M3STA	3 - 92	NT20138	
T2AL00M3SWA	3 - 32	NT20138	
T2AL00M3SWA	3 - 59	NT20138	
T2AL00M3SWA	3 - 92	NT20138	
T2AL00M4STA	3 - 115	NT20138	
T2AL00M4STA	3 - 123	NT20138	
T2AL00M5SWA	3 - 115	NT20138	
T2AL00M5SWA	3 - 123	NT20138	
T2AX00B1STA	3 - 32	NT20138	
T2AX00B1STA	3 - 59	NT20138	
T2AX00B1STA	3 - 92	NT20138	
T2AX00B1STA	3 - 115	NT20138	
T2AX00B1STA	3 - 123	NT20138	
T2AX00B2STA	3 - 32	NT20138	
T2AX00B2STA	3 - 59	NT20138	
T2AX00B2STA	3 - 92	NT20138	
T2AX00B2STA	3 - 115	NT20138	
T2AX00B2STA	3 - 123	NT20138	
T2AX00M3RTA	3 - 32	NT20138	
T2AX00M3RTA	3 - 59	NT20138	
T2AX00M3RTA	3 - 92	NT20138	
T2AX00M3RTA	3 - 115	NT20138	
T2AX00M3RTA	3 - 123	NT20138	
T2AX00M3STA	3 - 32	NT20138	
T2AX00M3STA	3 - 59	NT20138	
T2AX00M3STA	3 - 92	NT20138	
T2AX00M3STA	3 - 115	NT20138	
T2AX00M3STA	3 - 123	NT20138	
T2AX00M3SWA	3 - 32	NT20138	
T2AX00M3SWA	3 - 59	NT20138	
T2AX00M3SWA	3 - 92	NT20138	
T2AX00M3SWA	3 - 115	NT20138	
T2AX00M3SWA	3 - 123	NT20138	
T2AX00M4SWA	3 - 115	NT20138	
T2AX00M4SWA	3 - 123	NT20138	
I T2AX00M5SWA	3 - 115	NT20138	
I T2AX00M5SWA	3 - 123	NT20138	
T2BA123SHA	3 - 38	NT20138	
T2BA123SHA	4 - 14	NT20138	
T2BA253LHA	3 - 38	NT20138	
T2BA253LHA	3 - 65	NT20138	
T2BA253LHA	4 - 14	NT20138	
T2BA253SHA	3 - 65	NT20138	
T2BA253SHA	4 - 14	NT20138	
I T2BA403LHA	3 - 98	NT20138	
T2BA403SHA	3 - 98	NT20138	

Valid until August 2014

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A Assembled to order.

	CAT. NO.	PAGE	P.S.	PRICE \$
	T2BA403SHA	4 - 14	NT20138	
	T2BA803LHA	3 - 118	NT20138	
	T2BA803SHA	3 - 118	NT20138	
	T2BAX63LHA	3 - 126	NT20138	
	T2CB803GHNA	3 - 118	NT20138	
	T2CB804GHNA	3 - 118	NT20138	
	T2CF00L	3 - 38	NT20138	
	T2CF00L	3 - 65	NT20138	
	T2CF00L	3 - 98	NT20138	
	T2CF00L	4 - 14	NT20138	
	T2CF00LA	3 - 118	NT20138	
	T2CF00LA	3 - 126	NT20138	
	T2CF121SLNG	3 - 37	NT20138	
	T2CF121SLNG	4 - 13	NT20138	
	T2CF122SLNG	3 - 37	NT20138	
	T2CF123SLNG	3 - 37	NT20138	
	T2CF123SLNG	4 - 13	NT20138	
I	T2CF123SSNBA	3 - 37	NT20138	
I	T2CF123SSNBA	4 - 13	NT20138	
	T2CF124SLNG	3 - 37	NT30141	
	T2CF124SLNG	4 - 13	NT30141	
I	T2CF124SSNBA	3 - 37	NT20138	
I	T2CF124SSNBA	4 - 13	NT20138	
	T2CF161SLNG	3 - 64	NT20138	
	T2CF161SLNG	4 - 13	NT20138	
	T2CF253LLNG	3 - 37	NT20138	
	T2CF253LLNG	3 - 64	NT20138	
	T2CF253LLNG	4 - 13	NT20138	
	T2CF253SLNG	3 - 64	NT20138	
	T2CF253SLNG	4 - 13	NT20138	
	T2CF253SSNBA	3 - 64	NT20138	
	T2CF253SSNBA	4 - 13	NT20138	
	T2CF254LLNG	3 - 37	NT20138	
	T2CF254LLNG	3 - 64	NT20138	
	T2CF254LLNG	4 - 13	NT20138	
	T2CF254SLNG	3 - 64	NT20138	
	T2CF254SLNG	4 - 13	NT20138	
	T2CF254SSNBA	3 - 64	NT20138	
	T2CF254SSNBA	4 - 13	NT20138	
	T2CF403SLNG	3 - 97	NT20138	
	T2CF403SLNG	4 - 13	NT20138	
	T2CF403SWNG	3 - 97	NT30141	
	T2CF403SWNG	4 - 13	NT30141	
	T2CF404SLNG	3 - 97	NT20138	
	T2CF404SWNG	3 - 97	NT20138	
	T2CF803SLHGA	3 - 118	NT20138	
	T2CF804SLHGA	3 - 118	NT20138	
	T2CFX33SLHGA	3 - 126	NT20138	
	T2CFX34SLHGA	3 - 126	NT20138	

	CAT. NO.	PAGE	P.S.	PRICE \$
	T2CLSBB25033	5 - 34	NT30141	
I	T2CLSBB25043	5 - 34	NT30141	
	T2CLSBB25044	5 - 34	NT30141	
	T2CLSBB40033	5 - 34	NT30141	
I	T2CLSBB40043	5 - 34	NT30141	
	T2CLSBB40044	5 - 34	NT30141	
	T2CLSBB63033	5 - 34	NT30141	
	T2CLSBB63043	5 - 34	NT30141	
	T2CLSBB63044	5 - 34	NT30141	
	T2CR123SG	3 - 38	NT20138	
	T2CR123SG	4 - 14	NT20138	
	T2CR124SG	3 - 38	NT20138	
	T2CR124SG	4 - 14	NT20138	
	T2CR253SG	3 - 38	NT20138	
	T2CR253SG	3 - 65	NT20138	
	T2CR253SG	4 - 14	NT20138	
	T2CR254SG	3 - 38	NT20138	
	T2CR254SG	3 - 65	NT20138	
	T2CR254SG	4 - 14	NT20138	
	T2CR403SG	3 - 98	NT20138	
	T2CR403SG	4 - 13	NT20138	
	T2CR403SG	4 - 14	NT20138	
	T2CR404SG	3 - 98	NT20138	
	T2CR404SG	4 - 13	NT20138	
	T2CR803LHGA	3 - 118	NT20138	
	T2CR803SHGA	3 - 118	NT20138	
	T2CR804LHGA	3 - 118	NT20138	
	T2CR804SHGA	3 - 118	NT20138	
	T2CS121SG	3 - 37	NT20138	
	T2CS121SG	4 - 13	NT20138	
	T2CS122SG	4 - 13	NT40143	
	T2CS123SG	3 - 37	NT20138	
	T2CS123SG	4 - 13	NT20138	
	T2CS124SG	3 - 37	NT20138	
	T2CS124SG	4 - 13	NT20138	
	T2CS251SG	3 - 64	NT20138	
	T2CS251SG	4 - 13	NT40143	
	T2CS253SG	3 - 37	NT20138	
	T2CS253SG	3 - 64	NT20138	
	T2CS253SG	4 - 13	NT20138	
	T2CS254SG	3 - 37	NT20138	
	T2CS254SG	3 - 64	NT20138	
	T2CS254SG	4 - 13	NT20138	
	T2DA12A	3 - 41	NT20138	
I	T2DF25A	3 - 41	NT20138	
I	T2DF25A	3 - 68	NT20138	
I	T2DF40A	3 - 101	NT20138	
I	T2DM25A	3 - 41	NT20138	
I	T2DM25A	3 - 68	NT20138	

Valid until August 2014

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A Assembled to order.

	CAT. NO.	PAGE	P.S.	PRICE \$
I	T2DM40A	3 - 101	NT20138	
	T2FB123BA	3 - 39	NT20138	
I	T2FB124BA	3 - 39	NT20138	
I	T2FB251BA	3 - 39	NT20138	
I	T2FB251BA	3 - 39	NT20138	
I	T2FB251BA	3 - 66	NT20138	
	T2FB253BA	3 - 39	NT20138	
	T2FB253BA	3 - 66	NT20138	
	T2FB254BA	3 - 39	NT20138	
	T2FB254BA	3 - 66	NT20138	
	T2FB463BA	3 - 99	NT20138	
	T2FB464BA	3 - 99	NT20138	
I	T2FP12S3B	3 - 41	NT20138	
	T2FP12S4A	3 - 41	NT20138	
I	T2FP25S3B	3 - 68	NT20138	
I	T2FP25S4A	3 - 68	NT20138	
I	T2FP40S3A	3 - 101	NT20138	
I	T2FP40S4A	3 - 101	NT20138	
	T2FW12S3A	3 - 39	NT20138	
I	T2FW12S4A	3 - 39	NT20138	
	T2FW25L3B	3 - 39	NT20138	
	T2FW25L3B	3 - 66	NT20138	
I	T2FW25L4B	3 - 39	NT20138	
I	T2FW25L4B	3 - 66	NT20138	
	T2FW40L3A	3 - 99	NT20138	
	T2FW40L3A	3 - 119	NT20138	
I	T2FW40L4A	3 - 99	NT20138	
I	T2FW40L4A	3 - 119	NT20138	
	T2GB40N04A	3 - 100	NT20138	
	T2GB40N06A	3 - 100	NT20138	
	T2GBX6N12A	3 - 116	NT20138	
	T2GBX6N12A	3 - 126	NT20138	
	T2GBX6N16A	3 - 116	NT20138	
	T2GBX6N16A	3 - 126	NT20138	
	T2HB12UR5BN	3 - 34	NT20138	
	T2HB12UR5RN	3 - 34	NT20138	
	T2HB25UR5BN	3 - 34	NT20138	
	T2HB25UR5BN	3 - 61	NT20138	
	T2HB25UR5RN	3 - 34	NT20138	
	T2HB25UR5RN	3 - 61	NT20138	
	T2HB40UR5BN	3 - 94	NT20138	
	T2HB40UR5RN	3 - 94	NT20138	
	T2HB80UR5BN	3 - 116	NT20138	
	T2HB80UR5RN	3 - 116	NT20138	
	T2HBX6UR5BN	3 - 124	NT20138	
	T2HBX6UR5RN	3 - 124	NT20138	
A	T2HL12CAP	3 - 38	NT20138	
	T2HL25B	3 - 38	NT20138	
	T2HL25B	3 - 65	NT20138	

CAT. NO.	PAGE	P.S.	PRICE \$
A T2HL25CAP	3 - 38	NT20138	
A T2HL25CAP	3 - 65	NT20138	
T2HL40A	3 - 99	NT20138	
T2HL40A	3 - 119	NT20138	
A T2HL40CAP	3 - 99	NT20138	
T2HL80CAP	3 - 119	NT20138	
A T2HLS125NFCAP	3 - 38	NT30141	
A T2HLS160NFCAP	3 - 65	NT30141	
T2HLX6A	3 - 127	NT20138	
T2HLX6CAP	3 - 127	NT20138	
T2HP12R6BN	3 - 34	NT20138	
T2HP12R6RN	3 - 34	NT20138	
A T2HP25PALK	3 - 34	NT30141	
A T2HP25PALK	3 - 34	NT30141	
A T2HP25PALK	3 - 61	NT30141	
T2HP25R6BN	3 - 34	NT20138	
T2HP25R6BN	3 - 61	NT20138	
T2HP25R6RN	3 - 34	NT20138	
T2HP25R6RN	3 - 61	NT20138	
A T2HP40PALK	3 - 94	NT30141	
T2HP40R6BN	3 - 94	NT20138	
T2HP40R6RN	3 - 94	NT20138	
T2HP80PALK	3 - 116	NT20138	
T2HP80R6BN	3 - 116	NT20138	
T2HP80R6ME	3 - 116	NT20138	
T2HP80R6RN	3 - 116	NT20138	
T2HPX6PALK	3 - 124	NT20138	
T2HPX6R6BN	3 - 124	NT20138	
T2HPX6R6ME	3 - 124	NT20138	
T2HPX6R6RN	3 - 124	NT20138	
A T2HS12R5GM	3 - 34	NT20138	
T2HS12R5RM	3 - 34	NT20138	
T2HS250SHAFT	3 - 22	NT20138	
T2HS250SHAFT	3 - 34	NT20138	
T2HS250SHAFT	3 - 34	NT20138	
T2HS250SHAFT	3 - 61	NT20138	
A T2HS25R5GM	3 - 34	NT20138	
A T2HS25R5GM	3 - 61	NT20138	
A T2HS25R5RM	3 - 34	NT20138	
A T2HS25R5RM	3 - 61	NT20138	
T2HS400SHAFT	3 - 94	NT20138	
T2HS400SHAFT	3 - 116	NT20138	
T2HS400SHAFT	3 - 124	NT20138	
T2HS400SHAFT	6 - 11	NT20138	
T2HS400SHAFT	6 - 26	NT20138	
T2HS400SHAFT	6 - 37	NT20138	
A T2HS40R5GM	3 - 94	NT20138	
A T2HS40R5RM	3 - 94	NT20138	
T2HS80R6GM	3 - 116	NT20138	

Valid until August 2014

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A Assembled to order.

	CAT. NO.	PAGE	P.S.	PRICE \$
	T2HS80R6RM	3 - 116	NT20138	
	T2HSESC100	3 - 22	NZ00150	
	T2HSESC100	3 - 34	NZ00150	
	T2HSESC100	3 - 34	NZ00150	
	T2HSESC100	3 - 61	NZ00150	
	T2HSESC100	3 - 94	NZ00150	
	T2HSESC100	3 - 116	NZ00150	
	T2HSESC100	3 - 124	NZ00150	
	T2HSESC100	6 - 11	NZ00150	
	T2HSESC100	6 - 26	NZ00150	
	T2HSESC100	6 - 37	NZ00150	
	T2HSX6R6GM	3 - 124	NT20138	
	T2HSX6R6RM	3 - 124	NT20138	
	T2MBX33P	3 - 125	NT20138	
	T2MBX34P	3 - 125	NT20138	
	T2MBX63P	3 - 125	NT20138	
	T2MBX64P	3 - 125	NT20138	
	T2MC12A10NB	3 - 33	NT20138	
	T2MC12A24NB	3 - 33	NT20138	
	T2MC12D02NB	3 - 33	NT20138	
I	T2MC12D04NB	3 - 33	NT20138	
	T2MC12D10NB	3 - 33	NT20138	
I	T2MC25A10NB	3 - 33	NT20138	
I	T2MC25A10NB	3 - 60	NT20138	
	T2MC25A24NB	3 - 33	NT20138	
	T2MC25A24NB	3 - 60	NT20138	
	T2MC25D02NB	3 - 33	NT20138	
	T2MC25D02NB	3 - 60	NT20138	
I	T2MC25D04NB	3 - 33	NT20138	
I	T2MC25D04NB	3 - 60	NT20138	
I	T2MC25D10NB	3 - 33	NT20138	
I	T2MC25D10NB	3 - 60	NT20138	
	T2MC40A10NB	3 - 93	NT20138	
	T2MC40D02NB	3 - 93	NT20138	
I	T2MC40D10NB	3 - 93	NT20138	
	T2MC80A10NA	3 - 119	NT20138	
	T2MC80D10NA	3 - 119	NT20138	
	T2MCX6A10NA	3 - 127	NT20138	
	T2MCX6A24NA	3 - 127	NT20138	
	T2MCX6D02NA	3 - 127	NT20138	
	T2ML12L3A	3 - 35	NT20138	
	T2ML12L4A	3 - 35	NT20138	
	T2ML12RA	3 - 35	NT20138	
	T2ML25L3A	3 - 35	NT20138	
	T2ML25L3A	3 - 62	NT20138	
	T2ML25L4A	3 - 35	NT20138	
	T2ML25L4A	3 - 62	NT20138	
	T2ML25RA	3 - 35	NT20138	
	T2ML25RA	3 - 62	NT20138	

CAT. NO.	PAGE	P.S.	PRICE \$
T2ML40L3B	3 - 95	NT20138	
T2ML40L4B	3 - 95	NT20138	
T2ML40RB	3 - 95	NT20138	
T2ML80L3A	3 - 117	NT20138	
T2ML80L4A	3 - 117	NT20138	
T2ML80RA	3 - 117	NT20138	
I A T2MLH40L3B	3 - 95	NT20138	
I A T2MLH40L4B	3 - 95	NT20138	
I A T2MLH40RB	3 - 95	NT20138	
T2MM25L05A	3 - 33	NT20138	
T2MM25L05A	3 - 60	NT20138	
T2MM25L15A	3 - 33	NT20138	
T2MM25L15A	3 - 60	NT20138	
T2MM40L06A	3 - 93	NT20138	
T2MM40L06A	3 - 119	NT20138	
T2MM40L21A	3 - 93	NT20138	
T2MM40L21A	3 - 119	NT20138	
T2MM40S06A	3 - 119	NT20138	
T2MM40S21A	3 - 119	NT20138	
I T2MS123SFA	3 - 36	NT20138	
I T2MS124SFA	3 - 36	NT20138	
T2MS253LFA	3 - 36	NT20138	
T2MS253LFA	3 - 63	NT20138	
I T2MS253SFA	3 - 63	NT20138	
T2MS254LFA	3 - 36	NT20138	
T2MS254LFA	3 - 63	NT20138	
I T2MS254SFA	3 - 63	NT20138	
I T2MS403SFA	3 - 96	NT20138	
I T2MS404SFA	3 - 96	NT20138	
T2MS803LFA	3 - 117	NT20138	
T2MS803SFA	3 - 117	NT20138	
T2MS804LFA	3 - 117	NT20138	
T2MS804SFA	3 - 117	NT20138	
T2MSX63SFA	3 - 125	NT20138	
T2MSX64SFA	3 - 125	NT20138	
T2MW00L	3 - 125	NT20138	
T2MW00LA	3 - 36	NT20138	
T2MW00LA	3 - 63	NT20138	
T2MW00LA	3 - 96	NT20138	
T2MW00LA	3 - 117	NT20138	
T2MW00S	3 - 125	NT20138	
T2MW00SA	3 - 36	NT20138	
T2MW00SA	3 - 63	NT20138	
T2MW00SA	3 - 96	NT20138	
T2MW00SA	3 - 117	NT20138	
T2MW12CA	3 - 36	NT20138	
T2MW25CA	3 - 36	NT20138	
T2MW25CA	3 - 63	NT20138	
T2MW40CB	3 - 96	NT20138	

Valid until August 2014

I Available on indent only.

A Assembled to order.

	CAT. NO.	PAGE	P.S.	PRICE \$
	T2MW80CA	3 - 117	NT20138	
I A	T2MWH40CB	3 - 96	NT20138	
	T2MWX6CA	3 - 125	NT20138	
	T2PF123BA	3 - 147	NT40143	
I	T2PF124BA	3 - 147	NT20138	
	T2PF253BA	3 - 147	NT20138	
	T2PF254BA	3 - 147	NT20138	
	T2PF403BA	3 - 147	NT20138	
	T2PF404BA	3 - 147	NT20138	
	T2PF803HA	3 - 120	NT20138	
	T2PF804HA	3 - 120	NT20138	
	T2PM12A3A	3 - 146	NT20138	
I	T2PM12A4A	3 - 146	NT20138	
	T2PM25A3A	3 - 146	NT20138	
I	T2PM25A4A	3 - 146	NT20138	
	T2PM40A3A	3 - 146	NT20138	
I	T2PM40A4A	3 - 146	NT20138	
	T2PM80A3A	3 - 120	NT20138	
	T2PM80A4A	3 - 120	NT20138	
	T2RP123SA	3 - 40	NT20138	
	T2RP124SA	3 - 40	NT20138	
	T2RP253LA	3 - 40	NT20138	
	T2RP253LA	3 - 67	NT20138	
	T2RP253SB	3 - 67	NT20138	
	T2RP254LA	3 - 40	NT20138	
	T2RP254LA	3 - 67	NT20138	
	T2RP254SB	3 - 67	NT20138	
I	T2RP403LA	3 - 100	NT20138	
	T2RP403SA	3 - 100	NT20138	
I	T2RP404LA	3 - 100	NT20138	
	T2RP404SA	3 - 100	NT20138	
	T2RP463SA	3 - 100	NT20138	
	T2RP464SA	3 - 100	NT20138	
	T2RP803HA	3 - 119	NT20138	
	T2RP803MA	3 - 119	NT20138	
	T2RP803NA	3 - 119	NT20138	
	T2RP804HA	3 - 119	NT20138	
	T2RP804MA	3 - 119	NT20138	
	T2RP804NA	3 - 119	NT20138	
	T2RPX03HA	3 - 119	NT20138	
	T2RPX04HA	3 - 119	NT20138	
	T2RPX335B	3 - 127	NT20138	
	T2RPX345B	3 - 127	NT20138	
	T2RPX635B	3 - 127	NT20138	
	T2RPX645B	3 - 127	NT20138	
	T2SF25NEA	3 - 67	NT20138	
	T2SF25NTA	3 - 40	NT20138	
	T2SF25NTA	3 - 67	NT20138	
	T2SH00A10TA	3 - 32	NT20138	

CAT. NO.	PAGE	P.S.	PRICE \$
T2SH00A10TA	3 - 59	NT20138	
T2SH00A10TA	3 - 92	NT20138	
T2SH00A10TA	3 - 115	NT20138	
T2SH00A10TA	3 - 123	NT20138	
T2SH00A20TA	3 - 32	NT20138	
T2SH00A20TA	3 - 59	NT20138	
T2SH00A20TA	3 - 92	NT20138	
T2SH00A20TA	3 - 115	NT20138	
T2SH00A20TA	3 - 123	NT20138	
T2SH00A40TA	3 - 32	NT20138	
T2SH00A40TA	3 - 59	NT20138	
T2SH00A40TA	3 - 92	NT20138	
T2SH00A40TA	3 - 115	NT20138	
T2SH00A40TA	3 - 123	NT20138	
I T2SH00D01TA	3 - 115	NT20138	
I T2SH00D01TA	3 - 123	NT20138	
T2SH00D02TA	3 - 32	NT20138	
T2SH00D02TA	3 - 59	NT20138	
T2SH00D02TA	3 - 92	NT20138	
T2SH00D02TA	3 - 115	NT20138	
T2SH00D02TA	3 - 123	NT20138	
T2SH00D04TA	3 - 32	NT20138	
T2SH00D04TA	3 - 59	NT20138	
T2SH00D04TA	3 - 92	NT20138	
T2SH00D04TA	3 - 115	NT20138	
T2SH00D04TA	3 - 123	NT20138	
T2SH00D10TA	3 - 32	NT20138	
T2SH00D10TA	3 - 59	NT20138	
T2SH00D10TA	3 - 92	NT20138	
T2SH00D10TA	3 - 115	NT20138	
T2SH00D10TA	3 - 123	NT20138	
T2SH00D20TA	3 - 32	NT20138	
T2SH00D20TA	3 - 59	NT20138	
T2SH00D20TA	3 - 92	NT20138	
T2SH00D20TA	3 - 115	NT20138	
T2SH00D20TA	3 - 123	NT20138	
T2SH16A10WA	3 - 59	NT20138	
T2SH16A20WA	3 - 59	NT20138	
T2SH16D02WA	3 - 59	NT20138	
T2SH16D10WA	3 - 59	NT20138	
T2SH16D20WA	3 - 59	NT20138	
A T2SW3P1251255K	3 - 20	NT20138	
A T2SW3P125TC	3 - 20	NT20138	
A T2SW3P2501505K	3 - 20	NT20138	
A T2SW3P2502505K	3 - 20	NT20138	
A T2SW3P250TC	3 - 20	NT20138	
A T2SW3P250TC	3 - 20	NT20138	
A T2SW3P6304005K	3 - 20	NT20138	
A T2SW3P6306005K	3 - 20	NT20138	

Valid until August 2014

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A Assembled to order.

	CAT. NO.	PAGE	P.S.	PRICE \$
	A T2SW3P630TC	3 - 20	NT20138	
	A T2SW3P630TC	3 - 20	NT20138	
	I A T2SW4P1251255K	3 - 20	NT20138	
	I A T2SW4P125TC	3 - 20	NT20138	
	I A T2SW4P2501505K	3 - 20	NT20138	
	I A T2SW4P2502505K	3 - 20	NT20138	
	I A T2SW4P250TC	3 - 20	NT20138	
	I A T2SW4P250TC	3 - 20	NT20138	
	I A T2SW4P6304005K	3 - 20	NT20138	
	I A T2SW4P6306005K	3 - 20	NT20138	
	I A T2SW4P630TC	3 - 20	NT20138	
	I A T2SW4P630TC	3 - 20	NT20138	
	I T2TF25LGA	3 - 41	NT20138	
	I T2TF25LGA	3 - 68	NT20138	
	I T2TF25RGA	3 - 41	NT20138	
	I T2TF25RGA	3 - 68	NT20138	
	I T2TF40LGA	3 - 101	NT20138	
	I T2TF40LGA	3 - 119	NT20138	
	I T2TF40RGA	3 - 101	NT20138	
	I T2TF40RGA	3 - 119	NT20138	
	T2TP003A	3 - 120	NT20138	
	T2TP003A	3 - 146	NT20138	
	T2UPX31000	3 - 120	NT20138	
	T2UPX3125	3 - 40	NT20138	
	T2UPX3250	3 - 67	NT20138	
	T2UPX3400	3 - 100	NT20138	
	T2UPX3630	3 - 100	NT20138	
	T2UPX3800	3 - 120	NT20138	
	T2UPXE3250	3 - 40	NT20138	
	T2UPXE3250	3 - 67	NT20138	
	T2UV00A10NTA	3 - 32	NT20138	
	T2UV00A10NTA	3 - 59	NT20138	
	T2UV00A10NTA	3 - 92	NT20138	
	T2UV80A10NTA	3 - 115	NT20138	
	T2UV80A10NTA	3 - 123	NT20138	
	T2UV00A20NTA	3 - 32	NT20138	
	T2UV00A20NTA	3 - 59	NT20138	
	T2UV00A20NTA	3 - 92	NT20138	
	T2UV80A20NTA	3 - 115	NT20138	
	T2UV80A20NTA	3 - 123	NT20138	
	T2UV00A40NTA	3 - 32	NT20138	
	T2UV00A40NTA	3 - 59	NT20138	
	T2UV00A40NTA	3 - 92	NT20138	
	T2UV80A40NTA	3 - 115	NT20138	
	T2UV80A40NTA	3 - 123	NT20138	
	T2UV00D02NTA	3 - 32	NT20138	
	T2UV00D02NTA	3 - 59	NT20138	
	T2UV00D02NTA	3 - 92	NT20138	
	T2UV80D02NTA	3 - 115	NT20138	

CAT. NO.	PAGE	P.S.	PRICE \$
T2UV80D02NTA	3 - 123	NT20138	
T2UV00D10NTA	3 - 32	NT20138	
T2UV00D10NTA	3 - 59	NT20138	
T2UV00D10NTA	3 - 92	NT20138	
T2UV80D10NTA	3 - 115	NT20138	
T2UV80D10NTA	3 - 123	NT20138	
I T2UV00D20NTA	3 - 32	NT20138	
I T2UV00D20NTA	3 - 59	NT20138	
I T2UV00D20NTA	3 - 92	NT20138	
I T2UV80D20NTA	3 - 115	NT20138	
I T2UV80D20NTA	3 - 123	NT20138	
T40CAPLAB	3 - 93	NZ00150	
T40CAPLAB	3 - 94	NZ00150	
T40CAPLAB	3 - 94	NZ00150	
T40CAPLAB	3 - 95	NZ00150	
T40CAPLAB	3 - 95	NZ00150	
T40CAPLAB	3 - 96	NZ00150	
T40CAPLAB	5 - 36	NZ00150	
T80CAPLAB	3 - 116	NT20138	
TAA5LY	1 - 9	NT10136	
TAL111	1 - 68	NB30088	
TAL111MINI	1 - 68	NB30088	
TAL171	1 - 68	NB30088	
TAL211	1 - 68	NB30088	
TAL211MINI	1 - 68	NB30088	
TAL271	1 - 68	NB30088	
TAL371MP240VAC	1 - 68	NB30088	
TAL371PRO	1 - 68	NB30088	
TAL372PRO	1 - 68	NB30088	
TAL471PRO	1 - 68	NB30088	
TAL472PRO	1 - 68	NB30088	
TAL791PRO	1 - 68	NB30088	
TAL892PLUSTOP	1 - 68	NB30088	
TAL892PLUSTOP	1 - 68	NB30088	
TALCEPLUSTOP	1 - 68	NB30088	
I TDAA2	8 - 14	NT30141	
I TDAB2	8 - 14	NT30141	
TDAC2	8 - 14	NT30141	
TDB50SG12	1 - 9	NT10136	
I TDGA2	8 - 14	NT30141	
TDGB2	8 - 14	NT30141	
TDGC2	8 - 14	NT30141	
TDGD2	8 - 14	NT30141	
TDGE2	8 - 14	NT30141	
TDGF2	8 - 14	NT30141	
TDGH2	8 - 14	NT30141	
TEMRELAY	7 - 32	NT40143	
TEMVISIONMAX	7 - 32	NT40143	
I A TEMVISIONPRO	7 - 32	NT40143	

Valid until August 2014

I Available on indent only.

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CAT. NO.	PAGE	P.S.	PRICE \$
TFH 22D	6 - 8	NT20138	
TFJ21PB	3 - 22	NT20138	
TFJ22LU	6 - 8	NT20138	
TFJ34XU	6 - 11	NT20138	
TFJ36XU	6 - 26	NT20138	
TFJ38XU	6 - 37	NT20138	
TGPEN181S	2 - 56	NT40143	
TGPEN182S	2 - 56	NT40143	
TGPEN182SEVE	2 - 56	NT40143	
TGPEN182SODD	2 - 56	NT40143	
TGPEN241S	2 - 56	NT40143	
TGPEN242S	2 - 56	NT40143	
TGPEN242SEVE	2 - 56	NT40143	
TGPEN242SODD	2 - 56	NT40143	
TGPEN302S	2 - 56	NT40143	
TGPEN302SEVE	2 - 56	NT40143	
TGPEN302SODD	2 - 56	NT40143	
TGPEN362S	2 - 56	NT40143	
TGPEN362SEVE	2 - 56	NT40143	
TGPEN362SODD	2 - 56	NT40143	
TGPEN422S	2 - 56	NT40143	
TGPEN422SEVE	2 - 56	NT40143	
TGPEN422SODD	2 - 56	NT40143	
TGPEN482S	2 - 56	NT40143	
TGPEN482SEVE	2 - 56	NT40143	
TGPEN482SODD	2 - 56	NT40143	
TGPEN602S	2 - 56	NT40143	
TGPEN722S	2 - 56	NT40143	
TGPEN842S	2 - 56	NT40143	
TGPEN92SEVE	2 - 56	NT40143	
TGPEN92SODD	2 - 56	NT40143	
TGPEN962S	2 - 56	NT40143	
TGPINS	2 - 57	NT40143	
TH250TOPC	1 - 9	NT10136	
TH250TOPC	2 - 51	NT10136	
TH250TOPC	2 - 68	NT10136	
TKB50SGL	1 - 9	NT10136	
TKC50SG	1 - 9	NT10136	
TKNHPOA	2 - 22	NB20071	
TKNHPOA	3 - 39	NB20071	
TKNHPOA	3 - 66	NB20071	
TKNHPOA	3 - 99	NB20071	
TKNHPOA	6 - 27	NB20071	
TKNHPOA	6 - 37	NB20071	
TKNHPOB	2 - 22	NB20071	
TKNHPOB	3 - 39	NB20071	
TKNHPOB	3 - 66	NB20071	
TKNHPOB	3 - 99	NB20071	
TKNHPOB	6 - 27	NB20071	

CAT. NO.	PAGE	P.S.	PRICE \$
TKNHPOB	6 - 37	NB20071	
TKNHPOC	2 - 22	NB20071	
TKNHPOC	3 - 39	NB20071	
TKNHPOC	3 - 66	NB20071	
TKNHPOC	3 - 99	NB20071	
TKNHPOC	6 - 27	NB20071	
TKNHPOC	6 - 37	NB20071	
TKNHPOD	2 - 22	NB20071	
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TKNHPOF	2 - 22	NB20071	
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TKNHPOG	2 - 22	NB20071	
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TKNHPOG	6 - 37	NB20071	
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TKNHPOH	6 - 37	NB20071	
TKNHPOI	2 - 22	NB20071	
TKNHPOI	3 - 39	NB20071	
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TKNHPOI	6 - 37	NB20071	
TKNHPOJ	2 - 22	NB20071	
TKNHPOJ	3 - 39	NB20071	
TKNHPOJ	3 - 66	NB20071	
TKNHPOJ	3 - 99	NB20071	
TKNHPOJ	6 - 27	NB20071	
TKNHPOJ	6 - 37	NB20071	

Valid until August 2014

I Available on indent only.

A Assembled to order.

CAT. NO.	PAGE	P.S.	PRICE \$
TKNHPOK	2 - 22	NB20071	
TKNHPOK	3 - 39	NB20071	
TKNHPOK	3 - 66	NB20071	
TKNHPOK	3 - 99	NB20071	
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TKNHPOR	6 - 37	NB20071	
TKNHPOS	2 - 22	NB20071	
TKNHPOS	3 - 39	NB20071	
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TKNHPOS	3 - 99	NB20071	
TKNHPOS	6 - 27	NB20071	
TKNHPOS	6 - 37	NB20071	
TKNHPOT	2 - 22	NB20071	

CAT. NO.	PAGE	P.S.	PRICE \$
TKNHPOT	3 - 39	NB20071	
TKNHPOT	3 - 66	NB20071	
TKNHPOT	3 - 99	NB20071	
TKNHPOT	6 - 27	NB20071	
TKNHPOT	6 - 37	NB20071	
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TKNHPKEY0F	3 - 99	NB20071	
TKNHPKEY0F	6 - 27	NB20071	
TKNHPKEY0F	6 - 37	NB20071	
TKNHPKEY0G	2 - 22	NB20071	
TKNHPKEY0G	3 - 39	NB20071	

Valid until August 2014

I Available on indent only.

A Assembled to order.

CAT. NO.	PAGE	P.S.	PRICE \$
TKNHPKEY0G	3 - 66	NB20071	
TKNHPKEY0G	3 - 99	NB20071	
TKNHPKEY0G	6 - 27	NB20071	
TKNHPKEY0G	6 - 37	NB20071	
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TKNHPKEY0H	6 - 27	NB20071	
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TKNHPKEY0I	2 - 22	NB20071	
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TKNHPKEY0N	6 - 37	NB20071	
TKNHPKEY0O	2 - 22	NB20071	
TKNHPKEY0O	3 - 39	NB20071	
TKNHPKEY0O	3 - 66	NB20071	

CAT. NO.	PAGE	P.S.	PRICE \$
TKNHPKEY0O	3 - 99	NB20071	
TKNHPKEY0O	6 - 27	NB20071	
TKNHPKEY0O	6 - 37	NB20071	
TKNHPKEY0P	2 - 22	NB20071	
TKNHPKEY0P	3 - 39	NB20071	
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TKNHPKEY0P	6 - 37	NB20071	
TKNHPKEY0Q	2 - 22	NB20071	
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TKNHPKEY0R	6 - 37	NB20071	
TKNHPKEY0S	2 - 22	NB20071	
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TKNHPKEY0S	6 - 37	NB20071	
TKNHPKEY0T	2 - 22	NB20071	
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TKNHPKEY0T	6 - 27	NB20071	
TKNHPKEY0T	6 - 37	NB20071	
A TL100EM 100 3K	6 - 7	NT20138	
A TL100EM 15 3K	6 - 7	NT20138	
A TL100EM 20 3K	6 - 7	NT20138	
A TL100EM 30 3K	6 - 7	NT20138	
A TL100EM 40 3K	6 - 7	NT20138	
A TL100EM 50 3K	6 - 7	NT20138	
A TL100EM 60 3K	6 - 7	NT20138	
A TL100EM 75 3K	6 - 7	NT20138	
TL100EMR5GM	6 - 8	NT20138	
A TL100EMR6BN	6 - 8	NT20138	
TL101240V	5 - 31	NT30141	
A TL101CIP	5 - 31	NT30141	
I TL1250NE 1000 3 FC	6 - 34	NT20138	
I TL1250NE 1000 3 LG	6 - 34	NT30141	
I TL1250NE 1250 3 FC	6 - 34	NT20138	
I TL1250NE 1250 3 LG	6 - 34	NT30141	

Valid until August 2014

I Available on indent only.

A Assembled to order.

	CAT. NO.	PAGE	P.S.	PRICE \$
	TL630NE3LSIG	6 - 32	NT20138	
I	TL630NE 630 3	6 - 32	NT20138	
	TL800NE3LSIG	6 - 33	NT20138	
I	TL800NE 800 3	6 - 33	NT20138	
	TLC12S	2 - 10	NT40143	
	TLC18S	2 - 10	NT40143	
	TLC6S	2 - 10	NT40143	
	TLCDMA	2 - 10	NT40143	
A	TLP1	5 - 29	NT30141	
A	TLP2	5 - 28	NT30141	
I A	TLP2L1CABLE10	5 - 32	NT30141	
I A	TLP2L1CABLE15	5 - 32	NT30141	
I A	TLP2L1CABLE20	5 - 32	NT30141	
I A	TLP2L1CABLE25	5 - 32	NT30141	
I A	TLP2L1CABLE30	5 - 32	NT30141	
A	TLP2L1LCABLE	5 - 31	NT30141	
A	TLP2L1LCABLE	5 - 32	NT30141	
I	TNS2	3 - 67	NT20138	
I	TNS2110V	3 - 100	NT20138	
I	TNS2240V	3 - 100	NT20138	
	TPD OSZ	8 - 2	NT20138	
	TX6CAPLAB	3 - 124	NT20138	
I	TXBD0009A	3 - 22	NT20138	
	TXJD0050B	3 - 66	NT20138	
I	TXLD0005A	6 - 26	NT20138	
I	TXLD0006A	6 - 26	NT20138	
	TXLD0012A	6 - 27	NT20138	
I	TXLD0013A	6 - 27	NT20138	
I	TXLD0016A	6 - 27	NT20138	
I	TXLD0016A	6 - 27	NT20138	
	TXRD0003A	3 - 132	NT30141	
	TXRD0004A	3 - 132	NT30141	
	TXRD0005A	3 - 132	NT20138	
	TZS-100	8 - 2	NT30141	
	TZS-15	8 - 2	NT30141	
	TZS-24	8 - 2	NT30141	
	TZS-40	8 - 2	NT30141	
	TZS-68	8 - 2	NT30141	
	TZS AD120240V	8 - 2	NT30141	
	TZS AD24VAC	8 - 2	NT30141	
	TZS AD415440V	8 - 2	NT30141	
U				
	UPX330PB	3 - 22	NT30141	
	UPX3440	6 - 12	NT30141	
	UPX3800	6 - 27	NT30141	
	UXHB0001B	3 - 132	NT30141	
	UXKB0001A	3 - 132	NT30141	
	UXKB0002A	6 - 26	NT20138	
	UXKB0002A	6 - 26	NT20138	

CAT. NO.	PAGE	P.S.	PRICE \$
UXKB0003A	6 - 37	NT30141	
UXKB0013A	3 - 38	NT20138	
I UXKC0001B	6 - 11	NT20138	
UXKC0002B	6 - 11	NT20138	
I UXKC0003B	6 - 11	NT20138	
UXKC0004A	6 - 26	NT20138	
UXKC0005A	6 - 26	NT20138	
UXKC0006D	6 - 36	NT30141	
UXKC0007D	6 - 36	NT30141	
UXKC0012A	3 - 132	NT30141	
I UXKC0013A	3 - 132	NT30141	
UXKC0020A	3 - 132	NT20138	
UXKC0020A	6 - 11	NT20138	
UXKC0020A	6 - 26	NT20138	
UXKC0020A	6 - 36	NT20138	
UXKC0021B	6 - 11	NT20138	
UXKC0022B	6 - 26	NT20138	
UXKC0023B	6 - 36	NT30141	
UXKC0024B	6 - 36	NT30141	
UXKC0025B	3 - 132	NT30141	
UXKC0026C	6 - 36	NT30141	
I UXKC0027C	6 - 36	NT30141	
UXKE0030A	6 - 8	NT20138	
I UXLB0006C	3 - 22	NT20138	
I UXLB0008C	3 - 22	NT20138	
UXLB0009D	6 - 10	NT20138	
UXLB0010D	6 - 25	NT20138	
UXLB0011D	6 - 35	NT30141	
I UXLB0012C	3 - 131	NT30141	
UXLB0013D	6 - 10	NT20138	
UXLB0014D	6 - 10	NT20138	
UXLB0015D	6 - 25	NT20138	
UXLB0016D	6 - 25	NT20138	
UXLB0017D	6 - 35	NT30141	
UXLB0018D	6 - 35	NT30141	
I UXLB0019D	3 - 131	NT30141	
UXLB0020C	3 - 131	NT30141	
I UXLB0021C	3 - 131	NT30141	
I UXLB0023C	3 - 131	NT20138	
I UXLB0024D	6 - 35	NT20138	
UXLB0025D	6 - 35	NT20138	
UXLB0026D	6 - 35	NT20138	
I UXMB0006B	3 - 132	NT30141	
UXMB0008B	3 - 132	NT30141	
UXMB0009B	3 - 132	NT30141	
I UXMC0001B	6 - 11	NT20138	
I UXMC0003B	6 - 11	NT20138	
I UXMC0004B	6 - 11	NT20138	
UXMC0005B	6 - 11	NT20138	

Valid until August 2014

I Available on indent only.

A Assembled to order.

	CAT. NO.	PAGE	P.S.	PRICE \$
	UXMC0006B	6 - 26	NT20138	
I	UXMC0008B	6 - 26	NT20138	
I	UXMC0009B	6 - 26	NT20138	
	UXMC0010B	6 - 26	NT20138	
	UXMD0001B	6 - 11	NT20138	
	UXMD0002B	6 - 26	NT20138	
	UXOY0001A	6 - 25	NT20138	
	UXOY0002A	6 - 25	NT20138	
	UXOY0003A	6 - 36	NT30141	
	UXOY0004A	6 - 36	NT30141	
	UXOY0005A	6 - 36	NT30141	
	UXOY0006A	3 - 132	NT30141	
I	UXOY0007A	3 - 132	NT30141	
	UXPD0011B	6 - 12	NT20138	
	UXPD0012A	6 - 12	NT20138	
	UXPD0013C	4 - 14	NT20138	
	UXPD0013C	6 - 27	NT20138	
I	UXPD0014B	6 - 27	NT20138	
	UXQH0004B	4 - 14	NT20138	
	UXQH0004B	6 - 12	NT20138	
	UXQH0004B	6 - 27	NT20138	
	UXQH0004B	6 - 37	NT20138	
	UXRC0006C	6 - 11	NT20138	
I	UXRC0007C	6 - 11	NT20138	
	UXRC0008B	6 - 26	NT20138	
I	UXRC0009B	6 - 26	NT20138	
	UXUB0013B	3 - 131	NT20138	
	UXUB0013B	6 - 10	NT20138	
	UXUB0013B	6 - 25	NT20138	
	UXUB0013B	6 - 35	NT20138	
	UXUB0014B	3 - 131	NT20138	
	UXUB0014B	6 - 10	NT20138	
	UXUB0014B	6 - 25	NT20138	
	UXUB0014B	6 - 35	NT20138	
	UXUB0015B	3 - 131	NT20138	
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	UXUB0015B	6 - 25	NT20138	
	UXUB0015B	6 - 35	NT20138	
I	UXUB0016B	3 - 131	NT20138	
I	UXUB0016B	6 - 10	NT20138	
I	UXUB0016B	6 - 25	NT20138	
I	UXUB0016B	6 - 35	NT20138	
	UXUB0017B	3 - 131	NT20138	
	UXUB0017B	6 - 10	NT20138	
	UXUB0017B	6 - 25	NT20138	
	UXUB0017B	6 - 35	NT20138	
I	UXUB0018B	3 - 131	NT20138	
I	UXUB0018B	6 - 10	NT20138	
I	UXUB0018B	6 - 25	NT20138	

	CAT. NO.	PAGE	P.S.	PRICE \$
I	UXUB0018B	6 - 35	NT20138	
I	UXUB0038B	3 - 131	NT20138	
I	UXUB0038B	6 - 10	NT20138	
I	UXUB0038B	6 - 25	NT20138	
I	UXUB0038B	6 - 35	NT20138	
	UXXB0001D	3 - 22	NT20138	
	UXXB0003C	3 - 22	NT20138	
	UXXB0004D	6 - 10	NT20138	
	UXXB0005D	6 - 10	NT20138	
	UXXB0006D	6 - 10	NT20138	
	UXXB0007D	6 - 25	NT20138	
	UXXB0008D	6 - 25	NT20138	
	UXXB0009D	6 - 25	NT20138	
	UXXB0010D	6 - 35	NT30141	
	UXXB0011D	6 - 35	NT30141	
	UXXB0012D	6 - 35	NT30141	
	UXXB0013C	3 - 131	NT30141	
	UXXB0014C	3 - 131	NT30141	
I	UXXB0015C	3 - 131	NT30141	
I	UXXB0016C	3 - 131	NT30141	
I	UXXB0017C	3 - 131	NT30141	
I	UXXB0018C	3 - 131	NT30141	
I	UXXB0023D	6 - 35	NT20138	
	UXXB0024D	6 - 35	NT20138	
I	UXXB0025D	6 - 35	NT20138	
I	UXYB0004A	6 - 27	NT20138	
I	UXYB0004A	6 - 27	NT20138	
I	UXYC0005A	6 - 27	NT20138	
I	UXYC0005A	6 - 27	NT20138	
	UXYD0001A	3 - 132	NT20138	
	UXYD0001A	6 - 12	NT20138	
	UXYD0001A	6 - 27	NT20138	
	UXYD0001A	6 - 37	NT20138	
	UXYD0002A	3 - 132	NT20138	
	UXYD0002A	6 - 12	NT20138	
	UXYD0002A	6 - 27	NT20138	
	UXYD0002A	6 - 37	NT20138	
V				
	VS125NJ3100	6 - 5	NT20138	
	VS125NJ3125	6 - 5	NT20138	
	VS125NJ320	6 - 5	NT20138	
	VS125NJ332	6 - 5	NT20138	
	VS125NJ350	6 - 5	NT20138	
	VS125NJ363	6 - 5	NT20138	
	VS250NJ3160	6 - 6	NT20138	
	VS250NJ3250	6 - 6	NT20138	
X				
	XA63012U	4 - 3	NT40143	
I	XA63016U4POLE	4 - 5	NT40143	

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	CAT. NO.	PAGE	P.S.	PRICE \$
	XA63018U	4 - 3	NT40143	
	XA63024U	4 - 3	NT40143	
I	XA63024U4POLE	4 - 5	NT40143	
	XA63030U	4 - 3	NT40143	
I	XA63032U4POLE	4 - 5	NT40143	
	XA63036U	4 - 3	NT40143	
I	XA63040U4POLE	4 - 5	NT40143	
	XA63042U	4 - 3	NT40143	
	XA63048U	4 - 3	NT40143	
I	XA63048U4POLE	4 - 5	NT40143	
I	XA63056U4POLE	4 - 5	NT40143	
	XA63060U	4 - 3	NT40143	
I	XA63064U4POLE	4 - 5	NT40143	
	XA6306U	4 - 3	NT40143	
	XA63072U	4 - 3	NT40143	
I	XA6308U4POLE	4 - 5	NT40143	
	XA80012U	4 - 3	NT40143	
I	XA80016U4POLE	4 - 5	NT40143	
	XA80018U	4 - 3	NT40143	
	XA80024U	4 - 3	NT40143	
I	XA80024U4POLE	4 - 5	NT40143	
	XA80030U	4 - 3	NT40143	
I	XA80032U4POLE	4 - 5	NT40143	
	XA80036U	4 - 3	NT40143	
	XA80040U4POLE	4 - 5	NT40143	
	XA80042U	4 - 3	NT40143	
	XA80048U	4 - 3	NT40143	
	XA80048U4POLE	4 - 5	NT40143	
	XA80056U4POLE	4 - 5	NT40143	
	XA80060U	4 - 3	NT40143	
	XA80064U4POLE	4 - 5	NT40143	
	XA8006U	4 - 3	NT40143	
	XA80072U	4 - 3	NT40143	
	XA8008U4POLE	4 - 5	NT40143	
	XAB2	2 - 51	NT20138	
	XAB2	3 - 41	NT20138	
	XAB3	2 - 51	NT20138	
	XAB3	3 - 68	NT20138	
	XB80012U	4 - 3	NT40143	
I	XB80016U4POLE	4 - 6	NT40143	
	XB80018U	4 - 3	NT40143	
	XB80024U	4 - 3	NT40143	
I	XB80024U4POLE	4 - 6	NT40143	
	XB80030U	4 - 3	NT40143	
I	XB80032U4POLE	4 - 6	NT40143	
	XB80036U	4 - 3	NT40143	
I	XB80040U4POLE	4 - 6	NT40143	
	XB80042U	4 - 3	NT40143	
	XB80048U	4 - 3	NT40143	

	CAT. NO.	PAGE	P.S.	PRICE \$
I	XB80048U4POLE	4 - 6	NT40143	
	XB80060U	4 - 3	NT40143	
	XB8006U	4 - 3	NT40143	
	XB80072U	4 - 3	NT40143	
I	XB8008U4POLE	4 - 6	NT40143	
	XBSSL 800 12U	4 - 7	NT40143	
	XBSSL 800 15U	4 - 7	NT40143	
	XBSSL 800 18U	4 - 7	NT40143	
	XBSSL 800 21U	4 - 7	NT40143	
	XBSSL 800 24U	4 - 7	NT40143	
	XBSSL 800 30U	4 - 7	NT40143	
	XBSSL 800 36U	4 - 7	NT40143	
I	XBSSL 800 3U	4 - 7	NT40143	
	XBSSL 800 6U	4 - 7	NT40143	
	XBSSL 800 9U	4 - 7	NT40143	
	XBSSR 800 12U	4 - 8	NT40143	
	XBSSR 800 15U	4 - 8	NT40143	
	XBSSR 800 18U	4 - 8	NT40143	
	XBSSR 800 21U	4 - 8	NT40143	
	XBSSR 800 24U	4 - 8	NT40143	
	XBSSR 800 30U	4 - 8	NT40143	
	XBSSR 800 36U	4 - 8	NT40143	
I	XBSSR 800 3U	4 - 8	NT40143	
	XBSSR 800 6U	4 - 8	NT40143	
	XBSSR 800 9U	4 - 8	NT40143	
	XC100012U	4 - 9	NT40143	
	XC100018U	4 - 9	NT40143	
	XC10001X4R12U	4 - 10	NT40143	
	XC10001X4R24U	4 - 10	NT40143	
	XC10001X4R36U	4 - 10	NT40143	
	XC100024U	4 - 9	NT40143	
	XC10002X4R12U	4 - 10	NT40143	
	XC10002X4R24U	4 - 10	NT40143	
	XC10002X4R36U	4 - 10	NT40143	
	XC100030U	4 - 9	NT40143	
	XC100036U	4 - 9	NT40143	
	XC100042U	4 - 9	NT40143	
I	XC100048U	4 - 9	NT40143	
	XC10006U	4 - 9	NT40143	
	XCW0840LS13	7 - 6	NZ00150	
	XCW0840LS16	7 - 6	NZ00150	
I	XDM6-3	6 - 27	NT20138	
I	XDM6-4	6 - 27	NT20138	
	XEC1640LS20	7 - 6	NZ00150	
	XEC1640LS25	7 - 6	NZ00150	
	XEC1640LS32	7 - 6	NZ00150	
	XEC1640LS40	7 - 6	NZ00150	
	XFE10	3 - 132	NT20138	
I	XH630PJ 400 3	6 - 15	NT20138	

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	CAT. NO.	PAGE	P.S.	PRICE \$
	XH630PJ 630 3	6 - 15	NT20138	
	XH630SE 630 3	6 - 17	NT20138	
I A	XH630SE 630 3LSIG	6 - 17	NT20138	
	XH630SE 630 4	6 - 17	NT20138	
I	XH630SE 630 4LSIG	6 - 17	NT20138	
I	XH800PE 800 3	6 - 23	NT20138	
I	XH800PE 800 4	6 - 23	NT20138	
	XH800PJ 800 3P	6 - 20	NT20138	
I	XH800PJ 800 4P	6 - 20	NT20138	
	XH800SE 800 3	6 - 22	NT20138	
I A	XH800SE 800 3LSIG	6 - 22	NT20138	
I	XH800SE 800 4	6 - 22	NT20138	
I	XH800SE 800 4LSIG	6 - 22	NT20138	
	XKA4	6 - 11	NT20138	
	XKA6	6 - 26	NT20138	
	XM30PB0.7 3P	3 - 21	NT20138	
	XM30PB10 3P	3 - 21	NT20138	
	XM30PB12 3P	3 - 21	NT20138	
	XM30PB1.4 3P	3 - 21	NT20138	
	XM30PB2.0 3P	3 - 21	NT20138	
	XM30PB2.6 3P	3 - 21	NT20138	
	XM30PB4 3P	3 - 21	NT20138	
	XM30PB5 3P	3 - 21	NT20138	
	XM30PB8 3P	3 - 21	NT20138	
	XM30TSC	3 - 22	NT20138	
I	XS1000ND10003FC	3 - 145	NT20138	
	XS1250ND12503FC	3 - 145	NT30141	
A	XS1250OCRSK	6 - 37	NT20138	
I A	XS1250SE 10003LG	6 - 29	NT30141	
I A	XS1250SE 10004LG	6 - 29	NT30141	
	XS1250SE 1000 FC3	6 - 29	NT30141	
	XS1250SE 1000 FC4	6 - 29	NT30141	
	XS1250SE 12503LG	6 - 29	NT30141	
I A	XS1250SE 12504LG	6 - 29	NT30141	
	XS1250SE 1250 FC3	6 - 29	NT30141	
	XS1250SE 1250 FC4	6 - 29	NT30141	
I	XS1600ND16003FC	3 - 145	NT30141	
	XS1600SE 16003LG	6 - 31	NT30141	
	XS1600SE 16004LG	6 - 31	NT30141	
	XS1600SE 1600 FC3	6 - 31	NT30141	
	XS1600SE 1600 FC4	6 - 31	NT30141	
I	XS2000ND20003RC	3 - 145	NT30141	
I A	XS2000NE 20003L	3 - 128	NT30141	
	XS2000NE 20003 RC	3 - 128	NT30141	
I	XS2000NE 20004L	3 - 128	NT20138	
I	XS2000NE 20004RC	3 - 128	NT30141	
	XS2000NN3RC	3 - 142	NT30141	
I	XS2000NN4RC	3 - 142	NT30141	
I A	XS2000OCRSK	3 - 132	NT20138	

	CAT. NO.	PAGE	P.S.	PRICE \$
I	XS2500ND25003RC	3 - 145	NT30141	
	XS2500NE 2500 RC3	3 - 129	NT20138	
I	XS2500NE 2500 RC4	3 - 129	NT20138	
I	XS2500NN3RC	3 - 142	NT30141	
	XS2500NN4FC	3 - 142	NT20138	
	XS2500SE 25003L	3 - 129	NT20138	
I	XS2500SE 25004L	3 - 129	NT20138	
	XS3200NE32003 RC	3 - 130	NT30141	
A	XS400OCRSK	6 - 12	NT20138	
	XS630NJ 400 3	6 - 14	NT20138	
	XS630NJ 630 3	6 - 14	NT20138	
A	XS630OCRSK	6 - 27	NT20138	
	XS630SE 630 3	6 - 16	NT20138	
A	XS630SE 6303LSIG	6 - 16	NT20138	
	XS630SE 630 4	6 - 16	NT20138	
I A	XS630SE 6304LSIG	6 - 16	NT20138	
	XS800NJ 800 3	6 - 19	NT20138	
	XS800NJ 800 4	6 - 19	NT20138	
	XS800NN3	6 - 13	NT20138	
	XS800SE 800 3	6 - 21	NT20138	
A	XS800SE 800 3LSIG	6 - 21	NT20138	
	XS800SE 800 4	6 - 21	NT20138	
I A	XS800SE 800 4LSIG	6 - 21	NT20138	
A	XV1250NE1000 3 K	6 - 30	NT20138	
A	XV1250NE1250 3 K	6 - 30	NT20138	
I A	XV1250NE 400 3 K	6 - 30	NT20138	
A	XV1250NE 800 3 K	6 - 30	NT20138	
A	XV400NE 160 3K	6 - 9	NT20138	
A	XV400NE 250 3K	6 - 9	NT20138	
A	XV400NE 400 3K	6 - 9	NT20138	
A	XV630PE 400 3K	6 - 24	NT20138	
A	XV630PE 630 3K	6 - 24	NT20138	
A	XV800PE 800 3K	6 - 24	NT20138	
Y				
A	YASD22D	6 - 8	NT20138	
A	YASD34	6 - 11	NT20138	
Z				
	ZS125 GJ 3 100	3 - 135	NT20138	
	ZS125 GJ 3 125	3 - 135	NT20138	
	ZS125 GJ 3 20	3 - 135	NT20138	
	ZS125 GJ 3 32	3 - 135	NT20138	
	ZS125 GJ 3 50	3 - 135	NT20138	
	ZS125 GJ 3 63	3 - 135	NT20138	
	ZS125 GJ 4 100	3 - 135	NT20138	
	ZS125 GJ 4 100 SN	3 - 135	NT20138	
	ZS125 GJ 4 125	3 - 135	NT20138	
	ZS125 GJ 4 125 SN	3 - 135	NT20138	
	ZS125 GJ 4 20	3 - 135	NT20138	
	ZS125 GJ 4 20 SN	3 - 135	NT20138	

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CAT. NO.	PAGE	P.S.	PRICE \$
ZS125 GJ 4 32	3 - 135	NT20138	
ZS125 GJ 4 32 SN	3 - 135	NT20138	
ZS125 GJ 4 50	3 - 135	NT20138	
ZS125 GJ 4 50 SN	3 - 135	NT20138	
ZS125 GJ 4 63	3 - 135	NT20138	
ZS125 GJ 4 63 SN	3 - 135	NT20138	
ZS250 GJ 3 160	3 - 136	NT20138	
ZS250 GJ 3 250	3 - 136	NT20138	
ZS250 GJ 4 160	3 - 136	NT20138	
ZS250 GJ 4 160 SN	3 - 136	NT20138	
ZS250 GJ 4 250	3 - 136	NT20138	
ZS250 GJ 4 250 SN	3 - 136	NT20138	
ZS400 GF 3 250	3 - 140	NT20138	
ZS400 GF 3 300	3 - 140	NT20138	
ZS400 GF 3 350	3 - 140	NT20138	
ZS400 GF 3 400	3 - 140	NT20138	
ZS400 GF 4 250	3 - 140	NT20138	
ZS400 GF 4 300	3 - 140	NT20138	
ZS400 GF 4 350	3 - 140	NT20138	
ZS400 GF 4 400	3 - 140	NT20138	
ZS630 GF 3 250	3 - 141	NT20138	
ZS630 GF 3 300	3 - 141	NT20138	
ZS630 GF 3 350	3 - 141	NT20138	
ZS800 GF 3 350	3 - 141	NT20138	
ZS800 GF 3 400	3 - 141	NT20138	

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Field support services

NHP Service provides a comprehensive range of value add services that support and enhance the reliability and performance of NHP products. Our team of proficiently qualified technicians are available for a variety of lifecycle services, including:

- Product repairs and service
- On-site emergency breakdown service
- Preventative maintenance, and
- Commissioning

Product repairs and service

Our National Service Headquarters is based in Melbourne. For over 40 years, we have supported all NHP products, from motor starters to circuit breakers. Traditionally, products are returned to our National service centre for maintenance and repair. When this is not possible, we deploy our field service technicians to complete the tasks at customer sites.

Products covered by NHP Service:

1. NHP variable speed drives
2. NHP soft starters
3. NHP auto transformer starters
4. NHP liquid resistance starters
5. Terasaki ACBs, MCCBs
6. NHP power factor correction panels and power quality products

Emergency breakdown assistance

Modern facility managers demand consistency and efficiency of performance. In industrial applications, production is paramount.

In the case of commercial installations, continuity of service is equally important. In either case, disruption can result in costly losses and consequential damages. You want action, and you want it fast! NHP service offers 24/7 protection to ensure that your plant and equipment continues to work for you. Our service technicians are on call and are equipped to minimise downtime.

Charge out fees*

Onsite: Standard hourly rate = \$135/hr

Normal business hours:

8.00am - 5.00pm, Monday to Friday

All site work is subject to minimum four hours (includes travel and organisation time).

- Minimum charge normal business hours = 4 hours (\$540), thereafter = \$135/hr
- Minimum charge after hours = 4 hours (\$800), thereafter = \$200/hr
- Minimum charge public holidays = 4 hours (\$1600), thereafter = \$400/hr

Return to base: Standard hourly rate = \$105/hr

All return to base work incurs a minimum evaluation charge starting from \$200, and thereafter a quote is issued for the repair/service work to be completed on the item. This quote will cover both labour and parts.

Overtime on request:

- Hourly rate after hours = \$150/hr
- Hourly rate for public holidays = \$250/hr

Special service quotes:

The service sales team can also create special service quotes for scheduled work or maintenance contracts.

Payment:

Customers that do not have an account with NHP can use NHP's secure VISA and MasterCard credit card facilities.

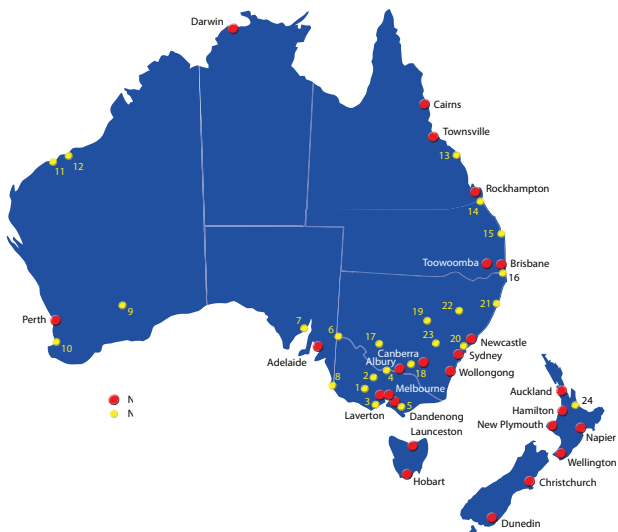
Products and/or service offered for sale in this pocket book are subject to our standard Conditions of Sale, applicable at the date the order is placed. NHP standard Conditions of Sale can be viewed on our website at:

<http://www.nhp.com.au/cos> or by requesting a copy for any of our offices.

Contacts

Normal business hours: contact your local NHP branch.

After hours: phone 1300 NHP NHP, where your after hours service request will be answered by technically trained NHP customer service staff, who will assess the level of service support required and arrange for the work to be completed.



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