

INSTALLATION INSTRUCTIONS

PANELBOARDS CONCEPT ONE / PLUS / PREMIER / TOUGH

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Using this manual

Authorised Personnel Only

The product or system described in this documentation must be installed and maintained by qualified personnel only. NHP accept no responsibility for the consequences of the use of this equipment by unqualified personnel. A qualified person is one with the necessary skills and knowledge of the construction and operation of the installation of electrical equipment and has been trained to identify and avoid risks.

Appropriate use of NHP products

NHP products are intended to be used only for the applications described in the catalogue and technical documentation, which is dedicated to them. If products and components from other manufacturers are used, they must be recommended or approved by NHP. Appropriate use of NHP products during transport, storage, installation, assembly, commissioning, operation and maintenance is necessary to ensure safe operation and without any problems. The permissible ambient conditions must be met. The information contained in the technical documentation must be observed.

Publication of responsibility

The contents of this document have been reviewed to ensure that the reliability of the information is correct at time of publication. NHP are not responsible for printing or damage resulting from errors. NHP reserve the right to make corrections and changes needed in subsequent edition.

Warnings and notes

This documentation contains safety instructions that you must follow for your personal safety and to prevent damage to property. Safety instructions, referring to your personal safety are reported in the literature by a safety alert symbol. Safety warning symbols and the words below are classified according to the degree of risk.



WARNING: Indicates an imminently hazardous situation which, if it cannot be avoided, will result in death or serious injury.



WARNING: Indicates a potentially hazardous situation which, if it cannot be avoided, can result serious injury or death.



WARNING: Indicates a potentially hazardous situation which, if it cannot be avoided, may cause minor or moderate injury.



Important Notice: Indicates a warning of property damage and can also indicate important operating and especially useful information on the product, that it should pay particular attention to efficient and safe operation.

1. AS/NZS 61439 Compliance

NHP Concept panelboards are designed and verified to meet AS/NZS 61439



Important Notice: If a user modifies the panelboard outside the scope of the NHP design then they are deemed to be the assembly manufacture and are responsible for compliance to AS/NZS 61439.

The installer needs to pay close attention to the AS/NZS 61439 standard that the panelboard complies to. Specifically, AS/NZS 61439.2 and AS/NZS 61439.3. The main differences stated below:

AS/NZS 61439.2 Requirements	AS/NZS 61439.3 Requirements
Any current rating ⁽¹⁾	Current rating not exceeding 250A (I_{nA} 250A)
No current limit on outgoing circuits	An outgoing circuit not exceeding 125A (I_{nc} 125A)
Specified to have a form of separation	No form of separation ⁽²⁾
	Intended to be operated by ordinary persons
	Outgoing protective circuits must be suitable to be operated by ordinary persons (example: MCBs to AS/NZS 60898)

⁽¹⁾ NHP's Concept Range is available in 160A, 250A, 400A and 630A

⁽²⁾ If required, panelboard must conform to AS/NZS 61439.2

2. Environmental Requirements

Concept panelboard should be installed in a suitable ventilated environment. Each concept panelboard range has particular ingress protection rating which should be considered when selecting the mounting location along with the local environmental conditions. The installer should be guided to make an assessment that the product they are installing suits the environment being installed.



Important Notice: Do not install the panelboard in an area where the ambient atmosphere contains volatile or corrosive gas or vapours. If the panelboard is not going to be immediately installed, it must be stored in an area where it is not exposed to a corrosive atmosphere. If the panelboard is to be installed in a C3 or C4 zone exposed to coastal air or in a corrosive atmosphere, then a stainless board should be considered.

2.1 Ingress Protection

All Concept panelboards come with predefined and tested IP ratings. The IP rating is marked on the panelboard labelling.



Important Notice: The installer must meet all AS/NZS 3000 section 1.7 requirements for selection and installation of electrical equipment. The installer must ensure all fixings and cable intrusions meet the listed IP rating of the panelboard. Example: ensuring that the correct IP rated cable glands are being used.

When mounting all enclosures it is important that the fasteners and sealing around these fasteners maintain the require IP rating. NHP offer an IP66 mounting sealing kit PN: CPPIP66 to assist with this.

Concept Panelboard IP ratings:

Type	IP rating	Design Notes
Concept One	IP40	
Concept Plus	IP42	IP52 kit available PN: CPLEIP52Mx
Concept Premier	IP66	When installing outdoors in weather the Concept rain hood accessory should be installed PN: CPRARxxx
Concept Tough	IP66	

2.2 Condensation & Humidity

If condensation arising from humidity may be expected in the operating environment a breathing/pressure equalisation valve shall be installed to assist with changes in humidity and drainage of moisture.

Vent/pressure valve PN: DA284xx Stainless steel or insulated options available

Drain: DD084



Important Notice: Where a condensation issue could arise within electrical equipment, a breathing/pressure equalisation valve shall be installed. Refer to AS/NZS 3000:2018 section 1.7.2. The installer must evaluate the environment and determine if additional condensation protection measures are required.

The following humidity limits apply for storage and operation:

Maximum relative humidity	
Indoor installations	Outdoor installations
50% at 40°C	100% at 25°C

2.3 Temperature

All Concept panelboards conform to AS/NZS 61439.1 section 7 for normal service conditions.

The following temperature limits apply:

	Ambient air temperature	
	Indoor installations	Outdoor installations
Maximum*	40°C	40°C
Maximum average over a period of 24 hours	35°C	35°C
Minimum	-5°C	-25°C

* For applications outside the above listed temperatures contact NHP

3. Handling

The installer is required to abide by all **Occupational Health and Safety** site rules when moving carrying or lifting all panelboards.



Warning: To guard against personal injury and/or equipment damage follow these guidelines:

- **Do not** subject the panelboard to high rates of acceleration or deceleration while transporting or lifting
- **Do not** allow personnel or their limbs directly underneath the panelboard when it is being lifted and mounted

3.1 Mass

Concept One, Plus and Premier:

	MCB Pole Capacity	
	24-48W	60-96W
Concept One	20-30 kgs	30-40 kgs
Concept Plus	30-40 kgs	50-70 kgs
Concept Premier	30-50 kgs	50-75 kgs

Concept Tough:

	Box Size			
	1	2	3	4
Concept Tough	40-60 kgs	70-100 kgs	100-150 kgs	130-170 kgs

Note: The above weights are approximate with no wiring/cabling installed.

4. Installation

The installer shall comply with the current versions of the following standards:

Standard	Description
AS/NZS 3000	Electrical Installation wiring rules
AS/NZS 3008	Electrical installations selection of cables
AS/NZS 61439	Low-voltage switchgear and control gear assemblies
AS/NZS 3760	In-service safety inspection and testing of electrical equipment and RCD's
AS/NZS 3003	Electrical installations patient areas
AS/NZS 3019	Electrical installations periodic verification

4.1 Installation Checklist

- Panelboard must be installed upright on a flat level surface. Verify that the panelboard is not warped and is vertical and stable.
- When selecting fixings ensure the correct type is selected for the mounting material.
- The panelboard must be assembled using the mounting provisions provided

- Ensure the fixings weight rating exceeds the total panelboard weight (with all internal components installed).
- The supporting structure that the panelboard is mounted on must be suitably rated for the weight of the panelboard
- Electrical terminals may become loose during transit and must be checked before the energisation of the switchboard
- Internal connections must be tightened to required torque settings. DO NOT USE POWER TOOLS
- Panelboards must be clean and free from dust, debris, swarf and wire strands. These are often generated while making cable entries. Panelboard shall be cleaned with a vacuum. DO NOT CLEAN THE PANELBOARD WITH COMPRESSED AIR.
- Ensure equipment is not damaged and has not moved or become loose during transit

4.2 Torque Requirements

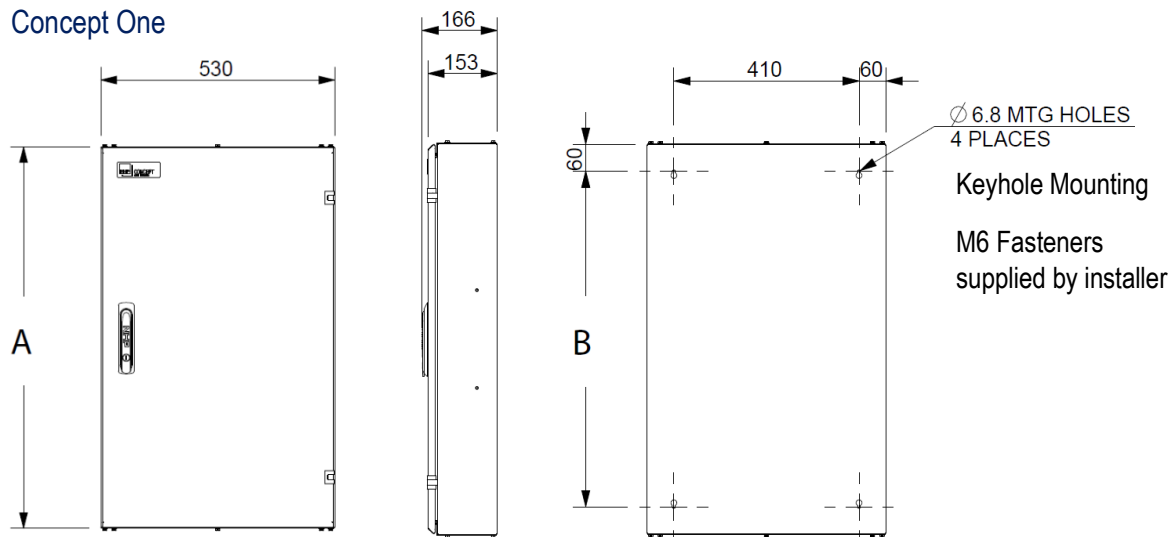
Device	Description	Torque (Nm)
NHP MCB	1 connection per pole	4.5
NHP MCB (DTCB10H)	1 connection per pole	4.5
NHP RCBOs (DSRCBS/M6RCBS) Compact 86mm	1 connection line side	4.5
	2 connections load side	3
NHP RCBOs (DSRCBH/MOD6RCBO1) Long body	1 connection line side	4.5
	2 connections load side	3
NHP RCBOs (DSRCB/MOD6RCBO2) 2 pole width	1 connection per pole	4.5
NHP RCCBs (DSRCD/MOD6RCCB) 2 or 4 pole width	1 connection per pole	4.5
Main Switch CEL3xxx	Supplied M8 fasteners	20
Main Switch CEL3xxxM	Terminal screw M8	10
	Attached busbar M10 (G4.8)	30
Direct lugs into DIN chassis	Bolt M8 (G8.8)	20
Earth & Neutral Bars	Main bolts (G8.8)	20
	Tunnels - 16mm ²	2
	Tunnels - 25mm ²	2.5
Gland plate fasteners	Special fastener M5	5
Internal fixing fastener	Special fastener M5x10	5
Earth/Neutral bar fixing fastener	Special fastener M5x25	5
Escutcheon fastener	Machine screw M5	3
TemBreak PRO 125A/160A	Terminal screw M8	6
	Attached busbar M8 (G4.8)	16
TemBreak PRO 250A	Terminal screw M8	10
	Attached busbar M10 (G4.8)	30
TemBreak PRO 400A/630A	Terminal screw M10	20
	Attached busbar M12 (G4.8)	60
Socomec load break switches (SLB)	125 - 160A M8 (G8.8)	20

	200 - 400A M10 (G8.8)	40
	500 - 630A M12 (G8.8)	69
Socomec load break switches (VLB)	250 - 500A M10 (G8.8)	20
General fasteners	Machine screw M4 (G4.8)	1.6
	Machine screw M5 (G4.8)	3.3
	Machine screw M6 (G4.8)	5.6
	Bolt/set screw M6 (G8.8)	8
	Bolt/set screw M8 (G8.8)	20

Note: For products not listed in the above table refer to the relevant products installation instructions

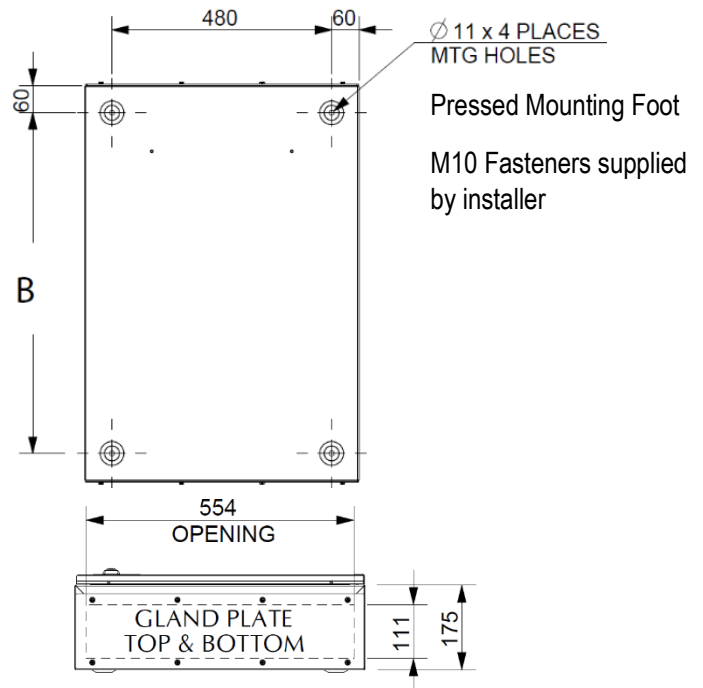
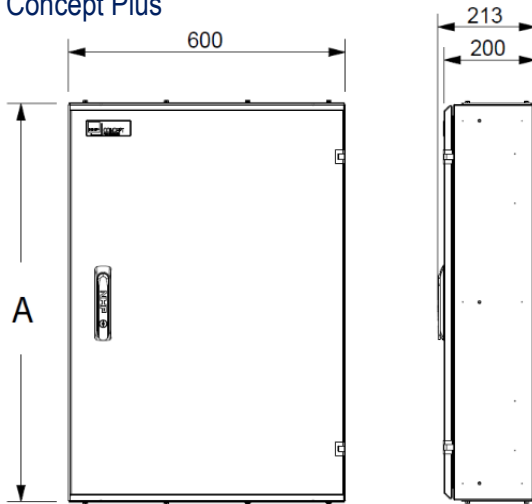
4.2 Dimensions

Concept One



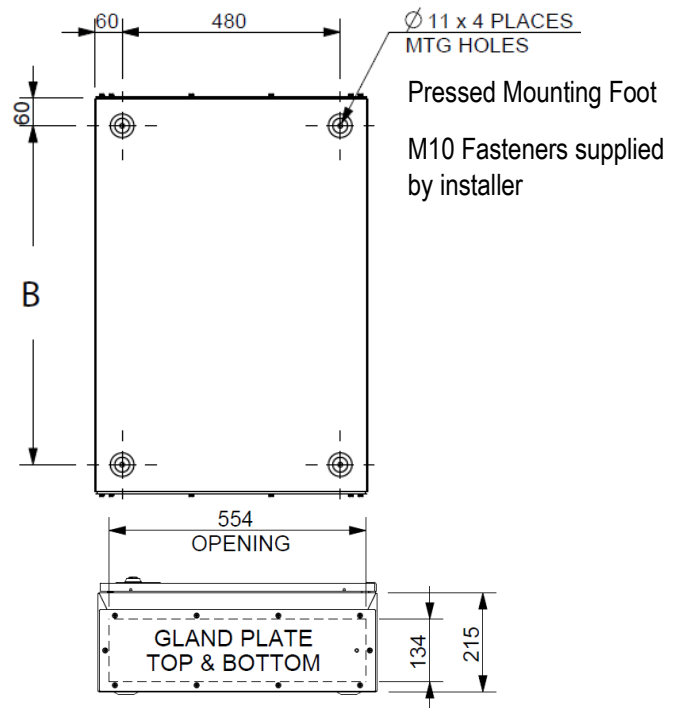
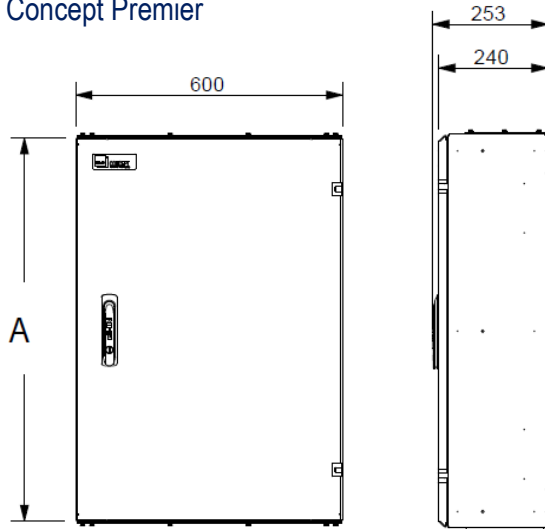
Module Size	A	B
2	432mm	312mm
3	648mm	528mm
4	864mm	744mm
5	1080mm	960mm
6	1296mm	1176mm

Concept Plus



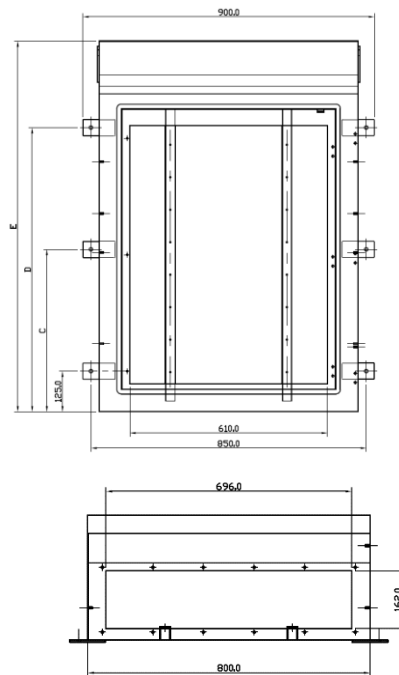
Module Size	A	B
2	432mm	312mm
3	648mm	528mm
4	864mm	744mm
5	1080mm	960mm
6	1296mm	1176mm
7	1512mm	1392mm
8	1728mm	1608mm
9	1944mm	1824mm

Concept Premier



Module Size	A	B
2	432mm	312mm
3	648mm	528mm
4	864mm	744mm
5	1080mm	960mm
6	1296mm	1176mm
7	1512mm	1392mm
8	1728mm	1608mm
9	1944mm	1824mm

Concept Tough



External Mounting Tags

6 x M10 Fasteners supplied by installer

Box Size	A	B	C	D	E
2	1000mm	1015mm	-	750mm	750mm
3	1500mm	1515mm	750mm	1375mm	750mm
4	2000mm	2015mm	1000mm	1875mm	2142mm

4.3 Cable Gland Recommendations

Appropriate cable glands should be used for all panelboard cable entries. Where possible use the gland plates provided with the panelboard for cable entries. Remove the gland plates prior to slotting or cutting for cable entries to avoid ingress of swarf & other debris. If using large single core cables use nonferrous gland plates to reduce chance of eddy currents.

Selection of the cable glands must not compromise the panelboards required IP rating. Follow the cable gland installation manufacturers instructions to ensure correct installation.

4.4 Accessibility

The installer shall install the panelboard according to AS/NZS 3000 section 2.10.2.

The panelboard must be arranged to provide sufficient space for:

- The initial installation
- Replacement of individual items of control and protective devices
- Accessibility for operation, testing, inspection, maintenance and repair



Warning: Consideration shall be given to provide a means of escape from the immediate vicinity of the panelboard in more than one direction, in case of an arcing fault occurring while work is in progress at the panelboard.

5. Operation

Once the panelboard is installed, wired correctly and before the supply feeding the board is switched ON, the following start up procedure should be followed:

1. Ensure all supplies feeding the board are isolated
2. The main switch or main incomer protection device and all protective devices internal to the panel board are OFF - MCBs or RCBOs
3. Switch ON upstream supply breaker
4. Switch ON panelboard main switch or main incomer protection device
5. One by one switch ON the required outgoing circuits – MCBs or RCBOs

6. Modification and Repairs

The busbar and chassis for all Concept panelboards are designed to suit only NHP MCBs and RCBOs. If non-standard products are used the person modifying or repairing will be responsible for re-verification to AS/NZS 61439. Modifications made to gland plates for cable entries are allowed (see section 4.3).



Important Notice: Failure to fit only NHP approved circuit protective devices may void any warranty and prove to be dangerous. If the prospective fault level at this switchboard is greater than the MCB/RCBO fault rating, there must be suitable cascading with upstream protection.

Common in scope allowable modifications:

- Emergency lighting kits
- External lighting control kits
- Surge protection
- Concept compatible door handles
- Changing gland plates to nonferrous materials such as aluminium or brass
- Fitting 160A or 250A Concept isolator
- Fitting up to 200A MCCB
- Allowable MCBs and RCBOs as stated below:

Board Type	Allowable MCBs and RCBOs (Model)
Concept One	NHP DIN-T, NHP MOD6
Concept Plus, Premier & Tough	NHP DIN-T

Refer to NHP for allowed modifications to stay within scope of the design

7. Testing and Maintenance

Applicable standards for testing and maintenance:

Standard	Description
AS/NZS 3760	Safety inspection and testing of electrical equipment
AS/NZS 3003	Electrical installations – Patient areas
AS/NZS 3019	Electrical installations - Periodic verification

Concept panel boards should be inspected every 12 months and at least once and within the initial 12-month warranty period. Electrical switchgear by its design and construction does not call for maintenance to ensure its function. Routine maintenance is however required to ensure continued safe and reliable operation.

Panelboards routine maintenance should be dependent on the environment it is installed in. More frequent maintenance is required for the following applications:

Environment	Frequent maintenance required
Harsh environment	Inspect structural integrity of enclosure, door seals and locking hardware
Vibration	Loose cable/power connections and potential physical damage due vibrations

7.1 Periodic Check list

- Check torque of any fixing and fastenings especially at terminals for conductors
- Check for internal cleanliness (dust and foreign objects increase the possibility of short circuit and ark faults)
- Check for obvious damage, defects, or modifications within the panelboard equipment and wiring insulation for discoloration that may indicate exposure to excessive heat, chemicals, or moisture.
- Check operation of circuit breakers
- Check condition of paint finish, door gaskets and enclosure for signs of damage
- If applicable, check the operation of emergency and exit light testing circuits monthly and maintain as per AS/NZS 2293.2

7.2 RCD testing

RCDs must be tested according to AS/NZS 3760 section 2.3.3.4 and AS/NZS 3003. A regular trip button test is required to ensure the correct operation of the RCD.

8. Additional Characteristics

Description	Unit	Concept One (COE)			Concept Plus (CPL)			Concept Premier (CPR)		
		No MSW	160A MSW	250A MSW	No MSW	160A MSW	250A MSW	No MSW	160A MSW	250A MSW
Model number		COExxLG	COExxM160LG	COExxM250LG	CPLxxG CPLxxO	CPLxxM160G CPLxxM160O	CPLxxM250G CPLxxM250O	CPRxxG, CPRxxO, CPRxxSSO, CPRxxSS	CPRxxM160G CPRxxM160O	CPRxxM250G CPRxxM250O
Assembly standard		AS/NZS 61439.3			AS/NZS 61439.3			AS/NZS 61439.3		
Degree of protection		IP40			IP42 (IP52 option)			IP66		
Rated voltage	U _n	415 V			415 V			415 V		
Rated operational voltage	U _e	230/400-240/415 V			230/400-240/415 V			230/400-240/415 V		
Rated insulation voltage	U _i	500 V			500 V			500 V		
Rated impulse withstand voltage	U _{imp}	IV 6 kV			IV 6 kV			IV 6 kV		
Rated assembly current	I _{nA}	250A	160A	250A	250A	160A	250A	250A	160A	250A
Rated current of a circuit	I _{nc}	63 A			63 A			63 A		
Rated peak withstand current	I _{pk}	52kA			52kA			52kA		
Rated short-time withstand current	I _{cw}	25kA 0.1s			25kA 0.1s			25kA 0.1s		
Rated conditional short-time current of an assembly	I _{cc}		10kA CEL3160M	10kA CEL3250M		10kA CEL3160M	10kA CEL3250M		10kA CEL3160M	10kA CEL3250M
Prospective short circuit current	I _{cp}	10kA			10kA			10kA		
Rated diversity factor	RDF	0.6 (63A)			0.4 (63A)			0.4 (63A)		
Rated frequency	f _n	50 Hz			50 Hz			50 Hz		
Pollution degree		2			3			3		
System of earthing		TN-S, TN-C-S			TN-S, TN-C-S			TN-S, TN-C-S		
Indoor and or outdoor installation		Indoor			Indoor			Indoor or Outdoor		
Stationary or movable		Stationary			Stationary			Stationary		
Intended for skilled or ordinary persons		Ordinary persons			Ordinary persons			Ordinary persons		
EMC classification		Environment B			Environment A or B			Environment A or B		
Special service conditions ⁽¹⁾		Standard service conditions			Standard service conditions			Standard service conditions		
Terminal compatibility		Terminals for copper conductors			Terminals for copper conductors			Terminals for copper conductors		
External design		Wall mounted surface type assembly			Wall mounted surface type assembly			Wall mounted surface type assembly		
Mechanical impact protection		IK07			IK10			IK10		
Type of construction fixed or removable		Fixed			Fixed			Fixed		
Measures for protection against electric shock		Basic protection by enclosure			Basic protection by enclosure			Basic protection by enclosure		
Neutral Bar Rating	A	250A			250A			250A		
Overall dimensions		Refer to NHP Catalogue			Refer to NHP Catalogue			Refer to NHP Catalogue		
Weight		Refer to NHP carton			Refer to NHP carton			Refer to NHP carton		
Form of separation (AS/NZS 61439.2)		2b ⁽²⁾	2b		2b ⁽²⁾	2b		2b ⁽²⁾	2b	
Type of electrical connection of functional units (AS/NZS 61439.2)		FFF			FFF			FFF		
Type A or B		Type B DBO			Type B DBO			Type B DBO		

⁽¹⁾ (if applicable) refer 7.2

⁽²⁾ when fitted CEL MSW

