NHP Electrical Engineering Products

Authorised Service Provider
A ROCKWELL AUTOMATION PARTNER

Authorised Distributor

NHP

Low and Medium Voltage PowerFlex® Drives

Powerful performance.
Flexible control.

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Contents

Fixed speed

Variable speed

Motor protection

Technical support

- The national network offered by NHP and further backed by Rockwell Automation offers a level of support that is second to none.
- Our Application Engineering team has extensive experience in VSD applications and is distributed around the country to offer you localised support.
- Field service emergency support.
- TechConnect for immediate expert phone support.

Packaged and harmonic solutions

- NHP is proud of its ability to provide Australian built packaged solutions, tailored to meet our customers' requirements without being locked into a prescribed engineered option.
- Our configured drive cabinets or 'components' offering allows you to choose from the full suite of harmonic solutions and other accessories.

Ease of use

- Rockwell Automation software tools offer an easy to use interface, regardless whether you are commissioning the drive from the keypad, using drive software or utilising premier integration with Studio 5000 Logix Designer. Our configured drive cabinets or components offering allows you to choose from the full suite of harmonic solutions and other accessories.
- The drive start up wizard presents a smart way to set up all significant parameters for most applications and the software provides a terrific interface, graphically showing things such as ramp times.

Flexible connectivity and integration

In addition to traditional hardwired I/O, NHP offers reduced set up and troubleshooting time by seamlessly integrating PowerFlex® drives and Logix programmable automation controllers.

- Real time access to information and production data with Ethernet/IP™, DeviceNet™, ControlNet™ and other commercially available networks.
- Lower costs associated with programming, installation and overall ownership with one software tool for drive configuration, operation and maintenance.

One comprehensive range

- The PowerFlex® 750 range offers one common platform extending from 0.75 kW upwards.
- Small single phase input drives.
- 690 V drives.
- High voltage drives for 3.3 kV and 6.6 kV applications, in addition to DC drives.

Flexible parameter sets and motor control

- Allen-Bradley drives offer a solution that's easy for standard applications, but also includes a high level of functionality for things like load sharing, shaft synchronisation, lifting and permanent magnet motors.
- The embedded DeviceLogix in the PowerFlex® 750 series is a standard offering and can be used with the usual drives software tools.

LV PowerFlex® AC Drives

Selection guide

Simple selection guide

Attributes	PowerFlex® 4M	PowerFlex® 523	PowerFlex® 525	Armor PowerFlex®
Catalogue reference	22F…	25A...	25B...	35E…
Rated power	0.2 - 11kW	0.2 - 22kW	0.4 - 22kW	0.75 - 7.5kW
Supply voltage	120 - 480V	100 - 600V	100 - 600V	380 - 480V
Ambient temperature limit for enclosure types	IP20: -10°C to 50°C IP20 Zero Stacking: -10°C to 40°C	IP20: -20°C to 50°C IP20 Zero Stacking: -20°C to 45°C without de-rating -20°C to 55°C with de-rating	IP20: -20°C to 50°C IP20 Zero Stacking: -20°C to 45°C without de-rating -20°C to 55°C with de-rating	IP54/IP66 -25°C to 55°C
Enclosure protection	IP 20	IP 20	IP 20	IP 54 / IP 66
Motor Control	• Volts per Hertz	• Volts per Hertz • Sensorless vector control	• Volts per Hertz • Sensorless vector control • Closed loop velocity vector control • Permanent magnet motor control	• Volts per Hertz • Sensorless vector control • Closed loop velocity vector control
Application	• Open loop speed regulation	• Open loop speed regulation	• Open loop speed regulation • Closed loop speed regulation	• Open loop speed regulation • Closed loop speed regulation
Safety	-	-	• Built-in hardwired Safe Torque Off, SIL 2, PLd, cat. 3	• Built-in hardwired Safe Torque Off, SIL 2, PLd, cat. 3 - option • Networked Safe Torque Off SIL 3, PLe, cat. 3 - option
Features	• Compact, space saving design • Cost-effective • Feed-through wiring • Drive overload protection and ramp regulation	• Modular design eases installation • Economizer motor control for energy savings • Application-specific parameter groups • Configurable analog output communicates a reference point to another drive or external device • Automatic Device Configuration	• Modular design eases installation • Economizer motor control for energy savings • Application-specific parameter groups • Simple positioning control with optional encoder card • Automatic Device Configuration	• Embedded I/O standard • Economizer motor control for energy savings • Compact, space saving design • Environmentally robust design

LV PowerFlex® AC Drives

Selection guide

Simple selection guide

Attributes	PowerFlex® 753	PowerFlex® 755	PowerFlex® 755T	PowerFlex® 755TS
Catalogue reference	20F...	20G...	20GE…	20G2…
Rated power	0.37 - 250kW	0.37 - 1500kW	7.5 - 4500kW	0.37 - 250kW
Supply voltage	200 - 690V	200 - 690V	400 - 690V	200 - 690V
Ambient temperature limit for enclosure types	IP00/IP20: 0°C to 50°C IP54: 0°C to 40°C	IP00/IP20: 0°C to 50°C IP54: 0°C to 40°C	IP20: -20°C to 50°C IP54: -20°C to 40°C	IP 00/IP 20: -20°C to 50°C IP54: -20°C to 40°C
Enclosure protection	IP 00 / IP 20 / IP 54 / flange mount	IP 00 / IP 20 / IP 54 / flange mount	IP 00 / IP 20 / IP 54 / flange mount	IP 00 / IP 20 / IP 54
Motor Control	• Flux vector control with and without an encoder • Sensorless vector control • Volts per Hertz • Permanent magnet motor control	• Flux vector control with and without an encoder • Sensorless vector control • Volts per Hertz • Permanent magnet motor control	• Sensorless vector • Flux vector control • Volts per Hertz • Economizer • Field-oriented control • Permanent magnet motor control • Synchronous reluctance	• Sensorless vector • Flux vector control • Volts per Hertz • Economizer • Field-oriented control • Permanent magnet motor control • Synchronous reluctance
Application	• Open loop speed regulation • Closed loop speed regulation • Accurate torque and speed regulation • Indexer positioning	• Open loop speed regulation • Closed loop speed regulation • Accurate torque and speed regulation • Accurate positioning with PCAM, indexer, and gearing	• Open loop speed regulation • Closed loop speed regulation • Precise torque, position, and speed regulation • Accurate positioning with PCAM, indexer, and gearing	• Open loop speed regulation • Closed loop speed regulation • Precise torque, position, and speed regulation • Accurate positioning with PCAM, indexer, and gearing
Safety	• Hardwired Safe Torque Off SIL 3, PLe, cat. 3 - option • Hardwired Safe Speed Monitor SIL 3, PLe, cat. 4 - option	• Hardwired Safe Torque Off SIL 3, PLe, cat. 3 - option • Networked Safe Torque Off SIL 3, PLe, cat. 3 - option • Hardwired Safe Speed Monitor SIL 3, PLe, cat. 4 - option • Networked Integrated Safety Functions • SIL CL 3 and PLe Cat 4 - option	• Hardwired Safe Torque Off SIL 3, PLe, cat. 3 • Networked Safe Torque Off SIL 3, PLe, cat. 3 • Hardwired Safe Speed Monitor SIL 3, PLe, cat. 4 • Networked Integrated Safety Functions SIL CL 3 and PLe Cat 4	• Hardwired Safe Torque Off SIL 3, PLe, cat. 3 • Networked Safe Torque Off SIL 3, PLe, cat. 3 • Hardwired Safe Speed Monitor SIL 3, PLe, cat. 4 • Networked Integrated Safety Functions SIL CL 3 and PLe Cat 4
Features	• Embedded I/O standard • Three option slots for I/O, feedback, safety, auxiliary control power, communications • Predictive diagnostics • Adjustable voltage control • Application-specific control for indexing, • Oil well and fiber applications	• Five option slots for I/O, feedback, safety, auxiliary control power, communications • Predictive diagnostics • TorqProve™ for lifting applications • Application-specific control for indexing, oil well, and fiber applications • Adjustable voltage control • Convenient roll-in/out design for floor mount drives	• Provides harmonic mitigation and power factor correction • TotalFORCE technology with patented features to help optimize your system and maintain productivity • Predictive diagnostics and maintenance • Efficient installation and maintenance with convenient roll in/out design • High power density with compact footprint • TorqProve for lifting applications • Five option slots for I/O, feedback, safety, auxiliary control power, communications	• TotalFORCE technology with patented features to help optimize your system and maintain productivity • Predictive diagnostics and maintenance • Simplified migration from PowerFlex 755 with identical mechanical and electrical characteristics • High power density with compact footprint • TorqProve for lifting applications • Five option slots for I/O, feedback, safety, auxiliary control power, communications • Optional enhanced corrosive gas protection (XT)

PowerFlex® AC Drives

Typical application duty ratings

Actuator - positioning	Heavy	Flying shears	Normal	Pump - high pressure	Normal
Actuator - screw down	Heavy	Frames - spinning	Normal	Pump - mono	Heavy
Agitator - liquid	Normal	Frames - textile	Normal	Pump - piston	Heavy
Agitator - slurry	Heavy	Grinder	Normal	Pump - positive displacement	Heavy
Air separator	Normal	Indexer	Heavy	Pump - screw	Heavy
Belt plow	Heavy	Indexing positioner	Normal	Pump - sewerage	Normal
Blower - centrifugal	Normal	Ironer (laundry)	Normal	Pump - sludge	Heavy
Blower - positive displacement	Normal	Laundry washer	Heavy	Pump - slurry	Normal
Calendar - rubber	Heavy	Machine - automatic buffing	Normal	Pump - submersible	Normal
Calendar - paper	Normal	Machine - boring	Heavy	Pump - vacuum	Normal
Calendar - textile	Normal	Machine - bottling	Normal	Roll - bending	Heavy
Car puller	Heavy	Machine - cinder-block	Heavy	Roll - crushing	Normal
Card machine - textile	Heavy	Machine - polishing	Normal	Roll - flaking	Normal
Centrifuge	Heavy	Machine - textile	Heavy	Rotary kiln	Heavy
Compressor - recip. (loaded)	Normal	Machine - tools	Normal	Sander - belt	Normal
Compressor - recip. (unloaded)	Normal	Machine - vibrating	Heavy	Sander - disk	Normal
Compressor - screw	Normal	Mill - band	Normal	Saw - band	Normal
Compressor - screw (booster)	Normal	Mill - flour	Normal	Saw - circular	Normal
Conveyor - belt	Heavy	Mill - grinding	Normal	Saw - cutoff	Normal
Conveyor - drag	Heavy	Mill - metal rolling	Normal	Saw - gang	Normal
Conveyor - screw	Heavy	Mill - rubber	Heavy	Saw - metal	Normal
Conveyor - shaker	Heavy	Mill - saw	Normal	Saw - wood	Normal
Cooler - hot solids	Heavy	Mixer - centrifugal	Normal	Screen - centrifugal	Normal
Cooler - rotary	Heavy	Mixer - chemical	Heavy	Screen - vibrating	Heavy
Crane - bridge motion	Heavy	Mixer - concrete	Normal	Shaker	Normal
Crane - hoist motion	Heavy	Mixer - dough	Heavy	Shovel	Normal
Crane - trolley motion	Heavy	Mixer - liquid	Normal	Skip hoist	Normal
Edger	Normal	Mixer - sand	Normal	Tension maintaining	Heavy
Elevator - bucket	Heavy	Mixer - screw	Heavy	Textile looms	Heavy
Elevator - freight	Heavy	Mixer - slurry	Heavy	Tool - automatic	Normal
Elevator - personnel	Heavy	Mixer - solids	Heavy	Tool - boring	Normal
Escalators	Normal	Planer - metalworking	Normal	Tool - broaching	Normal
Extruder - plastic	Heavy	Planer - woodworking	Normal	Tool - lathe	Normal
Extruder - rubber	Heavy	Power walks	Normal	Tool - mill	Normal
Fan - axial (damped)	Light/ Normal	Press - draw	Heavy	Tool - production	Normal
Fan - axial (undamped)	Light/ Normal	Press - drill	Normal	Tool - shaper	Normal
Fan - centrifugal (damped)	Light/ Normal	Press - pellet	Heavy	Vehicle - freight	Heavy
Fan - centrifugal (undamped)	Light/ Normal	Press - printing	Normal	Vehicle - passenger	Normal
Fan - high pressure	Normal	Press - punching	Heavy	Winch	Heavy
Feeder - belt	Heavy	Pump - bore	Normal	Wood chipper	Heavy
Feeder - oscillating drive	Heavy	Pump - centrifugal	Light/ Normal	Woodworking jointers	Normal
Feeder - screw	Heavy	Pump - gas	Normal	-	-
Feeder - vibrating	Heavy	Pump - gear	Heavy	-	-

Notes
Normal duty rating 110% for 1 minute
Heavy duty rating 150% for 1 minute
Duty rating requirements are influenced by acceleration times


Esc
Sel
PowerFlex
Allen-Bradley
PowerFlex 523
PowerFlex 525
PORT
MOD
NET A
NET B

PowerFlex® 4M Micro Drives

Technical data

User manual

Selection guide

Providing users with powerful motor speed control in a compact, space-saving design, the PowerFlex® 4M Micro drive is the smallest and most cost effective member of the PowerFlex® family of drives.

Providing application flexibility, feed-through wiring and ease-of-programming, the PowerFlex® 4M Micro drive is ideal for machine level speed control, for applications requiring space savings and easy-to-use AC drives.

- Feed-through wiring design
- DIN rail mountable (frames A and B)
- Zero Stacking™ for ambient temperatures up to 40°C, saving valuable panel space 50°C ambient temperatures are permitted with minimal spacing between drives
- Keypad potentiometer
- All drives are heavy duty rated providing 150% overload capacity for 60 seconds, 200% for 3 seconds
- V/Hz control
- 1x analogue input
- 3x fixed and 2x programmable digital inputs
- 1x relay output
- Dynamic brake chopper (5.5-11kW models only)

Ordering details - PowerFlex® 4M Micro Drive, IP20 with EMC filter [1)]

240 V AC 1ø input 3 ø output

Heavy duty (kW)	Output current (A)	Frame size	Dimensions (mm)			Watts loss (W) [2)]	Catalogue no.
			H	W	D		
0.25	1.6	A	174	72	136	14	22FA1P6N113
0.37	2.5	A	174	72	136	25	22FA2P5N113
0.75	4.2	A	174	72	136	43	22FA4P2N113
1.5	8	B	174	100	136	82	22FA8P0N113
2.2	11	B	174	100	136	109	22FA011N113

Notes
1) For 2nd environment and offers 1st environment with 1 m cable length
2) Estimated watts loss (rated load, speed and PWM).

415 V AC

Heavy duty (kW)	Output current (A)	Frame size	Dimensions (mm)			Watts loss (W) [2)]	Catalogue no.
			H	W	D		
0.37	1.5	A	174	72	136	24	22FD1P5N113
0.75	2.5	A	174	72	136	41	22FD2P5N113
1.5	4.2	A	174	72	136	74	22FD4P2N113
2.2	6	B	174	100	136	92	22FD6P0N113
3.7	8.7	B	174	100	136	135	22FD8P7N113
5.5	13	C	260	130	180	190	22FD013N114
7.5	18	C	260	130	180	294	22FD018N114
11	24	C	260	130	180	378	22FD024N114

2) Estimated watts loss (rated load, speed and PWM).
Full complement of accessories available for PowerFlex® 4M Micro drives. This includes communication options, input and output line reactors, dynamic brake resistors, EMC filters, PC programming software and more. Consult NHP for details.

Power Flex 523 AC Drives

Technical data

User manual

Selection guide

PowerFlex 523 AC Drives are designed to help reduce installation and configuration time with an innovative modular design while providing just enough control for your application. These drives offer convenient programming features with the fast upload and download of configuration files over a standard USB connection. As well as installation flexibility with Zero Stacking and a high ambient operating temperature. PowerFlex 523 AC drives also provide a variety of motor control option, making these dives ideal for simple applications.

- Modular design eases installation
- Economizer motor control for energy savings
- Application specific parameter groups making programming intuitive
- Vast temperature range -20°C to +50°C (up to +70°C with optional fan and derating)
- Integral EMC filter and braking transistor

Ordering details PowerFlex® 523 AC drive, IP 20

240 V AC 1ø input 3 ø output

Normal duty (kW)	Output current (A)	Frame size	Dimensions (mm)			Watts loss (W) [2]	Catalogue no.
			H	W	D		
0.2	1.6	A	152	72	172	20	25AA1P6N114
0.4	2.5	A	152	72	172	29	25AA2P5N114
0.75	4.8	A	152	72	172	50	25AA4P8N114
1.5	8	B	180	87	172	81	25AA8P0N114
2.2	11	B	180	87	172	111	25AA011N114

415 V AC

Normal duty (kW)	Heavy duty (kW)	Output current (A)	Frame size	Dimensions (mm)			Watts loss (W) [2]	Catalogue no.
				H	W	D		
0.4	0.4	14	A	152	72	172	27	25AD1P4N114
0.75	0.75	2.3	A	152	72	172	37	25AD2P3N114
1.5	1.5	4	A	152	72	172	63	25AD4P0N114
2.2	2.2	6	A	152	72	172	88	25AD6P0N114
4.0	4.0	10.5	B	180	87	172	133	25AD010N114
5.5	5.5	13	C	220	107	184	175	25AD013N114
7.5	7.5	17	C	220	107	184	230	25AD017N114
11	11	24	D	260	130	212	313	25AD024N114
15	11	30	D	260	130	212	402	25AD030N114
18.5	15	37	E	300	185	279	602	25AD037N114
22	18.5	43	E	300	185	279	697	25AD043N114

PowerFlex® 525 AC Drives

Technical data

User manual

Selection guide

Designed for mid-level machine control, the PowerFlex® 525 AC Drive provides users with flexibility, space savings and ease of use. Drives are available over 5 frame sizes that cover ratings from 0.37 to 22 kW; 200…240 V, 380…480 V and 500…600 V.

- Economiser algorithm to allow the drive to reduce energy consumption
- Embedded communications including EtherNet/IP™ and Modbus RTU and options for dual port EtherNet/IP™, DeviceNet™, ControlNet™, Profibus™ DP etc
- Integrated EMC filter through all frame sizes
- Embedded Safe Torque-Off meets EN954-1
- V/Hz, Sensorless Vector Control an Flux-Oriented Control
- Ease of programming using keypad, Connected Components Workbench (CCW) 1) or Studio 5000 Logix Designer
- Removable control core with mains free programming using a standard USB printer cable
- Application specific parameter groups with possibility of creating customer user parameter sets, part of the standard menu structure
- Horizontal mounting capable
- Operation up to 70°C with de-rating
- Conformal coating on all PCBs as standard to reduce dust and moisture build up

Ordering details – PowerFlex® 525 AC drive, IP 20

240 V AC 1ø input 3 ø output

Heavy duty (kW)	Output current (A)	Frame size	Dimensions (mm)			Watts loss (W) [2]	Catalogue no.
			H	W	D		
0.37	2.5	A	152	72	172	29	25BA2P5N114
0.75	4.8	A	152	72	172	53	25BA4P8N114
1.5	8	B	180	87	172	84	25BA8P0N114
2.2	11	B	180	87	172	116	25BA011N114

Built in EMC filter [3]

415 V AC

Normal duty (kW)	Heavy duty (kW)	Output current (A)	Frame size	Dimensions (mm)			Watts loss (W) [2]	Catalogue no.
				H	W	D		
0.37	0.37	1.4	A	152	72	172	27	25BD1P4N114
0.75	0.75	2.3	A	152	72	172	37	25BD2P3N114
1.5	1.5	4	A	152	72	172	81	25BD4P0N114
2.2	2.2	6	A	152	72	172	88	25BD6P0N114
4	4	10.5	B	180	87	172	133	25BD010N114
5.5	5.5	13	C	220	109	184	175	25BD013N114
7.5	7.5	17	C	220	109	184	230	25BD017N114
11	11	24	D	260	130	212	313	25BD024N114
15	11	30	D	260	130	212	402	25BD030N114
18.5	15	37	E	300	185	279	602	25BD037N114
22	18.5	43	E	300	185	279	697	25BD043N114

Built in EMC filter [4]

Communication options and accessories

Description	Catalogue no.
Dual Port EtherNet/IP™ communication adapter	25-COMM-E2P
DeviceNet™ communication adapter	25-COMM-D
Encoder feedback adapter	25-ENC-1
Enhanced, LCD, full numerical, remote hand held	22-HIM-A3
Enhanced, LCD, fixed panel mount, IP 66	22-HIM-C2S
Panel mount bezel kit for remote hand held	22-HIM-B1

For full range of accessories consult NHP

Notes

1) Connected Components Workbench is a Windows based programming and configuration software package that supports PowerFlex® drives and other Rockwell Automation products.
2) Estimated watts loss (rated load, speed and PWM)
3) For Categories C1, C2 and C3
4) For Categories C2 and C3
5) Normal and heavy duty ratings are available for drives above 11 kW

Armor PowerFlex ® AC Drives

Technical data

User manual

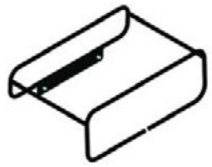
Product information

As an on-machine solution, the Armor® PowerFlex® drives move controls and hardware out of a cabinet and onto the machine, closer to the application. This can help industrial companies simplify machine designs and minimize costs and time to deploy. This range of on-machine PowerFlex solution is designed for harsh/rugged environments with an ingress protection (IP) rating of up to IP66.

It is easy to manage, can identify problems before downtime happens and built-in intelligence tells you about possible issues or required maintenances proactively.

- Robust shock (>25G) and vibration (>3G) resistant
- Embedded discrete and safety I/O
- Embedded 1000mbps dual port EtherNet/IP
- Optional dynamic brake resistor mounted on the device as an 'all-in-one' solution
- Wide ambient temperature -25°C to ~ 40°C (upto 55°C with derating)
- Local motor disconnect with status indication
- Feed-through power distribution
- Flexible mounting orientation (vertical or horizontal)
- Support multiple motor types including induction, permanent magnet and synchronous reluctance motor support

Accessories

	Description	Frame size	Catalogue no.
	Impact gaurd • Black metal construction	A/B	35-LG1-AB
	Splash plastic shiel • Clear plastic	A/B	35-SPS-AB
Dynamic brake resistor			
	Light duty 50 W, 360 Ω / 200 W, 120 Ω • IP54/66, Type 1/4/12, NEMA Type 1/4/12 • Right-angle plug connector • Mounts directly on Armor PowerFlex drive	A B	35R-00AP1K 35R-00BP1K
	Normal duty 100 W, 360 Ω / 300 W, 120 Ω • 1 m (3.3 ft) cable • IP54/66, Type 1/4/12, NEMA Type 1/4/12 • Right-angle plug connector • Separate mounting from Armor PowerFlexDrive	A A/B	35T-360P500 35T-120P1K2

Ordering details – Armor PowerFlex®

Bulletin 35 Armor PowerFlex Drives

Rated Current	Rated Power		Frame	24V DC Aux Power	EM Brake	Catalogue Number
A	HP	kW				
2.3	1	0.75	A	External	None	35*6D1L**01
2.3	1	0.75	A	External	Included	35*6D1L**11
2.3	1	0.75	A	Internal	None	35*6D1P**01
2.3	1	0.75	A	Internal	Included	35*6D1P**11
4	2	1.5	A	External	None	35*6D2L**01
4	2	1.5	A	External	Included	35*6D2L**11
4	2	1.5	A	Internal	None	35*6D2P**01
4	2	1.5	A	Internal	Included	35*6D2P**11
6	3	2.2	A	External	None	35*6D3L**01
6	3	2.2	A	External	Included	35*6D3L**11
6	3	2.2	A	Internal	None	35*6D3P**01
6	3	2.2	A	Internal	Included	35*6D3P**11
10.5	5	3.7	B	External	Included	35*6D4L**11
10.5	5	3.7	B	Internal	Included	35*6D4P**11
13	7.5	5.6	B	External	Included	35*6D5L**11
13	7.5	5.6	B	Internal	Included	35*6D5P**11
17	10	7.5	B	Internal	Included	35*6D6P**11
17	10	7.5	B	External	Included	35*6D6L**11

*Variant E - Standard S - Safety

** Power-in Gland 0 - Cord/Conduit 1 - Round Quick Connect 2 - Square Quick Connect

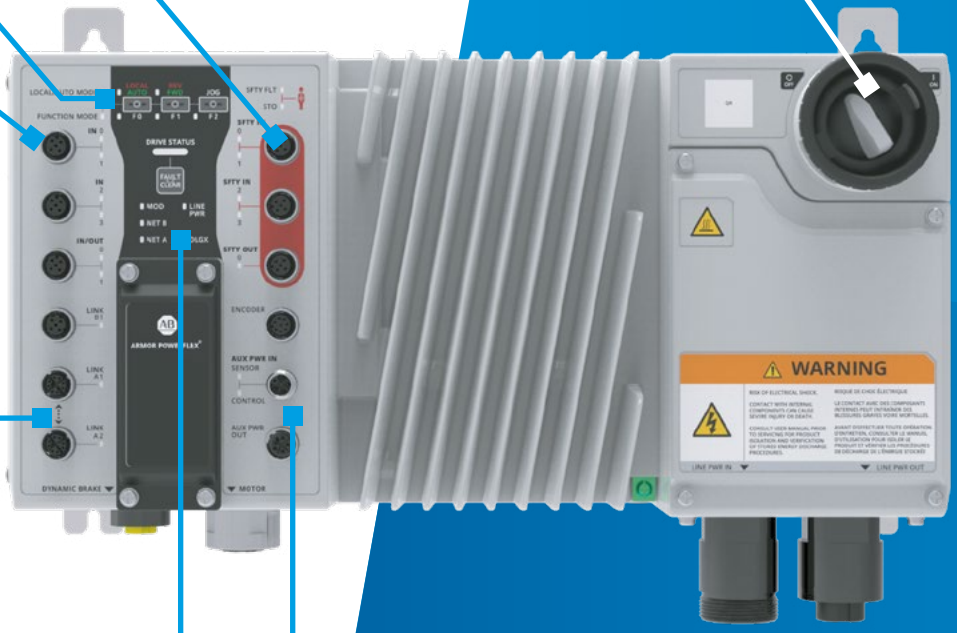
1..3 HP
0.75...2.2 kW frame

HOA keypad for local control when PLC is not available. Buttons are user-programmable for more flexible local control.

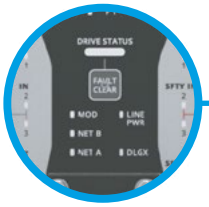
The local, lockable maintenance disconnect lets you safely maintain the motor with minimal disruptions.

Embedded safety inputs and outputs let you easily connect safety devices to their safety automation system.

Simplify machine design with embedded user inputs and outputs.



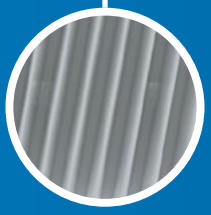
Dual-port EtherNet/IP gigabyte switch allows for a high speed network.



Local status diagnostic information helps the operator quickly know the status and troubleshoot issues when they arise.

Feed-through 24V DC auxiliary power supply lets you configure the device even when 3-phase power is off. Optional internal power supply.

Set your static IP address from five private address groups.



Design allows for easy wash-down and less chance to collect debris.

Test points let you safely verify DC bus and motor voltage status before maintenance actions.

Dynamic brake quick disconnect integrates resistor over temperature internally for protection.

Standardised quick disconnect motor cable assembly eliminates installation complexity.

Feed-through 3-phase and auxiliary power enables cost reduction and faster installation.

PowerFlex® 753 AC Drives

Technical data

Programming manual

Installation instructions

Selection guide

Designed for ease of integration, application flexibility and performance, the PowerFlex® 753 AC drive provides greater functionality across your manufacturing systems. With a myriad of features, the PowerFlex® 753 AC drive is perfect for all your general purpose applications.

- 3 control modes; V/Hz, Sensorless Vector Control and Vector Control with Force Technology™
- Embedded DeviceLogix™ control
- Predictive diagnostics with real time clock
- Speed, position and torque control
- Conformal coating as standard
- Normal duty application: 110% overload capacity for 60 seconds, 150% for 3 seconds
- Heavy duty application: 150% overload capacity for 60 seconds, 180% for 3 seconds
- Integrated I/O:
  - 3x digital inputs
  - 1x relay output
  - 1x transistor output
  - 1x analogue input
  - 1x analogue output
  - 1x PTC input
- 3 option slots for communications, safety, feedback and additional I/O

Ordering details – PowerFlex® 753 AC drive 415 V AC, IP 00/20, no HIM [1)]

Normal duty (kW)	Heavy duty (kW)	Output amps			Frame size	Dimensions (mm)			Watts loss (W) [2)]	Catalogue no.
		Cont.	1 Min.	3 sec.		H	W	D		
0.75	0.55	2.1	3.1	3.7	1 [3)]	400	110	212	72	20F11RC2P1JA0NNNNN
1.5	1.1	3.5	5.2	6.3	1 [3)]	400	110	212	93	20F11RC3P5JA0NNNNN
2.2	1.5	5	7.5	9	1 [3)]	400	110	212	106	20F11RC5P0JA0NNNNN
4	2.2	8.7	13	15.6	1 [3)]	400	110	212	159	20F11RC8P7JA0NNNNN
5.5	3.7	11.5	17.2	20.7	1 [3)]	400	110	212	192	20F11RC011JA0NNNNN
7.5	5.5	15.4	16.9	23.1	1 [3)]	400	110	212	246	20F11RC015JA0NNNNN
11	7.5	22	24.2	33	2	424.2	134.5	212	311	20F11NC022JA0NNNNN
15	11	30	33	45	3	454	190	212	403	20F11NC030JA0NNNNN
18.5	15	37	40.7	55.5	3	454	190	212	477	20F11NC037JA0NNNNN
22	18.5	43	47.3	64.5	3	454	190	212	631	20F11NC043JA0NNNNN
30	22	60	66	90	4	474	222	212	617	20F11NC060JA0NNNNN
37	30	72	79.2	108	4	474	222	212	762	20F11NC072JA0NNNNN
45	37	85	93.5	127.5	5	550	270	212	867	20F11NC085JA0NNNNN
55	45	104	114.4	156	5	550	270	212	1129	20F11NC104JA0NNNNN
75	55	140	154	210	6	665.5	270	346.4	1558	20F1ANC140JA0NNNNN
90	75	170	187	255	6	665.5	308	346.4	1681	20F1ANC170JA0NNNNN
110	90	205	225.5	307.5	6	665.5	308	346.4	2274	20F1ANC205JA0NNNNN
132	110	260	286	390	6	665.5	308	346.4	2951	20F1ANC260JA0NNNNN
160	132	302	332.2	453	7	875	430	346.4	3027	20F1ANC302JA0NNNNN
200	160	367	403.7	550.5	7	875	430	346.4	3908	20F1ANC367JA0NNNNN
250	200	456	501.6	684	7	875	430	346.4	4665	20F1ANC456JA0NNNNN

Ordering details – PowerFlex® 753 AC drive, IP 54, no HIM [1)]

Normal duty (kW)	Heavy duty (kW)	Output amps			Frame size	Dimensions (mm)			Watts loss (W) [2)]	Catalogue no.
		Cont.	1 Min.	3 sec.		H	W	D		
1.5	1.1	3.5	5.2	6.3	2	543.2	215.3	222.2	83	20F11GC3P5JA0NNNNN
2.2	1.5	5	7.5	9	2	543.2	215.3	222.2	97	20F11GC5P0JA0NNNNN
4	2.2	8.7	13	15.6	2	543.2	215.3	222.2	139	20F11GC8P7JA0NNNNN
5.5	3.7	11.5	17.2	20.7	2	543.2	215.3	222.2	178	20F11GC011JA0NNNNN
7.5	5.5	15.4	16.9	23.1	2	543.2	215.3	222.2	241	20F11GC015JA0NNNNN
11	7.5	22	24.2	33	2	543.2	215.3	222.2	311	20F11GC022JA0NNNNN
15	11	30	33	45	3	551	268	220.1	403	20F11GC030JA0NNNNN
18.5	15	37	40.7	55.5	3	551	268	220.1	477	20F11GC037JA0NNNNN
22	18.5	43	47.3	64.5	3	551	268	220.1	631	20F11GC043JA0NNNNN
30	22	60	66	90	4	571	300	220.1	617	20F11GC060JA0NNNNN
37	30	72	79.2	108	4	571	300	220.1	762	20F11GC072JA0NNNNN
45	37	85	93.5	127.5	5	647	348	220.1	867	20F11GC085JA0NNNNN
55	45	104	114.4	156	6	647	348	220.1	1129	20F1AGC104JA0NNNNN
75	55	140	154	210	6	1298.3	609.4	464.7	1558	20F1AGC140JA0NNNNN
90	75	170	187	255	6	1298.3	609.4	464.7	1681	20F1AGC170JA0NNNNN
110	90	205	225.5	307.5	6	1298.3	609.4	464.7	2274	20F1AGC205JA0NNNNN
132	110	260	286	390	6	1298.3	609.4	464.7	2951	20F1AGC260JA0NNNNN
160	132	302	332.2	453	7	1614	609.6	464.8	3027	20F1AGC302JA0NNNNN
200	160	367	403.7	550.5	7	1614	609.6	464.8	3908	20F1AGC367JA0NNNNN
250	200	456	501.6	684	7	1614	609.6	464.8	4665	20F1AGC456JA0NNNNN

Notes

PowerFlex® 753 AC drive shown fitted with optional enhanced HIM, 20-HIM-A6

1) Frames 2...5 are IP 20, frames 6...7 are IP 00
2) Estimated watts loss (rated load, speed and PWM)
3) Limited to two option slots when using the 2075020COMMF1 carrier card

Human interface modules

Description	Catalogue no.
Enhanced, LCD, full numeric, drive mount	20-HIM-A6
Enhanced, LCD, full numeric, fixed panel mount, IP 66 [3]	20-HIM-C6S
Panel mount bezel kit [4]	20-HIM-B1

Communications and safety options

Description	Catalogue no.
DeviceNet™ communication adapter	20-750-DNET
Control Net™ communication adapter	20-750-CNETC
EtherNet/IP™ communication adapter [5]	20-COMM-E
Dual EtherNet port card	20-750-ENETR
Communication carrier card [6]	20-750-20COMM
Communication carrier card-frame 1 [6]	20-750-20COMMF1
Safe torque-off	20-750-S

Control and I/O operations

Description	Catalogue no.
24 V DC I/O card with 2AI, 2AO, 6 DI, 2 RO	20-750-2262C-2R
24 V DC auxiliary control power supply	20-750-APS

Notes

1) PowerFlex® 753 AC drives come standard with no HIM (blank plate)
2) Estimated watts loss (rated load, speed and pwm)
3) IP 66 - for indoor use only. Includes a 1202-C30 interface cable (3 metres) for connection to drive
4) For use with 20-HIM-A6. Includes a 1202-C30 interface cable (3 metres) for connection to drive
5) Communication carrier card, 20-750-20COMM required for connection to PowerFlex® 753 AC drive
6) For legacy adapter compatibility, please contact your local NHP Account Representative

PowerFlex® 755 AC Drives

Technical data

Programming manual

Installation instructions

Selection guide

Designed for ease of integration, application flexibility and performance, the PowerFlex 755 AC drive provides improved functionality across many manufacturing systems. The PowerFlex 755 AC drive is designed to maximise users' investment and help improve productivity. Ideal for applications that require safety, high motor control performance and application flexibility, the PowerFlex 755 is highly functional and cost-effective solution. For IP54 wall mount or flange mount options, please contact NHP.

- Robust design that offers high performance for a wide variety of industrial applications
- IP20 or IP54
- Simplified integration into Logix with in-built single port EtherNet/IP and improved connectivity with optional dual port EtherNet/IP card
- Supports a comprehensive range of optional network protocols to ease integration into your architecture
- Option for hardwired safety or hardwired safe speed to help simplify meeting safety compliances
- Incorporates DeviceLogix™ to control outputs and manage status information locally within the drive, allowing you to operate the drive independently or complementary to supervisory control
- A slot-based hardware architecture that reduces unnecessary add-ons and gives you the flexibility to select option cards to suit your application and expand your drive for future needs
- Prevent unplanned downtime with predictive diagnostics and built-in protection features to help guard your investment
- Drives 250kW and larger have additional diagnostic features including built-in protection devices
- Drives above 250kW are all floor standing
- In-built torque proving software making configuration for hoisting applications easy
- Integral EMC filter and braking transistor

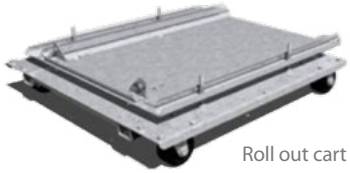
Ordering details – PowerFlex® 755 415V AC, IP00/IP20

Normal duty (W)	Heavy duty (kW)	Output amps			Frame size	Dimensions (mm)			Watts loss (W) [2]	Catalogue no.
		Cont.	1 Min.	3 sec.		H	W	D		
0.75	0.37	2.1	2.3	3.2	1	400.5	110	211	71	20G11RC2P1JA0NNNNN
1.5	0.75	3.5	3.9	5.3	1	400.5	110	211	83	20G11RC3P5JA0NNNNN
2.2	1.5	5	5.5	7.5	1	400.5	110	211	97	20G11RC5P0JA0NNNNN
4	2.2	8.7	9.6	13.1	1	400.5	110	211	139	20G11RC8P7JA0NNNNN
5.5	4	11.5	13.1	17.3	1	400.5	110	211	178	20G11RC011JA0NNNNN
7.5	5.5	15.4	16.9	23.1	1	400.5	110	211	241	20G11RC015JA0NNNNN
11	7.5	22	24.2	33	2	424.2	134.5	212	311	20G11NC022JA0NNNNN
15	11	30	33	45	3	454	190	212	403	20G11NC030JA0NNNNN
18.5	15	37	4.7	55.5	3	454	190	212	477	20G11NC037JA0NNNNN
22	18.5	43	47.3	64.5	3	454	190	212	631	20G11NC043JA0NNNNN
30	22	60	66	90	4	474	222	212	617	20G11NC060JA0NNNNN
37	30	72	79.2	108	4	474	222	212	762	20G11NC072JA0NNNNN
45	37	85	93.5	128	5	550	270	212	867	20G11NC085JA0NNNNN
55	45	104	114	156	5	550	270	212	1129	20G11NC104JA0NNNNN
75	55	140	154	210	6	665.5	308	346.4	1558	20G1ANC140JA0NNNNN
90	75	170	187	255	6	665.5	308	346.4	1681	20G1ANC170JA0NNNNN
110	90	205	226	308	6	665.5	308	346.4	2274	20G1ANC205JA0NNNNN
132	110	260	286	390	6	665.5	308	346.4	2951	20G1ANC260JA0NNNNN
160	132	302	332	453	7	881.5	430	350	3027	20G1ANC302JA0NNNNN
250	200	456	502	684	7	881.5	430	350	4665	20G1ANC456JA0NNNNN
270	200	477	525	716	7	881.5	430	350	4992	20G1ANC477JA0NNNNN

Note:
Frame 2...5 are IP20
Frame 6...7 are IP00

Ordering details – PowerFlex 755 AC drive 415V AC, IP 20, no HIM

Light duty		Normal duty		Heavy duty (W) [2]		Frame	Watts loss (W)	Catalogue no.
kW	Amps	kW	Amps	kW	Amps			
315	540	250	460	200	385	8	5869	20G1ABC460JN0NNNNN
315	585	315	540	250	456	8	6532	20G1ABC540JN0NNNNN
355	612	315	567	250	472	8	6950	20G1ABC567JN0NNNNN
400	750	355	650	315	540	8	8588	20G1ABC650JN0NNNNN
450	796	400	750	315	585	8	9303	20G1ABC750JN0NNNNN
450	832	400	770	355	642	8	9934	20G1ABC770JN0NNNNN
560	1040	500	910	400	750	8	11406	20G11BC910JN0NNNNN
630	1090	560	1040	500	880	9	12089	20G11BC1K0JN0NNNNN
710	1175	630	1090	500	910	9	13293	20G11BC1K1JN0NNNNN
800	1465	710	1175	560	1040	9	16756	20G11BC1K2JN0NNNNN
850	1480	800	1465	630	1090	9	16973	20G11BC1K4JN0NNNNN
900	1600	850	1480	710	1175	9	18749	20G11BC1K5JN0NNNNN
1000	1715	900	1590	710	1325	10	19286	20G11BC1K6JN0NNNNN
1400	2330	2150	2150	1000	1800	10	27110	20G11BC2K1JN0NNNNN



Roll out cart

Human interface modules

Description	Catalogue no.
Fixed door mount keypad, IP 66	20HIMC6S
24V I/O card with 2AI, 2AO, 6DI, 2RO	207202262C2R
Roll out cart (required)	20750CART1F8

Standard dimensions (mm)

Frame	Width	Height	Depth
8	600	2453	600
9	1200	2453	600
10	1800	2453	600

High kW PowerFlex 755 highlights

- Easy rack-out
- Change fan in-situ
- Easy access to all major components
- Only front access needed

Frame 8 with tailored option bay

Ready to roll out

Precision engineered enclosure

Modular rack-out with converter in place

PowerFlex ® 755TS AC Drives

Technical data

Installation instructions

Selection guide

To help get the most out of your equipment, PowerFlex 755TS drives are the first six-pulse variable frequency drives to incorporate TotalFORCE technology.

TotalFORCE technology combines flexible, high-performance motor control, advanced self-monitoring capabilities and a real-time digital platform that provides data that can make the difference between profit and loss. Leverage the rich diagnostic and predictive analytic insights to make smart operation, energy and predictive maintenance decisions. This includes traditional fan, pump and conveyor applications to more advanced motor control processes that require high performance features typically found in specialized drive solutions.

- Power range: 1…400 Hp / 0.75…270 kW; 400/480
- Supports up to five option cards for I/O, safety, communication
- Easy configuration, integration and visualisation in Studio 5000® design environment
- Built-in dual port Gigabit EtherNet/IP
- DeviceLogix™ integrated logic-solving capability for applications that require a quick and localized response to input events
- T-Link high-speed fibre-optic drive-to-drive communications
- CIP security enabled
- Integral hardwired and network safety

XT-corrosive gas protection optional

Reduce threat of early equipment failure from corrosion with PowerFlex drives with XT corrosive gas protection

- Corrosion resistant components
- Selecting and designing components that provide better performance
- Enhanced conformal coating
- Not all conformal coating are made equal
- Critical connection point protection
- Helping prevent exposure to internal and external connections

PowerFlex 750 XT option cards

Description	Catalogue no.
24 V DC I/O card with 2 Relay Outputs	20-750-2262C-2R-XT
115 V AC I/O card with 2 Relay Outputs	20-750-2262D-2R-XT
24 V DC I/O card with 1 Relay Outputs and 2 Digital Outputs	20-750-2263C-1R2T-XT
Incremental Encoder Module, XT	20-750-ENC-1-XT
Dual Incremental Encoder Module, XT	20-750-DENC-1-XT
Universal Feedback Module, XT	20-750-UFB-1-XT
TotalFORCE Auxiliary Power Supply, XT	20-750-TAPS-XT
755TS Torque Accuracy Module, XT	20-750-TSTAM-CD-XT
TLINK Module Kit, XT	20-750-TLINK-XT

Ordering details – PowerFlex®

755TS 380...400V AC, IP00/IP20

Normal duty		Heavy duty			
Output amps	kW	Output amps	kW	Catalogue no.	Frame size
2.1	0.75	1.3	0.37	20G*1RC2P1JA0NNNNN	1
3.5	1.5	2.1	0.75	20G*1RC3P5JA0NNNNN	1
5	2.2	3.5	1.5	20G*1RC5P0JA0NNNNN	1
8.7	4	5	2.2	20G*1RC8P7JA0NNNNN	1
11.5	5.5	8.7	4	20G*1RC011JA0NNNNN	1
15.4	7.5	11.5	5.5	20G*1RC015JA0NNNNN	1
2.1	0.75	2.1	0.75	20G*1NC2P1JA0NNNNN	2
3.5	1.5	3.5	1.5	20G*1NC3P5JA0NNNNN	2
5	2.2	5	2.2	20G*1NC5P0JA0NNNNN	2
8.7	4	8.7	4	20G*1NC8P7JA0NNNNN	2
11.5	5.5	11.5	5.5	20G*1NC011JA0NNNNN	2
15.4	7.5	11.5	5.5	20G*1NC015JA0NNNNN	2
22	11	15.4	7.5	20G*1NC022JA0NNNNN	2
30	15	22	11	20G*1NC030JA0NNNNN	3
37	18.5	30	15	20G*1NC037JA0NNNNN	3
43	22	37	18.5	20G*1NC043JA0NNNNN	3
61	30	43	22	20G*1NC061JA0NNNNN	3
60	30	43	22	20G*1NC060JA0NNNNN	4
72	37	60	30	20G*1NC072JA0NNNNN	4
86	45	72	37	20G*1NC086JA0NNNNN	4
85	45	72	37	20G*1NC085JA0NNNNN	5
104	55	85	45	20G*1NC104JA0NNNNN	5
140	75	104	55	20G*ANC140JA0NNNNN	6
170	90	140	75	20G*ANC170JA0NNNNN	6
205	110	170	90	20G*ANC205JA0NNNNN	6
260	132	205	110	20G*ANC260JA0NNNNN	6
302	160	260	132	20G*ANC302JA0NNNNN	7
367	200	302	160	20G*ANC367JA0NNNNN	7
456	250	367	200	20G*ANC456JA0NNNNN	7
477	270	367	200	20G*ANC477JA0NNNNN	7

* - Protection 2 - Standard Protection E - Corrosive Gas Protection (XT)

755TS 380...400V AC, IP54

Normal duty		Heavy duty			
Output amps	kW	Output amps	kW	Catalogue no.	Frame size
2.1	0.75	2.1	0.75	20G*1GC2P1JA0NNNNN	2
3.5	1.5	3.5	1.5	20G*1GC3P5JA0NNNNN	2
5	2.2	5	2.2	20G*1GC5P0JA0NNNNN	2
8.7	4	8.7	4	20G*1GC8P7JA0NNNNN	2
11.5	5.5	11.5	5.5	20G*1GC011JA0NNNNN	2
15.4	7.5	11.5	5.5	20G*1GC015JA0NNNNN	2
22	11	15.4	7.5	20G*1GC022JA0NNNNN	2
30	15	22	11	20G*1GC030JA0NNNNN	3
37	18.5	30	15	20G*1GC037JA0NNNNN	3
43	22	37	18.5	20G*1GC043JA0NNNNN	3
60	30	43	22	20G*1GC060JA0NNNNN	4
73	37	60	30	20G*1GC073JA0NNNNN	4
72	37	60	30	20G*1GC072JA0NNNNN	5
85	45	72	37	20G*1GC085JA0NNNNN	5
104	55	85	45	20G*AGC104JA0NNNNN	6
140	75	104	55	20G*AGC140JA0NNNNN	6
170	90	140	75	20G*AGC170JA0NNNNN	6
205	110	170	90	20G*AGC205JA0NNNNN	6
260	132	205	110	20G*AGC260JA0NNNNN	7
302	160	260	132	20G*AGC302JA0NNNNN	7
367	200	302	160	20G*AGC367JA0NNNNN	7
456	250	367	200	20G*AGC456JA0NNNNN	7

* - Protection 2 - Standard protection E - Corrosive gas protection (XT)

PowerFlex 755T XT

Technical data

Programming manual

Selection guide

New enhancement for the PowerFlex 755 TL/TM/T Drives

The introduction of XT-corrosive gas protection

- The PowerFlex TL, TR and TM products will now be manufactured with XT-corrosive gas protection as a standard.
- These drives combine conformal coating with several additional design enhancements to provide improved performance in environments with corrosive gasses.

Version 10 firmware

- CIP security - secure communications with EtherNet/IP™ network protocol.
- CIP object for predictive maintenance
- Synchronous reluctance motor control

T-Link option card

- The T-Link option card for PowerFlex 755T Drives will enable high speed drive to drive communication.
- High speed drive to drive communication simplifies or eliminates logic and hardware necessary to synchronise control between drives.

TotalForce® technology is our patented field-oriented control that provides precise, adaptive control of velocity, torque and position for electric motors. TotalForce technology allows the drives to respond quickly to operating conditions and automatically adjust to help improve system performance.

- Provide predictive diagnostics and maintenance settings to monitor drive and motor operating conditions to help analyse system health
- Offers optimised packaging of power components and options that reduce footprint and hardware
- Provide harmonic mitigation and meets the IEEE 519 standard
- Include roll in/out design which makes the power and filter modules easy to install and service
- Offer safe torque-off and safe speed monitor safety options
- Include built-in dual EtherNet/IP ports

Ordering detail – PowerFlex 755TL IP00/IP20 Wall Mount 400V Three-Phase Drives

Current	Power rating			Frame size	Dimensions (mm)			Total watts loss	Catalogue no.
Normal duty A	Light duty kW	Normal duty kW	Heavy duty kW		H	W	D		
15.4	11	7.5	5.5	5	863	343	356	752	20GE17NC015LNANNNNN
22	15	11	7.5	5	863	343	356	892	20GE7NC022LNANNNNN
30	18.5	15	11	5	863	343	356	1031	20GENC030LNANNNNN
37	22	18.5	15	5	863	343	356	1161	20GE7NC037LNANNNNN
43	30	22	18.5	5	863	343	356	1588	20GE7NC043LNANNNNN
60	37	30	22	5	863	343	356	1737	20GE7NC060LNANNNNN
72	45	37	30	5	863	343	356	2084	20GE7NC072LNANNNNN
85	55	45	37	5	863	343	356	2656	20GE7NC085LNANNNNN
104	55	55	45	5	863	343	356	2656	20GE7NC104LNANNNNN
140	90	75	55	6	1656	404	361	3650	20GE7NC140LNANNNNN
170	110	90	75	6	1656	404	361	4543	20GE7NC176LNANNNNN
205	132	110	90	6	1656	404	361	5127	20GE7NC205LNANNNNN
260	160	132	110	6	1656	404	361	6146	20GE7NC260LNANNNNN

Ordering detail – PowerFlex 755TL IP21 Floor Standing 400V Three-Phase Drives

A roll-out cart is required with these drives to assist with power wiring and cabinet mounting

Current	Power rating			Frame size	Dimensions (mm)			Total watts loss	Catalogue no.
Normal duty A	Light duty kW	Normal duty kW	Heavy duty kW		H	W	D		
302	200	160	132	7	2128	800	675	6707	20GE73C302LNANNNNN
367	250	200	160	7	2128	800	675	8699	20GE73C367LNANNNNN
460	315	250	200	7	2128	800	675	10634	20GE73C460LNANNNNN
540	315	315	250	7	2128	800	675	11812	20GE73C540LNANNNNN
585	355	315	250	7	2128	800	675	12689	20GE73C585LNANNNNN
302	200	160	132	8	2132	1200	675	11340	20GEG3C302LNANNNNN
367	250	200	160	8	2132	1200	675	14803	20GEG3C367LNANNNNN
460	315	250	200	8	2132	1200	675	18267	20GEG3C460LNANNNNN
540	315	315	250	8	2132	1200	675	20414	20GEG3C540LNANNNNN
585	355	315	250	8	2132	1200	675	18146	20GEG3C585LNANNNNN
650	400	355	315	8	2132	1200	675	23110	20GEG3C650LNANNNNN
750	450	400	315	8	2132	1200	675	23990	20GEG3C750LNANNNNN
770	450	400	355	8	2132	2000	675	26835	20GEG3C770LNANNNNN
920	560	500	400	9	2132	2000	675	31740	20GEG3C920LNANNNNN
1040	630	560	500	9	2132	2000	675	33828	20GEG3C1K0LNANNNNN
1112	710	630	500	9	2132	2000	675	31010	20GEG3C1K1LNANNNNN
1175	800	710	560	9	2132	2000	675	41344	20GEG3C1K2LNANNNNN
1465	850	800	630	9	2132	2000	675	46064	20GEG3C1K4LNANNNNN
1590	1000	850	710	10	2132	3200	675	45311	20GEG3C1K6LNANNNNN
1715	1250	1000	800	10	2132	3200	675	60912	20GEG3C1K7LNANNNNN
2156	1400	1250	1000	10	2132	3200	675	68143	20GEG3C2K1LNANNNNN

Ordering detail – PowerFlex 755TL IP54 Floor Standing 400V Three-Phase Drives

A roll-out cart is required with these drives to assist with power wiring and cabinet mounting

Current	Power rating			Frame size	Dimensions (mm)			Total watts loss	Catalogue no.
Normal duty A	Light duty kW	Normal duty kW	Heavy duty kW		H	W	D		
302	200	160	132	7	2128	800	675	6707	20GE74C302LNANNNNN
367	250	200	160	7	2128	800	675	8699	20GE74C367LNANNNNN
460	315	250	200	7	2128	800	675	10634	20GE74C460LNANNNNN
540	315	315	250	7	2128	800	675	11812	20GE74C540LNANNNNN
585	355	315	250	7	2128	800	675	12689	20GE74C585LNANNNNN
302	200	160	132	8	2132	1200	675	11340	20GEG4C302LNANNNNN
460	315	250	200	8	2132	1200	675	14803	20GEG4C460LNANNNNN
540	315	315	250	8	2132	1200	675	18267	20GEG4C540LNANNNNN
585	355	315	250	8	2132	1200	675	20414	20GEG4C585LNANNNNN
650	400	355	315	8	2132	1200	675	18146	20GEG4C650LNANNNNN
750	450	400	315	8	2132	1200	675	23110	20GEG4C750LNANNNNN
770	450	400	355	8	2132	1200	675	23990	20GEG4C770LNANNNNN
920	560	500	400	9	2132	2000	675	26835	20GEG4C920LNANNNNN
1040	630	560	500	9	2132	2000	675	31740	20GEG4C1K0LNANNNNN
1112	710	630	500	9	2132	2000	675	33828	20GEG4C1K1LNANNNNN
1175	800	710	560	9	2132	2000	675	31010	20GEG4C1K2LNANNNNN
1465	850	800	630	9	2132	2000	675	41344	20GEG4C1K4LNANNNNN
1590	1000	850	710	10	2132	2000	675	46064	20GEG4C1K6LNANNNNN
1715	1250	1000	800	10	2132	3200	675	45311	20GEG4C1K7LNANNNNN
2156	1400	1250	1000	10	2132	3200	675	60912	20GEG4C2K1LNANNNNN

Output choke and quick reference chart

Motor wiring output choke chart for PowerFlex® 753

Frame 2 - 4						■	■	■	■	■	■	■
Frame 5												■
Frame 6												■
Frame 7										■	■	■
Frame 8								■	■	■	■	■
0	50	75	100	125	150	175	200	225	250	275	300	325

☐ Output choke not required ■ Output choke required

motor cable length (m)

Notes:
1) The chart above is using the default switching frequencies; frames 2-4 @ 4 kHz and frames 5-8 @ 2 kHz
2) Values for cable length are for motor insulation @ 1488 V

PowerFlex 520 Series - Enclosure & Cooling Chart

Frame Size	Cat. No.	kW		Amps	Watt loss	Recommended Enclosure	Enclosure Dimensions (mm)			Recommended Cooling Cat. No.
		Normal duty	Heavy duty				H	W	D	
Single Phase, 240 VAC Input Drives										
A	25_A1P6N114	0.2	0.2	1.6	20	MAS0503026R5	500	300	260	GSV1000220+GSF10
A	25_A2P5N114	0.4	0.4	2.5	29	MAS0503026R5	500	300	260	GSV1000220+GSF10
A	25_A4P8N114	0.75	0.75	4.8	53	MAS0503026R5	500	300	260	GSV1000220+GSF10
B	25_A8P0N114	1.5	1.5	8	84	MAS0503026R5	500	300	260	GSV1000220+GSF10
B	25_A011N114	2.2	2.2	11	116	MAS0503026R5	500	300	260	GSV1500220+GSF15
3 Phase, 415 VAC Input Drives										
A	25_D1P4N114	0.4	0.4	1.4	27	MAS0503026R5	500	300	260	GSV1000220+GSF10
A	25_D2P3N1144	0.75	0.75	2.3	37	MAS0503026R5	500	300	260	GSV1000220+GSF10
A	25_D4P0N114	1.5	1.5	4	63	MAS0503026R5	500	300	260	GSV1000220+GSF10
A	25_D6P0N114	2.2	2.2	6	88	MAS0503026R5	500	300	260	GSV1000220+GSF10
B	25_D010N114	4	4	10.5	133	MAS0503026R5	500	300	260	GSV1500220+GSF15
C	25_D013N114	5.5	5.5	13	175	MAS0504030R5	500	400	300	GSV1500220+GSF15
C	25_D017N114	7.5	7.5	17	230	MAS0504030R5	500	400	300	GSV2000220+GSF20
D	25_D024N114	11	11	24	313	MAS0606040R5	600	600	400	GSV2000220+GSF25
D	25_D030N114	15	15	30	402	MAS0606040R5	600	600	400	GSV2500220+GSF25
E	25_D037N114	18.5	18.5	37	602	MAS0606040R5	600	600	400	GSV2501220+GSF25
E	25_D043N114	22	22	43	697	MAS0606040R5	600	600	400	GSV2501220+GSF30

Assumptions:
1) Ambient temperature is 40°C (enclosure internal maximum temperature is 50°C)
2) Top, bottom and sides of enclosure are uncovered (enclosure mounted against a wall)
3) Enclosure dimensions and ventilation have not accounted for any acessories (e.g. reactors, contactors, etc)

Notes:
1) Replace '_' with 'A' for the PowerFlex 523 and 'B' for the PowerFlex 525

PowerFlex 750 Series - Enclosure & Cooling Chart

Frame Size	Cat. No.	kW		Amps	Watt loss	Recommended Enclosure	Enclosure Dimensions (mm)			Recommended Cooling Cat. No.
		Normal duty	Heavy duty				H	W	D	
3 Phase, 400 VAC, 50hz Input Drives										
1	20_11RC2P1JA0NNNNN	0.75	0.55	2.1	72	MAS0604030R5	600	400	300	GSV1000220+GSF10
1	20_11RC3P5JA0NNNNN	1.5	1.1	3.5	93	MAS0604030R5	600	400	300	GSV1000220+GSF10
1	20_11RC5P0JA0NNNNN	2.2	1.5	5	106	MAS0604030R5	600	400	300	GSV1000220+GSF10
1	20_11RC8P7JA0NNNNN	4	2.2	8.7	159	MAS0604030R5	600	400	300	GSV1500220+GSF15
1	20_11RC011JA0NNNNN	5.5	3.7	11.5	192	MAS0604030R5	600	400	300	GSV1500220+GSF15
1	20_11RC015JA0NNNNN	7.5	5.5	15.4	246	MAS0806030R5	800	600	300	GSV2000220+GSF20
2	20_11NC2P1JA0NNNNN	0.75	0.55	2.1	71	MAS0604030R5	600	400	300	GSV1000220+GSF10
2	20_11NC3P5JA0NNNNN	1.5	1.1	3.5	83	MAS0604030R5	600	400	300	GSV1000220+GSF10
2	20_11NC5P0JA0NNNNN	2.2	1.5	5	97	MAS0604030R5	600	400	300	GSV1000220+GSF10
2	20_11NC8P7JA0NNNNN	4	2.2	8.7	139	MAS0604030R5	600	400	300	GSV1500220+GSF15
2	20_11NC011JA0NNNNN	5.5	3.7	11.5	178	MAS0604030R5	600	400	300	GSV1500220+GSF15
2	20_11NC015JA0NNNNN	7.5	5.5	15.4	241	MAS0804030R5	800	400	300	GSV2000220+GSF20
2	20_11NC022JA0NNNNN	11	7.5	22	311	MAS0806030R5	800	600	300	GSV2000220+GSF25
3	20_11NC030JA0NNNNN	15	11	30	403	MAS0806030R5	800	600	300	GSV2500220+GSF25
3	20_11NC037JA0NNNNN	18.5	15	37	477	MAS0806030R5	800	600	300	GSV2500220+GSF30
3	20_11NC043JA0NNNNN	22	18.5	43	631	MAS0806030R5	800	600	300	GSV2501220+GSF25
4	20_11NC060JA0NNNNN	30	22	60	617	MAS0806030R5	800	600	300	GSV2501220+GSF25
4	20_11NC072JA0NNNNN	37	30	72	762	MAS0806030R5	800	600	300	GSV2501220+GSF30
5	20_11NC085JA0NNNNN	45	37	85	867	MAS1006030R5	1000	600	300	GSV3000220+GSF30
5	20_11NC104JA0NNNNN	55	45	104	1129	MAS1006030R5	1000	600	300	GSV3000220+GSF30
6	20_1ANC140JA0NNNNN	75	55	140	1558	MAS1006040R5	1000	600	400	GSV3001220+GSF30
6	20_1ANC170JA0NNNNN	90	75	170	1681	MAS1006040R5	1000	600	400	GSV3001220+GSF30
6	20_1ANC205JA0NNNNN	110	90	205	2274	MAS1008040R5	1000	800	400	2x GSV3000220+ 2x GSF30
6	20_1ANC260JA0NNNNN	132	110	260	2951	MAS1208040R5	1200	800	400	2x GSV3001220+ 2x GSF30
7	20_1ANC302JA0NNNNN	160	132	302	3027	MAS1208040R5	1200	800	400	2x GSV3001220+ 2x GSF30
7	20_1ANC367JA0NNNNN	200	160	267	3908	MAS1208040R5	1200	800	400	2x TSV220122010000 + 2x GSF30
7	20_1ANC456JA0NNNNN	250	200	456	4665	MAS1208040R5	1200	800	400	2x TSV220022010000 + 2x GSF30*
7	20_1ANC456JA0NNNNN	250	200	456	4665	MCS20086R5+ PM2006R5	1800	600	500	TSV35U022000000+GSF30*

Assumptions:

1) Ambient temperature is 40°C (enclosure internal maximum temperature is 50°C)
2) Mild steel enclosures were used with base and back covered
3) Enclosure dimensions and ventilation have not accounted for any acessories (e.g. reactors, contactors, etc)
4) All cooling options selected achieve IP54 except those marked with "*"

Notes:

1) Replace '_' with 'F' for the PowerFlex 753 and 'G' for the PowerFlex 755

NHP Configured Drives

NHP Configured Drives offer a vast array of options in their basic drives packages - a level of choice that guarantees the most accurate application solution.

Leverage our local manufacturing capability with experienced engineers who understand local codes, standards and application requirements to help you get to market faster than ever before.

- **Ready to run – out the box:** Fully factory assembled configured drive enclosures from NHPs Laverton facility, all drives are 'ready to run'
- **Fast delivery:** Tailored delivery plans to suit the customer's project schedule
- **Enhanced reliability:** As NHP represents the single point of responsibility for all technology, engineering design, assembly and after-sales support, the Configured Drives offering is a refreshing new standard of drive reliability
- **Safety and standards compliant:** All NHP Configured Drives are designed, built and tested to comply with the relevant Australian Standards, plus Australian Standards defining RFI, harmonic emissions and other electrical performance standards
- **Engineering excellence:** NHP offers more than 50 years of experience and know-how of drives solutions for industry. All design and assembly work are completed in-house.
- **Power**: Drives are available in power capacities spanning 0.75kW to over 1MW. Power circuits can include input/output switchgear and filters (where required)
- **Control:** Speed control can be via local or remote 4 to 20mA or 0 to 10V inputs. Run/stop indication and start/stop push-button control is also provided either local to the panel or remote
- **Network connectivity**: NHP Configured Drives offer connectivity to today's most advanced industrial networks including EtherNet/IP, ControlNet, DeviceNet, Remote I/O and Data Highway Plus (DH+). Other networks are also supported, including ProfiBus, Interbus, RS485 DFI, RS485 HVAC and Lonworks
- **Operator interface:** All PowerFlex drives come complete with the Allen-Bradley® Human Interface Module (HIM) - fully-featured LCD multi- line/multi-lingual display and configuration panel. The HIM provides all drive configuration and real-time drive operation data and may be mounted either on the drive unit or the front of the drive enclosure

Arc Fault Contained Variable Speed Drives (VSDs)

Arc faults can cause serious injury and potentially be fatal. New, specially designed Rockwell Automation enclosures now add a further layer of protection to personnel in the event of an arc fault occurring. Safety is the number one priority in all applications, so increase the safety of your personnel by installing an Arc Fault contained PowerFlex 755 Variable Speed Drive.

Why is it difficult for VSDs to be arc fault contained?

VSDs have been difficult to design to withstand arc faults due to critical failure points in vents and fans. Rockwell Automation has designed a patented arc baffle ventilation system which allows air to flow under normal operating conditions, but under an arcing fault, diverts all gases flowing from the enclosure and provide no direct path for gas.

Simplified integration with Logix

The PowerFlex 750 offer seamless integration into the Logix environment for simplified and enhanced configuration, programming, diagnostics and maintenance.

Communications

The PowerFlex 750 series supports a comprehensive range of network protocols to ease integration into your architecture. The PowerFlex 755 features an embedded EtherNet/IP port, allowing you to easily manage drive data over EtherNet/IP networks.

Enclosure	IP 54, Floor Mounted				
Temperature Range	0-40°C				
Voltage Range	380 …400V AC				
Form of Separation	Form 4B, in accordance with AS/NZS 61439				
Cable Entry/ Exit	Bottom/ Bottom				
Normal Duty Rating at 400V	55 kW	90 kW	132 kW	200 kW	250 kW
Heavy Duty Rating at 400V	45 kW	75 kW	110 kW	160 kW	200 kW
Width	702 mm	902 mm	902 mm	1002 mm	1002 mm
Depth	800 mm	800 mm	800 mm	800 mm	800 mm
Height	2300 mm	2300 mm	2300 mm	2300m	2300 mm

Safe torque-off and safe speed monitor

Help protect personnel and equipment while reducing machine downtime with safety solutions up to and including PLe/SIL, Cat 3 and Cat 4

Standard inclusions:

- Incoming circuit breaker with shunt release and auxiliary contacts
- 24V DC power supply
- Door mounted human interface module
- 24V DC I/O module
- 4mm aluminium gland plate

Options:

- Line and load side reactor

Technical data

Selection guide

Powerflex DC Drives

The Allen-Bradley PowerFlex DC digital drive has been designed for the most demanding stand-alone and coordinated drive system applications. It combines powerful performance with flexible control to achieve a highly functional cost effective drive and control solution.

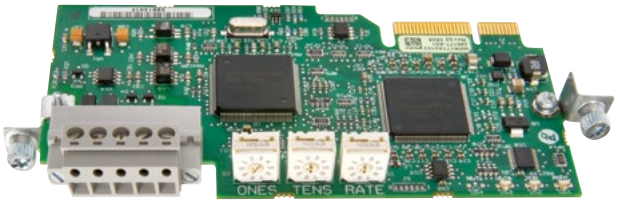
- Fully featured LCD display simplifies programming
- PC tools include DriveTools or Studio 5000 Logix Designer to assist with programming and troubleshooting
- Fully compatible with AC drives communication cards and software
- Proven noise suppression design
- Pull-apart terminal blocks for easy wiring and quick disconnect
- DC tacho and encoder feedback included as standard
- Extensive I/O offers installation flexibility

Ask about our 240 V and 690 V models

Ordering details PowerFlex DC drive 415 V AC, IP 20, no HIM [1)]

Drive output rating - 460 V AC Input

Normal duty kW	Amps	Catalogue no.	Frame size
1.5	4.1	20P41AD4P1RA0NNN	A
2.2	6	20P41AD6P0RA0NNN	A
3.7	10	20P41AD010RA0NNN	A
5.5	14	20P41AD014RA0NNN	A
7.5	19	20P41AD019RA0NNN	A
11	27	20P41AD027RA0NNN	A
15	35	20P41AD035RA0NNN	A
18.5	45	20P41AD045RA0NNN	A
22	52	20P41AD052RA0NNN	A
30	73	20P41AD073RA0NNN	A
37	86	20P41AD086RA0NNN	A
45	100	20P41AD100RA0NNN	A
56	129	20P41AD129RA0NNN	A
75	167	20P41AD167RA0NNN	B
93	207	20P41AD207RA0NNN	B
112	250	20P41AD250RA0NNN	B
149	330	20P41AD330RA0NNN	B
187	412	20P41AD412RA0NNN	B
224	495	20P41AD495RA0NNN	C
298	667	20P41AD667RA0NNN	C
373	830	20P41AD830RA0NNN	D
447	996	20P41AD996RA0NNN	D
552	1162	20P41AD1K1RA0NNN	D
597	1328	20P41AD1K3RA0NNN	D
671	1494	20P41AD1K4RA0NNN	D



Human interface modules

Description	Catalogue no.
Enhanced, LCD, full numeric, drive mount	20-HIM-A3
Enhanced, LCD, full numeric, fixed panel mount, IP 66 [2]	20-HIM-C3S
Panel mount bezel kit [3]	20-HIM-B1

Communications and safety options

Description	Catalogue no.
EtherNet/IP™ communication adapter	20-COMM-E
DeviceNet™ communication adapter	20-COMM-D

PowerFlex 6000T MV Drives

Help simplify your integration and operating experience by choosing PowerFlex 6000T medium voltage drives. They share the same control hardware, firmware and network interface software used in our latest generation of PowerFlex 755T low voltage drives. Using a common control platform across your entire installed base of variable speed drives lowers integration, operation and support costs. A common platform also reduces product-specific training requirements and spare parts inventory.

Technical data

User manual

Programming manual

Selection guide

Notes

1) PowerFlex® DC drives come standard with no HIM (blank plate)
2) IP 66 - for indoor use only. Includes a 1202-C30 interface cable (3 metres) for connection to drive
3) For use with 20 HIMA3. Includes a 1202-C30 interface cable (3 metres) for connection to drive

PowerFlex 6000T medium voltage drives feature:

- Easy configuration, integration and visualisation in the Studio 5000 design environment. The add-on profile is the preconfigured data translator, visual user interface and data configurator all rolled into one. It is also the primary tool that sends drive data to the control system
- Connected Components Workbench™ software - full device profile support, which makes it easier to configure the program and visualise in a single software package
- Simplified and more intuitive on-machine control, monitoring and diagnostics with a larger 10" colour touchscreen enhanced HIM
- Extensive input power monitoring functionality for kW, kVA, kVAR, elapsed kWh, MWh and power factor
- Quick and secure flash-over-fiber firmware updates for all main control boards and power cells from a single file
- More comprehensive and faster troubleshooting with the Forensic Data Recorder functionality

TotalFORCE Technology

PowerFlex 6000T drives now feature TotalFORCE technology which enables flexible high-performance control, real-time operational intelligence and automated commissioning and optimization.

- Features flexible high-performance control:
  - Includes flux vector, sensorless vector and V/ Hz control with load sharing
  - Features standard Device Logix capability
- Features real-time operational intelligence:
  - Offers predictive and preventative maintenance algorithms
  - Provides real-time alerts
- Features automated commissioning and optimization:
  - In-built adaptive control capability via
    - Load observer - real time tuning technology automatically compensates for unknown load disturbances and adjusts for applications with varying inertia and torque requirements during operation
    - Adaptive tuning monitors real-time drive and system performance characteristics via notch filters to identify and suppress potentially harmful resonance and vibration conditions

Technical data

Selection guide

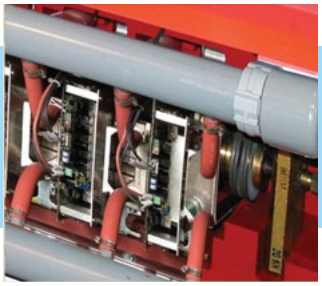
PowerFlex® 7000 MV Drives

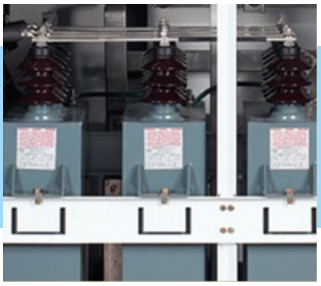
The PowerFlex® 7000 with 'direct-to-drive' technology means you can connect straight to your HV supply without an isolation transformer. This reduces installation and capital costs, while speeding up the installation process.

There is no need to install transformers for each drive, when only one or two can be used for the entire site.

- We can provide one of the shortest delivery lead times on MV drives which really helps when a deadline has to be met
- For fast maintenance, each SGCT and gate drive slides out easily without any special tools and can be changed in only 5 minutes
- Transformerless direct-to-drive technology can accept high voltage directly
- Use of standard motor cable
- Low parts count and low maintenance
- No DC bus capacitors increases reliability and reduces service costs
- Low harmonics and regenerative solutions with active front end
- Low total cost of ownership
- Easy to use

Liquid cooled technology






Range summary - air and liquid cooled

	Voltage	Frame	kW range	Current range (A)
Active front end - air cooled	3.3 kV	A	187 to 750	46 to 160
		B	450 to 3100	105 to 625
	6.6 kV	A	400 to 933	40 to 105
		B	400 to 5595	40 to 575
18-pulse - air cooled	3.3 kV	B	187 to 2050	46 to 430
	6.6 kV	B	400 to 3000	40 to 430
Active front end - liquid cooled	6.6 kV	C	1680 to 5595	185 to 575
18-pulse - liquid cooled	6.6 kV	C	3000 to 4100	325 to 657

Use standard motor cable

- Reduced dv/dt or reflected wave stress on motors
- No need for output filters
- Use economical non-screened motor cable

High reliability and low maintenance

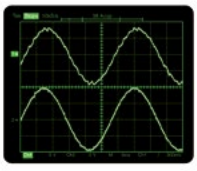
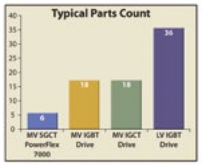
- Low parts count
- No DC bus capacitors reduces maintenance and eliminates 'the weak link'
- Simple change out of power components without special tools and all front access

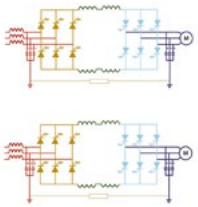
Power quality

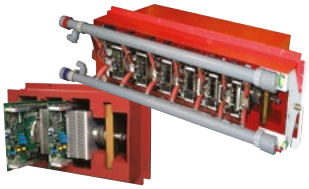
- AFE offers low harmonics
- High power factor
- Use economical non-screened motor cable

Liquid cooled energy savings

- Convenient closed loop cooling circuit
- Utilise waste heat for your process
- Maximise the drive efficiency





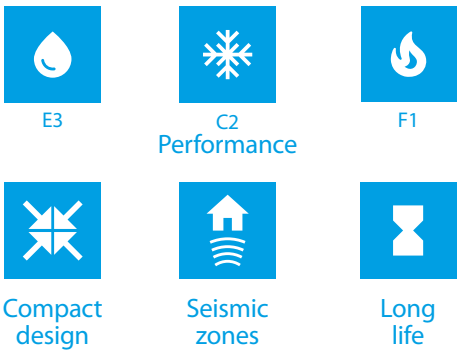
Cast Resin Transformers

TES-R

NHP TES-R cast resin transformers range from 50kVA to 6MVA with voltages up to 36kV.

Due to the flame-resistant and self-extinguishing materials used, they are perfect for indoor and special applications like rail, hospitals, data centres, high rise buildings and highly ecological environments.

Furthermore, the inherent design provides an additional benefit of reduced maintenance requirements.



Key characteristics:

Long service life

- The casting process allows a low level of partial discharge

Custom manufactured

- Voltages, impedances, efficiency, HV plug-in bushings and more

Compact design

- Optimised dimensions and terminals arrangement for critical situation of space

Built for local standards

- Type tested to AS60076, complies with MEPS AS2374.1.2 ensuring minimum energy losses

High environmental resistance

- Specific treatment for magnetic core and frames to withstand the most extreme environmental conditions

Heavy duty

- Special design structure for seismic zones or for using applications with high level vibrations

Eco-friendly

- Research and development of the highest performing materials, combined with an advanced design for high energy efficiency. Safe to use and easy to dispose of.

Applications:

- Indoor installations
- Reduced fire risk (F1 class). Crucial for inside public buildings like hospitals, hotels and airports
- Highly polluted places and atmospheres (E3 class), common in mines, paper mills, off-shore and on-shore sites, oil and gas systems, desalination plants and cement factories.
- Extremely low temperatures (C2 class)
- Distribution power grids, railways networks or substations

Applicable standards:

- AS 60076 Power Transformers
  – Parts 1, 2, 3, 5, 10 and 11
- AS 2374.1.2 Power Tx - Minimum Energy Performance Standard (MEPS)

Oil Immersed Transformers

Economical | Compact design | Seismic zones | High environmental resisntace

TES-OM

NHP TES-OM oil immersed transformers range from 50kVA to 7MVA with voltages up to 36kV.

The traditional oil transformers are available with oil conservator or hermetically sealed type with integral fins.

The insulating oil is mineral type PCB free, preventively treated and dried, filled under vacuum

Key characteristics:

- Economical
  Designed for easy installation with accessories properly wired and positioned, simplifying installation and maintenance, therefore reducing costs
- Custom manufactured
  Voltages, impedances, efficiency, HV plug-in bushings and more
- Compact design
  Optimised dimensions and terminals arrangement for critical situation of space.
- Built for local standards
  Type tested to AS60076, complies with MEPS AS2374.1.2 ensuring minimum energy losses
- High environmental resistance
  Specific coating treatment and use of stainless steel bolts to withstand the most extreme environmental conditions
- Heavy duty
  Special design structure for seismic zones or for using applications with high level vibrations
- Eco-friendly
  A combination of the best materials combined with an advanced design provides high energy efficiency. Non-flammable or bio-oil can be used to reduce the environmental risk.

Applications:

- Indoor or outdoor installations
- High polluted places and atmospheres
- Common in mines, paper mills, off-shore and on-shore sites, oil and gas systems, desalination plants and cement factories
- Extremely low temperatures (C2 class)
- Suitable for use in seismically unstable and high vibration environments
- Distribution power grids, solar / wind farms, railways networks or substations

Applicable standards:

- AS 60076 Power Transformers
  – Parts 1, 2, 3, 5, 10
- AS 1767.1 Insulating liquids - Spec for unused mineral insulating oils for Tx
- AS 2374.1.2 Power Tx - Minimum Energy Performance Standard (MEPS)

Air Insulated Switchgear

Modular design

2-position load break switch

Arc-Killer option

DF-2 and DF-2+ AIS with visual earthing

The DF-2's modular design allows you to create simple and custom-made combinations of medium-voltage cubicles with a rated voltage of up to 24kV. DF-2+ is a special DF-2 model that features Arc-Killer technology.

Key characteristics:

- Air-insulated switchgear: cubicles constructed with 2 mm galvanized steel sheets, and 4 mm sheets between compartments
- Built to withstand extreme weather conditions
- Suits both primary and secondary switchgear applications
- Maximum service voltage is 24kV with a maximum current of 1250A
- Rated short time current of 25kA for 3 seconds
- Demountable VCB design for fast replacement
- 50 year design life meeting the Australian Defence specification MIEE
- Switching in SF_6 for load break switch or vacuum for the vacuum circuit breaker
- DF-2+ internal arc classification is B-FLR 20kA,1s for ultimate safety
- GE Agile or SEL protection relays.

Applications:

- Suitable for most industrial and commercial installations.
- Distribution switchgear within electrical substations, wind generation, cogeneration and much more
- Replace obsolete installations and expand existing installations.

Applicable standards:

- AS 62271-1
- AS 62271-100
- AS 62271-102
- AS 62271-200
- IEC 62271-103
- IEC 62271-105
- IEC 60529

Technical specification

Air insulated switchgear with visual earthing (model DF-2)

Rated voltage	kV	12	12
Applicable circuit breaker device type(s)		Magnetic vacuum type CB: model ISM LD (2)	Magnetic vacuum type CB: model ISM HD (3)
General specifications			
Impulse withstand voltage 1,2 / 50 µs			
To earth and between phases	kV	75	75
Over the insulation distance	kV	85	85
Power frequency voltage test 1min.			
To earth and between phases	kV	28	28
Over the insulation distance	kV	32	32
Rated frequency	Hz	50/60	
Rated current	A	630/800	800/1250*
Rated short time current 3s	kA	16/20***	25
Rated peak value of the current	kA	50	63
Internal arc current for 1 s. IEC 62271-200 (5 criteria)			
DF-2 internal arc classification (A-FL) / (A-FLR)	kA	16	16
DF-2+ internal arc classification (B-FLR)	kA	20/-***	N/A
Degree of protection		IP4X	IP4X
LBS/ESW mechanical durability (close/open)		1000	1000
VCB short circuit breaking current	kA	16/20***	25
VCB electrical C/O operations		50000	30000
VCB operating cycles at rated short circuit breaking current		100	50
Maximum cable terminations	mm^2	400/630**	400/630**
Standards		IEC 62271-100, IEC 62271-1, 62271-102, -103, -105, 62271-200 and IEC 61243-5	
Certificates		KEMA/IPH	
Breaking capacity of load break switch (RV-44)			
Breaking capacity (IEC 62271-103)		Class E3*	Class E3*
Mainly active load	A	800/1250*	800/1250*
Closed loop current (Iloop)	A	800	800
Cable charging current (Icc)	A	18	18
Short-circuit making current (Ima)	kA	63	63
Earth fault current (Ief1)	A	100	100
Earth fault cable charging	A	30	30
Rapid earth fault current limiter (REFCL) compliance ratings			
Continuous withstand power frequency voltage phase-to-earth	kV	N/A	N/A
Power frequency withstand voltage (1 minute)	kV	N/A	N/A
BIL level	kV	N/A	N/A

Notes:

* According to IEC 62271-103, Class E1

**A standard connection is possible up to 400mm^2 for a single core cable per phase. Upon request, single core cables up to 630mm^2 or 2 parallel cables up to 630mm^2 per phase can be connected to the DF-2 switchgear with the use of a special adapter.

***Rated fault current

1) Mechanical VCB is self-powered. When used in a MV panel that has no auxiliary power available, a self-powered protection relay like the GE P15D must be used with the mechanical VCB.
2) LD = low duty
3) HD = heavy duty

	17.5	17.5 (SF_6 free switchgear)	24	24
	Mechanical vacuum type CB: model VA2/VAS2 (1)	Mechanical vacuum type CB: model VA2/VAS2 (1)	Mechanical vacuum type CB: model VA2/VAS2 (1)	Magnetic vacuum type CB: model ISM LD (2)
	95	95	125	125
	110	110	145	145
	38	38	50	50
	45	45	60	60
	800/1250*	800/1250*	630/800	630/800
	25	25	20	16/20
	63	63	50	40
	16	16	16	16
	20	20	20	N/A
	IP4X	IP4X	IP4X	IP4X
	1000	1000	1000	1000
	25	25	20	16/20
	10000/5000	10000/5000	10000/5000	30000
	75	75	75	50
	400/630**	400/630**	400/630**	400/630**
	IEC 62271-100, IEC 62271-1, 62271-102, -103, -105, 62271-200 and IEC 61243-5			
	KEMA/IPH			
	Class E3*	Off-load Isolator****	Class E3*	Class E3*
	800/1250*	N/A	630/800	630/800
	800	N/A	630/800	630/800
	18	N/A	18	18
	63	N/A	50	50
	100	N/A	100	100
	30	N/A	30	30
	N/A	N/A	24.13	24.13
	N/A	N/A	50	50
	N/A	N/A	125	125

Notes:

* According to IEC 62271-103, Class E1

**A standard connection is possible up to 400mm^2 for a single core cable per phase. Upon request, single core cables up to 630mm^2 or 2 parallel cables up to 630mm^2 per phase can be connected to the DF-2 switchgear with the use of a special adapter.

***Rated fault current

**** SF_6-free DF2 switchgear

1) Mechanical VCB is self-powered. When used in a MV panel that has no auxiliary power available, a self-powered protection relay like the GE P15D must be used with the mechanical VCB.
2) LD = low duty
3) HD = heavy duty

DF-2 / D-F2+ AIS switchgear with visual earthing 17.5-24kV, 800A-1250A, up to 25kA 3s

The Arc-Killer is a unique worldwide patented, fast acting earthing switch, activated by overpressure in the switchgear panel connecting all three phases together and to earth, thus diverting the high energy arcing fault into the low energy short circuit, which is finally cleared by upstream circuit breaker.

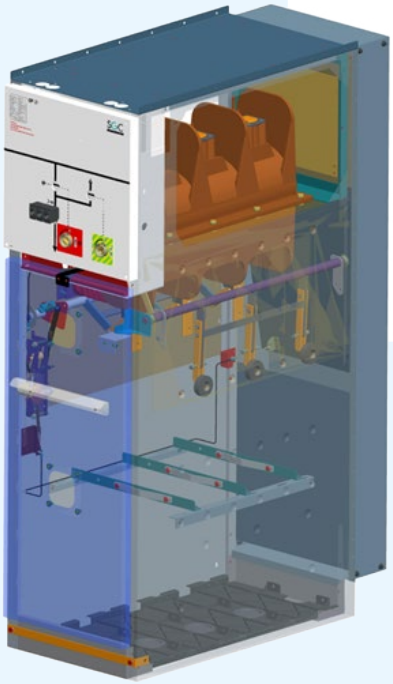
The internal arcing fault is quenched within 48ms, therefore the switchgear assembly is protected from significant arcing damage.

Therefore, the panel can be restored to serviceable condition, often in a matter of hours rather than weeks. Consequently, downtime and the resulting financial loss are greatly reduced, while providing the highest possible protection for the operator.

The Arc-Killer is for the DF2+ series air insulated modular type switchgear and for the DR6+/DT6+ compact gas insulated RMUs up to 24kV, where it quenches the arcing fault even faster again, in 25ms.

Arc-Killer benefits:

- Makes MV switchrooms safer
- Super fast arc fault quenching (48ms for DF2+ and 25ms for DR6+ RMU)
- Protection of workers from potentially toxic gases caused by overpressure in a compact switch room, thereby eliminating the hazard of fire propagation
- Arc-Killer (up to 17.5kV) has achieved the 20kA/1s, BFLR internal arc classification achieved without need for ducting or venting of the arc fault gases outside of switchgear



Optical arc flash relays

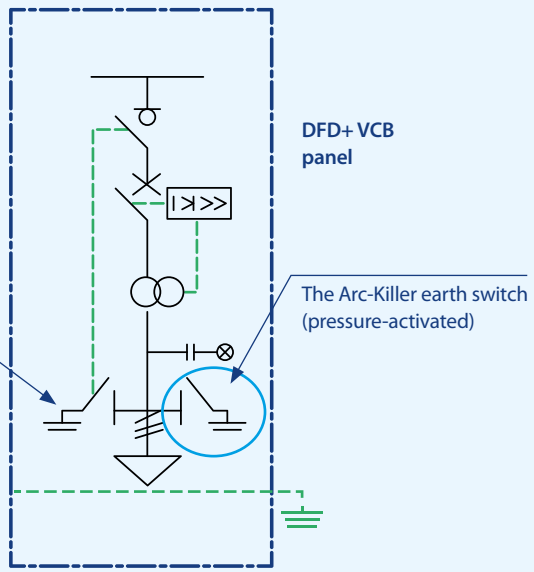
While the Arc-Killer is the optimum solution to protect the 17.5kV DF2+ MV switchgear, it is not available for all installation types.

For 24kV switchgear installations or when using the DF2 DF-DT type of panels utilising magnetically actuated VCB*, fast arc fault protection can be implemented using the NHP Arc LogiXTM Optical arc flash relay range*.

One relay can be mounted on each switchgear panel with optical sensors monitoring busbar and cable compartment zones.

If the fault occurs in a VCB/cable compartment, the relay will only trip the VCB in that particular compartment, thus ensuring only the faulty feeder panel is isolated while the rest of the switchgear remains energised.

When Arc LogiXTM Optical relays are used in combination with magnetically actuated VCB in DF-2 DF-DT panels, a fast arc fault clearing time below 50ms can still be achieved thanks to super swift magnetic VCB tripping, thus providing an excellent level of protection.



Gas Insulated Ring Main Units

Compact and extensible

3-position load break switch

Arc-Killer option

DR-6/DT-6 and DR-6+/DT-6+

The DR/DT-6 ring main unit (RMU) provides a network switching function by load break/earth switch and protection functions by a fuse switch or a dedicated vacuum circuit breaker in applications with rated voltage up to 24kV.

DR-6+ is a special DR-6 model that features Arc-Killer technology.

Key characteristics:

- Gas insulated switchgear (GIS) (SF_6) RMU: metal enclosed GIS cubicles with galvanised steel sheets 2mm and between the compartments 4mm
- Built to withstand extreme weather conditions
- Ease of use with a clear synoptic
- Maxium service voltage is 24kV with a maximum current of 630A
- Rated short time current of 20kA for 1 second
- Three position load break switch
- 30 year design life
- Compact or extensible concept
- Optional: easy to reach injection points (at the top)
- DR-6+ with built-in Arc-Killer has an internal arc classification of B-FLR 20kA, 1s for ultimate safety
- No emission of SF_6 in case of internal arc due to the patented Arc-Killer technology

Applications:

- Suitable for most industrial and commercial installations
- Distribution switchgear within electrical substations, wind generation, cogeneration and much more
- Replace obsolete installations and expand existing installations

Applicable standards:

- AS 62271-1
- AS 62271-102
- AS 62271-200
- IEC 62271-103
- IEC 62271-105
- IEC 61243-5

Technical specification

DR-6 gas insulated switchgear

Rated voltage	kV	12	12
Applicable circuit breaker device type(s)		Magnetic vacuum type CB: model ISM LD [2]	Mechanical vacuum type CB: model VA3 [1] [3]
General specifications			
Impulse withstand voltage 1,2 / 50 µsec.			
To earth and between phases	kV	75	75
Over the insulation distance	kV	85	85
Power frequency voltage test 1min.			
To earth and between phases	kV	28	28
Over the insulation distance	kV	32	32
Rated frequency	Hz	50/60	50/60
Rated short time current 1 s	kA	20	20
Rated peak value of the current	kA	52.5	52.5
Internal arc current for 1 s. IEC 62271-200 (5 criteria)	kA	20	20
Internal arc classification		A-FL (B-FLR – with Arc-Killer option)	A-FL (B-FLR – with Arc-Killer option)
Degree of protection			
HV compartment		IP6X	IP6X
LV and cable compartment		IP6X	IP6X
Rated gas pressure at 20°C	Bar	0.5 bar overpressure	0.5 bar overpressure
Line feeder (RV50 load break switch)			
Short-circuit making current (Ima)	kA	20	20
Breaking capacity (IEC 62271-103)		Class E3	Class E3
Rated current (Iload)	A	630	630
Closed loop current (Iloop)	A	630	630
Cable charging current (Icc)	A	25	25
Earth fault current (Ief1)	A	180	180
Number of makings		5	5
Transformer feeder			
Rated current	A	63	63
Fuse switch			
Rated current	A	63	63
Short circuit breaking capacity (limited by the fuse)	kA	25	25
Making capacity	kA	63	63
Circuit breaker			
Short circuit breaking capacity	kA	20	25
Rated short time current 1 s	kA	20	25
Operational sequence at rated current		O-0.3s-CO-15s-CO	O-0.3s-CO-15s-CO
Making capacity	kA	50	62.5
VCB electrical C/O operations		50000	2000/10000
VCB operating cycles at rated short circuit breaking current		100	As per class E1

Notes:

1) Mechanical VCB is self-powered. When used in an MV panel that has no auxiliary power available, a self-powered protection relay like the GE P15D must be used with the mechanical VCB.
2) Magnetic VCB requires an auxiliary power supply to be connected at all times to function. LD = low duty type
3) VA3 available in a standard type and a higher rating type as a special option

	17.5	24	24
	Mechanical vacuum type CB: model VA3 [1) 3)]	Magnetic vacuum type CB: model ISM LD [2)]	Mechanical vacuum type CB: model VA3 [1) 3)]
	95	125	125
	110	145	145
	38	50	50
	45	60	60
	50/60	50/60	50/60
	20	12.5	12.5
	52.5	52.5	52.5
	20	20	20
	A-FL (B-FLR – with Arc-Killer option)	A-FL (B-FLR – with Arc-Killer option)	A-FL (B-FLR – with Arc-Killer option)
	IP6X	IP6X	IP6X
	IP6X	IP6X	IP6X
	0.5 bar overpressure	0.5 bar overpressure	0.5 bar overpressure
	20	12.5	12.5
	Class E3	Class E3	Class E3
	630	630	630
	630	630	630
	25	25	25
	180	180	180
	5	5	5
	63	63	63
	63	63	63
	25	25	25
	63	63	63
	20	16/20	20
	20	16/20	20
	O-0.3s-CO-15s-CO	O-0.3s-CO-15s-CO	O-3min-CO-3min-CO
	50	40/50	50
	2000/10000	30000	2000/10000
	As per class E1	50	As per class E1

Notes:

1) Mechanical VCB is self-powered. When used in a MV panel that has no auxiliary power available, a self-powered protection relay like the GE P15D must be used with the mechanical VCB.
2) Magnetic VCB requires an auxiliary power supply to be connected at all times to function. LD = low duty type

Protek DFX Kiosks

Customizable | Long life | Arc-Killer option

DFX-GP and DFX-S

NHP DFX kiosks are custom designed to suit a wide variety of applications and are available in a general purpose type and a special purpose type. Protek DFX Kiosks are suitable for network voltages of 11kV and 22kV meeting power requirements from 200kVA up to 2500kVA. Full switchroom solutions, enclosed switchgear and enclosed transformers can also be provided upon request.

Key characteristics:

- **Built to last**
  Designed and built using quality materials. Also featuring the DF-2+ MV switchgear which has a 50 year design life to meet the Australian Defence standard MIEE
- **Custom manufactured transformer characteristics**
  Voltages, impedances, efficiency, HV plug-in bushings and more
- **Compact design**
  Optimised dimensions and terminals arrangement for critical situation of space
- **Built for local standards**
  Type tested to AS60076, complies with MEPS AS2374.1.2 ensuring minimum energy losses
- **High environmental resistance**
  Specific coating treatment and use of stainless steel bolts to withstand the most extreme environmental conditions
- **Arc flash standards**
  NHP's DFX kiosk with the DR6+ or DF2+ is designed to comply with IAC-AB internal arc classification and includes the Arc-Killer technology as standard
- **Temperature monitoring**
  The health of core components can be tracked 24/7 via optional temperature monitoring sensors

Applications:

- Indoor or outdoor installations
- Highly polluted places and atmospheres common in mines, paper mills, off-shore and on-shore sites, oil and gas systems, desalination plants and cement factories
- Ring networks
- Defence, healthcare and heavy industry

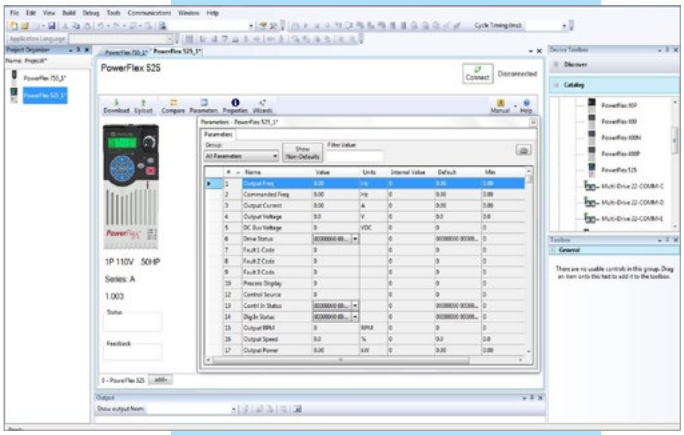
Applicable standards:

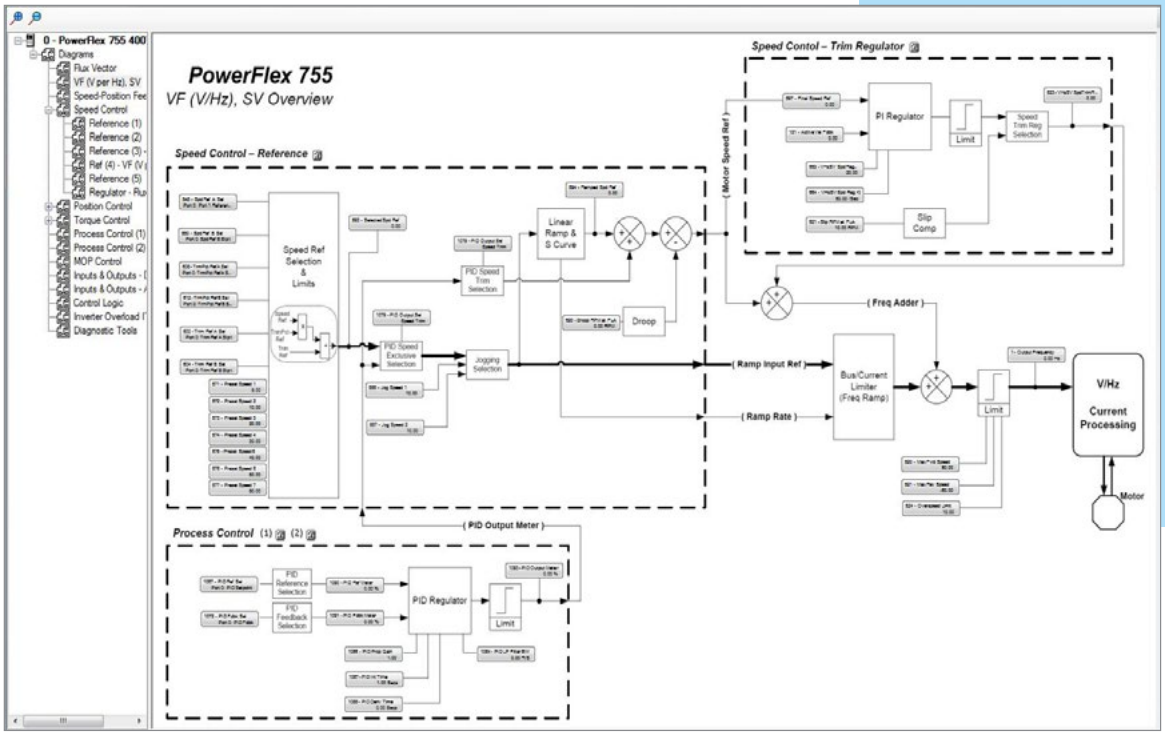
- AS 2067
- AS 62271.202
- MIEE 2011 Amendment 3 (Defence)
- AS 4312
- AS 60529
- AS/NZS 61439
- AS 3000

Connected Components Workbench software

Connected Components Workbench (CCW) is a Windows based programming and configuration software tool for all PowerFlex® drives and other Rockwell Automation Products. Easy to use menus, dialogues and wizards help you quickly start up your PowerFlex® drive. CCW offers the following features:

- Online and offline parameter configuration
- Start up and data logging wizards
- Control bar for start/stop, forward/reverse and speed command
- Fault history
- Diagram viewer for intuitive parameter editing
- Immediate access to user manuals of all CCW supported products





Application	Catalogue no.	No. of licences
DriveExecutive	9303-4DTE01ENE	1
DriveTools SP Suit includes DriveExecutive, DriveObserver	9303-4DTS01ENE	1
Connected Components Workbench	1)	NA *
USB Converter	1203-USB	-

Scan to download

Benefits of PowerFlex® integration with Studio 5000 Logix Designer

Studio 5000 Logix Designer includes full configuration and download support for the PowerFlex® family of drives.

By integrating this part of the system into a single software package, management of drives in a control system is consolidated.

Integrated PowerFlex® configuration and setup wizards streamline drives installation with EtherNet/IP™ and ControlNet™ networks by eliminating the task of individually configuring the required drive parameters and tags. You no longer have to complete complicated programming functions when installing drives or constantly refer back to user manuals for specific parameter and tag information.

- Compatible with Studio 5000 Logix Designer v21 and higher, and for select drives on ControlNet™ or EtherNet/IP™
- Dynamically select drive parameters transmitted as network I/O
- Wizards walk you through drive parameter configuration
- Diagnostic, fault, alarm, and event information are integral to Studio 5000 Logix Designer
- Allows continual use with CCW and DriveTools SP via import/export function
- Access, edit and save drive information to the control system project with ease

Harmonic solutions and services

Ensuring your site has clean electrical noise-free power is a key factor to ensuring the continuous health of your drives and other critical equipment.

NHP offers a complete suite of harmonic mitigation products and services to meet the best solution for your site. Utilising in-depth power quality analysis tools, NHP can provide all the critical information and recommendations required for improving the business's bottom line.

In addition, including a harmonic mitigation solution on-site will help:

- Reduce current distortion to THDi < 5% and voltage distortion to THDv <3%
- Helps achieve compliance with IEEE and IEC 519
- Long term savings in operation and maintenance cost
- Increased equipment service life
- Reduce downtime due to nuisance tripping

Delta Active Power Filter (APF) systems

Able to mitigate harmonics up the 50th order with a harmonic filtering rate up to 98%, as well as correct power factor and unbalanced three-phase networks, achieving high efficiency (>97%), low losses (<3%) and fast total response (20ms). The APF provides market-leading solution for harmonic mitigation.

It is adaptable and ensures network stability by providing infinite impedance to the grid.

- Multiple functions including harmonic filtering, power factor correction and load balancing
- Harmonic filtering up to the 50th order to achieve up to 98% reduction in harmonic content
- Highly efficient with less than 3% total losses
- Fast, dynamic response (<20ms) under all load conditions
- Modular design allows flexible solutions and allows easy expandability

Installation instructions

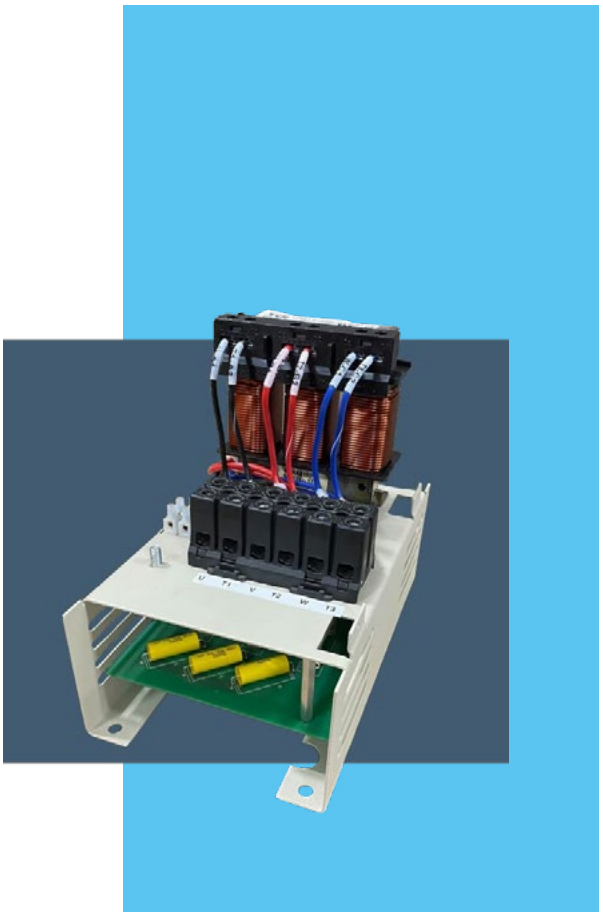
Selection guide

V1K DV/DT® Filters

The V1K dV/dt filters are designed to protect motors by limiting voltage spikes to below 1,000 V for applications with lead lengths from 100 to 1,000 feet.

The filter addresses motor failures caused by the reflected wave phenomenon, which occurs due to mismatched impedance at the ends of motor cables, leading to high peak voltages that can damage motor insulation.

The V1K combines a patented dampening circuit with a low pass filter to reduce common mode current by at least 30%. TCI guarantees that the V1K will limit motor terminal peak input voltage to 150% of the bus voltage under specified conditions.



- Motor Protection: Limits voltage spikes to below 1,000 V for applications with lead lengths from 100 to 1,000 feet.
- Design and Function: Available in Open, Type 1, and Type 3R configurations, with updates for sizes 2-12 Amps.
- Performance Guarantee: Ensures motor terminal peak input voltage is limited to 150% of the bus voltage with a wire lead length of 1,000 feet and a carrier frequency of 4 kHz.
- Application and Benefits: Reduces common mode current by at least 30%, addressing motor failures due to the reflected wave phenomenon.

Ordering details – V1K DV/DT® Filters

V1K

Technical Specifications	
Current Range	2 - 750 Amps; 208 - 600 VAC
Carrier Frequency	2 - 4 kHz (consult TCI for applications over 8 kHz if the cable lengths exceed 400 feet)
Insulation Rating	600 V Class
Insulation Class	Class H (180°C) or better
Efficiency	≥ 98%
Lead Length	Up to 1,000 ft (consult factory for applications above 1,000 feet)
Fundamental Frequency	0 - 60Hz (derating required for applications up to 120Hz
Over-load rating	200% rated current for 2 minutes per hour 150% rated current for 5 minutes per hour

Environmental Conditions	
Ambient Temperature	Enclosed: 40°C (104°F)
Operating Altitude	2000m (6,600 ft) Derating necessary above 2,000m

Part Numbering

V1K 80 A01 EX T

Series:

Current Rating (amps):

Enclosure:

A00 - Open

A01 - UL Type 1

A03 - UL Type 3R

Option:

(Blank) - No Option

EX - Heavy Duty Model

Option:

(Blank) - No Option

T - Thermal Switch

Delta Total Power Factor Correction (TPFC) systems

Utilising modular design, the TPFC unit provides a hybrid configuration using a mix of Static Var Generator (SVG) and Active Power Filter (APF) modules.

Whilst an active power filter can mitigate harmonics and correct power factor, it is generally not economically viable to use a harmonic filter to correct the power factor of a load. However, in many applications, there is a requirement to correct both power factor and mitigate a level of harmonics which are present.

The TPFC provides a simple solution to this issue by combining SVG and APF to target the reactive power compensation and harmonic mitigation individually. This harmonious solution is easy to implement, economically viable, and provides a complete, single-tier solution to the main power quality issues faced on-site.

- Modular system allowing for high customisation and individualisation
- Multiple configurations to suit individual applications
- High harmonic filtering rate (>98%) to ensure mitigation of harmonic issues
- Power factor correction of > 0.99 under all load conditions
- Precise and step-less compensation
- Fast response (<20 ms) to provide a dynamic correction to all power quality problems

Sinewave filters and dV/dt filters are available on request. For more information, please contact your local NHP Account Representative.

Power Quality Support

Power Quality audit

- NHP can provide comprehensive power quality audit services to determine your site's power quality issues. Our experienced application engineers can then work with you to determine the best solution for your installation.

Harmonic simulation tool

- For brownfield projects, harmonic calculation and simulation tools such as PowerCad and Rockwell Automation are available to determine the site's potential harmonic mitigation requirement. NHP can assist on system selection and design based on your calculation, providing critical information for decision making

Commissioning and configuration

- Our service team can provide onsite commissioning, working with you to configure a system that meets your unique requirements. Systems commissioned by the NHP service team are entitled to an additional 12 months' warranty on top of the standard 12 months provided by NHP.

Drive services

NHP Services and Solutions – offering so much more than quality electrical and automation products.

By assisting you to identify the risks and opportunities that are prevalent in your industry or application, NHP can facilitate the required services and solutions to maximise your operational investment in accordance with your priorities and objectives.

NHP Services and Solutions is backed by its supply line partners, both locally and globally, with genuine spare parts, technical support and training though to on-site service and repairs.

As well as being the sole Authorised Distributor of Rockwell Automation products in Australia and New Zealand, NHP is now also their exclusive Authorised Service Provider. NHP's and Rockwell Automation's teams of service professionals are able to:

- Prepare for the future of SMART Manufacturing through The Connected Enterprise, which delivers value by integrating your industrial assets with the rest of your supply chain
- Train workers and augment your workforce to manage knowledge transfer and develop new skills to enable IT/OT convergence, and take advantage of innovative technology
- Prepare for people and asset safety with assessments, engineered offerings, pre-engineered solutions and a remote audit-and-tracking service to confirm that people follow proper procedures
- Go beyond a 'keep-it-running' mindset and make the most of your production infrastructure with asset and plant optimisation services
- Tap new and expanding information infrastructure and security services to better define, design, deploy, manage and monitor the right network infrastructure for your plant.

Authorised Service Provider

A ROCKWELL AUTOMATION PARTNER

NHP Service and Solutions - our commitment

NHP has an extensive service infrastructure including Repair Centres, Test Rooms, Field Service Technicians, Application Engineers and Project Managers. With more than 50 years' experience in the electrical and engineering industry, our specialist teams work collaboratively to design and deliver solutions to maximise the success of your project.

NHP prides itself on excellence in customer service. We are committed to look after our customers for the life of their project and beyond. Our team of service technicians hold tertiary and/or trade qualifications and regularly participate in Supply Line Partner training programs to ensure our services are executed in line with manufacturer specifications. Equipped with comprehensive product knowledge, our technicians are committed to delivering the best practice of electrical services, while providing an exceptional customer experience.

NHP Service Capabilities

NHP offers an extensive range of service solutions to suit a wide range of needs, including installation and commissioning, migration, emergency breakdown or lifecycle services. From start-ups to conversions, we have the technical expertise to help you increase uptime and optimise equipment performance. Available on an as-required, scheduled, or full-time basis, we help you meet your specific needs throughout your maintenance strategy's lifecycle.

In relation to Drive Services, we can offer complete Lifecycle Support for your asset.

NHP and Rockwell Automation have a network of service professionals throughout Australia and New Zealand who can quickly respond to your needs. With NHP, you can think global and trust local.

Lifecycle support for your assets

TechConnectSM

Remote support for troubleshooting and technology adoption

ASSET PURCHASE

Assessments

Get a baseline on the lifecycle of your installed assets, network health, safety compliance and workforce capabilities

Start-up-commissioning

Configuring, commissioning and deployment of hardware and software for optimal performance

Preventive maintenance

Customised maintenance plans to optimise hardware performance

Asset management

Access to the parts you need with options for on-site assets

END OF LIFE

Training

Ensure that your workforce is skilled on the latest platforms

Repair/remanufacturing

On-demand parts to support unexpected failures

Modernisation

Turnkey solutions to modernise end-of-life technology

Asset lifecycle

Contractual services

Transactional services

Do you have the right level of support in place?

Why not contact your local NHP Account RepresentativeNHP Account Representative to discuss a customised maintenance plan which can extend the life of your equipment while ultimately saving you time and money.

IMPROVE productivity

Confirm that hardware is operating in optimal condition and reduce MTTF

Extend asset lifecycle and improve sustainability

REDUCE risk

Limit hazards and safety risks

Lower risk of premature equipment failures

REDUCE downtime

Perform standard maintenance on assets for increased reliability

Identify problems before an unplanned event happens

LOW VOLTAGE DRIVES

- Physical checks
- Control power checks
- Final power checks
- Consultation and remediation
- Parameter backup
- Calendar-based part replacement
- Commissioning and verification

MEDIUM VOLTAGE DRIVES

- Physical checks
- Control power checks
- Final power checks
- Consultation and remediation
- Parameter backup
- Calendar-based part replacement
- Commissioning and verification

CONTROL SYSTEMS

- Physical checks
- Check/update firmware
- Consultation and remediation
- Application/program backup
- Commissioning and verification

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