



One Range, One Result, One Name

Fenner[®] QD Series Inverters

The Power to Save Energy

Fenner[®]

THE MARK OF ENGINEERING EXCELLENCE

Fenner® QD Series Inverters

The Fenner range of Inverters offer simple, precise and powerful control, delivering the very best in performance and energy efficiency - time after time.

The QuickDrive (QD) range of inverters are available in a number of designs, such as the Fenner QD:Evo a simple general purpose drive and the Fenner QD:Neo ideal for demanding applications, both of which are designed for constant torque applications.

The range also caters for variable torque applications with the addition of the Fenner QD:Flow specifically designed to optimise the performance of fans and pumps used in HVAC applications.

Whatever your control requirements, Fenner can offer a solution that fits.

The Complete Solution

From initial product selection, through purchase, installation, operation and maintenance, you can rely on Fenner to deliver superb customer value underpinned by engineering excellence.

When you choose Fenner, you choose innovation, experience and practical reliable, simple to use solutions that have proved themselves over time with all those small pieces of engineering detail built in, honed by decades of experience to make a truly robust and reliable product.



The Power to Save Energy



Reliable Solutions

Wherever our customers are located, they are assured that the Fenner brand will always meet the same exacting standards and will excel in today's demanding applications. Fenner reliability is guaranteed and the QD Series inverters are at the heart of automated systems around the world.



Save Energy



- Accurate speed control of pumps and fans provides the most energy efficient method of control
- Energy Optimisation function minimises real time energy usage under partial load conditions
- Sleep and Wake Functions ensure operation only when required

Save Money



- Advanced on-board features remove the need for peripheral equipment
- Intelligent maintenance interval timing avoids costly downtime by allowing programmable maintenance reminders
- Automatic load monitoring provides an early warning of potential faults, such as blocked filters or belt failures

Save Time

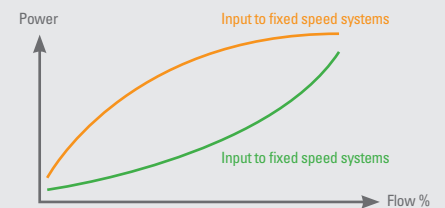


- Built in keypad and OLED text display offer intuitive operation
- Simple parameter structure with carefully selected default values reduce commissioning time
- Practical design allows easy access to power and control terminals without specialist tools

Optimising Efficiency with Fenner QD: Inverters

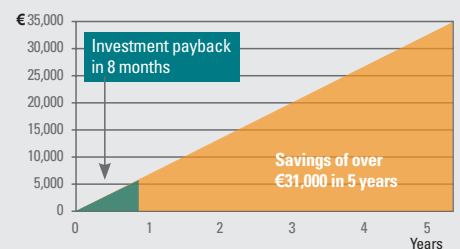
Instant Power Savings

With variable speed control, HVAC immediately reduces power usage compared to fixed speed systems.



Example Savings based on a 45kW Load

Did you know that reducing your motor speed by just 20% can result in potential energy savings of up to 50% - particularly on fan and pump applications?



Calculation is based on a typical estimated factory working week and energy costs, including estimated components and installation costs.

Fenner QD Inverters at a glance...

- Wide power range, from 0.37 – 250kW
- Robust design in IP20, IP55 and IP66 variants
- Quick and simple installation and commissioning
- Built-in features which combine to offer significant total cost reductions compared to other leading manufacturers
- Offer energy saving potential in both constant and variable torque applications
- Application specific firmware and product development
- Permanent magnet motor control and market leading PM motor synchronisation

Future-proof Efficiency

The Fenner QD:Neo has been designed to work with both standard induction motors, which typically meet the IE2 efficiency standards as well as the latest generation of high efficiency permanent magnet motors designed to meet the future IE4 requirements.



Fenner[®] QD:Neo

Constant Torque 0.75kW - 200kW

Fenner QD:Neo offers the perfect combination of high performance and ease of use, providing a solid solution for even the most demanding applications. Fenner QD:Neo is suitable for use with both standard induction and permanent magnet motors.



η 98%+
Energy Efficient

Fenner QD:NEO (IP20)

240V 1~ 50Hz supply				
Part No	kW	Amps	Size	
572N20P	0.75	4.3	2	
572N21P5	1.5	7	2	
572N22P2	2.2	10.5	2	

415V 3~ 50Hz supply				
Part No	kW	Amps	Size	
572N40P7	0.75	2.2	2	
572N41P5	1.5	4.1	2	
572N42P2	2.2	5.8	2	
572N44P0	4	9.5	2	
572N45P5	5.5	14	3	
572N47P5	7.5	18	3	
572N4011	11	24	3	

Fenner QD:NEO (IP55)

415V 3~ 50Hz supply				
Part No	kW	Amps	Size	
575N4011	11	24	4	
575N4015	15	30	4	
575N4018	18.5	39	4	
575N4022	22	46	4	
575N4030	30	61	5	
575N4037	37	72	5	
575N4045	45	90	6	
575N4055	55	110	6	
575N4075	75	150	6	
575N4090	90	180	6	
575N4110	110	202	7	
575N4132	132	240	7	
575N4160	160	302	7	

Fenner QD:NEO (IP66)

415V 3~ 50Hz supply				
Part No	kW	Amps	Size	
576N40P7	0.75	2.2	2	
576N41P5	1.5	4.1	2	
576N42P2	2.2	5.8	2	
576N44P0	4.0	9.5	2	
576N45P5	5.5	14	3	
576N47P5	7.5	18	3	

High Performance

- Sensorless Vector Control: Up to 200% torque from 0 speed ensures reliable starting and accurate speed control
- PM Motor Control future proof: Can be upgraded to the latest high efficiency permanent magnet motors
- I/O & Communications: Fenner QD:Neo supports a wide range of machine control systems interfaces

Key Features

- Just 14 basic parameters
- Pluggable control terminals
- Internal RFI filter complies with the latest EMC standards
- Up to 32kHz Output Switching Frequency gives ultra quiet motor operation
- Integral Brake Transistor
- Modbus and CANopen as standard
- IP20, IP55 & IP66 enclosures
- Bluetooth compatible Q-Stick for fast, accurate repeat programming

Applications

- Cranes
- Compressors
- Winding
- Mixers
- Packaging
- Conveyers
- Hoists
- Extruders
- Crushers
- Cutting

Safe Torque Off Function



The Fenner QD:Neo features a safe torque off function, as standard, to allow simple integration into machine critical safety circuits.

- Faster shut down and reset procedures reduce system maintenance time
- Better safety standard compared to mechanical solution
- Better motor connection. Single cable with no interruption

Controlling the Latest Generation of Permanent Magnet Motors and Standard Induction Motors



Motor Control for all Applications

V/F Control

V/F control is the standard method for variable speed AC motor control, suitable for induction and LSPM (LineStart, Permanent Magnet) motors. The control method is very simple, providing a variable output frequency and voltage, with the applied motor voltage being linearly proportional to the output frequency. This method is suitable for most simple applications.

Vector Control

Vector control is designed to provide high performance control of standard AC motors. This method provides improved starting performance, low frequency operation and better speed regulation with respect to load changes compared to V/F control. Dynamic performance is increased, and both the motor and machine are better protected through direct control and monitoring of the motor output torque.

Open Loop PM Motor Control

The latest generation of motors use a permanent magnet construction technique to achieve greater efficiency. These motors require a different control to obtain correct starting behaviour and maximise efficiency. The QD:Neo features a dedicated Open Loop PM motor control method which provides variable speed control with maximum efficiency and no requirement for a feedback device on the motor.

High Performance

Sensorless Vector Control

Up to 200% torque from zero speed ensures reliable starting and accurate speed control under all load conditions.

PM Motor Control

Future proof. Allows upgrade to the latest generation of high efficiency permanent magnet motors.

I/O & Communications

Fenner Neo supports a wide range of interfaces to machine control system

High Speed Compatibility

Up to 2,000Hz

Suited for Heavy Duty

All QD:Neo units provide 150% overload for 60 seconds as standard, ensuring each drive is suitable for heavy duty applications

Low Cost Installation

Built-in EMC Filter

An internal filter in every Fenner Neo saves cost and time for installation.

Integral Brake Transistor

Saves space, cost and time for installation.

Powerful PC Based Commissioning Software

Fenner Tools Studio allows parameter upload, download and storage and access to Fenner Neo Simple PLC functionality. Fast parameter copying between drives

Stand Alone Versatility

IP55 & IP66 enclosures perfect for standalone installations, washdown and dustproof environments

Fenner® QD:Flow

Variable Torque 0.75kW - 250kW

The Fenner QD:Flow sets a new standard for dedicated fan & pump control whilst retaining the ease of use you come to expect from Fenner inverters. Fenner QD:Flow has an innovative design, combined with robust performance to provide powerful flow control and reliability in a compact drive.



Optional LED or OLED (IP55 & IP66)



Belt Break Detection



Spin Start



Hand Auto



Bluetooth Q:Stick Programming



High Quality Long-life Fans

η 98%+
Energy Efficient

Fenner QD:Flow (IP55)

Fenner QD:Flow (IP66)

415V 3~ 50Hz supply			
Part No	kW	Amps	Size
585P4011	11	24	4
585P4015	15	30	4
585P4018	18.5	39	4
585P4022	22	46	4
585P4030	30	61	5
585PF4037	37	72	5
585P4045	45	90	5
585P4055	55	110	6
585P4075	75	150	6
585P4090	90	180	6
585P4110	110	202	7
585P4132	132	240	7
585P4160	160	302	7

240V 1~ 50Hz Supply			
Part No	kW	Amps	Size
586P20P7	0.75	3	2
586P21P5	1.5	7	2
586P22P2	2.2	10.5	2

415V 3~ 50Hz Supply			
Part No	kW	Amps	Size
586P40P7	0.75	2.2	2
586P41P5	1.5	4.1	2
586P22P2	2.2	5.8	2
586P44P0	4	9.5	2
586P45P5	5.5	18	3
586P47P5	7.5	18	3

Designed for HVAC

- Energy optimisation
- Energy monitoring
- Built in pump cascade control
- Multiple fan operation
- Resonance avoidance

Key Features

- 14 basic parameters
- Internal RFI filter
- Belt brake detection
- Anti-ragging function
- Fire-mode
- Spin start
- Bypass mode
- BACnet and Modbus RTU as standard
- Maintenance interval timer
- Multi-language OLED display
- Intelligent standby

Environment

- Industrial
- Domestic
- Airports
- Hospitals
- Kitchens
- Offices
- Additional Buildings
- Hotels
- Conference Centres
- Swimming Pools

Fieldbus Interfaces

Communication options:

- Profibus DP
- DeviceNet
- Ethernet IP

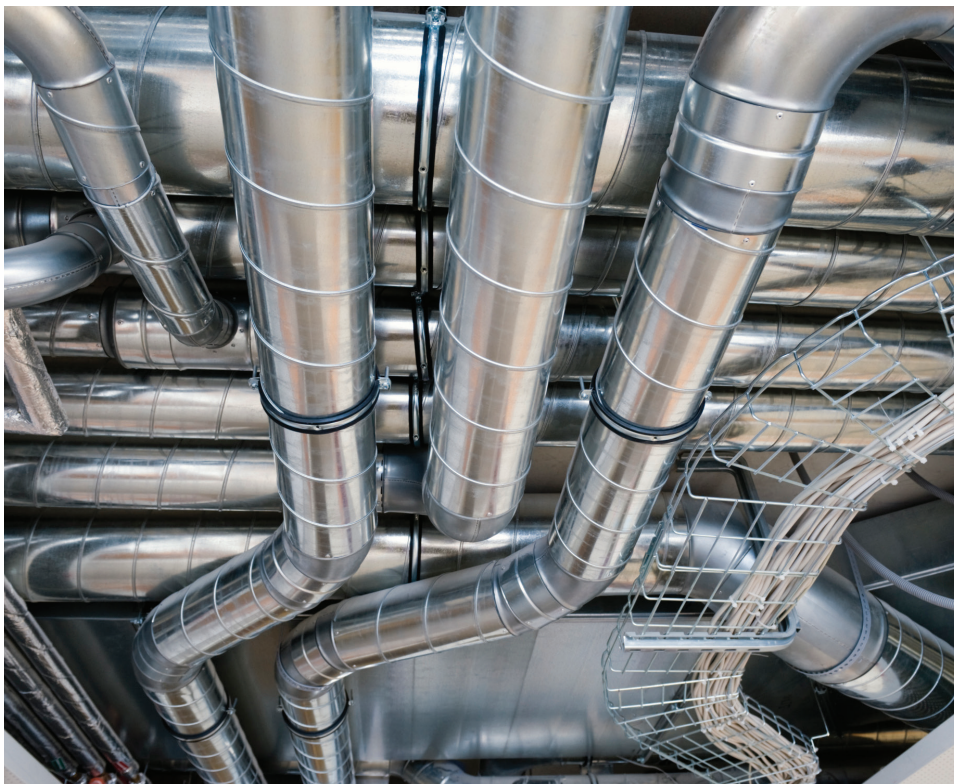


Expansion Modules

Extended functionality:

- Encoder Feedback
- Extended I/O
- Extended Relay

Dedicated to optimising efficiency in pumping and HVAC systems



Multiple Fan Operation

- All drives operate as variable speed for maximum energy saving.
- Equal run time sharing across each fan / fan bank.
- Automatic system reconfiguration in the event of a fan fault.
- Continued system operation when drives are individually powered off.
- Communication and +24V control voltage shared between drives via a standard RJ45 patch lead.
- Independent maintenance indicators for each fan bank.
- Any fan bank can be switched to hand operation at the touch of a button and will automatically rejoin the network when switched back to Auto.
- For belt driven fan applications each fan can be set for belt break detection.
- Optional mains isolator with lockoff for safe system maintenance.
- Drives configured through simple parameter set-up and intelligent drive self configuration.

Building Comfort and Safety Systems

Creating Comfortable and Efficient Building Environments

Air conditioning can use a huge amount of energy. Typically the air conditioning systems in buildings are designed for maximum occupancy and peak outside ambient. QD:Flow can vary the output of your air conditioning system to meet the varying demands throughout the day whilst reducing running costs.

Fire Override Mode

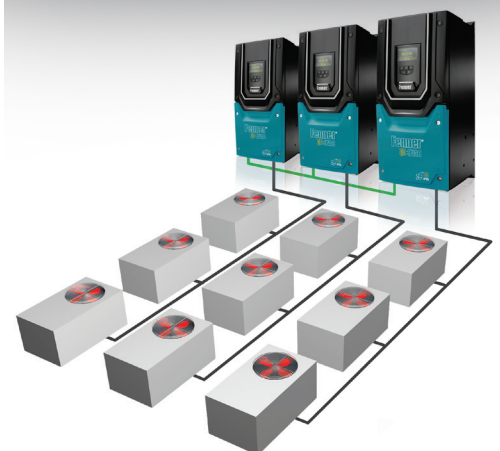
Fire override mode ignores signals and alarms, keeping the QD:Flow operating for as long as possible. This feature is crucial for ensuring smoke extraction from buildings in the event of a fire. Selectable logic means that the QD:Flow can easily be configured to the signal produced by your fire management system.

Stairwell Pressurisation

In the event of a fire, stairwells are often essential escape routes. The Fenner QD:Flow can be used to control air flow and pressure to help keep stairwells clear of smoke and allow safe evacuation and give firefighters safe access to buildings.

PID Control

The Fenner QD:Flow has a PID controller built in that is fully integrated with both HVAC and energy efficient features and is packaged in a user friendly way to ensure ease of use and fast commissioning. Now in the majority of applications it has become possible to eliminate the need for external controllers.



Fenner[®] QD:Evo

Easy to Use 0.37kW - 11.0kW



High Performance

- Easy to install
- Simple keypad control
- 50°C ambient rating for hot, tough applications
- Free lifetime technical support
- Energy optimising function

Key Features

- Simple commissioning, 12 basic parameter settings, default settings suitable for most applications
- Internal RFI filter for full EMC compliance
- Modbus RTU allows easy integration with your control and monitoring systems
- Compact enclosures help minimise your space requirements
- Brake chopper on sizes 2 & 3, dynamic and compact options with heatsink mounted resistor.
- High overload capacity, 150% overload for 60 seconds and 170% overload for 2 seconds

Applications

- Conveyors
- Blowers
- Packaging
- Fume extraction
- Pumping
- Conveyors
- Hoists
- Extruders
- Crushers
- Cutting

Fenner QD:Evo (IP20)

230V 1~ 50Hz supply			
Part No	kW	Amps	Size
572B20P4	0.37	2.3	1
572B20P7	0.75	4.3	1
572B21P5	1.5	7	1
572B22P2	2.2	10.5	2

400V 3~ 50Hz supply

Part No	kW	Amps	Size
572B40P7	0.75	2.2	1
572B41P5	1.5	4.2	1
572B42P2	2.2	5.8	2
572B44P0	4	9.5	2
572B45P5	5.5	14	3
572B47P5	7.5	18	3
572B4011	11	25	3

Fenner QD:Evo (IP66)

230V 1~ 50Hz supply			
Part No	kW	Amps	Size
576B20P4	0.37	2.3	1
576B20P7	0.75	4.3	1
576B21P5	1.5	7	1
576B22P2	2.2	10.5	2

400V 3~ 50Hz supply

Part No	kW	Amps	Size
576B40P7	0.75	2.2	1
576B41P5	1.5	4.2	1
576B42P2	2.2	5.8	2
576B44P0	4	9.5	2
576B45P5	5.5	14	3
576B47P5	7.5	18	3

Q:Port & Q:Stick

The Q:Port and Q:Stick offer fast accurate repeat programming for multiple drives.



The Q:Port is a remote keypad and display for up to 63 QD:Evo drives which have the same serial address on the network, the layout and operation of the Q:Port mimic the drive exactly.



Fenner® QD:Elevator

4kW to 37kW

The QD: Elevator drive is designed to provide smooth, reliable carriage control in all elevator applications. Suitable for both geared and gearless systems.



Plugable Control Terminals



Long Life, Low Noise Cooling Fan



QStick for fast and accurate Repeat Programming

Elevator Motor

- Gearless motors
- Geared motors (open/closed loop)
- Permanent magnet motors (open loop)

Easy to Use

- Dedicated elevator drive with logical parameter and function groups
- Factory parameter settings suited to simple elevator applications for fast start up
- Drive setup using familiar elevator units
- Standstill autotune - no shaft rotation-no rope removal required
- Wireless parameterisation (Using QD Stick)
- Five independent S-Ramps and dedicated motor holding brake control algorithm allowing fine tuning of the system

Flexibility

- Control of IM and PM motors in a single product, geared or gearless systems
- Open loop or Closed loop vector (with incremental encoder) control of standard IM motors
- Open loop or Closed loop (with EnDat encoder) control of PM motors.



Advanced Features

Rescue mode operation possible with external UPS

- On-board simple PLC function allows custom application programs to be written and interfacing with a wide variety of control systems
- Modbus RTU and CANopen as standard
- Full load operation up to 50% with no de-rating
- Output contactor control for SIL 3 compliance

Fenner QD:Elevator (IP20)

400V 3~ 50Hz Supply			
Part No	kW	Amps	Size
572L44P0	4	9.5	2
572L45P5	5.5	14	3
572L47P5	7.5	18	3
572L4011	11	24	3

Fenner QD:Elevator (IP55)

400V 3~ 50Hz Supply			
Part No	kW	Amps	Size
575L4011	11	24	4
575L4015	15	30	4
575L4018	18.5	39	4
575L4022	22	46	4
575L4030	30	61	5
575L4037	37	72	5

Smart Rescue Mode Feature

Smart Rescue Mode is an automatic system designed to allow evacuation from an elevator in the event of a power outage. During the power cut, the QD:Elevator can be powered at a reduced voltage, from an uninterruptable power supply. Smart Rescue Mode allows the elevator to be manoeuvred at reduced speed, should the elevator car be trapped between floors. As soon as normal power is resumed, Smart Rescue Mode will automatically revert to normal operation.

Inverter Options

Plug-in Modules

Extended functionality or communication options.



Expansion modules

- Encoder feedback
- Extended I/O
- Extended Relay
- Cascade control
- External remote I/O interface

Fieldbus Interfaces



DeviceNet



EthernetIP



Profibus

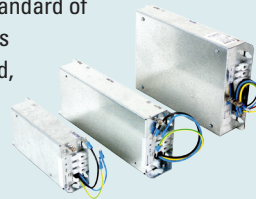


BACnet (Standard for QD:HVAC only)

- Modbus RTU onboard as standard (QD:Flow)
- Modbus RTU and CANopen onboard as standard (QD:Neo)
- Modbus RTU and BACnet MS/TP onboard as standard (QD:Flow)

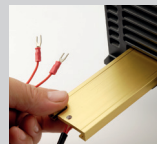
Qfilter – RFI Line Filters

Where a higher standard of EMC compliance is desired or required, Fenner provide a range of suitable filters.



QBrake - Dynamic Braking Resistors

Designed for or use with high inertia loads which need to be stopped rapidly. The QBrake assists in managing the electrical energy returned from the motor during braking by converting it to heat energy.



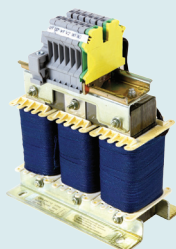
Input Chokes

Input chokes can be used to reduce the line harmonic current and voltage distortions, the input chokes also provide enhanced protection for QD Drives against transient voltages (spikes) or other mains borne interference.



Output Filters

Output filters improve the quality of output waveform, they improve system functionality, reliability and longevity.



Simple Configuration

Qport – Remote Keypad & LED Display

The Qport is a remote keypad and display for QD Drives which have the same serial address on the network, the layout and operation of the QPort mimic the drive exactly.

- Realtime keypad and display operation
- Single electrical interface for power and data
- Communicates with any compatible drive across a network
- Easy keypad switching to other network addresses
- Parameter lock function available
- 3 metres data cable included

QStick – Rapid Commissioning Tool



- Allows rapid copying of parameters between multiple drives
- Provides Bluetooth wireless interface
- Back up and restore of drive parameters
- USB Connection Kit
- RS485 to USB PC connection kit

Mains Isolator

Lockable mains isolator option. Can be used with sizes 4-8.



Fenner QD Series Inverters

Specification		QD:Evo	QD:NEO	QD:Flow
Input Ratings	Supply Voltage	110 – 115V ± 10% 200 – 240V ± 10% 380 – 480V ± 10%	200 - 240V ±10% 380 - 480V ± 10%	200 – 240V ± 10% 380 – 480V ± 10%
	Supply Frequency	48 – 62Hz	48-62 Hz	48 – 62Hz
	Displacement Power Factor	> 0.98	>0.98	> 0.98
	Phase Imbalance	3% Maximum allowed	3% maximum allowed	3% Maximum allowed
	Inrush current	< rated current	< rated current	< rated current
	Power cycle	120 per hour maximum, evenly spaced	120 per hour max. evenly spaced	120 per hour maximum, evenly spaced
Output Ratings	Output Power	110V 1 Phase Input: 0.5–1.5HP (230V 3 Phase Output) 230V 1 Phase Input: 0.75–4kW (1–5HP) 230V 3 Phase Input: 0.75–4kW (1–5HP) 400V 3 Phase Input: 0.75–11kW 460V 3 Phase Input: 1–15HP	230V 1 Phase Input 0.75 - 2.2kW 230V 3 Phase Input 0.75 - 75kW 400V 3 Phase Input 0.75 - 250kW 460V 3 Phase Input 1 - 350 HP	230V 1 Phase Input: 0.75–2.2kW (1–3HP) 230V 3 Phase Input: 0.75–75kW (1–100HP) 400V 3 Phase Input: 0.75–250kW 460V 3 Phase Input: 1–350HP
	Overload Capacity	150% for 60 seconds, 175% for 2 seconds	200% for 4 seconds	110% for 60 seconds
	Output Frequency	0 – 500Hz, 0.1Hz resolution	0 - 500 Hz, 0.1 Hz resolution	0 – 120Hz, 0.1Hz resolution
	Typical Efficiency	-	98%	98%
Ambient Conditions	Temperature	Storage : -40 to 60°C Operating : -10 to 40°C	Storage: -40° to 60°C Operating: -10°C to 40°C	Storage : -40 to 60°C Operating : -10 to 40°C
	Altitude	Up to 1000m ASL without derating Up to 2000m maximum UL Approved Up to 4000m maximum (non UL) Above 1000m : Derate by 1% per 100m	Up to 1000m ASL without derating Up to 2000m maximum UL Approved Up to 4000m maximum (non UL) Above 1000m : Derate by 1% per 100m	Up to 1000m ASL without derating Up to 2000m maximum UL approved Up to 4000m maximum (non UL) Above 1000m : Derate by 1% per 100m
	Humidity	95% Max, non-condensing	95% max, non-condensing	95% Max, non-condensing
Enclosure	Ingress Protection	IP20 IP66 (Excluding 11kW)	IP20 (Size 2, 3) IP55 (Size 4, 5, 6, 7) IP66 (Size 2, 3)	IP20 (Frame sizes 2 & 3) IP66 (Frame sizes 2 & 3; up to 7.5kW) IP55 (Frame sizes 4 – 7)
Programming	Keypad	Built-in Keypad as standard Optional remote mountable keypad	Built-in Keypad as standard Optional remote mountable keypad	Built-in keypad as standard Optional remote mountable keypad
	Display	Built-in LED display	Optional OLED or LED display (OLED Display Multi Language)	Built-in multi language OLED display (except IP20) LED display (IP20 only)
	PC	-	Yes	Yes
Control Specification	Control Method	V/F Voltage Vector Energy Optimised V/F	V/F Voltage Vector Energy Optimised V/F Sensorless Vector Speed Control Sensorless Vector Torque Control Closed Loop (Encoder) Speed Control Closed Loop (Encoder) Torque Control Open Loop PM Vector Control	Variable Torque V/F Variable Torque Energy Optimised V/F
	PWM Frequency	4 – 32kHz Effective	4 – 32kHz Effective	4 – 32kHz Effective
	Stopping Mode	Ramp to Stop : User Adjustable 0.01 – 600 seconds Coast to Stop	Ramp to Stop : User Adjustable 0.1 – 600 seconds Coast to Stop	Ramp to Stop : User Adjustable 1 – 600 seconds Coast to Stop
	Braking	Motor Flux Braking Built-in Braking Transistor (Frames 2 & 3)	Motor Flux Braking Built-in Braking Transistor (Optional for frame sizes 6 & 7)	Motor Flux Braking
	Skip Frequency	Single point, user adjustable	Single point, user adjustable	Single point, user adjustable
	Setpoint Control	Analog Signal 0 to 10 Volts 10 to 0 Volts 0 to 20mA 20 to 0mA 4 to 20mA 20 to 4 mA Digital Motorised Potentiometer (Keypad) Modbus RTU Optional Gateway Profibus DP, DeviceNet, EthernetIP	Analog Signal 0 to 10 Volts 10 to 0 Volts -10 to 10 Volts 0 to 20mA 20 to 0mA 4 to 20mA 20 to 4 mA Digital Motorised Potentiometer (Keypad) Modbus RTU, CANopen Profibus DP, DeviceNet, EthernetIP Optional	Analog Signal 0 to 10 Volts 10 to 0 Volts -10 to +10 Volts 0 to 20mA 20 to 0mA 4 to 20mA 20 to 4 mA Digital Motorised Potentiometer (Keypad) Modbus RTU, BACnet BACnet/IP, Profibus DP, DeviceNet, EtherNet/IP Optional
	I/O Specification	Power Supply	24 Volt DC, 100mA, Short Circuit Protected 10 Volt DC, 5mA for Potentiometer	24 Volt DC, 100mA, Short Circuit Protected 10 Volt DC, 5mA for Potentiometer
Programmable Inputs	4 Total as standard 2 Digital 2 Analog / Digital Selectable	5 Total as standard (Optional additional 3) 3 Digital (Optional additional 3) 2 Analog / Digital Selectable	5 Total as standard (Optional additional 3) 3 Digital (Optional additional 3) 2 Analog / Digital Selectable	
Digital Inputs	10 – 30 Volt DC, internal or external supply, NPN Response time : < 4ms	10 – 30 Volt DC, internal or external supply, NPN Response time : < 4ms	10 – 30 Volt DC, internal or external supply, NPN Response time : < 4ms	
Analog Inputs	Resolution : 12 bits Response time : < 4ms Accuracy : < 1% full scale Parameter adjustable scaling and offset	Resolution : 12 bits Response time : < 4ms Accuracy : < 1% full scale Parameter adjustable scaling and offset	Resolution : 12 bits Response time : < 4ms Accuracy : < 1% full scale Parameter adjustable scaling and offset	
Programmable Outputs	2 Total 1 Analog / Digital 1 Relay	4 Total (Optional additional 3) 2 Analog / Digital 2 Relays (Optional additional 3)	4 Total (Optional additional 3) 2 Analog / Digital 2 Relays (Optional additional 3)	
Relay Outputs	Maximum Voltage : 250 VAC, 30 VDC Switching Current Capacity : 6A AC, 5A DC	Maximum Voltage : 250 VAC, 30 VDC Switching Current Capacity : 6A AC, 5A DC	Maximum Voltage : 250 VAC, 30 VDC Switching Current Capacity : 6A AC, 5A DC	
Analog Outputs	0 to 10 Volt	0 to 10 Volt 0 to 20mA 4 to 20mA	0 to 10 Volt 0 to 20mA 4 to 20mA	
Control Functions		PID Control - Internal PID control with feedback display	Dedicated Hoist Operation Mode PID Control - Internal PID control with feedback display	Fire Mode - Selectable direction, Selectable speed reference Broken Belt Detection - Under load monitoring with autotuneconfiguration PID Control - Internal PID control with feedback display
Maintenance & Diagnostics	Fault Memory	Last 4 Trips stored with time stamp	Last 4 Trips stored with time stamp	Last 4 Trips stored with time stamp
	Data Logging	Logging of data prior to trip for diagnostic purposes : Output Current, Drive Temperature, DC Bus Voltage	Logging of data prior to trip for diagnostic purposes : Output Current, Drive Temperature, DC Bus Voltage	Logging of data prior to trip for diagnostic purposes : Output Current, Drive Temperature, DC Bus Voltage
	Maintenance Indicator	-	Maintenance Indicator with user adjustable maintenance interval Onboard service life monitoring	Maintenance Indicator with user adjustable maintenance interval Onboard service life monitoring
	Monitoring	Hours Run Meter Energy Consumption meter	Hours Run Meter Resettable & Non Resettable kWh meters	Hours Run Meter Resettable & Non Resettable kWh meters
Standards Compliance	EN 61800-3:2004	Adjustable speed electrical power drive systems. EMC requirements.	Adjustable speed electrical power drive systems. EMC requirements.	Adjustable speed electrical power drive systems. EMC requirements.

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