



Fenner® QD SERIES INVERTERS

Fenner QD (Quick Drive) Series inverters are ideal for both simple and sophisticated applications, due to their broad range of functions, easy configuration, simple installation and ultimate performance.



NEW

- **Fenner QD:IP55 & IP66;** ultimate protection for the harshest environment. Available in QD:E and QD:CT PLUS
- **Fenner QD:E;** easy to use general purpose drive with V/F control
- **Fenner QD:VT;** variable torque control optimised drive to minimise energy ideal for HVAC applications
- **Fenner QD:CT PLUS;** constant torque vector control delivers 200% torque down to 0.0Hz without feedback

Inverters Design Data Required

- Electrical Supply Voltage
- Constant / Variable Torque Application
- IP Rating Required
- Driven Machine
- Speed Range of Machine
- Cable Length to Motor
- Control Options Required
- Ambient Temperature
- Communication Options Required

INVERTERS	Page
Applications	141
Drive Selection Overview	142
Ordering Instructions	143
Electrical Data	144
Dimensions	145
Installation Dimensions	147
Power Wiring	149
Control Wiring:	152
Keypad Operation	154
Standard Parameters	155
Options for Fenner QD Range	158

Fenner QD Series Inverters



Improved Control Performance

- Third Generation Vector technology for ultimate motor control
- Unique open-loop performance allows this drive to be used in applications previously requiring a feedback signal
- 200% torque even at very low speeds with sensorless vector control
- High starting capacity available – 150% overload for 60 seconds and 175% for 2 seconds
- Ultra-quiet performance running at 32kHz switching frequency minimising motor noise

Quick Installation and Set-up

- Quick set-up – 14 standard parameters
- Various control options available. Local control or remote keypad along with communication networks.
- Auto-tune facility for fast set-up to achieve optimum performance (on CT/VT units)
- Fully Enclosed IP55/NEMA 12 with speed control FWD/REV selector and lockable isolator

Q-PORT

- Remote keypad and display for panel mounted control

Compliant with Industrial Standards

- Internal RFI filter for compliance with latest EMC Standards (EN 61800-3)
- Compliant with RoHS directives
- CE Europe and UL/CUL product accreditation

Q-STICK

- Upload/Download parameters on the QD:E drive for quick and accurate repeat programming
- The Q-STICK incorporates Infra-red communication to allow programming with a PDA or smart phone

QD:CT PLUS





CONVEYING

Obtaining the optimum speed of product transfer is a primary requirement of all conveyor systems. Fenner QD inverters and Fenner FM:P motors are suitable for horizontal, vertical or inclined conveyors, to give accurate speed control and a high starting torque to ensure reliable and efficient transportation of products.

BUILDING MANAGEMENT

Comfort and efficiency are key requirements for the environment within today's modern buildings. Easy to install and reliable Fenner QD inverters and FM:P motors ensure that the large number of motors driving fans and pumps for heating, ventilation and air conditioning are running at their optimum level, saving both energy and protecting the environment.

MIXING

For fixed speed or variable speed mixing applications, Fenner QD:CT PLUS Inverters and FM:P motors provide, high starting torque and application specific programmes ensuring mixing process times are optimised to improve productivity and increase efficiency.

PULP AND PAPER

From complex multi-function process control to single drive applications Fenner QD inverters and FM:P motors can reliably improve preparation and manufacturing processes from the wood yard or recycling yard to the paper machine and the paper converting process. Continuously improving uptime, quality and efficiency.

PLASTICS/MOULDING

Long running hours, a harsh working environment and precise speed control are just some of the tasks Fenner QD inverters and FM:P motors are designed to deliver. From a single conveyor application to fully integrated extrusion/moulding, the Fenner motors and drives package delivers a new level of control, reliability, flexibility and efficiency.

PUMPING

Pump systems need to be both reliable and efficient, ensuring that the correct volume of product is transported accurately and dependably. Fenner QD inverters and FM:P motors are designed to provide efficient and reliable service and can even be integrated into building management systems.

BOTTLING

Machinery which requires fast and accurate positioning in a harsh working environment, Fenner QD inverters are designed to work within panels or as stand-alone units allowing flexibility for high speed process applications.

FENNER QUICK DRIVE APPLICATION GUIDE

Industry/Application	QD:E	QD:VT	QD:CT PLUS
METALWORKING			
Spindles			●
Grinding			●
Drilling			●
Polishing			●
MINING & QUARRYING			
Mixers			●
Crushers			●
Conveyors	●		●
Skip Hoist			●
BUILDING AUTOMATION			
Fans		●	
Centrifugal Pumps		●	
Refrigeration		●	
Compressors			●
WATER			
Centrifugal Pumps		●	
PD Pumps	●		●
Fans		●	
Blowers	●		●
FOOD & BEVERAGE			
Conveyors	●		●
Mixers			●
Packaging	●		●
Compressors			●
MATERIALS HANDLING			
Conveyors	●		●
Packaging	●		●
Palletisers			●
Cranes			●
WOOD WORKING			
Routing			●
Cutting			●
Conveyors	●		●
CHEMICALS			
Mixers			●
Fume Extraction	●	●	
Pumping	●	●	●
Centrifuge			●
PRODUCTION			
Moulding			●
Extruders			●
Mixing			●
Winding			●

Specification		QD:E	QD:VT	QD:CT PLUS
Output ratings	Overload Capacity	150% for 60 secs 175% for 2 secs	110% for 60 secs 125% for 2 secs	150% for 60 secs 175% for 2 secs
	Frequency	0...500Hz	0...120Hz	0...2000Hz
Input Ratings	Frequency	48 - 62Hz	48 - 62Hz	48 - 62Hz
	Voltage	200 - 240 +/- 10% 1 Phase (0.37 - 2.2kW / 0.5 - 3HP)	200 - 240 +/- 10% 1 Phase (1.5 - 2.2kW / 2 - 3.0HP)	200 - 240 +/- 10% 1 Phase (0.37 - 2.2kW / 0.5 - 3.0HP)
		200 - 240 +/- 10% 3 Phase (0.37 - 4.0kW / 0.5 - 5HP)	200 - 240 +/- 10% 3 Phase (1.5 - 4.5kW / 2 - 6.0HP)	200 - 240 +/- 10% 3 Phase (1.5 - 9.0kW / 2 - 12.0HP)
	380 - 480 +/- 10% 3 Phase (0.75 - 11.0kW / 1 - 15HP)	380 - 480 +/- 10% 3 Phase (1.5 - 16.0kW / 2 - 21.0HP)	380 - 480 +/- 10% 3 Phase (1.5 - 16.0kW / 2 - 21.0HP)	
Ambient Conditions	Operating Temperature	IP20 = 0 to 50°C Max, IP55 = 0 to 40°C Max; IP66 = -10 to 40°C Max	0 to 50°C Max;	IP20 = 0 to 50°C Max, IP55 = 0 to 40°C Max;
	Storage Temperature	-40 to +60°C	-40 to +60°C	Storage: -40 to +60°C
	Altitude	0 - 2000m, derate 1% per 100m above 1000m	0 - 2000m, derate 5% per 100m above 1000m	0 - 2000m, derate 5% per 100m above 1000m
	Ingress Protection	IP20 / IP55 / IP66	IP20	IP20 / IP55
Programming	Keypad	Yes	Yes	Yes
	PC	-	Yes	Yes
	PDA	Yes with QStick	Yes	Yes
	Smartphone	Yes with QStick	Yes	Yes
Control Specification	Control Method	Voltage Vector	V / F	V / F 3 rd Sensorless Vector Closed Loop Vector (with optional encoder feedback interface)
	PWM Frequency	4...32kHz (effective)	4...32kHz (effective)	4...32kHz (effective)
	V/Hz ratio	Linear	Quadratic	Linear (1 adjustment point)
	Boost	Yes	Automatic after autotune	Automatic after autotune
	Stop Mode	Coast / Ramp / DC Brake	Coast / Ramp / DC Brake	Coast / Ramp / DC Brake
	Internal Brake transistor	Yes (except size 1) External Resistor required	Yes External Resistor required	Yes External Resistor required
	Capacity	100% Drive Rated Power continuously	100% Drive Rated Power continuously	100% Drive Rated Power continuously
	Skip Frequency	One point, adjustable frequency band	One point, adjustable frequency band	One point, adjustable frequency band
	Frequency setpoint control	0...10 VDC	0...10 VDC	0...10 VDC
		+/- 10 VDC	+/- 10 VDC	+/- 10 VDC
		20...4mA	0...24 VDC	0...24 VDC
		4...20mA	4...20mA	4...20mA
		0...20mA	0...20mA	0...20mA
		Digital – Keypad	Digital – Keypad	Digital – Keypad
		-	RS485 (Master Slave)	RS485 (Master Slave)
		ModBus RTU	ModBus RTU	ModBus RTU
	Pre-set speeds	4	8	8
	PID Control	Yes	Yes	Yes
	Spin Start	Yes	Yes	Yes
	Acceleration	0...6000 sec	0...3000 sec	0...3000 sec
	Deceleration	(2 ramps) 0...6000 sec/0...25 sec	(2 ramps) 0...3000 sec	(2 ramps) 0...3000 sec
	S Curve Accel / Decel	-	-	Firmware Download Available
	PC Setup Software	-	QStore PLUS	QStore PLUS
Programmable I/O	Input 1	Programmable Digital Input	Programmable Digital Input	Programmable Digital Input
	Input 2	Programmable Digital Input	User Selectable Digital Input / Output	User Selectable Digital Input / Output
	Input 3	User Selectable Analog / Digital Input	User Selectable Unipolar Analog / Digital Input	User Selectable Unipolar Analog / Digital Input
	Input 4	User Selectable Analog / Digital Input	User Selectable Bipolar Analog / Digital Input	User Selectable Bipolar Analog / Digital Input
	Output 1	Programmable Analog / Digital Output	Programmable Analog / Digital Output	Programmable Analog / Digital Output
	Relay 1	Relay Output (30 VDC 5A, 250 VAC, 6A)	Relay Output (30 VDC 5A, 250 VAC, 6A)	Relay Output (30 VDC 5A, 250 VAC, 6A)
Keypad Display	Operating Display	Output Frequency, Current, RPM and User Scalable values	Output Frequency, Current, RPM, Power and User Scalable values	Output Frequency, Current, RPM, Power and User Scalable values
	Remote Mount	Optional QPort E2 remote mounting keypad	Optional QPort PLUS remote mounting keypad	Optional QPort PLUS remote mounting keypad
Protective Functions	Inverter Trip	Over voltage	Over voltage	Over voltage
		Over current	Over current	Over current
		Under voltage	Under voltage	Under voltage
		External trip	External trip	External trip
		Motor overload	Motor overload	Motor overload
		Over temperature	Over temperature	Over temperature
		Short circuited	Short circuited	Short circuited
	Earth Fault	Earth Fault	Earth Fault	
Memory	Under Voltage	Under Voltage	Under Voltage	
	Last 4 Trips stored	Last 4 Trips stored	Last 4 Trips stored	
Bus Communication	Modbus	Yes	Yes	Yes
	Profibus DP	via Gateway	via Gateway	via Gateway
	DeviceNet	via Gateway	via Gateway	via Gateway
	RS485 (QBus)	Standard	Standard	Standard
Compliance with Standards	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
Additional Features	-	Built in Master – Slave Operation Mode PID 'Sleep & Wake Up' Modes. Energy Optimising Function	Built in Master – Slave Operation Mode PID 'Sleep' Mode Energy Optimising Function	

Ordering Instructions



All Fenner QD Inverters are identified with a unique code number. This consists of an eight digit code depending on the enclosure, power, supply voltage and range.

Construction of the coding system is explained below.

FIRST THREE DIGITS:

Series and enclosure

Code	Range	Enclosure
572	QD:E / CT PLUS / VT	IP20
575	QD:E / CT PLUS	IP55
576	QD:E	IP66

FOURTH DIGIT:

Inverter type

Code	Series
B	QD-E (Basic Inverter)
V	QD-CT PLUS (VECTOR control)
H	QD-VT (HVAC drive)
X	QD Options (All Models)

FIFTH DIGIT:

Supply voltage code

Code	Voltage
2	220-240V 1~ supply
3	220-240V 3~ supply
4	380-440V 3~ supply

SIXTH, SEVENTH & EIGHTH DIGITS:

Rated power code

Code	Output Power (kW)
0P4	0.37
0P7	0.75
1P5	1.50
2P2	2.20
3P0	3.00
4P0	4.00
5P5	5.50
7P5	7.50
011	11.0
015	15.0
018	18.5
022	22.0
030	30.0
037	37.0
045	45.0
055	55.0
075	75.0
090	90.0
110	110.0
132	132.0
160	160.0

NINTH DIGIT:

Special features

Code	Output Power
N	Non-Switched IP55 Non-standard option
E	Enlarged Frame Size Non-standard option

Fenner QD:E

200-240V 1 PHASE SUPPLY

Motor Power (kW)	Output Current (Amps)	Fenner Part Number			Frame Size
		IP20	IP55	IP66	
0.37	2.3	572B20P4	575B20P4	576B20P4	1
0.75	4.3	572B20P7	575B20P7	576B20P7	1
1.5	7.0	572B21P5	575B21P5	576B21P5	1
1.5	7.0	572B21P5E	575B21P5E	576B21P5E	2
2.2	10.5	572B22P2	575B22P2	576B22P2	2

200-240V 3 PHASE SUPPLY

Motor Power (kW)	Output Current (Amps)	Fenner Part Number			Frame Size
		IP20	IP55	IP66	
0.37	2.3	572B30P4	575B30P4	576B30P4	1*
0.75	4.3	572B30P7	575B30P7	576B30P7	1*
1.5	7	572B31P5	575B31P5	576B31P5	1*
1.5	7	572B31P5E	575B31P5E	576B31P5E	2
2.2	10.5	572B32P2	575B32P2	576B32P2	2
4.0	18	572B34P0	575B34P0	576B34P0	3

*Size 1 Drives on 200-240V 3 phase supply do not have an integral RFI filter

380-480V 3 PHASE SUPPLY

Motor Power (kW)	Output Current (Amps)	Fenner Part Number			Frame Size
		IP20	IP55	IP66	
0.75	2.2	572B40P7	575B40P7	576B40P7	1
1.5	4.1	572B41P5	575B41P5	576B41P5	1
1.5	4.1	572B41P5E	575B41P5E	576B41P5E	2
2.2	5.8	572B42P2	575B42P2	576B42P2	2
4	9.5	572B44P0	575B44P0	576B44P0	2
5.5	14	572B45P5	575B45P5	576B45P5	3
7.5	18	572B47P5	575B47P5	576B47P5	3
11	25	572B4011	-	-	3

Fenner QD:CT PLUS

200-240V 1 PHASE SUPPLY

Motor Power (kW)	Output Current (Amps)	Fenner Part Number		Frame Size
		IP20	IP55	
0.37	2.3	572V20P4	575V20P4	1
0.75	4.3	572V20P7	575V20P7	1
1.5	7.0	572V21P5	575V21P5	1
1.5	7.0	572V21P5E	575V21P5E	2
2.2	10.5	572V22P2	575V22P2	2

200-240V 3 PHASE SUPPLY

Motor Power (kW)	Output Current (Amps)	Fenner Part Number		Frame Size
		IP20	IP55	
1.5	7.0	572V31P5	575V31P5	2
2.2	10.5	572V32P2	575V32P2	2
3.0	14.0	572V33P0	575V33P0	3
4.0	18.0	572V34P0	-	3
5.5	25.0	572V35P5	-	3
7.5	39.0	572V37P5	-	4
11.0	46.0	572V3011	-	4
15.0	61.0	572V3015	-	4
18.5	72.0	572V3018	-	4
22.0	90.0	572V3022	-	5
30.0	110.0	572V3030	-	5
37.0	150.0	572V3037	-	5
45.0	180.0	572V3045	-	5
55.0	202.0	572V3055	-	6
75.0	240.0	572V3075	-	6
90.0	300.0	572V3090	-	6

380-480V 3 PHASE SUPPLY

Motor Power (kW)	Output Current (Amps)	Fenner Part Number		Frame Size
		IP20	IP55	
0.75	2.2	572V40P7	575V40P7	2
1.5	4.1	572V41P5	575V41P5	2
2.2	5.8	572V42P2	575V42P2	2
4.0	9.5	572V44P0	575V44P0	2
5.5	14.0	572V45P5	-	3
7.5	18.0	572V47P5	-	3
11.0	25.0	572V4011	-	3
15.0	30.0	572V4015	-	3
18.5	39.0	572V4018	-	4
22.0	46.0	572V4022	-	4
30.0	61.0	572V4030	-	4
37.0	72.0	572V4037	-	4
45.0	90.0	572V4045	-	5
55.0	110.0	572V4055	-	5
75.0	150.0	572V4075	-	5
90.0	180.0	572V4090	-	6
110.0	202.0	572V4110	-	6
132.0	240.0	572V4132	-	6
160.0	300.0	572V4160	-	6

Fenner QD:VT

200-240V 1 PHASE SUPPLY

Motor Power (kW)	Output Current (Amps)	Fenner Part Number	Frame Size
		IP20 Only	
1.5	7.0	572H21P5	2
2.2	10.5	572H21P2	2

200-240V 3 PHASE SUPPLY

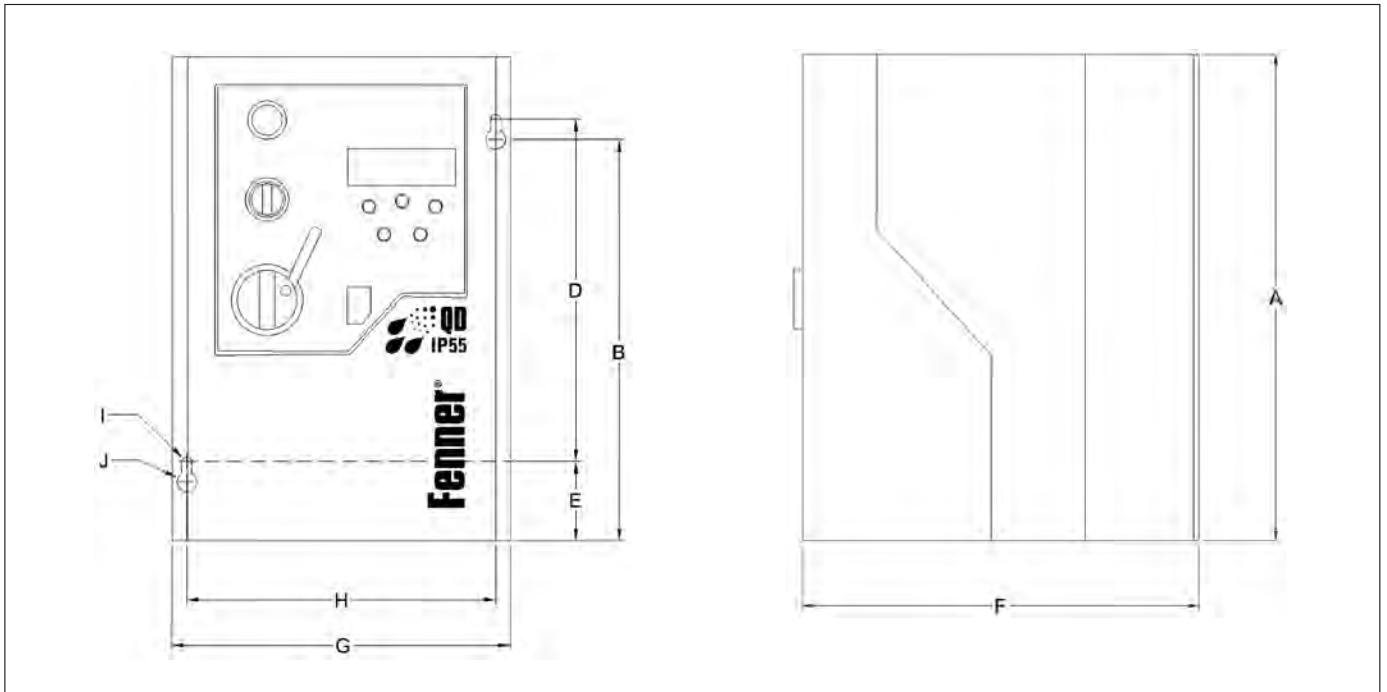
Motor Power (kW)	Output Current (Amps)	Fenner Part Number	Frame Size
		IP20 Only	
1.5	7.0	572H31P5	2
2.2	10.5	572H32P2	2
3.0	14.0	572H33P0	3
4.0	18.0	572H34P0	3
5.5	25.0	572H35P5	3
7.5	39.0	572H37P5	4
11.0	46.0	572H3011	4
15.0	61.0	572H3015	4
18.5	72.0	572H3018	4
22.0	90.0	572H3022	4
30.0	110.0	572H3030	5
37.0	150.0	572H3037	5
45.0	180.0	572H3045	5

380-480V 3 PHASE SUPPLY

Motor Power (kW)	Output Current (Amps)	Fenner Part Number	Frame Size
		IP20 Only	
1.5	4.1	572H41P5	2
2.2	5.8	572H42P2	2
4.0	9.5	572H44P0	2
5.5	14.0	572H45P5	3
7.5	18.0	572H47P5	3
11.0	25.0	572H4011	3
15.0	30.0	572H4015	3
18.5	39.0	572H4018	4
22.0	46.0	572H4022	4
30.0	61.0	572H4030	4
37.0	72.0	572H4037	4
45.0	90.0	572H4045	4
55.0	110.0	572H4055	5
75.0	150.0	572H4075	5
90.0	180.0	572H4090	6
110.0	202.0	572H4110	6
132.0	240.0	572H4132	6
160.0	300.0	572H4160	6



FENNER QD:IP55

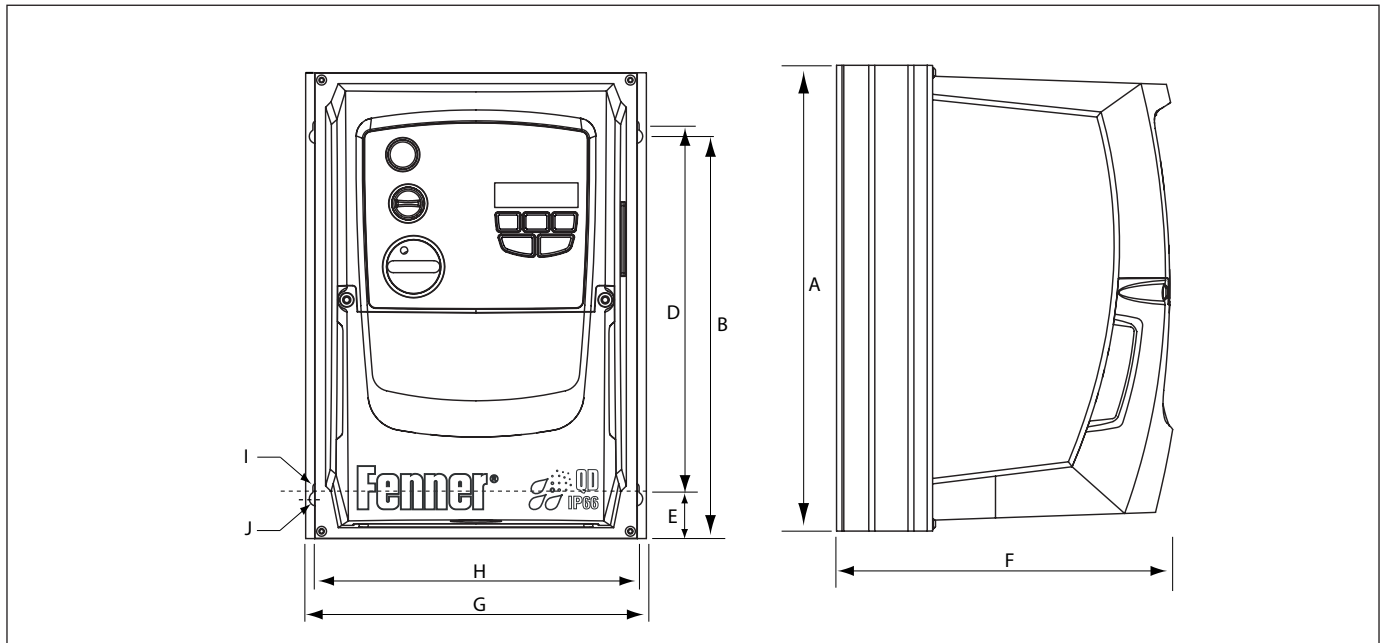


Dimensions Table

Frame Size	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	ØI mm	ØJ mm	Weight kg
1	200	166	-	141	33	162	140	128	4.2	8.4	2.4
2	310	276	-	251	33	176	164	153	4.2	8.4	4.6
3	310	276	-	251	33	228	210.5	197.5	4.2	8.4	7.4

*The size 3 unit has 4 symmetrical mounting points

FENNER QD:IP66

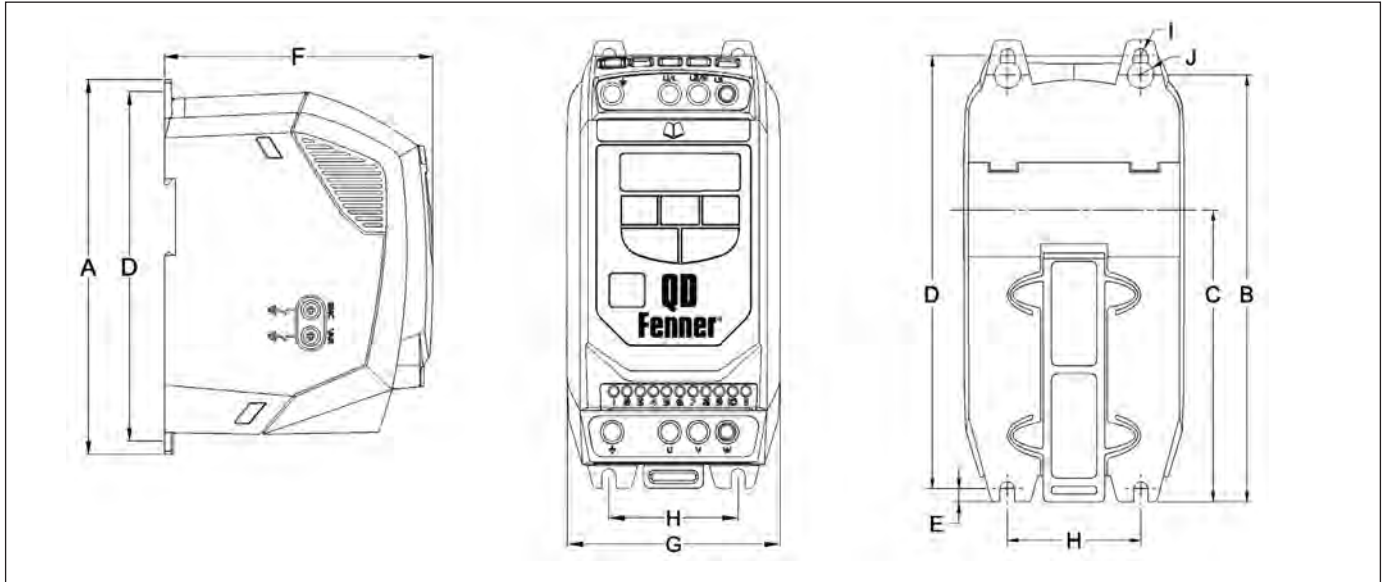


Dimensions Table

Frame Size	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	ØI mm	ØJ mm	Weight kg
1	232	207	-	189	25	175	161	148.5	4.0	8.0	2.8
2	257	220	-	200	28.5	186.5	188	176.0	4.2	8.4	4.6
3	310	276	-	251.5	33.4	228.7	210.5	197.5	4.2	8.4	7.4

*The size 3 unit has 4 symmetrical mounting points

FENNER QD:E

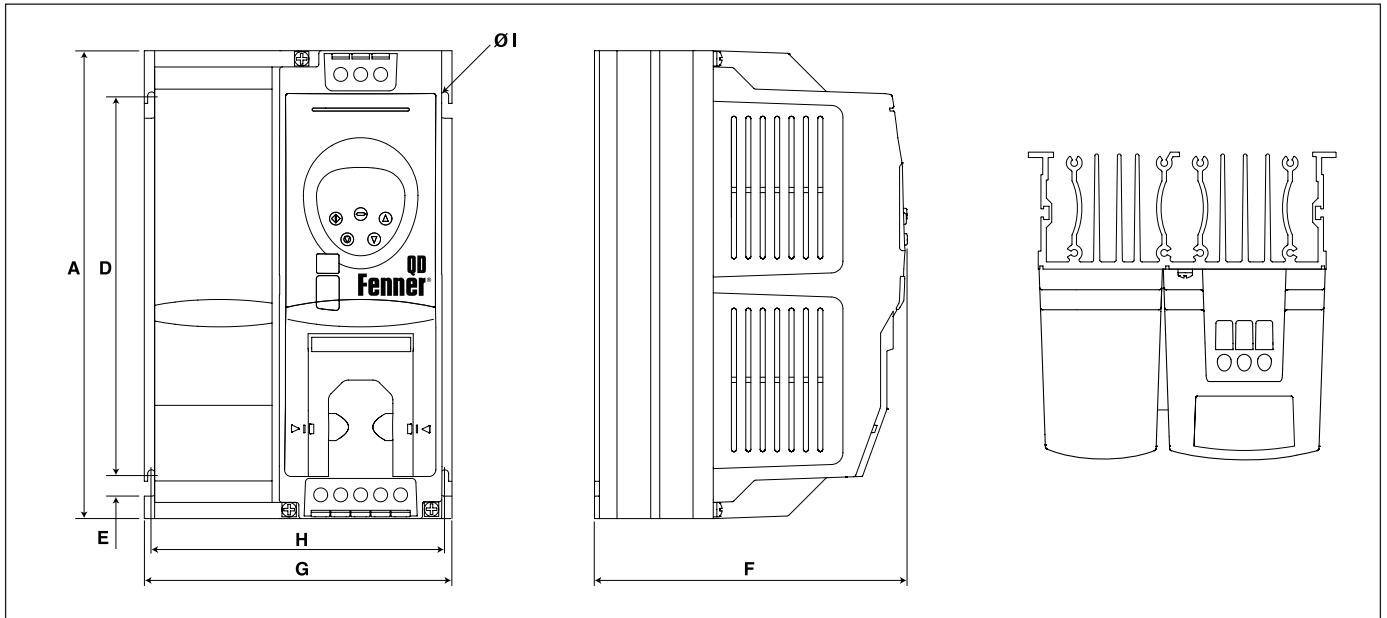


Dimensions Table

Frame Size	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	ØI mm	ØJ mm	Weight kg
1	173	160	109	162	5	123	82	50	5.5	10	1.1
2	221	207	137	209	5.3	150	109	63	5.5	10	2.6
3	261	246	*	247	6	175	131	80	5.5	10	4.0

* Size 3 does not have a DIN-rail mounting slot

FENNER QD:VT & QD:CT PLUS

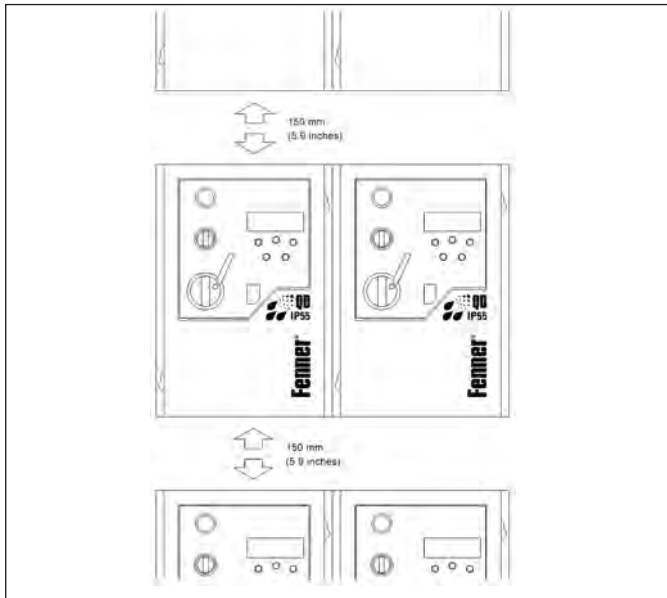


QD:VT & QD:CT PLUS Dimensions Table

Frame Size	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	ØI mm	ØJ mm	Weight kg
1	155	-	-	105	25	130	80	72	4	-	1.1
2	260	-	-	210	25	175	100	92	4	-	2.6
3	260	-	-	210	25	175	171	163	4	-	5.3
4	520	-	-	420	25	220	340	320	4	-	28
5	1045	-	-	945	50	220	340	320	9.5	-	67
6	1100	-	-	945	50	330	340	320	9.5	-	55



FENNER QD:IP55 & IP66 MOUNTING CLEARANCES



The IP55 / NEMA 12 Fenner drives can be installed side-by-side with their heatsink flanges touching. This allows adequate ventilation space between drives.

If the IP55 Fenner drive is to be installed above another drive or any other heat-producing device, the minimum vertical spacing is 150mm (5.9 inches)

Note: The IP55/NEMA 12 drive is intended for INDOOR USE ONLY

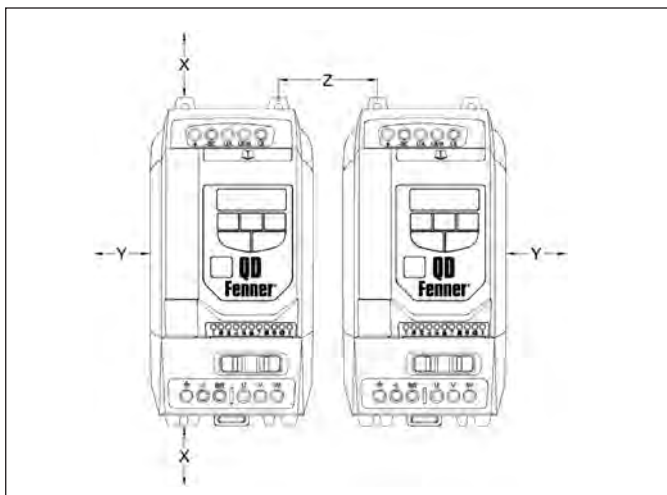
In the table below, Dimension Z assumes that the drives are mounted side-by-side with no clearance.

Typical drive heat losses are 3% of operating load conditions.

The figures below are guidelines only and the maximum operating ambient temperature of the drive **MUST NOT** be exceeded. If in doubt, please contact your local Fenner Authorised Distributor.

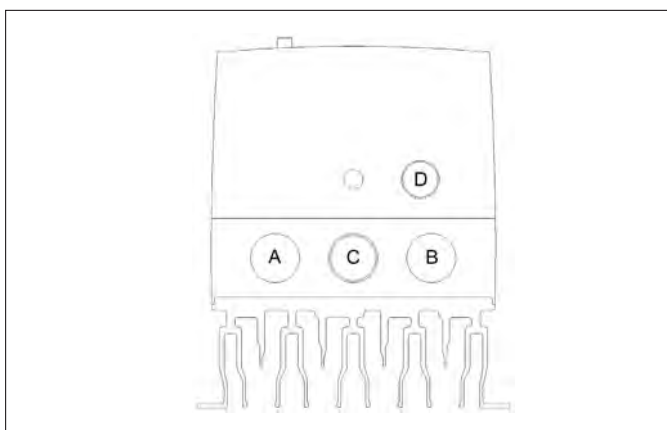
Sizes 1 & 2 are designed to be mounted onto DIN rail.

FENNER QD:E MOUNTING CLEARANCES



Frame Size	X mm	Y mm	Z mm	Recommended Airflow CFM (ft ³ /min)
1	50	50	33	11
2	75	50	46	11
3	100	50	52	26

GLAND HOLE SIZES QD:IP55



Any Metal conduit used **MUST** be earth bonded by means of a suitable earthing washer or gland adaptor.

PLEASE NOTE:

Where wires are required in the IP66 drive they must be made by the installer in line with the recommended hole sizes and gland sizes given for the IP55 unit (see table).

Lock Off:

The main power isolator switch can be locked in the 'Off' position using a 20mm standard shackle padlock (not supplied).

Gland Hole Sizes IP55

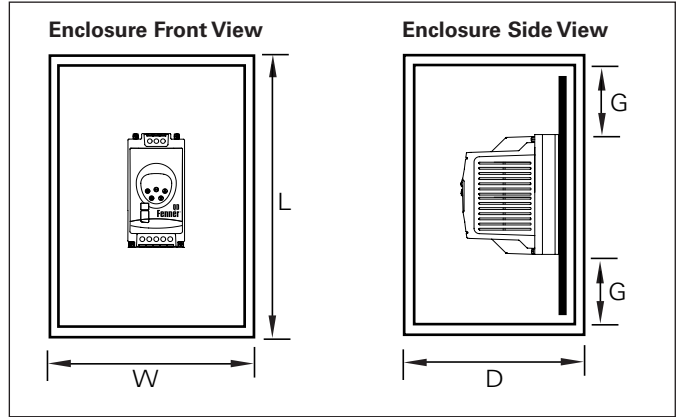
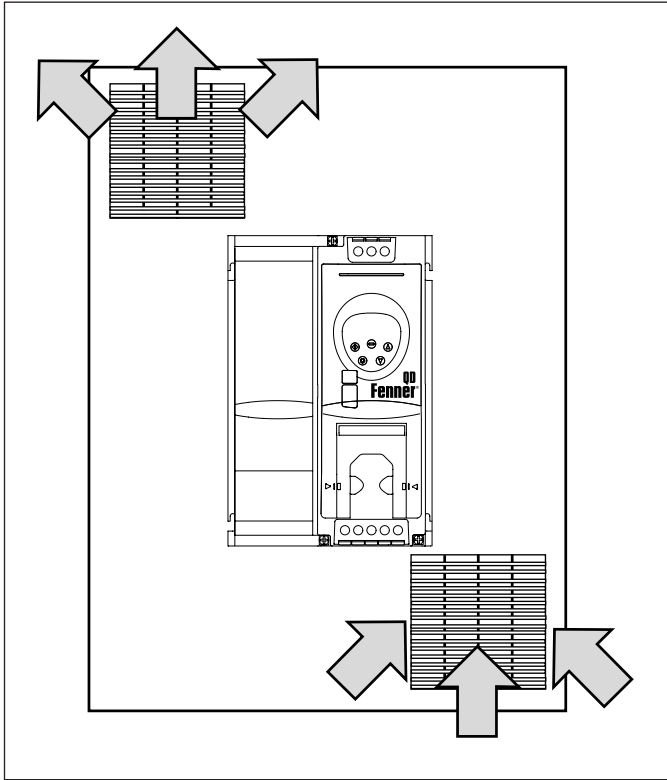
Frame Size	Input (A) & Output (B)	Centre Knockout (C)	Terminal Cover Knockout (D)
1	Ø 22mm	Ø 22mm	Ø 17mm
2	Ø 25mm	Ø 22mm	Ø 17mm
3	Ø 25mm	Ø 22mm	Ø 17mm

Recommended Gland Type IP55

SkinTop UL approved (UL94-V0) Type 12/IP55 non-metallic cable gland or non-rigid conduit

Frame Size	Input (A) & Output (B)	Centre Knockout (C)	Terminal Cover Knockout (D)
1	PG13.5 / M20	PG13.5 / M20	PG9 / M16
2	PG16 / M25	PG13.5 / M20	PG9 / M16
3	PG16 / M25	PG13.5 / M20	PG9 / M16

FENNER QD:VT & QD:CT PLUS MOUNTING CLEARANCES



The Fenner QD:VT and QD:CT PLUS drives can be installed side-by-side with their heatsink flanges touching. This gives adequate ventilation space between them. If the drive is to be installed above another drive or any other heat producing device, the minimum vertical spacing is 150mm. The enclosure should either be force ventilated or large enough to allow natural cooling.

For drives mounted in free ventilated enclosures or force ventilated enclosures, the following minimum sizes and airflow requirements are recommended:

QD:VT & QD:CT PLUS Mounting Clearances

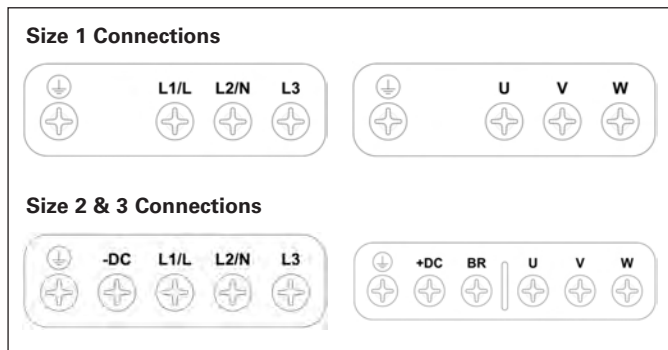
Frame Size	Max. Power Rating kW	Free-Vented Unit			Force-Vented Unit					
		L	W	D	G	L	W	D	G	Airflow m ³ /h
1	1.5	400	300	150	75	275	150	150	50	> 15
2	4	600	400	250	100	320	200	200	75	> 45
3	15	800	600	300	150	400	250	200	100	> 80
4	22	1000	600	300	200	800	500	250	130	> 300
4	37	-	-	-	-	800	500	250	130	> 300
5	90	-	-	-	-	1500	600	400	200	> 900
6	160	-	-	-	-	1600	600	400	250	> 1000



FENNER QD:E CONNECTION

Terminal	Torque Settings
Control	0.5 Nm
Power	1 Nm

IP20 DRIVES



Drive and Motor Connections

For 1 phase supply power should be connected to L1/L, L2/N.

For 3 phase supplies power should be connected to L1, L2, L3. Phase sequence is not important.

The motor should be connected to U, V, W.

For drives that have a dynamic brake transistor an optional external braking resistor will need be connected to +DC and BR. The brake resistor circuit should be protected by a suitable thermal protection circuit.

+DC and -DC connections can be used for DC Bus paralleling applications.

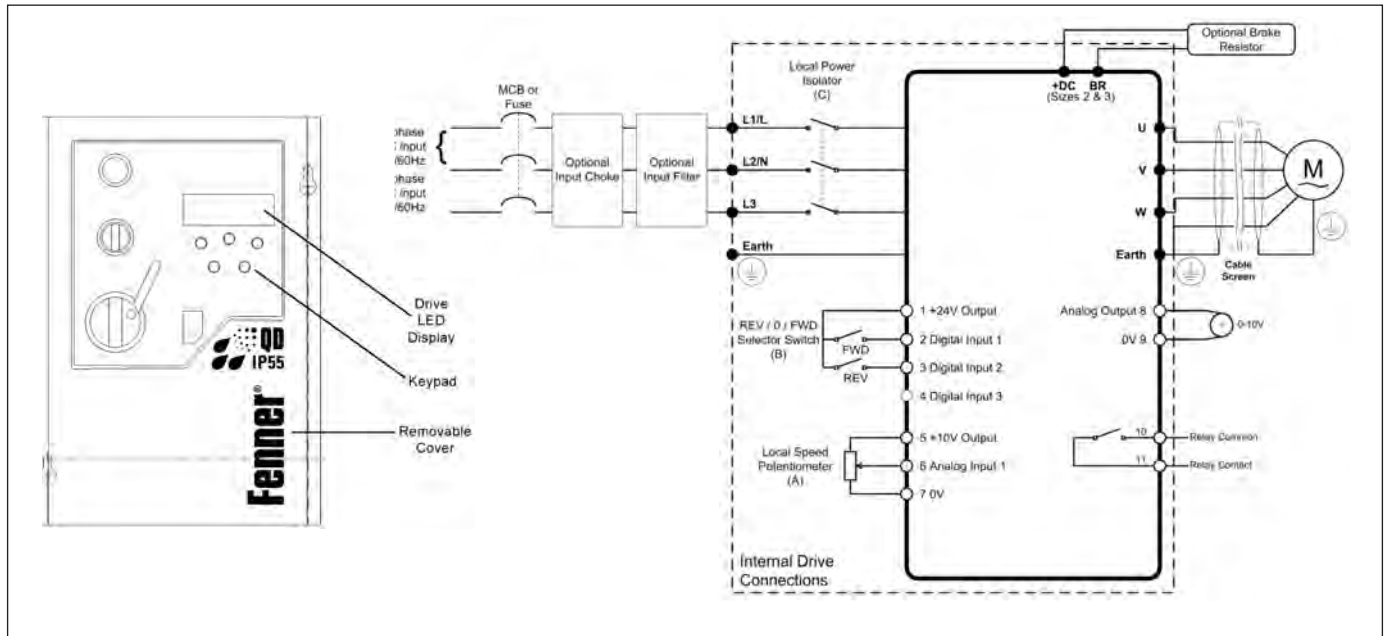
The -DC, +DC and BR connections are blanked off by plastic tabs when sent from the factory. The plastic tabs can be removed if/when required.

QD:IP55 / QD:IP66 DRIVES

Terminal	Torque Settings
Control	0.5 Nm
Power	1 Nm

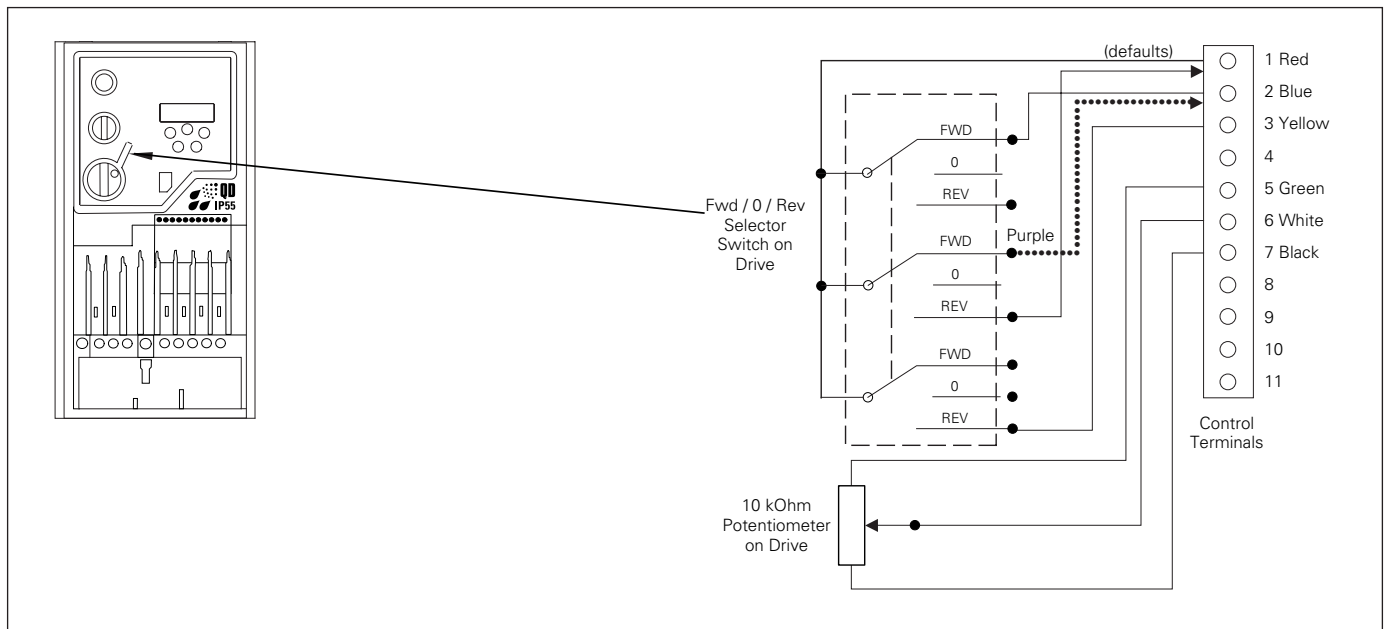
Note: Further information on all of the above can be found in the Advanced User Guide.

FENNER QD:E IP55 & IP66 CONNECTION DIAGRAM



Note: For Safety reasons the REV (Run reverse) setting is disabled by default. To enable the REV (run reverse) setting change parameter P-15 to 5.

FENNER QD:CT PLUS IP55 CONNECTION DIAGRAM

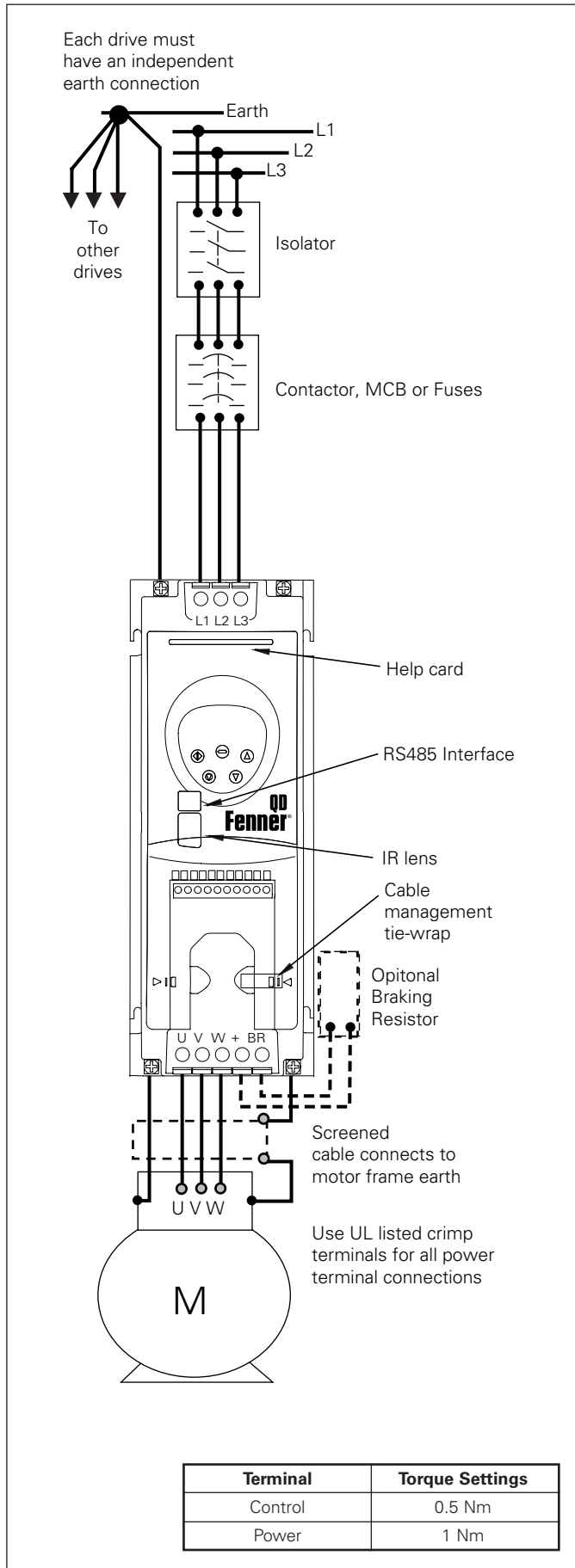


Note: Purple wire can be moved from terminal 1 (default) to terminal 2 to give greater functionality.



FENNER QD:VT & QD:CT PLUS CONNECTION

Drive and Motor Connection (IP20)



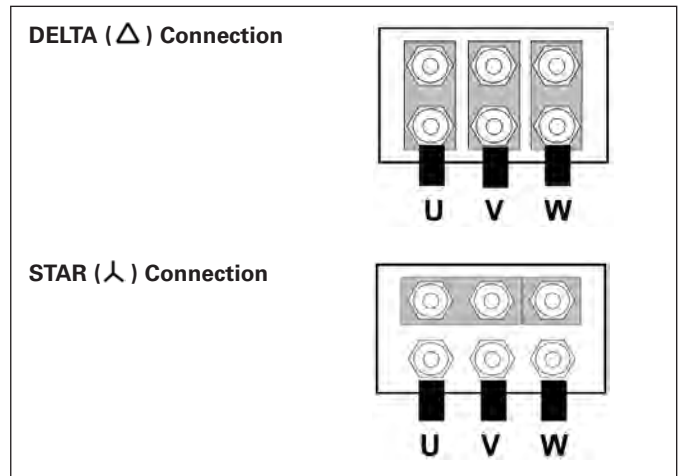
Motor Terminal Box Connections

Most general purpose motors are wound for operation on dual voltage supplies. This is indicated on the nameplate of the motor.

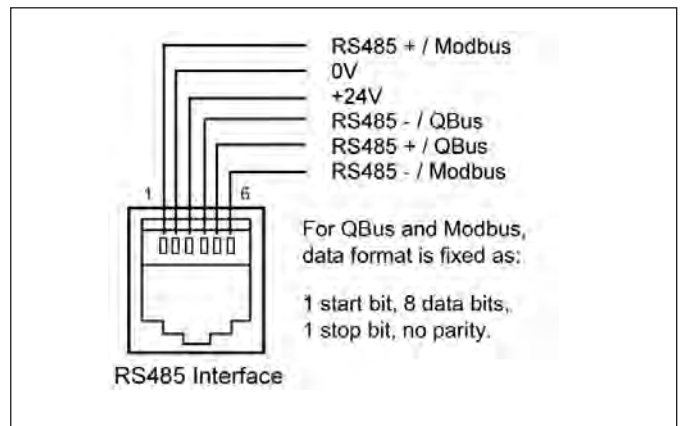
This operational voltage is normally selected when installing the motor by selecting either STAR or DELTA connection.

STAR always gives the higher of the two voltage ratings.

Typical ratings are: 400 / 230 (Δ/Δ)
 690 / 400 (Δ/Δ)



RS485 Interface Configuration



CONTROL TERMINAL CONNECTIONS

Default Connections

Control Terminal	Signal
1	+24V User Output
2	Digital Input 1
3	Digital Input 2
4	Digital Input 3 / Analog Input 2
5	+10V User Output
6	Analog Input 1 / Digital Input 4
7	0V
8	Analog Output / Digital Output
9	0V
10	Relay Common
11	Relay NO Contact

Control Terminal 1	+24V User Output
Current Limit	100mA

Control Terminal 2 & 3	Digital Inputs 1 & 2
Positive Logic	
Digital Voltage Range	8 to 30V
Sample Time	8 ms

Control Terminal 4	Digital Input 3 or Analog Input 2
Positive Logic	Digital Voltage Range 8 to 30V
Sample Time	8 ms
Analog Input Formats	As per Parameter P-47 Voltage: 0-10V Current: 4-20mA, 0-20mA, 20-4mA
Resolution	12-bit (0.025%)

Control Terminal 5	+10V Output
Current Limit	10mA
Minimum Resistance	1kΩ

Control Terminal 6	Analog Input 1 or Digital Input 4
Analog Input Formats	As per Parameter P-16 Voltage: 0-10V Current: 4-20mA, 0-20mA, 20-4mA
Resolution	12-bit (0.025%)
Positive Logic	-
Digital Voltage Range	8 to 30V
Sample Time	8 ms

Control Terminal 7 & 9	0V
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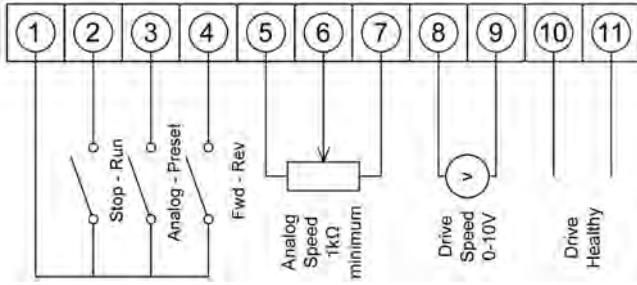
Control Terminal 8	Analog Output or Digital Output
Analog Voltage Range	0 to 10V
Digital Voltage Range	0 to 24V
Max Output Current	20mA

Control Terminal 10 & 11	User Relay Contacts
Voltage Rating	250 Vac / 30Vdc
Current Rating	6A / 5A
Contact Isolation	2.5kV
Operation of Relay	OPEN: No AC Supply OR Function of P-18 disabled CLOSED: AC Supply present & Function of P-18 enabled



CONTROL TERMINAL CONNECTIONS

The control terminals are defined as follows:



Control Terminal	Signal
1	+24V, 100mA user output.
2	Digital input 1, positive logic. "Logic 1" when Vin > 8V DC
3	Digital input 2, positive logic. "Logic 1" when Vin > 8V DC 2nd digital output: 0 / 24V, 10mA max
4	2nd analog input, 11-bit (0.05%). 0..10V, 0..20mA, 4..20mA. Digital input 3, positive logic. "Logic 1" when Vin > 8V DC.
5	+24V, 100mA reference output (for use with potentiometer).
6	Bipolar analog input, +/-12-bit (0.025%). Configurable for: 0..24V, 0..10V, -10V..10V, -24V...24V
7	0V (User GND). Connected to terminal 9
8	Analog output, 8-bit (0.25%). 0..10V, 4..20mA. Digital output: 0 / 24V, 20mA max
9	0V (User GND). Connected to terminal 7
10	User relay output. Potential free contacts. 30Vdc 5A, 250Vac 6A
11	User relay output. Potential free contacts. 30Vdc 5A, 250Vac 6A

Control Terminal 1	+24V User Output
Current Limit	100mA

Control Terminal 2	Digital Input 1
Positive Logic	
Digital Voltage Range	8 to 30V
Sample Time	8 ms

Control Terminal 3	Digital Input 1/"Drive Healthy Output" (Parameter Selectable)
Input Mode:	
Positive Logic	
Digital Voltage Range	8 to 30V
Sample Time	8 ms
Output Mode:	
Voltage Range	24V DC
Current Limit	10mA

Control Terminal 4	Digital Input 3 or Analog Input 2
Positive Logic	
Digital Voltage Range	8 to 30V
Sample Time	8 ms
Analog Input Formats	Voltage: 0 to 10V Current: 0 to 20mA, 4 to 20mA
Resolution	11 bit (0.05%)

Control Terminal 5	+10V Output
Minimum Resistance	1kΩ

Control Terminal 6	Bipolar Analog Input or Digital Input 4
Analog Input Formats	0 to 24V, 0 to 10V, -24 to +24V, -10 to +10V
Resolution	+/- 12 bit (0.025%)
Positive Logic	
Digital Voltage Range	8 to 30V
Sample Time	8 ms

Control Terminals 7 & 9	0 Volts
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Control Terminal 8	Analog or Digital Output
Analog Range	Voltage: 0 to 10V Current: 4 to 20mA
Digital Voltage Range	0 or 24V
Max Output Current	20mA

Control Terminals 10 & 11	User Relay Contacts
Voltage Rating	250 VAC / 30 VDC
Current Rating	6A / 5A
Contact Isolation	2.5kV
Function	No or NC, Parameter Selectable

Control Terminal Connections

The User Control terminals are available via an 11-way pluggable connector. All terminals are galvanically isolated, allowing direct connection to other equipment.

Do not connect mains supply voltages to any terminals other than the User relay output. Permanent damage will otherwise result.

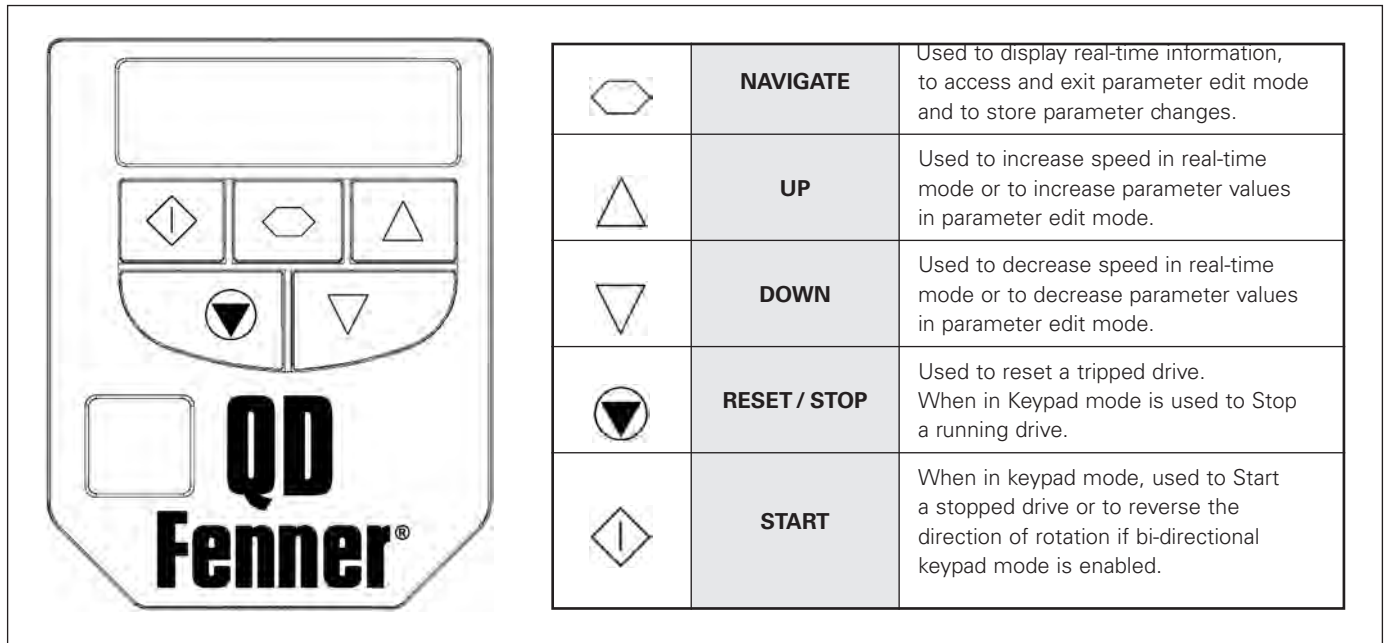
All other inputs will withstand up to 30V dc without damage.

The functionality of the inputs and outputs is user configurable. All operating modes are set up via the parameter set.


Up to 100mA can be sourced from the User +24V output and up to 20mA from the analog output.

MANAGING THE KEYPAD


The drive is configured and its operation monitored via the keypad and display.



Changing Parameters

To change a parameter value press and hold the  key for >1s whilst the drive displays **StoP**.

The display changes to **P-01**, indicating parameter 01.

Press and release the  key to display the value of this parameter.




Change to the required value using the  and  keys.

Press and release the  key once more to store the change.

Press and hold the  key for >1s to return to real-time mode.

The display shows **StoP** if the drive is stopped or, if the drive is running, the display shows 'Real-Time' information e.g. speed

Reset Factory Default Settings

To reset factory default parameters, press ,  and  for >2s. The display shows **P-dEF**.

Press the  button to acknowledge and reset the drive.



STANDARD PARAMETERS QD:E

Par.	Description	Range	Default	Explanation
P-01	Maximum speed	P-02 to P-09 x 5 (max 500Hz)	50Hz (60Hz)	Maximum speed limit – Hz or rpm. See P-10
P-02	Minimum speed	0 to P-01 (max 500Hz)	0Hz	Minimum speed limit – Hz or rpm. See P-10
P-03	Acceleration ramp time	0 to 600s	5s	Acceleration ramp time from 0 to base speed (P-09) in seconds.
P-04	Deceleration ramp time	0 to 600s	5s	Deceleration ramp time from base speed (P-09) to standstill in seconds. When P-04=0, the deceleration ramp is set by P-24. Setting P-04=0 also activates dynamic ramp control, where the ramp may be extended automatically to prevent an O-Volt trip.
P-05	Stop mode select	0: Ramp stop (brown-out ride-through) 1: Coast to stop 2: Ramp to stop (fast stop)	0	If the supply is lost and P-05=0 then the drive will try to continue running by reducing the speed of the load using the load as a generator. If P-05 = 2, the drive will ramp to stop using the P-24 decel ramp with dynamic brake control when mains supply lost.
P-06	Energy Optimiser	0: Disabled 1: Enabled	0	When enabled, automatically reduces applied motor voltage on light load. Minimum value is 50% of nominal.
P-07	Motor rated voltage	0, 20V to 250V 0, 20V to 500V	230V 400V	Rated (nameplate) voltage of the motor (Volts). Value limited to 250V for low voltage drives. Setting to zero disables voltage compensation.
P-08	Motor rated current	25% -100% of drive rated current	Drive rating	Rated (nameplate) current of the motor (Amps).
P-09	Motor rated frequency	25Hz to 500Hz	50Hz	Rated (nameplate) frequency of the motor.
P-10	Motor rated speed	0 to 30 000 rpm	0	When non-zero, all speed related parameters are displayed in rpm.
P-11	Voltage boost	Size 1: 0.0 to 20.0% Size 2: 0.0 to 15.0% Size 3: 0.0 to 10.0% of max output voltage.	Motor power dependent	Applies an adjustable boost to the voltage output at low speed to assist with starting 'sticky' loads. For continuous applications at low speed use a forced ventilated motor.
P-12	Terminal / Keypad / MODBUS / PI Drive Control Mode Selection	0. Terminal control 1. Keypad control – fwd only 2. Keypad control – fwd and rev 3. MODBUS network control with internal accel / decel ramps 4. MODBUS network control with accel / decel ramp adjustment 5. User PI control 6. User PI control with analog input 1 summation	0	Primary Control Mode of the drive 0. Terminal control. 1. Uni-directional keypad control. Keypad START button does not reverse direction. 2. Bi-directional keypad control. Keypad START button toggles between forward and reverse. 3. Control via Modbus RTU (RS485) comms interface using the internal accel / decel ramps. 4. Control via Modbus RTU (RS485) comms interface with accel / decel ramps updated via Modbus. 5. User PI control with external feedback signal. 6. User PI control with external feedback signal and summation with analog input 1.
P-13	Trip log	Last four trips stored	Read only	Previous 4 trips stored in order of occurrence, with the most recent first. Press UP or DOWN to step through all four. The most recent trip is always displayed first. UV trip is only stored once. Further fault event logging functions are available through parameter group zero.
P-14	Extended menu access	Code 0 to 9 999	0	Set to "101" (default) for extended menu access. Change code in P-39 to prevent unauthorised access to the Extended Parameter Set.

Note: Standby mode is enabled automatically when the drive is at zero speed for > 20 seconds

BASIC PARAMETER SET QD:VT

Par.	Description	Range	Default
P1-01	Max speed limit (Hz or rpm)	P1-02 to 120Hz / 7,200 rpm	50Hz
P1-02	Min speed limit (Hz or rpm)	0 to P1-01	0Hz
P1-03	Accel ramp time (s)	0s ... 3000s	30s
P1-04	Decel ramp time (s)	0s ... 3000s	30s
P1-05	Stop mode select	0: Ramp to stop (mains ride through) 1: Coast to stop 2: Ramp to stop (Fast-Stop mode)	0
P1-06	Energy optimizer	0: Disable 1: Enable	0
P1-07	Motor rated voltage	0V, 20V to 250V 0V, 20V to 500V 0V, 20V to 600V	230V 400V
P1-08	Motor rated current (rms)	20% to 100% of drive current rating (Amps)	Drive rating (Amps)
P1-09	Motor rated frequency	25 to 120Hz	50Hz
P1-10	Motor rated speed	0 to 7,200 rpm	0
P1-11	Preset speed 1	-P1-01 (min) to P1-01 (max)	50Hz
P1-12	Terminal / Keypad control of drive	0: Terminal control 1: Keypad control (fwd only) 2: Keypad control (fwd / rev toggle using start button) 3: Enable User PID control 4: Modbus network control	0 (terminal)
P1-13	Trip log	Last four trips stored	No fault
P1-14	Extended menu access code	0 to 30000. When in default state, set to 101 to access extended menu	0



BASIC PARAMETER SET QD:CT PLUS

Par.	Description	Range	Default
P1-01	Max speed limit (Hz or rpm) C Run (Enable)	P1-02 to P1-09 x 5. Max value 2000Hz / 60,000 rpm	50Hz
P1-02	Min speed limit (Hz or rpm)	0 to P1-01	0Hz
P1-03	Accel ramp time (s)	0s ... 3000s	5s
P1-04	Decel ramp time (s)	0s ... 3000s	5s
P1-05	Stop mode select	0 Ramp to stop (mains ride through) 1 Coast to stop 2 Ramp to stop (Fast-Stop mode)	0
P1-06	Energy Optimisation (Reserved for 3GV-M)	0: Disable 1: Enable	0
P1-07	Motor rated voltage	0V, 20V to 250V 0V, 20V to 500V 0V, 20V to 600V	230V 400V
P1-08	Motor rated current (rms)	20% to 100% of drive current rating (Amps)	Drive rating (Amps)
P1-09	Motor rated frequency	25 to 2000Hz	50Hz
P1-11	Preset speed 1	-P1-01 (min) to P1-01 (max)	50Hz
P1-12	Terminal / Keypad control of drive	0: Terminal control 1: Keypad control (fwd only) 2: Keypad control (fwd / rev toggle using start button) 3: Enable User PID control 4: Modbus network control (Optional)	0 (terminal)
P1-13	Trip log	Last four trips stored	No fault
P1-14	Extended menu access code	0 to 30000. When in default state, set to 101 to access extended menu	0

OPTIONS

Description	QD:E	QD:CT PLUS	QD:VT
QBRAKE	Dynamic braking resistor for use with high inertia loads which need to be stopped rapidly. <i>Please note: the size 1 unit is not suitable for braking applications as it has no integral braking circuit</i>		
572X1002	●	●	●
572X1004	●	●	●
572X1002E	●	●	●
QICHOKE	QICHOKE - Input Chokes Reduce harmonic distortion and protect Fenner QD drives against harmful supply disturbances. Input chokes available for drives sizes 1-3. Sizes 4-6 include 3 phase line chokes as standard.		
572X3011	●	●	●
572X3021	●	●	●
572X3031	●	●	●
572X3023	●	●	●
572X3033	●	●	●
572X3011E	●	●	●
572X3012E	●	●	●
572X3031E	●	●	●
572X3032E	●	●	●
572X3033E	●	●	●
QMCHOKE	QMCHOKE - Motor Chokes QM Motor Chokes improve the quality of the output waveform. In a small number of applications output filtering is strongly recommended to improve system functionality, reliability and longevity. Such applications include: long motor cables upto 200m; high capacitance motor cables; multiple motors connected in parallel; older motors without inverter grade insulation		
572X3113	●	●	●
572X3123	●	●	●
572X3133	●	●	●
572X3143		●	●
572X3153		●	●
572X3163		●	●
572X3113E	●	●	●
572X3123E	●	●	●
572X3133E*	●	●	●
			*maximum 5.5kW
QRELAY-3	QRELAY-3 provides 2 additional programmable relay outputs		
572X4003		●	●
QRELAY-2	QRELAY-2 provides a programmable second relay output		
572X4002	●	●	●
QRELAY-VT	QRELAY-VT provides 2 relays for typical 'drive running' and 'drive tripped' indicators		
572X4100	●	●	●
QMODULE	QMODULE - Encoder Module The external encoder feedback module is designed to provide closed loop speed control for the QD:CT PLUS range.		
572X7000		●	



OPTIONS

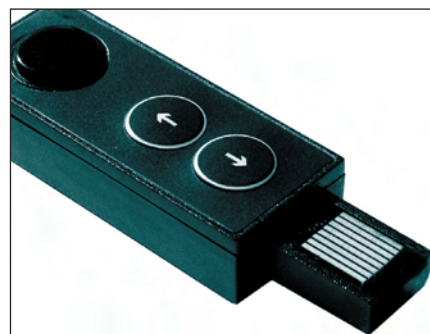
Description		QD:E	QD:CT PLUS	QD:VT
QPORT	QPORT - Remote Keypad & Display QPORT units act as a remote keypad and display for QD Drives on a network which have the same serial address. The physical layout and operation of the QPORT keypad and display mimic the QD drive exactly.			
572X0001	QD:CT PLUS/QD:VT - 6 Way RJ11, 10-36V DC, 30mA	•	•	•
572X0002	QD:E - 8 Way RJ45, 10-36V. 30mA	•		
QSPLITTER	QSPLITTER - RS485 data cable splitter is an RJ11 or RJ45 1 to 2 way connection block			
572X2100	RJ11, 1-2 way	•	•	•
572X2000	RJ45, 1-2 way	•		
QADAPTOR	QADAPTOR - RS485 Communications Adaptor The QADAPTOR is an isolated USB to RS485 communications adaptor designed for use with QStore Plus			
572X2200	QADAPTOR RS485	•	•	•
DATA CABLES	DATA CABLES			
572X2103	RJ11 to RJ11 RS485 data cable, 0.3 metres - Black		•	•
572X2110	RJ11 to RJ11 RS485 data cable, 1 metre - Black		•	•
572X2130	RJ11 to RJ11 RS485 data cable, 3 metre - Black		•	•
572X2005	RJ45 to RJ45 RS485 data cable, 0.5 metres - Blue	•		
572X2010	RJ45 to RJ45 RS485 data cable, 1 metre - Blue	•		
572X2030	RJ45 to RJ45 RS485 data cable, 3 metres - Blue	•		
QWAND	QWAND is a pocket PC that allows infra-red programming of QD Drives via the infra-red port on the front of the drive, supplied with software.			
572X0004	QWAND	•*	•	•
			<i>*only if used with QSTICK</i>	
QSTICK	QSTICK - For accurate repeat drive programming, simply insert the QSTICK into the RJ45 slot on the front of the QD:E drive with infra-red functionality			
572X0003	QSTICK for QD:E Drives	•		
QGATEWAY	QGATEWAY - Fieldbus Communications Fenner QD Drives can communicate with existing networks with the use of the QGATEWAY			
572X8001	Profibus gateway with RJ11 & RJ45, 9 way, D-type, data cables		•	•
572X8002	DeviceNet gateway with RJ11 & RJ45, 9 way, D-type, data cables		•	•
572X8003	EtherNet gateway with RJ11 & RJ45, 9 way, D-type, data cables		•	•

QSTICK

For fast accurate repeat drive programming. Simply insert QStick into the RJ45 slot on the face of the QD:E drive.

Key Benefits

- Upload/download buttons allow for fast copying of parameters between drives
- Infra-red communications capability provides remote control convenience
- Can be programmed with PDA or Smart Phone



QPORT REMOTE KEYPAD AND DISPLAY

QPort PLUS and QPort E are intelligent devices with a built in microcontroller.

Key Benefits

- Real time keypad and display operation mimics Fenner drive
- Single electrical interface for power and data
- Communicates with up to 63 drives on a network
- Automatically connects to specified drive
- IP54 rated when mounted on a panel
- Bright LED display with membrane keypad
- Parameter lock function available
- 3m Data Cable included

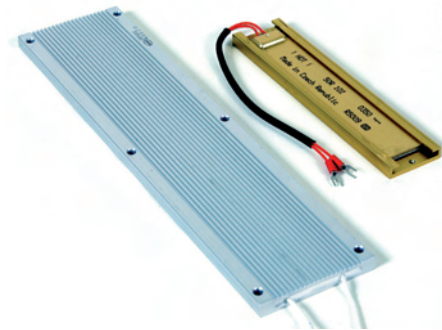


QPort units act as the remote keypad and display for the QDrive on the network which has the same serial address. The physical layout and the operation of the QPort keypad and display mimic the QD drive exactly.

QBRAKE - DYNAMIC BRAKING RESISTORS

Key Benefits

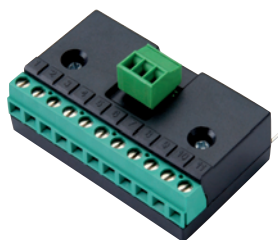
- Fenner QD drive software protects the QBRAKE from overload, hence no need for expensive overload relays
- Internal fusible element ensures fail safe operation
- Connects to side of drive, using the heatsink of the drive to prevent overheating
- No space envelope penalty, fits on side of the drive
- Series/parallel arrangements for more demanding applications



QBRAKE dynamic braking resistors are designed specifically for the Fenner QD range. For use with high inertia loads which need to be stopped rapidly. QBRAKE dynamic braking resistors assist the drive in managing the electrical energy returned from the motor during braking, by converting it to heat energy.

QRELAY-3

QRELAY-3 provides 2 additional programmable relay outputs



QRELAY-2

QRELAY-2 provides a second relay output.



QRELAY-VT

QRELAY-VT provides 2 relays for typical 'drive running' and 'drive tripped' indicators.



Product Code	572X4003
Max. relay switching voltage	250V AC / 220V DC
Max relay switching current	1A
Max input voltage	+/- 50V DC
Conformity	IP00, UL94V-0
Environmental	-10°C ... +50°C
Dimensions	56 x 33 (not pins) x 14mm

Product Code	572X4002
Max. relay switching voltage	250V AC / 220V DC
Max relay switching current	1A
Max input voltage	+/- 50V DC
Conformity	IP00, UL94V-0
Environmental	-10°C ... +50°C
Dimensions	56 x 33 (not pins) x 14mm

Product Code	572X4100
Max. relay switching voltage	250V AC / 220V DC
Max relay switching current	1A
Max input voltage	+/- 50V DC
Conformity	IP00, UL94V-0
Environmental	-10°C ... +50°C
Dimensions	56 x 33 (not pins) x 14mm