

# JC-VSD FP Series II Drives

## Product Bulletin

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The Johnson Controls® VSD FP Series II provides the advanced technology and features of the Johnson Controls VSD Series II with a Disconnect or Bypass in a factory mount option. Either option is available in NEMA 1 galvanized steel or NEMA 3R painted product. The FP Series II IntelliDisconnect comes with an enclosed disconnect (fused or non-fused) and door mounted operator. The FP Series II IntelliPass offers a fused or non-fused disconnect switch, a two contactor bypass design, and door mounted controls.



Figure 1: FP Series II Drives

Table 1: Features and Benefits

Features	Benefits
<b>Network Connectivity for Drive and Bypass (BACnet®, SA Bus, N2, and LON)</b>	Allows for compatibility with current and future Johnson Controls network architecture.
<b>Software Parameters That Utilize Engineering Units Common to the HVAC Industry</b>	Allow for quick and easy startup using the onboard startup wizard with engineering units transmitted over a communications bus.
<b>Johnson Controls Support That Includes Ordering, Estimating, and Project Management Tools: Advanced Order Management System (AOMS), Advanced Installation Management (AIM) Tools - QuickLIT, Catalog, PRESTO, and STORE</b>	Allows users to easily identify and order products.
<b>Closed-Loop Control Programmed with Engineering Units for Specific HVAC Applications: Standard, PID, or multi-pump</b>	Provides software parameters using engineering units common to the HVAC industry.
<b>Standard TYPE 12 Keypad on all Drives with Copy and Paste Function; Capable of Monitoring Three Parameters Simultaneously</b>	Allows easy transfer of parameter settings from one drive to another drive.
<b>Drive Programming Capability Using Auxiliary 24 V Power Supply (VS-AUX24V)</b>	Allows variable speed drive programming (including network communication validation) prior to wiring 3-phase power to the drive.

### **Additional FP Series II Features**

- NEMA 1 or NEMA 3R designs
- Temperature range of -10°C to 40°C (14° to 104°F)
- OSHPD Certified
- Plenum rated
- Fused or Non-fused disconnect designs with handle lockable in Off position
- EMI/RFI Filters standard on all drives
- I/O and communication cards provide plug-and-play functionality
- Active Energy Control on-board all drives to minimize energy losses and provide industry leading efficiency
- Real Time Clock supporting calendaring and PLC functionality
- Thin metal capacitor design for efficient drive operation and extended life
- Standard DC link choke and MOVs for enhanced transient and harmonic distortion protection
- Top and bottom conduit entry for ease of installation
- Copy and paste keypad function that allows you to transfer parameter settings from one drive to another
- Keypad that displays up to nine monitored parameters simultaneously
- Standard TYPE12 keypad on all drives
- Simplified operating menu allows for quick programming changes
- Anti-trip DC bus regulation
- Onboard RS-485 Communications (BACnet, N2, Modbus®)
- Onboard Ethernet-based communications (BACnet/IP, Modbus/TCP)
- SA Bus factory installed communications option
- Standard I/O: 6DI, 2AI, 1AO, 1 Form C RO (NO/NC),
- Short circuit withstand rating of 15kAIC (additional fuses required for non-fused disconnect designs)
- Input surge protection against voltage spikes (varistor input)

- Hard-wired external/damper interlock
- Accommodates a wide variety of expander boards and adapter boards
- Control logic can be powered from an external auxiliary control panel
- Robust steel enclosure for simple installation

### **Additional FP Series II IntelliPass Only Features**

- HAND/OFF/AUTO and DRIVE/OFF/BYPASS selector on keypad that simplifies control
- 2 contactor bypass with drive isolation switch
- Control power transformer with primary and secondary fusing
- Bypass can be controlled mechanically, electronically, and via SA Bus

**IMPORTANT:** Use this FP Series II Drive only as an operating control. Where failure or malfunction of the Series II open drive could lead to personal injury or property damage to the controlled equipment or other property, additional precautions must be designed into the control system. Incorporate and maintain other devices, such as supervisory or alarm systems or safety or limit controls, intended to warn of or protect against failure or malfunction of the Series II open drive.

# Catalog Number Selection

## VSD Series II Enclosed Drives Selection Chart

Catalog Number		Y	K	4	D	8	4	1	1	B	-	0	0	0	0	0	
<b>Base Product</b>	YK = VSD Series II Base Drive YM = VSM Drive																
<b>Amps, kW, Hp</b>	<p><b>208V, 230V 3-Phase (YK product)</b>            4D8 = 4.8 Amp, 0.75kW (1 Hp)            8D0 = 8.0 Amp, 1.5 kW (2 Hp)            011 = 11 Amp, 2.2 kW (3 Hp)            016 = 16 Amp, 4.0 kW (5 Hp)<sup>1</sup>            018 = 18 Amp, 4.0 kW (5 Hp)            024 = 24 Amp, 5.5 kW (7.5 Hp)<sup>1</sup>            025 = 25 Amp, 5.5 kW (7.5 Hp)            031 = 31 Amp, 7.5 kW (10 Hp)            048 = 48 Amp, 11 kW (15 Hp)            062 = 62 Amp, 15 kW (20 Hp)            070 = 70 Amp, 18.5 kW (25 Hp)<sup>1</sup>            075 = 75 Amp, 18.5 kW (25 Hp)            088 = 88 Amp, 22 kW (30 Hp)            115 = 115 Amp, 37 kW (40 Hp)<sup>1</sup>            140 = 140 Amp, 37 kW (40 Hp)            150 = 150 Amp, 45 kW (50 Hp)<sup>1</sup>            170 = 170 Amp, 45 kW (50 Hp)</p> <p><b>200-240V 3-Phase (YM product)</b>            2D8 = 2.8 Amp, 0.37 kW (0.5 Hp)            3D7 = 3.7 Amp, 0.55 kW (0.75 Hp)            4D8 = 4.8 Amp, 0.75 kW (1 Hp)            7D0 = 7.0 Amp, 1.1 kW (1.5 Hp)</p>		<p><b>460V 3-Phase (YK product)</b>            2D4 = 2.4 Amp, 1.1 kW (1 Hp)<sup>2</sup>            3D4 = 3.4 Amp, 1.1 kW (1 Hp)            4D0 = 4.0 Amp, 1.5 kW (2 Hp)<sup>2</sup>            4D8 = 4.8 Amp, 1.5 kW (2 Hp)            5D6 = 5.6 Amp, 2.2 kW (3 Hp)            9D0 = 9.0 Amp, 4.0 kW (5 Hp)<sup>2</sup>            9D6 = 9.6 Amp, 4.0 kW (5 Hp)            012 = 12 Amp, 5.5 kW (7.5 Hp)            016 = 16 Amp, 7.5 kW (10 Hp)            023 = 23 Amp, 11 kW (15 Hp)            031 = 31 Amp, 15 kW (20 Hp)            038 = 38 Amp, 18.5 kW (25 Hp)            046 = 46 Amp, 22 kW (30 Hp)            061 = 61 Amp, 30 kW (40 Hp)            070 = 70 Amp, 30 kW (50 Hp)<sup>2</sup>            072 = 72 Amp, 37 kW (50 Hp)            080 = 80 Amp, 45 kW (60 Hp)<sup>2</sup>            087 = 87 Amp, 45 kW (60 Hp)            105 = 105 Amp, 55 kW (75 Hp)<sup>2</sup>            140 = 140 Amp, 75 kW (100 Hp)            170 = 170 Amp, 90 kW (125 Hp)</p> <p><b>380-480V 3-Phase (YM product)</b>            1D3 = 1.3 Amp, 0.37 kW (0.5 Hp)            1D9 = 1.9 Amp, 0.55 kW (0.75 Hp)            2D4 = 2.4 Amp, 0.75 kW (1 Hp)            3D3 = 3.3 Amp, 1.1 kW (1.5 Hp)            4D3 = 4.3 Amp, 1.5 kW (2 Hp)</p>														
<b>Voltage</b>	1 = 208V (YK only)    6 = 200-240V (YM only) 2 = 230V (YK only)    7 = 380-480V (YM only) 4 = 460V (YK only)																
<b>Enclosure Rating</b>	1 = NEMA Type 1 2 = NEMA Type 2 (YK only)																
<b>Style</b>	1 = Non-fused IntelliDisconnect    3 = IntelliPass w/ Fused Disconnect 2 = Fused IntelliDisconnect <sup>3</sup> 4 = IntelliPass w/ Non-fused Disconnect																
<b>Revision</b>	B = Rev 2 (Americas)																
<b>Separator</b>																	
<b>Options</b>	00000 = No options S0000 = SA Bus Communication Card																

1 = 230V 3-phase Bypass only  
 2 = 460V 3-phase Bypass only  
 3 = Fused Disconnect is only option for YM product

## FP Series II Micro Drives Product Selection

**Table 2: FP Series II Micro Drive with Fused Disconnect NEMA Type 1 – 200-240V**

Code Number	hp	Current (A) <sup>1</sup>	Frame	Enclosure Rating
YM2D8612B-00000	0.5 hp	2.8	M1	NEMA Type 1
YM3D7612B-00000	0.75 hp	3.7	M1	NEMA Type 1
YM4D8612B-00000	1 hp	4.8	M1	NEMA Type 1
YM7D0612B-00000	1.5 hp	7	M1	NEMA Type 1

1. All horsepower and current ratings are Variable Torque (VT).

**Table 3: FP Series II Micro Drive with Fused Disconnect NEMA Type 1 – 380-480V**

Code Number	hp	Current (A) <sup>1</sup>	Frame	Enclosure Rating
YM1D3712B-00000	0.5 hp	1.3	M1	NEMA Type 1
YM1D9712B-00000	0.75 hp	1.9	M1	NEMA Type 1
YM2D4712B-00000	1 hp	2.4	M1	NEMA Type 1
YM3D3712B-00000	1.5 hp	3.3	M1	NEMA Type 1
YM4D3712B-00000	2 hp	4.3	M1	NEMA Type 1

1. All horsepower and current ratings are Variable Torque (VT).

## FP Series II Drives Product Selection

**Table 4: FP Series II IntelliDisconnect NEMA Type 1 - 208V Fused**

Code Number <sup>1</sup>	hp (kW) <sup>2</sup>	Current (A)	Frame	Enclosure Rating
YK4D8112B-00000	1 hp (0.75 kW)	4.8	A1	NEMA Type 1
YK8D0112B-00000	2 hp (1.5 kW)	8	A1	NEMA Type 1
YK011112B-00000	3 hp (2.2 kW)	11	A1	NEMA Type 1
YK018112B-00000	5 hp (4 kW)	18	A1	NEMA Type 1
YK025112B-00000	7.5 hp (5.5 kW)	25	A2	NEMA Type 1
YK031112B-00000	10 hp (7.5 kW)	31	A2	NEMA Type 1
YK048112B-00000	15 hp (11 kW)	48	A3	NEMA Type 1
YK062112B-00000	20 hp (15 kW)	62	A3	NEMA Type 1
YK075112B-00000	25 hp (18.5 kW)	75	A4	NEMA Type 1
YK088112B-00000	30 hp (22 kW)	88	A4	NEMA Type 1
YK140112B-00000	40 hp (37 kW)	140	A4	NEMA Type 1
YK170112B-00000	50 hp (45 kW)	170	A6	NEMA Type 1

1. For non-fused disconnect, change the 8<sup>th</sup> digit to a 1.
2. All horsepower and current ratings are Variable Torque (VT).

**Table 5: FP Series II IntelliDisconnect NEMA Type 3R - 208V Fused**

Code Number <sup>1</sup>	hp (kW) <sup>2</sup>	Current (A)	Frame	Enclosure Rating
YK4D8122B-00000	1 hp (0.75 kW)	4.8	C1	NEMA Type 3R
YK8D0122B-00000	2 hp (1.5 kW)	8	C1	NEMA Type 3R
YK011122B-00000	3 hp (2.2 kW)	11	C1	NEMA Type 3R
YK018122B-00000	5 hp (4 kW)	18	C1	NEMA Type 3R
YK025122B-00000	7.5 hp (5.5 kW)	25	C2	NEMA Type 3R
YK031122B-00000	10 hp (7.5 kW)	31	C2	NEMA Type 3R
YK048122B-00000	15 hp (11 kW)	48	C3	NEMA Type 3R
YK062122B-00000	20 hp (15 kW)	62	C3	NEMA Type 3R
YK075122B-00000	25 hp (18.5 kW)	75	C4	NEMA Type 3R
YK088122B-00000	30 hp (22 kW)	88	C4	NEMA Type 3R
YK140122B-00000	40 hp (37 kW)	140	C4	NEMA Type 3R
YK170122B-00000	50 hp (45 kW)	170	C6	NEMA Type 3R

1. For non-fused disconnect, change the 8<sup>th</sup> digit to a 1.
2. All horsepower and current ratings are Variable Torque (VT).

**Table 6: FP Series II IntelliDisconnect NEMA Type 1 - 230V Fused**

Code Number <sup>1</sup>	hp (kW) <sup>2</sup>	Current (A)	Frame	Enclosure Rating
YK4D8212B-00000	1 hp (0.75 kW)	4.8	A1	NEMA Type 1
YK8D0212B-00000	2 hp (1.5 kW)	8	A1	NEMA Type 1
YK011212B-00000	3 hp (2.2 kW)	11	A1	NEMA Type 1
YK018212B-00000	5 hp (4 kW)	18	A1	NEMA Type 1
YK025212B-00000	7.5 hp (5.5 kW)	25	A2	NEMA Type 1
YK031212B-00000	10 hp (7.5 kW)	31	A2	NEMA Type 1
YK048212B-00000	15 hp (11 kW)	48	A3	NEMA Type 1
YK062212B-00000	20 hp (15 kW)	62	A3	NEMA Type 1
YK075212B-00000	25 hp (18.5 kW)	75	A4	NEMA Type 1
YK088212B-00000	30 hp (22 kW)	88	A4	NEMA Type 1
YK140212B-00000	40 hp (37 kW)	140	A4	NEMA Type 1
YK170212B-00000	50 hp (45 kW)	170	A6	NEMA Type 1

1. For non-fused disconnect, change the 8<sup>th</sup> digit to a 1.
2. All horsepower and current ratings are Variable Torque (VT).

**Table 7: FP Series II IntelliDisconnect NEMA Type 3R - 230V Fused**

Code Number <sup>1</sup>	hp (kW) <sup>2</sup>	Current (A)	Frame	Enclosure Rating
YK4D8222B-00000	1 hp (0.75 kW)	4.8	C1	NEMA Type 3R
YK8D0222B-00000	2 hp (1.5 kW)	8	C1	NEMA Type 3R
YK011222B-00000	3 hp (2.2 kW)	11	C1	NEMA Type 3R
YK018222B-00000	5 hp (4 kW)	18	C1	NEMA Type 3R
YK025222B-00000	7.5 hp (5.5 kW)	25	C2	NEMA Type 3R
YK031222B-00000	10 hp (7.5 kW)	31	C2	NEMA Type 3R
YK048222B-00000	15 hp (11 kW)	48	C3	NEMA Type 3R
YK062222B-00000	20 hp (15 kW)	62	C3	NEMA Type 3R
YK075222B-00000	25 hp (18.5 kW)	75	C4	NEMA Type 3R
YK088222B-00000	30 hp (22 kW)	88	C4	NEMA Type 3R
YK140222B-00000	40 hp (37 kW)	140	C4	NEMA Type 3R
YK170222B-00000	50 hp (45 kW)	170	C6	NEMA Type 3R

1. For non-fused disconnect, change the 8<sup>th</sup> digit to a 1.
2. All horsepower and current ratings are Variable Torque (VT).

**Table 8: FP Series II IntelliDisconnect NEMA Type 1 - 480V Fused**

Code Number <sup>1</sup>	hp (kW) <sup>2</sup>	Current (A)	Frame	Enclosure Rating
YK3D4412B-00000	1 hp (1.1 kW)	3.4	A1	NEMA Type 1
YK4D8412B-00000	2 hp (1.5 kW)	4.8	A1	NEMA Type 1
YK5D6412B-00000	3 hp (2.2 kW)	5.6	A1	NEMA Type 1
YK9D6412B-00000	5 hp (4 kW)	9.6	A1	NEMA Type 1
YK012412B-00000	7.5 hp (5.5 kW)	12	A1	NEMA Type 1
YK016412B-00000	10 hp (7.5 kW)	16	A2	NEMA Type 1
YK023412B-00000	15 hp (11 kW)	23	A2	NEMA Type 1
YK031412B-00000	20 hp (15 kW)	31	A3	NEMA Type 1
YK038412B-00000	25 hp (18.5 kW)	38	A3	NEMA Type 1
YK046412B-00000	30 hp (22 kW)	46	A3	NEMA Type 1
YK061412B-00000	40 hp (30 kW)	61	A4	NEMA Type 1
YK072412B-00000	50 hp (37 kW)	72	A4	NEMA Type 1
YK087412B-00000	60 hp (45 kW)	87	A4	NEMA Type 1
YK105412B-00000	75 hp (55 kW)	105	A4	NEMA Type 1
YK140412B-00000	100 hp (75 kW)	140	A5	NEMA Type 1
YK170412B-00000	125 hp (90 kW)	170	A6	NEMA Type 1

1. For non-fused disconnect, change the 8<sup>th</sup> digit to a 1.
2. All horsepower and current ratings are Variable Torque (VT).

**Table 9: FP Series II IntelliDisconnect NEMA Type 3R - 480V Fused**

Code Number <sup>1</sup>	hp (kW) <sup>2</sup>	Current (A)	Frame	Enclosure Rating
YK3D4412B-00000	1 hp (1.1 kW)	3.4	C1	NEMA Type 3R
YK4D8412B-00000	2 hp (1.5 kW)	4.8	C1	NEMA Type 3R
YK5D6412B-00000	3 hp (2.2 kW)	5.6	C1	NEMA Type 3R
YK9D6412B-00000	5 hp (4 kW)	9.6	C1	NEMA Type 3R
YK012412B-00000	7.5 hp (5.5 kW)	12	C1	NEMA Type 3R
YK016412B-00000	10 hp (7.5 kW)	16	C2	NEMA Type 3R
YK023412B-00000	15 hp (11 kW)	23	C2	NEMA Type 3R
YK031412B-00000	20 hp (15 kW)	31	C3	NEMA Type 3R
YK038412B-00000	25 hp (18.5 kW)	38	C3	NEMA Type 3R
YK046412B-00000	30 hp (22 kW)	46	C3	NEMA Type 3R
YK061412B-00000	40 hp (30 kW)	61	C4	NEMA Type 3R
YK072412B-00000	50 hp (37 kW)	72	C4	NEMA Type 3R
YK087412B-00000	60 hp (45 kW)	87	C4	NEMA Type 3R
YK105412B-00000	75 hp (55 kW)	105	C4	NEMA Type 3R
YK140412B-00000	100 hp (75 kW)	140	C5	NEMA Type 3R
YK170412B-00000	125 hp (90 kW)	170	C6	NEMA Type 3R

1. For non-fused disconnect, change the 8<sup>th</sup> digit to a 1.
2. All horsepower and current ratings are Variable Torque (VT).

**Table 10: FP Series II IntelliPass NEMA Type 1 - 208V Fused**

Code Number <sup>1</sup>	hp (kW) <sup>2</sup>	Current (A)	Frame	Enclosure Rating
YK4D8113B-00000	1 hp (0.75 kW)	4.8	B1	NEMA Type 1
YK8D0113B-00000	2 hp (1.5 kW)	8	B1	NEMA Type 1
YK011113B-00000	3 hp (2.2 kW)	11	B1	NEMA Type 1
YK018113B-00000	5 hp (4 kW)	18	B1	NEMA Type 1
YK025113B-00000	7.5 hp (5.5 kW)	25	B2	NEMA Type 1
YK031113B-00000	10 hp (7.5 kW)	31	B2	NEMA Type 1
YK048113B-00000	15 hp (11 kW)	48	B3	NEMA Type 1
YK062113B-00000	20 hp (15 kW)	62	B3	NEMA Type 1
YK075113B-00000	25 hp (18.5 kW)	75	B4	NEMA Type 1
YK088113B-00000	30 hp (22 kW)	88	B4	NEMA Type 1
YK115113B-00000	40 hp (37 kW)	115	B4	NEMA Type 1
YK150113B-00000	50 hp (45 kW)	150	B6	NEMA Type 1

1. For non-fused disconnect, change the 8<sup>th</sup> digit to a 4.
2. All horsepower and current ratings are Variable Torque (VT).

**Table 11: FP Series II IntelliPass NEMA Type 3R - 208V Fused**

Code Number <sup>1</sup>	hp (kW) <sup>2</sup>	Current (A)	Frame	Enclosure Rating
YK4D8123B-00000	1 hp (0.75 kW)	4.8	D1	NEMA Type 3R
YK8D0123B-00000	2 hp (1.5 kW)	8	D1	NEMA Type 3R
YK011123B-00000	3 hp (2.2 kW)	11	D1	NEMA Type 3R
YK018123B-00000	5 hp (4 kW)	18	D1	NEMA Type 3R
YK025123B-00000	7.5 hp (5.5 kW)	25	D2	NEMA Type 3R
YK031123B-00000	10 hp (7.5 kW)	31	D2	NEMA Type 3R
YK048123B-00000	15 hp (11 kW)	48	D3	NEMA Type 3R
YK062123B-00000	20 hp (15 kW)	62	D3	NEMA Type 3R
YK075123B-00000	25 hp (18.5 kW)	75	D4	NEMA Type 3R
YK088123B-00000	30 hp (22 kW)	88	D4	NEMA Type 3R
YK115123B-00000	40 hp (37 kW)	115	D4	NEMA Type 3R
YK150123B-00000	50 hp (45 kW)	150	D6	NEMA Type 3R

1. For non-fused disconnect, change the 8<sup>th</sup> digit to a 4.
2. All horsepower and current ratings are Variable Torque (VT).



**Table 12: FP Series II IntelliPass NEMA Type 1 - 230V Fused**

Code Number <sup>1</sup>	hp (kW) <sup>2</sup>	Current (A)	Frame	Enclosure Rating
YK4D8213B-00000	1 hp (0.75 kW)	4.8	B1	NEMA Type 1
YK8D0213B-00000	2 hp (1.5 kW)	8	B1	NEMA Type 1
YK011213B-00000	3 hp (2.2 kW)	11	B1	NEMA Type 1
YK016213B-00000	5 hp (4 kW)	16	B1	NEMA Type 1
YK024213B-00000	7.5 hp (5.5 kW)	24	B2	NEMA Type 1
YK031213B-00000	10 hp (7.5 kW)	31	B2	NEMA Type 1
YK048213B-00000	15 hp (11 kW)	48	B3	NEMA Type 1
YK062213B-00000	20 hp (15 kW)	62	B3	NEMA Type 1
YK070213B-00000	25 hp (18.5 kW)	70	B4	NEMA Type 1
YK088213B-00000	30 hp (22 kW)	88	B4	NEMA Type 1
YK115213B-00000	40 hp (37 kW)	115	B4	NEMA Type 1
YK150213B-00000	50 hp (45 kW)	150	B6	NEMA Type 1

1. For non-fused disconnect, change the 8<sup>th</sup> digit to a 4.
2. All horsepower and current ratings are Variable Torque (VT).

**Table 13: FP Series II IntelliPass NEMA Type 3R - 230V Fused**

Code Number <sup>1</sup>	hp (kW) <sup>2</sup>	Current (A)	Frame	Enclosure Rating
YK4D8223B-00000	1 hp (0.75 kW)	4.8	D1	NEMA Type 3R
YK8D0223B-00000	2 hp (1.5 kW)	8	D1	NEMA Type 3R
YK011223B-00000	3 hp (2.2 kW)	11	D1	NEMA Type 3R
YK016223B-00000	5 hp (4 kW)	16	D1	NEMA Type 3R
YK024223B-00000	7.5 hp (5.5 kW)	24	D2	NEMA Type 3R
YK031223B-00000	10 hp (7.5 kW)	31	D2	NEMA Type 3R
YK048223B-00000	15 hp (11 kW)	48	D3	NEMA Type 3R
YK062223B-00000	20 hp (15 kW)	62	D3	NEMA Type 3R
YK070223B-00000	25 hp (18.5 kW)	70	D4	NEMA Type 3R
YK088223B-00000	30 hp (22 kW)	88	D4	NEMA Type 3R
YK115223B-00000	40 hp (37 kW)	115	D4	NEMA Type 3R
YK150223B-00000	50 hp (45 kW)	150	D6	NEMA Type 3R

1. For non-fused disconnect, change the 8<sup>th</sup> digit to a 4.
2. All horsepower and current ratings are Variable Torque (VT).

**Table 14: FP Series II IntelliPass NEMA Type 1 - 480V Fused**

Code Number <sup>1</sup>	hp (kW) <sup>2</sup>	Current (A)	Frame	Enclosure Rating
YK2D4413B-00000	1 hp (1.1 kW)	2.4	B1	NEMA Type 1
YK4D0413B-00000	2 hp (1.5 kW)	4	B1	NEMA Type 1
YK5D6413B-00000	3 hp (2.2 kW)	5.6	B1	NEMA Type 1
YK9D0413B-00000	5 hp (4 kW)	9	B1	NEMA Type 1
YK012413B-00000	7.5 hp (5.5 kW)	12	B1	NEMA Type 1
YK016413B-00000	10 hp (7.5 kW)	16	B2	NEMA Type 1
YK023413B-00000	15 hp (11 kW)	23	B2	NEMA Type 1
YK031413B-00000	20 hp (15 kW)	31	B3	NEMA Type 1
YK038413B-00000	25 hp (18.5 kW)	38	B3	NEMA Type 1
YK046413B-00000	30 hp (22 kW)	46	B3	NEMA Type 1
YK061413B-00000	40 hp (30 kW)	61	B4	NEMA Type 1
YK070413B-00000	50 hp (37 kW)	70	B4	NEMA Type 1
YK080413B-00000	60 hp (45 kW)	80	B4	NEMA Type 1
YK105413B-00000	75 hp (55 kW)	105	B4	NEMA Type 1
YK140413B-00000	100 hp (75 kW)	140	B5	NEMA Type 1
YK170413B-00000	125 hp (90 kW)	170	B6	NEMA Type 1

1. For non-fused disconnect, change the 8<sup>th</sup> digit to a 4.
2. All horsepower and current ratings are Variable Torque (VT).

**Table 15: FP Series II IntelliPass NEMA Type 3R - 480V Fused**

Code Number <sup>1</sup>	hp (kW) <sup>2</sup>	Current (A)	Frame	Enclosure Rating
YK2D4423B-00000	1 hp (1.1 kW)	2.4	D1	NEMA Type 3R
YK4D0423B-00000	2 hp (1.5 kW)	4	D1	NEMA Type 3R
YK5D6423B-00000	3 hp (2.2 kW)	5.6	D1	NEMA Type 3R
YK9D0423B-00000	5 hp (4 kW)	9	D1	NEMA Type 3R
YK012423B-00000	7.5 hp (5.5 kW)	12	D1	NEMA Type 3R
YK016423B-00000	10 hp (7.5 kW)	16	D2	NEMA Type 3R
YK023423B-00000	15 hp (11 kW)	23	D2	NEMA Type 3R
YK031423B-00000	20 hp (15 kW)	31	D3	NEMA Type 3R
YK038423B-00000	25 hp (18.5 kW)	38	D3	NEMA Type 3R
YK046423B-00000	30 hp (22 kW)	46	D3	NEMA Type 3R
YK061423B-00000	40 hp (30 kW)	61	D4	NEMA Type 3R
YK070423B-00000	50 hp (37 kW)	70	D4	NEMA Type 3R
YK080423B-00000	60 hp (45 kW)	80	D4	NEMA Type 3R
YK105423B-00000	75 hp (55 kW)	105	D4	NEMA Type 3R
YK140423B-00000	100 hp (75 kW)	140	D5	NEMA Type 3R
YK170423B-00000	125 hp (90 kW)	170	D6	NEMA Type 3R

1. For non-fused disconnect, change the 8<sup>th</sup> digit to a 4.
2. All horsepower and current ratings are Variable Torque (VT).

## FP Series II Drives Options

The following options are available for the FP Series II Drives when ordering from the factory.

**Table 16: FP Series II Options**

Option Number	Description
-00000	N2 and BACnet Com
-S0000	N2 and BACnet Com, SA Bus Communication Card Installed

## FP Series II Spare Parts and Options

The following spare parts and accessories are available for the FP Series II drives.

**Note:** These parts are ordered separately from the drive.

**Table 17: FP Series II Spare Parts & Accessories**

Code Number	Description
VS-RMT-KEYPAD2	Series II Remote Keypad Kit
VS-KEYPAD-SER2	Series II Graphic Bypass HOA (Hand-Off-Auto) Keypad
VS-REM-USB-LOAD	USB to RJ-45 Cable with Software Driver
VS-XXM-K9-FS4-5	Auxiliary Contacts - Quantity 2 (Frames 4 and 5 Bypass and Drive Output Contactors)
VS-XXM-K9-FS6-9	Auxiliary Contacts - Quantity 2 (Frames 6, 7, 8, and 9 Bypass and Drive Output Contactors)

The FP Series II drives can accommodate a wide selection of expander and adapter option boards to customize the drive for your application needs.

**Table 18: FP Series II Option Cards**

Option Type	Description	Allowed Slot Locations	Option Number
Extended I/O Cards	6 Digital Outputs (DI) or Digital Outputs (DO), 1 ext +24 V DC/EXT +24V DC Programmable	D, E	VS-XXM-B1
	1 Relay Output (RO) Normally Closed/Normally Open(NC/NO); 1 RO (NO); 1 Thermistor	D,E	VS-XXM-B2
	1 AI (mA Isolated); 2 AO (mA Isolated)	D, E	VS-XXM-B4
	Card - 3 Relay Dry Contact	D, E	VS-XXM-B5
	1 RO (NO), 5 Digital Inputs (DI) 42 to 240V AC Input	D, E	VS-XXM-B9
	Expander IO - 1*AO, 1*DO, 1*RO	D, E	VS-XXM-BF
Communication Cards	Johnson Controls SA Bus Com	D, E	VS-XXM-CS
	LONWORKS® Network	D, E	VS-XXM-C4
I/O Option Cards	3 Relay (Spare /Replacement Part Only - Not an Option with Standard VSD)	B	VS-XXM-F1
	2 Relay and 1 Thermistor – Replaces standard Relay board in Slot B	B	VS-XXM-F2

## Dimensions

See the table below and following pages for exterior dimensions of the FP Series II drives. Find the desired configuration based on horsepower, voltage, and options. For sizing purposes, the drives are categorized by style and VSD frame size. For example, A1-4 is an A1 Enclosure Size and a Frame 4 VSD.

**Table 19: FP Series II Micro Drives Selection Table**

HP	208-230V	380-480V
0.5	M1-1	M1-1
0.75	M1-2	M1-1
1	M1-2	M1-1
1.5	M1-2	M1-2
2	-	M1-2

**Table 20: FP Series II Drives Selection Table**

HP	208 / 230V		460V	
	Type 1 Disconnect	Type 1 Bypass	Type 1 Disconnect	Type 1 Bypass
1	A1-4	B1-4	A1-4	B1-4
2	A1-4	B1-4	A1-4	B1-4
3	A1-4	B1-4	A1-4	B1-4
5	A1-5	B1-5	A1-4	B1-4
7.5	A2-5	B2-5	A1-4	B1-4
10	A2-5	B2-5	A2-5	B2-5
15	A3-6	B3-6	A2-5	B2-5
20	A3-6	B3-6	A3-5	B3-5
25	A4-7	B4-7	A3-6	B3-6
30	A4-7	B4-7	A3-6	B3-6
40	A4-8	B4-8	A4-6	B4-6
50	A6-8	B6-8	A4-7	B4-7
60	-	-	A4-7	B4-7
75	-	-	A4-7	B4-7
100	-	-	A5-8	B5-8
125	-	-	A6-8	B6-8

## FP Series II Micro Drive with Disconnect NEMA Type 1 Dimensions

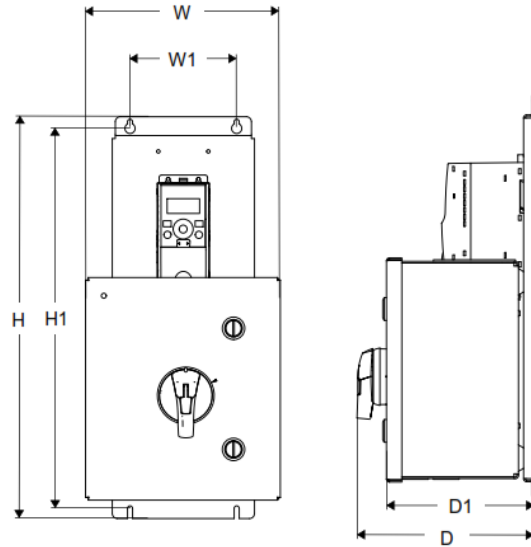


Figure 2: Micro Drive with Disconnect NEMA Type 1 Drawings

Table 21: Micro Drive with Disconnect NEAM Type 1 Dimensions

Configuration	Dimensions, in. (mm), approximate						Approximate Weights, lb (kg)
	H	H1	W	W1	D	D1	
M1-1	19.78 (502.4)	19.03 (483.4)	9.59 (243.6)	5.25 (133.4)	8.61 (218.7)	7.19 (182.6)	13.9 (6.3)
M1-2	19.78 (502.4)	19.03 (483.4)	9.59 (243.6)	5.25 (133.4)	8.61 (218.7)	7.19 (182.6)	15.4 (7.0)

## FP Series II IntelliDisconnect NEMA Type 1

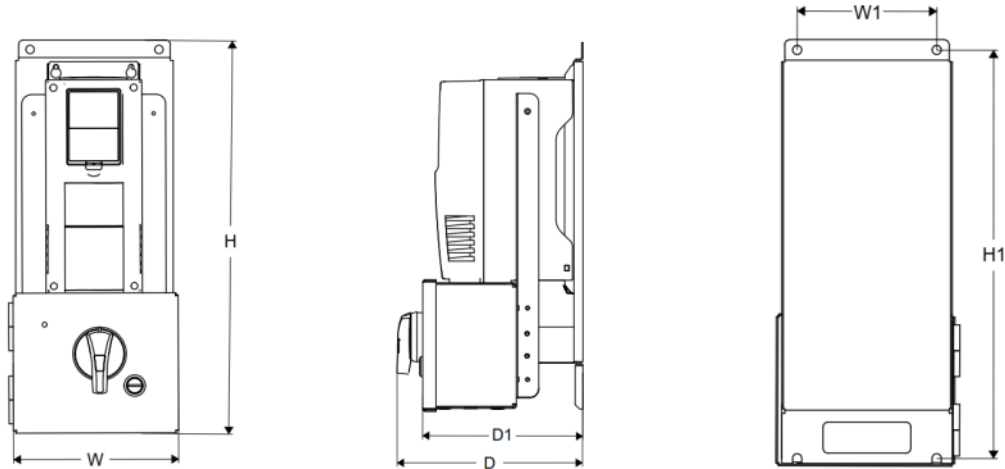


Figure 3: IntelliDisconnect NEMA Type 1 Drawings

Table 22: IntelliDisconnect NEMA Type 1 Dimensions

Configuration	Dimensions, in. (mm), approximate						Approximate Weights, lb (kg)
	H	H1	W	W1	D	D1	
A1-4	20.61 (523.5)	19.75 (501.7)	8.65 (219.7)	6.75 (171.5)	10.4 (264.2)	8.96 (227.6)	34 (15.4)
A1-5	30 (762)	29 (736.6)	8.65 (219.7)	6.75 (171.5)	11.18 (284)	9.74 (247.4)	54 (24.5)
A2-5	30 (762)	29 (736.6)	8.65 (219.7)	6.75 (171.5)	11.18 (284)	9.74 (247.4)	54 (24.5)
A3-5	20.61 (523.5)	19.75 (501.7)	8.65 (219.7)	6.75 (171.5)	10.4 (264.2)	8.96 (227.6)	54 (24.5)
A3-6	32.5 (825.5)	31.5 (800.1)	10.4 (264.2)	7.5 (190.5)	11.41 (289.8)	9.97 (253.2)	101 (45.8)
A4-6	41.03 (1042.2)	39.5 (1003.3)	12.4 (315)	10.5 (266.7)	13.67 (347.2)	11.97 (304)	113 (51.3)
A4-7	41.55 (1055.4)	39.5 (1003.3)	12.4 (315)	10.5 (266.7)	13.94 (354.1)	12.25 (311.2)	200 (90.7)
A4-8	44.04 (1118.6)	39.5 (1003.3)	12 (304.8)	10.5 (266.7)	15.86 (402.8)	14.17 (359.9)	363 (164.7)
A5-8	44.05 (1118.9)	42.06 (1068.3)	12 (304.8)	10.5 (266.7)	15.86 (402.8)	14.17 (359.9)	363 (164.7)
A6-8	47.65 (1210.3)	46.5 (1181.1)	16 (406.4)	14.5 (368.3)	15.86 (402.8)	14.17 (359.9)	363 (164.7)

## FP Series II Intellipass NEMA Type 1

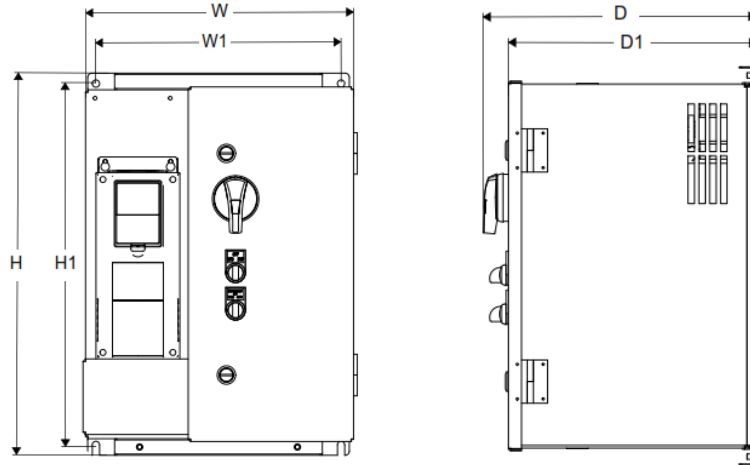


Figure 4: Intellipass NEMA Type 1 Drawings

Table 23: Intellipass NEMA Type 1 Dimensions

Configuration	Dimensions, in. (mm), approximate						Approximate Weights, lb (kg)
	H	H1	W	W1	D	D1	
<b>B1-4</b>	23 (584.2)	21.75 (552.5)	16.28 (413.5)	14.75 (374.7)	15.7 (398.8)	14.26 (362.2)	64 (29.0)
<b>B1-5</b>	23 (584.2)	21.75 (552.5)	16.28 (413.5)	14.75 (374.7)	15.7 (398.8)	14.26 (362.2)	88 (39.9)
<b>B2-5</b>	30 (762)	29 (736.6)	16.28 (413.5)	14.75 (374.7)	15.7 (398.8)	14.26 (362.2)	88 (39.9)
<b>B3-5</b>	31.5 (800.1)	30.5 (774.7)	19.13 (485.9)	17.75 (450.9)	15.7 (398.8)	14.26 (362.2)	88 (39.9)
<b>B3-6</b>	31.5 (800.1)	30.5 (774.7)	19.13 (485.9)	17.75 (450.9)	15.7 (398.8)	14.26 (362.2)	145 (65.8)
<b>B4-6</b>	39.5 (1003.3)	38.25 (971.6)	30.13 (765.3)	28.75 (730.3)	17.42 (442.5)	15.73 (399.5)	158 (71.7)
<b>B4-7</b>	42.75 (1085.9)	38.25 (971.6)	30.13 (765.3)	28.75 (730.3)	17.42 (442.5)	15.73 (399.5)	262 (118.8)
<b>B4-8</b>	42.9 (1089.7)	38.25 (971.6)	30.13 (765.3)	28.75 (730.3)	17.42 (442.5)	15.73 (399.5)	455 (206.4)
<b>B5-8</b>	44 (1117.6)	42.75 (1085.9)	33.13 (841.5)	31.75 (806.5)	17.42 (442.5)	15.73 (399.5)	455 (206.4)
<b>B6-8</b>	44 (1117.6)	42.75 (1085.9)	33.13 (841.5)	31.75 (806.5)	17.42 (442.5)	15.73 (399.5)	455 (206.4)

# Wiring

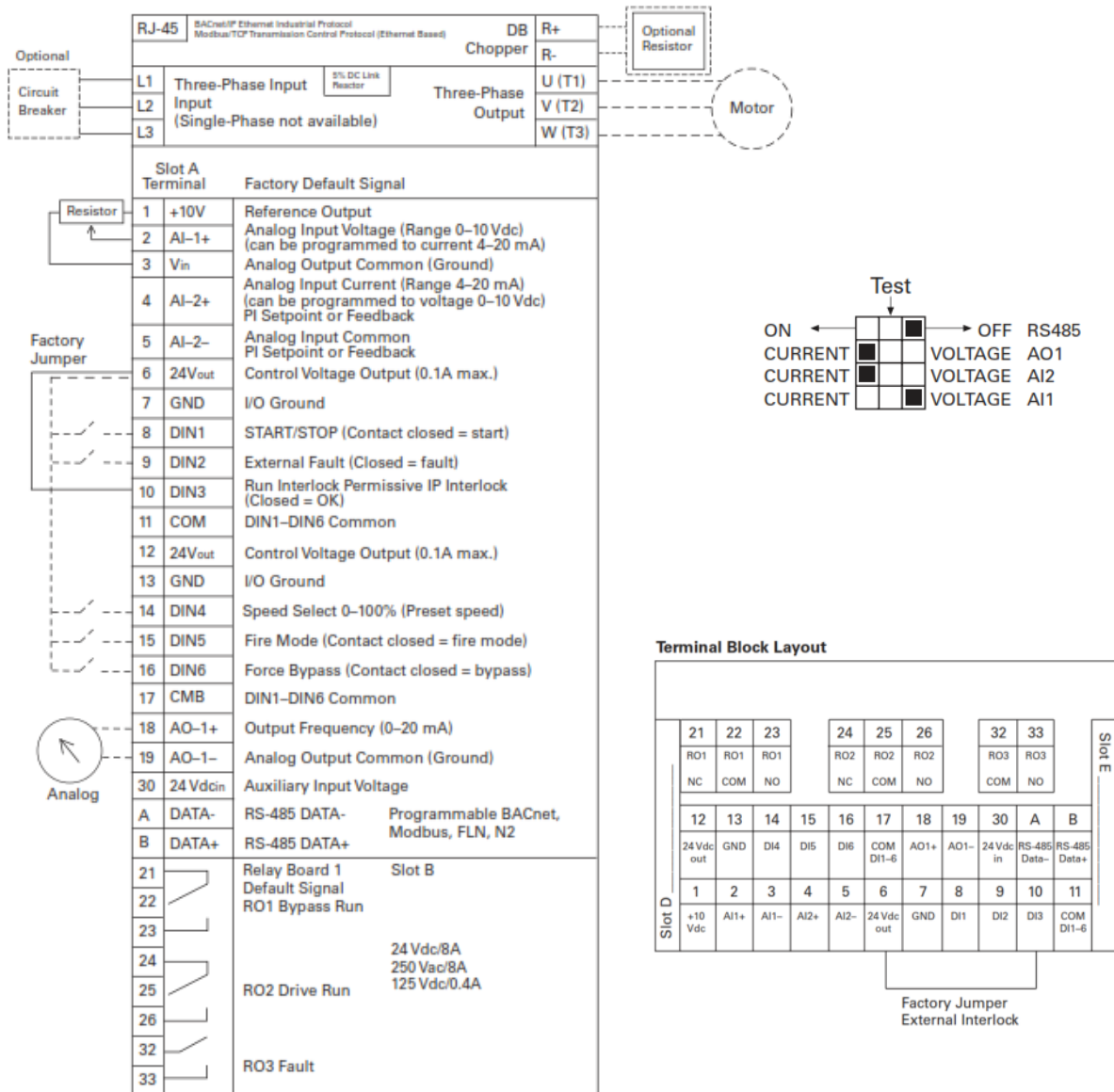


Figure 5: VSD FP Series II Base Drive Circuit Diagram



## Technical Specifications

### JC-VSD FP Series II Drives (Part 1 of 2)

<b>Input Voltage (<math>V_{in}</math>)</b>	208, 230, 480 VAC, -10%/+10%
<b>Input Frequency (<math>f_{in}</math>)</b>	50/60 Hz (Variation Up to 47-66 Hz)
<b>Connection to Power</b>	Once Per Minute or Less (Typical Operation)
<b>Current Withstand Rating</b>	15 kAIC
<b>Output Voltage</b>	0 to $V_{in}$ Line Voltage In
<b>Continuous Output Current</b>	Ambient Temperature Maximum 104°F (40°C), Overload 1.1 x $I_L$ (1 min./10 min.)
<b>Overload Current</b>	110% (1 min./10 min.)
<b>Initial Output Current</b>	150% for 2 Seconds
<b>Output Frequency</b>	-320 to 320 Hz
<b>Frequency Resolution</b>	0.01 Hz
<b>Control Method</b>	Frequency Control (V/f) Open Loop Sensorless Vector Control
<b>Switching Frequency</b>	1.5 to 10 kHz; default = 6 kHz
<b>Frequency Reference</b>	Analog Input: Resolution 0.1% (10 bit), Accuracy +/-1% Panel Reference: Resolution 0.01 Hz
<b>Field Weakening Point</b>	8 to 320 Hz
<b>Acceleration Time</b>	0.1 to 3,000 s
<b>Deceleration Time</b>	0.1 to 3,000 s
<b>Braking Torque</b>	DC Brake: 30% x $T_n$ (without Brake Option)
<b>Ambient Operating Temperature</b>	14 (No Frost) to 104°F (-10 to 40°C), De-rating to operate at 122°F (50°C)
<b>Storage Temperature</b>	-40 to 158°F (-40 to 70°C)
<b>Relative Humidity</b>	0 to 95% RH, Noncondensing, Noncorrosive, No Dripping Water
<b>Air Quality</b>	Chemical Vapors: IEC 60721-3-3, Unit In Operation, Class 3C2; Mechanical Particles: IEC 60721-3-3, Unit In Operation, Class 3S2
<b>Altitude</b>	100% Load Capacity (No Derating) Up to 3,280 ft (1,000 m); 1% Derating for Each 328 ft (100 m) Above 3,280 ft (1,000 m); Maximum 9,842 ft (3,000 m)
<b>Vibration</b>	EN 61800-5-1, EN 60068-2-6; 5 to 150 Hz, Displacement Amplitude 1 mm (Peak) at 5 to 15.8 Hz, Max. Acceleration Amplitude 1 G at 15.8 to 150 Hz, OSHPD Seismic Certified
<b>Shock</b>	EN 61800-5-1, EN 60068-2-27 United Parcel Service® (UPS) Drop Test (for Applicable UPS Weights) Storage and Shipping: max. 15 G, 11 ms (in package)
<b>Enclosure Class</b>	NEMA Type 1 or NEMA Type 3R
<b>EMC (at default settings)</b>	Immunity: Fulfills all Electromagnetic Compatibility (EMC) Immunity Requirements; Emissions: EN 61800-3 (2004), LEVEL H (EMC C2)
<b>Emissions</b>	EMC Level Dependent: +EMC 2: EN 61800-3 (2004) Category C2, Delivered with Class C2 EMC Filtering as Default
<b>Analog Input Voltage</b>	0 to 10 V, R = 200 kOhms Differential Resolution 0.1%; Accuracy ±1%, Dip Switch Selection (Voltage/Current)

## JC-VSD FP Series II Drives (Part 2 of 2)

<b>Analog Input Current</b>	0 (4) to 20 mA; $R_i$ - 250 Ohms Differential	
<b>Digital Inputs (6)</b>	Positive or Negative Logic; 18 to 30 VDC	
<b>Auxiliary Voltage</b>	24 V $\pm$ 10%, Maximum 100 mA	
<b>Output Reference Voltage</b>	10 V +3%, Maximum Load 10 mA	
<b>Analog Output</b>	0 to 10 V, 0 (4) to 20 mA; $R_L$ max. 500 Ohms; Resolution 10 bit; Accuracy $\pm$ 2%, Dip Switch Selection (Voltage/Current)	
<b>Relay Outputs</b>	3 Programmable, 2 Form C, 1 Form A Relay Outputs, Switching Capacity: 24 VDC/8 A, 250 VAC/8 A, 125 VDC/0.4 A	
<b>Hard-Wired Jumper</b>	Between Terminal 6 and 10 (Factory Default)	
<b>Dip Switch Setting Default</b>	RS485 = Off AO1 = Current AI2 = Current AI1 = Voltage	
<b>Overcurrent Protection</b>	Yes	
<b>Overvoltage Protection</b>	Yes	
<b>DC Bus Regulation Anti-trip</b>	Yes (Accelerates or Decelerates the Load)	
<b>Undervoltage Protection</b>	Yes	
<b>Earth Fault Protection</b>	Yes, in case of earth fault in motor or motor cable, only the frequency converter is protected.	
<b>Input Phase Supervision</b>	Yes, trips if any of the input phases are missing	
<b>Motor Phase Supervision</b>	Yes, trips if any of the output phases are missing	
<b>Overtemperature Protection</b>	Yes	
<b>Motor Overload Protection</b>	Yes	
<b>Motor Stall Protection</b>	Yes	
<b>Motor Underload Protection</b>	Yes	
<b>Short Circuit Protection</b>	Yes	
<b>Surge Protection</b>	Yes (Varistor Input)	
<b>Conformed Coated (Varnished) Board</b>	Yes (Prevents Corrosion)	
<b>OHSPD Special Seismic Certification Pre-Approval</b>	Yes	
<b>Compliance</b>	UL Listed File No 508C; cUL Listed Safety – EN 61800-5-1 (2007)	
<b>Warranty</b>	30 Months Standard Terms; 39 Months with Certified Startup	
<b>Reliability</b>	500,000 Hours Mean Time Between Failures (MTBF)	
<b>Weight</b>	See dimensions section	
<b>Horsepower/Amperes/ Kilowatts</b>	208V	1 to 50 Hp, 4.8 to 170 Amps, 0.75 to 45 kW
	230V	1 to 50 Hp, 4.8 to 170 Amps, 0.75 to 45 kW
	200-240V	0.5 to 1.5 Hp, 2.8 to 7.0 Amps, 0.37 to 1.1 kW
	380-480V	0.5 to 2 Hp, 1.3 to 4.3 Amps, 0.37 to 1.5 kW
	460V	1 to 125 Hp, 3.4 to 170 Amps, 1.1 to 90 kW



**Building Efficiency**

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