

# VSD Series II Variable Speed Open Drives

## Product Bulletin

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The Johnson Controls® VSD Series II Variable Speed Open Drives, powered by Eaton® technology, are specifically engineered for HVAC, pump, and fluid control applications. The ultra-efficient DC capacitor and power structure allows the drives to consume less energy, lowering greenhouse gases.

The I/O configuration is designed with wiring ergonomics in mind by including removable terminal blocks. The main, easily removable, control board used for all drive frames with six digital IN, two analog IN, one analog OUT, three relay OUT, and two expansion slots for I/O or communication boards. In addition, the control board has built-in RS-485 and Ethernet communication.

These drives continue the tradition of robust performance and raise the bar on features and functionality, ensuring the best solution at the right price.

VSD Series II Variable Speed Open Drives are selected using VSD Series II code numbers and standard Johnson Controls order entry tools.



Figure 1: VSD Series II Open Drive

Table 1: VSD Series II Open Drive Features and Benefits

Features	Benefits
Patented Active Energy Control Algorithm	Achieves an additional 2% to 8% energy savings when compared to competitive products.
HAND/OFF/AUTO and DRIVE/BYPASS Selector on Keypad	Simplifies control.
Copy/Paste Function	Allows the transfer of parameter settings from one drive to the next.
Versatile Keypad	Displays up to nine monitored parameters simultaneously.
EMI/RFI Filters Standard on All Drives (Frame 4 though Frame 9)	Meet EMC Category 2 requirements.
Motor Overload, Underload, and Stall Protections	Protect against premature motor failure.
BACnet® MS/TP, BACnet IP, Modbus®, and N2 Network Protocols	Provide a wide variety of communication protocols to meet the needs of many applications.

## Additional VSD Series II Open Drive Features

- Integrated DC link choke standard on drives from frame 4 through frame 9
- Anti-trip DC bus regulation
- Input surge protection against voltage spikes varistor input
- Additional I/O and communication cards provide plug-and-play functionality
- Remote mount keypad kit available
- NEMA Type 1 and NEMA Type 12 available
- Real-time clock with PLC functionality
- Two independent PID functions
- On-screen troubleshooting diagnostics with embedded manual assistance
- Onboard RS-485 (BACnet, N2, Modbus)
- Onboard Ethernet-based communications (BACnet/IP, Modbus/TCP)
- Standard NEMA Type 12 keypad on all drives
- Quickstart wizard built into programming of drive ensures a smooth startup
- I/O connections with simple quick connection terminals
- Control logic can be powered from an external 24V power supply to simulate internal drive functions and fieldbus, if necessary, used for testing and software downloads
- Standard I/O, 6DI, 2AI, 1AO 2 Form C RO (NO/NC), 1 Form A RO (NO)
- Hard-wired external/damper interlock

**IMPORTANT:** Use this VSD Series II Variable Speed Open 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.

## Onboard Network Communication

### **Metasys® System**

Each VSD Series II Variable Speed Open Drive provides communication between the drive and a Johnson Controls Metasys N2 network. With this connection, the drives can be controlled, monitored and programmed from the Metasys system. N2 can be selected and programmed by the drive keypad.

### **BACnet**

The VSD Series II Variable Speed Open Drives provide communication to BACnet® networks. Data transfer is master-slave/token passing (MS/TP) RS-485.

### **BACnet IP**

100 base T interface

### **Modbus TCP**

Ethernet-based protocol

### **Modbus RTU**

Each VSD Series II Variable Speed Open Drives provide communication to Modbus RTU RS-485 as a slave on a Modbus network. Other communication parameters include an address range from 1 – 247; a parity of None, Odd or Even; and the stop bit is 1.

**Table 2: VSD Series II Open Drives Selection Chart**

	Code Number	V	S				0	0	A	—	0	0	0	0	0
<b>Base Product</b>	VS = Series II Variable Speed Open Drive prefix														
<b>Amps/hp/kW</b>	3D4 = 3.4 A, 1.5 hp, 1.1 kW <sup>1</sup> 3D7 = 3.7 A, 3/4 hp, 0.55 kW <sup>2</sup> 4D8 = 4.8 A, 1 hp, 1.1 kW <sup>1</sup> 4D8 = 4.8 A, 2 hp, 1.5 kW <sup>2</sup> 5D6 = 5.6 A, 3 hp, 2.2 kW <sup>2</sup> 6D6 = 6.6 A, 1.5 hp, 1.1 kW <sup>1</sup> 8D0 = 8 A, 2 hp, 1.5 kW <sup>1</sup> 8D0 = 8 A, 4 hp, 3 kW <sup>2</sup> 011 = 11 A, 3 hp, 2.2 kW <sup>1</sup> 012 = 12 A, 4 hp, 3 kW <sup>1</sup> 012 = 12 A, 7.5 hp, 5.5 kW <sup>2</sup> 016 = 16 A, 10 hp, 7.5 kW <sup>2</sup> 018 = 18 A, 5 hp, 4 kW <sup>1</sup> 023 = 23 A, 15 hp, 11 kW <sup>2</sup> 024 = 24 A, 7.5 hp, 5.5 kW <sup>1</sup> 031 = 31 A, 10 hp, 7.5 kW <sup>1</sup> 031 = 31 A, 20 hp, 15 kW <sup>2</sup> 038 = 38 A, 25 hp, 18.5 kW <sup>2</sup> 046 = 46 A, 30 hp, 22 kW <sup>2</sup> 048 = 48 A, 15 hp, 11 kW <sup>1</sup> 061 = 61 A, 40 hp, 30 kW <sup>2</sup> 062 = 62 A, 20 hp, 15 kW <sup>1</sup> 072 = 72 A, 50 hp, 37 kW <sup>2</sup> 075 = 75 A, 25 hp, 18.5 kW <sup>1</sup> 087 = 87 A, 60 hp, 45 kW <sup>2</sup> 088 = 88 A, 30 hp, 22 kW <sup>1</sup> 105 = 105 A, 40 hp, 30 kW <sup>1</sup> 105 = 105 A, 75 hp, 55 kW <sup>2</sup> 140 = 140 A, 50 hp, 37 kW <sup>1</sup> 140 = 140 A, 100 hp, 75 kW <sup>2</sup> 170 = 170 A, 60 hp, 45 kW <sup>1</sup> 170 = 170 A, 125 hp, 90 kW <sup>2</sup> 205 = 205 A, 75 hp, 55 kW <sup>1</sup> 205 = 205 A, 150 hp, 110 kW <sup>2</sup> 261 = 261 A, 100 hp, 75 kW <sup>1</sup> 261 = 261 A, 200 hp, 132 kW <sup>2</sup> 310 = 310 A, 125 hp, 90 kW <sup>1</sup> 310 = 310 A, 250 hp, 160 kW <sup>2</sup>														
<b>Voltage</b>	2 = 230 V 4 = 480 V														
<b>Enclosure Rating</b>	1 = NEMA Type 1 (IP21) 2 = NEMA Type 12 (IP54)														
<b>Drive Style</b>	0 = None (Open Drive)														
<b>Revision #</b>	B = Rev. 2 (Americas) D = Rev. 2 (Canada)														
<b>Separator (—)</b>															
<b>Communications</b>	0 = STD (BACnet/Legacy N2/Modbus) S = SA Bus, CS Card (added to JC-VSD) L = LONWORKS® Network, C4 Card (added) <sup>3</sup>														
<b>Options</b>	00 = None														

1. 208 – 240 Volts 3-phase.
2. 380 – 480 Volts 3-phase.
3. Contact your local Johnson Controls representative for product availability.

**Table 3: VSD Series II 208/230 V Open Drives - Frame 4**

<b>Code Number</b>	<b>Description<sup>1</sup></b>	<b>Current (A)<sup>1</sup></b>
<b>VS3D7210B-00000</b>	VSD Series II, 3/4 hp (0.55 kW), 208 – 230 VAC, Type 1	3.7
<b>VS3D7210B-S0000</b>	VSD Series II, 3/4 hp (0.55 kW), 208 – 230 VAC, Type 1, SA Bus	3.7
<b>VS3D7210B-L0000</b>	VSD Series II, 3/4 hp (0.55 kW), 208 – 230 VAC, Type 1, LON	3.7
<b>VS3D7220B-00000</b>	VSD Series II, 3/4 hp (0.55 kW), 208 – 230 VAC, Type 12	3.7
<b>VS3D7220B-S0000</b>	VSD Series II, 3/4 hp (0.55 kW), 208 – 230 VAC, Type 12, SA Bus	3.7
<b>VS3D7220B-L0000</b>	VSD Series II, 3/4 hp (0.55 kW), 208 – 230 VAC, Type 12, LON	3.7
<b>VS4D8210B-00000</b>	VSD Series II, 1 hp (1.1 kW), 208 – 230 VAC, Type 1	4.8
<b>VS4D8210B-S0000</b>	VSD Series II, 1 hp (1.1 kW), 208 – 230 VAC, Type 1, SA Bus	4.8
<b>VS4D8210B-L0000</b>	VSD Series II, 1 hp (1.1 kW), 208 – 230 VAC, Type 1, LON	4.8
<b>VS4D8220B-00000</b>	VSD Series II, 1 hp (1.1 kW), 208 – 230 VAC, Type 12	4.8
<b>VS4D8220B-S0000</b>	VSD Series II, 1 hp (1.1 kW), 208 – 230 VAC, Type 12, SA Bus	4.8
<b>VS4D8220B-L0000</b>	VSD Series II, 1 hp (1.1 kW), 208 – 230 VAC, Type 12, LON	4.8
<b>VS6D6210B-00000</b>	VSD Series II, 1.5 hp (1.1 kW), 208 – 230 VAC, Type 1	6.6
<b>VS6D6210B-S0000</b>	VSD Series II, 1.5 hp (1.1 kW), 208 – 230 VAC, Type 1, SA Bus	6.6
<b>VS6D6210B-L0000</b>	VSD Series II, 1.5 hp (1.1 kW), 208 – 230 VAC, Type 1, LON	6.6
<b>VS6D6220B-00000</b>	VSD Series II, 1.5 hp (1.1 kW), 208 – 230 VAC, Type 12	6.6
<b>VS6D6220B-S0000</b>	VSD Series II, 1.5 hp (1.1 kW), 208 – 230 VAC, Type 12, SA Bus	6.6
<b>VS6D6220B-L0000</b>	VSD Series II, 1.5 hp (1.1 kW), 208 – 230 VAC, Type 12, LON	6.6
<b>VS8D0210B-00000</b>	VSD Series II, 2 hp (1.5 kW), 208 – 230 VAC, Type 1	8
<b>VS8D0210B-S0000</b>	VSD Series II, 2 hp (1.5 kW), 208 – 230 VAC, Type 1, SA Bus	8
<b>VS8D0210B-L0000</b>	VSD Series II, 2 hp (1.5 kW), 208 – 230 VAC, Type 1, LON	8
<b>VS8D0220B-00000</b>	VSD Series II, 2 hp (1.5 kW), 208 – 230 VAC, Type 12	8
<b>VS8D0220B-S0000</b>	VSD Series II, 2 hp (1.5 kW), 208 – 230 VAC, Type 12, SA Bus	8
<b>VS8D0220B-L0000</b>	VSD Series II, 2 hp (1.5 kW), 208 – 230 VAC, Type 12, LON	8
<b>VS011210B-00000</b>	VSD Series II, 3 hp (2.2 kW), 208 – 230 VAC, Type 1	11
<b>VS011210B-S0000</b>	VSD Series II, 3 hp (2.2 kW), 208 – 230 VAC, Type 1, SA Bus	11
<b>VS011210B-L0000</b>	VSD Series II, 3 hp (2.2 kW), 208 – 230 VAC, Type 1, LON	11
<b>VS011220B-00000</b>	VSD Series II, 3 hp (2.2 kW), 208 – 230 VAC, Type 12	11
<b>VS011220B-S0000</b>	VSD Series II, 3 hp (2.2 kW), 208 – 230 VAC, Type 12, SA Bus	11
<b>VS011220B-L0000</b>	VSD Series II, 3 hp (2.2 kW), 208 – 230 VAC, Type 12, LON	11
<b>VS012210B-00000</b>	VSD Series II, 4 hp (3 kW), 208 – 230 VAC, Type 1	12
<b>VS012210B-S0000</b>	VSD Series II, 4 hp (3 kW), 208 – 230 VAC, Type 1, SA Bus	12
<b>VS012210B-L0000</b>	VSD Series II, 4 hp (3 kW), 208 – 230 VAC, Type 1, LON	12
<b>VS012220B-00000</b>	VSD Series II, 4 hp (3 kW), 208 – 230 VAC, Type 12	12
<b>VS012220B-S0000</b>	VSD Series II, 4 hp (3 kW), 208 – 230 VAC, Type 12, SA Bus	12
<b>VS012220B-L0000</b>	VSD Series II, 4 hp (3 kW), 208 – 230 VAC, Type 12, LON	12

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

**Table 4: VSD Series II 208/230 V Open Drives - Frame 5**

<b>Code Number</b>	<b>Description<sup>1</sup></b>	<b>Current (A)<sup>1</sup></b>
<b>VS018210B-00000</b>	VSD Series II, 5 hp (4 kW), 208 – 230 VAC, Type 1	18
<b>VS018210B-S0000</b>	VSD Series II, 5 hp (4 kW), 208 – 230 VAC, Type 1, SA Bus	18
<b>VS018210B-L0000</b>	VSD Series II, 5 hp (4 kW), 208 – 230 VAC, Type 1, LON	18
<b>VS018220B-00000</b>	VSD Series II, 5 hp (4 kW), 208 – 230 VAC, Type 12	18
<b>VS018220B-S0000</b>	VSD Series II, 5 hp (4 kW), 208 – 230 VAC, Type 12, SA Bus	18
<b>VS018220B-L0000</b>	VSD Series II, 5 hp (4 kW), 208 – 230 VAC, Type 12, LON	18
<b>VS024210B-00000</b>	VSD Series II, 7.5 hp (5.5 kW), 208 – 230 VAC, Type 1	24
<b>VS024210B-S0000</b>	VSD Series II, 7.5 hp (5.5 kW), 208 – 230 VAC, Type 1, SA Bus	24
<b>VS024210B-L0000</b>	VSD Series II, 7.5 hp (5.5 kW), 208 – 230 VAC, Type 1, LON	24
<b>VS024220B-00000</b>	VSD Series II, 7.5 hp (5.5 kW), 208 – 230 VAC, Type 12	24
<b>VS024220B-S0000</b>	VSD Series II, 7.5 hp (5.5 kW), 208 – 230 VAC, Type 12, SA Bus	24
<b>VS024220B-L0000</b>	VSD Series II, 7.5 hp (5.5 kW), 208 – 230 VAC, Type 12, LON	24
<b>VS031210B-00000</b>	VSD Series II, 10 hp (7.5 kW), 208 – 230 VAC, Type 1	31
<b>VS031210B-S0000</b>	VSD Series II, 10 hp (7.5 kW), 208 – 230 VAC, Type 1, SA Bus	31
<b>VS031210B-L0000</b>	VSD Series II, 10 hp (7.5 kW), 208 – 230 VAC, Type 1, LON	31
<b>VS031220B-00000</b>	VSD Series II, 10 hp (7.5 kW), 208 – 230 VAC, Type 12	31
<b>VS031220B-S0000</b>	VSD Series II, 10 hp (7.5 kW), 208 – 230 VAC, Type 12, SA Bus	31
<b>VS031220B-L0000</b>	VSD Series II, 10 hp (7.5 kW), 208 – 230 VAC, Type 12, LON	31

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

**Table 5: VSD Series II 208/230 V Open Drives - Frame 6**

<b>Code Number</b>	<b>Description<sup>1</sup></b>	<b>Current (A)<sup>1</sup></b>
<b>VS048210B-00000</b>	VSD Series II, 15 hp (11 kW), 208 – 230 VAC, Type 1	48
<b>VS048210B-S0000</b>	VSD Series II, 15 hp (11 kW), 208 – 230 VAC, Type 1, SA Bus	48
<b>VS048210B-L0000</b>	VSD Series II, 15 hp (11 kW), 208 – 230 VAC, Type 1, LON	48
<b>VS048220B-00000</b>	VSD Series II, 15 hp (11 kW), 208 – 230 VAC, Type 12	48
<b>VS048220B-S0000</b>	VSD Series II, 15 hp (11 kW), 208 – 230 VAC, Type 12, SA Bus	48
<b>VS048220B-L0000</b>	VSD Series II, 15 hp (11 kW), 208 – 230 VAC, Type 12, LON	48
<b>VS062210B-00000</b>	VSD Series II, 20 hp (15 kW), 208 – 230 VAC, Type 1	62
<b>VS062210B-S0000</b>	VSD Series II, 20 hp (15 kW), 208 – 230 VAC, Type 1, SA Bus	62
<b>VS062210B-L0000</b>	VSD Series II, 20 hp (15 kW), 208 – 230 VAC, Type 1, LON	62
<b>VS062220B-00000</b>	VSD Series II, 20 hp (15 kW), 208 – 230 VAC, Type 12	62
<b>VS062220B-S0000</b>	VSD Series II, 20 hp (15 kW), 208 – 230 VAC, Type 12, SA Bus	62
<b>VS062220B-L0000</b>	VSD Series II, 20 hp (15 kW), 208 – 230 VAC, Type 12, LON	62

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

**Table 6: VSD Series II 208/230 V Open Drives - Frame 7**

<b>Code Number</b>	<b>Description<sup>1</sup></b>	<b>Current (A)<sup>1</sup></b>
<b>VS075210B-00000</b>	VSD Series II, 25 hp (18.5 kW), 208 – 230 VAC, Type 1	75
<b>VS075210B-S0000</b>	VSD Series II, 25 hp (18.5 kW), 208 – 230 VAC, Type 1, SA Bus	75
<b>VS075210B-L0000</b>	VSD Series II, 25 hp (18.5 kW), 208 – 230 VAC, Type 1, LON	75
<b>VS075220B-00000</b>	VSD Series II, 25 hp (18.5 kW), 208 – 230 VAC, Type 12	75
<b>VS075220B-S0000</b>	VSD Series II, 25 hp (18.5 kW), 208 – 230 VAC, Type 12, SA Bus	75
<b>VS075220B-L0000</b>	VSD Series II, 25 hp (18.5 kW), 208 – 230 VAC, Type 12, LON	75
<b>VS088210B-00000</b>	VSD Series II, 30 hp (22 kW), 208 – 230 VAC, Type 1	88
<b>VS088210B-S0000</b>	VSD Series II, 30 hp (22 kW), 208 – 230 VAC, Type 1, SA Bus	88
<b>VS088210B-L0000</b>	VSD Series II, 30 hp (22 kW), 208 – 230 VAC, Type 1, LON	88
<b>VS088220B-00000</b>	VSD Series II, 30 hp (22 kW), 208 – 230 VAC, Type 12	88
<b>VS088220B-S0000</b>	VSD Series II, 30 hp (22 kW), 208 – 230 VAC, Type 12, SA Bus	88
<b>VS088220B-L0000</b>	VSD Series II, 30 hp (22 kW), 208 – 230 VAC, Type 12, LON	88
<b>VS105210B-00000</b>	VSD Series II, 40 hp (30 kW), 208 – 230 VAC, Type 1	105
<b>VS105210B-S0000</b>	VSD Series II, 40 hp (30 kW), 208 – 230 VAC, Type 1, SA Bus	105
<b>VS105210B-L0000</b>	VSD Series II, 40 hp (30 kW), 208 – 230 VAC, Type 1, LON	105
<b>VS105220B-00000</b>	VSD Series II, 40 hp (30 kW), 208 – 230 VAC, Type 12	105
<b>VS105220B-S0000</b>	VSD Series II, 40 hp (30 kW), 208 – 230 VAC, Type 12, SA Bus	105
<b>VS105220B-L0000</b>	VSD Series II, 40 hp (30 kW), 208 – 230 VAC, Type 12, LON	105

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

**Table 7: VSD Series II 208/230 V Open Drives - Frame 8**

Code Number	Description <sup>1</sup>	Current (A) <sup>1</sup>
VS140210B-00000	VSD Series II, 50 hp (37 kW), 208 – 230 VAC, Type 1	140
VS140210B-S0000	VSD Series II, 50 hp (37 kW), 208 – 230 VAC, Type 1, SA Bus	140
VS140210B-L0000	VSD Series II, 50 hp (37 kW), 208 – 230 VAC, Type 1, LON	140
VS140220B-00000	VSD Series II, 50 hp (37 kW), 208 – 230 VAC, Type 12	140
VS140220B-S0000	VSD Series II, 50 hp (37 kW), 208 – 230 VAC, Type 12, SA Bus	140
VS140220B-L0000	VSD Series II, 50 hp (37 kW), 208 – 230 VAC, Type 12, LON	140
VS170210B-00000	VSD Series II, 60 hp (45 kW), 208 – 230 VAC, Type 1	170
VS170210B-S0000	VSD Series II, 60 hp (45 kW), 208 – 230 VAC, Type 1, SA Bus	170
VS170210B-L0000	VSD Series II, 60 hp (45 kW), 208 – 230 VAC, Type 1, LON	170
VS170220B-00000	VSD Series II, 60 hp (45 kW), 208 – 230 VAC, Type 12	170
VS170220B-S0000	VSD Series II, 60 hp (45 kW), 208 – 230 VAC, Type 12, SA Bus	170
VS170220B-L0000	VSD Series II, 60 hp (45 kW), 208 – 230 VAC, Type 12, LON	170
VS205210B-00000	VSD Series II, 75 hp (55 kW), 208 – 230 VAC, Type 1	205
VS205210B-S0000	VSD Series II, 75 hp (55 kW), 208 – 230 VAC, Type 1, SA Bus	205
VS205210B-L0000	VSD Series II, 75 hp (55 kW), 208 – 230 VAC, Type 1, LON	205
VS205220B-00000	VSD Series II, 75 hp (55 kW), 208 – 230 VAC, Type 12	205
VS205220B-S0000	VSD Series II, 75 hp (55 kW), 208 – 230 VAC, Type 12, SA Bus	205
VS205220B-L0000	VSD Series II, 75 hp (55 kW), 208 – 230 VAC, Type 12, LON	205

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

**Table 8: VSD Series II 208/230 V Open Drives - Frame 9**

Code Number	Description <sup>1</sup>	Current (A) <sup>1</sup>
VS261210B-00000	VSD Series II, 100 hp (75 kW), 208 – 230 VAC, Type 1	261
VS261210B-S0000	VSD Series II, 100 hp (75 kW), 208 – 230 VAC, Type 1, SA Bus	261
VS261210B-L0000	VSD Series II, 100 hp (75 kW), 208 – 230 VAC, Type 1, LON	261
VS261220B-00000	VSD Series II, 100 hp (75 kW), 208 – 230 VAC, Type 12	261
VS261220B-S0000	VSD Series II, 100 hp (75 kW), 208 – 230 VAC, Type 12, SA Bus	261
VS261220B-L0000	VSD Series II, 100 hp (75 kW), 208 – 230 VAC, Type 12, LON	261
VS310210B-00000	VSD Series II, 125 hp (90 kW), 208 – 230 VAC, Type 1	301
VS310210B-S0000	VSD Series II, 125 hp (90 kW), 208 – 230 VAC, Type 1, SA Bus	301
VS310210B-L0000	VSD Series II, 125 hp (90 kW), 208 – 230 VAC, Type 1, LON	301
VS310220B-00000	VSD Series II, 125 hp (90 kW), 208 – 230 VAC, Type 12	301
VS310220B-S0000	VSD Series II, 125 hp (90 kW), 208 – 230 VAC, Type 12, SA Bus	301
VS310220B-L0000	VSD Series II, 125 hp (90 kW), 208 – 230 VAC, Type 12, LON	301

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

**Table 9: VSD Series II 480 V Open Drives - Frame 4**

<b>Code Number</b>	<b>Description<sup>1</sup></b>	<b>Current (A)<sup>1</sup></b>
<b>VS3D4410B-00000</b>	VSD Series II, 1.5 hp (1.1 kW), 480 VAC, Type 1	3.4
<b>VS3D4410B-S0000</b>	VSD Series II, 1.5 hp (1.1 kW), 480 VAC, Type 1, SA Bus	3.4
<b>VS3D4410B-L0000</b>	VSD Series II, 1.5 hp (1.1 kW), 480 VAC, Type 1, LON	3.4
<b>VS3D4420B-00000</b>	VSD Series II, 1.5 hp (1.1 kW), 480 VAC, Type 12	3.4
<b>VS3D4420B-S0000</b>	VSD Series II, 1.5 hp (1.1 kW), 480 VAC, Type 12, SA Bus	3.4
<b>VS3D4420B-L0000</b>	VSD Series II, 1.5 hp (1.1 kW), 480 VAC, Type 12, LON	3.4
<b>VS4D8410B-00000</b>	VSD Series II, 2 hp (1.5 kW), 480 VAC, Type 1	4.8
<b>VS4D8410B-S0000</b>	VSD Series II, 2 hp (1.5 kW), 480 VAC, Type 1, SA Bus	4.8
<b>VS4D8410B-L0000</b>	VSD Series II, 2 hp (1.5 kW), 480 VAC, Type 1, LON	4.8
<b>VS4D8420B-00000</b>	VSD Series II, 2 hp (1.5 kW), 480 VAC, Type 12	4.8
<b>VS4D8420B-S0000</b>	VSD Series II, 2 hp (1.5 kW), 480 VAC, Type 12, SA Bus	4.8
<b>VS4D8420B-L0000</b>	VSD Series II, 2 hp (1.5 kW), 480 VAC, Type 12, LON	4.8
<b>VS5D6410B-00000</b>	VSD Series II, 3 hp (2.2 kW), 480 VAC, Type 1	5.6
<b>VS5D6410B-S0000</b>	VSD Series II, 3 hp (2.2 kW), 480 VAC, Type 1, SA Bus	5.6
<b>VS5D6410B-L0000</b>	VSD Series II, 3 hp (2.2 kW), 480 VAC, Type 1, LON	5.6
<b>VS5D6420B-00000</b>	VSD Series II, 3 hp (2.2 kW), 480 VAC, Type 12	5.6
<b>VS5D6420B-S0000</b>	VSD Series II, 3 hp (2.2 kW), 480 VAC, Type 12, SA Bus	5.6
<b>VS5D6420B-L0000</b>	VSD Series II, 3 hp (2.2 kW), 480 VAC, Type 12, LON	5.6
<b>VS8D0410B-00000</b>	VSD Series II, 4 hp (3 kW), 480 VAC, Type 1	8
<b>VS8D0410B-S0000</b>	VSD Series II, 4 hp (3 kW), 480 VAC, Type 1, SA Bus	8
<b>VS8D0410B-L0000</b>	VSD Series II, 4 hp (3 kW), 480 VAC, Type 1, LON	8
<b>VS8D0420B-00000</b>	VSD Series II, 4 hp (3 kW), 480 VAC, Type 12	8
<b>VS8D0420B-S0000</b>	VSD Series II, 4 hp (3 kW), 480 VAC, Type 12, SA Bus	8
<b>VS8D0420B-L0000</b>	VSD Series II, 4 hp (3 kW), 480 VAC, Type 12, LON	8
<b>VS9D6410B-00000</b>	VSD Series II, 5 hp (4 kW), 480 VAC, Type 1	9.6
<b>VS9D6410B-S0000</b>	VSD Series II, 5 hp (4 kW), 480 VAC, Type 1, SA Bus	9.6
<b>VS9D6410B-L0000</b>	VSD Series II, 5 hp (4 kW), 480 VAC, Type 1, LON	9.6
<b>VS9D6420B-00000</b>	VSD Series II, 5 hp (4 kW), 480 VAC, Type 12	9.6
<b>VS9D6420B-S0000</b>	VSD Series II, 5 hp (4 kW), 480 VAC, Type 12, SA Bus	9.6
<b>VS9D6420B-L0000</b>	VSD Series II, 5 hp (4 kW), 480 VAC, Type 12, LON	9.6
<b>VS012410B-00000</b>	VSD Series II, 7.5 hp (5.5 kW), 480 VAC, Type 1	12
<b>VS012410B-S0000</b>	VSD Series II, 7.5 hp (5.5 kW), 480 VAC, Type 1, SA Bus	12
<b>VS012410B-L0000</b>	VSD Series II, 7.5 hp (5.5 kW), 480 VAC, Type 1, LON	12
<b>VS012420B-00000</b>	VSD Series II, 7.5 hp (5.5 kW), 480 VAC, Type 12	12
<b>VS012420B-S0000</b>	VSD Series II, 7.5 hp (5.5 kW), 480 VAC, Type 12, SA Bus	12
<b>VS012420B-L0000</b>	VSD Series II, 7.5 hp (5.5 kW), 480 VAC, Type 12, LON	12

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

**Table 10: VSD Series II 480 V Open Drives - Frame 5**

Code Number	Description <sup>1</sup>	Current (A) <sup>1</sup>
VS016410B-00000	VSD Series II, 10 hp (7.5 kW), 480 VAC, Type 1	16
VS016410B-S0000	VSD Series II, 10 hp (7.5 kW), 480 VAC, Type 1, SA Bus	16
VS016410B-L0000	VSD Series II, 10 hp (7.5 kW), 480 VAC, Type 1, LON	16
VS016420B-00000	VSD Series II, 10 hp (7.5 kW), 480 VAC, Type 12	16
VS016420B-S0000	VSD Series II, 10 hp (7.5 kW), 480 VAC, Type 12, SA Bus	16
VS016420B-L0000	VSD Series II, 10 hp (7.5 kW), 480 VAC, Type 12, LON	16
VS023410B-00000	VSD Series II, 15 hp (11 kW), 480 VAC, Type 1	23
VS023410B-S0000	VSD Series II, 15 hp (11 kW), 480 VAC, Type 1, SA Bus	23
VS023410B-L0000	VSD Series II, 15 hp (11 kW), 480 VAC, Type 1, LON	23
VS023420B-00000	VSD Series II, 15 hp (11 kW), 480 VAC, Type 12	23
VS023420B-S0000	VSD Series II, 15 hp (11 kW), 480 VAC, Type 12, SA Bus	23
VS023420B-L0000	VSD Series II, 15 hp (11 kW), 480 VAC, Type 12, LON	23
VS031410B-00000	VSD Series II, 20 hp (15 kW), 480 VAC, Type 1	31
VS031410B-S0000	VSD Series II, 20 hp (15 kW), 480 VAC, Type 1, SA Bus	31
VS031410B-L0000	VSD Series II, 20 hp (15 kW), 480 VAC, Type 1, LON	31
VS031420B-00000	VSD Series II, 20 hp (15 kW), 480 VAC, Type 12	31
VS031420B-S0000	VSD Series II, 20 hp (15 kW), 480 VAC, Type 12, SA Bus	31
VS031420B-L0000	VSD Series II, 20 hp (15 kW), 480 VAC, Type 12, LON	31

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

**Table 11: VSD Series II 480 V Open Drives - Frame 6**

Code Number	Description <sup>1</sup>	Current (A) <sup>1</sup>
VS038410B-00000	VSD Series II, 25 hp (18.5 kW), 480 VAC, Type 1	38
VS038410B-S0000	VSD Series II, 25 hp (18.5 kW), 480 VAC, Type 1, SA Bus	38
VS038410B-L0000	VSD Series II, 25 hp (18.5 kW), 480 VAC, Type 1, LON	38
VS038420B-00000	VSD Series II, 25 hp (18.5 kW), 480 VAC, Type 12	38
VS038420B-S0000	VSD Series II, 25 hp (18.5 kW), 480 VAC, Type 12, SA Bus	38
VS038420B-L0000	VSD Series II, 25 hp (18.5 kW), 480 VAC, Type 12, LON	38
VS046410B-00000	VSD Series II, 30 hp (22 kW), 480 VAC, Type 1	46
VS046410B-S0000	VSD Series II, 30 hp (22 kW), 480 VAC, Type 1, SA Bus	46
VS046410B-L0000	VSD Series II, 30 hp (22 kW), 480 VAC, Type 1, LON	46
VS046420B-00000	VSD Series II, 30 hp (22 kW), 480 VAC, Type 12	46
VS046420B-S0000	VSD Series II, 30 hp (22 kW), 480 VAC, Type 12, SA Bus	46
VS046420B-L0000	VSD Series II, 30 hp (22 kW), 480 VAC, Type 12, LON	46
VS061410B-00000	VSD Series II, 40 hp (30 kW), 480 VAC, Type 1	61
VS061410B-S0000	VSD Series II, 40 hp (30 kW), 480 VAC, Type 1, SA Bus	61
VS061410B-L0000	VSD Series II, 40 hp (30 kW), 480 VAC, Type 1, LON	61
VS061420B-00000	VSD Series II, 40 hp (30 kW), 480 VAC, Type 12	61
VS061420B-S0000	VSD Series II, 40 hp (30 kW), 480 VAC, Type 12, SA Bus	61
VS061420B-L0000	VSD Series II, 40 hp (30 kW), 480 VAC, Type 12, LON	61

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

**Table 12: VSD Series II 480 V Open Drives - Frame 7**

Code Number	Description <sup>1</sup>	Current (A) <sup>1</sup>
VS072410B-00000	VSD Series II, 50 hp (37 kW), 480 VAC, Type 1	72
VS072410B-S0000	VSD Series II, 50 hp (37 kW), 480 VAC, Type 1, SA Bus	72
VS072410B-L0000	VSD Series II, 50 hp (37 kW), 480 VAC, Type 1, LON	72
VS072420B-00000	VSD Series II, 50 hp (37 kW), 480 VAC, Type 12	72
VS072420B-S0000	VSD Series II, 50 hp (37 kW), 480 VAC, Type 12, SA Bus	72
VS072420B-L0000	VSD Series II, 50 hp (37 kW), 480 VAC, Type 12, LON	72
VS087410B-00000	VSD Series II, 60 hp (45 kW), 480 VAC, Type 1	87
VS087410B-S0000	VSD Series II, 60 hp (45 kW), 480 VAC, Type 1, SA Bus	87
VS087410B-L0000	VSD Series II, 60 hp (45 kW), 480 VAC, Type 1, LON	87
VS087420B-00000	VSD Series II, 60 hp (45 kW), 480 VAC, Type 12	87
VS087420B-S0000	VSD Series II, 60 hp (45 kW), 480 VAC, Type 12, SA Bus	87
VS087420B-L0000	VSD Series II, 60 hp (45 kW), 480 VAC, Type 12, LON	87
VS105410B-00000	VSD Series II, 75 hp (55 kW), 480 VAC, Type 1	105
VS105410B-S0000	VSD Series II, 75 hp (55 kW), 480 VAC, Type 1, SA Bus	105
VS105410B-L0000	VSD Series II, 75 hp (55 kW), 480 VAC, Type 1, LON	105
VS105420B-00000	VSD Series II, 75 hp (55 kW), 480 VAC, Type 12	105
VS105420B-S0000	VSD Series II, 75 hp (55 kW), 480 VAC, Type 12, SA Bus	105
VS105420B-L0000	VSD Series II, 75 hp (55 kW), 480 VAC, Type 12, LON	105

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

**Table 13: VSD Series II 480 V Open Drives - Frame 8**

Code Number	Description <sup>1</sup>	Current (A) <sup>1</sup>
VS140410B-00000	VSD Series II, 100 hp (75 kW), 480 VAC, Type 1	140
VS140410B-S0000	VSD Series II, 100 hp (75 kW), 480 VAC, Type 1, SA Bus	140
VS140410B-L0000	VSD Series II, 100 hp (75 kW), 480 VAC, Type 1, LON	140
VS140420B-00000	VSD Series II, 100 hp (75 kW), 480 VAC, Type 12	140
VS140420B-S0000	VSD Series II, 100 hp (75 kW), 480 VAC, Type 12, SA Bus	140
VS140420B-L0000	VSD Series II, 100 hp (75 kW), 480 VAC, Type 12, LON	140
VS170410B-00000	VSD Series II, 125 hp (90 kW), 480 VAC, Type 1	170
VS170410B-S0000	VSD Series II, 125 hp (90 kW), 480 VAC, Type 1, SA Bus	170
VS170410B-L0000	VSD Series II, 125 hp (90 kW), 480 VAC, Type 1, LON	170
VS170420B-00000	VSD Series II, 125 hp (90 kW), 480 VAC, Type 12	170
VS170420B-S0000	VSD Series II, 125 hp (90 kW), 480 VAC, Type 12, SA Bus	170
VS170420B-L0000	VSD Series II, 125 hp (90 kW), 480 VAC, Type 12, LON	170
VS205410B-00000	VSD Series II, 150 hp (110 kW), 480 VAC, Type 1	205
VS205410B-S0000	VSD Series II, 150 hp (110 kW), 480 VAC, Type 1, SA Bus	205
VS205410B-L0000	VSD Series II, 150 hp (110 kW), 480 VAC, Type 1, LON	205
VS205420B-00000	VSD Series II, 150 hp (110 kW), 480 VAC, Type 12	205
VS205420B-S0000	VSD Series II, 150 hp (110 kW), 480 VAC, Type 12, SA Bus	205
VS205420B-L0000	VSD Series II, 150 hp (110 kW), 480 VAC, Type 12, LON	205

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

**Table 14: VSD Series II 480 V Open Drives - Frame 9**

Code Number	Description <sup>1</sup>	Current (A) <sup>1</sup>
VS261410B-00000	VSD Series II, 200 hp (132 kW), 480 VAC, Type 1	261
VS261410B-S0000	VSD Series II, 200 hp (132 kW), 480 VAC, Type 1, SA Bus	261
VS261410B-L0000	VSD Series II, 200 hp (132 kW), 480 VAC, Type 1, LON	261
VS261420B-00000	VSD Series II, 200 hp (132 kW), 480 VAC, Type 12	261
VS261420B-S0000	VSD Series II, 200 hp (132 kW), 480 VAC, Type 12, SA Bus	261
VS261420B-L0000	VSD Series II, 200 hp (132 kW), 480 VAC, Type 12, LON	261
VS310410B-00000	VSD Series II, 250 hp (160 kW), 480 VAC, Type 1	310
VS310410B-S0000	VSD Series II, 250 hp (160 kW), 480 VAC, Type 1, SA Bus	310
VS310410B-L0000	VSD Series II, 250 hp (160 kW), 480 VAC, Type 1, LON	310
VS310420B-00000	VSD Series II, 250 hp (160 kW), 480 VAC, Type 12	310
VS310420B-S0000	VSD Series II, 250 hp (160 kW), 480 VAC, Type 12, SA Bus	310
VS310420B-L0000	VSD Series II, 250 hp (160 kW), 480 VAC, Type 12, LON	310

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

## VSD Series II Accessories and Replacement Parts

**Table 15: Conversion Kits**

Code Number	Description
VS-FS4-N12KIT	Frame 4, Type 1 to Type 12 Conversion Kit – Type 12/IP54 Cover with Gasket and Plastic Plugs
VS-FS5-N12KIT	Frame 5, Type 1 to Type 12 Conversion Kit – Type 12/IP54 Cover with Gasket and Plastic Plugs
VS-FS6-N12KIT	Frame 6, Type 1 to Type 12 Conversion Kit – Type 12/IP54 Cover with Gasket and Plastic Plugs

**Table 16: Demonstration Kits**

Code Number	Description
VS-DEMO2	VSD Series II Bypass Demonstration Kit
VSM2-DEMO	VSD Micro Series II Bypass Demonstration Kit

**Table 17: Power Supplies, Cables, and Keypads**

Code Number	Description
VS-KEYPAD-SER2	VSD Series II Graphic Hands-Off/Auto Keypad
VS-RMT-KEYPAD2	VSD Series II Remote Keypad Kit
VS-REM-USB-LOAD	Remote Download USB to RJ-485 Cable with Software Driver Disk

**Table 18: Fans**

<b>Code Number</b>	<b>Description</b>
VS-FS4-FAN	Frame 4, Main Fan
VS-FS5-FAN	Frame 5, Main Fan
VS-FS6-FAN	Frame 6, Main Fan
VS-FS7-FAN	Frame 7, Main Fan
VS-FS8-FAN	Frame 8, Main Fan
VS-FS9-FAN	Frame 9, Main Fan
VS-FS4-INT-FAN	Frame 4, Internal Fan
VS-FS5-INT-FAN	Frame 5, Internal Fan
VS-FS6-INT-FAN	Frame 6, Internal Fan
VS-FS7-INT-FAN	Frame 7, Internal Fan
VS-FS8-INT-FAN	Frame 8, Internal Fan
VS-FS9-INT-FAN	Frame 9, Internal Fan

**Table 19: Flange Kits**

<b>Code Number</b>	<b>Description</b>
VS-FS4-N12FLKIT	Frame 4, Type 12/IP54 Flange Kit
VS-FS5-N12FLKIT	Frame 5, Type 12/IP54 Flange Kit
VS-FS6-N12FLKIT	Frame 6, Type 12/IP54 Flange Kit
VS-FS7-N12FLKIT	Frame 7, Type 12/IP54 Flange Kit

**Table 20: Communication Cards, Auxiliary Contacts, and I/O Cards**

<b>Code Number</b>	<b>Description</b>
VS-XXM-B1	I/O Expander Card, 6 DI/DO, Slot D/E
VS-XXM-B2	I/O Expander Card, 2 RO and Thermistor, Slot D/E
VS-XXM-B4	I/O Expander Card, 1 AI, 2 AO (Isolated), Slot D/E
VS-XXM-B5	I/O Expander Card, 3 RO, Slot D/E
VS-XXM-B9	I/O Expander Card, 1 RO, 5 DI (42 to 240 VAC), Slot D/E
VS-XXM-BF	I/O Expander Card, 1 AO, 1 DO, 1 RO, Slot D/E
VS-XXM-C4	LONWORKS® Communications Card, Slot D/E
VS-XXM-CS	SA Bus Communications Card
VS-XXM-F1	I/O Expander Card, 3 RO, Slot B
VS-XXM-F2	I/O Expander Card, 2 RO and Thermistor Input, Slot B
VS-XXM-K9-FS4-5	Auxiliary Contact Kit for IPASS Sizes B and C (Output and Bypass)
VS-XXM-K9-FS6-9	Auxiliary Contact Kit for IPASS Sizes D, F, and G (Output and Bypass)

**Table 21: Micro Drives**

Code Number	Description
VSM2-IP21-FS1	VSM II Type 1 / IP21 Kit – FS1
VSM2-IP21-FS2	VSM II Type 1 / IP21 Kit – FS2
VSM2-IP21-FS3	VSM II Type 1 / IP21 Kit – FS3
VSM2-KEYADAPTER	VSM II Remote Mounting Kit – Bezel and Cable
VSM2-PCADAPTER	VSM II Computer Connection Module
VSM2-RJADAPTER	VSM II RJ45 Adapter Module
VSM2-TEXTKEYPAD	VSM II Keypad

**Table 22: Power Supplies**

Code Number	Description
VS-PSG60E	Power Supply – 1 Phase, 90–264 VAC, 24 VDC @ 2.5 A
VS-PSG120E	Power Supply – 1 Phase, 90–264 VAC, 24 VDC @ 5 A
VS-PSG240E	Power Supply – 1 Phase, 85–264 VAC, 24 VDC @ 10 A
VS-PSG60F24	Power Supply – 3 Phase, 24 VDC, 60 W, IP20, Metal Case
VS-PSG120 F24	Power Supply – 3 Phase, 24 VDC, 120 W, IP20 Metal Case
VS-PSG240 F24	Power Supply – 3 Phase, 24 VDC, 240 W, IP20 Metal Case

**Table 23: Lights, Selector Switches, Relays**

Code Number	Description
VS-M22-L-A-W	Indicator Light, Amber, 12–30 V AC/DC
VS-M22-L-G-G	Indicator Light, Green, 12–30 V AC/DC
VS-M22-L-R-R	Indicator Light, Red, 12–30 V AC/DC
VS-M22-L-W-W	Indicator Light, White, 12–30 V AC/DC
VS-M22-WRK3	Non-Illuminated 3-Position Maintained Selector Switch, Thumb Grip, Black Bezel
VS-M22-CK20	Contact Block, 2 N.O. Cage Clamp
VS-M22-WVK-K10	Non-Illuminated Vertical Position Maintained Selector Switch, Thumb Grip, Black Bezel, 1 N.O.
VS-M22-IVS	DIN Rail Mounting Adapter
VS-M22-WRK3-K20	Non-Illuminated 3-Position Maintained Selector Switch, Thumb Grip, Silver Bezel, 2 N.O.
VS-D2RR4A	Ice Cube Relay, 4-Pole Double-Throw Switch, 6A, 120 VAC Coil
VS-D2PA6	4-Pole Socket for 2- and 4-Pole D2 Relays

**Table 24: Manual Motor Protectors and Accessories**

Code Number	Description
VS-XTPR2P5BC1	Manual Motor Protector, Rotary Frame B, Class 10, 1.6–2.5 A
VS-XTPR6P3BC1	Manual Motor Protector, Rotary Frame B, Class 10, 4–6.3 A
VS-XTPR004BC1	Manual Motor Protector, Rotary Frame B, Class 10, 2.5–4 A
VS-XTPR010BC1	Manual Motor Protector, Rotary Frame B, Class 10, 6.3–10 A
VS-XTPR012BC1	Manual Motor Protector, Rotary Frame B, Class 10, 8–12 A
VS-XTPR016DC1	Manual Motor Protector, Rotary Frame D, Class 10, 10–16 A
VS-XTPR025DC1	Manual Motor Protector, Rotary Frame D, Class 10, 16–25 A
VS-XTPR032DC1	Manual Motor Protector, Rotary Frame D, Class 10, 25–32 A
VS-XTPR040DC1	Manual Motor Protector, Rotary Frame D, Class 10, 32–40 A
VS-XTPR050DC1	Manual Motor Protector, Rotary Frame D, Class 10, 40–50 A
VS-XTPR058DC1	Manual Motor Protector, Rotary Frame D, Class 10, 50–58 A
VS-XTPAXLSA	Manual Motor Protector, Accessory, Line Side Adapter
VS-XTPAXLSAD	Manual Motor Protector, Accessory, Line Side Adapter Frame D
VS-XTPAXRHMB	Rotary Handle Mechanism IP65 Black
VS-XTPAXRHMSFT	Manual Motor Protector, Accessory Rotary Handle Mech Shaft
VS-XTPAXMBM	Manual Motor Protector, Shaft Supporter, Metal

**Table 25: Contactors, Overloads (Part 1 of 2)**

Code Number	Description
VS-XTCE007B01A	Contactors, 3-Phase, Full-Voltage, Non-Returning, 7A
VS-XTCE009B01A	Contactors, 3-Phase, Full-Voltage, Non-Returning, 9A
VS-XTCE012B01A	Contactors, 3-Phase, Full-Voltage, Non-Returning, 12A
VS-XTCE018C01A	Contactors, 3-Phase, Full-Voltage, Non-Returning, 18A
VS-XTCE025C01A	Contactors, 3-Phase, Full-Voltage, Non-Returning, 25A
VS-XTCE032C01A	Contactors, 3-Phase, Full-Voltage, Non-Returning, 32A
VS-XTCE040C01A	Contactors, 3-Phase, Full-Voltage, Non-Returning, 40A
VS-XTCE050DS1A	Contactors, 3-Phase, Full-Voltage, Non-Returning, 50A
VS-XTCE065DS1A	Contactors, 3-Phase, Full-Voltage, Non-Returning, 65A
VS-XTCE080FS1A	Contactors, 3-Phase, Full-Voltage, Non-Returning, 80A
VS-XTCE095FS1A	Contactors, 3-Phase, Full-Voltage, Non-Returning, 95A
VS-XTCE0115GS1A	Contactors, 3-Phase, Full-Voltage, Non-Returning, 115A
VS-XTCE0170GS1A	Contactors, 3-Phase, Full-Voltage, Non-Returning, 170A
VS-XTCEXRSBB	Contactors Accessory, RC Suppressor, Frame B, 110–240 V
VS-XTCEXRSBC	Contactors Accessory, RC Suppressor, Frame B, 240–500 V
VS-XTCEXRSCA	Contactors Accessory, RC Suppressor, Frame C, 110–130 V
VS-XTCEXRSCC	Contactors Accessory, RC Suppressor, Frame C, 240–500 V
VS-XTCEXRSFA	Contactors Accessory, RC Suppressor, Frame F, 110–130 V
VS-XTCEXFAC11	Contactors Accessory, Front Auxiliary Seq A, Frame B-C, 1 N.O. 1 N.C.
VS-XTCEXPBB	Contactors Accessory, Paralleling Bridge, Frame B
VS-XTCEXPBC	Contactors Accessory, Paralleling Bridge, Frame C

**Table 25: Contactors, Overloads (Part 2 of 2)**

<b>Code Number</b>	<b>Description</b>
VS-XTCEXPBD	Contactory Accessory, Paralleling Bridge, Frame D
VS-XTCEXPBG	Contactory Accessory, Paralleling Bridge, Frame G
VS-XTOB004BC1	IEC Overload Frame B Class 10, 2.4–4 A
VS-XTOB006BC1	IEC Overload Frame B Class 10, 4–6 A
VS-XTOB010BC1	IEC Overload Frame B Class 10, 6–10 A
VS-XTOB012BC1	IEC Overload Frame B Class 10, 9–12 A
VS-XTOB016CC1	IEC Overload Frame C Class 10, 10–16 A
VS-XTOB024CC1	IEC Overload Frame C Class 10, 16–24 A
VS-XTOB032CC1	IEC Overload Frame C Class 10, 24–32 A
VS-XTOB040DC1	IEC Overload Frame D Class 10, 24–40 A
VS-XTOB057DC1	IEC Overload Frame D Class 10, 40–57 A
VS-XTOB065DC1	IEC Overload Frame D Class 10, 50–65 A
VS-XTOB070GC1S	IEC Overload Frame G Class 10, 50–70 A, Sep Mnt
VS-XTOB100GC1S	IEC Overload Frame G Class 10
VS-XTOB125GC1S	IEC Overload Frame G Class 10
VS-XTOB150GC1S	IEC Overload Frame G Class 10
VS-XTOB2P4BC1	IEC Overload Frame B Class 10
VS-XTOB175GC1S	IEC Overload Frame G Class 10
VS-XTCE007B01TD	Contactory, 3-Phase, Full-Voltage, Non-Returning, 7A, Frame B, 1 N.C. Switch, 24 VDC Coil
VS-XTCE009B01TD	Contactory, 3-Phase, Full-Voltage, Non-Returning, 9A, Frame B, 1 N.C. Switch, 24 VDC Coil
VS-XTCE012B01TD	Contactory, 3-Phase, Full-Voltage, Non-Returning, 12A, Frame B, 1 N.C. Switch, 24 VDC Coil
VS-XTCE018C01TD	Contactory, 3-Phase, Full-Voltage, Non-Returning, 18A, Frame B, 1 N.C. Switch, 24 VDC Coil
VS-XTCE025C01TD	Contactory, 3-Phase, Full-Voltage, Non-Returning, 25A, Frame B, 1 N.C. Switch, 24 VDC Coil
VS-XTCE032C01TD	Contactory, 3-Phase, Full-Voltage, Non-Returning, 32A, Frame B, 1 N.C. Switch, 24 VDC Coil
VS-XTCE040D00TD	Contactory, 3-Phase, Full-Voltage, Non-Returning, 40A, Frame B, 24 VDC Coil
VS-XTCE050D00TD	Contactory, 3-Phase, Full-Voltage, Non-Returning, 50A, Frame B, 24 VDC Coil
VS-XTCE065D00TD	Contactory, 3-Phase, Full-Voltage, Non-Returning, 65A, Frame B, 24 VDC Coil
VS-XTCE080F00TD	Contactory, 3-Phase, Full-Voltage, Non-Returning, 80A, Frame F, 24 VDC Coil
VS-XTCE095F00TD	Contactory, 3-Phase, Full-Voltage, Non-Returning, 95A, Frame F, 24 VDC Coil
VS-XTCE115G00TD	Contactory, 3-Phase, Full-Voltage, Non-Returning, 115A, Frame G, 24 VDC Coil
VS-XTCEXFAC11	Contactory Accessory, Front Aux Seq A, Frame B-C
VS-XTCEXFAG11	Contactory Accessory, Front Aux Seq A, Frame D-G
VS-XTCEXPBB	Contactory Accessory, Paralleling Bridge, Frame B
VS-XTCEXPBC	Contactory Accessory, Paralleling Bridge, Frame C
VS-XTCEXPBD	Contactory Accessory, Paralleling Bridge, Frame D
VS-XTCEXPBG	Contactory Accessory, Paralleling Bridge, Frame G

**Table 26: FP Series II Spares**

<b>Code Number</b>	<b>Description</b>
<b>VS-HFD3080L</b>	Type HFD (Eaton term), 3-Pole, 80A Trip, 600 V Class, 65KA at 480 V, Line
<b>VS-HFD3100L</b>	Type HFD, 3-Pole, 100A, 600 V Class, 65KA at 480 V, Line
<b>VS-HFD3110L</b>	Type HFD, 3-Pole, 110A, 600 V Class, 65KA at 480 V, Line
<b>VS-HFD3125L</b>	Type HFD, 3-Pole, 125A Trip, 600 V Class, 65KA at 480 V, Line
<b>VS-HFDMP3080JL</b>	HFD Motor Protector, 3-Pole Switch, 80A, Overload 10–30 with Phase Imbalance
<b>VS-HFDMP3100JL</b>	HFD Motor Protector, 3-Pole Switch, 100A, Overload 10–30 with Phase Imbalance
<b>VS-HFDMP3160JL</b>	HFD Motor Protector, 3-Pole Switch, 160A, Overload 10–30 with Phase Imbalance
<b>VS-FHMVD06B</b>	Black Handle, 6 in. Shaft, F Frame
<b>VS-PHR2N12F</b>	Pistol Handle, Red, Size 2, NEMA 3R/12, For Front Oper
<b>VS-SHR0N12</b>	Selector Handle, Red, Size 0, NEMA 3R/12 (A, B, and C Frame)
<b>VS-SF200PH10X10</b>	Shaft 200 mm (7.9 in.), Use with Size 1 or 2 Pistol Handle, 10x10
<b>VS-SF200SH5X5</b>	Shaft 200 mm (7.9 in.), Use with Selector Handles for R5/R9, 5x5
<b>VS-SF320 PH10X10</b>	Shaft 320 mm (12.6 in.), Use with Size 1 or 2 Pistol Handle, 10x10
<b>VS-SF320SH5X5</b>	Shaft 320 mm (12.6 in.), Use with Selector Handles for R5/R9, 5x5
<b>VS-DHR5</b>	Direct Handle, for R5 Type Rotary Disconnects
<b>VS-DHR9</b>	Direct Handle, for R9 Type Rotary Disconnects (C Frame Only)
<b>VS-DHR9DE</b>	Direct Handle, for R9 Type Rotary Disconnects (Frames D and E)
<b>VS-R5A3030U</b>	UL508, A-Frame, 3-Pole Switch, 30 A, Non-Fusible Rotary Disconnect
<b>VS-5B3060U</b>	UL508, B-Frame, 3-Pole Switch, 60 A, Non-Fusible Rotary Disconnect
<b>VS-R9C3100U</b>	UL98, C-Frame, 3-Pole Switch, 100 A, Non-Fusible Rotary Disconnect
<b>VS-R9D3100U</b>	UL98, D-Frame, 3-Pole Switch, 100 A, Non-Fusible Rotary Switch
<b>VS-R93200U</b>	UL98, D-Frame, 3-Pole Switch, 200 A, Non-Fusible Rotary Switch
<b>VS-R9K3100FJ</b>	UL98, K-Frame, 3-Pole, 100 A, J-Fusible Rotary Disconnect
<b>VS-C075E5EFB</b>	75 VA Type MTE Control Transformer with Primary Fuse Block
<b>VS- C0200E5E</b>	200 VA Type MTE Control Transformer
<b>VS- C0200E5EFB</b>	200 VA Type MTE Control Transformer with Primary Fuse Block
<b>VS- C0350E5EFB</b>	350 VA Type MTE Control Transformer with Primary Fuse Block
<b>VS-C0500E5EFB</b>	500 VA Type MTE Control Transformer with Primary Fuse Block

## VSD Series II Option Boards

The VSD Series II Drives can accommodate a wide selection of expander and adapter option boards to customize the drive for your application needs. The drive's control unit is designed to accept a total of five option boards.

The VSD Series II factory installed standard board configuration includes an A9 I/O board and an A2 relay output board, which are installed in slots A and B.

**Table 27: Option Boards**

Description		Allowed Slot Locations <sup>1</sup>	Option Number
I/O Cards	3 Relay (Qty 2 Form C relay, qty 1 Form A Relay) (replacement only - included with Variable Speed Series II Drive)	B	VS-XXM-F1
	2 Relay and 1 Thermistor (Not available with L3 and L4 pilot light option.) (replaces standard slot B relay board.)	B	VS-XXM-F2
Extended I/O Cards	6 Digital Outputs (DI), 6 Digital Outputs (DO), 1 ext +24 VDC/EXT +24 VDC Programmable	D, E	VS-XXM-B1
	1 Relay Out (RO) Normally Closed/Normally Open (N.C./N.O.), 1 RO (N.O.), 1 Thermistor	D, E	VS-XXM-B2
	1 Analog Input (AI) (mA isolated), 2 Analog Output (AO) (mA isolated)	D, E	VS-XXM-B4
	Card - 3 Relay Dry Contact	D, E	VS-XXM-B5
	1 RO (N.O.), 5 DI (42 – 240 VAC Input)	D, E	VS-XXM-B9
	Expander IO - 1 AO, 1 DO, 1 RO	D, E	VS-XXM-BF
	SA Bus (JC-VSD Only)	D, E	VS-XXM-CS
	LONWORKS Network	D, E	VS-XXM-C4

1. The option card must be installed in one of the slots listed for that card.

## Dimensions

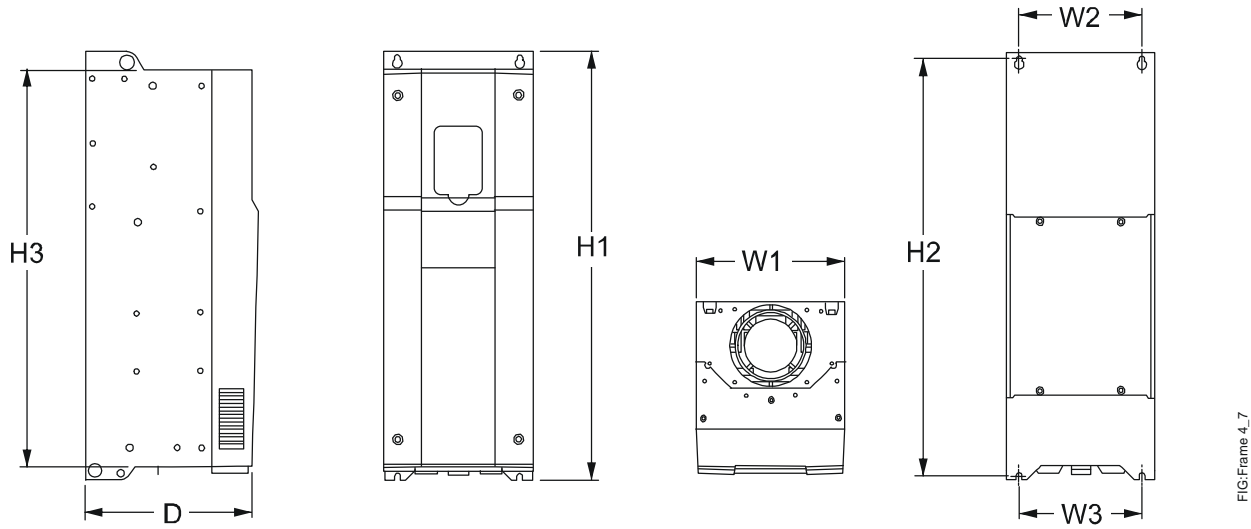


Figure 2: VSD Series II Open Drives Frame 4 – Frame 7

Table 28: VSD Series II Open Drives Frame 4 – Frame 7

Frame Size	Dimensions in. (mm), approximate						
	H1	H2	H3	D	W1	W2	W3
FR4	12.89 (327.5)	12.32 (313)	11.22 (285)	7.77 (197.3)	5.04 (128)	3.94 (100)	3.94 (100)
FR5	16.50 (419)	15.98 (406)	15.04 (382)	8.73 (221.6)	5.67 (144)	4.53 (115)	3.94 (100)
FR6	21.93 (557)	21.28 (540.5)	20.24 (514)	9.29 (236)	7.68 (195)	5.83 (148)	5.83 (148)
FR7	25.98 (660)	25.39 (645)	24.29 (617)	10.49 (266.5)	9.06 (230)	7.48 (190)	7.48 (190)

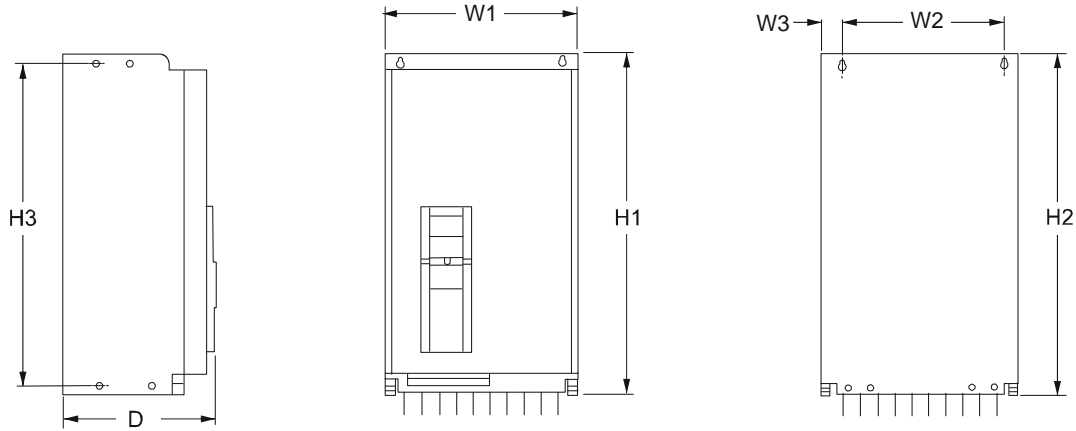


FIG.Frame 8\_9

Figure 3: VSD Series II Open Drives Frames 8 and 9

Table 29: VSD Series II Open Drives Frames 8 and 9

Frame Size	Dimensions in. (mm), approximate						
	H1	H2	H3	D	W1	W2	W3
FR8	38.02 (965.7)	37.26 (946.4)	37.26 (946.4)	13.76 (349.6)	11.42 (290.1)	9.29 (236)	1.42 (36)
FR9	33.09 (890.4)	31.89 (810)	31.89 (810)	14.63 (371.6)	18.90 (480)	15.75 (400)	1.57 (40)

# Wiring Diagram

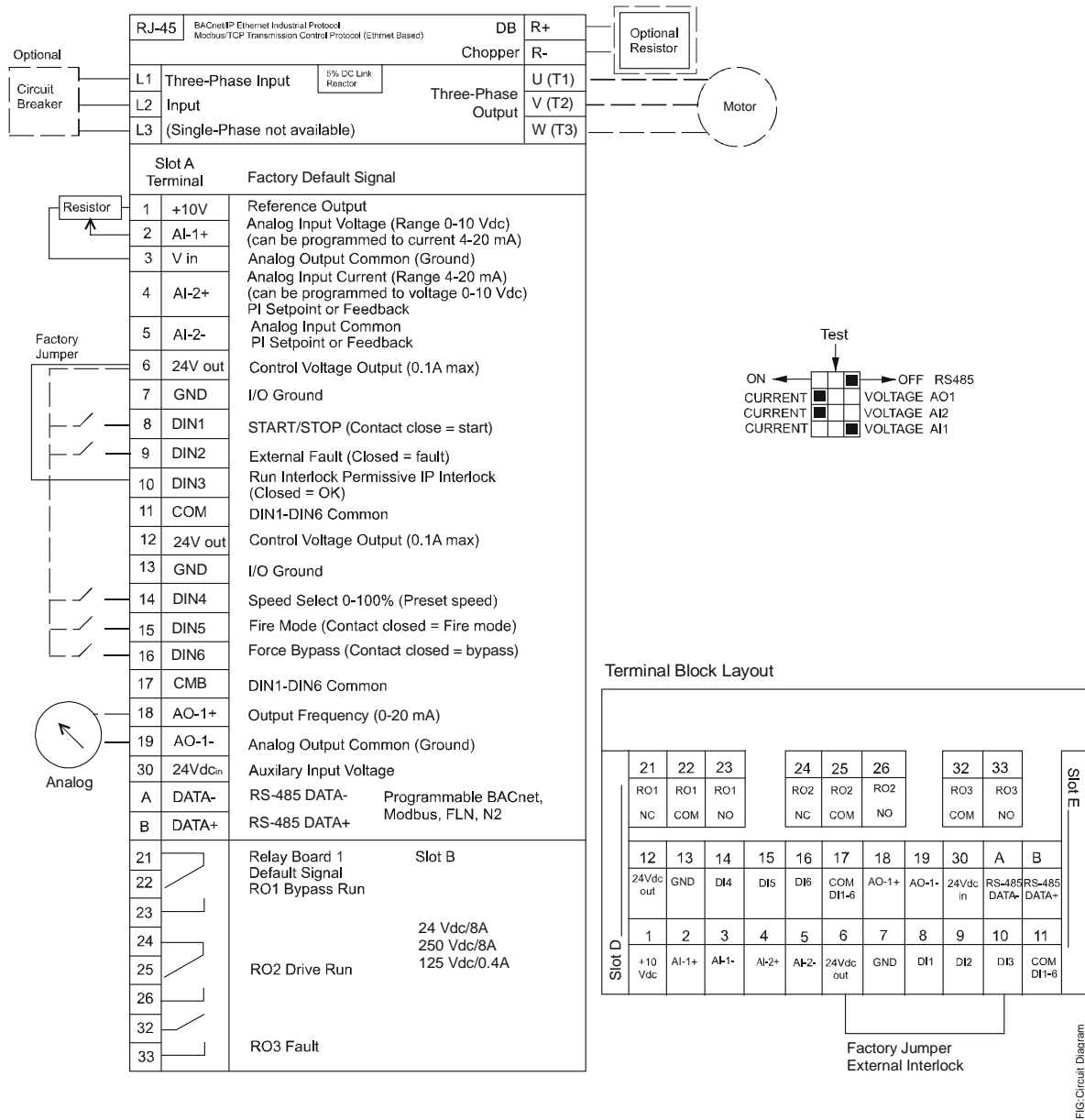



Figure 4: VSD Series II Open Drives Circuit Diagram

## Technical Specifications

### VSD Series II Variable Speed Open Drives (Part 1 of 3)

<b>Input Voltage (<math>V_{in}</math>)</b>	200 – 240 VAC, 380 – 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>	100 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>	0 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 – 310 A Frame 4 – 9: 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)
<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>	Frame 4 – 9, 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
<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/IP21 or NEMA Type 12/IP54
<b>EMC (at default settings)</b>	Immunity: Fulfills all Electromagnetic Compatibility (EMC) Immunity Requirements; Emissions: EN 61800-3 (2004), LEVEL H
<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)
<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

### VSD Series II Variable Speed Open Drives (Part 2 of 3)

<b>Auxiliary Voltage</b>	24 V $\pm$ 10%, Maximum 250 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 Wire Jumper</b>	Between Terminal 6 and 10 (Factory Default)	
<b>Dip Switch Setting Default</b>	RS485 = Off A01 = Current A12 = Current A11 = 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 (of the 24 V and 10 V Reference Voltages)	
<b>Surge Protection</b>	Yes (Varistor Input)	
<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)	
	CE Mark – Johnson Controls, Inc., declares that the VSD Series II Variable Speed Open Drives are in compliance with the essential requirements and other relevant provisions of EMC Directive 2004/108/EC and Low Voltage Directive 2006/95/EC.	
<b>Warranty</b>	2 Years Standard Terms; 3 Years with Certified Startup	
<b>Reliability</b>	500,000 Hours Mean Time Between Failures (MTBF)	
<b>Line Voltage (VAC)</b>	230 V (208 to 240 V) 480 V (380 to 500 V) 575 V (525 to 690 V)	
<b>Weight</b>	FR4	13.2 lb (6 kg)
	FR5	22 lb (10 kg)
	FR6	44 lb (20 kg)
	FR7	83 lb (37.5 kg)
	FR8	154.3 lb (70 kg)
	FR9	238 lb (108 kg)

### VSD Series II Variable Speed Open Drives (Part 3 of 3)

Voltage/Horsepower/Amperes	FR4	230 V, 0.75 to 4 hp, 0.55 to 3 kW, 3.7 to 12 A
		480 V, 1.5 to 7.5 hp, 1.1 to 5.5 kW, 3.4 to 12 A
FR5	230 V, 5 to 10 hp, 4 to 7.5 kW, 18 to 31 A	
	480 V, 10 to 20 hp, 7.5 to 15 kW, 16 to 31 A	
FR6	230 V, 15 to 20 hp, 11 to 15 kW, 48 to 62 A	
	480 V, 25 to 40 hp, 18.5 to 30 kW, 38 to 61 A	
FR7	230 V, 25 to 40 hp, 18.5 to 30 kW, 38 to 61 A	
	480 V, 50 to 75 hp, 37 to 55 kW, 75 to 105 A	
FR8	230 V, 50 to 75 hp, 37 to 55 kW, 140 to 205 A	
	480 V, 100 to 150 hp, 75 to 110 kW, 140 to 205 A	
FR9	230 V, 100 to 120 hp, 75 to 90 kW, 261 to 310 A	
	480 V, 100 to 125 hp, 132 to 160 kW, 261 to 310 A	

*The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.*



**Building Efficiency**

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