

## CXS, CXL Variable Frequency Drives

Variable Frequency Drives (VFD) accept a control input and then output tailored control signal(s) to operate as many as six devices (fans, pumps, etc.) with maximum efficiency. The VFD can be field-programmed without any extra devices or computer connections.

### SPECIFICATIONS

#### Wiring:

- ☐ Wire Type and Size is Model and Application Dependant.

#### Power Supply:

- ☐ 230 Vac, 45-66 Hz, +10%, -15%.
- ☐ 460 Vac, 45-66 Hz, +10%, -15%.

#### Ambient Ratings:

- ☐ Temperature Ranges:
  - ☐ Operating: 14°F to 104°F (-10°C to 40°C).
  - ☐ Storage: -40°F to 140°F (-40°C to 60°C).
- ☐ Humidity Range: 5 to 95% RH (non-condensing).

#### Control Inputs:

- ☐ Voltage: 0-10 Vdc.
- ☐ Current: 4-20 mA.
- ☐ Digital: up to six.

#### Output:

- ☐ Voltage:
  - ☐ Minimum: 0 Vdc.
  - ☐ Maximum: Input Voltage Dependant.
- ☐ Frequency:
  - ☐ Range: 0-500 Hz.
  - ☐ Resolution: 0.01 Hz.

#### Mounting:

- ☐ Mount vertically on a wall or other flat surface using four screws or bolts sized for the particular unit.

#### Approvals (Model Dependant):

- ☐ NEMA1.
- ☐ NEMA12.
- ☐ Underwriters Laboratories, Inc. (UL)
- ☐ Canadian Underwriters Laboratories, Inc. (CUL).
- ☐ CE.

#### Accessories:

- ☐ Inverter Bypass with overload protection: See Table 1.
- ☐ 32003439-001 Du/Dt 6A Filter for 460V models.
- ☐ 32003439-002 Du/Dt 8A Filter for 460V models.
- ☐ 32003439-003 Du/Dt 11A Filter for 460V models.
- ☐ 32003439-004 Du/Dt 15A Filter for 460V models.
- ☐ 32003439-005 Du/Dt 21A Filter for 460V models.
- ☐ 32003439-006 Du/Dt 27A Filter for 460V models.
- ☐ 32003439-007 Du/Dt 34A Filter for 460V models.
- ☐ 32003439-008 Du/Dt 40A Filter for 460V models.
- ☐ 32003439-009 Du/Dt 52A Filter for 460V models.
- ☐ 32003439-010 Du/Dt 65A Filter for 460V models.
- ☐ 32003439-011 Du/Dt 77A Filter for 460V models.
- ☐ 32003439-012 Du/Dt 96A Filter for 460V models.

### SPECIFICATION DATA

### FEATURES

- Seven configurable applications built in.
- Easy commissioning through software or control panel.
- Devices can be wall-mounted with wall- or panel-mounted display.
- Eleven protective functions (see Users Manual, Technical Data section).
- Compact Size.
- Insulated gate bi-polar transistor (IGBT) technology.

#### Accessories (continued):

- ☐ 32003439-013 Du/Dt 125A Filter for 460V models.
- ☐ 32003439-014 Du/Dt 160A Filter for 460V models.
- ☐ 32003439-015 Du/Dt 180A Filter for 460V models.
- ☐ 32003443-001 Demo Case.
- ☐ 32003445-001 Graphic Display.
- ☐ 32003446-001 Modbus Connection Board.
- ☐ 32003448-001 LonWorks® Connection Board.
- ☐ 32003449-001 Modbus Connection Board shipped with and installed in CXS connection box.
- ☐ 32003451-001 NEMA1 Door Installation Set for panels.
- ☐ 32003452-001 NEMA12 Door Installation Set for graphic panel.
- ☐ 32004193-001 Blank Panel Cover.
- ☐ 32004946-001 I/O Expander Board (1).
- ☐ 32004946-002 I/O Expander Board (2).
- ☐ 32004946-003 I/O Expander Board (3).
- ☐ 32004946-004 I/O Expander Board (4).
- ☐ 32004946-005 Encoder Expander Board.
- ☐ 32004946-006 Input Board (120 Vac).
- ☐ 32004946-007 Analog Output Expander Board.
- ☐ 32004946-008 Fast Encoder Board for CXS units.
- ☐ 32004946-009 I/O Expander Board.
- ☐ 32004946-010 Interbus S Connection Board for CXL units.
- ☐ 32004946-011 Profibus DP and I/O Expander Board for CXL units.
- ☐ 32004946-012 Profibus DP Connection Board for CXL units.
- ☐ 32004946-013 Device Net Connection Board for CXS units.
- ☐ 32004946-014 Device Net Connection Board for CXL units.
- ☐ 32004946-015 I/O Expander Board (1) in enclosure for CXS units.
- ☐ 32004946-016 I/O Expander Board (2) in enclosure for CXS units.
- ☐ 32004946-017 I/O Expander Board (3) in enclosure for CXS units.
- ☐ 32004946-018 I/O Expander Board (4) in enclosure for CXS units.
- ☐ 32004946-019 Analog Output Expander Board in enclosure for CXS units.
- ☐ 32004946-020 Interbus S Connection Board for CXS units.
- ☐ 32004946-021 Profibus DP Connection Board for CXS units.



## Models:

CXL	Brake choppers available													
CXS	Includes brake choppers													
	0007HP	Motor Power	0.75 HP		No choke									
	0010HP		1.0 HP											
	0015HP		1.5 HP											
	0020HP		2.0 HP											
	0030HP		3.0 HP		Includes AC line choke									
	0040HP		4.0 HP											
	0050HP		5.0 HP											
	0075HP		7.5 HP											
	0100HP		10 HP											
	0150HP		15 HP											
	0200HP		20 HP											
	0250HP		25 HP											
	0300HP		30 HP											
	0400HP		40 HP											
	0500HP		50 HP											
	0600HP		60 HP											
	0750HP		75 HP											
	1000HP		100 HP											
	1250HP		125 HP											
	1500HP		150 HP											
	1750HP		175 HP											
	2000HP		200 HP											
	2500HP		250 HP											
	3000HP		300 HP											
	V	Voltage												
		3	Three-phase circuitry											
			2	200/208/230V <sup>a</sup>										
				5	460V <sup>b</sup>									
					G	Alpha-numeric display								
						7	NEMA1 enclosure							
							5	NEMA12 enclosure						
								2	Enclosure with protected chassis <sup>c</sup>					
									I	Standard RFI Filter				
									C	High-grade RFI Filter				
									N	No filter				
										0	No brake <sup>d</sup>			
											1	Built-in brake		
CXS	0100HP	V		3		5		G		7		C		1

<sup>a</sup> CXS models up to 20 HP only.<sup>b</sup> CXS models up to 30 HP only.<sup>c</sup> Device shipped with accessories that, when used, provide NEMA1 rating for enclosure.<sup>d</sup> CXL models *only*.

## Accessories (continued):

Table 1. Inverter Bypass With Overload Protection.

HP Rating	Voltage in Vac		
	200/208	230	460
1/2	32003440-010	32003440-010	32003440-012
3/4	32003440-011	32003440-011	32003440-013
1	32003440-001	32003440-001	32003440-010
1-1/2			
2	32003440-002	32003440-002	32003440-011
3	32003440-003		32003440-001
5	32003440-004	32003440-003	32003440-002
7.5	32003440-005	32003440-004	32003440-003
10	32003440-006	32003440-005	
15	32003440-007	32003441-006	32003440-004
20	32003440-008	32003441-007	32003440-005
25	32003440-009	32003441-008	32003442-008
30	32003440-014	32003441-009	
40	32003440-015	32003441-010	32003442-009
50 to 60	—	—	32003442-010
75	—	—	32003442-011
100	—	—	32003442-012
125	—	—	32003442-013
150	—	—	32003442-014

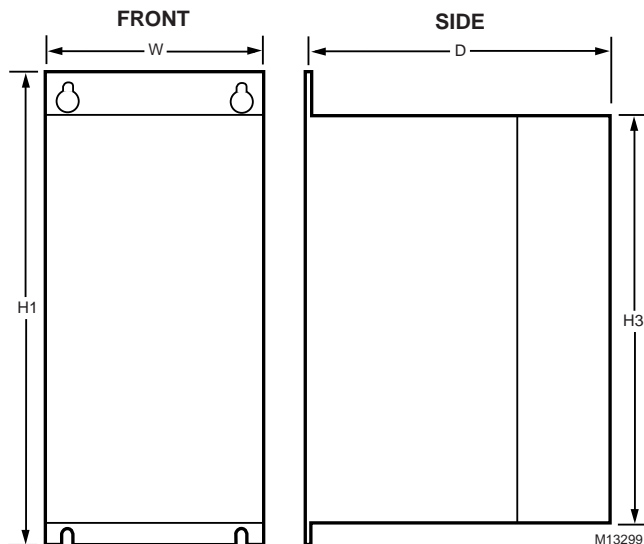
## TYPICAL SPECIFICATION

Alternating current (AC) motors with squirrel-cage rotors require a variable frequency control. The variable frequency drive (VFD) shall generate the required variable frequency through three main input voltage lines connected to an LC filter and diode bridge. This shall produce a DC voltage for an insulated gate bi-polar transistor (IGBT) bridge. The IGBT bridge shall produce a pulse-width modulated (PWM) AC voltage for the motor. A microprocessor shall control the motor according to measured signals and control commands set from the VFD control panel.

The VFD shall have seven programmable applications which can be modified using a personal computer-based commissioning tool with an optional software package, or a control panel with either an alpha-numeric or graphic LCD.

The VFD shall be UL and CE approved. The VFD shall be available with built-in RFI filters and all models with 3 HP or more shall include an AC choke.

Dimensions [in in. (mm)]:



Model	Frame	W	H3	H1	D	Type
CXS	M3	4-3/4 (120)	12 (305)	13-1/2 (343)	5-15/16 (150)	protected chassis
	M4	5-5/16 (135)	15-3/8 (390)	17 (432)	8-1/16 (205)	
	M5	7-5/16 (185)	21-11/16 (551)	23-3/8 (594)	8-1/2 (216)	
CXL	M4	4-11/16 (119)	15-3/8 (391)	16-11/16 (424)	8-1/2 (215)	NEMA1
	M5	6-3/16 (157)	20-5/16 (516)	22-1/8 (561)	9-3/8 (239)	
	M6	8-11/16 (221)	25-5/8 (650)	27-5/8 (701)	11-3/8 (290)	
	M7	14-11/16 (373)	39-3/8 (1001)	41-5/16 (1049)	13 (330)	
	M8	19-1/2 (495)	50-13/16 (1290)	53-1/8 (1349)	13-7/8 (353)	
	M9	27-5/8 (701)	40-3/16 (1021)	57-7/8 (1471)	15-3/8 (391)	

Model	Frame																							
	0.75 HP	1.0 HP	1.5 HP	2.0 HP	3.0 HP	4.0 HP	5.0 HP	7.5 HP	10 HP	15 HP	20 HP	25 HP	30 HP	40 HP	50 HP	60 HP	75 HP	100 HP	125 HP	150 HP	175 HP	200 HP	250 HP	300 HP
200/208/240V CXS	M3				M4				M5		M5	—		—		—		—		—		—		
460V CXS	—	M3			M3		M4		M4		M5	M5	—		—		—		—		—		—	
CXL	—				M4				M5		M6			M7			M8		M9					

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