

CERUS X-DRIVE with DISCONNECT

1/2–30HP (200/208/230VAC), 1/2–75HP (460VAC), 1/2–60HP (575VAC), 3-Phase Input
UL Type 1 Enclosed VFD with Disconnect

CERUS X-DRIVE

SPECIAL INSTRUCTIONS:

SIZING INFORMATION TABLES

Part Number	200VAC			208VAC			230VAC		
	HP	FLA	KAIC	HP	FLA	KAIC	HP	FLA	KAIC
CXD1-DISCO025-2V-2-5	1/2	2.5	100	1/2	2.4	100	1/2	2.2	100
CXD1-DISCO037-2V-4	3/4	3.7	100	3/4	3.5	100	3/4	3.2	100
CXD1-DISCO060-2V-6	1	4.8	100	1	4.6	100	1.5	6	100
CXD1-DISCO078-2V-8	2	7.8	100	2	7.5	100	2	6.8	100
CXD1-DISCO096-2V-10	2	7.8	100	2	7.5	100	3	9.6	100
CXD1-DISCO110-2V-13	3	11	100	3	10.6	100	3	9.6	100
CXD1-DISCO152-2V-17	3	11	100	3	10.6	100	5	15.2	100
CXD1-DISCO220-2V-22	5	17.5	100	5	16.7	100	7.5	22	100
CXD1-DISCO253-2V-26	7.5	25.3	100	7.5	24.2	100	7.5	22	100
CXD1-DISCO280-2V-32	7.5	25.3	100	7.5	24.2	100	10	28	100
CXD1-DISCO322-2V-40	10	32.2	100	10	30.8	100	10	28	100
CXD1-DISCO483-2V-50	15	48.30	100	15	46.2	100	15	42	100
CXD1-DISCO594-2V-63	-	-	-	20	59.4	100	20	54	100
CXD1-DISCO680-2V-75	20	62.1	100	20	59.4	100	25	68	100
CXD1-DISCO782-2V-90	25	78.2	100	25	74.8	100	25	68	100
CXD1-DISCO920-2V-100	30	92	100	30	88	100	30	80	100

Part Number	460VAC		
	HP	FLA	KAIC
CXD1-DISCO011-4V-1	1/2	1.1	65
CXD1-DISCO016-4V-1-6	3/4	1.6	65
CXD1-DISCO021-4V-2-5	1	2.1	65
CXD1-DISCO034-4V-4	2	3.4	65
CXD1-DISCO048-4V-6	3	4.8	65
CXD1-DISCO076-4V-8	5	7.6	65
CXD1-DISCO110-4V-13	7.5	11	65
CXD1-DISCO140-4V-17	10	14	30
CXD1-DISCO210-4V-22	15	21	30
CXD1-DISCO270-4V-32	20	27	30
CXD1-DISCO340-4V-40	25	34	50
CXD1-DISCO400-4V-40	30	40	50
CXD1-DISCO520-4V-63	40	52	50
CXD1-DISCO650-4V-75	50	65	50
CXD1-DISCO770-4V-90	60	77	50
CXD1-DISCO960-4V-100	75	96	50

Part Number	575VAC		
	HP	FLA	KAIC
CXD1-DISCO009-6V-1	1/2	0.9	25
CXD1-DISCO013-6V-1-6	3/4	1.3	25
CXD1-DISCO024-6V-2-5	1.5	2.4	25
CXD1-DISCO039-6V-4	3	3.9	25
CXD1-DISCO061-6V-6	5	6.1	25
CXD1-DISCO090-6V-10	7.5	9	25
CXD1-DISCO110-6V-13	10	11	25
CXD1-DISCO170-6V-17	15	17	10
CXD1-DISCO220-6V-22	20	22	10
CXD1-DISCO270-6V-32	25	27	10
CXD1-DISCO320-6V-40	30	32	10
CXD1-DISCO410-6V-50	40	41	10



Option Descriptions
Ethernet IP and Modbus TCP/IP Communications Card
3% Line Reactor ¹
5% Line Reactor ¹
Output Reactor (in lieu of line reactor) ²

¹ Available for 200, 208, 230, and 460VAC models only.

² Output reactors come standard on all 575VAC packages and do not need to be selected for these models.

SPECIFICATION TABLE

Cooling method		Forced air cooling by internal fans									
Short Circuit Rating		100KA									
Agency Approvals		UL and cUL listed, CE marked									
Motor Controls	Control Methods	200/208/230VAC and 460VAC models: V/F control, SVC (Sensorless Vector Control) 575/690VAC models: V/F and SVC									
	Control Type	PWM (Pulse Width Modulation)									
	Frequency Setting Resolution	Digital Reference: 0.01 Hz (Below 100 Hz), 0.1 Hz (Over 100 Hz) Analog Reference: [Max. output frequency]x 0.03/60Hz (±1 bit)									
	Frequency Accuracy	Digital: 0.01 % of Max. Output Frequency Analog: 0.1 % of Max. Output Frequency									
	V/F Control Curve	12 preset V/F curves and four-point square curve									
	Speed Control Ratio	1:12 (5Hz-60Hz) at 60Hz maximum frequency									
	Maximum Output Frequency	200/208/230VAC models: 599Hz (55kW and above: 400Hz); 460VAC models: 599Hz (90kW and above: 400Hz); 575/690VAC models: 599Hz									
	Overload Capacity	Variable Torque: 120% of VFD rated current for 1 minute during every 5 minutes of operation. Constant Torque: 150% of VFD rated current for 1 minute during every 5 minutes of operation and 160% for 3 seconds during every 25 seconds of operation.									
	Starting Torque	Up to 150% or higher at 0.5Hz (Torque Accuracy ±5%).									
	Torque Limit (Stall level)	Variable Torque: Max. 130% torque current; Constant Torque: Max. 160% torque current									
Operation	Operation Method	Keypad / Terminals / Communication (Built-in Modbus and BACnet)									
	Frequency Setting	Two Analog Inputs 0-10VDC/ 4- 20mA and One AI 0-10VDC. Digital: Keypad or Communication									
	By Digital Inputs	Start Signal	Forward, Reverse and Jog (some features can start and stop VFD based on analog signal).								
		Digital Inputs	8 programmable digital inputs can be set to any selection from long list of functions.								
		Multi-Step	Up to 17 Speeds can be set including Jog by Programmable Digital Inputs.								
		Accel/Decel Time and Presets	0.00- 600.00/0.0- 6000.0 seconds. Three ACC/DEC preset values switched by digital inputs or one by frequency. Additional adjustable Accel/Decel S-Curve pattern.								
		Emergency Stop	Ext. Trip and Shutdown immediately interrupt VFD output in any control method.								
		Jog	Jog operation with adjustable Jog frequency.								
		Fault Reset	Resets VFD faults via keypad, digital input or communication. Some critical faults can only be reset by cycling the VFD power.								
	Safety Inputs	SCM and STO terminals for safety circuit wiring.									
	Outputs	Three Multi-Function Relays	One relay with Form C: 250VAC 3A/30VDC 3A contact; Two relays with Form A: 250VAC 1.2A/30VDC 3A. Each relay can be programmed to any selection from the functions list.								
		Two Analog Outputs	Selections: Output Frequency, Output Current, Output Voltage, Output kW, DC Link Voltage, V1 or I input signal level. Both outputs are 0-10VDC scalable from 10 to 200%.								
	General Operation Functions		DC Braking, Frequency Limit, Jump Frequencies, 2nd ACC/DEC, Auto Restart, Auto-Tuning, PID w/sleep, Flying Start, Speed Search, DC Braking, Slip Compensation, Motor Pre-heat, Temperature Foldback, Damper Control, Fireman's Override, Shutdown, etc.								
Pump Operation Functions/Protections		Pipe Fill, 2nd PID, Trigger by AI, Overpressure, ULD (Underload), HLD (High Load), Dual Demand, Pipe Leak, Broken Pipe, MMC, Multi-VFD with Lead/Lag/Standby and Jokey, Transducer redundancy, Lubrication, Screen Clean, etc.									
Protection	VFD Fault Trips	Over Voltage, Low Voltage, Over Current, Overload, Short Circuit, Ground Fault, VFD Overheat, Input Phase Loss, Output Phase Open, CPU Communication Error, Signal Loss, Hardware Fault, etc.									
	Motor Overload	Adjustable electronic motor overload protection.									
	Overcurrent	200/208/230/460VAC Variable Torque: At 200% of VFD rated current, 200/208/230/460VAC Constant Torque: At 240% of VFD rated current, Current clamp: Variable Torque: 130- 135%, Constant Torque 170- 175% 575/690VAC models: At 225% VFD rated current Current clamp: Variable Torque: 128- 141%, Constant Torque: 170- 175%									
		230VAC models: At 410VDC DC bus voltage 460VAC models: At 820VDC DC bus voltage 575VAC models: At 1016VDC DC bus voltage 690VAC models: At 1189VDC DC bus voltage									
	Overtemperature	Built-in IGBT and Capacitor Bank temperature sensors									
	Restart After IPF	Adjustable power loss duration up to 20 sec. Leakage current is greater than 50% of rated current of the drive.									
	VFD Alarm	Stall Prevention at ACC and DEC, Overload, Thermal Sensor Fault, Capacitors High Temperature, Signal Loss, Overpressure, Underload, High Load, etc.									
	Keypad Display	Operation Information	Output Frequency, Output Current, Output Voltage, Frequency Reference, Operating Speed, DC Voltage, kWattmeter, Run-time, Last Trip Time, Pressure, etc.								
Fault History		The VFD stores 5 last faults.									
Environment	Operating Temperature	NEMA 1: 14°F - 104°F (-10°C - 40°C), Open Type: 14°F - 122°F (-10°C - 50°C)									
	Storage Temperature	-13°F - 158°F (-25°C - 70°C)									
	Ambient Humidity	Up to 95% RH. (Non-Condensing)									
	Altitude	Normal up to 3,300ft (1,000m). At altitude up to 2,000 m, de-rate by 1% of rated current or lower 0.5 °C of temperature for every 100m above 1,000m. Maximum altitude for Corner Grounded TN system is 2,000m. For application over 2,000m, please contact FELE for more details.									
	Vibration and Impact	Imm peak to peak value from 2Hz to 13.2Hz; 0.7G- 1.0G from 13.2Hz to 55Hz; 1.0G from 55Hz to 512Hz. Comply with IEC 60068-2-6 and IEC/EN60068-2-27.									
	Environmental Conditions	Pollution degree 2. No Corrosive Gas, Combustible Gas, Oil Mist or Dust. IEC60721-3-3/ IEC60364-1/ IEC60664-1									
Input Efficiency (>=X%)	Input Voltage	Drive Frame	Frame A	Frame B	Frame C	Frame D0	Frame D	Frame E	Frame F	Frame G	Frame H
		200/208/230VAC	96	96.5	96.5	-	97	97	-	-	-
		460VAC	96	96.5	96.5	97	97	97	97	97.5	97.5
		575VAC	97	98	97	-	97	97	97	98	98

SUBMITTED EQUIPMENT SCHEDULE

QTY	Tag	Part #	HP	Voltage	Phase	Communication Card

Line Reactor or Output Reactor

QTY	Tag	Part #	HP	Voltage	Phase	Communication Card

Line Reactor or Output Reactor

QTY	Tag	Part #	HP	Voltage	Phase	Communication Card

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Line Reactor or Output Reactor

QTY	Tag	Part #	HP	Voltage	Phase	Communication Card

Line Reactor or Output Reactor

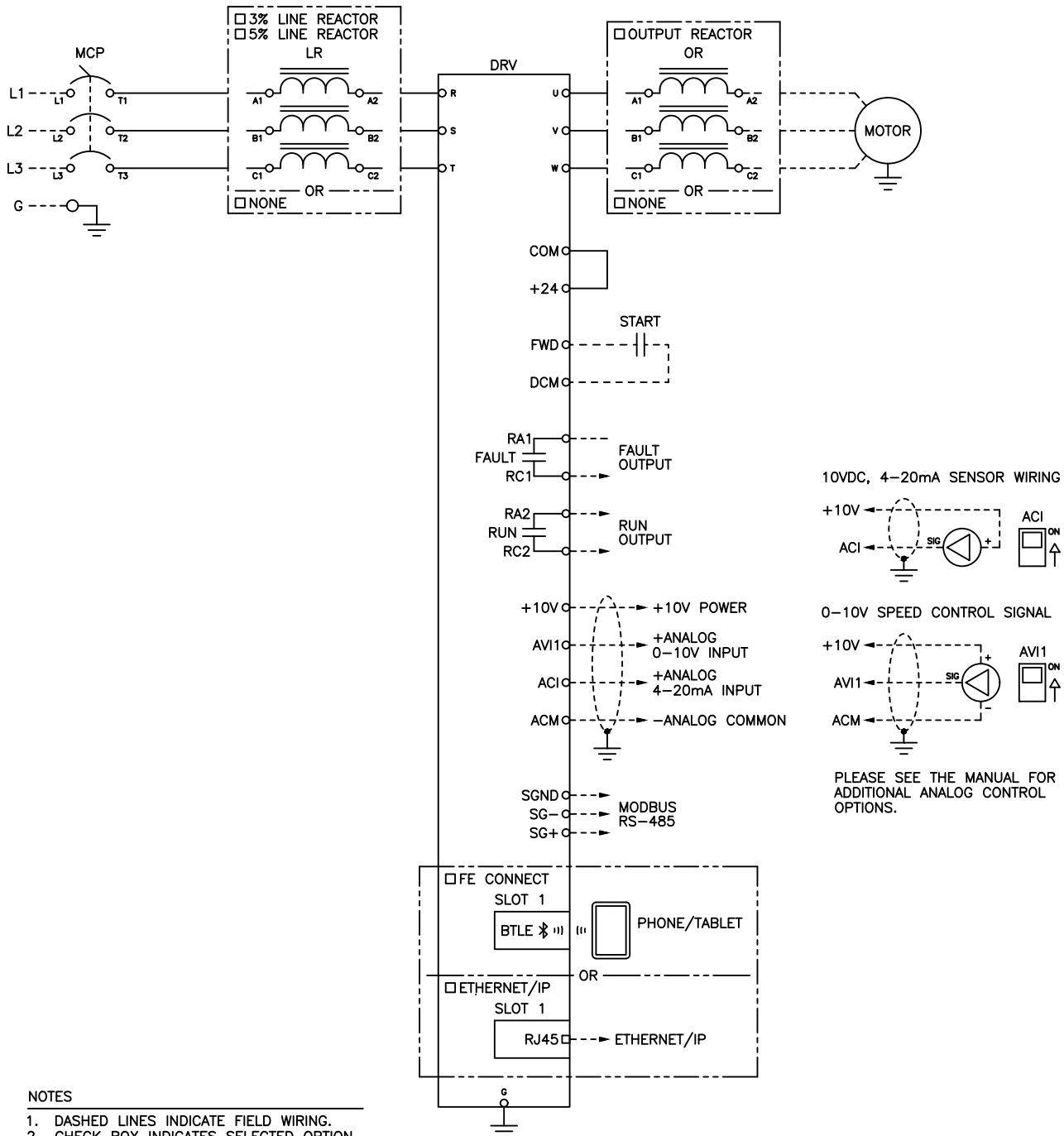
QTY	Tag	Part #	HP	Voltage	Phase	Communication Card

Line Reactor or Output Reactor

* 3% and 5% Line Reactors are not available on 575V VFD packages.

** Output reactors come standard on all 575V packages and do not need to be selected for these models.

WIRING DIAGRAM



NOTES

1. DASHED LINES INDICATE FIELD WIRING.
2. CHECK BOX INDICATES SELECTED OPTION.

MMS DISCONNECT SPECIFICATIONS

The following section details the MMS Disconnect sizing and ratings. To locate the part number for your X-Drive Disconnect panel, reference the sizing information table below.



200/208/230VAC X-Drive Panel		460VAC X-Drive Panel		575VAC X-Drive Panel	
Bypass Part Number	Contactor Part Number	Bypass Part Number	Contactor Part Number	Bypass Part Number	Contactor Part Number
CXD1-DISCO025-2V-2-5	CMS-32HI-2-5	CXD1-DISCO011-4V-1	CMS-32HI-1	CXD1-DISCO009-6V-1	CMS-32HI-1
CXD1-DISCO037-2V-4	CMS-32HI-4	CXD1-DISCO016-4V-1-6	CMS-32HI-1-6	CXD1-DISCO013-6V-1-6	CMS-32HI-1-6
CXD1-DISCO060-2V-6	CMS-32HI-6	CXD1-DISCO021-4V-2-5	CMS-32HI-2-5	CXD1-DISCO024-6V-2-5	CMS-32HI-2-5
CXD1-DISCO078-2V-8	CMS-32HI-8	CXD1-DISCO034-4V-4	CMS-32HI-4	CXD1-DISCO039-6V-4	CMS-32HI-4
CXD1-DISCO096-2V-10	CMS-32HI-10	CXD1-DISCO048-4V-6	CMS-32HI-6	CXD1-DISCO061-6V-6	CMS-32HI-6
CXD1-DISCO110-2V-13	CMS-32HI-13	CXD1-DISCO076-4V-8	CMS-32HI-8	CXD1-DISCO090-6V-10	CMS-32HI-10
CXD1-DISCO152-2V-17	CMS-32HI-17	CXD1-DISCO110-4V-13	CMS-32HI-13	CXD1-DISCO110-6V-13	CMS-32HI-13
CXD1-DISCO220-2V-22	CMS-32HI-22	CXD1-DISCO140-4V-17	CMS-32HI-17	CXD1-DISCO170-6V-17	CMS-32HI-17
CXD1-DISCO253-2V-26	CMS-32HI-26	CXD1-DISCO210-4V-22	CMS-32HI-22	CXD1-DISCO220-6V-22	CMS-32HI-22
CXD1-DISCO280-2V-32	CMS-32HI-32	CXD1-DISCO270-4V-32	CMS-32HI-32	CXD1-DISCO270-6V-32	CMS-63HI-32
CXD1-DISCO322-2V-40	CMS-32HI-40	CXD1-DISCO340-4V-40	CMS-32HI-40	CXD1-DISCO320-6V-40	CMS-63HI-40
CXD1-DISCO483-2V-50	CMS-63HI-50	CXD1-DISCO400-4V-40	CMS-63HI-40	CXD1-DISCO410-6V-50	CMS-63HI-50
CXD1-DISCO594-2V-63	CMS-63HI-63	CXD1-DISCO520-4V-63	CMS-63HI-63	CXD1-DISCO520-6V-63	CMS-100HI-63
CXD1-DISCO680-2V-75	CMS-100HI-75	CXD1-DISCO650-4V-75	CMS-100HI-75	CXD1-DISCO620-6V-65	CMS-100HI-65
CXD1-DISCO782-2V-90	CMS-100HI-90	CXD1-DISCO770-4V-90	CMS-100HI-90	-	-
CXD1-DISCO920-2V-100	CMS-100HI-100	CXD1-DISCO960-4V-100	CMS-100HI-100	-	-

(MCP) DISCONNECT SIZING TABLE

Frame Size	Part #	Rated operational current Ie (A)	Magnetic release operating current (A)	KAIC Ratings [kA]			Disconnect Device
				240V	480V	600V	
32AF	CMS-32HI-1	1	13	100	65	25	
	CMS-32HI-1-6	1.6	20.8	100	65	25	
	CMS-32HI-2-5	2.5	32.5	100	65	25	
	CMS-32HI-4	4	52	100	65	25	
	CMS-32HI-6	6	78	100	65	25	
	CMS-32HI-8	8	104	100	65	25	
	CMS-32HI-10	10	130	100	65	25	
	CMS-32HI-13	13	169	100	65	25	
	CMS-32HI-17	17	221	100	50	10	
	CMS-32HI-22	22	286	100	30	10	
	CMS-32HI-26	26	338	100	30	10	
63AF	CMS-32HI-32	32	416	100	30	10	
	CMS-63HI-40	40	520	100	50	10	
	CMS-63HI-50	50	650	100	50	10	
	CMS-63HI-63	63	819	100	50	10	
100AF	CMS-100HI-75	75	975	100	50	10	
	CMS-100HI-90	90	1170	100	50	10	
	CMS-100HI-100	100	1300	100	50	10	

200/208/230VAC X-Drive Panel		460VAC X-Drive Panel		575VAC X-Drive Panel	
Bypass Part Number	VFD Part Number	Bypass Part Number	VFD Part Number	Bypass Part Number	VFD Part Number
CXD1-BYP0025-2V-2-5	CXD-005-2V	CXD1-BYP0011-4V-1	CXD-003-4V	CXD1-BYP0009-6V-1	CXD-003-6V
CXD1-BYP0037-2V-4	CXD-005-2V	CXD1-BYP0016-4V-1-6	CXD-003-4V	CXD1-BYP0013-6V-1-6	CXD-003-6V
CXD1-BYP0060-2V-6	CXD-007-2V	CXD1-BYP0021-4V-2-5	CXD-003-4V	CXD1-BYP0024-6V-2-5	CXD-003-6V
CXD1-BYP0078-2V-8	CXD-010-2V	CXD1-BYP0034-4V-4	CXD-004-4V	CXD1-BYP0039-6V-4	CXD-006-6V
CXD1-BYP0096-2V-10	CXD-010-2V	CXD1-BYP0048-4V-6	CXD-008-4V	CXD1-BYP0061-6V-6	CXD-006-6V
CXD1-BYP0110-2V-13	CXD-015-2V	CXD1-BYP0076-4V-8	CXD-010-4V	CXD1-BYP0090-6V-10	CXD-009-6V
CXD1-BYP0152-2V-17	CXD-021-2V	CXD1-BYP0110-4V-13	CXD-013-4V	CXD1-BYP0110-6V-13	CXD-012-6V
CXD1-BYP0220-2V-22	CXD-031-2V	CXD1-BYP0140-4V-17	CXD-018-4V	CXD1-BYP0170-6V-17	CXD-018-6V
CXD1-BYP0253-2V-26	CXD-031-2V	CXD1-BYP0210-4V-22	CXD-024-4V	CXD1-BYP0220-6V-22	CXD-024-6V
CXD1-BYP0280-2V-32	CXD-031-2V	CXD1-BYP0270-4V-32	CXD-032-4V	CXD1-BYP0270-6V-32	CXD-030A-6V
CXD1-BYP0322-2V-40	CXD-046-2V	CXD1-BYP0340-4V-40	CXD-038-4V	CXD1-BYP0320-6V-40	CXD-036A-6V
CXD1-BYP0483-2V-50	CXD-061-2V	CXD1-BYP0400-4V-40	CXD-045-4V	CXD1-BYP0410-6V-50	CXD-045A-6V
CXD1-BYP0594-2V-63	CXD-061-2V	CXD1-BYP0520-4V-63	CXD-060-4V	CXD1-BYP0520-6V-63	CXD-054A-6V
CXD1-BYP0680-2V-75	CXD-075-2V	CXD1-BYP0650-4V-75	CXD-073-4V	CXD1-BYP0620-6V-65	CXD-067A-6V
CXD1-BYP0782-2V-90	CXD-090-2V	CXD1-BYP0770-4V-90	CXD-091-4V	-	-
CXD1-BYP0920-2V-100	CXD-105-2V	CXD1-BYP0960-4V-100	CXD-110-4V	-	-
CXD1-BYP1200-2V-200	CXD-105A-2V	CXD1-BYP1240-4V-200	CXD-150A-4V	-	-
CXD1-BYP1300-2V-225	CXD-146A-2V	CXD1-BYP1560-4V-250	CXD-180A-4V	-	-
CXD1-BYP1540-2V-250	CXD-180A-2V	-	-	-	-

CERUS X-DRIVE WITH DISCONNECT DIMENSIONS

All measurements in inches

UL TYPE 1

200/208/230VAC X-Drive with Disconnect	H x W x D	Frame Size	460VAC X-Drive with Disconnect	H x W x D	Frame Size	575VAC X-Drive with Disconnect	H x W x D	Frame Size
CXD1-DISCO025-2V-2-5	43.1" x 8.1" x 10.5"	1	CXD1-DISCO011-4V-1	43.1" x 8.1" x 10.5"	1	CXD1-DISCO009-6V-1	43.1" x 8.1" x 10.5"	1
CXD1-DISCO037-2V-4								
CXD1-DISCO060-2V-6								
CXD1-DISCO078-2V-8								
CXD1-DISCO096-2V-10								
CXD1-DISCO110-2V-13								
CXD1-DISCO152-2V-17								
CXD1-DISCO220-2V-22								
CXD1-DISCO253-2V-26								
CXD1-DISCO280-2V-32								
CXD1-DISCO322-2V-40	51.5" x 10.4" x 11.2"	2	CXD1-DISCO400-4V-40	51.5" x 10.4" x 11.2"	2	CXD1-DISCO024-6V-2-5	51.5" x 10.4" x 11.2"	2
CXD1-DISCO483-2V-50								
CXD1-DISCO594-2V-63								
CXD1-DISCO680-2V-75	57.6" x 12.5" x 13.0"	3	CXD1-DISCO650-4V-75	57.6" x 12.5" x 13.0"	3	CXD1-DISCO039-6V-4	57.6" x 12.5" x 13.0"	3
CXD1-DISCO782-2V-90								
CXD1-DISCO920-2V-100								