

COMMERCIAL HVAC & INDUSTRIAL DRIVES

CERUS® X-DRIVE





SAFETY FIRST!

As with all electrical equipment, only qualified, expert personnel should perform maintenance and installation. Comply with all applicable local and national codes and laws that regulate the installation and operation of equipment and read manuals thoroughly. Use only installation manuals and not this sales brochure for installation procedures. It is up to the installer to determine product suitability for a given application.

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For the most up-to-date product information, visit franklin-controls.com.



CERUS® X-DRIVE VFD (VARIABLE FREQUENCY DRIVE)

1/6–100HP (200/208VAC), 1/6–125HP (230VAC), 1/2–675+HP (460VAC),
1/2–500+ HP (575VAC), Single-Phase and 3-Phase Input
Dual Rated for Constant and Variable Torque
UL Type 1 Standalone Variable Frequency Drive

VARIABLE SPEED IS JUST THE BEGINNING

Designed for constant and variable torque application, the CERUS® X-Drive is Franklin Electric's all-inclusive drive solution for a variety of markets. The X-Drive controller is loaded with application-specific firmware with enhanced settings that control and protect motors for the most demanding applications in HVAC and industrial markets. Available in multiple packaged configurations, including bypass and enclosed, these panels are built to last, with every detail and component centered around your requirements. Pair this product with our legendary motors and pumps to maximize the performance of your application. All of this is backed by the best support team in the industry, making sure our business isn't what slows yours down.

Deliver More. Offer Franklin.

FULL-FEATURED FOR YOUR APPLICATION

- Streamline setup process with application-specific firmware allowing for quick and easy startups
- Applications: Basic, Supply Fan, Exhaust Fan, Vacuum, Constant Torque
- Selectable PID units include PSI, inWC, Feet, °F, °C, CFM, GPM, %, inHG, m, mBAR, BAR, kPa, LPM, CMH
- Full HP range offering allows for more versatility in project application
- Seamless integration into most automation systems with native BACnet, Modbus RTU and optional Ethernet communications
- Control up to 8 motors with built-in multi-motor control functionality
- Built-in Programmable Logic Controller (PLC) for advanced industrial applications
- UL Type 4X removable display that can be remote mounted without additional covers
- Industry leading power density which translates to a smaller footprint
- Standard UL Type 1, 12 and 3R enclosed packages available (UL Type 4X engineered to order)
- UL-Listed phase conversion versatility allows for single-phase or three-phase input

FULL-FEATURED FOR YOUR APPLICATION

Discover an incredibly intuitive start-up experience with application-specific parameters pre-set to industry standards for supply or exhaust fans, cooling tower panels, and circulating pumps.

VARYING SPEED, CONSTANT SAVINGS

- By running your motor to meet the demand of your application, the X-Drive can reduce energy costs by up to 50%
- Variable motor speed allows for soft start, protecting the life of your equipment and offering long-term savings



CERUS® X-DRIVE VFD

ORDERING & SIZING INFORMATION (200/208/230VAC)

Voltage	Part Number	Variable Torque Applications				Constant Torque Applications			
		Single-Phase		3-Phase		Single-Phase		3-Phase	
		HP	Amps	HP	Amps	HP	Amps	HP	Amps
200VAC, Single-Phase and 3-Phase	CXD-005A-2V	1/6	2.5	1	5	1/6	2.5	1/2	3
	CXD-007A-2V	1/4	3.75	1.5	7.5	1/6	2.5	1	5
	CXD-010A-2V	1/3	5	2	10	1/4	4	2	8
	CXD-015A-2V	1/2	7.5	3	15	1/3	5.5	3	11
	CXD-021A-2V	1	10.5	5	21	3/4	8.8	3	17
	CXD-031A-2V	2	15.5	7.5	31	1.5	12.5	5	25
	CXD-046A-2V	3	23	10	46	2	16.5	10	33
	CXD-061A-2V	3	30.5	15	61	3	24.5	15	49
	CXD-075A-2V	5	37.5	20	75	5	32.5	20	65
	CXD-090A-2V	5	45	25	90	5	37.5	20	75
	CXD-105A-2V	7.5	52.5	30	105	5	45	25	90
	CXD-146A-2V	7.5	48.1	40	146	5	39.6	40	120
	CXD-180A-2V	10	59.4	50	180	7.5	48.2	40	146
	CXD-215A-2V	-	70.9	60	215	15	59.4	60	180
	CXD-276A-2V	-	91	75	276	-	71	60	215
	CXD-322A-2V	-	106.2	100	322	-	84.2	75	255
208VAC, Single-Phase and 3-Phase	CXD-005A-2V	1/2	2.5	1	5	1/6	2.5	1/2	3
	CXD-007A-2V	3/4	3.75	1.5	7.5	1/6	2.5	1	5
	CXD-010A-2V	1	5	2	10	1/3	4	2	8
	CXD-015A-2V	2	7.5	3	15	1/2	5.5	3	11
	CXD-021A-2V	2	10.5	5	21	1	8.8	5	17
	CXD-031A-2V	3	15.5	7.5	31	1.5	12.5	7.5	25
	CXD-046A-2V	5	23	10	46	2	16.5	10	33
	CXD-061A-2V	7.5	30.5	20	61	3	24.5	15	49
	CXD-075A-2V	10	37.5	25	75	5	32.5	20	65
	CXD-090A-2V	10	45	30	90	5	37.5	25	75
	CXD-105A-2V	15	52.5	30	105	7.5	45	30	90
	CXD-146A-2V	15	48.1	50	146	5	39.6	40	120
	CXD-180A-2V	20	59.4	60	180	7.5	48.2	50	146
	CXD-215A-2V	25	70.9	75	215	10	59.4	60	180
	CXD-276A-2V	30	91	100	276	-	71	75	215
	CXD-322A-2V	30	106.2	100	322	-	84.2	75	255
230VAC, Single-Phase and 3-Phase	CXD-005A-2V	1/6	2.5	1	5	1/6	2.5	1/2	3
	CXD-007A-2V	1/3	3.75	2	7.5	1/6	2.5	1	5
	CXD-010A-2V	1/2	5	3	10	1/3	4	2	8
	CXD-015A-2V	3/4	7.5	5	15	1/2	5.5	3	11
	CXD-021A-2V	1.5	10.5	7.5	21	1	8.8	5	17
	CXD-031A-2V	2	15.5	10	31	2	12.5	7.5	25
	CXD-046A-2V	3	23	15	46	2	16.5	10	33
	CXD-061A-2V	5	30.5	20	61	3	24.5	15	49
	CXD-075A-2V	5	37.5	25	75	5	32.5	20	65
	CXD-090A-2V	7.5	45	30	90	5	37.5	25	75
	CXD-105A-2V	10	52.5	40	105	7.5	45	30	90
	CXD-146A-2V	7.5	48.1	50	146	5	39.6	40	120
	CXD-180A-2V	10	59.4	60	180	7.5	48.2	50	146
	CXD-215A-2V	15	70.9	75	215	10	59.4	60	180
	CXD-276A-2V	20	91	100	276	15	71	75	215
	CXD-322A-2V	20	106.2	125	322	15	84.2	100	255



CERUS® X-DRIVE VFD

ORDERING & SIZING INFORMATION (460VAC)

Voltage	Part Number	Constant Torque Applications				Variable Torque Applications			
		Single-Phase		3-Phase		Single-Phase		3-Phase	
		Hp	Amps	Hp	Amps	Hp	Amps	Hp	Amps
460VAC, Single-Phase and 3-Phase	CXD-003A-4V	-	1.5	3/4	1.7	-	1.5	1	3
	CXD-004A-4V	-	1.5	1.5	3	-	2.1	2	4.2
	CXD-005A-4V	-	2	2	4	1/2	2.75	3	5.5
	CXD-008A-4V	1/2	3	3	6	1	4.25	5	8.5
	CXD-010A-4V	1	4.5	5	9	1.5	5.25	5	10.5
	CXD-013A-4V	1.5	5.3	7.5	11	2	6.5	7.5	13
	CXD-018A-4V	2	6	7.5	12	3	9	10	18
	CXD-024A-4V	3	9	10	18	3	12	15	24
	CXD-032A-4V	3	12	15	24	5	16	20	32
	CXD-038A-4V	5	16	20	32	5	19	25	38
	CXD-045A-4V	5	19	25	38	7.5	22.5	30	45
	CXD-060A-4V	7.5	22.5	30	45	10	30	40	60
	CXD-073A-4V	10	30	40	60	15	36.5	50	73
	CXD-091A-4V	10	27	50	73	10	30	60	91
	CXD-110A-4V	10	33	60	91	15	36.3	75	110
	CXD-150A-4V	15	40	75	110	20	49.5	100	150
	CXD-180A-4V	25	55	100	150	25	59.4	125	180
	CXD-220A-4V	25	65	150	180	30	72.6	150	220
	CXD-260A-4V	30	80	150	220	30	85.8	175	260
	CXD-310A-4V	40	91	200	260	40	102.3	215	310
	CXD-370A-4V	50	109	250	310	50	122.1	250	370
	CXD-460A-4V	-	130	300	370	-	151.8	300	460
	CXD-530A-4V	-	161	350	460	-	174.9	375	530
	CXD-616A-4V	-	193	450	550	-	203.28	425	616
CXD-683A-4V	-	216	500	616	-	225.39	475	683	
CXD-770A-4V	-	240	-	683	-	254.1	536	770	
CXD-930A-4V	-	285.7	-	866	-	306.9	675	930	
575VAC, Single-Phase and 3-Phase	CXD-003A-6V	-	1.25	1.5	2.5	-	1.5	2	3
	CXD-004A-6V	-	1.8	2	3.6	1.2	2.15	3	4.3
	CXD-006A-6V	1/2	2.75	3	5.5	1	3.35	5	6.7
	CXD-009A-6V	1.5	4.1	5	8.2	1.5	4.95	7.5	9.9
	CXD-012A-6V	2	5	7.5	10	2	6.05	10	12.1
	CXD-018A-6V	3	7.7	10	15.5	3	9.35	15	18.7
	CXD-024A-6V	3	9.95	15	20	5	12.1	20	24.2
	CXD-030A-6V	3	10	20	24	-	-	25	30
	CXD-036A-6V	5	12	25	30	10	15	30	36
	CXD-045A-6V	5	15	30	36	7.5	18	40	45
	CXD-054A-6V	7.5	18	40	45	10	22.5	50	54
	CXD-067A-6V	5	14.8	50	54	7.5	17.82	60	67
	CXD-086A-6V	7.5	17.8	60	67	10	22.11	75	86
	CXD-104A-6V	10	22.1	75	86	15	28.3	100	104
	CXD-125A-6V	-	-	100	104	-	-	125	125
	CXD-150A-6V	-	-	125	125	-	-	150	150
	CXD-180A-6V	-	-	150	150	-	-	150	180
	CXD-220A-6V	-	-	150	180	-	-	200	220
	CXD-290A-6V	-	-	200	220	-	-	300	290
	CXD-350A-6V	-	-	300	290	-	-	350	350
	CXD-430A-6V	-	-	350	350	-	-	450	430
	CXD-465A-6V	-	-	450	430	-	-	450	465
	CXD-590A-6V	-	-	450	465	-	-	500	590
	CXD-675A-6V	-	-	500	590	-	-	SEE MOTOR	675

STAND ALONE DRIVE OPTIONS

Descriptions

Ethernet IP and Modbus TCP/IP Communication Card

CERUS® X-DRIVE VFD

SPECIFICATIONS

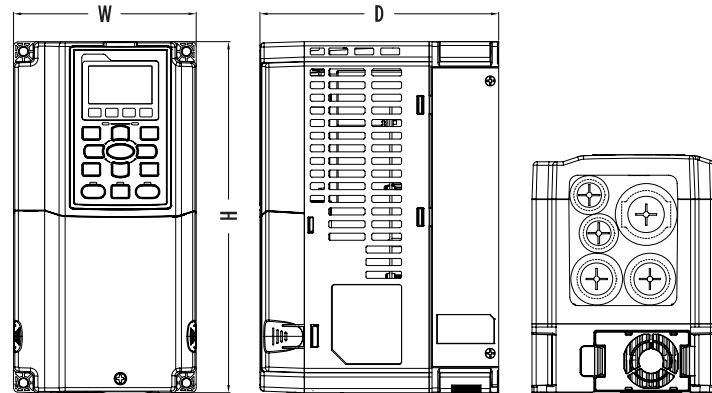
Cooling method		Forced air cooling by internal fans										
Short Circuit Rating		100kA										
Agency Approvals		UL and cUL listed, CE marked										
Motor Controls	Control Methods	200/208/230VAC and 460VAC models: V/F control, SVC (Sensorless Vector Control) 575/690VAC models: V/F and SVC										
	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 (±11 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.									
	Outputs	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.									
Protection	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 Feedback, 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.										
	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.										
Keypad Display	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%										
	Overvoltage	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.										
Environment	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.										
	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.										
Input Efficiency (>=X%)	Vibration and Impact	1mm 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	



CERUS® X-DRIVE VFD

DIMENSIONS

X-Drive VFD	W X H x D	Frame Size
CXD-005A-2V- CXD-021A-2V	5.12" x 9.84" x 6.69"	A
CXD-003A-4V- CXD-018A-4V		
CXD-003A-6V- CXD-006A-6V		
CXD-031-2V- CXD-061A-2V	7.48" x 12.6" x 7.48"	B
CXD-024A-4V- CXD-038A-4V		
CXD-009A-6V- CXD-018A-6V		
CXD-075-2V- CXD-05A-2V	9.84" x 15.75" x 8.27"	C
CXD-045A-4V- CXD-073A-4V		
CXD-024A-6V- CXD-045A-6V		
CXD-091A-4V- CXD-110A-4V	11.02" x 19.69" x 10.04"	D0
CXD-146A-2V- CXD-180A-2V	12.99" x 21.65" x 10.83"	D
CXD-150A-4V- CXD-180A-4V		
CXD-054A-6V- CXD-067A-6V		
CXD-215A-2V- CXD-322A-2V	14.57" x 23.19" x 11.81"	E
CXD-220A-4V- CXD-260A-4V		
CXD-086A-6V- CXD-150A-6V		
CXD-310A-4V- CXD-370A-4V	16.54" x 31.5" x 11.81"	F
CXD-180A-6V- CXD-220A-6V		
CXD-460A-4V- CXD-530A-4V	19.69" x 39.37" x 15.63"	G
CXD-290A-6V- CXD-350A-6V		
CXD-616A-4V- CXD-930A-4V	27.56" x 56.5" x 15.91"	H
CXD-430A-6V- CXD-675A-6V		



CERUS® X-DRIVE BYPASS

1/2-50HP (200/208VAC), 1/2-60HP (230VAC), 1/2-125HP (460VAC), 1/2-60HP (575VAC), 3-Phase Input
UL Type 1, 3R or 12 Enclosed Smart Bypass Panel

BYPASS PANEL FEATURES

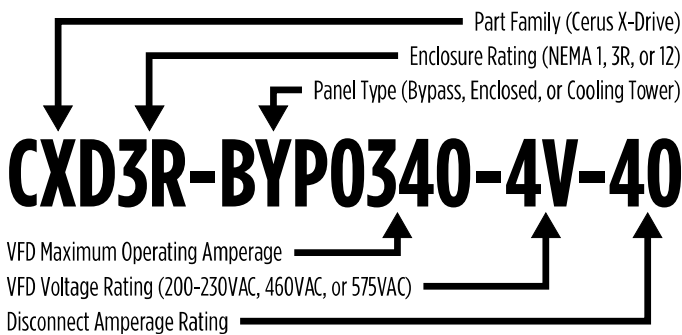
Standard Bypass Features

- Compact vertical design preserves wall space
- includes standard MMS disconnect, Hand-Off-Auto and VFD/Off/Bypass switches
- 3-Contactor (drive-isolation equivalent) configuration
- Harmonic mitigation device on all 575VAC panels

Easy Installation, Space Saving Design

- Reduced labor and operation costs
- Manual bypass control simplifies system operation
- 3-Contactor bypass configuration standard across all panels
- Hand-Off-Auto switch standard on all UL Type 3R and 12 panels
- Up to 100 KAIC short-circuit rating available
- Standard UL Type 1, 12 and 3R enclosed packages available (UL Type 4X engineered to order)
- UL 508C and cUL rating with all drive models for complete motor protection
- Door-mounted keypad for simple programming and system access
- Optional Ethernet & Modbus TCP/IP communications card (BACnet and RS-485 modbus standard)
- Optional panel space heater for rugged environmental conditions (UL Type 3R panels)

PART NUMBER ANATOMY



CERUS® X-DRIVE BYPASS

ORDERING & SIZING INFORMATION (UL TYPE 1)

Part Number	200VAC			208VAC			230VAC		
	HP	FLA	KAIC	HP	FLA	KAIC	HP	FLA	KAIC
CXDI-BYP0025-2V-2-5	1/2	2.5	100	1/2	2.4	100	1/2	2.2	100
CXDI-BYP0037-2V-4	3/4	3.7	100	3/4	3.5	100	3/4	3.2	100
CXDI-BYP0060-2V-6	1	4.8	100	1	4.6	100	1.5	6	100
CXDI-BYP0078-2V-8	2	7.8	100	2	7.5	100	2	6.8	100
CXDI-BYP096-2V-10	2	7.8	100	2	7.5	100	3	9.6	100
CXDI-BYP0110-2V-13	3	11	100	3	10.6	100	3	9.6	100
CXDI-BYP0152-2V-17	3	11	100	3	10.6	100	5	15.2	100
CXDI-BYP0220-2V-22	5	17.5	100	5	16.7	100	7.5	22	100
CXDI-BYP0253-2V-26	7.5	25.3	100	7.5	24.2	100	7.5	22	100
CXDI-BYP0280-2V-32	7.5	25.3	100	7.5	24.2	100	10	28	100
CXDI-BYP0322-2V-40	10	32.2	100	10	30.8	100	10	28	100
CXDI-BYP0483-2V-50	15	48.30	100	15	46.2	100	15	42	100
CXDI-BYP0594-2V-63	-	-	-	20	59.4	100	20	54	100
CXDI-BYP0680-2V-75	20	62.1	100	20	59.4	100	25	68	100
CXDI-BYP0782-2V-90	25	78.2	100	25	74.8	100	25	68	100
CXDI-BYP0920-2V-100	30	92	100	30	88	100	30	80	100
CXDI-BYP1200-2V-200	30	92	5	30	88	5	40	104	5
CXDI-BYP1300-2V-225	40	120	5	40	114	5	50	130	5
CXDI-BYP1540-2V-250	50	150	10	50	143	10	60	154	10

Part Number	460VAC		
	HP	FLA	KAIC
CXDI-BYP0011-4V-1	1/2	1.1	65
CXDI-BYP0016-4V-1-6	3/4	1.6	65
CXDI-BYP0021-4V-2-5	1	2.1	65
CXDI-BYP0034-4V-4	2	3.4	65
CXDI-BYP0048-4V-6	3	4.8	65
CXDI-BYP0076-4V-8	5	7.6	65
CXDI-BYP0110-4V-13	7.5	11	65
CXDI-BYP0140-4V-17	10	14	30
CXDI-BYP0210-4V-22	15	21	30
CXDI-BYP0270-4V-32	20	27	30
CXDI-BYP0340-4V-40	25	34	50
CXDI-BYP0400-4V-40	30	40	50
CXDI-BYP0520-4V-63	40	52	50
CXDI-BYP0650-4V-75	50	65	50
CXDI-BYP0770-4V-90	60	77	50
CXDI-BYP0960-4V-100	75	96	50
CXDI-BYP1240-4V-200	100	124	10
CXDI-BYP1560-4V-250	125	156	10

Part Number	575VAC		
	HP	FLA	KAIC
CXDI-BYP0009-6V-1	1/2	0.9	25
CXDI-BYP0013-6V-1-6	3/4	1.3	25
CXDI-BYP0024-6V-2-5	1.5	2.4	25
CXDI-BYP0039-6V-4	3	3.9	25
CXDI-BYP0061-6V-6	5	6.1	25
CXDI-BYP0090-6V-10	7.5	9	25
CXDI-BYP0110-6V-13	10	11	25
CXDI-BYP0170-6V-17	15	17	10
CXDI-BYP0220-6V-22	20	22	10
CXDI-BYP0270-6V-32	25	27	10
CXDI-BYP0320-6V-40	30	32	10
CXDI-BYP0410-6V-50	40	41	10
CXDI-BYP0520-6V-63	50	52	10
CXDI-BYP0620-6V-65	60	62	10

PANEL OPTIONS (UL TYPE 1)

UL TYPE 1 Bypass Option Descriptions
Bypass Pilot Light (24V, Amber)
Fault Pilot Light (24V, Red)
Run Pilot Light (24V, Green)
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.

CERUS® X-DRIVE BYPASS

ORDERING & SIZING INFORMATION (UL TYPE 3R)

Part Number	200VAC			208VAC			230VAC		
	HP	FLA	KAIC	HP	FLA	KAIC	HP	FLA	KAIC
CXD3R-BYP0025-2V-2-5	1/2	2.5	100	1/2	2.4	100	1/2	2.2	100
CXD3R-BYP0037-2V-4	3/4	3.7	100	3/4	3.5	100	3/4	3.2	100
CXD3R-BYP0060-2V-6	1	4.8	100	1	4.6	100	1.5	6	100
CXD3R-BYP0078-2V-8	2	7.8	100	2	7.5	100	2	6.8	100
CXD3R-BYP096-2V-10	2	7.8	100	2	7.5	100	3	9.6	100
CXD3R-BYP0110-2V-13	3	11	100	3	10.6	100	3	9.6	100
CXD3R-BYP0152-2V-17	3	11	100	3	10.6	100	5	15.2	100
CXD3R-BYP0220-2V-22	5	17.5	100	5	16.7	100	7.5	22	100
CXD3R-BYP0253-2V-26	7.5	25.3	100	7.5	24.2	100	7.5	22	100
CXD3R-BYP0280-2V-32	7.5	25.3	100	7.5	24.2	100	10	28	100
CXD3R-BYP0322-2V-40	10	32.2	100	10	30.8	100	10	28	100
CXD3R-BYP0483-2V-50	15	48.30	100	15	46.2	100	15	42	100
CXD3R-BYP0594-2V-63	-	-	-	20	59.4	100	20	54	100
CXD3R-BYP0680-2V-75	20	62.1	100	20	59.4	100	25	68	100
CXD3R-BYP0782-2V-90	25	78.2	100	25	74.8	100	25	68	100
CXD3R-BYP0920-2V-100	30	92	100	30	88	100	30	80	100
CXD3R-BYP1200-2V-200	30	92	5	30	88	5	40	104	5
CXD3R-BYP1300-2V-225	40	120	5	40	114	5	50	130	5
CXD3R-BYP1540-2V-250	50	150	10	50	143	10	60	154	10

Part Number	460VAC		
	HP	FLA	KAIC
CXD3R-BYP0011-4V-1	1/2	1.1	65
CXD3R-BYP0016-4V-1-6	3/4	1.6	65
CXD3R-BYP0021-4V-2-5	1	2.1	65
CXD3R-BYP0034-4V-4	2	3.4	65
CXD3R-BYP0048-4V-6	3	4.8	65
CXD3R-BYP0076-4V-8	5	7.6	65
CXD3R-BYP0110-4V-13	7.5	11	65
CXD3R-BYP0140-4V-17	10	14	30
CXD3R-BYP0210-4V-22	15	21	30
CXD3R-BYP0270-4V-32	20	27	30
CXD3R-BYP0340-4V-40	25	34	50
CXD3R-BYP0400-4V-40	30	40	50
CXD3R-BYP0520-4V-63	40	52	50
CXD3R-BYP0650-4V-75	50	65	50
CXD3R-BYP0770-4V-90	60	77	50
CXD3R-BYP0960-4V-100	75	96	50
CXD3R-BYP1240-4V-200	100	124	10
CXD3R-BYP1560-4V-250	125	156	10

Part Number	575VAC		
	HP	FLA	KAIC
CXD3R-BYP0009-6V-1	1/2	0.9	25
CXD3R-BYP0013-6V-1-6	3/4	1.3	25
CXD3R-BYP0024-6V-2-5	1.5	2.4	25
CXD3R-BYP0039-6V-4	3	3.9	25
CXD3R-BYP0061-6V-6	5	6.1	25
CXD3R-BYP0090-6V-10	7.5	9	25
CXD3R-BYP0110-6V-13	10	11	25
CXD3R-BYP0170-6V-17	15	17	10
CXD3R-BYP0220-6V-22	20	22	10
CXD3R-BYP0270-6V-32	25	27	10
CXD3R-BYP0320-6V-40	30	32	10
CXD3R-BYP0410-6V-50	40	41	10
CXD3R-BYP0520-6V-63	50	52	10
CXD3R-BYP0620-6V-65	60	62	10

PANEL OPTIONS (UL TYPE 3R)

Factory Options (UL Type 3R)
Speed Potentiometer
Ethernet IP and Modbus TCP/IP Communications Card
3% Line Reactor
5% Line Reactor
dV/dt Filter ¹
EMI/FRI Filter ²

Factory Options (UL Type 3R)
Surge Suppressor
UL Type 3R Enclosed Door-Mounted Keypad Cover
UL Type 12 Enclosed Door-Mounted Keypad Cover
Panel Space Heater
Free-standing Foot Kit (12 inches)

¹ Available only on 460 and 575VAC bypass panels. Selecting a dV/dt Filter for a 575VAC panel will substitute out the 575VAC output reactor as the harmonic mitigation device.

² Available on 200, 208, 230, and 460VAC panels only.



CERUS® X-DRIVE BYPASS

ORDERING & SIZING INFORMATION (UL TYPE 12)

Part Number	200VAC			208VAC			230VAC		
	HP	FLA	KAIC	HP	FLA	KAIC	HP	FLA	KAIC
CXD12-BYP0025-2V-2-5	1/2	2.5	100	1/2	2.4	100	1/2	2.2	100
CXD12-BYP0037-2V-4	3/4	3.7	100	3/4	3.5	100	3/4	3.2	100
CXD12-BYP0060-2V-6	1	4.8	100	1	4.6	100	1.5	6	100
CXD12-BYP0078-2V-8	2	7.8	100	2	7.5	100	2	6.8	100
CXD12-BYP096-2V-10	2	7.8	100	2	7.5	100	3	9.6	100
CXD12-BYP0110-2V-13	3	11	100	3	10.6	100	3	9.6	100
CXD12-BYP0152-2V-17	3	11	100	3	10.6	100	5	15.2	100
CXD12-BYP0220-2V-22	5	17.5	100	5	16.7	100	7.5	22	100
CXD12-BYP0253-2V-26	7.5	25.3	100	7.5	24.2	100	7.5	22	100
CXD12-BYP0280-2V-32	7.5	25.3	100	7.5	24.2	100	10	28	100
CXD12-BYP0322-2V-40	10	32.2	100	10	30.8	100	10	28	100
CXD12-BYP0483-2V-50	15	48.30	100	15	46.2	100	15	42	100
CXD12-BYP0594-2V-63	-	-	-	20	59.4	100	20	54	100
CXD12-BYP0680-2V-75	20	62.1	100	20	59.4	100	25	68	100
CXD12-BYP0782-2V-90	25	78.2	100	25	74.8	100	25	68	100
CXD12-BYP0920-2V-100	30	92	100	30	88	100	30	80	100
CXD12-BYP1200-2V-200	30	92	5	30	88	5	40	104	5
CXD12-BYP1300-2V-225	40	120	5	40	114	5	50	130	5
CXD12-BYP1540-2V-250	50	150	10	50	143	10	60	154	10

Part Number	460VAC		
	HP	FLA	KAIC
CXD12-BYP0011-4V-1	1/2	1.1	65
CXD12-BYP0016-4V-1-6	3/4	1.6	65
CXD12-BYP0021-4V-2-5	1	2.1	65
CXD12-BYP0034-4V-4	2	3.4	65
CXD12-BYP0048-4V-6	3	4.8	65
CXD12-BYP0076-4V-8	5	7.6	65
CXD12-BYP0110-4V-13	7.5	11	65
CXD12-BYP0140-4V-17	10	14	30
CXD12-BYP0210-4V-22	15	21	30
CXD12-BYP0270-4V-32	20	27	30
CXD12-BYP0340-4V-40	25	34	50
CXD12-BYP0400-4V-40	30	40	50
CXD12-BYP0520-4V-63	40	52	50
CXD12-BYP0650-4V-75	50	65	50
CXD12-BYP0710-4V-90	60	77	50
CXD12-BYP0960-4V-100	75	96	50
CXD12-BYP1240-4V-200	100	124	10
CXD12-BYP1560-4V-250	125	156	10

Part Number	575VAC		
	HP	FLA	KAIC
CXD12-BYP0009-6V-1	1/2	0.9	25
CXD12-BYP0013-6V-1-6	3/4	1.3	25
CXD12-BYP0024-6V-2-5	1.5	2.4	25
CXD12-BYP0039-6V-4	3	3.9	25
CXD12-BYP0061-6V-6	5	6.1	25
CXD12-BYP0090-6V-10	7.5	9	25
CXD12-BYP0110-6V-13	10	11	25
CXD12-BYP0170-6V-17	15	17	10
CXD12-BYP0220-6V-22	20	22	10
CXD12-BYP0270-6V-32	25	27	10
CXD12-BYP0320-6V-40	30	32	10
CXD12-BYP0410-6V-50	40	41	10
CXD12-BYP0520-6V-63	50	52	10
CXD12-BYP0620-6V-65	60	62	10

PANEL OPTIONS (UL TYPE 12)

Factory Options (UL Type 12)
Speed Potentiometer
Ethernet IP and Modbus TCP/IP Communications Card
3% Line Reactor
5% Line Reactor
dV/dt Filter ¹

Factory Options (UL Type 12)
EMI/FRI Filter ²
Surge Suppressor
UL Type 3R Enclosed Door-Mounted Keypad Cover
UL Type 12 Enclosed Door-Mounted Keypad Cover

¹ Available only on 460 and 575VAC bypass panels. Selecting a dV/dt Filter for a 575VAC panel will substitute out the 575VAC output reactor as the harmonic mitigation device.

² Available on 200, 208, 230, and 460VAC panels only.

CERUS® X-DRIVE BYPASS

SPECIFICATIONS

		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 (±11 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.								
	Outputs	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.								
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 Feedback, 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%									
	Overvoltage	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 (>=1%)	Drive Frame		Frame A	Frame B	Frame C	Frame D0	Frame D	Frame E	Frame F	Frame G	Frame H
	Input Voltage	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	



CERUS® X-DRIVE BYPASS

DIMENSIONS

UL TYPE 1

200/208/230VAC X-Drive Bypass	H x W x D	Frame Size	460VAC X-Drive Bypass	H x W x D	Frame Size	575VAC X-Drive Bypass	H x W x D	Frame Size
CXD1-BYP0025-2V-2-5	43.1" x 8.1" x 10.5"	1	CXD1-BYP0011-4V-1	43.1" x 8.1" x 10.5"	1	CXD1-BYP0009-6V-1	43.1" x 8.1" x 10.5"	1
CXD1-BYP0037-2V-4								
CXD1-BYP0060-2V-6								
CXD1-BYP0078-2V-8								
CXD1-BYP0096-2V-10								
CXD1-BYP0110-2V-13								
CXD1-BYP0152-2V-17								
CXD1-BYP0220-2V-22								
CXD1-BYP0253-2V-26								
CXD1-BYP0280-2V-32								
CXD1-BYP0322-2V-40	51.5" x 10.4" x 11.2"	2	CXD1-BYP0340-4V-40	51.5" x 10.4" x 11.2"	2	CXD1-BYP0270-6V-32	51.5" x 10.4" x 11.2"	2
CXD1-BYP0483-2V-50								
CXD1-BYP0594-2V-63	57.6" x 12.5" x 13.0"	3	CXD1-BYP0520-4V-63	57.6" x 12.5" x 13.0"	3	CXD1-BYP0410-6V-50	62.0" x 18.8" x 14.9"	4
CXD1-BYP0680-2V-75								
CXD1-BYP0782-2V-90	62.0" x 18.8" x 14.9"	4	CXD1-BYP0770-4V-90	62.0" x 18.8" x 14.9"	4	CXD1-BYP0520-6V-63		
CXD1-BYP0920-2V-100								
CXD1-BYP1200-2V-200	62.0" x 18.8" x 14.9"	4	CXD1-BYP0960-4V-100	62.0" x 18.8" x 14.9"	4	CXD1-BYP0620-6V-65		
CXD1-BYP1300-2V-225								
CXD1-BYP1540-2V-250								

UL TYPE 3R

200/208/230VAC X-Drive Bypass	H x W x D	Frame Size	460VAC X-Drive Bypass	H x W x D	Frame Size	575VAC X-Drive Bypass	H x W x D	Frame Size
CXD3R-BYP0025-2V-2-5	36.5" x 26.0" x 16.375"	1	CXD3R-BYP0011-4V-1	36.5" x 26.0" x 16.375"	1	CXD32-BYP003-6V-1	36.5" x 26.0" x 16.375"	1
CXD3R-BYP0037-2V-4								
CXD3R-BYP0060-2V-6								
CXD3R-BYP0078-2V-8								
CXD3R-BYP0096-2V-10								
CXD3R-BYP0110-2V-13								
CXD3R-BYP0152-2V-17								
CXD3R-BYP0220-2V-22								
CXD3R-BYP0253-2V-26								
CXD3R-BYP0280-2V-32			41.5" x 29.0" x 16.375"			2		
CXD3R-BYP0483-2V-50								
CXD3R-BYP0594-2V-63	46.5" x 29.0" x 16.375"	3	CXD3R-BYP0520-4V-63	46.5" x 29.0" x 16.375"	3	CXD32-BYP009-6V-10	51.5" x 34.0" x 20.5"	4
CXD3R-BYP0680-2V-75								
CXD3R-BYP0782-2V-90	51.5" x 34.0" x 20.5"	4	CXD3R-BYP0770-4V-90	51.5" x 34.0" x 20.5"	4	CXD32-BYP012-6V-13		
CXD3R-BYP0920-2V-100								
CXD3R-BYP1200-2V-200	51.5" x 34.0" x 20.5"	4	CXD3R-BYP0960-4V-100	51.5" x 34.0" x 20.5"	4	CXD32-BYP018-6V-17		
CXD3R-BYP1300-2V-225								
CXD3R-BYP1540-2V-250								

CERUS® X-DRIVE BYPASS

DIMENSIONS

UL TYPE 12

200/208/230VAC X-Drive Bypass	H x W x D	Frame Size	460VAC X-Drive Bypass	H x W x D	Frame Size	460VAC X-Drive Bypass	H x W x D	Frame Size																																																																																																																																																																																					
CXD12-BYP0025-2V-2-5	39.0" x 24.0" x 13.0"	1	CXD12-BYP0011-4V-1	39.0" x 24.0" x 13.0"	1	CXD3-BYP0009-6V-1	39.0" x 24.0" x 13.0"	1																																																																																																																																																																																					
CXD12-BYP0037-2V-4			CXD12-BYP0060-2V-6			CXD12-BYP0078-2V-8			CXD12-BYP0096-2V-10	CXD12-BYP0110-2V-13	CXD12-BYP0152-2V-17	CXD12-BYP0220-2V-22	CXD12-BYP0253-2V-26	CXD12-BYP0280-2V-32	CXD12-BYP0322-2V-40	45.0" x 30.0" x 13.0"	2	CXD12-BYP0016-4V-6	45.0" x 30.0" x 13.0"	2	CXD3-BYP0013-6V-1-6	45.0" x 30.0" x 13.0"	2	CXD12-BYP0483-2V-50	CXD12-BYP0594-2V-63	CXD12-BYP0680-2V-75	CXD12-BYP0782-2V-90	51.0" x 36.0" x 17.0"	3	CXD12-BYP0021-4V-2-5	51.0" x 36.0" x 17.0"	3	CXD3-BYP0024-6V-2-5	51.0" x 36.0" x 17.0"	3	CXD12-BYP0920-2V-100	CXD12-BYP1200-2V-200	63.0" x 36.0" x 21.0"	4	CXD12-BYP0034-4V-4	63.0" x 36.0" x 21.0"	4	CXD3-BYP0039-6V-4	63.0" x 36.0" x 21.0"	4	CXD12-BYP1300-2V-225	CXD12-BYP1540-2V-250				CXD12-BYP0048-4V-6			CXD3-BYP0051-6V-6						CXD12-BYP0076-4V-8			CXD3-BYP0090-6V-10						CXD12-BYP0110-4V-13			CXD3-BYP0110-6V-13						CXD12-BYP0140-4V-17			CXD3-BYP0170-6V-17						CXD12-BYP0210-4V-22			CXD3-BYP0220-6V-22						CXD12-BYP0270-4V-32			CXD3-BYP0270-6V-32						CXD12-BYP0340-4V-40			CXD3-BYP0320-6V-40						CXD12-BYP0400-4V-40			CXD3-BYP0410-6V-50						CXD12-BYP0520-4V-63			CXD3-BYP0520-6V-63						CXD12-BYP0650-4V-75			CXD3-BYP0620-6V-65						CXD12-BYP0770-4V-90									CXD12-BYP0960-4V-100									CXD12-BYP1240-4V-200									CXD12-BYP1560-4V-250																					
CXD12-BYP0060-2V-6			CXD12-BYP0078-2V-8			CXD12-BYP0096-2V-10			CXD12-BYP0110-2V-13	CXD12-BYP0152-2V-17	CXD12-BYP0220-2V-22	CXD12-BYP0253-2V-26	CXD12-BYP0280-2V-32	CXD12-BYP0322-2V-40	45.0" x 30.0" x 13.0"			2			CXD12-BYP0016-4V-6			45.0" x 30.0" x 13.0"	2	CXD3-BYP0013-6V-1-6	45.0" x 30.0" x 13.0"			2			CXD12-BYP0483-2V-50			CXD12-BYP0594-2V-63	CXD12-BYP0680-2V-75			CXD12-BYP0782-2V-90			51.0" x 36.0" x 17.0"			3	CXD12-BYP0021-4V-2-5	51.0" x 36.0" x 17.0"	3	CXD3-BYP0024-6V-2-5	51.0" x 36.0" x 17.0"	3	CXD12-BYP0920-2V-100	CXD12-BYP1200-2V-200	63.0" x 36.0" x 21.0"	4	CXD12-BYP0034-4V-4	63.0" x 36.0" x 21.0"	4	CXD3-BYP0039-6V-4	63.0" x 36.0" x 21.0"	4	CXD12-BYP1300-2V-225	CXD12-BYP1540-2V-250				CXD12-BYP0048-4V-6			CXD3-BYP0051-6V-6						CXD12-BYP0076-4V-8			CXD3-BYP0090-6V-10						CXD12-BYP0110-4V-13			CXD3-BYP0110-6V-13						CXD12-BYP0140-4V-17			CXD3-BYP0170-6V-17						CXD12-BYP0210-4V-22			CXD3-BYP0220-6V-22						CXD12-BYP0270-4V-32			CXD3-BYP0270-6V-32						CXD12-BYP0340-4V-40			CXD3-BYP0320-6V-40						CXD12-BYP0400-4V-40			CXD3-BYP0410-6V-50						CXD12-BYP0520-4V-63			CXD3-BYP0520-6V-63						CXD12-BYP0650-4V-75			CXD3-BYP0620-6V-65						CXD12-BYP0770-4V-90									CXD12-BYP0960-4V-100									CXD12-BYP1240-4V-200									CXD12-BYP1560-4V-250				
CXD12-BYP0078-2V-8			CXD12-BYP0096-2V-10			CXD12-BYP0110-2V-13			CXD12-BYP0152-2V-17	CXD12-BYP0220-2V-22	CXD12-BYP0253-2V-26	CXD12-BYP0280-2V-32	CXD12-BYP0322-2V-40	45.0" x 30.0" x 13.0"							2					CXD12-BYP0016-4V-6		45.0" x 30.0" x 13.0"	2		CXD3-BYP0013-6V-1-6	45.0" x 30.0" x 13.0"	2	CXD12-BYP0483-2V-50	CXD12-BYP0594-2V-63	CXD12-BYP0680-2V-75	CXD12-BYP0782-2V-90			51.0" x 36.0" x 17.0"							3			CXD12-BYP0021-4V-2-5			51.0" x 36.0" x 17.0"	3			CXD3-BYP0024-6V-2-5			51.0" x 36.0" x 17.0"			3	CXD12-BYP0920-2V-100	CXD12-BYP1200-2V-200	63.0" x 36.0" x 21.0"	4	CXD12-BYP0034-4V-4	63.0" x 36.0" x 21.0"	4	CXD3-BYP0039-6V-4	63.0" x 36.0" x 21.0"	4	CXD12-BYP1300-2V-225	CXD12-BYP1540-2V-250				CXD12-BYP0048-4V-6			CXD3-BYP0051-6V-6						CXD12-BYP0076-4V-8			CXD3-BYP0090-6V-10						CXD12-BYP0110-4V-13			CXD3-BYP0110-6V-13						CXD12-BYP0140-4V-17			CXD3-BYP0170-6V-17						CXD12-BYP0210-4V-22			CXD3-BYP0220-6V-22						CXD12-BYP0270-4V-32			CXD3-BYP0270-6V-32						CXD12-BYP0340-4V-40			CXD3-BYP0320-6V-40						CXD12-BYP0400-4V-40			CXD3-BYP0410-6V-50						CXD12-BYP0520-4V-63			CXD3-BYP0520-6V-63						CXD12-BYP0650-4V-75			CXD3-BYP0620-6V-65						CXD12-BYP0770-4V-90									CXD12-BYP0960-4V-100									CXD12-BYP1240-4V-200		
CXD12-BYP0096-2V-10			CXD12-BYP0110-2V-13			CXD12-BYP0152-2V-17			CXD12-BYP0220-2V-22	CXD12-BYP0253-2V-26	CXD12-BYP0280-2V-32	CXD12-BYP0322-2V-40	45.0" x 30.0" x 13.0"													2					CXD12-BYP0016-4V-6			45.0" x 30.0" x 13.0"	2	CXD3-BYP0013-6V-1-6	45.0" x 30.0" x 13.0"	2	CXD12-BYP0483-2V-50		CXD12-BYP0594-2V-63	CXD12-BYP0680-2V-75	CXD12-BYP0782-2V-90	51.0" x 36.0" x 17.0"	3	CXD12-BYP0021-4V-2-5		51.0" x 36.0" x 17.0"	3	CXD3-BYP0024-6V-2-5	51.0" x 36.0" x 17.0"	3					CXD12-BYP0920-2V-100							CXD12-BYP1200-2V-200	63.0" x 36.0" x 21.0"			4			CXD12-BYP0034-4V-4			63.0" x 36.0" x 21.0"	4	CXD3-BYP0039-6V-4	63.0" x 36.0" x 21.0"	4	CXD12-BYP1300-2V-225	CXD12-BYP1540-2V-250				CXD12-BYP0048-4V-6			CXD3-BYP0051-6V-6						CXD12-BYP0076-4V-8			CXD3-BYP0090-6V-10						CXD12-BYP0110-4V-13			CXD3-BYP0110-6V-13						CXD12-BYP0140-4V-17			CXD3-BYP0170-6V-17						CXD12-BYP0210-4V-22			CXD3-BYP0220-6V-22						CXD12-BYP0270-4V-32			CXD3-BYP0270-6V-32						CXD12-BYP0340-4V-40			CXD3-BYP0320-6V-40						CXD12-BYP0400-4V-40			CXD3-BYP0410-6V-50						CXD12-BYP0520-4V-63			CXD3-BYP0520-6V-63						CXD12-BYP0650-4V-75			CXD3-BYP0620-6V-65						CXD12-BYP0770-4V-90									CXD12-BYP0960-4V-100						
CXD12-BYP0110-2V-13			CXD12-BYP0152-2V-17			CXD12-BYP0220-2V-22			CXD12-BYP0253-2V-26	CXD12-BYP0280-2V-32	CXD12-BYP0322-2V-40	45.0" x 30.0" x 13.0"				2	CXD12-BYP0016-4V-6		45.0" x 30.0" x 13.0"	2		CXD3-BYP0013-6V-1-6	45.0" x 30.0" x 13.0"								2					CXD12-BYP0483-2V-50			CXD12-BYP0594-2V-63	CXD12-BYP0680-2V-75	CXD12-BYP0782-2V-90	51.0" x 36.0" x 17.0"	3			CXD12-BYP0021-4V-2-5	51.0" x 36.0" x 17.0"			3			CXD3-BYP0024-6V-2-5	51.0" x 36.0" x 17.0"	3	CXD12-BYP0920-2V-100	CXD12-BYP1200-2V-200	63.0" x 36.0" x 21.0"	4	CXD12-BYP0034-4V-4	63.0" x 36.0" x 21.0"	4	CXD3-BYP0039-6V-4	63.0" x 36.0" x 21.0"							4					CXD12-BYP1300-2V-225			CXD12-BYP1540-2V-250				CXD12-BYP0048-4V-6			CXD3-BYP0051-6V-6						CXD12-BYP0076-4V-8			CXD3-BYP0090-6V-10						CXD12-BYP0110-4V-13			CXD3-BYP0110-6V-13						CXD12-BYP0140-4V-17			CXD3-BYP0170-6V-17						CXD12-BYP0210-4V-22			CXD3-BYP0220-6V-22						CXD12-BYP0270-4V-32			CXD3-BYP0270-6V-32						CXD12-BYP0340-4V-40			CXD3-BYP0320-6V-40						CXD12-BYP0400-4V-40			CXD3-BYP0410-6V-50						CXD12-BYP0520-4V-63			CXD3-BYP0520-6V-63						CXD12-BYP0650-4V-75			CXD3-BYP0620-6V-65						CXD12-BYP0770-4V-90									CXD12-BYP0960-4V-100							
CXD12-BYP0152-2V-17			CXD12-BYP0220-2V-22			CXD12-BYP0253-2V-26			CXD12-BYP0280-2V-32	CXD12-BYP0322-2V-40	45.0" x 30.0" x 13.0"				2		CXD12-BYP0016-4V-6	45.0" x 30.0" x 13.0"				2		CXD3-BYP0013-6V-1-6	45.0" x 30.0" x 13.0"		2			CXD12-BYP0483-2V-50						CXD12-BYP0594-2V-63			CXD12-BYP0680-2V-75	CXD12-BYP0782-2V-90	51.0" x 36.0" x 17.0"			3	CXD12-BYP0021-4V-2-5	51.0" x 36.0" x 17.0"		3	CXD3-BYP0024-6V-2-5		51.0" x 36.0" x 17.0"	3	CXD12-BYP0920-2V-100			CXD12-BYP1200-2V-200	63.0" x 36.0" x 21.0"			4			CXD12-BYP0034-4V-4			63.0" x 36.0" x 21.0"	4		CXD3-BYP0039-6V-4	63.0" x 36.0" x 21.0"		4	CXD12-BYP1300-2V-225			CXD12-BYP1540-2V-250						CXD12-BYP0048-4V-6			CXD3-BYP0051-6V-6						CXD12-BYP0076-4V-8			CXD3-BYP0090-6V-10						CXD12-BYP0110-4V-13			CXD3-BYP0110-6V-13						CXD12-BYP0140-4V-17			CXD3-BYP0170-6V-17						CXD12-BYP0210-4V-22			CXD3-BYP0220-6V-22						CXD12-BYP0270-4V-32			CXD3-BYP0270-6V-32						CXD12-BYP0340-4V-40			CXD3-BYP0320-6V-40						CXD12-BYP0400-4V-40			CXD3-BYP0410-6V-50						CXD12-BYP0520-4V-63			CXD3-BYP0520-6V-63						CXD12-BYP0650-4V-75			CXD3-BYP0620-6V-65						CXD12-BYP0770-4V-90									CXD12-BYP0960-4V-100								
CXD12-BYP0220-2V-22			CXD12-BYP0253-2V-26			CXD12-BYP0280-2V-32			CXD12-BYP0322-2V-40	45.0" x 30.0" x 13.0"				2			CXD12-BYP0016-4V-6				45.0" x 30.0" x 13.0"			2				CXD3-BYP0013-6V-1-6	45.0" x 30.0" x 13.0"	2		CXD12-BYP0483-2V-50	CXD12-BYP0594-2V-63			CXD12-BYP0680-2V-75			CXD12-BYP0782-2V-90	51.0" x 36.0" x 17.0"		3	CXD12-BYP0021-4V-2-5		51.0" x 36.0" x 17.0"		3		CXD3-BYP0024-6V-2-5	51.0" x 36.0" x 17.0"			3	CXD12-BYP0920-2V-100	CXD12-BYP1200-2V-200	63.0" x 36.0" x 21.0"							4		CXD12-BYP0034-4V-4			63.0" x 36.0" x 21.0"	4				CXD3-BYP0039-6V-4	63.0" x 36.0" x 21.0"	4	CXD12-BYP1300-2V-225	CXD12-BYP1540-2V-250				CXD12-BYP0048-4V-6			CXD3-BYP0051-6V-6						CXD12-BYP0076-4V-8			CXD3-BYP0090-6V-10						CXD12-BYP0110-4V-13			CXD3-BYP0110-6V-13						CXD12-BYP0140-4V-17			CXD3-BYP0170-6V-17						CXD12-BYP0210-4V-22			CXD3-BYP0220-6V-22						CXD12-BYP0270-4V-32			CXD3-BYP0270-6V-32						CXD12-BYP0340-4V-40			CXD3-BYP0320-6V-40						CXD12-BYP0400-4V-40			CXD3-BYP0410-6V-50						CXD12-BYP0520-4V-63			CXD3-BYP0520-6V-63						CXD12-BYP0650-4V-75			CXD3-BYP0620-6V-65						CXD12-BYP0770-4V-90									CXD12-BYP0960-4V-100									CXD12-BYP1240-4V-200
CXD12-BYP0253-2V-26			CXD12-BYP0280-2V-32			CXD12-BYP0322-2V-40			45.0" x 30.0" x 13.0"				2				CXD12-BYP0016-4V-6									45.0" x 30.0" x 13.0"		2				CXD3-BYP0013-6V-1-6	45.0" x 30.0" x 13.0"	2	CXD12-BYP0483-2V-50	CXD12-BYP0594-2V-63	CXD12-BYP0680-2V-75	CXD12-BYP0782-2V-90	51.0" x 36.0" x 17.0"		3		CXD12-BYP0021-4V-2-5	51.0" x 36.0" x 17.0"		3		CXD3-BYP0024-6V-2-5	51.0" x 36.0" x 17.0"		3	CXD12-BYP0920-2V-100		CXD12-BYP1200-2V-200	63.0" x 36.0" x 21.0"			4	CXD12-BYP0034-4V-4		63.0" x 36.0" x 21.0"	4		CXD3-BYP0039-6V-4	63.0" x 36.0" x 21.0"						4		CXD12-BYP1300-2V-225			CXD12-BYP1540-2V-250				CXD12-BYP0048-4V-6			CXD3-BYP0051-6V-6						CXD12-BYP0076-4V-8			CXD3-BYP0090-6V-10						CXD12-BYP0110-4V-13			CXD3-BYP0110-6V-13						CXD12-BYP0140-4V-17			CXD3-BYP0170-6V-17						CXD12-BYP0210-4V-22			CXD3-BYP0220-6V-22						CXD12-BYP0270-4V-32			CXD3-BYP0270-6V-32						CXD12-BYP0340-4V-40			CXD3-BYP0320-6V-40						CXD12-BYP0400-4V-40			CXD3-BYP0410-6V-50						CXD12-BYP0520-4V-63			CXD3-BYP0520-6V-63						CXD12-BYP0650-4V-75			CXD3-BYP0620-6V-65						CXD12-BYP0770-4V-90									CXD12-BYP0960-4V-100									CXD12-BYP1240-4V-200	
CXD12-BYP0280-2V-32			CXD12-BYP0322-2V-40			45.0" x 30.0" x 13.0"						2				CXD12-BYP0016-4V-6	45.0" x 30.0" x 13.0"		2	CXD3-BYP0013-6V-1-6			45.0" x 30.0" x 13.0"								2	CXD12-BYP0483-2V-50			CXD12-BYP0594-2V-63	CXD12-BYP0680-2V-75	CXD12-BYP0782-2V-90	51.0" x 36.0" x 17.0"		3		CXD12-BYP0021-4V-2-5	51.0" x 36.0" x 17.0"		3		CXD3-BYP0024-6V-2-5	51.0" x 36.0" x 17.0"		3		CXD12-BYP0920-2V-100	CXD12-BYP1200-2V-200	63.0" x 36.0" x 21.0"			4		CXD12-BYP0034-4V-4	63.0" x 36.0" x 21.0"				4		CXD3-BYP0039-6V-4	63.0" x 36.0" x 21.0"			4		CXD12-BYP1300-2V-225	CXD12-BYP1540-2V-250						CXD12-BYP0048-4V-6			CXD3-BYP0051-6V-6						CXD12-BYP0076-4V-8			CXD3-BYP0090-6V-10						CXD12-BYP0110-4V-13			CXD3-BYP0110-6V-13						CXD12-BYP0140-4V-17			CXD3-BYP0170-6V-17						CXD12-BYP0210-4V-22			CXD3-BYP0220-6V-22						CXD12-BYP0270-4V-32			CXD3-BYP0270-6V-32						CXD12-BYP0340-4V-40			CXD3-BYP0320-6V-40						CXD12-BYP0400-4V-40			CXD3-BYP0410-6V-50						CXD12-BYP0520-4V-63			CXD3-BYP0520-6V-63						CXD12-BYP0650-4V-75			CXD3-BYP0620-6V-65						CXD12-BYP0770-4V-90									CXD12-BYP0960-4V-100									CXD12-BYP1240-4V-200		
CXD12-BYP0322-2V-40	45.0" x 30.0" x 13.0"	2	CXD12-BYP0016-4V-6	45.0" x 30.0" x 13.0"	2		CXD3-BYP0013-6V-1-6	45.0" x 30.0" x 13.0"			2																																																																																																																																																																																		
CXD12-BYP0483-2V-50			CXD12-BYP0594-2V-63				CXD12-BYP0680-2V-75			CXD12-BYP0782-2V-90				51.0" x 36.0" x 17.0"	3	CXD12-BYP0021-4V-2-5		51.0" x 36.0" x 17.0"		3	CXD3-BYP0024-6V-2-5	51.0" x 36.0" x 17.0"		3	CXD12-BYP0920-2V-100		CXD12-BYP1200-2V-200		63.0" x 36.0" x 21.0"	4		CXD12-BYP0034-4V-4			63.0" x 36.0" x 21.0"	4	CXD3-BYP0039-6V-4	63.0" x 36.0" x 21.0"	4	CXD12-BYP1300-2V-225	CXD12-BYP1540-2V-250				CXD12-BYP0048-4V-6			CXD3-BYP0051-6V-6							CXD12-BYP0076-4V-8				CXD3-BYP0090-6V-10									CXD12-BYP0110-4V-13				CXD3-BYP0110-6V-13						CXD12-BYP0140-4V-17			CXD3-BYP0170-6V-17						CXD12-BYP0210-4V-22			CXD3-BYP0220-6V-22						CXD12-BYP0270-4V-32			CXD3-BYP0270-6V-32						CXD12-BYP0340-4V-40			CXD3-BYP0320-6V-40						CXD12-BYP0400-4V-40			CXD3-BYP0410-6V-50						CXD12-BYP0520-4V-63			CXD3-BYP0520-6V-63						CXD12-BYP0650-4V-75			CXD3-BYP0620-6V-65						CXD12-BYP0770-4V-90									CXD12-BYP0960-4V-100									CXD12-BYP1240-4V-200									CXD12-BYP1560-4V-250																					
CXD12-BYP0594-2V-63			CXD12-BYP0680-2V-75				CXD12-BYP0782-2V-90		51.0" x 36.0" x 17.0"	3			CXD12-BYP0021-4V-2-5			51.0" x 36.0" x 17.0"					3				CXD3-BYP0024-6V-2-5	51.0" x 36.0" x 17.0"	3	CXD12-BYP0920-2V-100				CXD12-BYP1200-2V-200	63.0" x 36.0" x 21.0"	4			CXD12-BYP0034-4V-4			63.0" x 36.0" x 21.0"	4	CXD3-BYP0039-6V-4	63.0" x 36.0" x 21.0"	4	CXD12-BYP1300-2V-225	CXD12-BYP1540-2V-250				CXD12-BYP0048-4V-6			CXD3-BYP0051-6V-6						CXD12-BYP0076-4V-8			CXD3-BYP0090-6V-10						CXD12-BYP0110-4V-13			CXD3-BYP0110-6V-13						CXD12-BYP0140-4V-17			CXD3-BYP0170-6V-17						CXD12-BYP0210-4V-22			CXD3-BYP0220-6V-22						CXD12-BYP0270-4V-32			CXD3-BYP0270-6V-32						CXD12-BYP0340-4V-40			CXD3-BYP0320-6V-40						CXD12-BYP0400-4V-40			CXD3-BYP0410-6V-50						CXD12-BYP0520-4V-63			CXD3-BYP0520-6V-63						CXD12-BYP0650-4V-75			CXD3-BYP0620-6V-65						CXD12-BYP0770-4V-90									CXD12-BYP0960-4V-100									CXD12-BYP1240-4V-200									CXD12-BYP1560-4V-250																						
CXD12-BYP0680-2V-75			CXD12-BYP0782-2V-90			51.0" x 36.0" x 17.0"	3					CXD12-BYP0021-4V-2-5	51.0" x 36.0" x 17.0"	3	CXD3-BYP0024-6V-2-5		51.0" x 36.0" x 17.0"	3	CXD12-BYP0920-2V-100	CXD12-BYP1200-2V-200		63.0" x 36.0" x 21.0"	4	CXD12-BYP0034-4V-4	63.0" x 36.0" x 21.0"			4			CXD3-BYP0039-6V-4	63.0" x 36.0" x 21.0"					4					CXD12-BYP1300-2V-225			CXD12-BYP1540-2V-250				CXD12-BYP0048-4V-6			CXD3-BYP0051-6V-6						CXD12-BYP0076-4V-8			CXD3-BYP0090-6V-10						CXD12-BYP0110-4V-13			CXD3-BYP0110-6V-13						CXD12-BYP0140-4V-17			CXD3-BYP0170-6V-17						CXD12-BYP0210-4V-22			CXD3-BYP0220-6V-22						CXD12-BYP0270-4V-32			CXD3-BYP0270-6V-32						CXD12-BYP0340-4V-40			CXD3-BYP0320-6V-40						CXD12-BYP0400-4V-40			CXD3-BYP0410-6V-50						CXD12-BYP0520-4V-63			CXD3-BYP0520-6V-63						CXD12-BYP0650-4V-75			CXD3-BYP0620-6V-65						CXD12-BYP0770-4V-90									CXD12-BYP0960-4V-100									CXD12-BYP1240-4V-200									CXD12-BYP1560-4V-250																							
CXD12-BYP0782-2V-90	51.0" x 36.0" x 17.0"	3	CXD12-BYP0021-4V-2-5	51.0" x 36.0" x 17.0"	3			CXD3-BYP0024-6V-2-5	51.0" x 36.0" x 17.0"	3																																																																																																																																																																																			
CXD12-BYP0920-2V-100			CXD12-BYP1200-2V-200			63.0" x 36.0" x 21.0"	4	CXD12-BYP0034-4V-4			63.0" x 36.0" x 21.0"	4	CXD3-BYP0039-6V-4	63.0" x 36.0" x 21.0"	4	CXD12-BYP1300-2V-225	CXD12-BYP1540-2V-250				CXD12-BYP0048-4V-6						CXD3-BYP0051-6V-6								CXD12-BYP0076-4V-8				CXD3-BYP0090-6V-10						CXD12-BYP0110-4V-13			CXD3-BYP0110-6V-13						CXD12-BYP0140-4V-17			CXD3-BYP0170-6V-17						CXD12-BYP0210-4V-22			CXD3-BYP0220-6V-22						CXD12-BYP0270-4V-32			CXD3-BYP0270-6V-32						CXD12-BYP0340-4V-40			CXD3-BYP0320-6V-40						CXD12-BYP0400-4V-40			CXD3-BYP0410-6V-50						CXD12-BYP0520-4V-63			CXD3-BYP0520-6V-63						CXD12-BYP0650-4V-75			CXD3-BYP0620-6V-65						CXD12-BYP0770-4V-90									CXD12-BYP0960-4V-100									CXD12-BYP1240-4V-200									CXD12-BYP1560-4V-250																																													
CXD12-BYP1200-2V-200	63.0" x 36.0" x 21.0"	4	CXD12-BYP0034-4V-4	63.0" x 36.0" x 21.0"	4			CXD3-BYP0039-6V-4	63.0" x 36.0" x 21.0"	4																																																																																																																																																																																			
CXD12-BYP1300-2V-225			CXD12-BYP1540-2V-250														CXD12-BYP0048-4V-6			CXD3-BYP0051-6V-6						CXD12-BYP0076-4V-8			CXD3-BYP0090-6V-10						CXD12-BYP0110-4V-13			CXD3-BYP0110-6V-13						CXD12-BYP0140-4V-17			CXD3-BYP0170-6V-17						CXD12-BYP0210-4V-22			CXD3-BYP0220-6V-22						CXD12-BYP0270-4V-32			CXD3-BYP0270-6V-32						CXD12-BYP0340-4V-40			CXD3-BYP0320-6V-40						CXD12-BYP0400-4V-40			CXD3-BYP0410-6V-50						CXD12-BYP0520-4V-63			CXD3-BYP0520-6V-63						CXD12-BYP0650-4V-75			CXD3-BYP0620-6V-65						CXD12-BYP0770-4V-90									CXD12-BYP0960-4V-100									CXD12-BYP1240-4V-200									CXD12-BYP1560-4V-250																																																							
CXD12-BYP1540-2V-250								CXD12-BYP0048-4V-6					CXD3-BYP0051-6V-6						CXD12-BYP0076-4V-8			CXD3-BYP0090-6V-10						CXD12-BYP0110-4V-13			CXD3-BYP0110-6V-13						CXD12-BYP0140-4V-17			CXD3-BYP0170-6V-17						CXD12-BYP0210-4V-22			CXD3-BYP0220-6V-22						CXD12-BYP0270-4V-32			CXD3-BYP0270-6V-32						CXD12-BYP0340-4V-40			CXD3-BYP0320-6V-40						CXD12-BYP0400-4V-40			CXD3-BYP0410-6V-50						CXD12-BYP0520-4V-63			CXD3-BYP0520-6V-63						CXD12-BYP0650-4V-75			CXD3-BYP0620-6V-65						CXD12-BYP0770-4V-90									CXD12-BYP0960-4V-100									CXD12-BYP1240-4V-200									CXD12-BYP1560-4V-250																																																														
			CXD12-BYP0048-4V-6			CXD3-BYP0051-6V-6																																																																																																																																																																																							
			CXD12-BYP0076-4V-8			CXD3-BYP0090-6V-10																																																																																																																																																																																							
			CXD12-BYP0110-4V-13			CXD3-BYP0110-6V-13																																																																																																																																																																																							
			CXD12-BYP0140-4V-17			CXD3-BYP0170-6V-17																																																																																																																																																																																							
			CXD12-BYP0210-4V-22			CXD3-BYP0220-6V-22																																																																																																																																																																																							
			CXD12-BYP0270-4V-32			CXD3-BYP0270-6V-32																																																																																																																																																																																							
			CXD12-BYP0340-4V-40			CXD3-BYP0320-6V-40																																																																																																																																																																																							
			CXD12-BYP0400-4V-40			CXD3-BYP0410-6V-50																																																																																																																																																																																							
			CXD12-BYP0520-4V-63			CXD3-BYP0520-6V-63																																																																																																																																																																																							
			CXD12-BYP0650-4V-75			CXD3-BYP0620-6V-65																																																																																																																																																																																							
			CXD12-BYP0770-4V-90																																																																																																																																																																																										
			CXD12-BYP0960-4V-100																																																																																																																																																																																										
			CXD12-BYP1240-4V-200																																																																																																																																																																																										
			CXD12-BYP1560-4V-250																																																																																																																																																																																										



CERUS® X-DRIVE WITH ENCLOSED DISCONNECT

1/2–30HP (200/208/230VAC), 1/2–75HP (460VAC), 1/2–40HP (575VAC), 3-Phase Input
VFD with UL Type 1 Enclosed MMS Disconnect

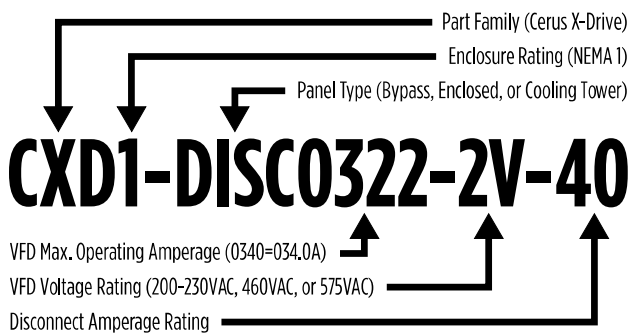
PANEL FEATURES

Easy Installation, Time Saving Design

- Reduces labor costs
- UL type 1 mated-enclosure design maintains drive's UL rating while offering addition safety of MMS disconnect
- Slim-line design reduces installation footprint
- UL 508C and cUL rating with all drive models for maximum motor protection
- Optional Ethernet & Modbus TCP/IP communication card (BACnet and RS-485 modbus standard)
- Optional application-specific protective options:
 - Line reactors (3% or 5%)
 - Output Reactor (200–230VAC and 460VAC only)



PART NUMBER ANATOMY



CERUS® X-DRIVE WITH ENCLOSED DISCONNECT

ORDERING & SIZING INFORMATION

Part Number	200VAC			208VAC			230VAC		
	HP	FLA	KAIC	HP	FLA	KAIC	HP	FLA	KAIC
CXDI-DISC0025-2V-2-5	1/2	2.5	100	1/2	2.4	100	1/2	2.2	100
CXDI-DISC0037-2V-4	3/4	3.7	100	3/4	3.5	100	3/4	3.2	100
CXDI-DISC0060-2V-6	1	4.8	100	1	4.6	100	1.5	6	100
CXDI-DISC0078-2V-8	2	7.8	100	2	7.5	100	2	6.8	100
CXDI-DISC0096-2V-10	2	7.8	100	2	7.5	100	3	9.6	100
CXDI-DISC0110-2V-13	3	11	100	3	10.6	100	3	9.6	100
CXDI-DISC0152-2V-17	3	11	100	3	10.6	100	5	15.2	100
CXDI-DISC0220-2V-22	5	17.5	100	5	16.7	100	7.5	22	100
CXDI-DISC0253-2V-26	7.5	25.3	100	7.5	24.2	100	7.5	22	100
CXDI-DISC0280-2V-32	7.5	25.3	100	7.5	24.2	100	10	28	100
CXDI-DISC0322-2V-40	10	32.2	100	10	30.8	100	10	28	100
CXDI-DISC0483-2V-50	15	48.30	100	15	46.2	100	15	42	100
CXDI-DISC0594-2V-63	-	-	-	20	59.4	100	20	54	100
CXDI-DISC0680-2V-75	20	62.1	100	20	59.4	100	25	68	100
CXDI-DISC0782-2V-90	25	78.2	100	25	74.8	100	25	68	100
CXDI-DISC0920-2V-100	30	92	100	30	88	100	30	80	100

Part Number	460VAC		
	HP	FLA	KAIC
CXDI-DISC0011-4V-1	1/2	1.1	65
CXDI-DISC0016-4V-1-6	3/4	1.6	65
CXDI-DISC0021-4V-2-5	1	2.1	65
CXDI-DISC0034-4V-4	2	3.4	65
CXDI-DISC0048-4V-6	3	4.8	65
CXDI-DISC0076-4V-8	5	7.6	65
CXDI-DISC0110-4V-13	7.5	11	65
CXDI-DISC0140-4V-17	10	14	30
CXDI-DISC0210-4V-22	15	21	30
CXDI-DISC0270-4V-32	20	27	30
CXDI-DISC0340-4V-40	25	34	50
CXDI-DISC0400-4V-40	30	40	50
CXDI-DISC0520-4V-63	40	52	50
CXDI-DISC0650-4V-75	50	65	50
CXDI-DISC0770-4V-90	60	77	50
CXDI-DISC0960-4V-100	75	96	50

Part Number	575VAC		
	HP	FLA	KAIC
CXDI-DISC0009-6V-1	1/2	0.9	25
CXDI-DISC0013-6V-1-6	3/4	1.3	25
CXDI-DISC0024-6V-2-5	1.5	2.4	25
CXDI-DISC0039-6V-4	3	3.9	25
CXDI-DISC0061-6V-6	5	6.1	25
CXDI-DISC0090-6V-10	7.5	9	25
CXDI-DISC0110-6V-13	10	11	25
CXDI-DISC0170-6V-17	15	17	10
CXDI-DISC0220-6V-22	20	22	10
CXDI-DISC0270-6V-32	25	27	10
CXDI-DISC0320-6V-40	30	32	10
CXDI-DISC0410-6V-50	40	41	10

PANEL OPTIONS (UL TYPE 1)

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.

CERUS® X-DRIVE WITH ENCLOSED DISCONNECT

SPECIFICATIONS

		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.								
	Outputs	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.								
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 Feedback, 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%									
	Overvoltage	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.									
Keypad Display	VFD Alarm	Stall Prevention at ACC and DEC, Overload, Thermal Sensor Fault, Capacitors High Temperature, Signal Loss, Overpressure, Underload, High Load, etc.									
	Operation Information	Output Frequency, Output Current, Output Voltage, Frequency Reference, Operating Speed, DC Voltage, kWattmeter, Run-time, Last Trip Time, Pressure, etc.									
Environment	Fault History	The VFD stores 5 last faults.									
	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 (>=1%)	Drive Frame		Frame A	Frame B	Frame C	Frame D0	Frame D	Frame E	Frame F	Frame G	Frame H
	Input Voltage	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

CERUS® X-DRIVE WITH ENCLOSED DISCONNECT

DIMENSIONS (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	575AC X-Drive with Disconnect	H x W x D	Frame Size
CXDI-DISCO025-2V-2-5	43.1" x 8.1" x 10.5"	1	CXDI-DISCO011-4V-1	43.1" x 8.1" x 10.5"	1	CXDI-DISCO009-6V-1	43.1" x 8.1" x 10.5"	1
CXDI-DISCO037-2V-4			CXDI-DISCO016-4V-1-6			CXDI-DISCO013-6V-1-6		
CXDI-DISCO060-2V-6			CXDI-DISCO021-4V-2-5			CXDI-DISCO024-6V-2-5		
CXDI-DISCO078-2V-8			CXDI-DISCO034-4V-4			CXDI-DISCO039-6V-4		
CXDI-DISCO096-2V-10			CXDI-DISCO048-4V-6			CXDI-DISCO061-6V-6		
CXDI-DISCO110-2V-13			CXDI-DISCO076-4V-8			CXDI-DISCO090-6V-10		
CXDI-DISCO152-2V-17			CXDI-DISCO110-4V-13			CXDI-DISCO110-6V-13		
CXDI-DISCO220-2V-22			CXDI-DISCO140-4V-17			CXDI-DISCO170-6V-17		
CXDI-DISCO253-2V-26			CXDI-DISCO210-4V-22			CXDI-DISCO220-6V-22		
CXDI-DISCO280-2V-32			CXDI-DISCO270-4V-32			CXDI-DISCO270-6V-32		
CXDI-DISCO322-2V-40			CXDI-DISCO340-4V-40			CXDI-DISCO320-6V-40		
CXDI-DISCO483-2V-50			CXDI-DISCO400-4V-40			CXDI-DISCO410-6V-50	51.5" x 10.4" x 11.2"	2
CXDI-DISCO594-2V-63			CXDI-DISCO520-4V-63					
CXDI-DISCO680-2V-75	CXDI-DISCO650-4V-75		51.5" x 10.4" x 11.2"	2				
CXDI-DISCO782-2V-90	CXDI-DISCO770-4V-90							
CXDI-DISCO920-2V-100	CXDI-DISCO960-4V-100							



ENCLOSED CERUS® X-DRIVE VFD

1/2–50HP (200/208VAC), 1/2–60HP (230VAC),
1/2–125HP (460VAC), 1/2–60HP (575AC), 3-Phase Input
UL Type 3R and 12 Enclosed VFD

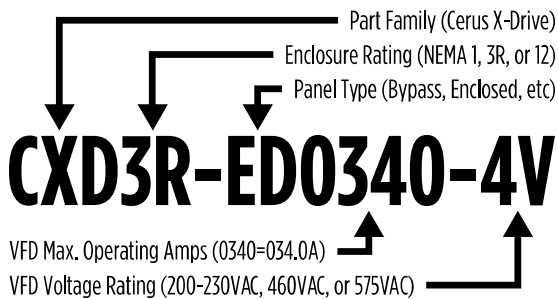
PANEL FEATURES

Designed to Withstand Harsh Environments

- Standard UL Type 3R, and 12 panels offering maximizes versatility (UL Type 4X engineered to order)
- Rainproof UL Type 3R enclosure reduces thermal absorption with white, solar-reflective finish and filtered cooling fans
- Hand-Off-Auto switch standard on all panels
- UL 508C and cUL rating with all drive models for complete motor protection
- Door-mounted keypad for simple programming and system access
- Optional application-specific protective options
 - Line and output reactors
 - dV/dT filter
 - EMI/RFI filter
- Optional Ethernet & Modbus TCP/IP communications card (BACnet and RS-485 modbus standard)



PART NUMBER ANATOMY



ENCLOSED CERUS® X-DRIVE VFD

ORDERING & SIZING INFORMATION (UL TYPE 3R)

Part Number	200VAC		
	HP	FLA	KAIC
CXD3R-ED0048-2V	1	4.8	100
CXD3R-ED0069-2V	1.5	6.9	100
CXD3R-ED0078-2V	2	7.8	100
CXD3R-ED0110-2V	3	11	100
CXD3R-ED0175-2V	5	17.5	100
CXD3R-ED0253-2V	7.5	25.3	100
CXD3R-ED0322-2V	10	32.2	100
CXD3R-ED0483-2V	15	48.3	100
CXD3R-ED0621-2V	20	62.1	100
CXD3R-ED0782-2V	25	78.2	100
CXD3R-ED0920-2V	30	92	100
CXD3R-ED1200-2V	40	120	100
CXD3R-ED1500-2V	50	150	100
CXD3R-ED1770-2V	60	177	100
CXD3R-ED2210-2V	75	221	100
CXD3R-ED2850-2V	100	285	100

Part Number	230VAC		
	HP	FLA	KAIC
CXD3R-ED0042-2V	1	4.2	100
CXD3R-ED0060-2V	1.5	6	100
CXD3R-ED0068-2V	2	6.8	100
CXD3R-ED0096-2V	3	9.6	100
CXD3R-ED0152-2V	5	15.2	100
CXD3R-ED0220-2V	7.5	22	100
CXD3R-ED0280-2V	10	28	100
CXD3R-ED0420-2V	15	42	100
CXD3R-ED0540-2V	20	54	100
CXD3R-ED0680-2V	25	68	100
CXD3R-ED0800-2V	30	80	100
CXD3R-ED1040-2V	40	104	100
CXD3R-ED1300-2V	50	130	100
CXD3R-ED1540-2V	60	154	100
CXD3R-ED1920-2V	75	192	100
CXD3R-ED2480-2V	100	248	100
CXD3R-ED3120-2V	125	312	100

Part Number	460VAC		
	HP	FLA	KAIC
CXD3R-ED0021-4V	1	2.1	100
CXD3R-ED0030-4V	1.5	3	100
CXD3R-ED0034-4V	2	3.4	100
CXD3R-ED0048-4V	3	4.8	100
CXD3R-ED0076-4V	5	7.6	100
CXD3R-ED0110-4V	7.5	11	100
CXD3R-ED0140-4V	10	14	100
CXD3R-ED0210-4V	15	21	100
CXD3R-ED0270-4V	20	27	100
CXD3R-ED0340-4V	25	34	100
CXD3R-ED0400-4V	30	40	100
CXD3R-ED0520-4V	40	52	100
CXD3R-ED0650-4V	50	65	100
CXD3R-ED0770-4V	60	77	100
CXD3R-ED0960-4V	75	96	100
CXD3R-ED1240-4V	100	124	100
CXD3R-ED1560-4V	125	156	100
CXD3R-ED1800-4V	150	180	100
CXD3R-ED2400-4V	200	240	100
CXD3R-ED3020-4V	250	302	100
CXD3R-ED3610-4V	300	361	100
CXD3R-ED4140-4V	350	414	100
CXD3R-ED4770-4V	400	477	100
CXD3R-ED5150-4V	450	515	100
CXD3R-ED5900-4V	500	590	100

Part Number	575VAC		
	HP	FLA	KAIC
CXD3R-ED0017-6V	1	1.7	100
CXD3R-ED0024-6V	1.5	2.4	100
CXD3R-ED0027-6V	2	2.7	100
CXD3R-ED0039-6V	3	3.9	100
CXD3R-ED0061-6V	5	6.1	100
CXD3R-ED0090-6V	7.5	9	100
CXD3R-ED0110-6V	10	11	100
CXD3R-ED0170-6V	15	17	100
CXD3R-ED0220-6V	20	22	100
CXD3R-ED0270-6V	25	27	100
CXD3R-ED0320-6V	30	32	100
CXD3R-ED0410-6V	40	41	100
CXD3R-ED0520-6V	50	52	100
CXD3R-ED0620-6V	60	62	100
CXD3R-ED0770-6V	75	77	100
CXD3R-ED0990-6V	100	99	100
CXD3R-ED1250-6V	125	125	100
CXD3R-ED1440-6V	150	144	100
CXD3R-ED1920-6V	200	192	100
CXD3R-ED2420-6V	250	242	100
CXD3R-ED2890-6V	300	289	100
CXD3R-ED3360-6V	350	336	100
CXD3R-ED3820-6V	400	382	100
CXD3R-ED4120-6V	450	412	100
CXD3R-ED4720-6V	500	472	100

PANEL OPTIONS (UL TYPE 3R)

Factory Options (UL Type 3R)
Manual Motor Starter Disconnect
Molded-Case Circuit Breaker Disconnect
Start/Stop Push Buttons (in lieu of HOA Switch)
Fault Pilot Light (24V, Red)
Run Pilot Light (24V, Green)
Speed Potentiometer
Emergency Stop Push Button
UL Type 3R Enclosed Door-Mounted Keypad Cover
UL Type 12 Enclosed Door-Mounted Keypad Cover

Factory Options (UL Type 3R)
Ethernet IP and Modbus TCP/IP Communications Card
3% Line Reactor
5% Line Reactor
Output Reactor ¹
dV/dt Filter ²
EMI/RFI Filter
Surge Suppressor
Panel Space Heater
Free-standing Foot Kit (12 inches)

¹ Available for 460VAC models only.

² Available for 460 and 575VAC models only.



ENCLOSED CERUS® X-DRIVE VFD

ORDERING & SIZING INFORMATION (UL TYPE 12)

Part Number	200VAC		
	HP	FLA	KAIC
CXD12-ED0048-2V	1	4.8	100
CXD12-ED0069-2V	1.5	6.9	100
CXD12-ED0078-2V	2	7.8	100
CXD12-ED0110-2V	3	11	100
CXD12-ED0175-2V	5	17.5	100
CXD12-ED0253-2V	7.5	25.3	100
CXD12-ED0322-2V	10	32.2	100
CXD12-ED0483-2V	15	48.3	100
CXD12-ED0621-2V	20	62.1	100
CXD12-ED0782-2V	25	78.2	100
CXD12-ED0920-2V	30	92	100
CXD12-ED1200-2V	40	120	100
CXD12-ED1500-2V	50	150	100
CXD12-ED1770-2V	60	177	100
CXD12-ED2210-2V	75	221	100
CXD12-ED2850-2V	100	285	100

Part Number	230VAC		
	HP	FLA	KAIC
CXD12-ED0042-2V	1	4.2	100
CXD12-ED0060-2V	1.5	6	100
CXD12-ED0068-2V	2	6.8	100
CXD12-ED0096-2V	3	9.6	100
CXD12-ED0152-2V	5	15.2	100
CXD12-ED0220-2V	7.5	22	100
CXD12-ED0280-2V	10	28	100
CXD12-ED0420-2V	15	42	100
CXD12-ED0540-2V	20	54	100
CXD12-ED0680-2V	25	68	100
CXD12-ED0800-2V	30	80	100
CXD12-ED1040-2V	40	104	100
CXD12-ED1300-2V	50	130	100
CXD12-ED1540-2V	60	154	100
CXD12-ED1920-2V	75	192	100
CXD12-ED2480-2V	100	248	100
CXD12-ED3120-2V	125	312	100

Part Number	460VAC		
	HP	FLA	KAIC
CXD12-ED0021-4V	1	2.1	100
CXD12-ED0030-4V	1.5	3	100
CXD12-ED0034-4V	2	3.4	100
CXD12-ED0048-4V	3	4.8	100
CXD12-ED0076-4V	5	7.6	100
CXD12-ED0110-4V	7.5	11	100
CXD12-ED0140-4V	10	14	100
CXD12-ED0210-4V	15	21	100
CXD12-ED0270-4V	20	27	100
CXD12-ED0340-4V	25	34	100
CXD12-ED0400-4V	30	40	100
CXD12-ED0520-4V	40	52	100
CXD12-ED0650-4V	50	65	100
CXD12-ED0770-4V	60	77	100
CXD12-ED0960-4V	75	96	100
CXD12-ED1240-4V	100	124	100
CXD12-ED1560-4V	125	156	100
CXD12-ED1800-4V	150	180	100
CXD12-ED2400-4V	200	240	100
CXD12-ED3020-4V	250	302	100
CXD12-ED3610-4V	300	361	100
CXD12-ED4140-4V	350	414	100
CXD12-ED4770-4V	400	477	100
CXD12-ED5150-4V	450	515	100
CXD12-ED5900-4V	500	590	100

Part Number	575VAC		
	HP	FLA	KAIC
CXD12-ED0017-6V	1	1.7	100
CXD12-ED0024-6V	1.5	2.4	100
CXD12-ED0027-6V	2	2.7	100
CXD12-ED0039-6V	3	3.9	100
CXD12-ED0061-6V	5	6.1	100
CXD12-ED0090-6V	7.5	9	100
CXD12-ED0110-6V	10	11	100
CXD12-ED0170-6V	15	17	100
CXD12-ED0220-6V	20	22	100
CXD12-ED0270-6V	25	27	100
CXD12-ED0320-6V	30	32	100
CXD12-ED0410-6V	40	41	100
CXD12-ED0520-6V	50	52	100
CXD12-ED0620-6V	60	62	100
CXD12-ED0770-6V	75	77	100
CXD12-ED0990-6V	100	99	100
CXD12-ED1250-6V	125	125	100
CXD12-ED1440-6V	150	144	100
CXD12-ED1920-6V	200	192	100
CXD12-ED2420-6V	250	242	100
CXD12-ED2890-6V	300	289	100
CXD12-ED3360-6V	350	336	100
CXD12-ED3820-6V	400	382	100
CXD12-ED4120-6V	450	412	100
CXD12-ED4720-6V	500	472	100

PANEL OPTIONS (UL TYPE 12)

Factory Options
Manual Motor Starter Disconnect
Molded-Case Circuit Breaker Disconnect
Start/Stop Push Buttons (in lieu of HOA Switch)
Fault Pilot Light (24V, Red)
Run Pilot Light (24V, Green)
Speed Potentiometer
Emergency Stop Push Button
UL Type 3R Enclosed Door-Mounted Keypad Cover

Factory Options
UL Type 12 Enclosed Door-Mounted Keypad Cover
Ethernet IP and Modbus TCP/IP Communications Card
3% Line Reactor
5% Line Reactor
Output Reactor ¹
dV/dt Filter ²
EMI/RFI Filter
Surge Suppressor

¹ Available for 460VAC models only.

² Available for 460 and 575VAC models only.

ENCLOSED CERUS® X-DRIVE VFD

SPECIFICATIONS

		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 (±11 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.								
	Outputs	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.								
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%									
	Overvoltage	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	-3°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	1mm 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 (>=%)		Drive Frame	Frame A	Frame B	Frame C	Frame D0	Frame D	Frame E	Frame F	Frame G	Frame H
	Input Voltage	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



CERUS® X-DRIVE WITH ENCLOSED DISCONNECT

DIMENSIONS (UL TYPE 3R)

200VAC X-Drive Enclosed	H x W x D	230VAC X-Drive Enclosed	H x W x D
CXD3R-ED0048-2V	36.5" x 26.0" x 16.375"	CXD3R-ED0042-2V	36.5" x 26.0" x 16.375"
CXD3R-ED0069-2V		CXD3R-ED0060-2V	
CXD3R-ED0078-2V		CXD3R-ED0068-2V	
CXD3R-ED0110-2V		CXD3R-ED0096-2V	
CXD3R-ED0175-2V		CXD3R-ED0152-2V	
CXD3R-ED0253-2V		CXD3R-ED0220-2V	
CXD3R-ED0322-2V		CXD3R-ED0280-2V	
CXD3R-ED0483-2V		CXD3R-ED0420-2V	
CXD3R-ED0621-2V		CXD3R-ED0540-2V	
CXD3R-ED0782-2V		CXD3R-ED0680-2V	
CXD3R-ED0920-2V	CXD3R-ED0800-2V	41.5" x 29.0" x 16.375"	
CXD3R-ED1200-2V	CXD3R-ED1040-2V	46.5" x 29.0" x 16.375"	
CXD3R-ED1500-2V	CXD3R-ED1300-2V	51.5" x 34.0" x 20.5"	
CXD3R-ED1770-2V	CXD3R-ED1540-2V	51.5" x 34.0" x 20.5"	
CXD3R-ED2210-2V	CXD3R-ED1920-2V	56.5" x 39.0" x 20.5"	
CXD3R-ED2850-2V	CXD3R-ED2480-2V	56.5" x 39.0" x 20.5"	
	CXD3R-ED3120-2V		

460VAC X-Drive Enclosed	H x W x D	575VAC X-Drive Enclosed	H x W x D
CXD3R-ED0021-4V	36.5" x 26.0" x 16.375"	CXD3R-ED0017-6V	36.5" x 26.0" x 16.375"
CXD3R-ED0030-4V		CXD3R-ED0024-6V	
CXD3R-ED0034-4V		CXD3R-ED0027-6V	
CXD3R-ED0048-4V		CXD3R-ED0039-6V	
CXD3R-ED0076-4V		CXD3R-ED0061-6V	
CXD3R-ED0110-4V		CXD3R-ED0090-6V	
CXD3R-ED0140-4V		CXD3R-ED0110-6V	
CXD3R-ED0210-4V		CXD3R-ED0170-6V	
CXD3R-ED0270-4V		CXD3R-ED0220-6V	
CXD3R-ED0340-4V		CXD3R-ED0270-6V	
CXD3R-ED0400-4V	CXD3R-ED0320-6V	51.5" x 34.0" x 20.5"	
CXD3R-ED0520-4V	CXD3R-ED0410-6V		
CXD3R-ED0650-4V	CXD3R-ED0520-6V		
CXD3R-ED0770-4V	CXD3R-ED0620-6V		
CXD3R-ED0960-4V	CXD3R-ED0770-6V		
CXD3R-ED1240-4V	CXD3R-ED0990-6V	56.5" x 39.0" x 20.5"	
CXD3R-ED1560-4V	CXD3R-ED1250-6V		
CXD3R-ED1800-4V	CXD3R-ED1440-6V		
CXD3R-ED2400-4V	CXD3R-ED1920-6V	63" x 60" x 25"	
CXD3R-ED3020-4V	CXD3R-ED2420-6V	93" x 72" x 25"	
CXD3R-ED3610-4V	CXD3R-ED2890-6V		
CXD3R-ED4140-4V	CXD3R-ED3360-6V		
CXD3R-ED4770-4V	CXD3R-ED3820-6V		
CXD3R-ED5150-4V	CXD3R-ED4120-6V		
CXD3R-ED5900-4V	CXD3R-ED4720-6V		

CERUS® X-DRIVE WITH ENCLOSED DISCONNECT

DIMENSIONS (UL TYPE 12)

200VAC X-Drive Enclosed	H x W x D	230VAC X-Drive Enclosed	H x W x D
CXD12-ED0048-2V	39.0" x 24.0" x 13.0"	CXD12-ED0042-2V	39.0" x 24.0" x 13.0"
CXD12-ED0069-2V		CXD12-ED0060-2V	
CXD12-ED0078-2V		CXD12-ED0068-2V	
CXD12-ED0110-2V		CXD12-ED0096-2V	
CXD12-ED0175-2V		CXD12-ED0152-2V	
CXD12-ED0253-2V		CXD12-ED0220-2V	
CXD12-ED0322-2V		CXD12-ED0280-2V	
CXD12-ED0483-2V		CXD12-ED0420-2V	
CXD12-ED0621-2V		CXD12-ED0540-2V	
CXD12-ED0782-2V		CXD12-ED0680-2V	
CXD12-ED0920-2V	CXD12-ED0800-2V	45.0" x 30.0" x 13.0"	
CXD12-ED1200-2V	CXD12-ED1040-2V		
CXD12-ED1500-2V	CXD12-ED1300-2V	51.0" x 36.0" x 17.0"	
CXD12-ED1770-2V	CXD12-ED1540-2V	51.0" x 36.0" x 17.0"	
CXD12-ED2210-2V	CXD12-ED1920-2V		
CXD12-ED2850-2V	CXD12-ED2480-2V	63.0" x 36.0" x 21.0"	
		CXD12-ED3120-2V	

460VAC X-Drive Enclosed	H x W x D	575VAC X-Drive Enclosed	H x W x D
CXD12-ED0021-4V	39.0" x 24.0" x 13.0"	CXD12-ED0017-6V	39.0" x 24.0" x 13.0"
CXD12-ED0030-4V		CXD12-ED0024-6V	
CXD12-ED0034-4V		CXD12-ED0027-6V	
CXD12-ED0048-4V		CXD12-ED0039-6V	
CXD12-ED0076-4V		CXD12-ED0061-6V	
CXD12-ED0110-4V		CXD12-ED0090-6V	
CXD12-ED0140-4V		CXD12-ED0110-6V	
CXD12-ED0210-4V		CXD12-ED0170-6V	
CXD12-ED0270-4V		CXD12-ED0220-6V	
CXD12-ED0340-4V		CXD12-ED0270-6V	
CXD12-ED0400-4V	CXD12-ED0320-6V		
CXD12-ED0520-4V	CXD12-ED0410-6V	45.0" x 30.0" x 13.0"	
CXD12-ED0650-4V	CXD12-ED0520-6V		
CXD12-ED0770-4V	CXD12-ED0620-6V	51.0" x 36.0" x 17.0"	
CXD12-ED0960-4V	CXD12-ED0770-6V		
CXD12-ED1240-4V	CXD12-ED0990-6V		
CXD12-ED1560-4V	CXD12-ED1250-6V		
CXD12-ED1800-4V	CXD12-ED1440-6V	63.0" x 36.0" x 21.0"	
CXD12-ED2400-4V	CXD12-ED1920-6V		
CXD12-ED3020-4V	CXD12-ED2420-6V		
CXD12-ED3610-4V	CXD12-ED2890-6V		
CXD12-ED4140-4V	CXD12-ED3360-6V	93.0" x 72.0" x 25.0"w	
CXD12-ED4770-4V	CXD12-ED3820-6V		
CXD12-ED5150-4V	CXD12-ED4120-6V		
CXD12-ED5900-4V	CXD12-ED4720-6V		

CERUS® X-DRIVE COOLING TOWER CONTROLLER

1-40HP (200-230VAC), 1-125HP (460VAC), 3-Phase Input
Stand Alone or Building Automation Controlled Options
Energy Saving VFDs

PANEL FEATURES

Integrates With An Existing Automation Systems or Temperature Control Option for Standalone Application

- Scalable options to meet any application
- Adequately sized for additional options including spray pump, basin heater control, line reactors, and other critical features

Cerus® X-Drive for Optimum Performance

- Space-vector control for clean sinewave output for efficiency and enhanced motor life
- Automatic energy savings mode
- Dual PID controls: primary for maintaining temperature, pressure, etc. and secondary for PID control of external device
- Standard kWh metering of energy usage to optimize control

Multiple PID Set Points

- Programmable and selectable for maintaining pressure/temperature during different seasons or operating conditions

Standard Integrated HOA and 3-Contactor Bypass

- Integrated HOA and status indications for simplified operation
- VFD isolating three contactor bypass with disconnect options standard

Single Source Control Reduces Components and Increases Reliability

- Wide range of options available
- One connection point for power

Temperature Control Option Provides Complete Stand-Alone Operation

- Ideal for retrofit
- Start/stop sequencing for fans, dampers, and spray pumps
- Provides analog output to vary speed of drive
- Accepts direct input from RTD type sensor or thermocouple
- Adjustments for set-points and hysteresis



OPTIONAL FEATURES



Basin Heater Control

- Prevents freezing
- Contactor activated by external signal (i.e. thermostat)
- Provision for low water protection



Vibration Cutout

- Provision for vibration switch cut-out



2-Stage Temperature Control

- Start/stop sequencing for fans, dampers, and spray pumps
- Provides analog output to vary speed of drive
- Accepts direct input from RTD type sensor or thermocouple
- Adjustments for set-points and hysteresis



Output Reactor/Filters

- Use when leads from drive to motor exceed 35' at 460 VAC or greater
- Above 100' use output filter
- Decreases level of voltage spikes to prevent motor insulation breakdown



Spray Pump Starter

- Full-voltage starter with overload relay
- HOA switch provided
- Status indication options



Water Level Control Power

- Provides 120VAC @ 2A



Line Reactors

- For use in systems with unstable utility power, long leads from service transformer to VFD, and/or when power source is greater than 10 times the kVA rating of the inverter
- Provides harmonic distortion filtering



Panel Space Heater

- To prevent condensation and freezing

CERUS® X-DRIVE COOLING TOWER CONTROLLER

ORDERING & SIZING INFORMATION

Cooling Tower Control, 200-230VAC, 3-Phase					
HP	FLA	UL Type 1 Part Number	UL Type 3R Part Number	3% Line Reactor	
1	4.6	CTP1-BYP001-2V-3	CTP3R-BYP001-2V-3		
2	6.6	CTP1-BYP002-2V-3	CTP3R-BYP002-2V-3		
3	10.6	CTP1-BYP003-2V-3	CTP3R-BYP003-2V-3		
5	16.7	CTP1-BYP005-2V-3	CTP3R-BYP005-2V-3		VFD-KDRB22L
7.5	24.2	CTP1-BYP007-2V-3	CTP3R-BYP007-2V-3		VFD-KDRB23L
10	30.8	CTP1-BYP010-2V-3	CTP3R-BYP010-2V-3		VFD-KDRD25L
15	46.2	CTP1-BYP015-2V-3	CTP3R-BYP015-2V-3		VFD-KDRD24L
20	59.4	CTP1-BYP020-2V-3	CTP3R-BYP020-2V-3		VFD-KDRD26L
25	74.8	CTP1-BYP025-2V-3	CTP3R-BYP025-2V-3		VFD-KDRD22L
30	88	CTP1-BYP030-2V-3	CTP3R-BYP030-2V-3		VFD-KDRF24L
40	114	CTP1-BYP040-2V-3	CTP3R-BYP040-2V-3		VFD-KDRF25L

Cooling Tower Control, 460VAC, 3-Phase Input						
HP	FLA	UL Type 1	UL Type 3R	3% Line Reactor	Output Reactor	Output Filter
1	2.1	CTP1-BYP001-4V-3	CTP3R-BYP001-4V-3			
2	3.4	CTP1-BYP002-4V-3	CTP3R-BYP002-4V-3			
3	4.8	CTP1-BYP003-4V-3	CTP3R-BYP003-4V-3			
5	7.6	CTP1-BYP005-4V-3	CTP3R-BYP005-4V-3	VFD-KDRA3L	VFD-KDRA3P	VFD-VIK8A00
7.5	11	CTP1-BYP007-4V-3	CTP3R-BYP007-4V-3	VFD-KDRA4L	VFD-KDRA4P	VFD-VIK12A00
10	14	CTP1-BYP010-4V-3	CTP3R-BYP010-4V-3	VFD-KDRA5L	VFD-KDRB1P	VFD-VIK18A00
15	21	CTP1-BYP015-4V-3	CTP3R-BYP015-4V-3	VFD-KDRB2L	VFD-KDRD1P	VFD-VIK21A00
20	27	CTP1-BYP020-4V-3	CTP3R-BYP020-4V-3	VFD-KDRBIL	VFD-KDRD2P	VFD-VIK27A00
25	34	CTP1-BYP025-4V-3	CTP3R-BYP025-4V-3	VFD-KDRD1L	VFD-KDRD3P	VFD-VIK35A00
30	40	CTP1-BYP030-4V-3	CTP3R-BYP030-4V-3	VFD-KDRD2L	VFD-KDRD4P	VFD-VIK45A00
40	52	CTP1-BYP040-4V-3	CTP3R-BYP040-4V-3	VFD-KDRCIL	VFD-KDRDIP	VFD-VIK55A00
50	65	CTP1-BYP050-4V-3	CTP3R-BYP050-4V-3	VFD-KDRF2L	VFD-KDRF1P	VFD-VIK80A00
60	77	-	CTP3R-BYP060-4V-3	VFD-KDRF4L	VFD-KDRF2P	VFD-VIK80A00
75	96	-	CTP3R-BYP075-4V-3	VFD-KDRF3L	VFD-KDRF3P	VFD-VIK10A00
100	124	-	CTP3R-BYP100-4V-3	VFD-KDRH3L	VFD-KDRH1P	VFD-VIK130A00
125	156	-	CTP3R-BYP125-4V-3	VFD-KDRH2L	VFD-KDRH1P	VFD-VIK160A00
150	180	-	CTP3R-BYP150-4V-3			

PANEL OPTIONS

Part No.	Description
VFD-RPL*	Run pilot light (green standard)
VFD-BPL*	Bypass pilot light (amber standard)
VFD-FLT*	Fault pilot light (red standard)
VFD-OFF*	Off pilot light (red standard)
CTP-TC	Temperature controller
CTP-3TC	3-Phase temperature controller

Part No.	Description
CTP-60HTR	60W panel space heater
CTP-150HTR	150W panel space heater
CTP-250HTR	250W panel space heater
CTP-MHTR	Motor Heater
TIGA1B00	Immersion Temperature Sensor, 2.5"

Basin Heater Contactor				
208V	kW		Max Amps	Basin Heater
	230V	460V		
3/4	3/4	2	2.5	CTP-9/HI-2.5
1	1.5	3	4.0	CTP-9/HI-4
2	2	4	6.0	CTP-9/HI-6
2.5	3	6	8.0	CTP-9/HI-8
3	3.5	8	10.0	CTP-18/HI-10
4	5	10	13.0	CTP-18/HI-13
6	6.5	14	17.0	CTP-18/HI-17
7.5	8.5	18	22.0	CTP-32/HI-22
9	10	21	26.0	CTP-32/HI-26
11	12	26	32.0	CTP-32/HI-32

Spray Pump Starter				
208V	3 Phase HP			Spray Pump
	230V	460V		
1/2	1/2	1		CTP-9/H-2.5
3/4	3/4	2		CTP-9/H-4
1	1.5	3		CTP-9/H-6
2	2	5		CTP-9/H-8
2	3	5		CTP-18/H-10
3	3	7.5		CTP-18/H-13
3	5	10		CTP-18/H-17
5	7.5	15		CTP-32/H-22
7.5	7.5	15		CTP-32/H-26
7.5	10	20		CTP-32/H-32

CERUS® X-DRIVE COOLING TOWER CONTROLLER

SPECIFICATIONS

		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 (±11 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.								
	Outputs	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.								
	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 I1 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, ULN (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%								
		Overvoltage	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	1mm 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/EN60068-2-7.								
	Environmental Conditions	Pollution degree 2. No Corrosive Gas, Combustible Gas, Oil Mist or Dust. IEC60721-3-3/ IEC60364-1/ IEC60664-1									
Input Efficiency (>=1%)	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	

CERUS® X-DRIVE COOLING TOWER CONTROLLER

DIMENSIONS (UL TYPE 1)

200–230VAC Part Number	H x W x D
CTPI-BYP001-2V-3	57.6" x 12.5" x 13.0"
CTPI-BYP002-2V-3	
CTPI-BYP003-2V-3	
CTPI-BYP005-2V-3	
CTPI-BYP007-2V-3	
CTPI-BYP010-2V-3	
CTPI-BYP015-2V-3	62.0" x 18.8" x 14.9"
CTPI-BYP020-2V-3	
CTPI-BYP025-2V-3	
CTPI-BYP030-2V-3	
CTPI-BYP040-2V-3	
CTPI-BYP040-2V-3	

460VAC Part Number	H x W x D
CTPI-BYP001-4V-3	57.6" x 12.5" x 13.0"
CTPI-BYP002-4V-3	
CTPI-BYP003-4V-3	
CTPI-BYP005-4V-3	
CTPI-BYP007-4V-3	
CTPI-BYP010-4V-3	
CTPI-BYP015-4V-3	62.0" x 18.8" x 14.9"
CTPI-BYP020-4V-3	
CTPI-BYP025-4V-3	
CTPI-BYP030-4V-3	
CTPI-BYP040-4V-3	
CTPI-BYP050-4V-3	

DIMENSIONS (UL TYPE 3R)

200–230VAC Part Number	H x W x D
CTP3R-BYP001-2V-3	36.5" x 26" x 16.5"
CTP3R-BYP002-2V-3	
CTP3R-BYP003-2V-3	
CTP3R-BYP005-2V-3	
CTP3R-BYP007-2V-3	
CTP3R-BYP010-2V-3	
CTP3R-BYP015-2V-3	41.5" x 29" x 16.56"
CTP3R-BYP020-2V-3	46.5" x 29" x 16.56"
CTP3R-BYP025-2V-3	
CTP3R-BYP030-2V-3	51.5" x 34" x 20.6"
CTP3R-BYP040-2V-3	56.5" x 39" x 20.6"

460VAC Part Number	H x W x D
CTP3R-BYP001-4V-3	36.5" x 26" x 16.5"
CTP3R-BYP002-4V-3	
CTP3R-BYP003-4V-3	
CTP3R-BYP005-4V-3	
CTP3R-BYP007-4V-3	
CTP3R-BYP010-4V-3	
CTP3R-BYP015-4V-3	41.5" x 29" x 16.56"
CTP3R-BYP020-4V-3	46.5" x 29" x 16.56"
CTP3R-BYP025-4V-3	
CTP3R-BYP030-4V-3	51.5" x 34" x 20.6"
CTP3R-BYP040-4V-3	
CTP3R-BYP050-4V-3	
CTP3R-BYP060-4V-3	56.5" x 39" x 20.6"
CTP3R-BYP075-4V-3	67" x 36" x 16"
CTP3R-BYP100-4V-3	63.0" x 60.0" x 25.0"
CTP3R-BYP125-4V-3	
CTP3R-BYP150-4V-3	

