

CERUS X-DRIVE VFD

1-100HP (200VAC), 1-125HP (230VAC), 1-675HP (460VAC),
2-500+ HP (575VAC), Single-Phase and 3-Phase Input

CERUS X-DRIVE

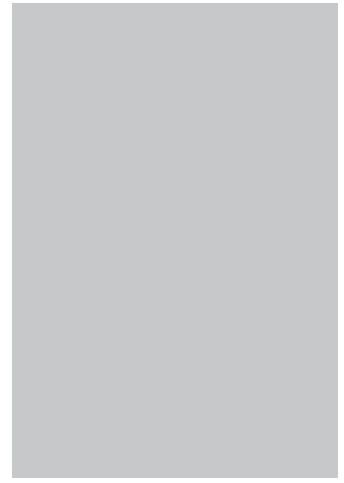
Software Ver: 1.0

SIZING INFORMATION TABLES

X-Drive Variable Frequency Drive - 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	1/2	2.5	1	5	1/2	2.5	1/2	2.5
	CXD-007A-2V	3/4	3.75	1.5	7.5	1/2	2.5	1	2.5
	CXD-010A-2V	1	5	2	10	3/4	4	2	4
	CXD-015A-2V	1	7.5	3	15	1	5.5	3	5.5
	CXD-021A-2V	2	10.5	5	21	2	8.8	3	8.8
	CXD-031A-2V	3	15.5	7.5	31	3	12.5	5	12.5
	CXD-046A-2V	5	23	10	46	3	16.5	10	16.5
	CXD-061A-2V	7.5	30.5	15	61	5	24.5	15	24.5
	CXD-075A-2V	10	37.5	20	75	10	32.5	20	32.5
	CXD-090A-2V	10	45	25	90	10	37.5	20	37.5
	CXD-105A-2V	15	52.5	30	105	10	45	25	45
	CXD-146A-2V	10	48.1	40	146	10	39.6	40	39.6
	CXD-180A-2V	15	59.4	50	180	10	48.2	40	48.2
	CXD-215A-2V	20	70.9	60	215	15	59.4	60	59.4
208VAC, Single-Phase and 3-Phase	CXD-005A-2V	1/2	2.5	1	5	1/2	2.5	1/2	2.5
	CXD-007A-2V	3/4	3.75	1.5	7.5	1/2	2.5	1	2.5
	CXD-010A-2V	1	5	2	10	3/4	4	2	4
	CXD-015A-2V	2	7.5	3	15	1	5.5	3	5.5
	CXD-021A-2V	2	10.5	5	21	2	8.8	5	8.8
	CXD-031A-2V	3	15.5	7.5	31	3	12.5	7.5	12.5
	CXD-046A-2V	5	23	10	46	3	16.5	10	16.5
	CXD-061A-2V	7.5	30.5	20	61	5	24.5	15	24.5
	CXD-075A-2V	10	37.5	25	75	10	32.5	20	32.5
	CXD-090A-2V	10	45	30	90	10	37.5	25	37.5
	CXD-105A-2V	15	52.5	30	105	10	45	30	45
	CXD-146A-2V	15	48.1	50	146	10	39.6	40	39.6
	CXD-180A-2V	20	59.4	60	180	10	48.2	50	48.2
	CXD-215A-2V	25	70.9	75	215	15	59.4	60	59.4
230 V, Single-Phase and 3-Phase	CXD-005A-2V	1/2	2.5	1	5	1/2	2.5	1/2	2.5
	CXD-007A-2V	3/4	3.75	2	7.5	1/2	2.5	1	2.5
	CXD-010A-2V	1	5	3	10	3/4	4	2	4
	CXD-015A-2V	2	7.5	5	15	1	5.5	3	5.5
	CXD-021A-2V	3	10.5	7.5	21	2	8.8	5	8.8
	CXD-031A-2V	5	15.5	10	31	3	12.5	7.5	12.5
	CXD-046A-2V	7.5	23	15	46	5	16.5	10	16.5
	CXD-061A-2V	10	30.5	20	61	7.5	24.5	15	24.5
	CXD-075A-2V	10	37.5	25	75	10	32.5	20	32.5
	CXD-090A-2V	15	45	30	90	10	37.5	25	37.5
	CXD-105A-2V	15	52.5	40	105	15	45	30	45
	CXD-146A-2V	10	48.1	50	146	10	39.6	40	39.6
	CXD-180A-2V	20	59.4	60	180	15	48.2	50	48.2
	CXD-215A-2V	25	70.9	75	215	20	59.4	60	59.4
CXD-276A-2V	30	91	100	276	25	71	75	71	
CXD-322A-2V	40	106.2	125	322	30	84.2	100	84.2	

SPECIAL INSTRUCTIONS:



Factory Options
Modbus TCP/IP Communication Card



Note: HP rating is based on standard NEMA B, 4-pole motor design as represented in NEC table 430.150 full-load current, 3-phase alternating current motors.

SIZING INFORMATION TABLES

X-Drive Variable Frequency Drive - 480/575VAC

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
480VAC, Single-Phase and 3-Phase	CXD-003A-4V	-	1.5	1	3	-	1.5	3/4	1.7
	CXD-004A-4V	-	2.1	2	4.2	-	1.5	1.5	3
	CXD-005A-4V	1/2	2.75	3	5.5	-	2	2	4
	CXD-008A-4V	1	4.25	5	8.5	1/2	3	3	6
	CXD-010A-4V	1.5	5.25	5	10.5	1	4.5	5	9
	CXD-013A-4V	2	6.5	7.5	13	1.5	5.3	7.5	11
	CXD-018A-4V	3	9	10	18	2	6	7.5	12
	CXD-024A-4V	3	12	15	24	3	9	10	18
	CXD-032A-4V	5	16	20	32	3	12	15	24
	CXD-038A-4V	5	19	25	38	5	16	20	32
	CXD-045A-4V	7.5	22.5	30	45	5	19	25	38
	CXD-060A-4V	10	30	40	60	7.5	22.5	30	45
	CXD-073A-4V	15	36.5	50	73	10	30	40	60
	CXD-091A-4V	10	30	60	91	10	27	50	73
	CXD-110A-4V	15	36.3	75	110	10	33	60	91
	CXD-150A-4V	20	49.5	100	150	15	40	75	110
	CXD-180A-4V	25	59.4	125	180	25	55	100	150
	CXD-220A-4V	30	72.6	150	220	25	65	150	180
	CXD-260A-4V	30	85.8	175	260	30	80	150	220
	CXD-310A-4V	40	102.3	215	310	40	91	200	260
CXD-370A-4V	50	122.1	250	370	50	109	250	310	
CXD-460A-4V	-	151.8	300	460	-	130	300	370	
CXD-530A-4V	-	174.9	375	530	-	161	350	460	
CXD-616A-4V	-	203.28	425	616	-	193	450	550	
CXD-683A-4V	-	225.39	475	683	-	216	500	616	
CXD-770A-4V	-	254.1	536	770	-	240	-	683	
CXD-930A-4V	-	306.9	675	930	-	285.7	-	866	
575VAC, Single-Phase and 3-Phase	CXD-003A-6V	-	-	2	3	-	1.25	1.5	2.5
	CXD-004A-6V	1.2	2.15	3	4.3	-	1.8	2	3.6
	CXD-006A-6V	1	3.35	5	6.7	1/2	2.75	3	5.5
	CXD-009A-6V	1.5	4.95	7.5	9.9	1.5	4.1	5	8.2
	CXD-012A-6V	2	6.05	10	12.1	2	5	7.5	10
	CXD-018A-6V	3	9.35	15	18.7	3	7.7	10	15.5
	CXD-024A-6V	5	12.1	20	24.2	3	9.95	15	20
	CXD-030A-6V	-	-	25	30	3	10	20	24
	CXD-036A-6V	10	15	30	36	5	12	25	30
	CXD-045A-6V	7.5	18	40	45	5	15	30	36
	CXD-054A-6V	10	22.5	50	54	7.5	18	40	45
	CXD-067A-6V	7.5	17.82	60	67	5	14.8	50	54
	CXD-086A-6V	10	22.11	75	86	7.5	17.8	60	67
	CXD-104A-6V	15	28.3	100	104	10	22.1	75	86
	CXD-125A-6V	-	-	125	125	-	-	100	104
	CXD-150A-6V	-	-	150	150	-	-	125	125
	CXD-180A-6V	-	-	150	180	-	-	150	150
	CXD-220A-6V	-	-	200	220	-	-	150	180
	CXD-290A-6V	-	-	300	290	-	-	200	220
	CXD-350A-6V	-	-	350	350	-	-	300	290
CXD-430A-6V	-	-	450	430	-	-	350	350	
CXD-465A-6V	-	-	450	465	-	-	450	430	
CXD-590A-6V	-	-	500	590	-	-	450	465	
CXD-675A-6V	-	-	SEE MOTOR	675	-	-	500	590	

Note: HP rating is based on standard NEMA B, 4-pole motor design as represented in NEC table 430.150 full-load current, 3-phase alternating current motors.

SPECIFICATION TABLE

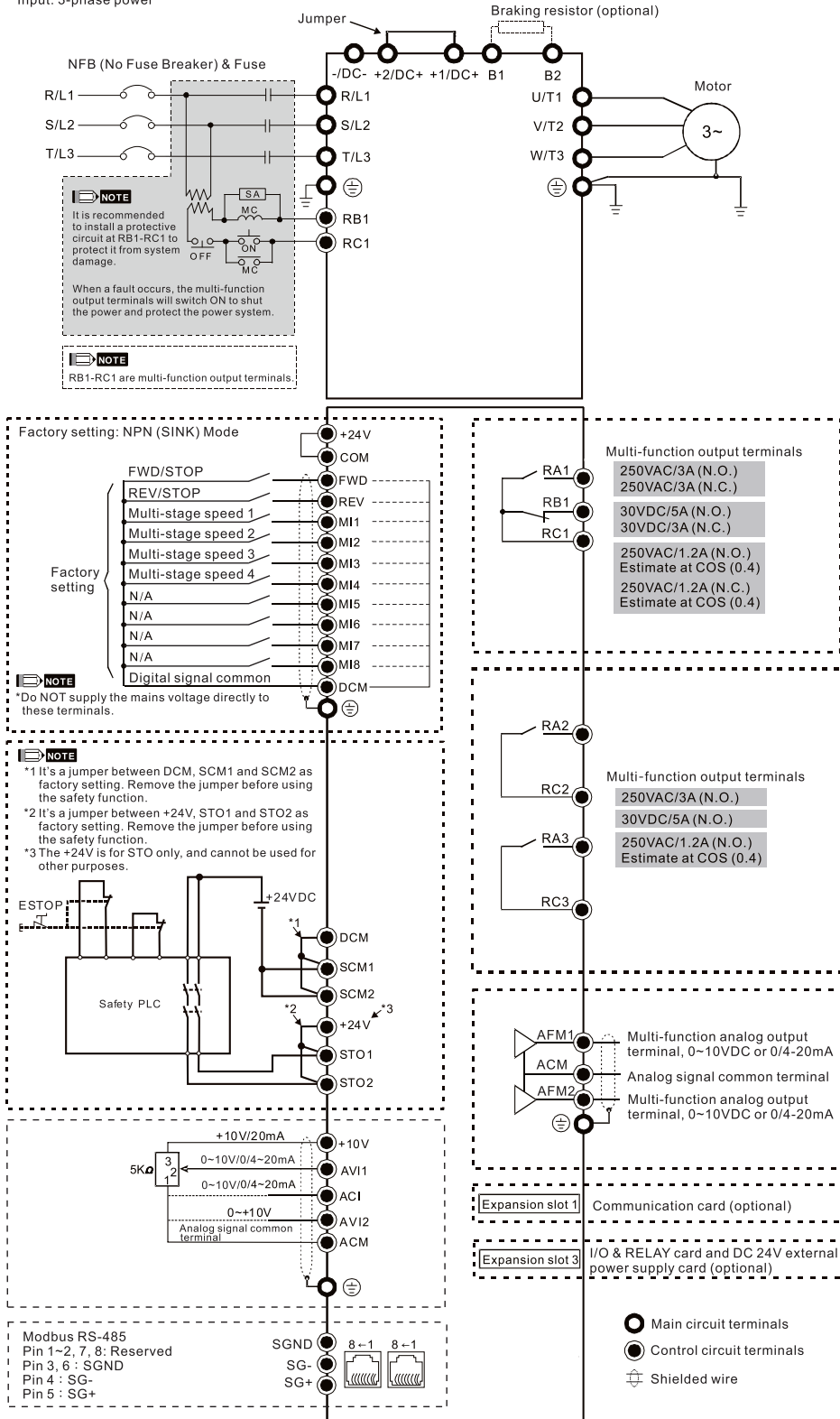
Cooling method		Forced air cooling by internal fans										
Short Circuit Rating		100kA*										
Agency Approvals	UL	UL508C, UL/cUL										
	CE - Low Voltage	EN6100-5-1										
	CE - EMC	EN61800-3, EN61000-3-12, IEC61000-4-2, IEC61000-4-3, IEC61000-4-4, IEC61000-4-5, IEC61000-4-6, IEC61000-4-8, IEC61000-6-2, IEC61000-6-4										
	Other	C-Tick, ROHS										
Motor Controls	Control Methods	V/F and SVC (Sensorless Vector Control)										
	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 / RS-485 BACnet or Modbus Communication / Optional Modbus TCP/IP & Ethernet IP Communication										
	Frequency Setting	Two Analog Inputs 0-10VDC/ 4-20mA and One AI 0-10VDC. Digital: Keypad or Communication										
	By Digital Inputs	Start Signal	Forward, Reverse and Jog (some features can start and stop VFD based on analog signal).									
		Digital Inputs	8 programmable digital inputs can be set to any selection from long list of functions.									
		Multi-Step	Up to 17 Speeds can be set including Jog by Programmable Digital Inputs.									
		Accel/Decel Time and Presets	0.00- 600.00/0.0- 6000.0 seconds. Three ACC/DEC preset values switched by digital inputs or one by frequency. Additional adjustable Accel/Decel S-Curve pattern.									
		Emergency Stop	Ext. Trip and Shutdown immediately interrupt VFD output in any control method.									
		Jog	Jog operation with adjustable Jog frequency.									
		Fault Reset	Resets VFD faults via keypad, digital input or communication. Some critical faults can only be reset by cycling the VFD power.									
	Outputs	Safety Inputs	SCM and STO terminals for safety circuit wiring.									
		Three Multi-Function Relays	One relay with Form C: 250VAC 3A/30VDC, 3A (resistive) 1.2A (inductive) contact; Two relays with Form A: 250VAC 1.2A/30VDC 3A (resistive) 1.2A (inductive). 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, AV11, AC1, AV12 AI 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, Power-on Delay, Run Delay, Minimum Run Timer, PM Motor and MagForce Control and Auto-Tuning									
Pump Operation Functions/Protections		Sleep Mode with Pressure Boost, Pipe Fill, PID, Overpressure, ULN (Underload), HLD (High Load), Broken Pipe, Backspin Timer, MMC, Lubrication, Screen Clean, No-Flow Protection, Pump Prime Time										
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	200/208/230/460 VAC Variable Torque: At 200% of VFD rated current, 200/208/230/460 VAC Constant Torque: At 240% of VFD rated current, Current clamp: Variable Torque: 130- 135%, Constant Torque 170- 175% 575 VAC models: At 225% VFD rated current Current clamp: Variable Torque: 128- 141%, Constant Torque: 170- 175%										
	Overvoltage	230 VAC models: At 410VDC DC bus voltage 460 VAC models: At 820VDC DC bus voltage 575 VAC models: At 1016VDC 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		Provides 6 fault records and logs 30 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/EN60068-2-27.										
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	98	98	98	-	98	98	-	-	-	
		460VAC	98	98	98	98	98	98	98	98	98	
		575VAC	97	98	97	-	97	97	97	98	98	

* Short-circuit rating of 100 kA when protected by suitable Class J fuses. kA rating may vary depending on the branch protection used.

X-DRIVE POWER WIRING DIAGRAM

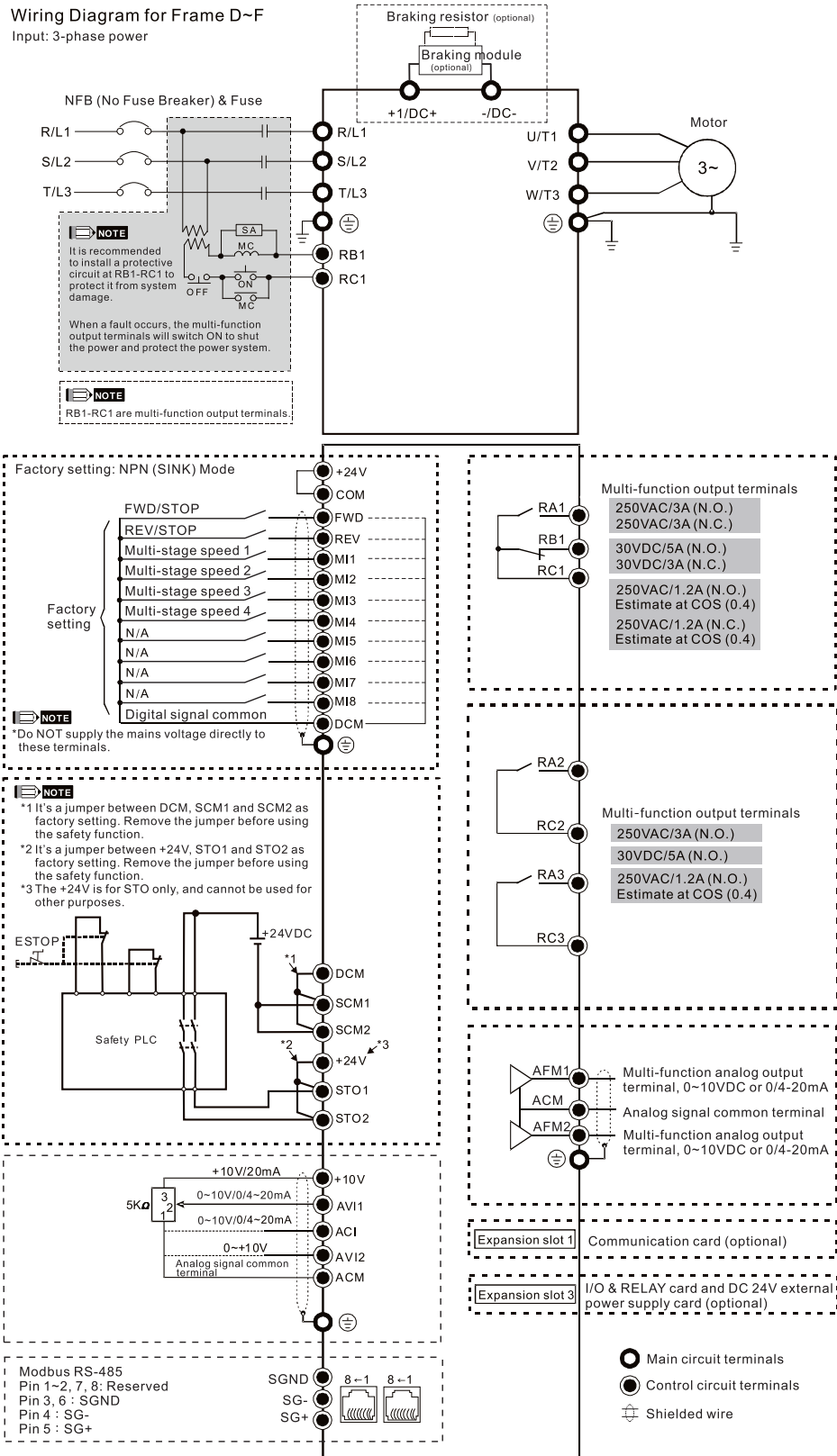
Wiring Diagram for Frame A~C

Input: 3-phase power



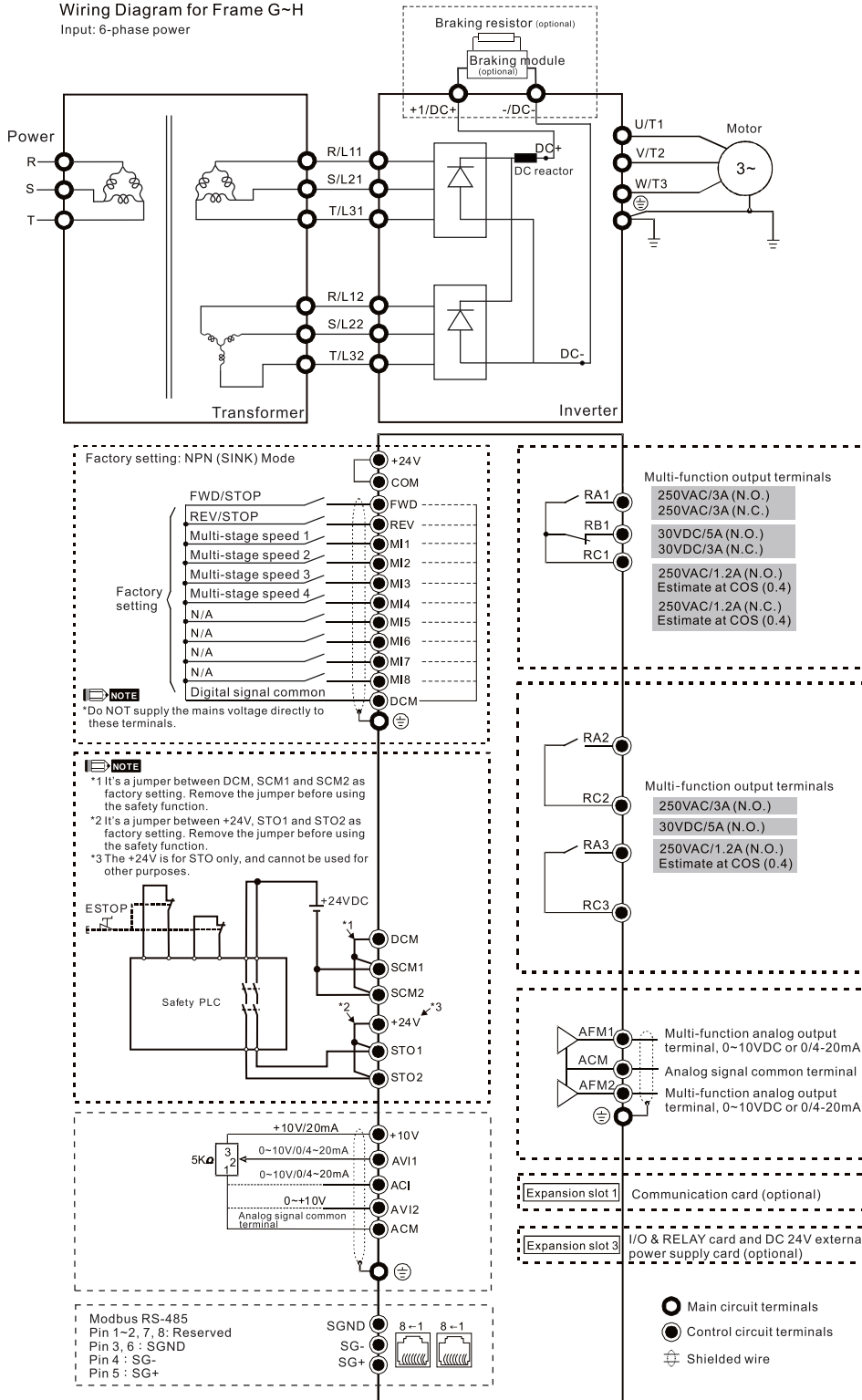
X-DRIVE POWER WIRING DIAGRAM

Wiring Diagram for Frame D~F
Input: 3-phase power



X-DRIVE POWER WIRING DIAGRAM

Wiring Diagram for Frame G-H
Input: 6-phase power



NOTE

When wiring for 12 Pulse Input, please strictly follow above wiring diagram, or it may cause the fan stop unexpectedly. Any question, please contact Franklin Electric

CERUS X-DRIVE DIMENSIONS

All measurements in inches

X-Drive VFD	Open Type (No Junc. Box) (W x H x D)	UL Type 1 (w/ Junc. Box) (W x H x D)	Frame Size
CXD-005A-2V- CXD-021A-2V	5.12" x 9.84" x 6.69"	N/A	A
CXD-003A-4V- CX D-018A-4V			
CXD-003A-6V- CXD-006A-6V			
CXD-031-2V- CXD-061A-2V	7.48" x 12.6" x 7.48"	N/A	B
CXD-024A-4V- CXD-038A-4V			
CXD-009A-6V- CXD-018A-6V			
CXD-075-2V- CXD-105A-2V	9.84" x 15.75" x 8.27"	N/A	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"	11.02" x 24.19" x 10.04"	D0
CXD-146A-2V- CXD-180A-2V	12.99" x 21.65" x 10.83"	12.99" x 27.10" 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"	14.57" x 28.18" 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"	16.54" x 37" x 11.81"	F
CXD-180A-6V- CXD-220A-6V			
CXD-460A-4V- CXD-530A-4V	19.69" x 39.37" x 15.63"	19.69" x 48.83" x 15.63"	G
CXD-290A-6V- CXD-350A-6V			
CXD-616A-4V- CXD-930A-4V	27.56" x 56.5" x 15.91"	27.56" x 68.7" x 15.91"	H
CXD-430A-6V- CXD-675A-6V			

