

SX (690 V)

V2.1

High performance Vector Control

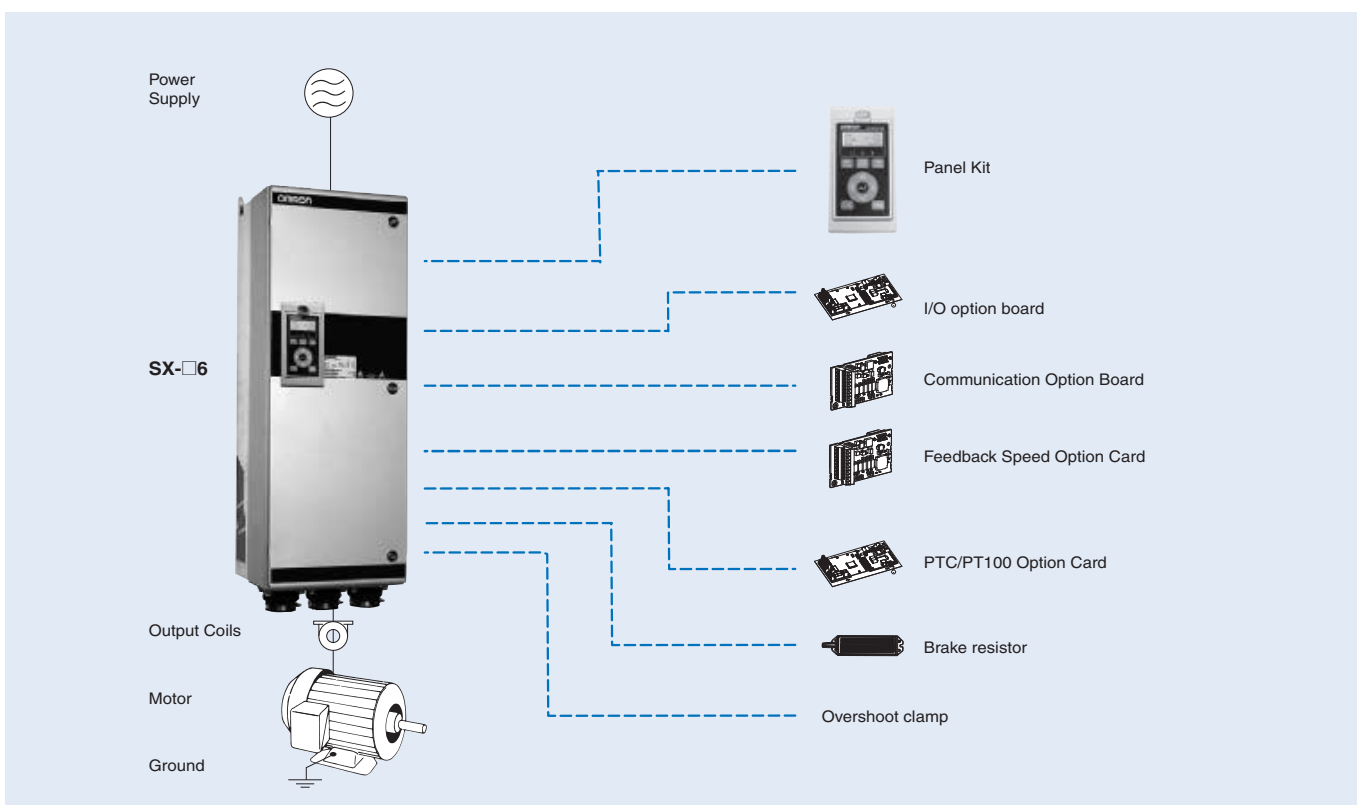
- New operator with Real-Time Clock
- IM & PM motor control
- IP20 & IP54 wide range
- Built-in Filter according to C3 Class
- Built-in Fuses (From 400 kW)
- Safety EN62061:2005 SIL 3
- Load curve control
- HCB technology (Half controlling Bridge)
- Logic programmability
- Pre-maintenance alarms
- Options flexibility (I/O's, Fieldbus, PTC/PT100, Multiple Pump control, Encoder, Crane control)
- Built-in RS-485 Modbus
- Communication options (EtherCAT, PROFINET, Modbus, DeviceNet, PROFIBUS, Modbus TCP)
- Embedded 24 VDC standby power supply
- Liquid cooling drive version
- 12-pulse rectifier option
- CE, UL, RoHS, DNV, EAC

Ratings

- 690 V Class three-phase 1.5 kW to 3,000 kW

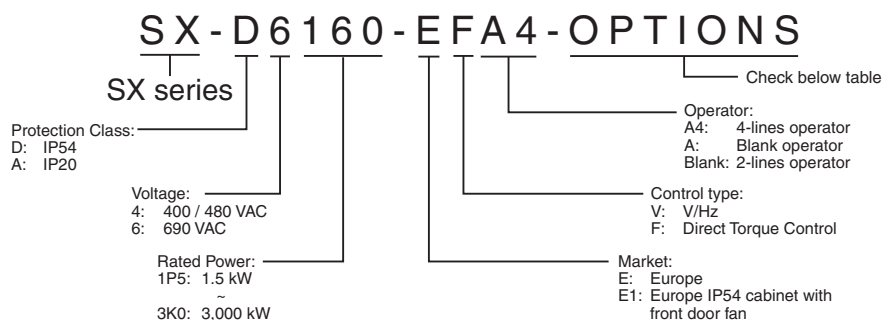


System configuration



Specifications

Type designation



Options available

Options	Letter ("?" means no character)	Options	Letter ("?" means no character)
Built-in EMC filter	"?" = Standard EMC filter (Category C3) "B" = IT-Net (filter disconnected from ground) "B1" = EMC filter (Category C2)	Option board Fieldbus position 4	"?" = No option "L" = DeviceNet "M" = PROFIBUS-DP "M1" = PROFINET (1-port) "M2" = PROFINET (2-ports) "N" = RS232/485 "O" = Ethernet Modbus TCP "O1" = EtherCAT
Built-in brake chopper	"?" = No brake chopper or DC-connection included "C" = Brake chopper & DC-connection included "D" = Only DC-connection included	Liquid Cooling	"?" = No Liquid Cooling "P" = Liquid Cooling
Safe stop	"?" = Not included "F" = Safe stop included	Standard	"?" = IEC "Q" = UL
Coated boards ^{*1}	"?" = No coating "G" = Coated boards	Marine ^{*2}	"?" = No marine option "R" = Marine option included
Option board position 1	"?" = No option "H" = Crane I/O "I" = Encoder "J" = PTC/PT100 "K" = Extended I/O	Cabinet input options	"?" = No cabinet input options "S" = Main switch included "T" = Main contactor included "U" = Main switch + contactor included
Option board position 2	"?" = No option "I" = Encoder "J" = PTC/PT100 "K" = Extended I/O	Cabinet output options	"?" = No cabinet output options included "V" = dV/dt filter included "W" = dV/dt filter + Overshoot clamp included "X" = Sinusfilter included "X1" = All-pole sinus filter included
Option board position 3	"?" = No option "I" = Encoder "J" = PTC/PT100 "K" = Extended I/O	—	

^{*1} IP20 models from 1.5 kW to 55 kW are coated from factory.

^{*2} Marine option is not available for IP20 models from 1.5 kW to 55 kW.

690 V class

Three-phase: SX-D6□□-E□		1P5	2P2	3P0	4P0	5P5	7P5	011	015	018	022	030	037	045	055
Motor kW ^{*1}	For HD setting	0.75	1.5	2.2	3	4	5.5	7.5	11	15	18.5	22	30	37	45
	For ND setting	1.5	2.2	3	4	5.5	7.5	11	15	18.5	22	30	37	45	55
Output characteristics ^{*2}	Max output current (A)	3.2	4.8	6.4	9.6	12.8	16	20.8	29	34	40	53	67	80	93
	Rated output current (A) at HD	1.6	2.4	3.2	4.8	6.4	8	10.4	14.4	16.8	20	26	34	40	46
	Rated output current (A) at ND ³	2	3	4	6	8	10	13	18	21	25	33	42	50	58
	Output voltage	0 to Mains supply voltage													
	Max. output frequency	599 Hz													
Power supply	Rated input voltage and frequency	3-phase 500 to 690 V, 50/60 Hz													
	Allowable voltage fluctuation	+10% to -15%													
	Allowable frequency fluctuation	45 to 65 Hz													

^{*1} Based on a standard 4-pole motor for maximum applicable motor output

^{*2} Values for IP54 models, IP20 ones has slightly different current ratings

Three-phase: SX-D6□□-E□		075	090	110	132	160	200	250	315	355	400	450	500	600	630
Motor kW ^{*1}	For HD setting	55	75	90	110	132	160	200	250	315	315	315	355	450	500
	For ND setting	75	90	110	132	160	200	250	315	355	400	450	500	600	630
Output characteristics ^{*2}	Max output current (A)	98	108	131	175	210	252	300	360	450	480	516	600	720	780
	Rated output current (A) at HD	66	72	87	117	140	160	200	240	300	320	344	400	480	520
	Rated output current (A) at ND ³	82	90	109	146	175	200	250	300	375	400	430	500	600	650
	Output voltage	0 to Mains supply voltage													
	Max. output frequency	599 Hz													
Power supply	Rated input voltage and frequency	3-phase 500 to 690 V, 50/60 Hz													
	Allowable voltage fluctuation	+10% to -15%													
	Allowable frequency fluctuation	45 to 65 Hz													

^{*1} Based on a standard 4-pole motor for maximum applicable motor output

^{*2} For units up to 200KW the IP20 output current ratings are slightly different

Three-phase: SX-D6□□-E□		710	800	900	1K0	1K2	1K4	1K6	1K8	2K0	2K2	2K4	2K6	2K8	3K0
Motor kW ^{*1}	For HD setting	600	650	710	800	900	1120	1250	1400	1600	1700	1900	2000	2200	2400
	For ND setting	710	800	900	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000
Output characteristics ^{*2}	Max output current (A)	900	1032	1080	1200	1440	1680	1920	2160	2400	2640	2880	3120	3360	3600
	Rated output current (A) at HD	576	640	720	800	960	1120	1280	1440	1600	1760	1920	2080	2240	2400
	Rated output current (A) at ND ³	720	800	900	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000
	Output voltage	0 to Mains supply voltage													
	Max. output frequency	599 Hz													
Power supply	Rated input voltage and frequency	3-phase 500 to 690 V, 50/60 Hz													
	Allowable voltage fluctuation	+10% to -15%													
	Allowable frequency fluctuation	45 to 65 Hz													

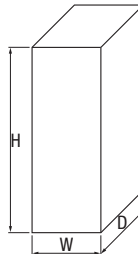
^{*1} Based on a standard 4-pole motor for maximum applicable motor output

Common specifications

Model number SX-		Specifications
Control functions	Motor control	AC motor, PM motor
	Control methods	V/f control for "V" type V/f control, Vector control with or without feedback for the "F" type
	Output frequency range	0.0 to 599 Hz
	Frequency tolerance	Analogue set value: 1% + 1.5 LSB fsd
	Resolution of frequency set value	Digital set value: 0.1 Hz Analogue set value: 0.03 Hz / 60 Hz (11 bit + sign)
	Resolution of output frequency	0.1 Hz
	Frequency set value	-10 to +10 V (40 kΩ), 0 to 20 mA (252 Ω), frequency setting value (selectable)
	Starting Torque	150% for Heavy duty, 120% for Normal duty
	Torque static accuracy	<3% in Vector control with feedback <3% in vector control without feedback if speed between 10 and 100%, <10% at 0 Hz
	Torque response	1 ms for 0% to 90% speed 5 ms for 90% to 100% speed (Close and open loop)
	Speed Control Accuracy	V/f control 1% Vector control without feedback 0.1% Vector control with feedback 0.01%
	Speed Response	0.4% without encoder feedback 0.2% with encoder feedback
	Torque Limit	From Analog input
	Accel/Decel Time	0.0 to 3600.0 s
	Braking torque	5% to 10% (100% with external braking resistor)
Functionality	Main Control Functions	PID, sleep function, brake control, torque control (Direct torque control model), Pump/Fan control, Logic functions, virtual connections, overvoltage control, undervoltage override, autoreset, two motor support, Lim Switch, External trip, Preset Speeds, MotPot Up Down, Pump Feedb, Timer, Mot PreMag , Jog, Ext Mot Temp, Loc/Rem, AnIn select, Brk Ackn.
Protection functions	Motor protection	Motor overheat protection based on output current or PTC by option board
	Momentary overcurrent Protection	Drive stops when output current exceeds 200% of peak current
	Overload Protection	Drive stops after 1 min at 150% of rated output current (Heavy Duty Rating) Drive stops after 1 min at 120% of rated output current (Normal Duty Rating) (1 min every 10 min)
	Overvoltage Protection	Line Overvoltage: 1120 VDC during more than 10 s for 690 V class Fast Overvoltage: 1220 for 690 VDC
	Undervoltage Protection	500 for 690 V class (Adjustable by input power supply parameter)
	Momentary power loss Ride-Thru	Low voltage override function
	Heatsink Overheat Protection	Protected by thermistor
	Braking Resistance Overheat Protection	Hardware short circuit protection
	Stall prevention	Current limit function
Ambient conditions	Power charge indication	Power LED remains lit while capacitors are charged
	Ambient Temperature	0 to +40°C, up to 45°C with derating
	Ambient humidity	90% RH or less (without condensation)
	Storage temperature	-20°C to +60°C (short-term temperature during transportation)
	Altitude	Up to 1000 meters (output derating of 1% per 100 m above 1000 m, max. 2000 m)
	Vibration / Shock	According to IEC 60068-2-6, Sinusoidal vibrations: 10<f<57 Hz, 0.075 mm, 57<f<150 Hz, 1g
	Contamination, according to IEC 60721-3-3	No electrically conductive dust allowed. Cooling air must be clean and free from corrosive materials. Chemical gases, class 3C2. Solid particles, class 3S2
	Protection Design	IP54 enclosure according to the EN 60529, IP20

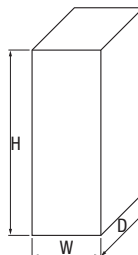
Dimensions

IP54 models

Drive model	Frame	Dimensions in mm			
		H	W	D	
SX-D61P5 to D6022	C69	440/512 ¹	178	314	
SX-D6030 to D6055	D69	545/590 ¹	220	282	
SX-D6075 to D6200	F69	1090	345	312	
SX-D6250 to D6400	H69	2250	600	600	
SX-D6450 to D6600	I69		900		
SX-D6630 to D6800	J69		1200		
SX-D6900 to D61K0	KA69		1500		
SX-D61K2	K69		1800		
SX-D61K4	L69		2100		
SX-D61K6	M69		2400		
SX-D61K8	N69		2700		
SX-D62K0	O69		3000		
SX-D62K2	P69		3300		
SX-D62K4	Q69		3600		
SX-D62K6	R69		3900		
SX-D62K8	S69		4200		
SX-D63K0	T69		4500		

*1 Enclosure height/Total height.

IP20 models

Drive model	Frame	Dimensions in mm			
		H	W	D	
SX-A61P5 to A6022	C2(69)	536	176	267	
SX-A6030 to A6055	D2(69)	658	220	291	
SX-A6250 to A6400	H69	1176	500	450	
SX-A6450 to A6600	I69		730		
SX-A6630 to A6800	J69		1100		
SX-A6900 to A61K0	KA69		1365		
SX-A61K2	K69		1630		
SX-A61K4	L69		2000		
SX-A61K6	M69		2230		
SX-A61K8	N69		2530		
SX-A62K0	O69		2830		
SX-A62K2	P69		3130		
SX-A62K4	Q69		3430		
SX-A62K6	R69		3730		
SX-A62K8	S69		4030		
SX-A63K0	T69		4330		

Weight and Air flow

Model SX-	Weight (kg)		Air flow (m ³ /hour)
	SX-D (IP54)	SX-A (IP20)	
1P5 to 022	19.8	17	170
030 to 055	32	30	
075 to 200	77	-	800
250 to 400	399	176	1600
450 to 600	563	257	2400
630 to 800	773	352	3200
900 to 1K0	937	433	4000
1K2	1100	514	4800
1K4	1311	609	5600
1K6	1481	690	6400
1K8	1651	771	7200
2K0	1849	866	8000
2K2	2050	947	8800
2K4	2214	1028	9600
2K6	2423	1123	10400
2K8	2613	1204	11200
3K0	2777	1285	12000

LCD operator



Output coils

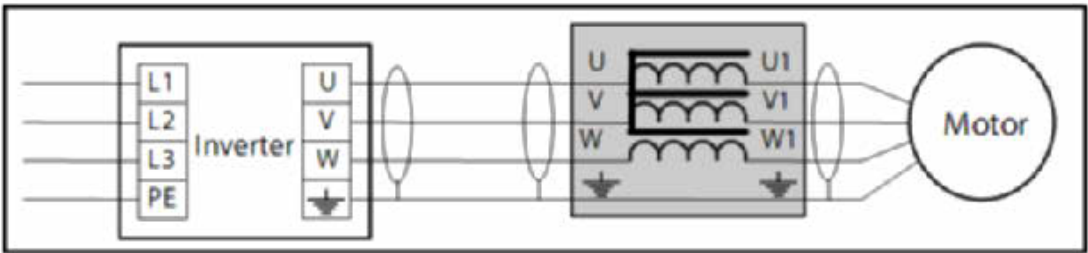
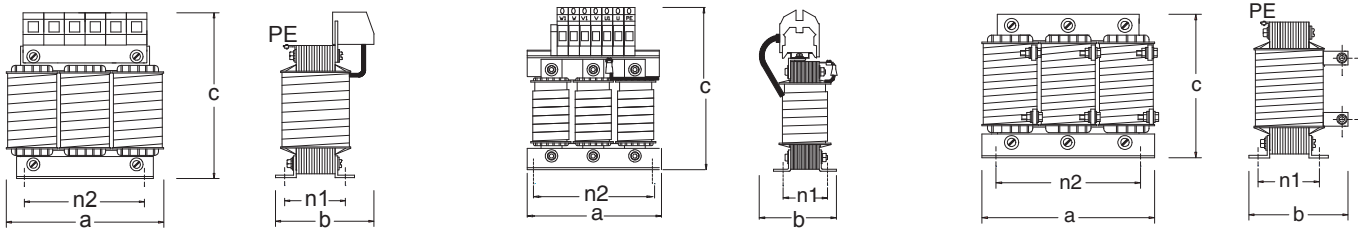


Figure 1

Figure 2

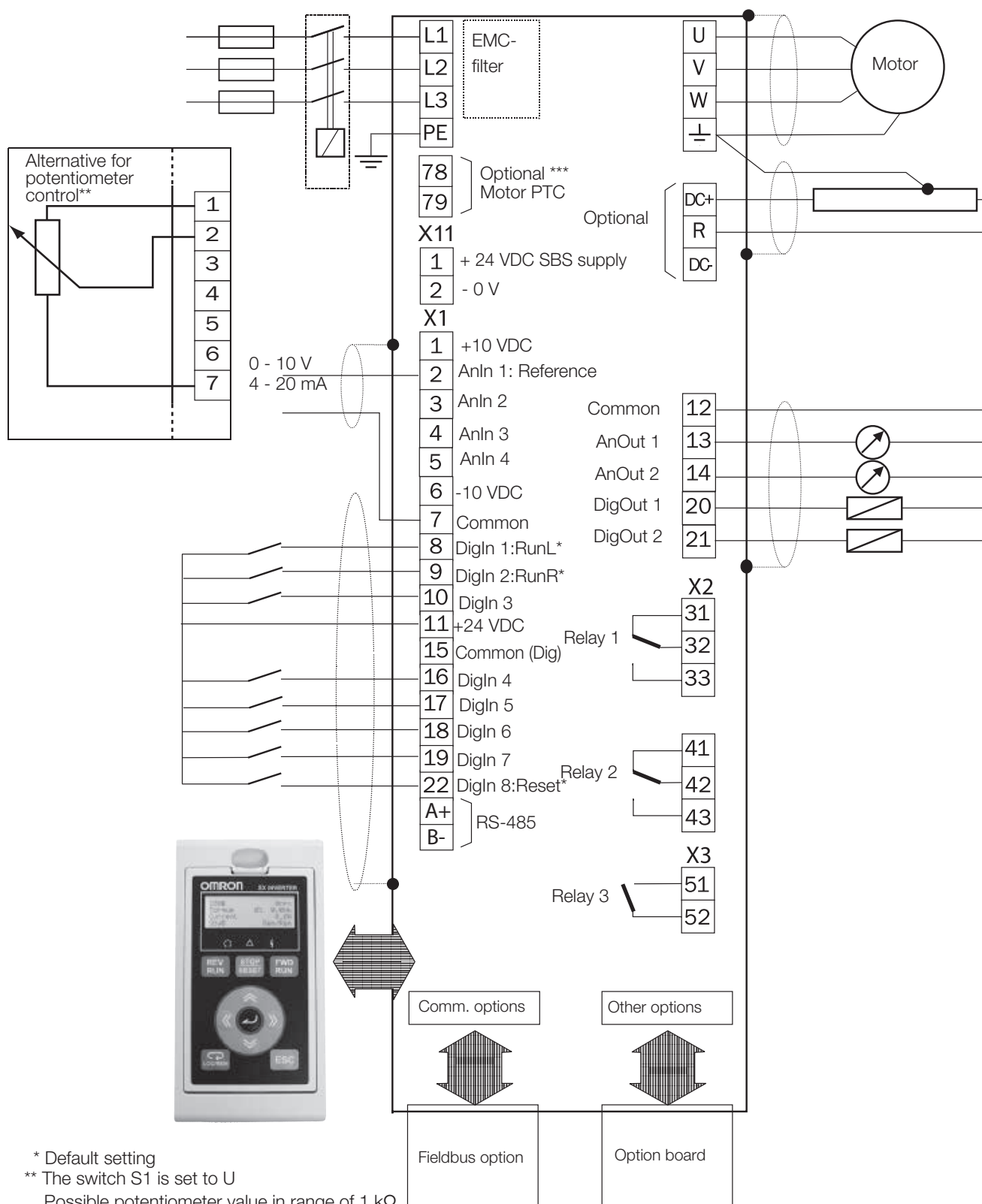
Figure 3



Type	Fig	a	b	c	n2	n1	Fix	Weight	Connection
473160 00	1	78	60	95	50	31	M4	0.6 kg	2.5 mm ²
473161 00		78	60	95	50	31	M4	0.6 kg	2.5 mm ²
473162 00		78	60	95	50	31	M4	0.6 kg	2.5 mm ²
473163 00		96	65	105	71	39	M4	1.0 kg	2.5 mm ²
473164 00		96	65	105	71	39	M4	1.0 kg	2.5 mm ²
473165 00		96	74	105	71	48	M4	1.2 kg	4 mm ²
473166 00	2	96	74	105	71	48	M4	1.2 kg	4 mm ²
473168 00		155	105	205	130	57	M5	4.0 kg	35 mm ²
473169 00		190	120	235	170	66	M6	8.4 kg	35 mm ²
473170 00	3	190	140	260	170	77	M6	10.2 kg	50 mm ²
473171 00		210	160	180	175	97	M6	13.4 kg	M10
473172 00		230	170	200	175	95	M6	18.4 kg	M10
473173 00		230	170	200	175	95	M6	18.9 kg	M10
473174 00		240	180	210	185	96	M8	22.6 kg	M12

Installation

Standard connections



* Default setting

** The switch S1 is set to U

Possible potentiometer value in range of 1 kΩ to 10 kΩ (¼ Watt) linear, where we advice to use a linear 1 kΩ / ¼ W type potentiometer for best control linearity.

*** Optional terminals X1: 78 - 79 for connection of Motor-PTC on frame sizes B, C and D.

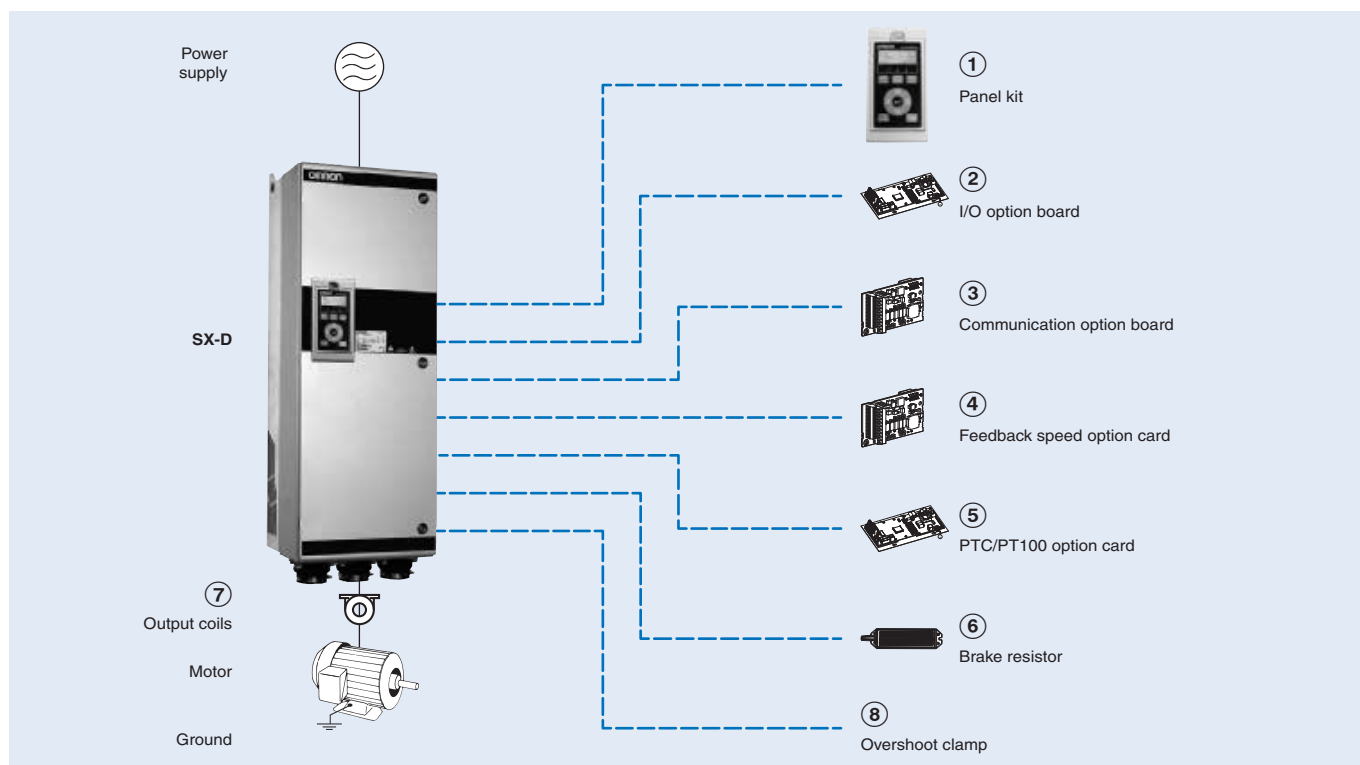
Main circuit

Terminal	Name	Function (signal level)
L1, L2, L3	Main circuit power supply input	Used to connect line power to the drive.
U, V, W	Drive output	Used to connect the motor
DC-, DC+, R	DC link connections, Brake resistor	The brake resistor must be connected terminals DC+ and R (Terminals are only fitted if the Brake Chopper Option is built-in)
PE	Safety earth	Protected earth
	Grounding	Motor earth

Control Circuit

Type	No.	Signal name	Function	Signal level
Digital input signals	8	DigIn 1	RunL (reverse)	High > 9 VDC Low < 4 VDC Max 30 VDC Impedance 4.7 kW for < 3.3 VDC 3.6 kW for > 3.3 VDC
	9	DigIn 2	RunR (forward)	
	10	DigIn 3	Off	
	16	DigIn 4	Off	
	17	DigIn 5	Off	
	18	DigIn 6	Off	
	19	DigIn 7	Off	
	22	DigIn 8	RESET	
	11	+24 V	+24 VDC supply voltage	Max 100mA
	15	Common	Signal ground	
Analog input signals	1	+10 V	+10 VDC supply voltage	-10 to 10 VDC 0 to 20mA Max 30V/30mA Impedance 20 kW Voltage 250 W Current
	2	AnIn 1	Process Ref	
	3	AnIn 2	Off	
	4	AnIn 3	Off	
	5	AnIn 4	Off	
	6	-10 V	-10 VDC supply voltage	
	7	Common	Signal ground	
Digital output signals	20	DigOut 1	Ready	High > 20 VDC @50 mA > 23 VDC open Low <1 VDC @ 50 mA 100 mA max together with +24VDC
	21	DigOut 2	Brake	
	12	Common	Signal ground	
	31	N/C 1	Relay 1 output Trip, active when the VSD is in a TRIP condition.	0.1 to 2 A 250 VAC or 42 VDC
	32	COM 1		
	33	N/O 1		
	41	N/C 2	Relay 2 output Run, active when the VSD is started.	
	42	COM 2		
	43	N/O 2		
	51	COM 3	Relay 3 output Off	
	52	N/O 3		
Analog output signals	12	Common	Signal ground	0 to 10 V/0 to 20 mA Max -13 V @ 5 mA Impedance: 10 W (Voltage)
	13	AnOut1	Min speed to max speed	
	14	AnOut2	0 to max torque	
RS-485	A+	A+	RS-485 Differential transmit and receive	
	B-	B-		
SBS supply	1	+	External Standby power supply terminals	24 VDC ±10%
	2	—		0 V

Ordering information



SX

Specifications					IP54 Model		IP20 Model	
Voltage	Heavy duty		Normal duty		Direct torque control	V/F	Direct torque control	V/F
690 V	0.75 kW	1.6 A	1.5 kW	2 A	SX-D61P5-EFA4	SX-D61P5-EVA4	SX-A61P5-EFA4	SX-A61P5-EVA4
	1.5 kW	2.4 A	2.2 kW	3 A	SX-D62P2-EFA4	SX-D62P2-EVA4	SX-A62P2-EFA4	SX-A62P2-EVA4
	2.2 kW	3.2 A	3 kW	4 A	SX-D63P0-EFA4	SX-D63P0-EVA4	SX-A63P0-EFA4	SX-A63P0-EVA4
	3 kW	4.8 A	4 kW	6 A	SX-D64P0-EFA4	SX-D64P0-EVA4	SX-A64P0-EFA4	SX-A64P0-EVA4
	4 kW	6.4 A	5.5 kW	8 A	SX-D65P5-EFA4	SX-D65P5-EVA4	SX-A65P5-EFA4	SX-A65P5-EVA4
	5.5 kW	8 A	7.5 kW	10 A	SX-D67P5-EFA4	SX-D67P5-EVA4	SX-A67P5-EFA4	SX-A67P5-EVA4
	7.5 kW	10.4 A	11 kW	13 A	SX-D6011-EFA4	SX-D6011-EVA4	SX-A6011-EFA4	SX-A6011-EVA4
	11 kW	14.4 A	15 kW	18 A	SX-D6015-EFA4	SX-D6015-EVA4	SX-A6015-EFA4	SX-A6015-EVA4
	15 kW	16.8 A	18.5 kW	21 A	SX-D6018-EFA4	SX-D6018-EVA4	SX-A6018-EFA4	SX-A6018-EVA4
	18.5 kW	20 A	22 kW	25 A	SX-D6022-EFA4	SX-D6022-EVA4	SX-A6022-EFA4	SX-A6022-EVA4
	22 kW	26 A	30 kW	33 A	SX-D6030-EFA4	SX-D6030-EVA4	SX-A6030-EFA4	SX-A6030-EVA4
	30 kW	34 A	37 kW	42 A	SX-D6037-EFA4	SX-D6037-EVA4	SX-A6037-EFA4	SX-A6037-EVA4
	37 kW	40 A	45 kW	50 A	SX-D6045-EFA4	SX-D6045-EVA4	SX-A6045-EFA4	SX-A6045-EVA4
	45 kW	46 A	55 kW	58 A	SX-D6055-EFA4	SX-D6055-EVA4	SX-A6055-EFA4	SX-A6055-EVA4
	55 kW	66 A	75 kW	82 A	SX-D6075-EFA4	SX-D6075-EVA4	-	-
	75 kW	72 A	90 kW	90 A	SX-D6090-EFA4	SX-D6090-EVA4		
	90 kW	87 A	110 kW	109 A	SX-D6110-EFA4	SX-D6110-EVA4		
	110 kW	117 A	132 kW	146 A	SX-D6132-EFA4	SX-D6132-EVA4		
	132 kW	140 A	160 kW	175 A	SX-D6160-EFA4	SX-D6160-EVA4		
	160 kW	160 A	200 kW	200 A	SX-D6200-E1FA4	SX-D6200-E1VA4		
	200 kW	200 A	250 kW	250 A	SX-D6250-E1FA4	SX-D6250-E1VA4	SX-A6250-EFA4	SX-A6250-EVA4
	250 kW	240 A	315 kW	300 A	SX-D6315-E1FA4	SX-D6315-E1VA4	SX-A6315-EFA4	SX-A6315-EVA4
	315 kW	300 A	355 kW	375 A	SX-D6355-E1FA4	SX-D6355-E1VA4	SX-A6355-EFA4	SX-A6355-EVA4
	315 kW	320 A	400 kW	400 A	SX-D6400-E1FA4	SX-D6400-E1VA4	SX-A6400-EFA4	SX-A6400-EVA4
	315 kW	344 A	450 kW	430 A	SX-D6450-E1FA4	SX-D6450-E1VA4	SX-A6450-EFA4	SX-A6450-EVA4
	355 kW	400 A	500 kW	500 A	SX-D6500-E1FA4	SX-D6500-E1VA4	SX-A6500-EFA4	SX-A6500-EVA4
	450 kW	480 A	600 kW	600 A	SX-D6600-E1FA4	SX-D6600-E1VA4	SX-A6600-EFA4	SX-A6600-EVA4
	500 kW	520 A	630 kW	650 A	SX-D6630-E1FA4	SX-D6630-E1VA4	SX-A6630-EFA4	SX-A6630-EVA4
	600 kW	576 A	710 kW	720 A	SX-D6710-E1FA4	SX-D6710-E1VA4	SX-A6710-EFA4	SX-A6710-EVA4
	650 kW	640 A	800 kW	800 A	SX-D6800-E1FA4	SX-D6800-E1VA4	SX-A6800-EFA4	SX-A6800-EVA4
	710 kW	720 A	900 kW	900 A	SX-D6900-E1FA4	SX-D6900-E1VA4	SX-A6900-EFA4	SX-A6900-EVA4
	800 kW	800 A	1000 kW	1000 A	SX-D61K0-E1FA4	SX-D61K0-E1VA4	SX-A61K0-EFA4	SX-A61K0-EVA4
	900 kW	960 A	1200 kW	1200 A	SX-D61K2-E1FA4	SX-D61K2-E1VA4	SX-A61K2-EFA4	SX-A61K2-EVA4
	1120 kW	1120 A	1400 kW	1400 A	SX-D61K4-E1FA4	SX-D61K4-E1VA4	SX-A61K4-EFA4	SX-A61K4-EVA4
	1250 kW	1280 A	1600 kW	1600 A	SX-D61K6-E1FA4	SX-D61K6-E1VA4	SX-A61K6-EFA4	SX-A61K6-EVA4
	1400 kW	1440 A	1800 kW	1800 A	SX-D61K8-E1FA4	SX-D61K8-E1VA4	SX-A61K8-EFA4	SX-A61K8-EVA4
	1600 kW	1600 A	2000 kW	2000 A	SX-D62K0-E1FA4	SX-D62K0-E1VA4	SX-A62K0-EFA4	SX-A62K0-EVA4
	1700 kW	1760 A	2200 kW	2200 A	SX-D62K2-E1FA4	SX-D62K2-E1VA4	SX-A62K2-EFA4	SX-A62K2-EVA4
	1900 kW	1920 A	2400 kW	2400 A	SX-D62K4-E1FA4	SX-D62K4-E1VA4	SX-A62K4-EFA4	SX-A62K4-EVA4
	2000 kW	2080 A	2600 kW	2600 A	SX-D62K6-E1FA4	SX-D62K6-E1VA4	SX-A62K6-EFA4	SX-A62K6-EVA4
	2200 kW	2240 A	2800 kW	2800 A	SX-D62K8-E1FA4	SX-D62K8-E1VA4	SX-A62K8-EFA4	SX-A62K8-EVA4
	2400 kW	2400 A	3000 kW	3000 A	SX-D63K0-E1FA4	SX-D63K0-E1VA4	SX-A63K0-EFA4	SX-A63K0-EVA4

① Panel Kit

Type	Model	Description	Function
Panel kit	SX-OP04K-00-E	Panel kit	Complete panel kit including 4-lines operator (frame D and higher)
	SX-OP02-00-E		Complete panel kit including 2-lines operator
	SX-OP04K-51-E	Blank panel kit	Complete panel kit including a blank operator (frame D and higher)
	SX-OP04K-71-E		Complete panel kit including a blank operator (frame B)
	SX-OP04K-81-E		Complete panel kit including a blank operator (frame C)
Operator	SX-OPHH-00-E	Handheld control panel	Complete handheld control panel
	SX-OP04-00-E	Digital operator	Drive digital 4-lines operator
	SX-OP01-00-E		Drive digital 2-lines operator
	SX-OP01-11-E	Blank operator	Blank operator

② I/O option board

Model	Description	Function
01-3876-01	Additional I/O option	Provides 3 extra relay outputs and 3 additional digital inputs
01-3876-07	Crane option	Dedicated option board for crane application, including additional I/O and functions

③ Communication option board

Type	Model	Description	Function
Communication option board	01-3876-04	RS232/485	MODBUS RTU serial communication by RS232 or RS485 interface with galvanic isolation
	01-3876-05	PROFIBUS-DP	Used for operating the drive through PROFIBUS-DP communication with the host controller.
	01-3876-06	DeviceNet	Used for operating the drive through DeviceNet communication with the host controller.
	01-3876-09	Modbus/TCP, Ethernet	Used for operating the drive through Modbus/TCP communication with the host controller.
	01-3876-10	EtherCAT	Used for operating the drive through EtherCAT communication with the host controller.
	01-3876-11	PROFINET (1-port)	Used for operating the drive through PROFINET communication with the host controller.
	01-3876-12	PROFINET (2-ports)	
	01-3876-13	EtherNet/IP (2-ports)	Used for operating the drive through EtherNet/IP communication with the host controller

④ Encoder feedback option card

Model	Description	Function
01-3876-03	Encoder option	Used for connection of the actual motor speed via encoder. Up to 100 kHz with TTL and HTL incremental encoders with 5/24 V power supply

⑤ PTC/PT100 option card

Model	Description	Function
01-3876-08	Thermal protection	Allows to connect a motor thermistor to the drive

⑥ Braking chopper and braking resistor

All drive sizes could be fitted with an optional built-in brake chopper from factory but is not possible to install it later. The choice of the resistor depends on the application switch-on duration and duty-cycle. Following tables describes the activation level of the built-in braking chopper and the minimum resistor that could be used depending on the input voltage.

Type	Rmin for different input voltage (Ω)		
	500 to 525 VAC	550 to 600 VAC	660 to 690 VAC
SX-61P5	30.4	34.8	40
SX-62P2	30.4	34.8	40
SX-63P0	30.4	34.8	40
SX-64P0	30.4	34.8	40
SX-65P5	30.4	34.8	40
SX-67P5	30.4	34.8	40
SX-6011	30.4	34.8	40
SX-6015	30.4	34.8	40
SX-6018	30.4	34.8	40
SX-6022	30.4	34.8	40
SX-6030	12.9	14.8	17
SX-6037	12.9	14.8	17
SX-6045	12.9	14.8	17
SX-6055	12.9	14.8	17
SX-6075	4.9	5.7	6.5
SX-6090	4.9	5.7	6.5
SX-6110	4.9	5.7	6.5
SX-6132	4.9	5.7	6.5
SX-6160	4.9	5.7	6.5
SX-6200	4.9	5.7	6.5
SX-6250	2 × 4.9	2 × 5.7	2 × 6.5
SX-6315	2 × 4.9	2 × 5.7	2 × 6.5
SX-6355	2 × 4.9	2 × 5.7	2 × 6.5
SX-6400	2 × 4.9	2 × 5.7	2 × 6.5
SX-6450	3 × 4.9	3 × 5.7	3 × 6.5

Type	Rmin for different input voltage (Ω)		
	500 to 525 VAC	550 to 600 VAC	660 to 690 VAC
SX-6500	3 × 4.9	3 × 5.7	3 × 6.5
SX-6600	3 × 4.9	3 × 5.7	3 × 6.5
SX-6630	4 × 4.9	4 × 5.7	4 × 6.5
SX-6710	4 × 4.9	4 × 5.7	4 × 6.5
SX-6800	4 × 4.9	4 × 5.7	4 × 6.5
SX-6900	5 × 4.9	5 × 5.7	5 × 6.5
SX-61K0	5 × 4.9	5 × 5.7	5 × 6.5
SX-61K2	6 × 4.9	6 × 5.7	6 × 6.5
SX-61K4	7 × 4.9	7 × 5.7	7 × 6.5
SX-61K6	8 × 4.9	8 × 5.7	8 × 6.5
SX-61K8	9 × 4.9	9 × 5.7	9 × 6.5
SX-62K0	10 × 4.9	10 × 5.7	10 × 6.5
SX-62K2	11 × 4.9	11 × 5.7	11 × 6.5
SX-62K4	12 × 4.9	12 × 5.7	12 × 6.5
SX-62K6	13 × 4.9	13 × 5.7	13 × 6.5
SX-62K8	14 × 4.9	14 × 5.7	14 × 6.5
SX-63K0	15 × 4.9	15 × 5.7	15 × 6.5

Supply voltage (VAC)	Built-in brake chopper trigger level (VDC)
500 to 525	860
550 to 600	1000
660 to 690	1150

⑦ Output coils

Output coils above SX-D6160-E should be order from factory as they should be installed inside of the cabinet

Voltage	Drive model	Model	Rated current	Inductance	Rated Voltage	Max carrier	Max output frequency	Max temp
690 V	SX-61P5	473160 00	2.8 A	1.5 mH	800 V	10 kHz	200 Hz	40°C
	SX-62P2	473161 00	4.4 A	1 mH				
	SX-63P0	473161 00	4.4 A	1 mH				
	SX-64P0	473162 00	6.6 A	0.65 mH				
	SX-65P5	473163 00	11 A	0.4 mH				
	SX-67P5	473163 00	11 A	0.4 mH				
	SX-6011	473164 00	14.3 A	0.3 mH				
	SX-6015	473165 00	18.2 A	0.25 mH				
	SX-6018	473166 00	26.4 A	0.175 mH				
	SX-6022	473166 00	26.4 A	0.175 mH				
	SX-6030	473168 00	65 A	0.1 mH				
	SX-6037	473168 00	65 A	0.1 mH				
	SX-6045	473168 00	65 A	0.1 mH				
	SX-6055	473168 00	65 A	0.1 mH				
	SX-6075	473169 00	90 A	0.1 mH				
	SX-6090	473169 00	90 A	0.1 mH				
	SX-6110	473170 00	146 A	0.05 mH				
	SX-6132							
	SX-6160	473171 00	175 A	0.05 mH				
	SX-6200	473172 00	275 A	0.032 mH				
	SX-6250	473172 00	275 A	0.032 mH				
	SX-6315	473173 00	320 A	0.025 mH				
	SX-6355	473174 00	410 A	0.021 mH				
	SX-6400	473174 00	410 A	0.021 mH				
						1.5 kHz	100 Hz	

⑧ Overshoot clamp

Only two types of overshoot clamps could be order for after mounting

Model	Drive	Function
52163	SX-61P5 to 6200	Together with the output coils, the overshoot clamp restricts the voltage and the dV/dt on the motor winding. Drives must be ordered including the option DC+/DC- connectors.
52220	SX-6250 to 63K0	Together with the output coils, the overshoot clamp restricts the voltage and the dV/dt on the motor winding. Doesn't require the "DC+/DC-" option.

Computer software

Types	Model	Description	Installation
Software	CX-Drive	Computer software	Configuration and monitoring software tool
	CX-One	Computer software	Configuration and monitoring software tool
	ESaver	Computer software	Software tool for Energy Saving calculation

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.