Electrical Standard Products (ESP) Branch Offices:

REGISTERED OFFICE AND HEAD OFFICE
L&T House, Ballard Estate
P. O. Box 278
Mumbai 400 001
Tel: 022-67525656
Fax: 022-67525858
Website: www.Larsentoubro.com

ELECTRICAL STANDARD PRODUCTS (ESP)
501, Sakar Complex I
Opp. Gandhigram Rly. Station
Ashram Road
Ahmedabad 380 009
Tel: 079-66304006-11
Fax: 079-66304025
e-mail: esp-ahm@LNTEBG.com

38, Cubbon Road, P. O. Box 5098
Bangalore 560 001
Tel: 080-25020100 / 25020324
Fax: 080-25580525
e-mail: esp-blr@LNTEBG.com

131/1, Zone II
Maharana Pratap Nagar
Bhopal 462 011
Tel: 0755-3080511 / 05 / 08 / 13 / 17 / 19
Fax: 0755-3080502
e-mail: esp-bho@LNTEBG.com

Plot No. 559, Annapurna Complex
Lewis Road
Bhubaneswar 751 014
Tel: 0674-6451342, 2436690, 2436696
Fax: 0674-2537309
e-mail: nayakd@LNTEBG.com

Aspire Towers, 4th Floor
Plot No. 55, Phase-I
Industrial & Business Park
Chandigarh-160 002
Tel: 0172-4646840 / 41 / 42 / 46 / 53
Fax: 0172-4646802
Email: esp-chd@Lntebg.com

L&T Construction Campus
TC-1 Building, II Floor
Mount-Poonamallee Road
Manapakkam
Chennai 600 089
Tel: 044-2270 6800
Fax: 044-22706940
e-mail: esp-maa1@LNTEBG.com

67, Appuswamy Road
Post Bag 7156
Opp. Nirmala College
Coimbatore 641 045
Tel: 0422-2588120 / 1 / 5
Fax: 0422-2588148
e-mail: esp-cbe@LNTEBG.com

Khairasol, Degaul Avenue
Durgapur 713 212
Tel: 2559848, 2559849, 2559844
Fax: 0343-2553614
e-mail: esp-dgp@LNTEBG.com

5, Milanpur Road, Bamuni Maidan
Guwahati 781 021
Tel: +91 8876554410 / 8876554417
Fax: 361-2551308
e-mail: hazrasudipto@LNTEBG.com

II Floor, Vasantha Chambers
5-10-173, Fateh Maidan Road
Hyderabad 500 004
Tel: 040-67015052
Fax: 040-23296468
e-mail: esp-hyd@LNTEBG.com

Monarch Building, 1st Floor
D-236 & 237, Amrapali Marg
Vaishali Nagar
Jaipur 302 021
Tel: 0141-4385914 to 18
Fax: 0141-4385925
e-mail: esp-jai@LNTEBG.com

Akashdeep Plaza, 2nd Floor
P. O. Golmuri
Jamshedpur 831 003
Jharkhand
Tel: 0657-2312205 / 38
Fax: 0657-2341250
e-mail: esp-jam@LNTEBG.com

Skybright Bldg; M. G. Road
Ravipuram Junction, Ernakulam
Kochi 682 016
Tel: 0484-4409420 / 4 / 5 / 7
Fax: 0484-4409426
e-mail: esp-cok@LNTEBG.com

3-B, Shakespeare Sarani
Kolkata 700 071
Tel: 033-44002572 / 3 / 4
Fax: 033-22821025 / 7587
e-mail: esp-ccu@LNTEBG.com

A28, Indira Nagar, Faizabad Road
Lucknow 226 016
Tel: 0522-4929905 / 04
Fax: 0522-2311671
e-mail: esp-Lko@LNTEBG.com

No: 73, Karpaga Nagar, 8th Street
K. Pudur
Madurai 625 007
Tel: 0452-2537404, 2521068
Fax: 0452-2537552
e-mail: esp-mdu@LNTEBG.com

L&T Business Park,
Tower 'B' / 5th Floor
Saki Vihar Road, Powai
Mumbai 400 072
Tel: 022-67052874 / 2737 / 1156
Fax: 022-67051112
e-mail: esp-bom@LNTEBG.com

12, Shivaji Nagar
North Ambajhari Road
Nagpur 440 010
Tel: 0712-2260012 / 6606421
Fax: 2260030 / 6606434
e-mail: esp-nag@LNTEBG.com

32, Shivaji Marg
P. O. Box 6223
New Delhi 110 015
Tel: 011-41419514 / 5 / 6
Fax: 011-41419600
e-mail: esp-del@LNTEBG.com

L&T House
P. O. Box 119
191/1, Dhole Patil Road
Pune 411 001
Tel: 020-66033395 / 66033279
Fax: 020-26164048 / 26164910
e-mail: esp-pnq@LNTEBG.com

Crystal Tower,
4th Floor, G. E. Road
Telibandha
Raipur - 492 006
Tel: 0771-4283214
e-mail: esp-raipur@LNTEBG.com

3rd Floor
Vishwakarma Chambers
Majura Gate, Ring Road
Surat 395 002
Tel: 0261-2473726
Fax: 0261-2477078
e-mail: esp-sur@LNTEBG.com

Radhadaya Complex
Old Padra Road
Near Charotar Society
Vadodara 390 007
Tel: 0265-6613610 / 1 / 2
Fax: 0265-2336184
e-mail: esp-bar@LNTEBG.com

Door No. 49-38-14/3/2, 1st floor,
NGGO's Colony, Akkayyapalem,
Visakhapatnam - 530 016
Tel: 0891 2791126, 2711125
Fax.: 0891 2791100
Email: esp-viz@LNTEBG.com

Product improvement is a continuous process. For the latest information and special applications, please contact any of our offices listed here.

CBMC/DP/122014

SP 50698

L&T SWITCHGEAR
SAFE & SURE

LARSEN & TOUBRO

Larsen & Toubro Limited, Electrical Standard Products
Powai Campus, Mumbai 400 072

Customer Interaction Center (CIC)
BSNL / MTNL (toll free): 1800 233 5858 Reliance (toll free): 1800 200 5858
Tel: 022 6774 5858 Fax: 022 6774 5859 Email: cic@Lntebg.com
Web: www.Lntebg.com

Regd. Office: L&T House, N. M. Marg, Ballard Estate, Mumbai - 400 001. INDIA Tel: +91 22 6752 5656 CIN: L99999MH1946PLC004768

LARSEN & TOUBRO

High on intelligence big on reliability

Sx2000 | AC Drive

Single-Phase 230V (0.75 ~ 3.7kW)
Three-Phase 230V (0.75 ~ 18.5kW)
Three-Phase 415V (0.75 ~ 90kW)
IP66 Three-Phase 415V (0.75 ~ 30kW)

L&T SWITCHGEAR
SAFE & SURE

Two decades of application knowledge

For over two decades, various industry sectors have been reaping the benefits of L&T's cost-effective, performance-oriented AC Drive solutions. L&T's grasp of the specific needs of each industry enables it to offer application-specific solutions for various industries – such as processing, textile, plastic, ceramic, pharmaceutical, elevator, oil & gas, power, cement and material-handling.

Sx2000 AC Drive

Smart AC Drive – new reliability edge

The Sx2000 adds a new dimension to L&T's AC drive solutions. Built to L&T's stringent quality standards, the Sx2000 is tested and certified to meet global benchmarks, thus giving you the assurance of total reliability.

The Sx2000 is built to deliver powerful performance. It handles loads up to 75 kW (HD) / 90 kW (ND) – making it perfect for compressors, conveyors, machine tools, elevators, textiles, fans, pumps, plastic extruders, wire drawings, etc.

Parameters can be copied/loaded from the drive to the smart copier and vice versa – simply with the keypad. It produces a starting torque of 200% at 0.5 Hz, which provides better control at low-speed. Its compact size enables panel-size reduction, hence helps in space-efficient design. It has safety features like Safe Torque Off (STO) with redundant input circuit which meet EN 61508 SIL 2 standards.

Backed by engineering knowledge across seven decades

A knowledge-based company, L&T brings you the benefits of over 75 years of engineering experience and expertise, and the richness of its collaborations with technology leaders across the globe.

For 50 years, L&T's low-tension switchgear – India's widest range – has been the preferred option of top industrial houses countrywide.

Meeting your needs, solving your problems

We believe in addressing your needs and not just selling a product. That's why a dedicated Solutions Team first focuses on understanding your application. Then helps you select the drive that best meets your needs. Our advice on installation, maintenance and replacement will ensure that your machines function at peak productivity. From engineer to repair technician, our people have the knowledge and skill-sets to deliver total peace of mind.

Tested
E&A Lab
NABL-Certified

Tested. Certified. Reliable.

L&T is one of the few switchgear manufacturers in India with a dedicated, NABL-certified testing facility. Our products are tested for conformity to standards that exceed minimum requirements, giving you the assurance of high-quality performance. Our focus on continuous improvement ensures that our standards are on par with the best in the world. Repeat orders endorse the value that we deliver.

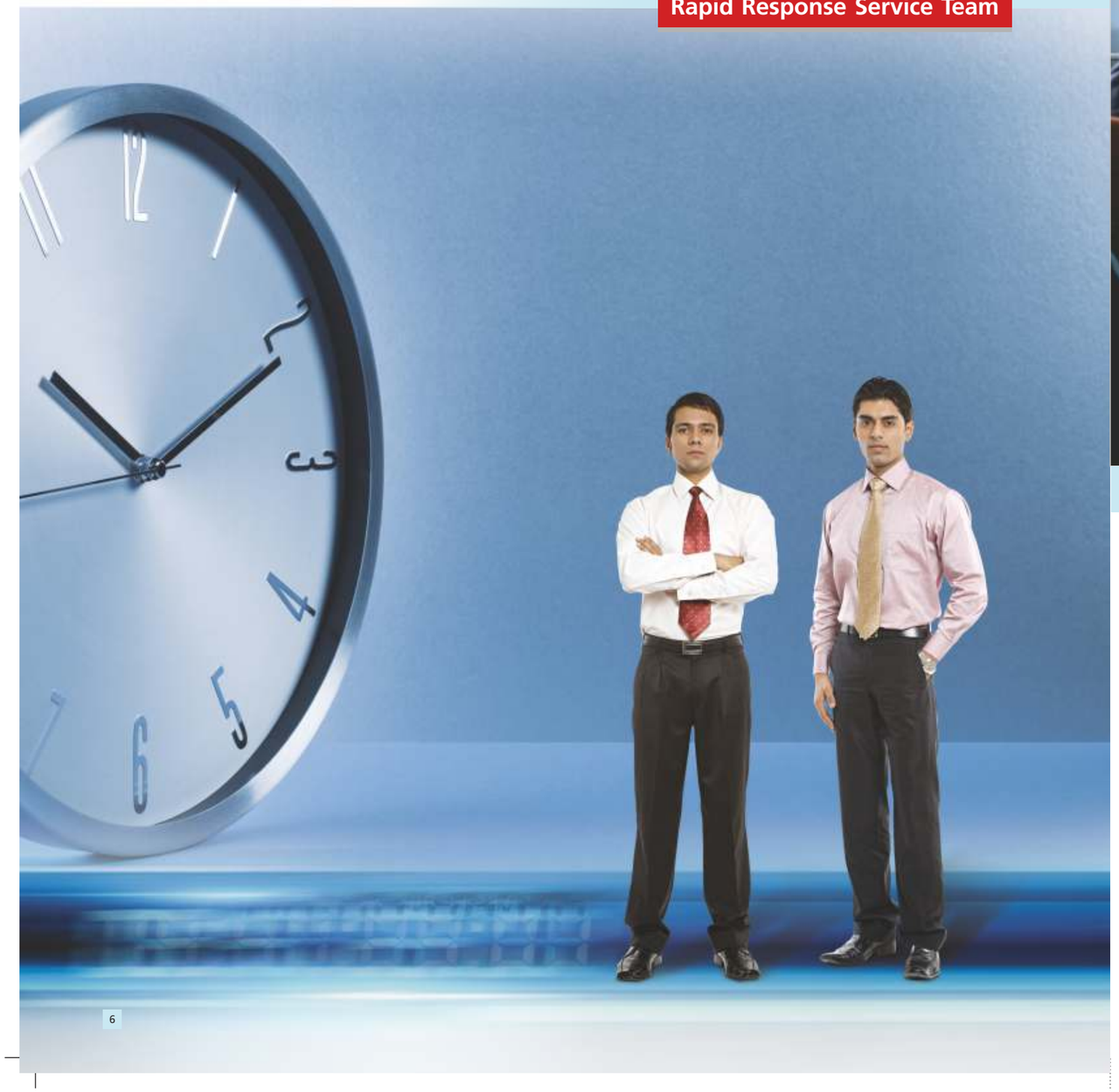
The reliability of the Sx2000 is ensured by international test certification – UL, CE and ROHS.

Ready Spares

After-sales service aimed at maximum uptime

A malfunction of the drive can bring an entire assembly line or process to a halt. To ensure maximum uptime for you, our Rapid Response service team is available to analyze the situation and help you set the problem right. We have set up strategic service centres across the country to provide temporary replacement drives or ready spares to ensure that your business keeps running smoothly.

Rapid Response Service Team



Training your people to enhance your operations

At our countrywide Switchgear Training Centres, we can train your operators, electricians and supervisors to increase their effectiveness in the operation, maintenance and trouble-shooting of your drives. We can also conduct in-plant training and workshops at your premises to improve both power management and equipment maintenance skills. This gives you total operational excellence, minimising downtime.

L&T's engineers and channel partners also upgrade their skills through seminars, workshops, training sessions and white papers on electrical practices.

Features that ensure performance

Powerful performance
- Sensorless control functions
- Starting torque (200%/0.5Hz)

Safety functions
- Built-in Safe Torque Off (STO)
- Redundant input circuit

Suitable for users
- Various field networks

Standard compliance
- International standards

Space-efficient design
- Side-by-side installation
- Decreased dimensions

Sx2000

Smart. Space-efficient. Safer.

Built to deliver powerful performance, its smart features, compact size and safety features increase efficiency.

Specialized Features

Sx2000 improves user convenience with a smart copier.

Functions without power input

The drive does not need to be powered when using the smart copier.

LED lamp feedbacks

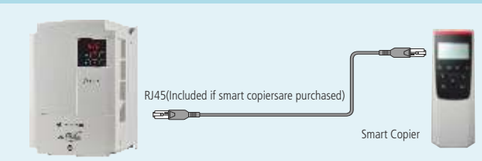
The run LED flickers during normal operation. The error LED flickers when events such as communication errors occur.

Read/Write function of parameters

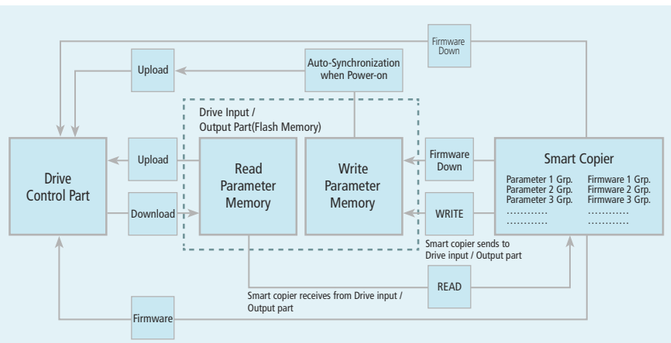
Parameters can be copied/loaded from the drive to the smart copier and vise versa, simply with the keypad.

Simple installation

I/O parameter and main firmware saved in the smart copier can be downloaded to both the drive I/O and the control part. Firmware can be downloaded from a PC by using a USB cable.



Smart Copier



- Smart Copier will be available soon.

Peer 2 Peer function embedded

I/O can be shared among master and slave drives. (RS485 wiring required).

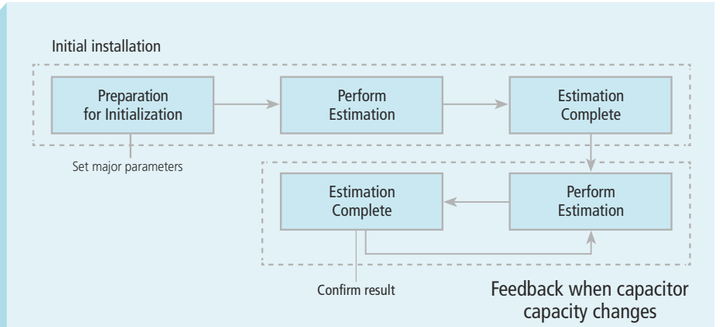
Main capacitor lifecycle estimation

Estimated through monitoring the change in the capacitance value (Fig.1).

Fan lifecycle estimation

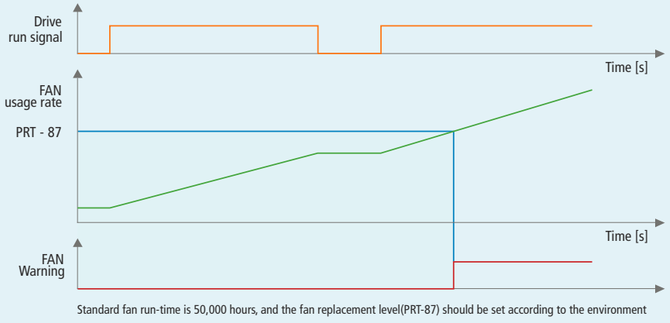
Warning signal is displayed when fan is operated over a certain amount of hours (Fig.2).

Main capacitor lifecycle estimation



(Fig.1)

Fan lifecycle estimation



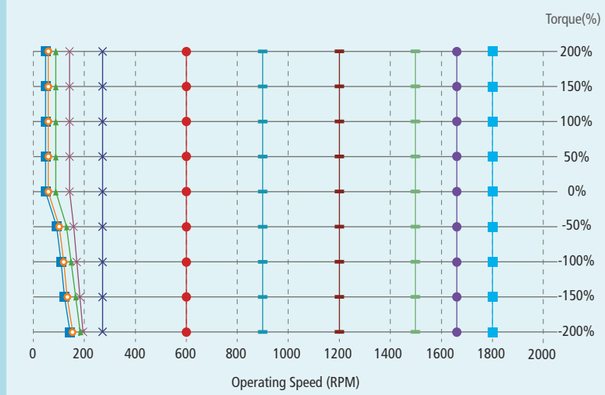
(Fig.2)

Powerful Performance

Sx2000 is a drive with enhanced sensorless control.

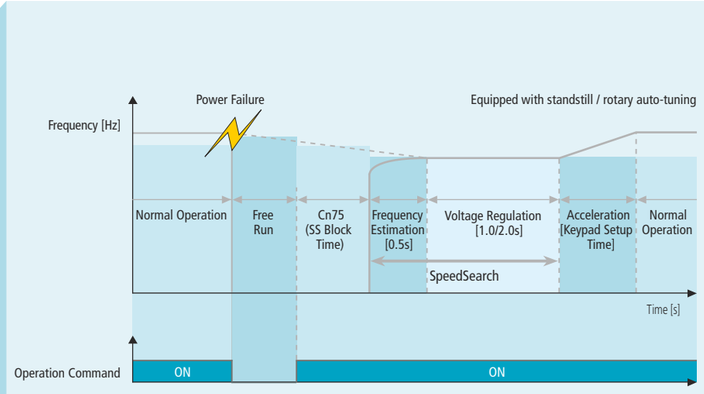
Powerful sensorless control

Starting torque of 200%/0.5Hz is produced and provides robust power in the low speed region.
The motor auto-tuning function is optimised to maximise motor performance.



Flying-start function

Drive capable of reliable and smooth re-starts even for bi-directional rotating loads

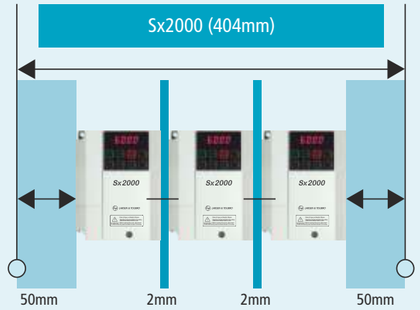


Space Efficient Design

The Sx2000 increases the efficiency of the control panel.

Side-by-Side installation

Minimised distance between drives enables panel size reduction for the installation of multiple drives..



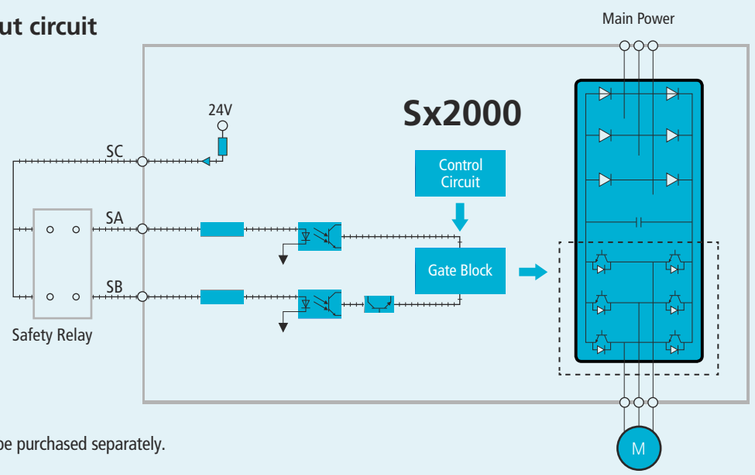
Safety Function

Sx2000 has built-in safety functions conforming to modern safety standards.

Built-in Safe Torque Off (STO)

The safety input function meets EN ISO 13849-1 PLd and EN 61508 SIL2 (EN60204-1, stop category 0).
This feature is standard and enables compliance with current safety standards.

Redundant input circuit



• Safety relay needs to be purchased separately.

User-Friendly

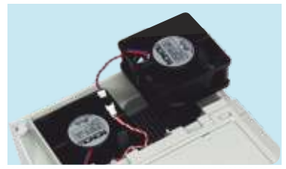
The Sx2000 offers a variety of conveniences to you.

Various field bus options - easy to install and use.

You can connect to a variety of fieldbus networks
Easy maintenance and mounting
① **Profibus-DP** ② **Ethernet IP** ③ **Modbus TCP** ④ **CANopen**

Simple cooling fan replacement

Tool-less replacement of cooling fan without dismantling the drive

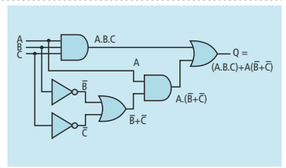


Flange type

The heat sink can be mounted outside of the panel in case the space is limited.

User sequence function

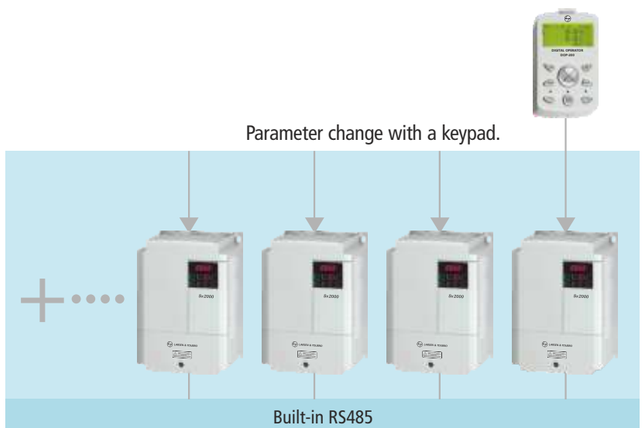
Simple PLC sequences can be operated with various function block combinations.



Multi-keypad function

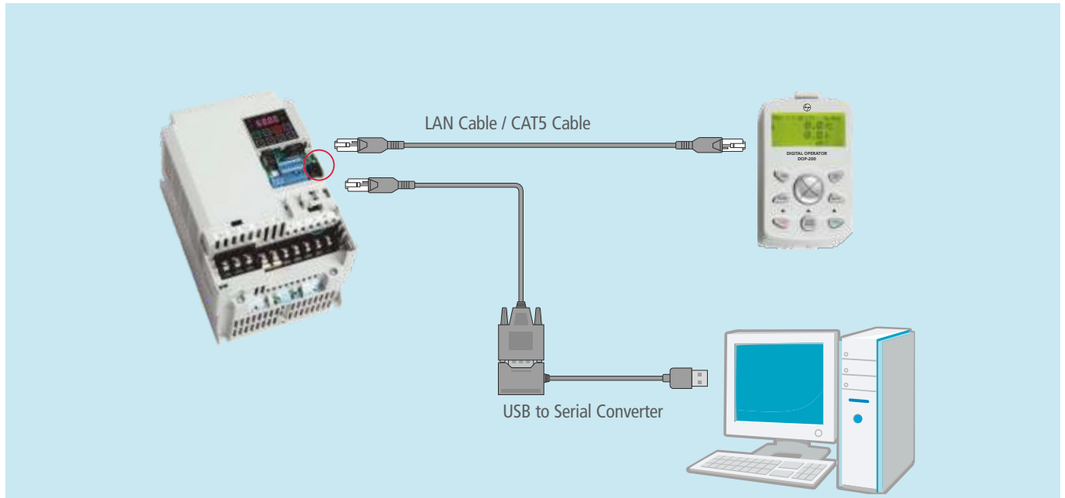
Single LCD keypad can be used to set up the parameters of a RS485 connected drives.

- LCD keypad (same as Fx2000 model) enables handy parameter set up.
- Multi-language support will be available.



User-Friendly

Drive connect connection with RJ45 port



Standard Compliance

The Sx2000 complies with a diverse range of international standards.

Built-in DC reactor

Effective in improving power factor and decreasing THD.
- 3-phase 400V 30~75kW

Global Compliance

Global standard compliance

Dual rating operation

Designed to be used for heavy and normal duty applications.

Overload capacity – Heavy duty operation: **150%** of rated current, 60 seconds
– Normal duty operation: **120%** of rated current, 60 seconds

Selectable Rotary/Standstill auto-tuning

Standstill / Rotary auto-tuning options are available as standard to find motor constants with or without rotating the motor for optimised motor performance.

The drive for harsh environmental conditions.

Sx2000 IP66 / NEMA 4X Series

Protected against foreign substances such as fine dust and high pressure water spray.

- Satisfies NEMA standard type 4X for indoor use
- 230/415V 0.4~22kW

Model & Type

Motor Rating (Normal Duty)	Single-Phase 230V	Three-Phase 230V		Three-Phase 415V	
	IP20	IP20	IP66	IP20	IP66
0.75 kW	LTVF-S10003BAA	LTVF-S20003BAA	LTVF-S20003XAA	LTVF-S40002BAA	LTVF-S40002XAA
1.5 kW	LTVF-S10006BAA	LTVF-S20006BAA	LTVF-S20006XAA	LTVF-S40003BAA	LTVF-S40003XAA
2.2 kW	LTVF-S10010BAA	LTVF-S20010BAA	LTVF-S20010XAA	LTVF-S40005BAA	LTVF-S40005XAA
3.7 kW	LTVF-S10012BAA	LTVF-S20012BAA	LTVF-S20012XAA	LTVF-S40007BAA	LTVF-S40007XAA
5.5 kW		LTVF-S20018BAA	LTVF-S20018XAA	LTVF-S40010BAA	LTVF-S40010XAA
7.5 kW		LTVF-S20030BAA	LTVF-S20030XAA	LTVF-S40016BAA	LTVF-S40016XAA
11 kW		LTVF-S20040BAA	LTVF-S20040XAA	LTVF-S40023BAA	LTVF-S40023XAA
15 kW		LTVF-S20056BAA	LTVF-S20056XAA	LTVF-S40030BAA	LTVF-S40030XAA
18.5 kW		LTVF-S20069BAA	LTVF-S20069XAA	LTVF-S40038BAA	LTVF-S40038XAA
22 kW				LTVF-S40044BAA	LTVF-S40044XAA
30 kW				LTVF-S40058BAA	LTVF-S40058XAA
37 kW				LTVF-S40075BAA	
45 kW				LTVF-S40091BAA	
55 kW				LTVF-S40107BAA	
75 kW				LTVF-S40142BAA	
90 kW				LTVF-S40169BAA	

LTVF	–	S	4	0010	B	A	A
L&T Variable Frequency Drive		Series	Input Voltage	Drive Current Rating	Enclosure	Reserved	Reserved
		Sx2000	1 Single-Phase 200~240[V]	Normal Duty (Amp)	B IP20		
			2 Three-Phase 200~240[V]		X IP66		
			4 Three-Phase 380~480[V]				

Input and output specification: Single-phase 230V (0.4 kW HD ~ 2.2 kW ND)

LTVF-S1□□□□BAA			0003	0006	0010	0012
Motor Rating	Heavy Duty (HD)	HP	0.5	1.0	2.0	3.0
		kW	0.4	0.75	1.5	2.2
	Normal Duty (ND)	HP	1.0	2.0	3.0	5.0
		kW	0.75	1.5	2.2	3.7
Output Rating	Capacity [kVA]	Heavy Duty (HD)	1.0	1.9	3.0	4.2
		Normal Duty (ND)	1.2	2.3	3.8	4.6
	Rated Current	Heavy Duty (HD)	2.5	5.0	8.0	11.0
		Normal Duty (ND)	3.1	6.0	9.6	12.0
	Frequency [Hz]		0~400Hz (IM Sensorless : 0~120[Hz])			
	Voltage [V]		3-phase 200~240V			
Input Rating	Voltage [V]		1-phase 200~240VAC (-15% ~ +10%)			
	Frequency [Hz]		50~60Hz (±5%)			
	Rated Current [A]	Heavy Duty (HD)	4.4	9.3	15.6	21.7
		Normal Duty (ND)	5.8	11.7	19.7	24.0

Input and output specification: Three-phase 230V (0.4 kW HD ~ 18.5 kW ND)

LTVF-S2□□□□BAA			0003	0006	0010	0012	0018	0030	0040	0056	0069
Motor Rating	Heavy Duty (HD)	HP	0.5	1.0	2.0	3.0	5.4	7.5	10.0	15.0	20.0
		kW	0.4	0.75	1.5	2.2	4.0	5.5	7.5	11.0	15.0
	Normal Duty (ND)	HP	1.0	2.0	3.0	5.0	7.5	10.0	15.0	20.0	25.0
		kW	0.75	1.5	2.2	3.7	5.5	7.5	11.0	15.0	18.5
Output Rating	Capacity [kVA]	Heavy Duty (HD)	1.0	1.9	3.0	4.2	6.5	9.1	12.2	17.5	22.9
		Normal Duty (ND)	1.2	2.3	3.8	4.6	6.9	11.4	15.2	21.3	26.3
	Rated Current	Heavy Duty (HD)	2.5	5.0	8.0	11.0	17.0	24.0	32.0	46.0	60.0
		Normal Duty (ND)	3.1	6.0	9.6	12.0	18.0	30.0	40.0	56.0	69.0
	Frequency [Hz]		0~400Hz (IM Sensorless : 0~120[Hz])								
	Voltage [V]		3-phase 200~240V								
Input Rating	Voltage [V]		3-phase 200~240VAC (-15% ~ +10%)								
	Frequency [Hz]		50~60Hz (±5%)								
	Rated Current [A]	Heavy Duty (HD)	2.2	4.9	8.4	11.8	18.5	25.8	34.9	50.8	66.7
		Normal Duty (ND)	3.0	6.3	10.8	13.1	19.4	32.7	44.2	62.3	77.2

- Maximum applicable capacity is indicated in case of using a 4-pole standard motor (230 and 415V classes are based on 220 and 440V respectively).
- For the rated capacity, 230 and 415V class input capacities are based on 220 and 440V respectively.
- The rated output current is limited depending on the set-up of carrier frequency (CN-04).

Input and output specification Three-phase 415V (0.4 kW HD ~ 30 kW ND)

LTVF-S4□□□□BAA			0002	0003	0005	0007	0010	0016	0023	0030	0038	0044	0058
Motor Rating	Heavy Duty (HD)	HP	0.5	1.0	2.0	3.0	5.4	7.5	10.0	15.0	20.0	25.0	30.0
		kW	0.4	0.75	1.5	2.2	4.0	5.5	7.5	11.0	15.0	18.5	22.0
	Normal Duty (ND)	HP	1.0	2.0	3.0	5.0	7.5	10.0	15.0	20.0	25.0	30.0	40.0
		kW	0.75	1.5	2.2	3.7	5.5	7.5	11.0	15.0	18.5	22.0	30.0
Output Rating	Capacity [kVA]	Heavy Duty (HD)	1.0	1.9	3.0	4.2	6.5	9.1	12.2	18.3	22.9	29.7	34.3
		Normal Duty (ND)	1.5	2.4	3.9	5.3	7.6	12.2	17.5	22,9	29.0	33.5	44.2
	Rated Current	Heavy Duty (HD)	1.3	2.5	4.0	5.5	9.0	12.0	16.0	24.0	30.0	39.0	45.0
		Normal Duty (ND)	2.0	3.1	5.1	6.9	10.0	16.0	23.0	30.0	38.0	44.0	58.0
	Frequency [Hz]		0~400Hz (IM Sensorless : 0~120[Hz])										
	Voltage [V]		3-phase 380~480V										
Input Rating	Voltage [V]		3-phase 380~480VAC (-15% ~ +10%)										
	Frequency [Hz]		50~60Hz (±5%)										
	Rated Current [A]	Heavy Duty (HD)	1.1	2.4	4.2	5.9	9.8	12.9	17.5	26.5	33.4	43.6	50.7
		Normal Duty (ND)	2.0	3.3	5.5	7.5	10.8	17.5	25.4	33.4	42.5	49.5	65.7

Input and output specification: Three-phase 415V (30 kW HD ~ 90 kW ND)

LTVF-S4□□□□BAA			0075	0091	0107	0142	0169
Motor Rating	Heavy Duty (HD)	HP	40.0	50.0	60.0	75.0	100.0
		kW	30.0	37.0	45.0	55.0	75.0
	Normal Duty (ND)	HP	50.0	60.0	75.0	100.0	120.0
		kW	37.0	45.0	55.0	75.0	90.0
Output Rating	Capacity [kVA]	Heavy Duty (HD)	46.5	57.2	69.4	83.8	115.8
		Normal Duty (ND)	57.2	69.4	81.5	108.2	128.8
	Rated Current	Heavy Duty (HD)	61.0	75.0	91.0	110.0	152.0
		Normal Duty (ND)	75.0	91.0	107.0	142.0	169.0
	Frequency [Hz]		0~400Hz (IM Sensorless : 0~120[Hz])				
	Voltage [V]		3-phase 380~480V				
Input Rating	Voltage [V]		3-phase 380~480VAC (-15% ~ +10%)				
	Frequency [Hz]		50~60Hz (±5%)				
	Rated Current [A]	Heavy Duty (HD)	56.0	69.0	85.0	103.0	143.0
		Normal Duty (ND)	69.0	85.0	100.0	134.0	160.0

- Maximum applicable capacity is indicated in case of using a 4-pole standard motor (230 and 415V classes are based on 220 and 440V respectively).
- For the rated capacity, 230 and 415V class input capacities are based on 220 and 440V respectively.
- The rated output current is limited depending on the set-up of carrier frequency (CN-04).

Control

Control Method	V/f, Slip compensation, Sensorless vector
Frequency Setting Resolution	Digital command: 0.01Hz / Analog command: 0.05Hz (maximum frequency: 50Hz)
Frequency Accuracy	1% of the maximum output frequency
V/F Pattern	Linear, Squared, User V/F
Overload Capacity	HD: 150% 1 minute, ND: 120% 1 minute
Torque Boost	Manual/Automatic torque boost

Operation

Operation Mode		Keypad /Terminal / Communication option selectable	
Frequency Setting		Analog : -10~10[V], 0~10[V], 4~20[mA] / Digital : Keypad, Pulse train input	
Operation Function		PID control, 3-wire operation, frequency limit, second function, anti-forward and reverse direction rotation, commercial transition, speed search, power braking, leakage reduction, up-down operation, DC braking, frequency jump, slip compensation, automatic restart, automatic tuning, energy buffering, flux braking, fire mode	
Input	Multi-function Terminal Standard I/O (5 points) Multiple I/O (7 points)	NPN (Sink) / PNP (Source) Selectable	
		Function: Forward run, reverse run, reset, external trip, emergency stop, jog operation, multi-step frequency-high, middle, low, multi-step acceleration/ deceleration-high, middle, low, DC braking at stop, 2nd motor select, frequency up/down, 3-wire operation, change into normal operation during PID operation, change into main body operation during option operation, analog command frequency fixing, acceleration/deceleration stop etc. selectable.	
	Analog Input	V1: -10~10V selectable V2: 0~10V/I2 4~20mA	
		0Hz~32kHz, Low level: 0~0.8V, High level: 3.5~12V	
Output	Open Collector Terminal	Fault output and drive operation status output	less than DC 24V 50mA
	Multi-function Relay		(N.O., N.C.) less than AC 250V 1A, less than DC 30V 1A
	Analog Output	Selectable A0;V: 0~10V/0~20mA; Frequency, Output current, Output voltage, DC stage voltage etc. selectable	
	Pulse Train	Maximum 32kHz, 10~12 [V]	

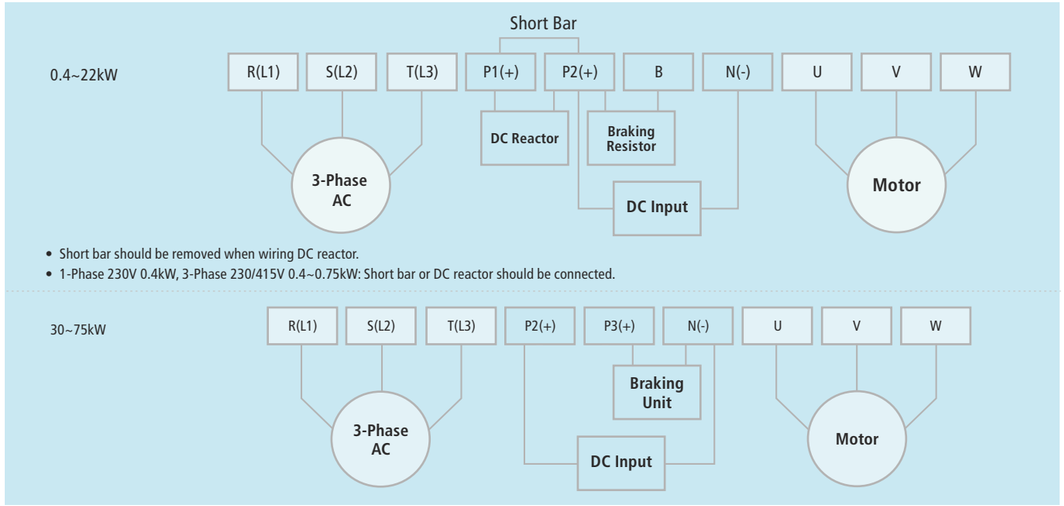
Protective Function

Trip	Over-current trip, external signal trip, ARM short circuit current trip, overheat trip, Input imaging trip, ground trip, motor over heat trip, I/O board link trip, No motor trip, parameter writing trip, emergency stop trip, command loss trip, external memory error, CPU watchdog trip, motor normal load trip, over voltage trip, temperature sensor trip, drive overheat, option trip, output imaging trip, drive overload trip, fan trip, pre-PID operation failure, external break trip, low voltage trip during operation, low voltage trip, safety A(B) trip, analog input error, motor overload trip,
Alarm	Command loss trip alarm, overload alarm, normal load alarm, drive overload alarm, fan operation alarm, resistance braking rate alarm, number of corrections on rotor tuning error
Momentary Power Loss	HD below 15ms (ND below 8ms): Continuous operation (To be within rated input voltage, rated output) HD above 15ms (ND above 8ms): Automatic restart operation enable

Environment

Cooling Type	Forced fan cooling structure Forced cooling type : 0.4-15 kW 200V/0.4-22 kW 400V (excluding some models)
Protection Degree	IP20/UL Open (Default), UL Enclosed Type 1 (Option), IP66/NEMA 4X (Option)
Ambient Temperature	Ambient temperature under the condition of no ice or frost. HD: -10~50°C / ND: -10~40°C [However, recommended to use load below 80% when using at 50°C under Normal Duty]
Storage Temperature	-20 ~ 65 degrees C
Humidity	Relative humidity below 90% RH (no dew formation)
Altitude, Vibration	Below 1,000m, below 5.9m/sec2 (0.6G)
Location	No corrosive gas, flammable gas, oil mist etc. indoors (pollution degree 2 environment)
Pressure	70~106 kPa

Power Terminal Specifications

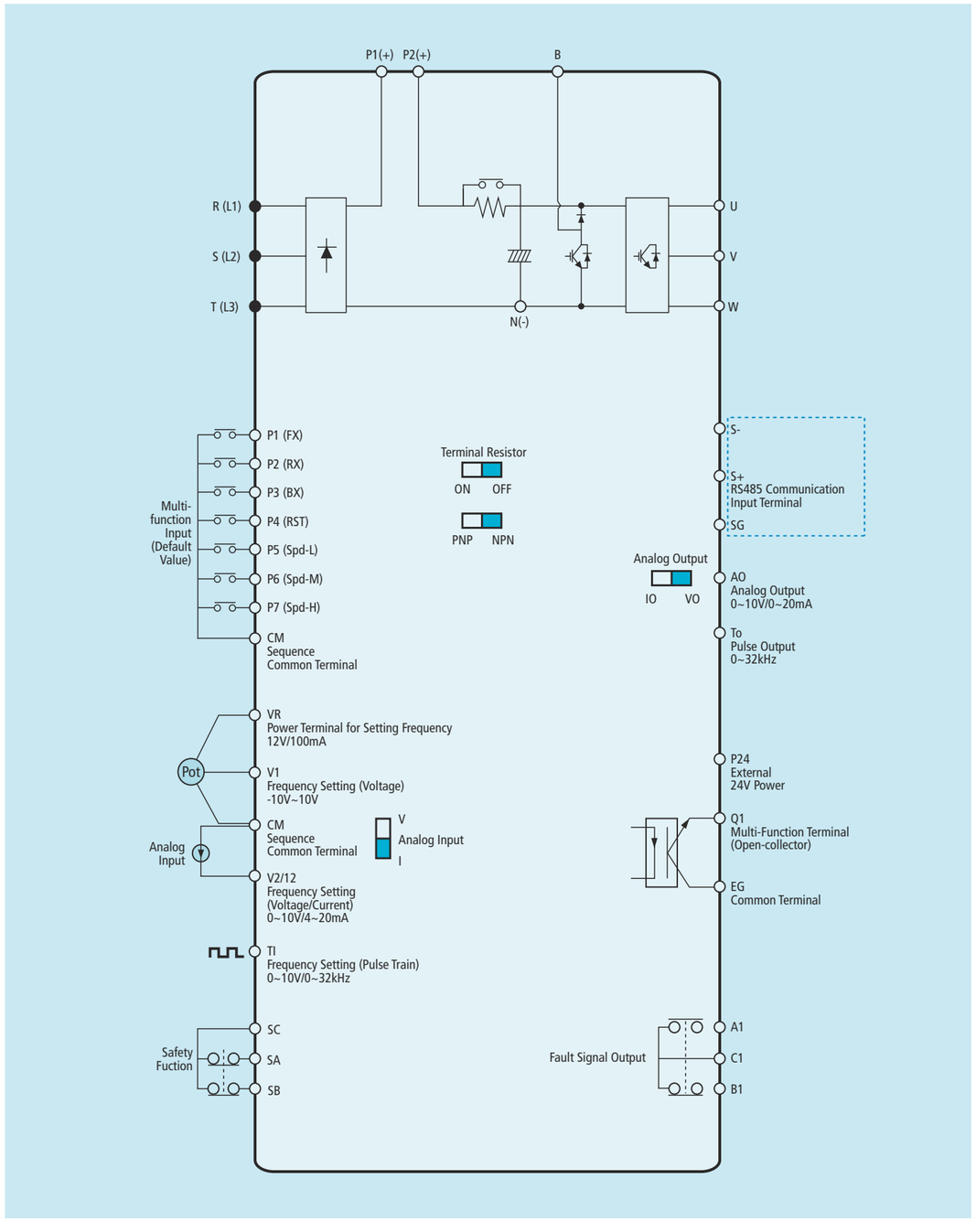


- Short bar should be removed when wiring DC reactor.
- 1-Phase 230V 0.4kW, 3-Phase 230/415V 0.4~0.75kW: Short bar or DC reactor should be connected.

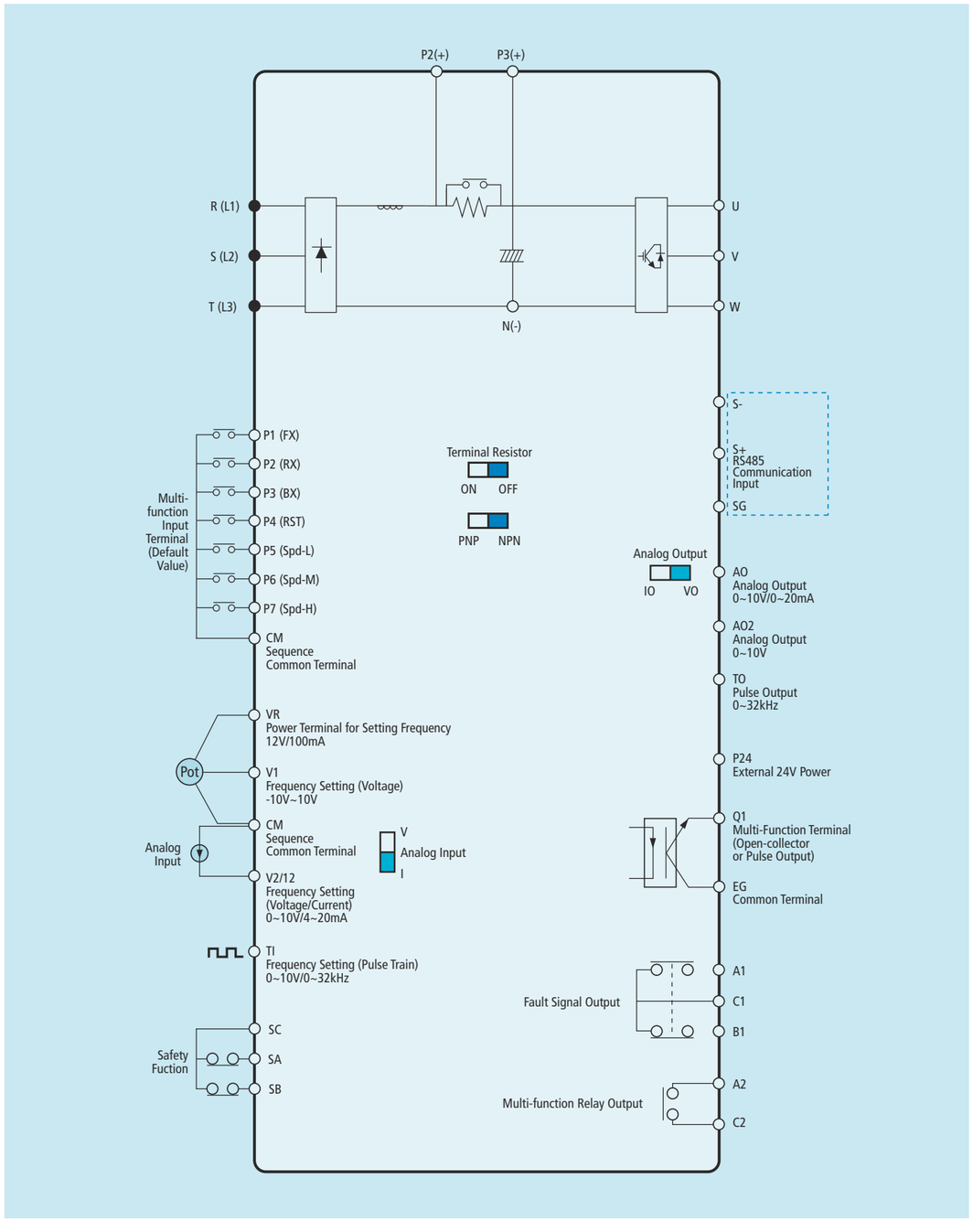
Drive Cat. No.		Screw	[1] Torque	[2] Wire			
				mm2		AWG	
			Kgf • cm	R.S.T	U.V.W	R.S.T	U.V.W
230V Single Phase	LTVF-S10003BAA	M3.5	2.1 ~ 6.1	2	2	14	14
	LTVF-S10006BAA	M3.5	2.1 ~ 6.1	2	2	14	14
	LTVF-S10010BAA	M3.5	2.1 ~ 6.1	2	2	14	14
	LTVF-S10012BAA	M4	2.1 ~ 6.1	3.5	3.5	12	12
230V Three Phase	LTVF-S20003BAA	M3.5	2.1 ~ 6.1	2	2	14	14
	LTVF-S20006BAA	M3.5	2.1 ~ 6.1	2	2	14	14
	LTVF-S20010BAA	M3.5	2.1 ~ 6.1	2	2	14	14
	LTVF-S20012BAA	M4	2.1 ~ 6.1	3.5	3.5	12	12
	LTVF-S20018BAA	M4	2.1 ~ 6.1	3.5	3.5	12	12
	LTVF-S20030BAA	M4	2.1 ~ 6.1	6	6	10	10
	LTVF-S20040BAA	M4	2.1 ~ 6.1	6	6	10	10
	LTVF-S20056BAA	M5	4.0 ~ 10.2	10	10	8	8
	LTVF-S20069BAA	M5	4.0 ~ 10.2	16	16	6	6
415V Three Phase	LTVF-S40002BAA	M3.5	2.1 ~ 6.1	2	2	14	14
	LTVF-S40003BAA	M3.5	2.1 ~ 6.1	2	2	14	14
	LTVF-S40005BAA	M3.5	2.1 ~ 6.1	2	2	14	14
	LTVF-S40007BAA	M3.5	2.1 ~ 6.1	2	2	14	14
	LTVF-S40010BAA	M4	2.1 ~ 6.1	2	2	14	14
	LTVF-S40016BAA	M4	2.1 ~ 6.1	2.5	2.5	14	14
	LTVF-S40023BAA	M4	2.1 ~ 6.1	4	4	12	12
	LTVF-S40030BAA	M5	4.0 ~ 10.2	4	4	12	12
	LTVF-S40038BAA	M5	4.0 ~ 10.2	6	6	10	10
	LTVF-S40044BAA	M5	4.0 ~ 10.2	10	10	8	8
	LTVF-S40058BAA	M5	4.0 ~ 10.2	16	10	8	8
	LTVF-S40075BAA	M8	61.2 ~ 91.8	25	25	4	4
	LTVF-S40091BAA	M8	61.2 ~ 91.8	25	25	4	4
	LTVF-S40107BAA	M8	61.2 ~ 91.8	70	70	1/0	1/0
	LTVF-S40142BAA	M8	61.2 ~ 91.8	70	70	1/0	1/0
	LTVF-S40169BAA	M8	61.2 ~ 91.8	70	70	1/0	1/0

[1] Only use the specified torque on the screw heads, otherwise damage could occur. Loose screws can cause overheating and damage.
[2] Use copper wires with 600V, 90°C specification.

Standard Connection Diagram [0.4~22kW]

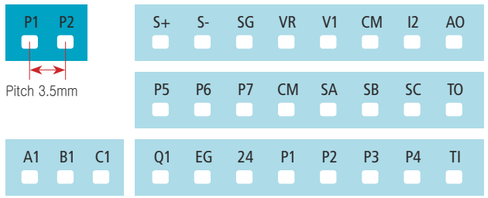


Standard Connection Diagram [30~75kW]

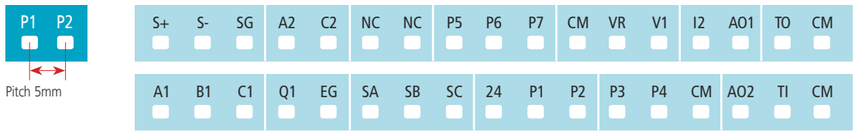


Control Terminal Configuration

0.4~22kW



30~75kW

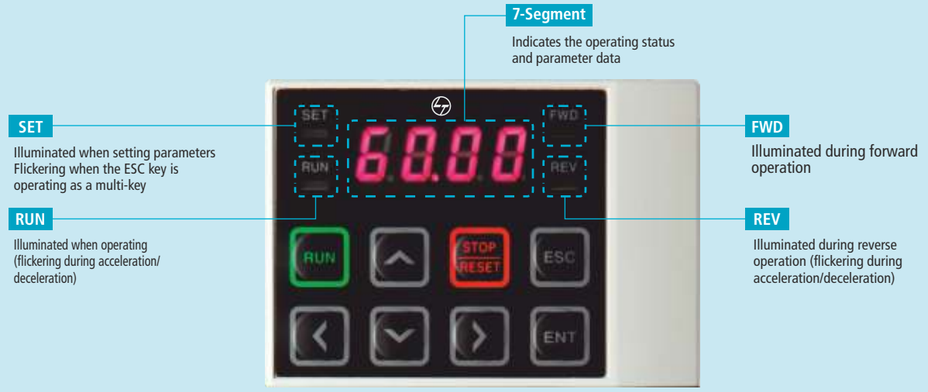


• I/O board is supplied built-in the Sx2000 LCD loader, and can be mounted on the front of the drive. • NC :Terminal not in use.

Terminal Type	Recommended Wire Size [mm2] (AWG)		Screw	Torque	Electrical Specifications
	No Crimp-style Terminal	Crimp-style Terminal		N.m	
P1~P7, CM	0.75 (18)	0.5 (20)	M2	0.22 ~ 0.25	
VR					Max output V/I : 12V, 100mA, volume resistor 1~5k
V1					UNIPOLAR : 0 ~ 10V (max12V) BIPOLAR : -10 ~ 10V (max ±12V)
I2					4~20mA(max 0~24mA, input resistor 249Ω.
AO1					0 ~ 10V (max output V/I : 12V, 10mA) 0 ~ 20mA (Load resistor less than 500 Ω, max output current : 24mA)
AO2					0 ~ 10V (max output V/I : 12V, 10mA)
Q1					Less than DC 26V, 100mA
EG					
24					Max output current : 150mA
TI					0 ~ 32kHz (Low Level : 0 ~ 0.8V High Level : 3.5 ~ 12V)
TO					0 ~ 32kHz, 0 ~ 12V
SA, SB, SC[1)]					Less than DC 24V, 25mA
S+, S-, SG					
A1,B1,C1	1.0(17)	1.5(15)	M2.6	0.4	Less than AC250V 1A, less than DC30V 1A
A2, C2					Less than AC250V 5A, less than DC30V 5A

1) The wire length of the safety input should not exceed 30m.

Keypad Details



Display	Term	Function Description	
RUN	RUN Key	Run command	
STOP RESET	STOP/RESET Key	STOP: Stop command during operation, RESET: Reset command when a fault occurs.	
^	UP Key	Used to scroll through codes or to increase a parameter value	
v	DOWN Key	Used to scroll through codes or to decrease a parameter value	
<	Left Key	Used to jump to other parameter groups or move the cursor to the left	
>	Right Key	Used to jump to other parameter groups or move the cursor to the right	
ENT	Enter Key	Used to set a parameter value or to save the changed parameter value	
ESC	Escape Key	Used to cancel the jog or remote/local change key or when editing	
FWD	Forward Run	Illuminated during forward run	Flickering when a fault occurs
REV	Reverse Run	Illuminated during reverse run	
RUN	RUN Key	Illuminated during operation (flickering during acceleration/deceleration)	
SET	Setting	Illuminated during parameter setting/Flickering when the ESC key is operating as a multi-key	
7-Segment	Current Value	Indicates operating conditions and parameter data	

Braking Resistors

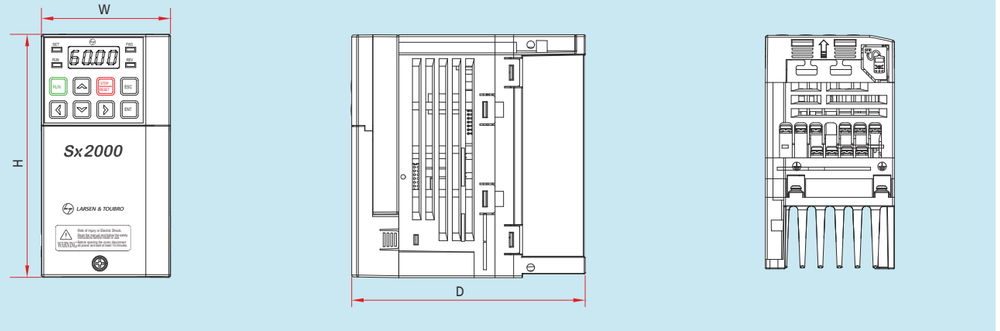
Drive Cat. No	415V Three-Phase		
	Braking Unit	Resistor [ohm]	Watt [W]
LTVF-S40002BAA	Built-in	1,200	100
LTVF-S40003BAA	Built-in	600	150
LTVF-S40005BAA	Built-in	300	300
LTVF-S40007BAA	Built-in	200	400
LTVF-S40010BAA	Built-in	130	600
LTVF-S40016BAA	Built-in	85	1,000
LTVF-S40023BAA	Built-in	60	1,200
LTVF-S40030BAA	Built-in	40	2,000
LTVF-S40038BAA	Built-in	30	2,400
LTVF-S40044BAA	Built-in	20	3,600
LTVF-S40058BAA	Built-in	20	3,600
LTVF-S40075BAA	LTDBU-0370	16.9	6,400
LTVF-S40091BAA	LTDBU-0370	16.9	6,400
LTVF-S40107BAA	LTDBU-0550	11.4	9,600
LTVF-S40142BAA	LTDBU-0550	11.4	9,600
LTVF-S40169BAA	LTDBU-0750	8.4	12,800

Note : Values of DBU-DBR are based on following considerations,
Drives with inbuilt DBU :Braking torque = 150% max, Enable Duty (% ED) = 5%. In case 10% ED DBR wattage should be double
Drives with external DBU, average braking torque will be 100% max with 10 % ED

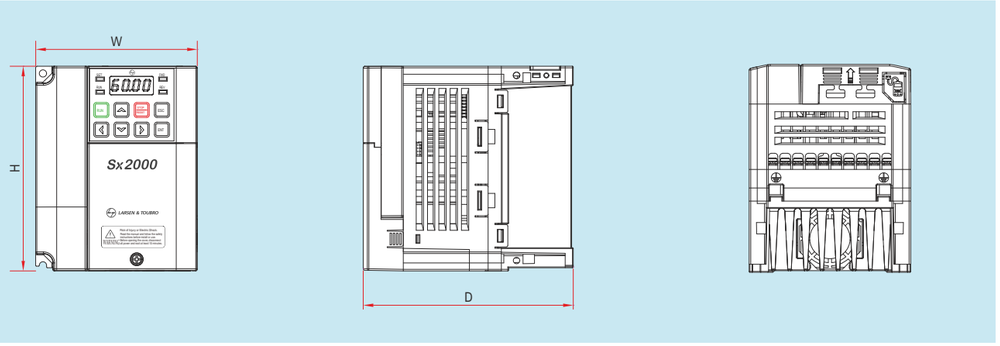
MCCB (Moulded Case Circuit Breaker) and MC (Magnetic Contactor)

Drive Cat. No.	MCCB (L&T)	MC Amp (L&T)
LTVF-S10003BAA	DM16/5	MNX 9-2P
LTVF-S10006BAA	DM16/10	MNX 12-2P
LTVF-S10010BAA	DM16/16	MNX 18-2P
LTVF-S10012BAA	DM100/25	MNX 22-2P
LTVF-S20003BAA	DM16/5	MO 9
LTVF-S20006BAA	DM16/10	MO 12
LTVF-S20010BAA	DM16/16	MO 18
LTVF-S20012BAA	DM100/25	MO 25
LTVF-S20018BAA	DM100/35	MO 32
LTVF-S20030BAA	DM100/50	MO 60
LTVF-S20040BAA	DM100/70	MO 70
LTVF-S20056BAA	DN2-250M/100	MO 95
LTVF-S20069BAA	DN2-250M/125	MNX 140

Drive Cat. No.	MCCB (L&T)	MC Amp (L&T)
LTVF-S40002BAA	DM16/2.5	MO 9
LTVF-S40003BAA	DM16/5	MO 9
LTVF-S40005BAA	DM16/10	MO 9
LTVF-S40007BAA	DM16/12	MO 12
LTVF-S40010BAA	DM100/25	MO 18
LTVF-S40016BAA	DM100/30	MO 25
LTVF-S40023BAA	DM100/35	MO 32
LTVF-S40030BAA	DM100/60	MO 50
LTVF-S40038BAA	DM100/70	MO 70
LTVF-S40044BAA	DM100/80	MO 80
LTVF-S40058BAA	DN2-250M/ 100	MO 95
LTVF-S40075BAA	DN2-250M / 125	MO 95
LTVF-S40091BAA	DN2-250M / 160	MNX 140
LTVF-S40107BAA	DN2-250M / 160	MNX 140
LTVF-S40142BAA	DN2-250M / 200	MNX 185
LTVF-S40169BAA	DN3-400M / 320	MNX 225



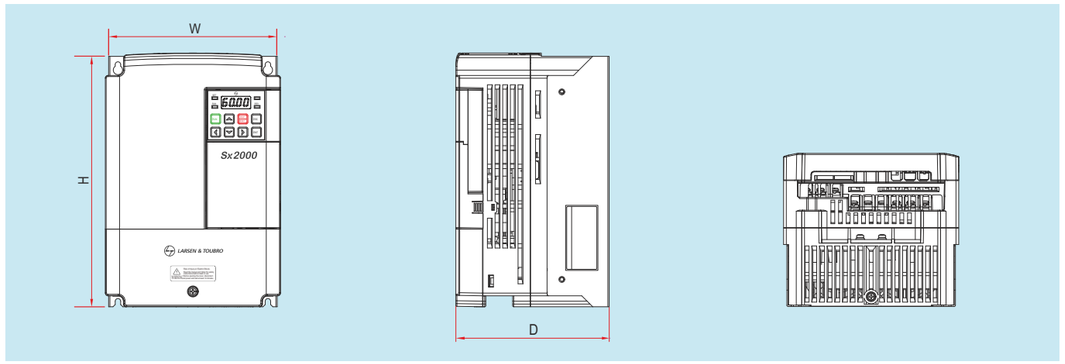
Input Voltage	Drive Cat. No.	W (mm)	H (mm)	D (mm)	Weight (kg)
Single Phase 230 V	LTVF-S10003BAA	68	128	128	0.88
Three Phase 230 V	LTVF-S20003BAA	68	128	123	0.86
	LTVF-S20006BAA	68	128	128	0.86
Three Phase 415 V	LTVF-S40002BAA	68	128	123	0.86
	LTVF-S40003BAA	68	128	128	0.88



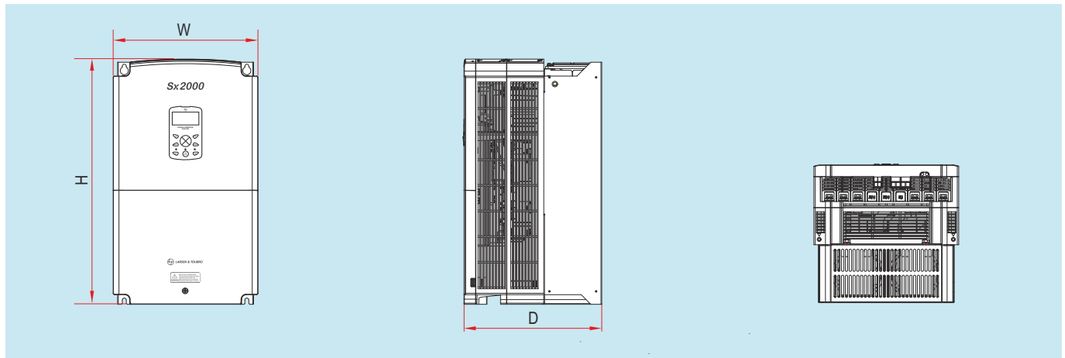
Input Voltage	Drive Cat. No.	W (mm)	H (mm)	D (mm)	Weight (kg)
Single-Phase 230 V	LTVF-S10006BAA	100	128	130	1.3
	LTVF-S10010BAA	100	128	145	1.5
	LTVF-S10012BAA	140	128	145	2.2
Three-Phase 230 V	LTVF-S20010BAA	100	128	130	1.5
	LTVF-S20012BAA	100	128	145	1.5
	LTVF-S20018BAA	140	128	145	2.3
Three-Phase 415 V	LTVF-S40005BAA	100	128	130	1.5
	LTVF-S40007BAA	100	128	145	1.5
	LTVF-S40010BAA	140	128	145	2.7

Note: The above images are solely for reference purposes. Please refer to the technical manual.

Dimensions & Weight



Input Voltage	Drive Cat. No.	W (mm)	H (mm)	D (mm)	Weight (kg)
Three-Phase 230 V	LTVF-S20030BAA	160	232	140	3.3
	LTVF-S20040BAA	160	232	140	3.3
	LTVF-S20056BAA	180	290	163	4.6
	LTVF-S20069BAA	220	350	187	4.6
Three-Phase 415 V	LTVF-S40016BAA	160	232	140	3.3
	LTVF-S40023BAA	160	232	140	3.4
	LTVF-S40030BAA	180	290	163	4.6
	LTVF-S40038BAA	180	290	163	4.8
	LTVF-S40044BAA	220	350	187	7.5
	LTVF-S40058BAA	220	350	187	7.5



Input Voltage	Drive Cat. No.	W (mm)	H (mm)	D (mm)	Weight (kg)
Three Phase 415 V	LTVF-S40075BAA	275	450	284	26
	LTVF-S40091BAA	325	510	284	35
	LTVF-S40107BAA	325	510	284	35
	LTVF-S40142BAA	325	550	309	43
	LTVF-S40169BAA	325	550	309	43

Note: The above images are solely for reference purposes. Please refer to the technical manual.

Note