YASKAWA

LA500 Data Sheet

AC Compact Drive for Lift Applications

Data Sheet

Type: **CIPR-LA50Cxxxxxxxx**

200 V Class, Three-Phase Input: 4 to 18.5 kW
400 V Class, Three-Phase Input: 4 to 18.5 kW

Contents

Introduction

LA500 is a dedicated drive for lift applications. The key attributes are ease of use, flexibility and sustainability. Loaded with valuable features and functions the LA500 drives greatly simplifies system designs and maximize system and machine performance while reducing the effort for installation and setup to a minimum.

LA500 Online Info

Drive Selection

LA500 drives must be selected according to power supply voltage, motor rated current, load profile of the application, and ambient condition of the area they are operated in.

LA500 standard drives are rated for Heavy Duty applications. In Heavy Duty the LA500 can run applications with constant torque and heavy overload of up to 165% for 30 seconds.

LA500 drives are designed to be wall mounted upright and in clean environmental condition. In case of special mounting methods (heatsink external, horizontal, etc.), high ambient temperature (>50 °C), high altitude (> 1000 m), use of high carrier frequency, and so forth, an output current derating must be considered when selecting the drive.

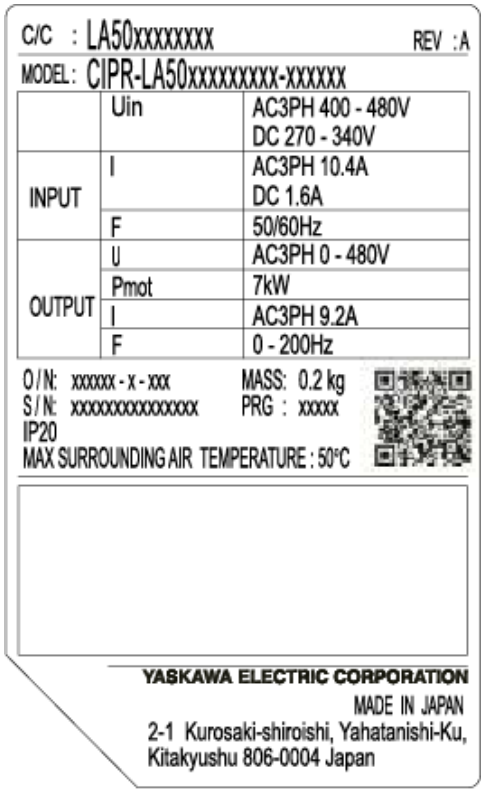
Model Designation

The following diagram and table describe how to read model number of the lift drive.

CIPR – LA50 C 4 005 E B A B

1 2 3 4 5 6 7 8 9

No.	Description
1	Drive Series
2	Product Series • LA50: LA500
3	Region code • C: Europe
4	Voltage class • 2: 200V 3-phase • 4: 400V 3-phase
5	Rated output current ***Note:*** *Refer to the list of models*
6	EMC filter • A: no built-in EMC filter • E: Built-in EMC filter (400V: C2, 20m; 200V: C3,20m)
7	Enclosure design • B: IP20
8	Environmental specification • A: Standard
9	Design revision order • A: Without SIL3 STO function • B: With SIL3 STO function



List of Models

200V Model

Type	Model CIPR-LA50C…	Power	Current	Model Code	SAP#
LA500	2019	4 kW	17,5 A	CIPR-LA50C2019EBAB	10113982
LA500	2025	5,5 kW	25 A	CIPR-LA50C2025EBAB	10113983
LA500	2033	7,5 kW	33 A	CIPR-LA50C2033EBAB	10113984
LA500	2047	11 kW	47 A	CIPR-LA50C2047EBAB	10113985
LA500	2060	15 kW	60 A	CIPR-LA50C2060EBAB	10113986
LA500	2075	18,5 kW	75 A	CIPR-LA50C2075EBAB	10113987

400V Model

Type	Model CIPR-LA50C…	Power	Current	Model Code	SAP#
LA500	4009	4 kW	9,2 A	CIPR-LA50C4009EBAB	10113988
LA500	4015	5,5 kW	14,8 A	CIPR-LA50C4015EBAB	10113989
LA500	4018	7,5 kW	18 A	CIPR-LA50C4018EBAB	10113990
LA500	4024	11 kW	24 A	CIPR-LA50C4024EBAB	10113991
LA500	4031	15 kW	31 A	CIPR-LA50C4031EBAB	10113992
LA500	4039	18,5 kW	39 A	CIPR-LA50C4039EBAB	10113993
LA500	4045	22 kW	45 A	CIPR-LA50C4045EBAB	10113994

General specification

Item	Description
Product Name	LA500
Power Range	3-phase 200~240 V: 4 to 18.5 kW 3-phase 380~400 V: 4 to 18.5 kW
Rated Input Frequency	50 Hz
Allowable Voltage Fluctuation	-15 to +10%
Allowable Frequency Fluctuation	±5%
DC Supply	200 V class: 270 to 340 Vdc 400 V class: 513 to 679 Vdc
Overload Tolerance	165% of rated output current for 30 sec
DC Reactor	External
Braking Transistor	Built in
Applicable Motor Types	Induction
Maximum Output Frequency	Induction Motor: 120 Hz
Output frequency resolution	0.001 Hz
Starting Torque	V/f control (IM): 150% @ 3 Hz Vector Control (IM): 150% @ 1 Hz CLV control (IM): 150% @ 0 rpm
Speed Control Range	V/f control (IM): 1:40 OLV control (IM): 1:100 CLV control (IM): 1:1500
Torque Limit Control	Possible in Vector Control (IM), sensorless, 4 quadrants individually adjustable
Acceleration/Deceleration Ramps	4 individual, 0 to 600 s linear, 4 separately adjustable S-curves
Braking Torque	Approx. 20% without braking resistor, approx. 125% with dynamic braking option
V/f Pattern	Freely adjustable
Protection	• Motor electronic thermistor function • Motor PTC input • Instantaneous over current at 200% of rated current • Drive over load 150% (HD) for 1 min, once per 10 min • DC over voltage at 820 Vdc (400 V units) • Output ground fault • Motor stall prevention
Software Functions	• Power outage ride through control • Brake Sequence • Light Load Search and Rescue Operation • Short Floor Function • Over-/under torque detection • 17-step multi-speed operation • Motor data auto-tuning rotating/in stop condition • Dwell function • Cooling fan control by heatsink temperature • Leveling Speed • Phase loss detection • Parameter copy function
Ambient Conditions	Place of Installation: • Indoors, no direct sunlight • free from oil, mist, flammable gases, metal powder, oil, water, salt, harmful gases and liquids, solvents Operation temperature: • IP20: -10 to +50°C (up to 60°C with derating) • UL type 1: -10 to +40°C • Side-by-Side mounting: -10 to +40°C (up to 50°C with derating) Storage temperature: -20 to +70°C Humidity: 95% RH, no condensation Overvoltage category: III Pollution degree: 2 or less Altitude: up to 1000m, up to 4000m with 1% current derating per 100 m

Vibration Resistance	10 to 20 Hz – 1 g (9.81 m/s²); 20 to 55 Hz – 0.6 g (5.9 m/s²)
Standards	• UL61800-5-1 • EN61800-2 • IEC/EN61800-5-1 • ISO/EN13849-1 Cat. III PLe, IEC/EN61508 SIL3 (2 Safety inputs, 1 EDM output)
Enclosure	• IP20
Communication	• Modbus/Memobus embedded via built in RS485 interface, 115.2 kBps
Programming Interface	• Built in removable LED keypad with soft buttons • Built in USB mini port for connection a PC or Android Smart Device • Serial through keypad port (needs adapter)
Programming Tools	• DriveWizard 10 (Windows 10) • DriveWizard mobile (Android and iOS)

Power Ratings

200V Model

Model CIPR-LA50C…		2019	2025	2033	2047	2060	2075
Maximum Applicable Motor Capacity	**kW**	4	5,5	7,5	11	15	18,5
Rated Output Current	**Amp**	17,6	25	33	47	60	75
Rated Output Capacity	**kVA**	6,7	9,5	12,6	17,9	22,9	28,6
Rated Input Current (A)	**AC**	18,9	24	37	52	68	96
Default Carrier Frequency	**kHz**	8	8	8	8	8	8
DC Reactor		External Option					
Braking Transistor		Built-lin					
Maximum Output Voltage		Three phase 200V to 240V Note: The maximum output voltage is proportional to the input voltage					
EMC Filter		Built-in, category: C3					
Power Supply		AC Power: Three phase 200V to 240V (-15% to +10%) at 50/60Hz Allowable Frequency Fluctuation: ±5% DC Power: 270V to 340V					
Input Power	**kVA**	8,7	11	17	24	31	44

400V Model

Model CIPR-LA50C…		4009	4015	4018	4024	4031	4039	4045
Maximum Applicable Motor Capacity	**kW**	4	5,5	7,5	11	15	18,5	22
Rated Output Current	**Amp**	9,2	14,8	18	24	31	39	45
Rated Output Capacity	**kVA**	7	11,3	13,7	18,3	23,6	29,7	34,3
Rated Input Current (A)	**AC**	10,4	15	20	29	39	50,5	59,7
Default Carrier Frequency	**kHz**	8	8	8	8	8	8	8
DC Reactor		External Option						
Braking Transistor		Built-lin						
Maximum Output Voltage		Three phase 380V to 480V Note: The maximum output voltage is proportional to the input voltage						
EMC Filter		Built-in, category: C2						
Power Supply		AC Power: Three phase 380V to 480V (-15% to +10%) at 50/60Hz Allowable Frequency Fluctuation: ±5% DC Power: 513V to 679V						
Input Power	**kVA**	9,5	14	18	27	36	47	55

Integrated EMC Filters

LA500 Drives are offered with or without an embedded EMC filter. Internal EMC filters are designed to be used in TN grids. The filters shall be disabled when using the drive in an ungrounded system or a system that is not grounded symmetrically.

Voltage Class	Model	IEC61800-3 Category	Cable Length *1	Leakage Current *2
Three-phase 200V	LA50C2019Exx / LA50C2075Exx	C3	20 m	1.8
Three-phase 400 V	LA50C4009Exx	C2	20 m	3.1
	LA50C4015Exx / LA50C4018Exx	C2	20 m	7.8
	LA50C4024Exx / LA50C4031Exx	C2	20 m	1.9
	LA50C4039Exx / LA50C4045Exx	C2	20 m	7.8

*1 Shielded Motor Cable
*2 Leakage currents shown here are calculated and for the EMC filter only. Values in real applications can vary depending on factors like phase voltage imbalance, grounding etc.

Watt Loss

200V Model

Model CIPR-LA50C…	Power	Current	LA500 Drive Heat Losses (with EMC filter)			
			Carrier Frequency (kHz)	Inside (W)	Outside (W)	Total Loss (W)
2018	4 kW	17,5 A	8	41	108	149
2025	5,5 kW	25 A	8	50	187	237
2033	7,5 kW	33 A	8	61	232	293
2047	11 kW	47 A	8	86	318	404
2060	15 kW	60 A	8	120	473	593
2075	18,5 kW	75 A	8	149	525	674

400V Model

Model CIPR-LA50C…	Power	Current	LA500 Drive Heat Losses			
			Carrier Frequency (kHz)	Inside (W)	Outside (W)	Total Loss (W)
4009	4 kW	9,2 A	8	55	116	171
4015	5,5 kW	14,8 A	8	63	141	204
4018	7,5 kW	18 A	8	93	206	299
4024	11 kW	24 A	8	121	286	407
4031	15 kW	31 A	8	132	331	463
4039	18,5 kW	39 A	8	141	365	506
4045	22 kW	45 A	8	188	497	685

Deratings

Carrier Frequency Derating

The rated current of LA500 drives might need to be reduced depending on the selected carrier frequency.

200V Model

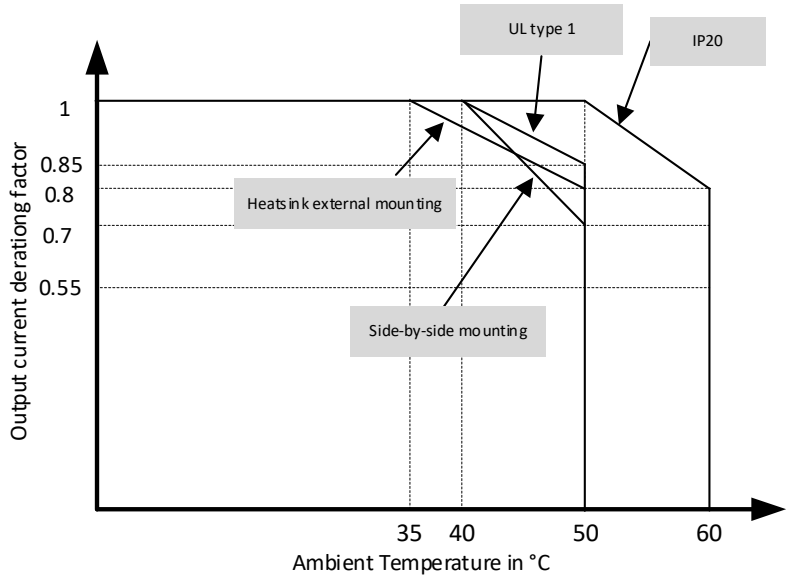
Model CIPR-LA50C…	Power	Current	LA500 Rated Output Current in Ampere					
			2 kHz	5 kHz	8 kHz	10 kHz	12.5 kHz	15 kHz
4009	4 kW	9,2 A	9,2	9,2	9,2	8,1	6,8	5,5
4015	5,5 kW	14,8 A	14,8	14,8	14,8	13,1	11	8,9
4018	7,5 kW	18 A	18	18	18	13,1	11	11
4024	11 kW	24 A	24	24	24	21,3	17,8	14
4031	15 kW	31 A	31	31	31	27,5	23	19
4039	18,5 kW	39 A	39	39	39	34,5	29	23
4045	22 kW	45 A	45	45	45	39,9	33,4	27

400V Model

Model CIPR-LA50C…	Power	Current	LA500 Rated Output Current in Ampere					
			2 kHz	5 kHz	8 kHz	10 kHz	12.5 kHz	15 kHz
4009	4 kW	9,2 A	9,2	9,2	9,2	8,1	6,8	5,5
4015	5,5 kW	14,8 A	14,8	14,8	14,8	13,1	11	8,9
4018	7,5 kW	18 A	18	18	18	13,1	11	11
4024	11 kW	24 A	24	24	24	21,3	17,8	14
4031	15 kW	31 A	31	31	31	27,5	23	19
4039	18,5 kW	39 A	39	39	39	34,5	29	23
4045	22 kW	45 A	45	45	45	39,9	33,4	27

Ambient Temperature Derating

Depending on the mounting condition, enclosure type and ambient temperature derating factors need to be applied on the rated output current of LA500 drives. The derating curves shown below are valid for all frames of LA500.



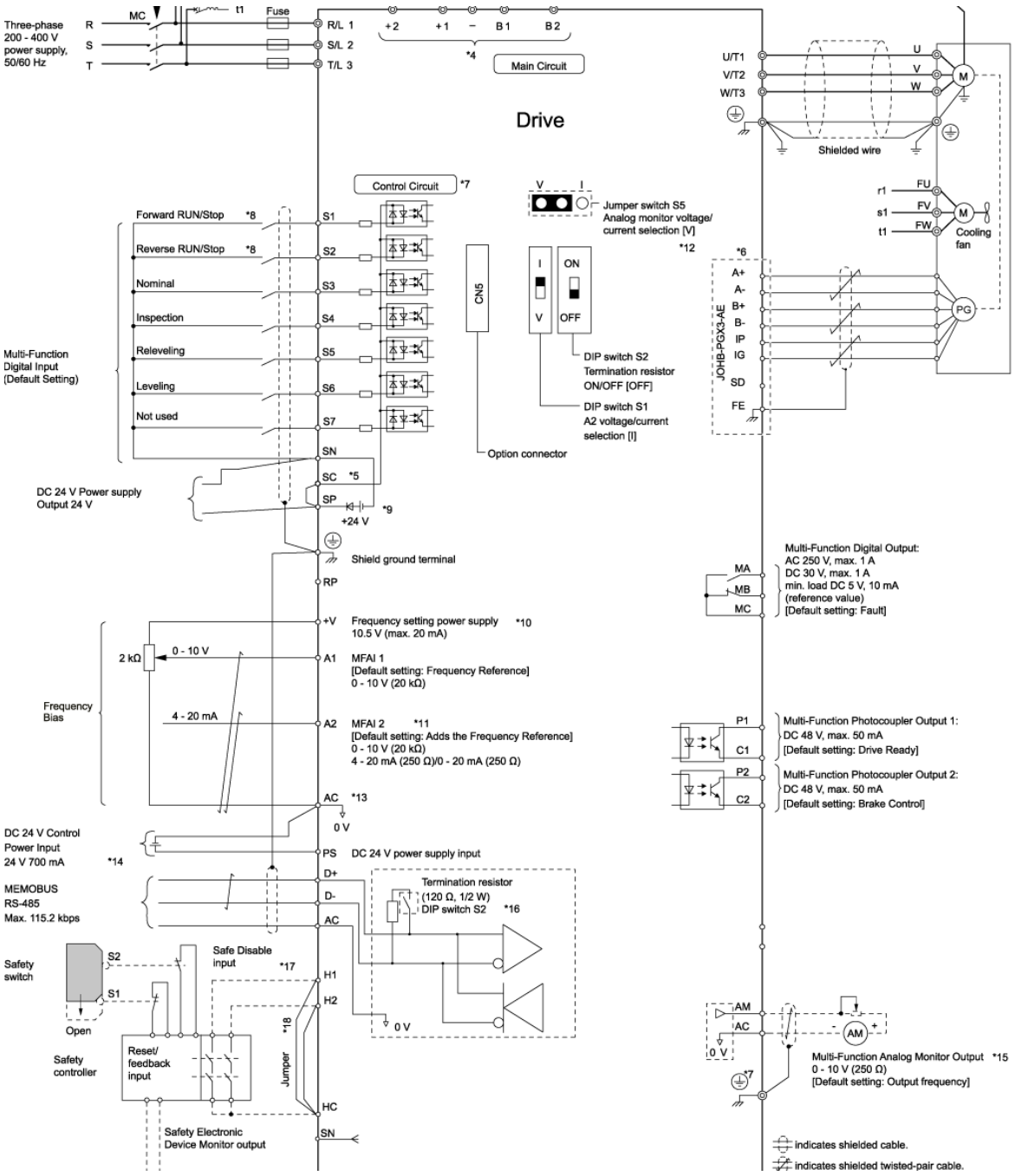
Altitude Derating

LA500 drives can be operated at altitudes up to 1000 m without derating. Between 1000 and 4000 m altitude above sea level a derating of 1 % per 100 m must be applied to the rated output current.

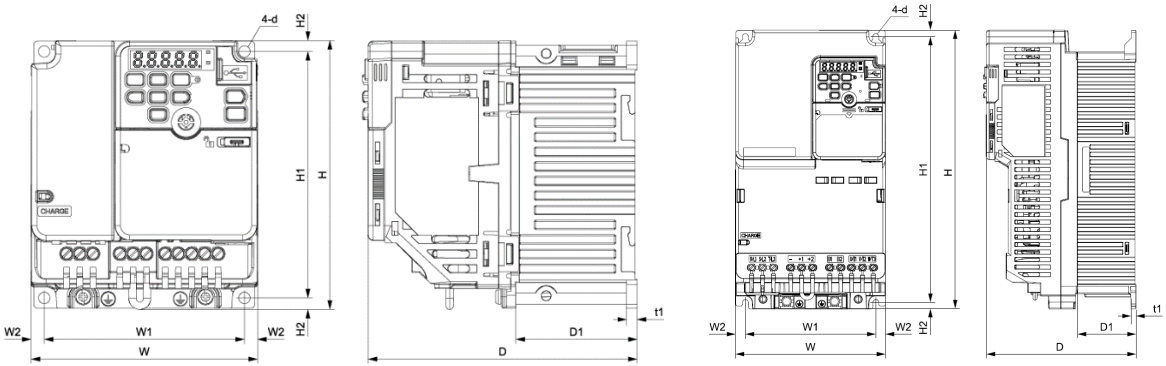
Additionally, a derating must be applied to the rated voltage if the drive is installed over 2000 m above sea level with the neutral point of the power supply ungrounded.

Electrical Connections

Connection Diagram



Dimensions



200V Model

Voltage Class	Power [kW]	Model	Dimensions [mm] / Weight [kg]										
			W	H	D	D1	W1	W2	H1	H2	t1	d	Weight
3x200V	4	LA50x2018	140	128	193	65	128	6	118	193	5	For M5	2.4
3x200V	5.5	LA50x2025	140	260	196	55	122	9	248	196	5	For M5	3.9
3x200V	7.5	LA50x2033	140	260	196	55	122	9	248	196	5	For M5	4.1
3x200V	11	LA50x2047	180	300	196	55	160	10	284	196	5	For M5	6
3x200V	15	LA50x2060	220	350	216	78	192	14	336	216	5	For M5	8.5
3x200V	18.5	LA50x2075	220	350	216	78	192	14	336	216	5	For M6	9

400V Model

Voltage Class	Power [kW]	Model	Dimensions [mm] / Weight [kg]										
			W	H	D	D1	W1	W2	H1	H2	t1	d	Weight
3x400V	4	LA50x4009	140	128	193	65	128	6	118	5	5	For M5	2.6
3x400V	5.5	LA50x4015	140	260	196	55	122	9	248	6	5	For M5	3.9
3x400V	7.5	LA50x4018	140	260	196	55	122	9	248	6	5	For M5	3.9
3x400V	11	LA50x4024	180	300	196	55	160	10	284	8	5	For M5	5.5
3x400V	15	LA50x4031	180	300	196	55	160	10	284	8	5	For M5	5.5
3x400V	18.5	LA50x4039	190	350	251	94	160	15	336	7	5	For M6	8
3x400V	22	LA50x4044	190	350	251	94	160	15	336	7	5	For M6	8.5

Accessories

Motor Speed Feedback option

The LA500 is capable to control the motor in CLV mode. The required motor feedback option (encoder) should be of TTL type.

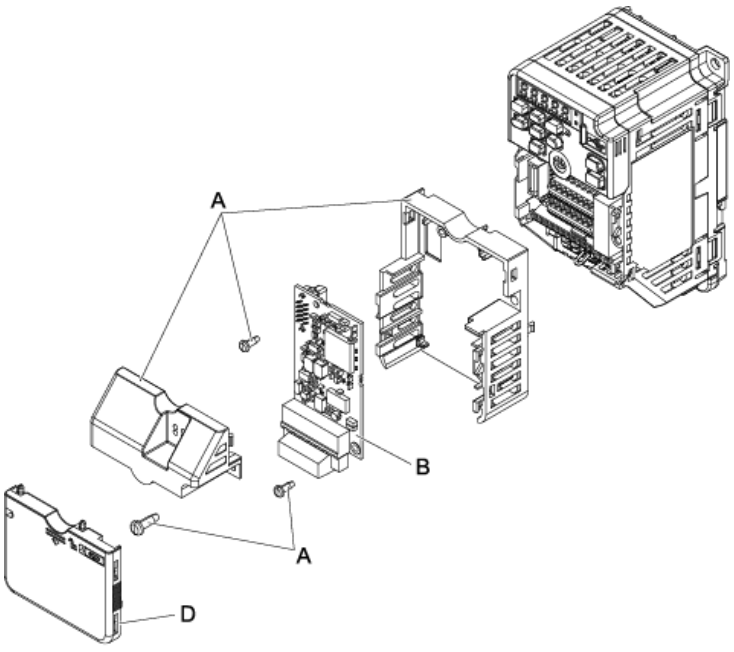
To make brake control easier the LA500 motor speed feedback option series JOHB-PGX3-AE also includes one relay on the feedback card to connect the motor brake directly.

Option	Model Number	SAP#
Motor Feedback	JOHB-PGX3-AE	10114901
Motor Feedback Mounting KIT	JOHB-GA50	10105392

Important:

- The motor feedback mounting kit is not part of motor feedback option and must be **ordered separately**
- With motor feedback option installed the depth of the drive increases for 27 mm
- For LA500 units manufactured before 2025 a firmware upgrade (24013 or higher) will be required to support JOHB-PGX3-AE option card

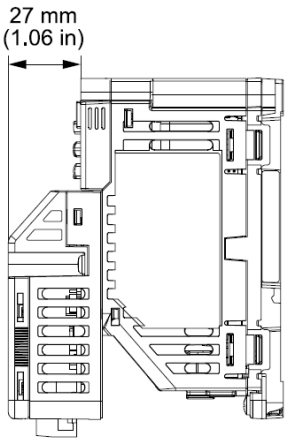
Option enclosure (Model code: JOHB-GA50, parts A) and option card installation:



A - Option card mounting kit components

B - Motor speed feedback option (JOHB-PGX3-AE)

C - Front cover



LED/LCD Keypads

LED Full Size Keypad

Option	Model Number	SAP#
LED Full Size Keypad	JVOP-KPLEA04AAA	10010185

This optional LED keypad provides a larger LED display (5 digit, 7 segments) and larger navigation buttons for more comfort during drive operation.

LCD Keypad

Option	Model Number	SAP#
LCD Keypad	JVOP-KPLCA04AEA	10105769

This optional LCD keypad greatly improves the operability of the drive. The high-res screen can display graphics and multi-language full text. Additional functions are: Start-up Wizard, copy function (4 sets of parameters), backup, data logging, real-time clock.

LCD Bluetooth Keypad

Option	Model Number	SAP#
LCD Bluetooth Keypad	JVOP-KPLCC04ABA	10099085

This optional LCD keypad provides the ability to connect to the drive using Bluetooth. It is designed to be able to operate like the LCD keypad if keypad navigation is required.

This keypad is used in conjunction with DriveWizard Mobile to connect to the drive via Bluetooth. You can download DriveWizard Mobile to your mobile device through the Apple AppStore or Google Play.

Extension Cables

Extension cables for keypads are offered in two lengths.

Model Number	Description	SAP#
WV001-YEG	Keypad Remote Mount Cable - 1 Meter	10007058
WV003-YEG	Keypad Remote Mount Cable - 3 Meter	10012366

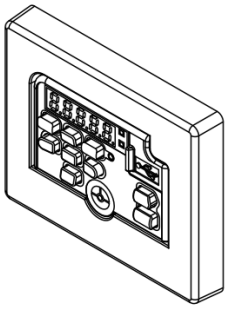
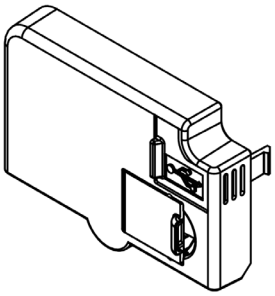
Appearance

LED Keypad	LCD Keypad	Extension Cable
		

Keypad Door Mounting Kits

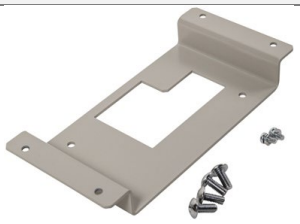
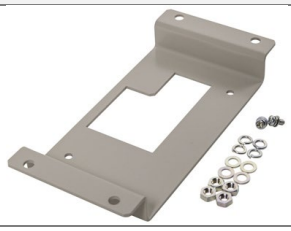
Door Mounting Kit for LA500 Internal Keypad

The removable keypad on LA500 can be mounted on a panel door using the parts below. When mounting the keypad externally a blind cover should be applied to the drive. Cables WV001-YEG or WV003-YEG are recommended as extension cable.

Part	Door mounting kit for LA500 integrated keypad	Blind cover for LA500
Model Number	ZPBA-GA500	JVOP-KPBCH04AAA
SAP#	10106938	10106937
Appearance	 (Door mounting kit does not contain a keypad, blind cover or cable!)	

Door Mounting Kits for LCD Keypads (with or without Bluetooth)

The LCD keypads can be mounted to a panel front door using one of the mounting kits below.

Type of Mounting	Brackets have tapped holes for use with screws	brackets have untapped holes for use with panel studs
Model Number	900-192-933-001	900-192-933-002
SAP#	10090514	10090515
Appearance		

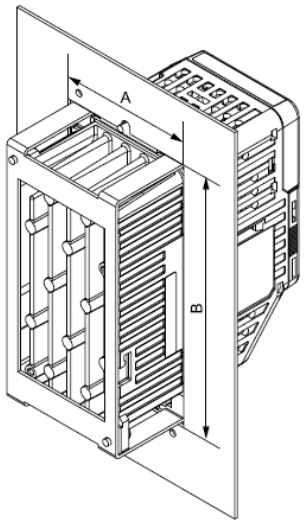
Heatsink External Mounting Kit

LA500 drives with IP20 can be mounted with the heatsink out the back of the panel or enclosure in order to have the main source of heat loss outside and so reduce panel volume or panel cooling. A rectangular cut out is required in the panel. Drives are fixed using an heatsink external mounting kit. Details on assembly and installation can be found the Installation Manual for these kits (TOEPC72060009_).

Important:

- With this method of mounting the rated output current might require a derating. See section “Deratings“ in this document.
- The backside of the drive remains IP20. The externally mounted heatsink should not be exposed to dusty or wet environment that would normally require a higher degree of ingress protection.

Appearance



Heatsink External Mounting Kit Model Numbers

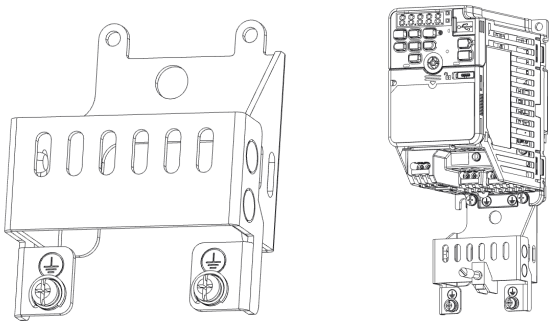
Voltage Class	Power kW	LA500 Model	Heatsink External Mounting Kit	SAP#
3x400V	4	LA50x4009xxx	ZPSA-GA50V3-1	10105756
3x400V	5.5	LA50x4015xxx	ZPSA-GA50V5-1	10105758
3x400V	7.5	LA50x4018xxx	ZPSA-GA50V5-1	10105758
3x400V	11	LA50x4024xxx	ZPSA-GA50V6-1	10105759
3x400V	15	LA50x4031xxx	ZPSA-GA50V6-1	10105759
3x400V	18.5	LA50x4039xxx	ZPSA-GA50V8-1	10105761
3x400V	22	LA50x4044xxx	ZPSA-GA50V8-1	10105761

Cable Shield Clamp Kit

A cable shield kit can be mounted at the bottom of the drive in order to easy cable shield connection and provide a strain relief at the same time.

Important:
- Cable shield and UL Type 1 kits cannot be installed simultaneously.

Appearance



Cable Shield Kit Model Numbers

Voltage Class	Power kW (HD)	LA500 Model	Shield Clamp Kit	SAP#
3x400V	4	LA50x4009xxx	ZHZ-GA50V3	10108105
3x400V	5.5	LA50x4015xxx	ZHZ-GA50V5	10108107
3x400V	7.5	LA50x4018xxx	ZHZ-GA50V5	10108107
3x400V	11	LA50x4024xxx	ZHZ-GA50V6	10108108
3x400V	15	LA50x4031xxx	ZHZ-GA50V6	10108108
3x400V	18.5	LA50x4039xxx	ZHZ-GA50V8	10108110
3x400V	22	LA50x4044xxx	ZHZ-GA50V8	10108110

Power Options

AC Input Reactors

Input reactors can be applied in order to reduce harmonic distortion on the AC input line. Reactors are offered as IP00 protection. IP20 covers are separately available.

200V Model

LA500 Model	Reactor		SAP#	
	IP00	IP20 cover	IP00	IP20 cover
LA50C2018xxxx	LR3 40-4/20	IP20-Box32	10011010	10062614
LA50C2025xxxx	LR3 40-4/45	IP20-Box35	10011017	10062617
LA50C2033xxxx				
LA50C2047xxxx	LR3 40-4/70	IP20-Box37	10011021	10062619
LA50C2060xxxx				
LA50C2075xxxx	LR3 40-4/90	IP20-Box39	10011023	10062621

400V Model

LA500 Model	Reactor		SAP#	
	IP00	IP20 cover	IP00	IP20 cover
LA50C4009xxx	B 1103136	IP20-Box32	10008858	10062614
LA50C4015xxx	B 1103138	IP20-Box35	10000040	10062617
LA50C4018xxx				
LA50C4024xxx	B 1103139	IP20-Box35	10000041	10062617
LA50C4031xxx	B 1103140	IP20-Box37	10000042	10062619
LA50C4038xxx	B 1103141	IP20-Box39	10008862	10062621
LA50C4045xxx	B 1103142	IP20-Box39	10008863	10062621

Braking Resistors

LA500 drives have embedded braking transistors. Resistors selected from the table below can be directly connected to terminals B1 and B2. When connecting with other resistors, the resistance must be higher than the minimum value listed below.

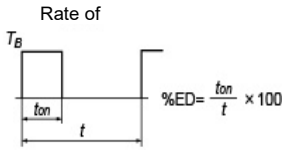
200V Model

LA500 Model	Resistor 40% ED	Minimum Resistor (Ohm)	SAP#
LA50C2018xxxx	RH-1560W040	32	10004350
LA50C2025xxxx	RH-2700W025	9,6	10004351
LA50C2033xxxx	RH-2700W025	9,6	10004351
LA50C2047xxxx	RH-9600W015	9,6	10004358
LA50C2060xxxx	RH-9600W015	9,6	10004358
LA50C2075xxxx	RH-9600W015	9,6	10004358

400V Model

LA500 Model	Resistor 40% ED	Minimum Resistor (Ohm)	SAP#
LA50C4009xxxx	RH-1000W120	100	10004349
LA50C4015xxxx	RH-1560W040	32	10004350
LA50C4018xxxx	RH-1560W040	32	10004350
LA50C4024xxxx	RH-2700W025	20	10004351
LA50C4031xxxx	RH-3700W025	20	10004352
LA50C4038xxxx	RH-4800W022	19,2	10004353
LA50C4045xxxx	RH-6000W022	19,2	10004356

- 40% ED : 120 s cycle time (t) and 48 s switch on time (ton)



Tools and Software

Tools

Tool	Description	System	Connection
DriveWizard 10	PC Tool for parameter management/backup/diagnostics	Windows	USB-mini
DriveWizard Mobile	Mobile app for parameter management/backup/diagnostics	Android	• Bluetooth • USB-mini with USB on-the-go adapter
		iPhone	• Bluetooth

Connection Cables

Model Number	Description	SAP#
JZSP-CVS06-02-E	USB-mini connection cable for PC 2.5m	300-100-888

LA500 Lift Inverter

THE NEW REFERENCE IN COMPACT LIFT DRIVE

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