

**YASKAWA**

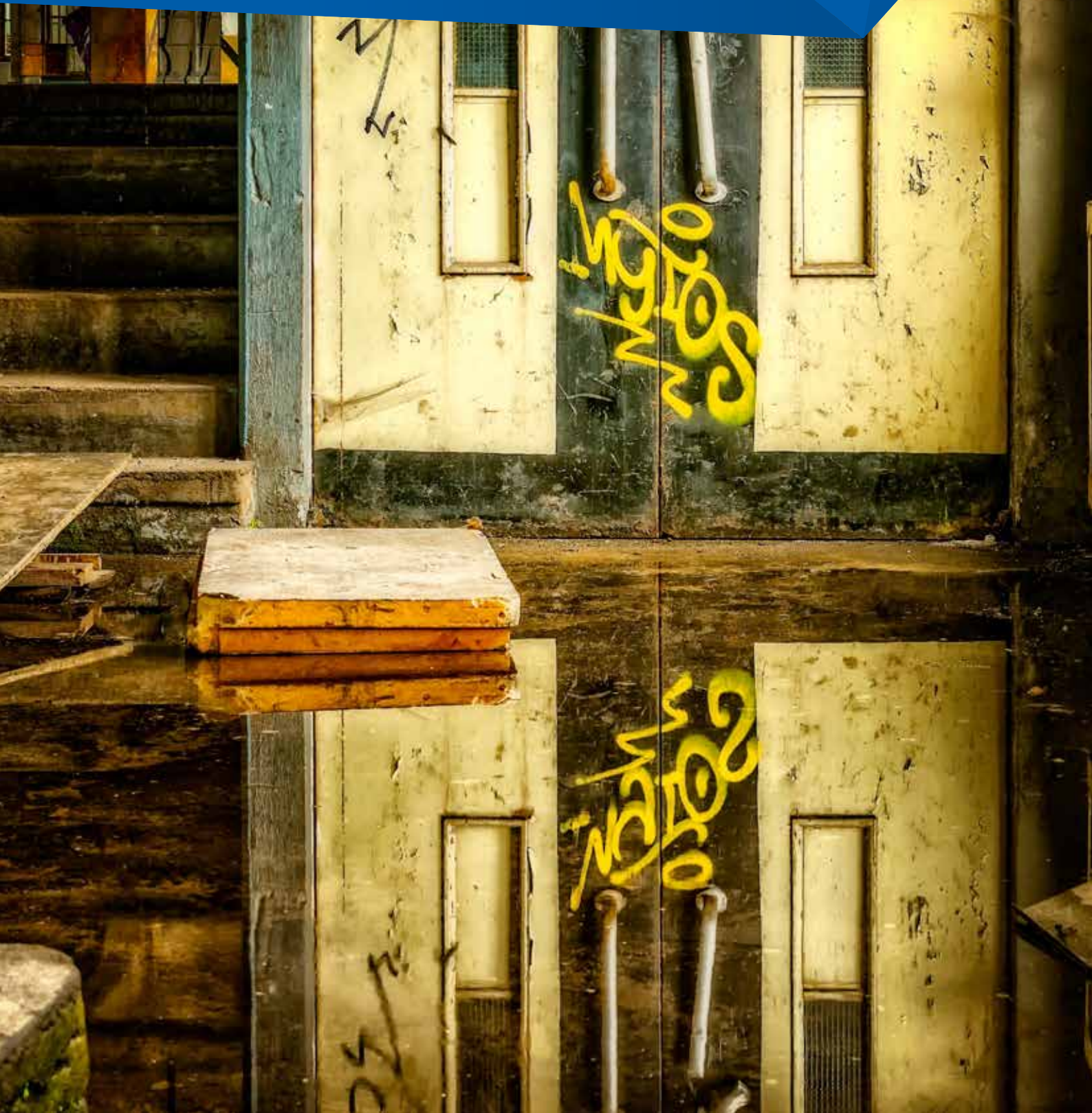
# LA500

AC Microdrives for Lift Applications



# Does your lift need a new drive?

We have the perfect fit. Our LA500 lift drive comes with integrated safety features, highest ride comfort and outstanding reliability. Installing LA500 to your lift adds sustainability while saving you time and energy.



Drawing upon more than 100 years of experience in driving motors, Yaskawa develops products which perfectly combine technical superiority with easy operation.

The latest result of this evolution is the new LA500 microdrive. Compact in size and flexible in terms of motor type and connectivity, the LA500 is designed to easily master your lift application.

#### **Simplified system integration**

LA500 drives are designed to be easily integrated into lift systems. Embedded safety functions, integrated filters and braking choppers reduce the number of components in the control panel, which does not only reduce the space required but also increases system reliability.

#### **Fast installation and setup**

A highly flexible interface allows easy integration with most any lift controller. Easy wiring and smart functions for completing a basic setup in a couple of minutes minimize the time and cost involved in the commissioning of your lift.

#### **Highest ride comfort**

With precise motor control and high starting torque, flexibly configurable ride curves and integrated brake control logic, the LA500 provides the key to a smooth ride and accurate landing.

#### **Sustainable systems**

Designed for 10 years of operation without maintenance, our LA500 drives are built to perform reliably for a long time. The robust design featuring coated PCBs allows operation in 50 °C without derating, while integrated service lifetime prediction prevents sudden failures and downtime.



LA500 – flexibility, ease of use, and a sustainable design offer the best value proposition for your lift application.

# Makes life easier

The LA500 drive comes with value-adding functions and smart features which offer benefits throughout the entire life cycle of an installation. No matter whether in drive selection, through design, during installation, start up or troubleshooting, the LA500 makes life easy.

## Temperature controlled fans

Cooling fans run only when needed. Audible noise and contamination is minimized while service intervals can be prolonged.

## Tactile keypad

The bright LED display and tactile buttons make menu navigation easy and intuitive. The removable keypad can serve as a parameter backup or copy unit.

## Robust design

The LA500 can be operated at altitudes of up to 4000m and in high-temperature environments of up to 60°C. Coated PCBs protect the drive against dust and mist.

## Embedded braking chopper

Direct connection of a braking resistor reduces the number of parts, required space and simplifies the installation.

## 24 VDC power input for controller

Simplify your wiring and keep the drive's command interface operational, even during standby or power outages.



## Common menus

Menus and parameters are arranged and named as with any other Yaskawa drive, thus reducing training expenses.

## USB port

Easily connect to your PC or mobile device for programming, monitoring or troubleshooting the LA500.

## Minimal service requirements

A design for 10 years without maintenance provides hassle-free long term operation.

## Screwless control terminals

Easily create long-lasting, reliable connections without the need for periodical re-tightening.

## Easily accessible main circuit terminals

Connect main circuit and motor cables in shortest time without removing any covers.

## 24 VDC power for sensors

Internal power supply delivers an extra 150 mA for use with external sensors, thus eliminating the need for a separate power supply.

## Built-in EMC filter

Built in class C2 filters allow for compliance with EN12015 without the need for external EMC filters.

## DriveWizard Mobile

DriveWizard mobile is the ultimate set-up tool for LA500 drives. From simple parameter editing to the Setup Wizard with an 8 channel fully featured oscilloscope, it provides all the tools needed for setup, monitoring, and process optimization.

- Intuitive parameter editing with help and search functions
- Create favorite parameter lists
- 8-channel oscilloscope with comprehensive trigger functions and data analysis
- Parameter backup/verify
- Setup Wizard for quick setup without knowledge of menus and parameters
- Troubleshooting support with fault analysis and countermeasures
- Export to DriveWizard PC tool
- Worry-free data recovery: Parameter back-up/retrieval anytime via Yaskawa cloud service for registered drives
- Usable offline in areas without mobile reception
- Programming without power

Mobile device connectivity is enabled using the built-in USB port (USB on-the-go) or via wireless communication with the Bluetooth® LCD keypad option.



## Optional LCD keypad:

### Additional functionality

LA500 drives can be programmed and operated with an external high-resolution graphical keypad. Support for 9 languages, a Setup Wizard, and the intuitive full text menu structure simplify drive setup and save valuable time.

- Copy function for 4 sets of parameters
- Data logging on Micro-SD card
- Real-time clock
- Available with Bluetooth for connecting a mobile device
- Automatic backup function
- Standard RJ45 cable connection

### Setup wizard

The Setup Wizard reduces the setup time to just a couple of minutes. It guides the user through the basic setup using simple questions which do not require any knowledge of drive parameters, thus saving valuable time.



# Relaxing in daily use and installation

Enjoy a smooth and comfortable ride of your lift. The excellent motor control of the the LA500 and the integrated brake control sequence guarantee for soft changes in speed and accurate landing.

## Highest comfort

Ride profiles with individual jerk setting for each speed change and different selectable acceleration/deceleration ramps allow fine tuning for a smooth and shockless ride.

The accurate leveling control of LA500 makes floor and cabin ground even under any load condition, thus avoiding dangerous traps.

The flexible brake control sequence optimizes the start and stop for soft movement and accurate landing.

- Adjustable speed profiles with individual jerk settings
- Accurate leveling independent of load
- Short floor management
- Easy to tune brake sequence for smooth ride and best landing
- Evacuation in light direction for smallest possible UPS/battery
- Optional speed feedback option card for the connection of a TTL encoder





## Makes life easy

The integrated EMC filter and braking chopper make installation faster, reduce wiring, save space and time.

Intuitive menus with lift terminology (terms and units on LC display) simplify the setup procedure.

Operate the lift without motor contactors - just make use of the Safe Torque Off function (STO, SIL3) of the LA500. Avoiding additional contactors also reduce the space required, wiring effort and eliminates switching noise.

- Integrated EMC filter with class C2 for EN12015 compliance
- Integrated braking chopper
- Integrated SIL3 STO function for operation without motor contactors
- Flexible control sequence to work with almost any controller
- Setup in lift terminology and units
- Automatic motor data tuning in stand still condition without removing ropes

## Sustainable

With its innovative design the LA500 paves the way to sustainable lift system. The LA500 is designed with durability in mind. It can stand more than 2.5 million full load starts while components are selected to provide up to 10 years operation free of maintenance.

The drive's cooling fans are temperature controlled and only run when really required. This avoids pollution by twirling dust inside the panel, improves reliability, and minimizes the need for regular maintenance.

LA500 is not only reliable, it also helps to make your lift green. The very low stand-by power consumption of only approx. 10W saves energy and helps to achieve Class 1 rating in terms of efficiency for your elevator (according to ISO 25745-2; max 50W).

- Long lasting design
- Maintenance free
- Energy saving by super low stand-by consumption

# Specification overview

Motor control	
<b>Motor types</b>	Induction Motor (IM)
<b>Control methods</b>	Sensorless V/f, Sensorless Vector Control, Vector Control with Encoder feedback (option card required)
<b>Motor parameter tuning</b>	Automatic, rotating/static

Further functions	
Dedicated lift sequence with individual accel./decel./jerk settings and lift brake sequence	
Automatic short floor operation (encoder option required)	
Emergency evacuation function with battery or UPS	
Support for full text display in multiple languages and lift terminology	
Start up wizard	
SIL3 STO for operation without motor contactors	

Protective functions	
Stall prevention, overload prevention, overheat prevention, motor overheat, control sequence error detection, over-speed/torque detection, input-/output-phase loss detection, motor ground fault detection etc.	

Self-monitoring	
Monitoring of main components (fans, IGBTs, capacitors, charging circuit) with maintenance alarm notification	

Communication options	Model code
Option Card Enclosure (required for encoder option)	JOHB-PGX3-AE

Other options	
Bluetooth® keypad, attachment for external heatsink, external EMC filter, shield clamp kit, AC chokes for EN12015 compliance, harmonics filter, output chokes, braking resistors, braking modules, DIN rail attachment, UL-Type 1 Kit	

Operating environment	
<b>Ambient temperature</b>	IP20: -10 to +50 °C/+60 °C with derating UL Type 1: -10 to +40 °C/+50 °C with derating
<b>Storage temperature</b>	-20 to +70 °C
<b>Humidity</b>	95 % RH or less (non-condensing)
<b>Altitude</b>	Up to 1000 m without derating, up to 4000 m with derating
<b>Vibration/Shock</b>	10 to 20Hz: 9.8 m/s <sup>2</sup> 20 to 55Hz: 5.9 m/s <sup>2</sup>
<b>Protection design</b>	IP20 standard, UL Type 1-Kit (optional)
<b>Mounting</b>	DIN rail, external heatsink
<b>Environmental conditions</b>	IEC 60721-3-3, Class 3C2 (chemical gases), Class 3S2 (solid particles)

Conformity / Standards	
<b>Standards</b>	CE, UKCA
<b>Functional safety</b>	IEC/EN61508 SIL3 (STO), PLe

Power ratings	
<b>Overload capacity</b>	165 %/30 s, with automatic carrier reduction to 5 kHz above 150 % load
<b>Rated voltage</b>	200 to 240 VAC, -15 to +10 % 380 to 480 VAC, -15 to +10 %
<b>Capacity range (ND)</b>	200V Class: 4.0 to 18.5 kW 400V Class: 4.0 to 22 kW
<b>Output frequency</b>	0 to 120 Hz
<b>Carrier frequency</b>	8 kHz; max. 15 kHz with derating
<b>Braking transistor</b>	Integrated

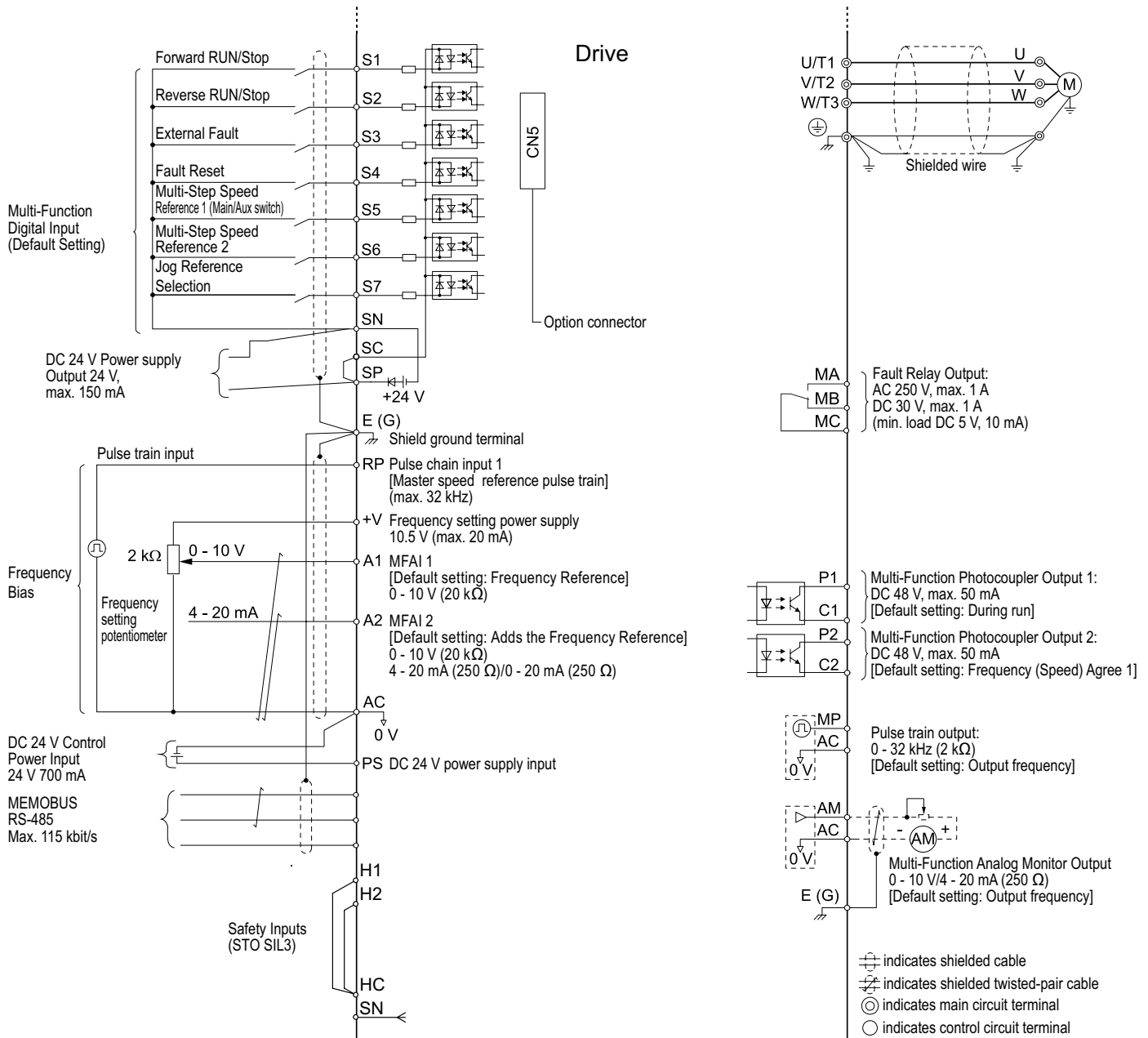
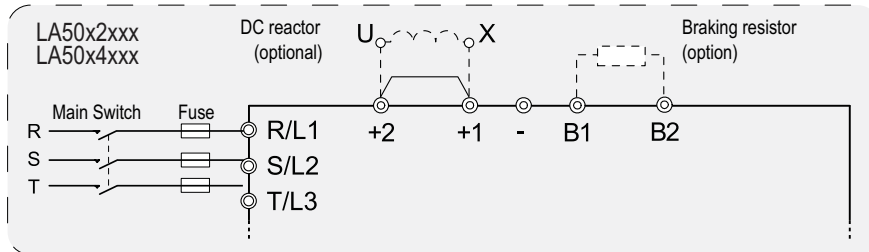
Control / Programming	
<b>Control inputs</b>	7 digital, 2 analog (1×V/I, 1×V)
<b>Control outputs</b>	1 relay, 2 photo coupler, 1 analog
<b>Programming interface</b>	Mini-USB on the front cover; digital operator with Bluetooth® (optional)
<b>Keypad</b>	7-segment LED with 5 digits, tactile soft buttons, copy function (removable)
<b>Serial communication</b>	Memobus/Modbus, RS-485, up to 115 kbit/s





# Connection diagram

Three-phase  
200 - 400 V  
power supply,  
50/60 Hz



# Technical data

## Model code

CIPR - LA50 C 4 004 E B A A

### Product Series

LA500 Series

### Region Code

C: Europe

### Voltage Class

2: 200 V 3-phase

4: 400 V 3-phase

### Rated Output Current

See Ratings Table

### Design Spec

A: Standard

B: With SIL3 STO function

### Environmental Spec

A: Standard

### Enclosure

B: IP20 standard

### EMC Filter Option

A: No built-in filter

E: EMC filter built-in

(400 V: C2, 20 m; 200 V: C3, 20 m)

## IP20 standard | Ratings

Model Code LA50CxxxxEBAA	Max Appl. Motor Power [kW]	Rated Out- put Current [A]	Dimensions [mm]				Weight [kg]	
			W	H	D (no EMC filter)	D (with EMC filter)	(no EMC filter)	(with EMC filter)
<b>200 - 240 VAC, 3-phase</b>								
2018	4.0	17.5	140	128	143	193	2	2.4
2025	5.5	25	140	260	140	196	3.4	3.9
2033	7.5	33					3.6	4.1
2047	11	47	180	300	143	196	5.5	6
2060	15	60	220	350	187	216	7.5	8.5
2075	18.5	75					8	9
<b>380 - 480 VAC, 3-phase</b>								
4009	4.0	9.2	140	128	143	193	2	2.6
4015	5.5	14.8	140	260	140	196	3	3.9
4018	7.5	18					3.2	3.9
4024	11	24	180	300	143	196	4.6	5.5
4031	15	31					4.8	5.5
4039	18.5	39	190	350	204	251	6.5	8
4045	22	45					6.5	8.5



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