YASKAWA

LA500

AC Microdrives for Lift Applications

yaskawa.eu

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. Use the LA500 closed loop option for lift applications to upgrade your ride comfort to a new level.

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.

Makes your 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.

Closed Loop feedback option

Use the LA500 closed loop option (JOHB-PGX3-AE) for lift applications to upgrade your ride comfort to a new level.

Robust design

The LA500 can be operated at altitudes of up to 4000 m 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.

Built-in EMC filter

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

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

Designed for over 2 million full-load starts and 10 years of maintenance-free operation.

Screwless control terminals

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

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.

24 VDC power input for controller

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

Easily accessible main circuit terminals

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

Usability first

DriveWizard Mobile

DriveWizard mobile is the ultimate setup 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

Mobile device connectivity is achieved through using the built-in USB port or wireless communication with the Bluetooth® LCD keypad option.

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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.

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

Easy Start-up

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 it's 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. 10 W saves energy and helps to achieve Class 1 rating in terms of efficiency for your elevator (according to ISO 25745-2; max 50 W).

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

LA500

Catalog code

LA50 C 4 004 E B A A

(1) (2) (3) (4) (5) (6) (7) (8)

1	Drive series
LA50	LA500 series

2	Region code
C	Europe

3	Drive rating
2	200 V, 3-phase
4	400 V, 3-phase

4	Rated output current
...	See Ratings table

5	EMC filter option
A	No EMC filter
E	C: C2 built-in (400 V: C2, 20 m; 200 V: C3, 20 m)

6	Enclosure
B	IP20

7	Environmental spec
A	Standard

8	Hardware revision
A	Standard
B	With SIL3 STO function

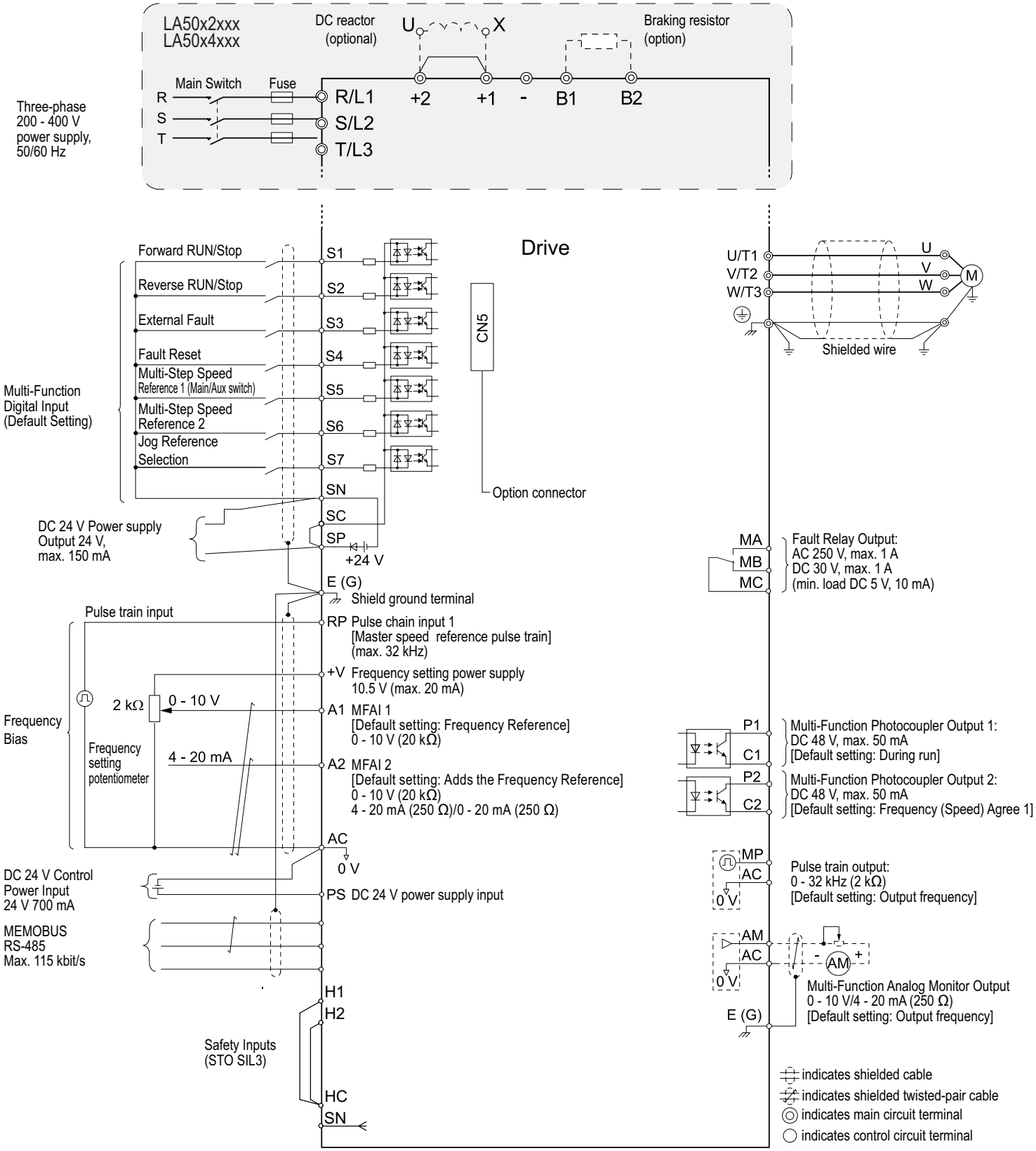
Ratings - 200 V models

Model Code LA50CxxxxEBAA	Max Appl. Motor Power	Rated Output Current	Dimensions [mm]				Weight [kg]	
	[kW]	[A]	W	H	D (no EMC filter)	D (with EMC filter)	(no EMC filter)	(with EMC filter)
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

Ratings - 400 V models

Model Code LA50CxxxxEBAA	Max Appl. Motor Power	Rated Output Current	Dimensions [mm]				Weight [kg]	
	[kW]	[A]	W	H	D (no EMC filter)	D (with EMC filter)	(no EMC filter)	(with EMC filter)
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

Connection diagram



Specification

Item	Specification	
Motor types	Induction Motor (IM)	
Control methods	Sensorless V/f, Sensorless Vector Control, Vector Control with Encoder feedback (option card JOHB-PGX3-AE required)	
Motor parameter tuning	Automatic, rotating/static	
Main control 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	
Options	JOHB-PGX3-AE	Closed Loop Encoder option (TTL)
	JOHB-GA50	Option card enclosure (required for encoder option)
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	
Ambient temperature	IP20: -10 to +50 °C/+60 °C with derating UL Type 1: -10 to +40 °C/+50 °C with derating	
Storage temperature	-20 to +70 °C	
Humidity	95 % RH or less (non-condensing)	
Altitude	Up to 1000 m without derating, up to 4000 m with derating	
Vibration/Shock	10 to 20 Hz: 9.8 m/s²	
	20 to 55 Hz: 5.9 m/s²	
Protection design	IP20 standard, UL Type 1-Kit (optional)	
Mounting	DIN rail, external heatsink	
Environmental conditions	IEC 60721-3-3, Class 3C2 (chemical gases), Class 3S2 (solid particles)	
Standards	CE, UKCA	
Functional safety	IEC/EN61508 SIL3 (STO), PLe	
Overload capacity	165 %/30 s, with automatic carrier reduction to 5 kHz above 150 % load	
Rated voltage	200 V Class: 200 to 240 VAC, -15 to +10 %	
	400 V Class: 380 to 480 VAC, -15 to +10 %	
Capacity range (HD)	200 V Class: 4.0 to 18.5 kW	
	400 V Class: 4.0 to 22 kW	
Output frequency	0 to 120 Hz	
Carrier frequency	8 kHz; max. 15 kHz with derating	
Braking transistor	Integrated	
Control inputs	7 digital, 2 analog (1×V/I, 1×V)	
Control outputs	1 relay, 2 photo coupler, 1 analog	
Programming interface	Mini-USB on the front cover; digital operator with Bluetooth® (optional)	
Keypad	7-segment LED with 5 digits, tactile soft buttons, copy function (removable)	
Serial communication	Memobus/Modbus, RS-485, up to 115 kbit/s	

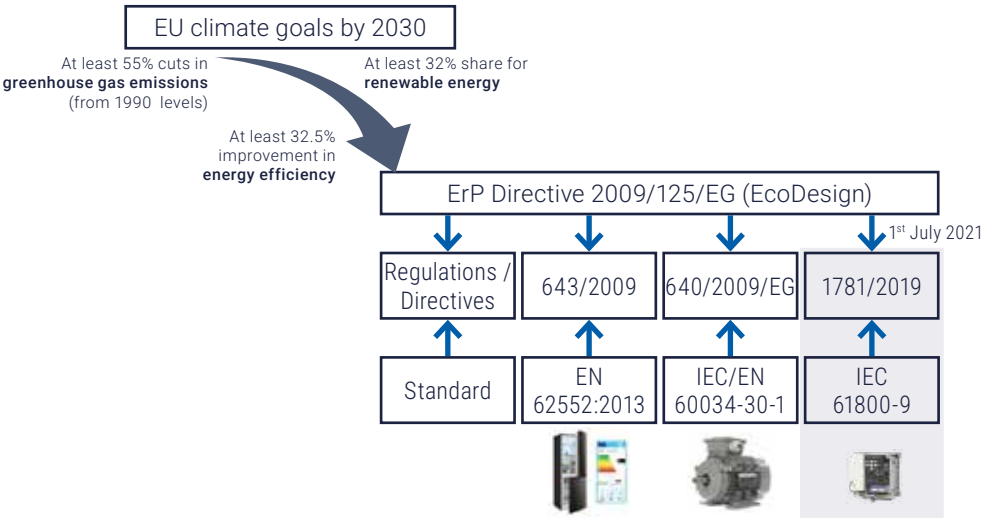
Lifting everyone to a sustainable tomorrow

Achieving the European climate goals

To achieve European “Green Deal” climate targets, the ErP (Energy-related Products) Directive was created, which is often referred to as the Ecodesign Directive. It provides a framework but does not contain product-specific requirements, as these are so diverse that they cannot possibly be covered by just one directive. Consequently, implementation regulations have been defined, based on the ErP Directive, which regulate the requirements for the energy efficiency of products.

Similar regulations and labels exist for industrial applications such as compressors, fans, pumps, etc., and electric motors, which are estimated to consume half of the electrical energy produced in the EU, have not been spared.

However, it was recognized that much more energy could be saved by controlling the speed of electric motors and so Regulation (EU) 2019/1781 was published, which now regulates the efficiency of the variable speed drive that work alongside the motors.

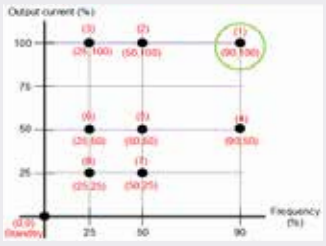


Efficiency at a glance

To determine the efficiency of a VFD (Variable Frequency Drive), the loss values are measured at eight defined load points and in standby according to the IEC 61800-9-2 standard. The loss value at the load point (90, 100) (90% speed, 100% load) is compared with a defined reference value. If it is below 75 % of the reference value, the device corresponds to the highest efficiency class IE2.

Watt loss according to IEC 61800-9-2 and efficiency class according to (EU) 2019/1781

CDM data (complete drive module)



IE classes

IE2 Loss < Ref* 75%

IE1 Reference Loss

IE0 Loss > Ref* 125%

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the future.
Sustainably.
Together.

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