YASKAWA

L1000A

Lift Drives

www.yaskawa.eu.com

Rise to the top

Yaskawa L1000 lift drives are the solution to technical requirements of today's elevators. This lift drive controls induction and permanent magnet motors. It is the first choice for new installation, machine room less lifts, but also for modernization. Experience the proven Yaskawa reliability combined with a new level of ride comfort.

Best ride comfort

The L1000A comes with a sophisticated vector control algorithm and lift dedicated control functions that that assure a bump-free start also without load sensor, smooth speed transition and precise landing. The L1000A make a ride as comfortable as possible.

Setup in shortest time

Setting up an elevator drive can be a real hassle or it can be as easy as with L1000A. Motor data are automatically tuned in standstill condition without the need to remove ropes, defaults are set to match the needs of most installations and parameters are shown in multi-language lift terminology and units.

Flexible controller interface

The L1000A provides a digital/analogue in- and outputs to connect to a lift controller but also supports DCP3, DCP4 and CANopen-Lift. The variety of interfaces allows an easy connection of the L1000A to almost any controller.

Brake monitoring

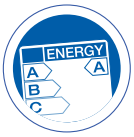
The L1000A is available with brake monitoring as part of protection against unintended car movement which replaces external devices and thus reduces cost and wiring effort.

Rescue operation

In case of power outage L1000A can simply be supplied by batteries or an uninterruptable power supply (UPS). The drive can automatically evacuate to the light load direction allowing an optimal selection of the components used without any over sizing.

Operation without motor contactors

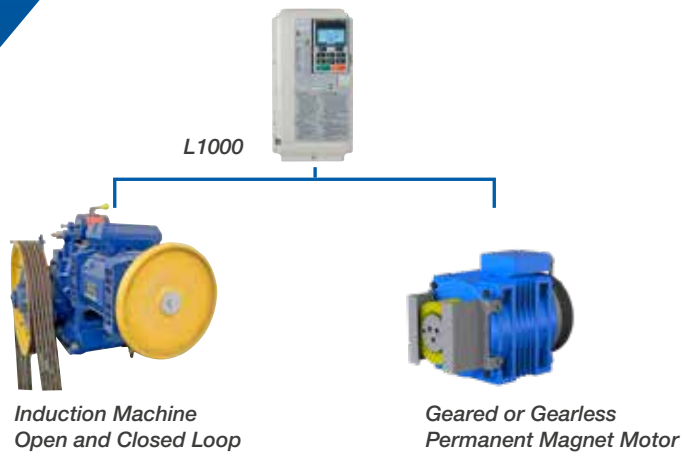
The L1000A can completely replace motor contactors. Thus it reduces audible noise, cost, space requirements and maintenance effort without compromising in terms of safety.



Low standby power consumption

The L1000A consumes very little energy, especially when not in operation. Thus making it easier to build lift systems which meet highest energy efficiency requirements.

Benefits at a glance



One drive, any lift

L1000A drives provide the right motor control for any lift application. It can drive induction machines and permanent magnet motors. For easy setup in a few minutes L1000A comes with automatic motor and encoder tuning functions that can tune relevant settings in stand still condition of the lift without the need of removing ropes.

HTL TTL Resolver EnDat HIPERFACE® by SICK

- Precisely controls induction and PM motors
- Allows usage of inexpensive incremental encoder with Interior PM motor control
- Easy tuning
- Smooth ride without bumps and roll-back
- Smooth start of gearless machines even without load sensor

Operation without motor contactors

L1000A drives have a built in STO (Safe Torque Off) function that is SIL3 certified. It allows operation of lift motors without motor contactors in accordance with EN81-20.

- Silent operation
- Saves panel space
- Less parts, less probability of failure means less call outs for maintenance

Quiet drive

L1000A drives have temperature controlled cooling fans that only run when required, not all the time. This lowers audible noise, extends maintenance intervals but also reduces dust aggregation in panels.

Benefits at a glance

Open controller interface

The L1000A can easily be connected to almost any lift controller. The digital/analogue inputs and outputs are freely programmable and pre-set to most likely configurations. For an easy interface setup the drive provides signalling patterns for commonly used controllers that can be switched with just a single parameter.

In addition serial protocols like DCP3, DCP4 and CANopen-Lift are supported.

- Flexible digital/analog interface
- Pre-settings for most common controllers simplifies setup
- Support of serial procolls DCP3, DCP4 and CANopen-Lift

Built-in LCD interface for simple setup and parameter handling

L1000A drives are shipped with a built-in LCD keypad with full text display in various languages. For easy use the keypad can be taken off the unit and connected using a standard RJ45 cable.

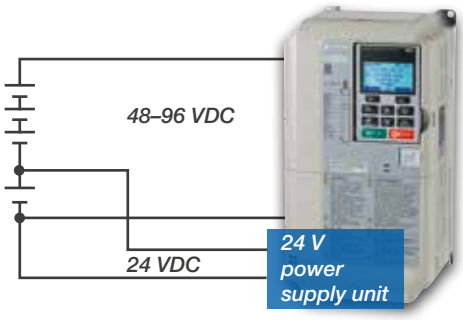
- 11 European languages (English, German, French, Spanish, Italian, Portuguese, Greek, Turkish, Polish, Czech, Russian)
- Clear text display in lift terminology and units (m/s, m/s^2, ...)
- Integrated backlight for good readability in dark environment
- Parameter copy function for easy setup of lift with the same configuration
- Removable from main unit, usable with extension cable

Evacuation with UPS or battery

L1000A provides several possibilities to evacuate trapped passengers quickly in case of a power outage. It can be used with an uninterruptable power supply (UPS) or batteries and an automatic light load search evacuates in the light load direction, allowing a “just fit” selection of the UPS or battery without a lot of oversizing.

- Single or three-phase 230 Vac UPS for 400 V drives
- 48 – 96 Vdc battery for main circuit with 24 Vdc supply of control circuit
- Automatic evacuation in light load direction

UPS wiring and operation

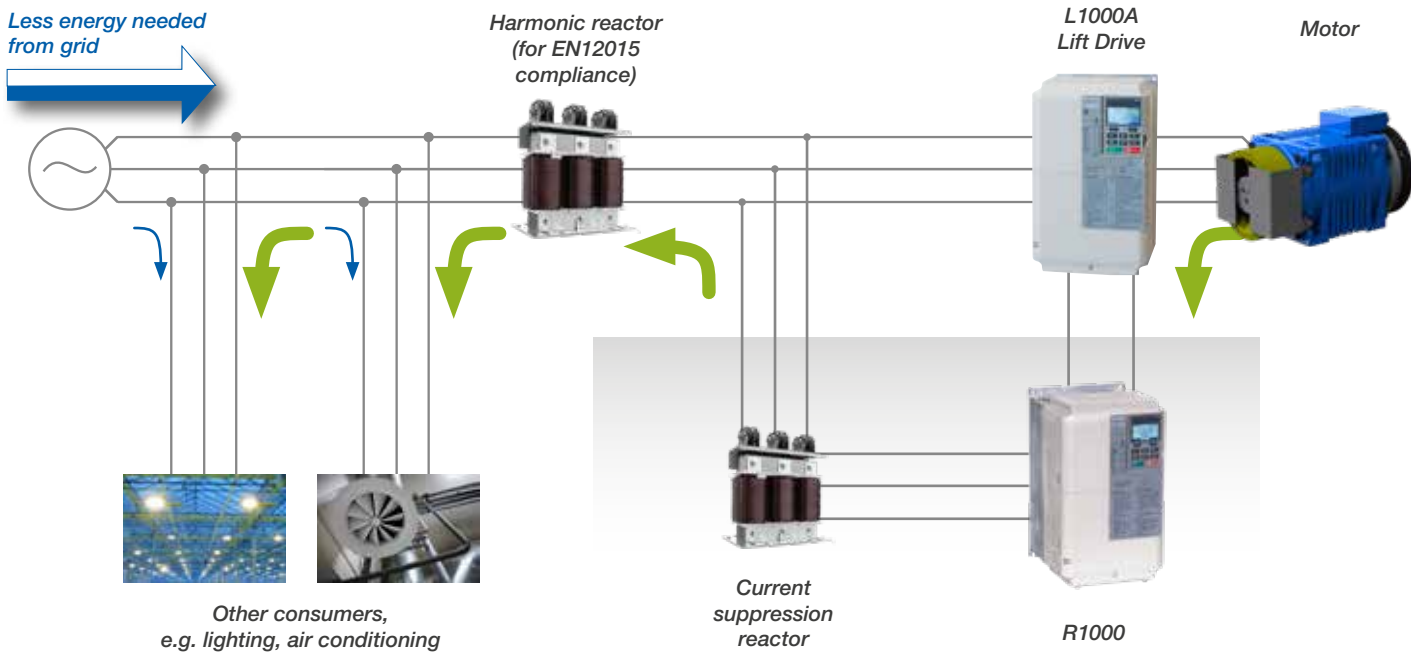


Back-up battery wiring and operation

*For clarity, the illustrations have been simplified, omitting several switches and control signals.

Smart combination

Together with the Yaskawa R1000 regenerative unit, the lift drive L1000A can be highly efficient, save installation room, reduce cooling efforts, and simplify hardware installation and maintenance.



Save energy with power regeneration

The R1000 avoids wasted energy by delivering it back to the power source for use by other loads. R1000 can flexibly be used to maximize efficiency of single- and multi-axis systems.

Economical dynamic braking

The R1000 provides the most economical way of dynamic braking by:

- Selection purely by braking power – R1000 can be smaller than the drive
- Less energy consumption from grid as other consumers in the same installation can use braking energy
- Less space and heat by removed braking choppers and resistors
- Reduced ventilation requirements by less heat emission

Flexible application

The R1000 can be used on single drives as well as in drives, servo or other systems that have an interconnected DC bus.

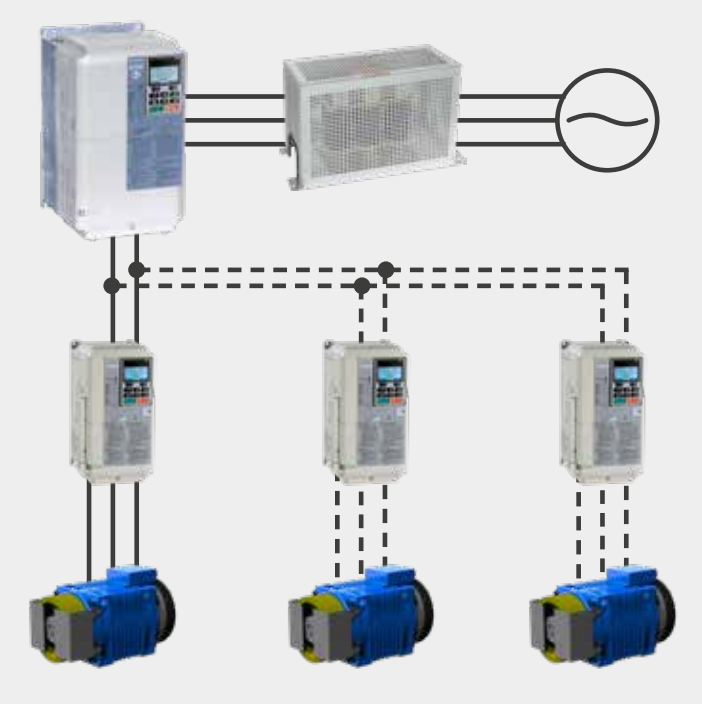
All compatible

The R1000 can work with all conventional drives having full power access to DC bus. By that it is the perfect match when planning energy efficient new installations but when upgrading existing installations.

Also available:

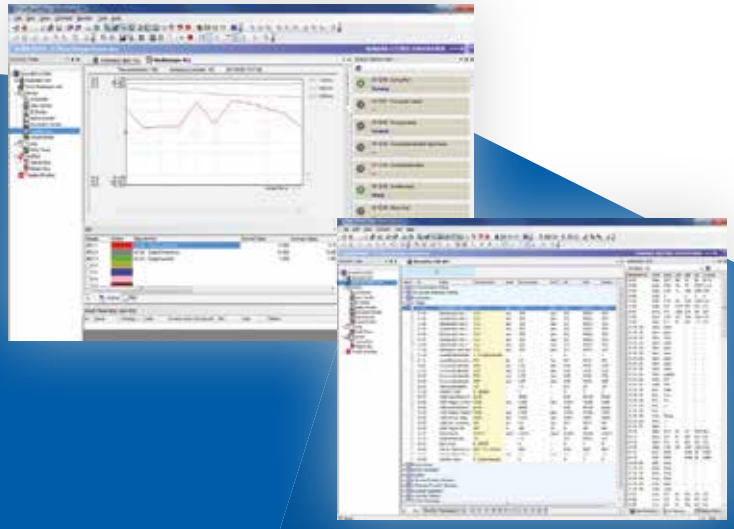
D1000 - Regenerative converter unit

The D1000 is a low harmonics power supply unit (THD-i < 5%) which can be used to supply several drives through DC bus connection. Additionally the braking energy can be fed back to the grid instead of wasting it in braking resistors.



DriveWizard Plus for easy engineering

Manage the unique settings for all your drives right on your PC. An indispensable tool for drive setup and maintenance. Edit parameters, access all monitors, create customized operation sequences, and observe drive performance with the oscilloscope function.



- All in one tool for parameter management, drive setup, monitoring, and fault diagnostics
- Convenient PC-based drive-setup, monitoring and diagnostic functions
- Built-in scope function
- Online and offline parameter editing

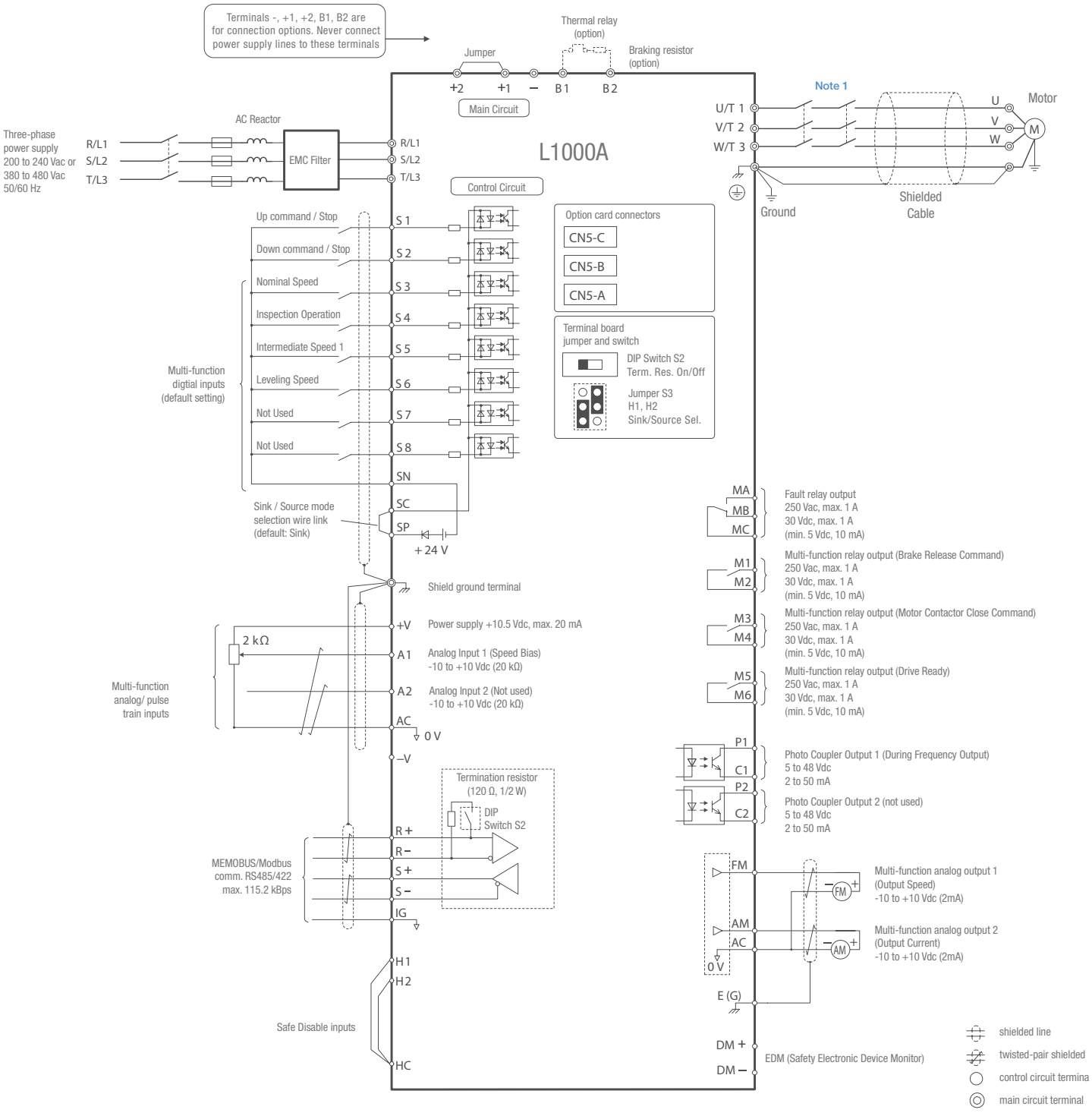
Specifications

Operating Environment	
Ambient temperature	-10 to +50 °C (IP20)
Storage temperature	-20 to +60 °C
Humidity	95 % RH or less (non-condensing)
Altitude	Up to 1000 meters (output derating required above 1000 m, max. 3000 m)
Vibration/Shock	10 Hz to 20 Hz, 9.8 m/s^2 max. 20 Hz to 55 Hz, 5.9 m/s^2 (200 V: 45 kW or more, 400 V: 55 kW or more) or 2.0 m/s^2 max. (200 V: 55 kW or less, 400 V: 75 kW or less)
Protection design	IP20 Open Type enclosure
Conformity / Standards	
Standards	CE, UL, cUL, RoHS
Functional safety	LC2A: STO (Safe Torque Off) according to EN ISO 13849-1, Cat. 3, PL d; IEC EN 61508 SiL2 LC4F: STO (Safe Torque Off) according to EN ISO 13849-1, Cat. 3, PL e; IEC EN 61508 SiL3
Power Ratings	
Overload capacity	150% for 1 minute
Rated voltage	LC2A: 200 to 240 Vac 50/60 Hz (-15% to +10%)
	LC4F: 380 to 480 Vac 50/60 Hz (-15% to +10%)
Rated input frequency	50/60 Hz ± 3%
Output frequency	0 - 200 Hz
Starting torque	150%/3 Hz (V/f Control), 200%/0.3 Hz (Open Loop Vector Control), 200%/0 r/min (Closed Loop Vector Control)
Braking transistors	Built-in up to 30 kW
Control / Programming	
Control inputs	8 digital (sink/source), 2 analog (current/voltage)
Control outputs	4 digital, 2 analog (current/voltage), 2 photocoupler
Operator	LCD with copy function for several parameter

Options

Options			Model code
Communication	CANopen-Lift (only for LC4F models)		SI-L3
Motor feedback	Incremental Encoder (Line Driver)		PG-X3
	Complimentary Encoder (HTL, Open-Collector)		PG-B3
	Resolver Interface for TS2640N321E64		PG-RT3
	Endat 2.1/2.2, HIPERFACE		PG-F3
	Heidenhain ERN1387 / ERN487		PG-E3
Input/Output	Analog Output: 2-channel, -/+10 V (11-bit signed)		AO-A3
	Digital Input: 16 Digital inputs, +24 V, at 8 mA each, sink or source, multi-function or frequency reference (16-bit binary or BCD)		DI-A3
	Digital Output: 6 photocoupler (48 V, 50 mA), 2 relay contacts (250 VAC/30 VDC, 1 A max.)		DO-A3
Other options	USB Copy Unit		JVOP-181
	IP65 Operator Mounting Frame		EUOP-V11001
	DriveWizard Plus		
	24 V Power Supply	400 V class	PS-A10HB
		200 V class	PS-A10LB
	LCD Operator Extension Cable	1 m	WV001
		3 m	WV003

Connection diagram



Note 1: The drive provides a STO (Safe Torque Off) function that allows operation with only one motor contactor or without motor contactors while keeping compliance with EN81-1/2 and EN81-20. For details refer to instruction manuals.

Technical Data

Model designation

CIMR-L C 4F 0015 B A A - _ _ _

Product Series
AC Drive L1000A

Region Code
C: Europe

Voltage Class
2A: 200 V 3-phase, standard
4F: 400 V 3-phase, SIL 3 STO built-in

Rated output current
See Ratings Table

Enclosure
B: IP20
C: IP20 with reduced bending space

Environmental Spec
A: Standard

Revision

Special Model
Blank: Standard
9130: Enhanced*

*Enhanced: DCP3 & 4 interface, CANopen-Lift, Brake Monitoring for protection against unintended car movement, Advanced Light Load Search, Output Phase Loss Protection

Data

200 - 240 VAC

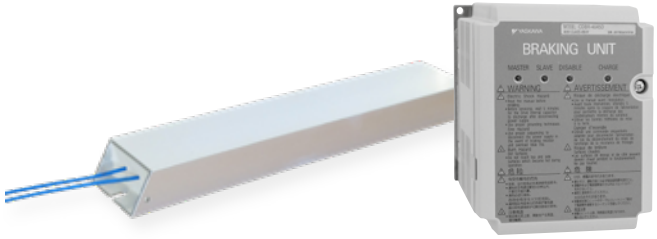
Catalog Code LC2A	Max Applicable Motor Power	Dimensions [mm]			Weight [kg]	EMC Filter	AC Input Reactor		Braking Resistor
	[kW]	H	W	D			IP 00	IP 20 Cover	
0008	1.5	260	140	147	3.2	FB-40014B	LR3 40-4/16	IP20-Box32	on request
0011	2.2								
0018	4.0			164	3.5	FB-40025B	LR3 40-4/20		RH-1560W40
0025	5.5			167	4.0	FB-40044B	LR3 40-4/45	IP20-Box35	
0033	7.5								RH-2700W025
0047	11	300	180	187	5.6	FB-40060A	LR3 40-4/70	IP20-Box37	
0060	15	350	220	197	8.7	FB-40072A			on request
0075	18.5	365			9.7	FB-40105A	LR3 40-4/90	IP20-Box39	
0085	22	534	254	258	23		LR3 40-4/115	IP20-Box41	
0115	30	614	279		28	FB-40170A			
0145	37	630	329	283	40		LR3 40-4/160		
0180	45						LR3 40-4/200		
0215	55	705	450	330	81	FB-40250A	LR3 40-4/250	IP20-Box44	
0283	75				86				
0346	90	800	500	350	105	FB-40414A	LR3 40-4/400		
0415	110								

EMC Filter & AC Input Reactor

EMC filters and AC reactors are installed at the input of the drive. They reduce conducted emission and harmonic distortion in order to maintain compliance with EMC standards such as the EN12015.

Braking Options

Braking options dissipate kinetic energy when moving in regenerative direction. Drives up to 30 kW have built-in braking transistors and must only be equipped with a braking resistor. Larger drives need an additional braking unit.



Data

380 - 480 VAC

Catalog Code LC4F	Max Applicable Motor Power	Dimensions [mm]			Weight [kg]	EMC Filter	AC Input Reactor		Braking Resistor
	[kW]	H	W	D			IP 00	IP 20 Cover	
0005	1.5	260	140	147	3.2	FB-40008B	B1103136	IP20-Box32	RH-1000W120
0006	2.2			164	3.4	FB-40014B			
0009	4.0				3.5				
0015	5.5			167	3.9	FB-40025B	B1103138	IP20-Box35	
0018	7.5								RH-1560W040
0024	11	300	180		5.4	FB-40044B	B1103139	IP20-Box36	RH-2700W025
0031	15			187	5.7		B1103140	IP20-Box37	RH-3700W025
0039	18.5	350	220	197	8.3	FB-40060A	B1103141	IP20-Box39	RH-4800W022
0045	22	465	254	258	23				RH-6000W022
0060	30	515	279		27	FB-40072A	B1103142		RH-7500W023
0075	37	630	329		39	FB-40105A			CDBR 4045B + RH9600W015
0091	45						B0910013	IP20-Box42	
0112	55	730		283	43	FB-40170A			2× (CDBR 4030B + RH6000W22)
0150	75				45		B1411053	on request	2× (CDBR 4045B + RH9600W15)
0180	90	705	450	330	85	FB-40250A			
0216	110	800	500	350	103		2× B0910013	2× IP20-Box42	3× (CDBR 4045B + RH9600W15)

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