

YASKAWA

LIFT INVERTER SERIES L1000A



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L1000A
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L1000A

For
Modernization
and
New Installation

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A Leader in Inverter Drives Technology
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Experience and Innovation

Since 1915 YASKAWA has manufactured and supplied products for machine building and industrial automation. Our standard products as well as tailor-made solutions are well known and have a high reputation for outstanding quality and reliability.

YASKAWA is the leading global manufacturer of inverter drives, servo drives, machine controllers, medium voltage inverters, and industrial robots.

We have always been a pioneer in motion control and drive technology, launching product innovations, which optimise the productivity and efficiency of both machines and systems.

Today we produce more than 1.8 million inverters per year. Considering this, YASKAWA is probably the biggest inverter manufacturer in the world.



Furthermore, with a yearly production of more than 800,000 servo motors and 20,000 robots we offer a wide range of products for drive automation processes in many different industries. YASKAWA technology is used in all fields of machine building and industrial automation.



Wherever You Are – Our Local Support is Near.



Employing more than 14,600 people worldwide

More than 1,350 employees in worldwide service network

More than 1,300 employees in Europe

Rise To The Top

YASKAWA L1000 lift drives are the solution to technical requirements of today's elevators. This inverter 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 assure a bump-free start also without load sensor, smooth speed transition and precise landing. The L1000A make a ride as comfortable as possible.



BRAKE MONITORING

The L1000A is available with an EN81-A3 compliant brake monitoring function which replaces external devices and thus reduces cost and wiring effort.



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 stand-still 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.



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.



FLEXIBLE CONTROLLER INTERFACE

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

* in preparation



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.

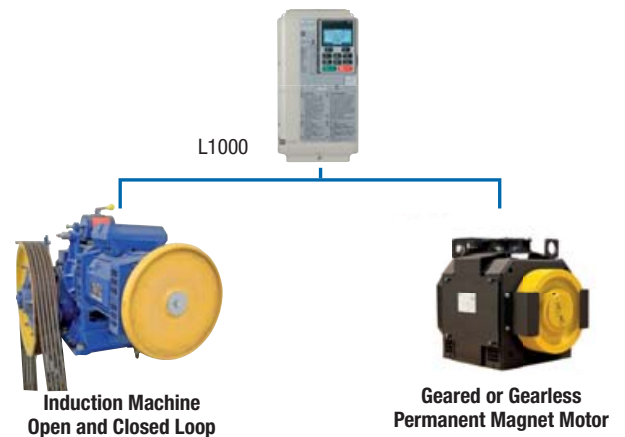


Benefits at a Glance

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.

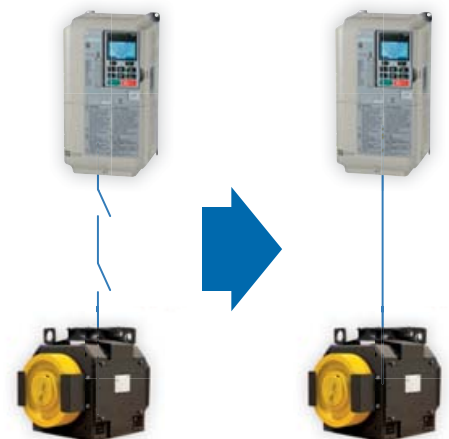
- ▶ Precisely controls induction and PM motors
- ▶ Allows usage of inexpensive incremental encoder with Interior PM motor control
- ▶ Easy tuning
- ▶ Smooth ride without bumps and roll-back
- ▶ Smooth start of gearless machines even without load sensor



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 EN81-1/2 and 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.

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 CANLift* are supported.

- ▶ Flexible digital/analogue interface
- ▶ Pre-settings for most common controllers simplifies setup
- ▶ Support of serial protocols DCP3, DCP4* and CANLift*

* in preparation



Built-in LCD Interface for Simple Setup and Parameter Handling



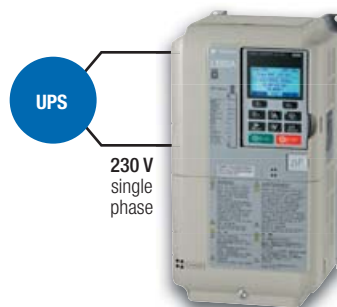
L1000A drives are shipped with a built-in LCD keypad with full text display in various languages. For easy use the keypad can be taken off the unit and connected using a standard RJ45 cable.

- ▶ 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/s², ...)
- ▶ 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

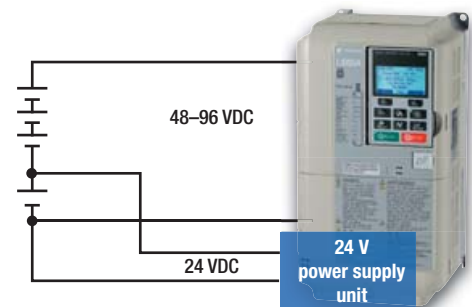
Evacuation with UPS or Battery

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 over sizing.

- ▶ 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.

Engineering Tools for YASKAWA Inverter Drives

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



Also Available from YASKAWA:

Tailored Motor-Drive Packages

With the combination of L1000A drives and MSYP series gearless lift motors YASKAWA offers packages for gearless lifts with loads up to 2500 kg and speeds up to 2 m/s. All component have been selected and adjusted to provide maximum ride comfort with minimum effort.



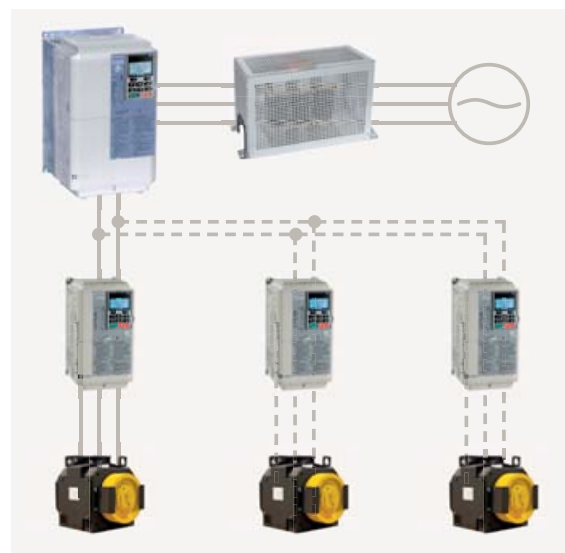
L1000V

The compact YASKAWA L1000V is the cost-effective solution for modernisations and new installation of lifts with open loop controlled geared motors. L1000V drives cover a power range from 4 to 15 kW. Reduced to the essentials, this drive combines easy setup, stable lift performance and a durable, solid design.

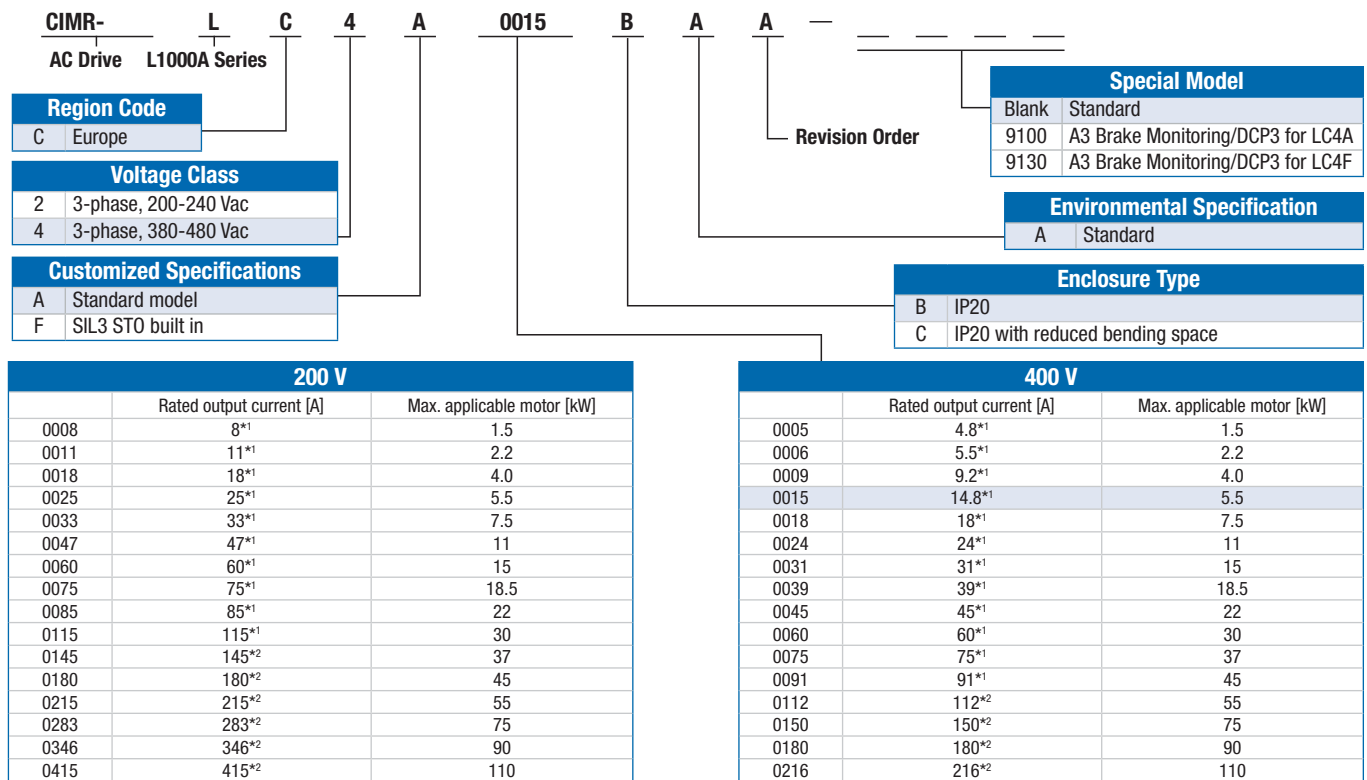


D1000 - Low Harmonics Regenerative Converter

With a D1000 converter braking energy can be fed back to the grid instead of wasting it in braking resistors. Especially for lifts with a high number of travels this is the solution to achieve maximum energy efficiency. The D1000 can be used for single and group lifts.



Model Number Keys for the L1000A Lift Inverter



*1: This value assumes a maximum carrier frequency of 8 kHz. Increasing the carrier frequency requires a reduction in current.
 *2: This value assumes a maximum carrier frequency of 5 kHz. Increasing the carrier frequency requires a reduction in current.

Specifications

Category	Specification	Value
Operating Environment	Ambient Temperature	-10 to +50 °C (open chassis), -10 to +40 °C (NEMA Type 1)
	Humidity	95% RH or less (non condensating)
	Storage Temperature	-20 to +60 °C (short-term temperature during transportation)
	Altitude	Up to 1000 meters (output derating required above 1000 m, max. 3000 m)
	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)
	Protective Design	IP20 Open Type enclosure
	Standards	CE, UL, cUL, RoHS
	Functional Safety	LC□A: STO (Safe Torque Off) according to EN ISO 13849-1, Cat. 3, PL d; IEC EN 61508 SiL2 LC□F: STO (Safe Torque Off) according to EN ISO 13849-1, Cat. 3, PL e; IEC EN 61508 SiL3*3
Power Ratings	Overload Capability	150% for 1 minute
	Rated Input Voltage	200 to 240 Vac 50/60 Hz (-15% to +10%), 380 to 480 Vac 50/60 Hz (-15% to +10%)
	Rated Input Frequency	50/60 Hz ± 3%
	Input Power Factor	min. 0.98 (for rated operation)
	Output Frequency Range	0 - 120 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 Transistor	Built-in up to 30 kW

*3: Available for 400 V models only

Options & Accessories

	Item	Description	Model Code	
Input / Output	▶ Analog Output	2 channel analog output option -10 to +10 VDC (Res. 1/2048)	AO-A3	
	▶ Digital Output	8 channel digital output option 6 photo couplers (48 V, 50 mA or less), 2 relay contact outputs max 250 Vac/30 Vdc, 1 A	DO-A3	
	▶ Digital Input	1 channel digital input option 16 bit binary, 2 digit BCD + sign signal + set signal, +24 V (isolated), 8 mA	DI-A3	
	Item	Description	Model Code	
Communi- cation	▶ Communication Interface Unit	CANopen	SI-S3	
	Item	Description	Model Code	
Motor Speed Feedback	▶ Open Collector Type	Phase A, B, and Z pulse (complementary type), max. 50 kHz	PG-B3	
	▶ Line Driver Type	Phase A, B, and Z pulse (differential pulse) (RS-422), max. 300 kHz, pulse monitor output	PG-X3	
	▶ Endat / Hiperface	Endat 2.1/2.2, HIPERFACE	PG-F3	
	▶ Heidenhain sin/cos	Heidenhain ERN1387 / ERN487	PG-E3	
	▶ Resolver	Resolver	PG-RT3	
	Item	Description	Model Code	
Others	▶ USB Copy Unit	USB converter for PC Tool usage and copy unit for easy parameter setup duplication and backup in one	JVOP-181	
	▶ IP65 Operator Mounting Frame	Provides a simple way of installing the LCD Remote Operator of the drive on a cabinet wall or door	EUOP-V11001	
	▶ DriveWizard Plus	Software used for parametrization		
	▶ 24 V Power Supply	Provides power supply for the control circuit and option boards when main circuit power is off	400 V class	PS-A10HB
			200 V class	PS-A10LB
▶ LCD Operator Extension Cable	Cable for connecting the LCD operator	WV001: 1 m WV003: 3 m		

EMC and Braking Options

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.



400 V Class

Model CIMR-LC4□ □□□□	Standard EMC Filter	AC Input Reactor		Braking Unit	Braking Resistor
		IP00	IP20	CDBR	
0005	FB-4008A	B 1103136	B 0903088	built in	-
0006	FB-40014A				
0009					
0015	FB-40025A	B 1103138	B 0903089		RH-1000W120
0018					RH-1560W040
0024	FB-40044A	B 1103139	B 0903090		RH-2700W025
0031		B 1103140	B 0903091		RH-3700W025
0039	FB-40060A	B 1103141	B 0910014		RH-4800W022
0045					RH-4800W022
0060	FB-40072A	B 1103142	B 0910016		RH-6000W022
0075	FB-40105A	B 1103142	B 0910016	4045D	RH-9600W015
0091		B 0910013	B 0910018		
0112	FB-40170A	B 0910013	B 0910018	2× 4030D	2× RH-6000W022
0150					
0180					
0216	FB-40250A	-	-	-	-

200 V Class

Model CIMR-LC2A □□□□	Standard EMC Filter	AC Input Reactor		Braking Unit CDBR
		IP00	IP20	
0008	FB-40014A	LR3 40-4/16	LR3 40-4/16-IP20	-
0011				
0018	FB-40025A	LR3 40-4/20	LR3 40-4/20-IP20	
0025	FB-40060A	LR3 40-4/45	LR3 40-4/45-IP20	
0033				
0047		LR3 40-4/70	LR3 40-4/70-IP20	
0060	FB-40072A	LR3 40-4/90	LR3 40-4/90-IP20	
0075	FB-40105A			
0085	FB-40170A	LR3 40-4/115	LR3 40-4/115-IP20	
0115				
0145		LR3 40-4/160	LR3 40-4/160-IP20	
0180	FB-40250A	LR3 40-4/200	LR3 40-4/200-IP20	2037D
0215				2× 2022D
0283	FB-40414A	LR3 40-4/250	LR3 40-4/250-IP20	-
0346				
0415	FB-40675A	LR3 40-4/400	LR3 40-4/400-IP20	

L1000 Dimensions and Weights

IP20*

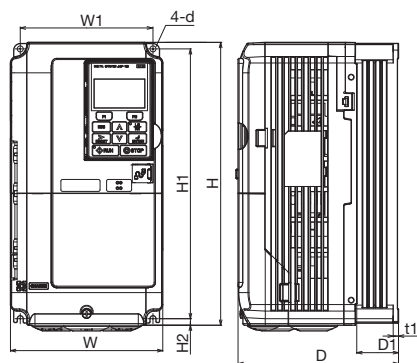


Fig. 1

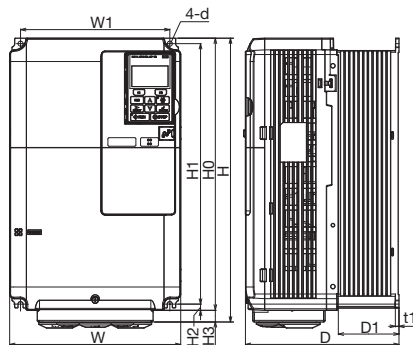


Fig. 2

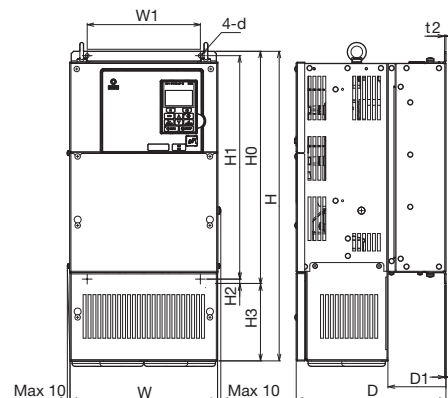


Fig. 3

400 V Class

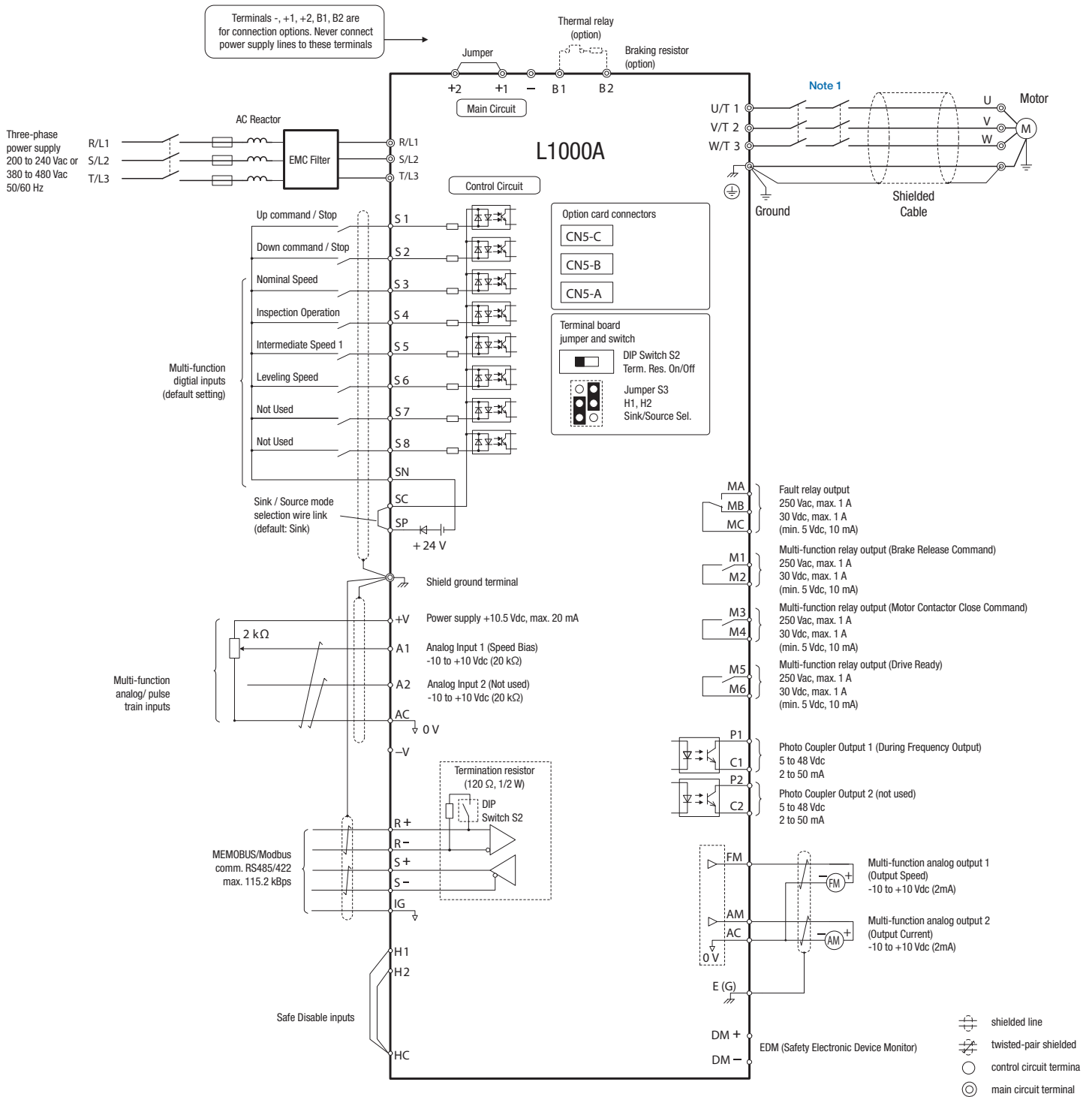
Model CIMR-LC4□□□□	Max. applicable motor capacity [kW]	Fig.	IP20	Dimensions [mm]												Weight [kg]					
				W	H	D	W1	H0	H1	H2	H3	D1	t1	t2	d						
0005	1.5	Fig. 1	●	140	260	147	122	-	248	6	-	-	38	5	-	M5	3.2				
0006	2.2					164							55				3.4				
0009	4.0					167							55				3.5				
0015	5.5			Fig. 3	●	180	300	187	160	-	284	8	-	-	75	2.3	M6	5.4			
0031	15							187							78			5.7			
0039	18.5							220							350			197	192	350	335
0045	22					254	465	258	195	400	385	7.5	65	100	-	-	-	-	-	23	
0060	30					279	515	258	220	450	435										120
0075	37					Fig. 3	❖	329	630	258	260	510	495	7.5	120	105	2.3	-	-	-	39
0091	45																				
0112	55	450	705	330	325			705	680	12.5	163	130	3.2	M10	-	-	-	85			
0150	75																		500	800	350

200 V Class

Model CIMR-LC2A□□□□	Max. applicable motor capacity [kW]	Fig.	IP20	Dimensions [mm]												Weight [kg]																
				W	H	D	W1	H0	H1	H2	H3	D1	t1	t2	d																	
0008	1.5	Fig. 1	●	140	260	147	122	-	248	6	-	-	38	5	-	M5	3.2															
0011	2.2					164							55				3.5															
0018	4.0					167							55				4.0															
0025	5.5			Fig. 2	●	180	300	187	160	-	284	8	-	-	75	2.3	M6	5.6														
0060	15	220	350					197							192			350	335	8	15	78	8.7									
0075	18.5	220	365					197							192			350	335	8	15	78	9.7									
0085	22	Fig. 3	❖			254	534	258	195	400	385	7.5	134	100	2.3	2.3	-	-	23													
0115	30																			279	614	258	220	450	435	164	100	28				
0145	37					Fig. 3	❖	329	630	283	260	550	535	7.5	80	110	2.3	2.3	-	-	40											
0180	45																					450	705	330	325	705	680	12.5	163	130	3.2	3.2
0215	55	500	800	350	370																											

Note: * with reduced bending space
 ● IP20 compliant standard enclosure
 ❖ IP20 compliant enclosure with reduced bending space

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.



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