

# FRENIC-Lift

## LM2C



# **FRENIC-Lift**

**LM2C: Excellent price-performance ratio  
for everyday lift applications**



# The new version of LM2: LM2C

## Small, smart, economic.



Combine the most important features of our bestseller FRENIC-Lift with the demand of elementary elevator applications - and get our new FRENIC-Lift LM2C.

Cost efficiency and basic structures, not more, not less. This inverter gets to the point:

**Simple application = simple solution.**

*Save energy to support Green Building.*

*Your economic solution for sustainability.*



## Benefits

*The economic version of FRENIC-Lift keeps all basic necessary options and functions. For uncomplicated lift applications, here's all you need.*

### Book type shape

- Side mounting:
- Install the inverter in the most convenient way depending on space limitations (e.g. door frames).
- Removable power terminals: Easier and faster installation by pre-wiring thanks to removable power terminals.
- IP 54 heatsink:
- Stronger IP level allows feed through mounting for heat-sink, making cabinet design smaller and cheaper for shaft installation.



### Different energy saving modes

Following the standards and directives for saving energy (ISO 25745), different saving energy modes are available. Put the inverter to sleep mode by activating a digital input. Charging circuits are highly robust and allow high number of power ups per hour.

### Certified functional safety functions according to EN81-20 for an easier installation

- Contactorless: Needless of the two motor contactors between inverter and motor (Pollution Degree 3)
- Brake monitoring function for UCM

### Connected to the world

CANopen, DCP and Modbus RTU are available thanks to the 3 built-in communication ports.

### Stronger coating

New coating makes PCB stronger against humidity and dust. Robustness for lift shaft environments.

### Easy rescue operation

Rescue operation available by means of UPS or batteries. Thanks to the new 24VDC input, rescue can be performed from 48 VDC only. Software functions help as well to optimize UPS or batteries sizing by choosing the most favourable rescue direction.

### Able to control any induction motor

FRENIC-Lift is able to control any induction motor in the market.

### Customizable logic capability

Customize your own functions with the built-in PLC function. Easily program your PLC via loader software. Create up to 200 steps program (macro steps / function blocks).

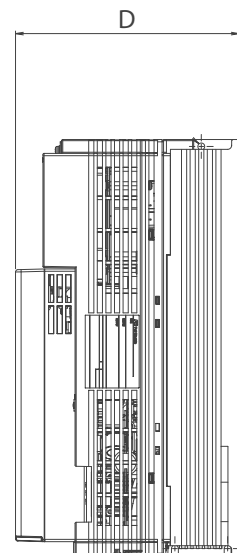
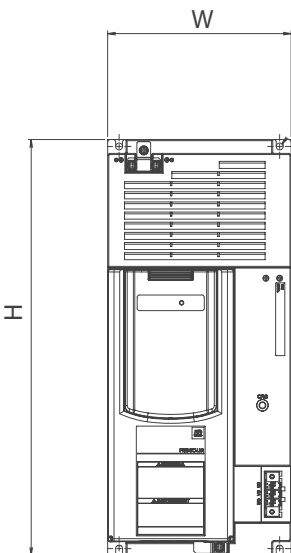
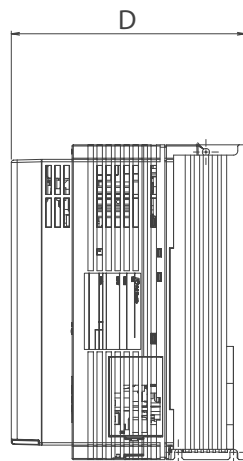
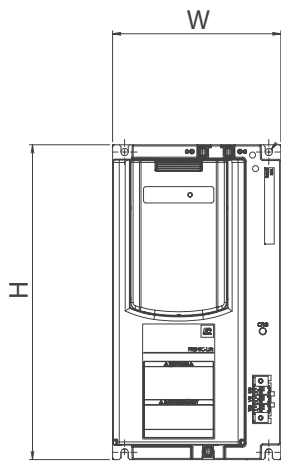
## TYPE CODE



## Dimensions

### External Dimensions LM2C

Type	W (mm)	H (mm)	D (mm)
FRN0010LM2C-4E	140	260	195
FRN0015LM2C-4E			
FRN0019LM2C-4E			
FRN0025LM2C-4E			
FRN0032LM2C-4E	160	360	195



## Conformity Standards

### Lift Directive

Replacement of two motor contactors: interrupting the current to the motor (to stop the machine), as required by EN 81-20 (Pollution Degree 3)

Brake monitoring for EN 81-20

Travel direction change counter for lifts with belt or coated ropes

### Machinery Directive

- EN ISO13849-1: PL-e
- EN60204-1: Stop category 0
- EN61800-5-2: STO SIL3
- EN62061: SIL3

### Low Voltage Directive

- EN61800-5-1: Over voltage category 3

### EMC Directive

- EN12015, EN12016, EN 61800-3, EN 61326-3-1 (with external EMC filter)  
(Emission) Category 2 (0025 (11kW) or lower)  
Category 3 (0032 (15kW) or higher)
- (Immunity) 2<sup>nd</sup> environment

### Canadian and U.S. standards

- CSA C22.2 No.274-13: Adjustable speed drives
- UL 508 C (3rd Edition): Power Conversion Equipment
- According to CSA B44.1-11/ASME A17.5-2014: Elevator and escalator electrical equipment

FRN0010LM2C-4E to  
FRN0025LM2C-4E

FRN0032LM2C-4E

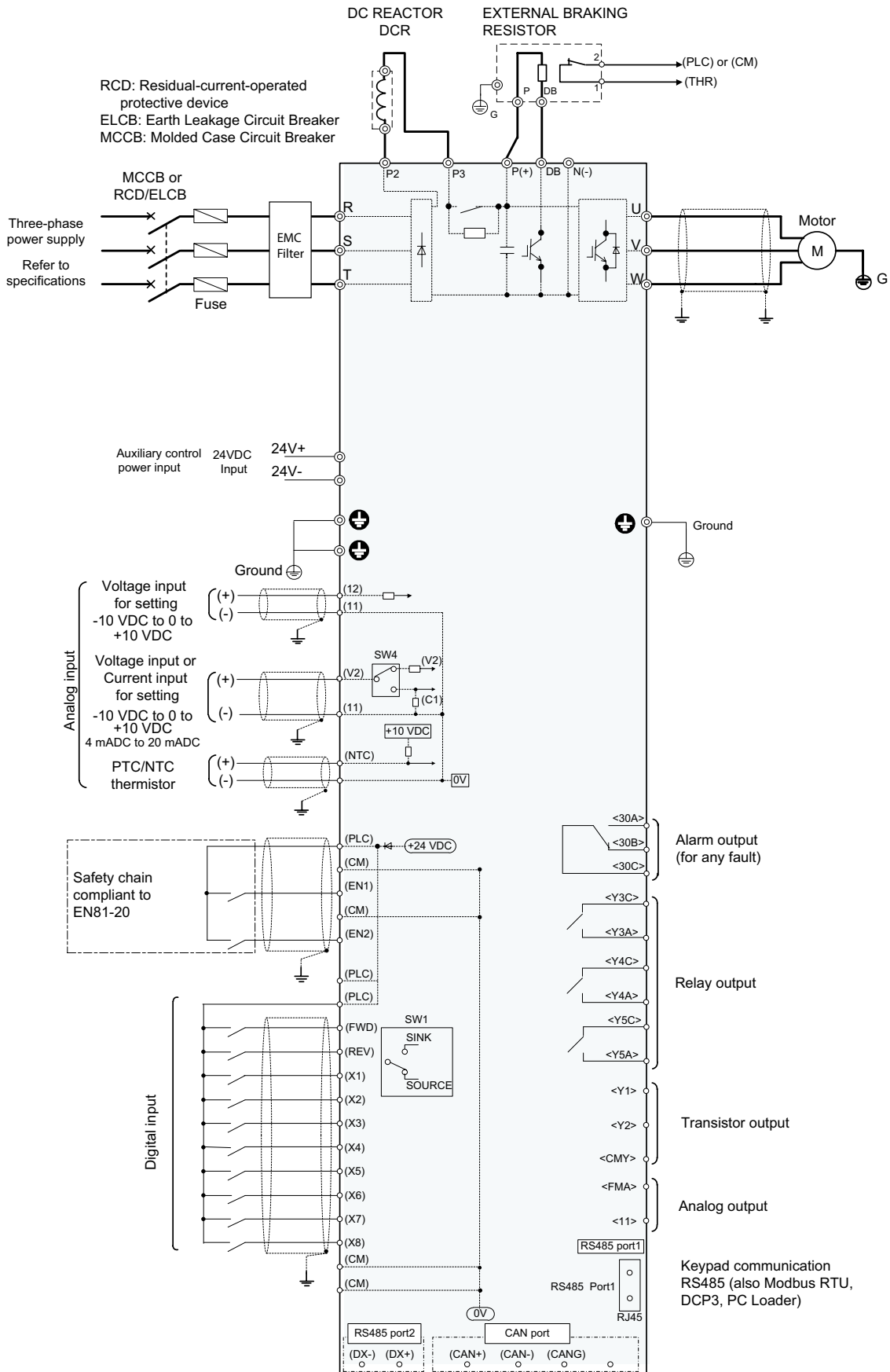
Specifications

Item		3-phase 400 V					3-phase 230 V <span style="color: blue; font-weight: bold;">NEW</span>					
Type FRN_LM2C-4E		0010	0015	0019	0025	0032	0015	0019	0025	0032		
Nominal applied motor [kW]		4.0	5.5	7.5	11	15	3.0	4.0	5.5	7.5		
Output ratings	Rated capacity <sup>1</sup> [kVA]	7.6	11	14	18	24	6.0	7.4	9.8	12.7		
	Rated voltage <sup>2</sup> [V]	3-phase 380 to 480 VAC					3-phase 220 to 230 VAC					
	Rated current <sup>3</sup> [A]	10.0	15.0	18.5	21.4 (24.5) <sup>8</sup>	32.0	15.0	18.5	21.4 (24.5) <sup>8</sup>	32.0		
	Overload capacity [A] (Permissible overload time)	18.0 (3s)	27.0 (3s)	33.3 (3s)	44.1 (3s)	57.6 (3s)	27.0 (3s)	33.3 (3s)	44.1 (3s)	57.6 (3s)		
	Rated frequency [Hz]	50, 60 Hz										
Input ratings	Main power supply	Normal operation	Phases, Voltage, Frequency		3-phase 380 to 480 VAC, 50/60 Hz			3-phase 230 VAC, 50/60 Hz				
			Variations: Voltage: +10 to -15% (Voltage unbalance: 2% or less <sup>4</sup> ), Frequency: +5 to -5%		Variations: Voltage: +10 to -10% (Voltage unbalance: 2% or less <sup>4</sup> ), Frequency: +5 to -5%							
		Rated current <sup>5</sup> [A]	with DCR	7.5	10.6	14.4	21.1	28.8	10.6	14.4	21.1	28.8
			without DCR	13	17.3	23.2	33.0	43.8	17.3	23.2	31.5	42.7
	Required power supply capacity (with DCR) [kVA]		5.2	7.4	10	15	20	4.2	5.7	8.4	11.5	
	UPS operation	Input power for driving Phases, Voltage, Frequency		1-phase 220 to 480 VAC, 50/60 Hz			1-phase 220 to 240 VAC, 50/60 Hz					
		Variations: Voltage: +10 to -10%, Frequency: +5 to -5%										
		Operation time [s]		180								
	Battery operation	Input power for driving Voltage		48 VDC or more in the direct current voltage conversion								
		Operation time [s]		180								
Aux. control power Voltage		24 VDC (22 to 32 VDC), Maximum 40 W <sup>9</sup>										
Braking	Braking time <sup>7</sup> [s]		60									
	Braking duty-cycle (%ED) <sup>7</sup> [%]		50									
	Rated regenerative power <sup>7</sup> [kW]		3.2	4.4	6.0	8.8	12	2.4	3.2	4.4	6.0	
	Minimum resistance [Ω] <sup>6</sup>		96	47	47	24	24	24	24	16	12	
Enclosure (IEC60529)		IP20										
Cooling method		Heat sink: IP54										
Cooling method		Fan cooling										
Average power losses [W] in standstill <sup>10</sup>		23			26	23			26			
Average power losses [W] in standby <sup>11</sup>		16					-					
Weight/Mass [kg]		4.1	4.1	4.4	4.4	5.6	4.1	4.4	4.4	5.6		

\*1) In case of 3ph 400 V: Rated capacity is calculated by regarding the output rated voltage as 440 VAC.  
In case of 3ph 230 V: Rated capacity is calculated by regarding the output rated voltage as 230 VAC.  
\*2) Output voltage cannot exceed the power supply voltage.  
\*3) These values correspond to the following conditions: carrier frequency is 8 kHz (2 phase modulation) and ambient temperature is 45°C. Select the inverter capacity such that the square average current during operation is not higher than the 80% of the rated current of the inverter.  
\*4) Voltage unbalance [%] = (Max.voltage [V] - Min.voltage [V]) / Three-phase average voltage [V] x 67 (IEC61800-3). This is for 3ph 400 VAC and 3ph 200 VAC.  
\*5) The power supply capacity is 500 kVA (ten times the inverter capacity when the inverter capacity exceeds 50kVA), and the value of the power supply impedance is %X=5%.

\*6) The admissible error of minimum resistance is ±5%.  
\*7) Braking time and duty cycle (%ED) are defined by cycle operation at the rated regenerative power.  
\*8) Rated current is for 45°C, rated current in brackets corresponds to ambient temperature of 40°C.  
\*9) Only for rescue operation. Do not use during normal operation.  
\*10) Standstill means STBY function is not activated, cooling fan and output of inverter are stopped, inverter is supplied by means of normal power supply (L1/L2/L3).  
\*11) Standby means STBY function is activated, cooling fan and output of inverter are stopped, inverter is supplied by means of auxiliary power supply (15kW or less: +24VDC).

## Basic Wiring Diagrams



## Options

*Extra options are available to fulfill your specific requirements such as user friendly LCD keypad and dual mounting attachment to save your cabinet space.*

## Options LM2C

**EMC Filter**

External EMC filter compliant to EN12015 available.

**DC Reactor**

Compliant to EN12015 harmonic levels. More compact. Reduces input current.

**Braking Resistor**

Burns regenerated energy when the lift is in braking mode. Different braking resistors available according to lift speed and traffic.

**DA-LM2**

Keypad adapter for side mounting installation. Includes cable. Depending on the attachment, width and height will change.

**TP-A1-LM2**

Advanced LCD keypad. Intuitive and user friendly menu. Monitoring and maintenance information. Up to 3 inverter settings can be recorded in internal memory. Different speed units selectable (rpm, Hz, mm/s). Available in different languages: English, German, French, Spanish, Italian, Dutch, Russian, Greek, Turkish, Polish, Czech, Swedish, Portuguese, Chinese, Japanese and user customized language.

**TP-E1U**

Basic keypad with 7-segment display. Mini-USB connector included for a direct communication between FRENIC-Lift and PC loader software.

**PC Loader Software**

Free software for monitoring and programming FRENIC-Lift. Oscilloscope function available. Includes an application to program built-in PLC. Download for free:  
[www.fujielectric-europe.com](http://www.fujielectric-europe.com)

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