

- Digital inputs and outputs
- Analog inputs and outputs
- Communication interfaces
- Data storage with clock-calendar
- Communication devices and cables to connect LOVATO Electric products to personal computers, smartphones and tablets
- Gateway data logger.

Expansion modules

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EXP SERIES EXPANSION MODULES

- For flush-mount products
- Digital inputs and outputs
- Analog inputs and outputs
- Inputs for PT100 sensors
- Communication modules (RS232, RS485, Ethernet, etc.)
- GSM/GPRS modem
- Data storage with clock-calendar (RTC)
- Powered directly by the base product
- Automatic identification by base product
- Tropicalized versions.



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EXM SERIES EXPANSION MODULES

- For modular products.
- Digital inputs and outputs
- Communication modules (RS232, RS485, Ethernet, etc.)
- Data storage with clock-calendar (RTC)
- Separate auxiliary power supply
- Base product connection by IR port
- Automatic identification by base product.



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ACCESSORIES

- Communication devices
- Remote display unit
- Converters
- Gateway
- Remote control and monitoring GSM modem via SMS
- Protective cover
- Connecting cable.

Expansion modules for flush-mount products



EXP10...

Order code	Description	Qty per pkg	Wt
		n°	[kg]
Inputs and outputs.			
EXP1000	4 digital inputs, opto-isolated	1	0.060
EXP1001	4 static outputs, opto-isolated	1	0.054
EXP1002	2 digital inputs and 2 static outputs, opto-isolated	1	0.058
EXP1003	2 relay outputs, rated 5A 250VAC	1	0.050
EXP1004 EXP1004T Ⓢ	2 analog inputs, opto-isolated 0/4...20mA or PT100 or 0...10V or 0...±5V	1	0.056
EXP1005	2 analog outputs, opto-isolated 0/4...20mA, 0-10V or 0...±5V	1	0.064
EXP1006	2 relay outputs to increase number of steps	1	0.064
EXP1007	3 relay outputs to increase number of steps	1	0.085
EXP1008 EXP1008T Ⓢ	2 opto-isolated digital inputs and 2 relay outputs rated 5A 250VAC	1	0.058
EXP1040	2 digital/resistive inp. 2 static out.	1	0.054
EXP1041	2 thermocouple inp. 2 static out.	1	0.054
EXP1042T Ⓢ	6 digital inputs	1	0.054
EXP1043T Ⓢ	4 digital inputs and 2 static outputs	1	0.054
Communication ports.			
EXP1010	Opto-isolated USB interface	1	0.060
EXP1011	Opto-isolated RS232 interface	1	0.040
EXP1012 EXP1012T Ⓢ	Opto-isolated RS485 interface	1	0.050
EXP1013 EXP1013T Ⓢ	Opto-isolated Ethernet interface	1	0.060
EXP1014	Opto-isolated Profibus-DP interface	1	0.080
EXP1018 Ⓢ	IEC/EN/BS 61850 interface	1	0.060
Various functionalities.			
EXP1015	GPRS/GSM modem	1	0.080
EXP1016	Capacitor bank protection	1	0.080
EXP1030	Data storage, clock-calendar	1	0.050

Ⓢ IEC/EN/BS 61850 protocol

The module will be made available only when the competent authorities have established the exact terms of the supervision and control of the specific commands (at the time of catalogue printing, currently under study as specified in the Italian CEI 0-16 and CEI 0-21 standards).

Ⓢ PCB tropicalized.

EXP series compatibility with LOVATO Electric products

TYPE	IP	DIGITAL MULTIMETERS			AUTOMATIC POWER FACTOR CONTROLLERS			AUTOMATIC TRANSFER SWITCH CONTROLLERS		FIRE PUMP CONTROLLERS		ENGINE AND GENERATOR CONTROLLERS		
	PMVF20 PMVF30	DMG6...	DMG7000 DMG7500 DMG8000 DMG9000		DCRL3/5	DCRL8	DCRG8	ATL610	ATL800/900	FFL800...	FFLRA400	RGK4...	RGK610	RGK750 RGK8... RGK9...
EXP1000		●	●				●	●	●		●			●
EXP1001		●	●				●	●	●		●			●
EXP1002		●	●				●	●	●		●			●
EXP1003	●	●	●	●	●	●	●	●	●		●			●
EXP1004...			●				●		●	EXP1004T				● (no RGK750)
EXP1005			●				●		●					● (no RGK750)
EXP1006				●	●	●	●	●	●					
EXP1007				●	●	●	●	●	●					
EXP1008...		●	●				●		●	EXP1008T	●			●
EXP1010	●	●	●	●	●	●	●	●	●		●		●	●
EXP1011	●	●	●	●	●	●	●	●	●		●		●	●
EXP1012...	●	●	●	●	●	●	●	●	●	EXP1012T	●		●	●
EXP1013...	●	●	●	●	●	●	●	●	●	EXP1013T	●			●
EXP1014			●				●		●					
EXP1015							●		●	●	●			●
EXP1016							●							
EXP1018	●													
EXP1030							●							
EXP1040												●		
EXP1041														●
EXP1042T										●	●		●	●
EXP1043T										●	●	●	●	●
Max n° of	2	1	3	1	2	4	2	2	3	2	2	1	1	2/3/4

General characteristics

EXP series expansion modules can increase the functionality of the LOVATO Electric products, such as:

- Digital inputs
- Relay outputs
- Static outputs
- Analog inputs
- Inputs for PT100 temperature sensor
- Thermocouple inputs "J" or "K" types
- Analog outputs
- Communication interface
- GPRS/GSM modem (without antenna, see page 31-4)
- Data storage.
- Powered directly by the base product
- Automatic identification by the base product
- Rear base product mounting with no need of tools
- **T suffixed versions have tropicalized PCB.**

Certifications and compliance

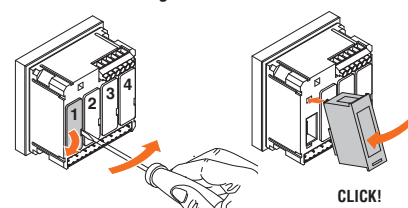
Certifications obtained: UL Listed, for USA and Canada (cULus File E93601), as Listed Accessory under Auxiliary Devices; EXP1018 excluded, EAC.

Compliant with standards:

- For EXP1018: IEC/EN/BS 61850 and Italian CEI 0-16, CEI 0-21
- For EXP1004, EXP1010 and EXP1013: IEC/EN/BS 61010-1, IEC/EN/BS 61000-6-2, IEC/EN/BS 61000-6-4, UL508, CSA C22.2 n° 14
- For EXP1015: IEC/EN/BS 61010-1, IEC/EN/BS 62311, ETSI EN 301 489-1, ETSI EN 301 469-7, EN 301 511, USA/FCC 47 CFR part 15, Subpart B, CAN/ICES-003
- For all other types: IEC/EN/BS 61010-1, IEC/EN/BS 61000-6-2, IEC/EN/BS 61000-6-3, UL508, CSA C22.2 n° 14.

For overall dimensions, wiring diagrams and technical characteristics, consult the technical instructions in Downloads of the local or global websites; see details on inside front cover.

Expansion module fixing



Expansion modules for modular products



EXM1000



EXM1010

Order code	Description	Qty per pkg n°	Wt [kg]
Inputs and outputs.			
EXM1000	2 digital inputs and 2 static outputs, opto-isolated	1	0.137
EXM1001	2 digital inputs, opto-isolated and 2 relay outputs, rated 5A 250VAC	1	0.147
EXM1002	4 opto-isolated digital inputs and 2 relay outputs rated 5A 250VAC	1	0.155
Communication ports.			
EXM1010	Opto-isolated USB interface	1	0.140
EXM1011	Opto-isolated RS232 interface	1	0.125
EXM1012	Opto-isolated RS485 interface	1	0.140
EXM1013	Opto-isolated Ethernet interface	1	0.140
EXM1018	IEC/EN/BS 61850 interface	1	0.140
EXM1020	Opto-isolated RS485 interface and 2 relay outputs, rated 5A 250VAC	1	0.140
EXM1030	Data storage, RTC with backup reserve energy for data logging	1	0.140

❶ IEC/EN/BS 61850 protocol

The module will be made available only when the competent authorities have established the exact terms of the supervision and control of the specific commands (at the time of catalogue printing, currently under study as specified in the Italian CEI 0-21 standard).

General characteristics

EXM series expansion modules can increase functionality of LOVATO Electric products, such as:

- Digital inputs
- Relay outputs
- Static outputs
- Communication interfaces
- Data storage.
- Connection to base product by IR (infrared beam) port
- Automatic identification by the base product
- Side base product mounting
- Auxiliary power supply: 100-240VAC 50/60Hz.

Certifications and compliance

Certifications obtained: UL Listed, for USA and Canada (cULus File E93601), as Listed Accessory under Auxiliary Devices; EXM10 18 excluded, EAC.

Compliant with standards:

- For EXM1018: IEC/EN/BS 61850 and Italian CEI 0-21
- For EXM1012, 1020, 1013: IEC/EN/BS 61010-1, IEC/EN/BS 61000-6-2, IEC/EN/BS 61000-6-4, UL 508, CSA C22.2 n° 14
- For all other types: IEC/EN/BS 61010-1, IEC/EN/BS 61000-6-2, IEC/EN/BS 61000-6-3, UL508, CSA C22.2 n° 14.

For overall dimensions, wiring diagrams and technical characteristics, consult technical instructions online in Downloads of the local or global website; see details on inside front cover.

Expansion module fixing



CLICK!

EXM series compatibility with LOVATO Electric products

	INTERFACE PRO. SYSTEM UNITS PMVF51/60/70/80	ENERGY METER DMED310T2	DATA CONCENTRATOR DMECD	DIGITAL MULTIMETER DMG300
EXM1000		●	●	●
EXM1001	●	●	●	●
EXM1002			●	●
EXM1010	●	●	●	●
EXM1011	●	●	●	●
EXM1012	●	●	●	●
EXM1013	●	●	●	●
EXM1018	●			
EXM1020		●	●	●
EXM1030		●	●	●
Max n° of modules addable	2	3	3	3

Communication devices



CX01



CX02



CX03

Order code	Description	Qty per pkg	Wt
		n°	[kg]
CX01	PC ↔ LOVATO Electric device, with USB optic connector for programming, data download, diagnostics and firmware upgrade	1	0.090
CX02	PC ↔ LOVATO Electric device Wi-Fi device for programming, data download, diagnostics and firmware upgrade	1	0.090
CX03	GSM penta-band (850/900/1800/1900/2100MHz)	1	0.090



General characteristics

Communication devices to link LOVATO Electric products to:

- Personal computers (PC)
- Smartphones
- Tablets.

CX01

This USB/optical device, complete with cable, allows to connect compatible LOVATO Electric products with a PC without having to disconnect the power supply from the electric panel.

The PC identifies the connection as a standard USB.

CX02

This Wi-Fi point connection lets LOVATO Electric products be viewed by a PC, smartphone and tablet without having to connect cables.

CX03

Antenna compatible with major part of worldwide mobile networks, thanks to the 850/900/1800/1900/2100MHz frequencies.

IEC degree of protection: IP67. Fixing by Ø10mm/0.39" drilling. Cable length 2.5m/2.73yd.

Compliance for CX02

Compliant with standards: EN/BS 60950-1, EN 62311, EN 301 489-1 V2.2.0, EN 301 489-17 V3.2.0, EN300 328 V2.1.1.

Remote display unit



EXCRDU1

Order code	Description	Qty per pkg	Wt
		n°	[kg]
EXCRDU1	Remote display unit, graphic LCD, touchscreen 128x112 pixels, IP65 protection NEMA 4X. Compatible with ADXL... soft starter and VLB3... variable speed drives. Cable length 3m/10ft	1	0.360

General characteristics

Alarm conditions can be viewed on the remote display and alarm silencing can also be activated.

- Dual 100...240VAC / 12...24VDC power supply
- Touch screen 128x112 pixel backlight graphic LCD
- Built-in buzzer
- Static (SSR) output for global alarm signalling
- Opto-isolated RS485 interface port
- Conductor cross section: 0.2...2.5mm² (24...12 AWG; 18...12 AWG per UL/CSA)
- Tightening torque: 0.56Nm (4.5lb.in)
- Compatible with ADXL... soft starter and VLB3... variable speed drives.

Certification and compliance

Certification obtained: cULus, EAC.

Compliant with standard: IEC/EN/BS 61010-1, IEC/EN/BS 61000-6-2, IEC 61000-6-3, UL508, CSA C22.2 n° 14.

Converters



EXCCON01

Order code	Description	Qty per pkg	Wt
		n°	[kg]
EXCCON01	RS485/ Ethernet converter, 12...48VDC, including DIN rail fixing kit	1	0.400

EXCCON01 general characteristics

The EXCCON01 converter can interface "Slave" devices connected in a RS485 bus with a "Master" equipped with an Ethernet interface port:

- Kit consisting of a converter and DIN rail mounting accessory
- Web interface programming
- No power pack included.

Certifications

Certifications obtained: cULus (UL 60950-1) Listed, FCC CLASS A.

Gateway



EXCGLA01



EXCGLAX1

new

Order code	Description	Qty per pkg	Wt
		n°	[kg]
EXCGLA01	Gateway data logger for data collecting via Modbus from the device in the field. Publishing of the data to supervision software, also in Cloud	1	0.600
EXCGLAX1	2G/4G modem communication module for EXCGLA01	1	0.160
EXCM4G01	4G Gateway with RS485 and Ethernet port, Modbus RTU/TCP protocol	1	0.300

EXCGLA01 and EXCGLAX1 general characteristics

EXCGLA01 gateway is able to collect data from devices which are connected through Ethernet or RS485 port.

Modbus-RTU, ASCII and TCP protocols are supported.

The data can be reviewed by a connection to Synergy Cloud service or to Ethernet local web server and a browser.

The access to internet for data sending can be achieved with Ethernet port or by adding EXCGLAX1 2G/4G modem.

- CPU ARM 1 GHz
- 2 Ethernet port
- 1 RS232/RS422/RS485 serial port
- 24VDC (10...32VDC) power supply
- Operating temperature -20...+60°C
- Simplified connection to LOVATO Electric devices
- Compatible with **Synergy** and **Synergy** softwares
- Supports LTE cat. 4 Global, UMTS/DC HS DPA/HSUPA/WCDMA, GSM/GPRS/EDGE
- SIM slot for microSIM.

Compliance

Compliance with standards for EXCGLA01: EN/BS 61000-6-4 emissions,

EN/BS 61000-6-2 immunity, for installations in an industrial environment.

For EXCGLAX1: EN/BS 61000-6-4, EN/BS 61000-6-2, EN/BS 61000-6-3, EN/BS 61000-6-1, EN/BS 60945, ETSI EN 301 489-1, ETSI EN 301 489-52, EN/BS 301 511, ETSI EN 301 908-1, ETSI EN 301 908-2, EN/BS 62311, EN/BS 60950-1.

EXCM4G01 general characteristics

The EXCM4G01 gateway can interface "Slave" devices connected in a RS485 with a "Master" using a 4G network:

- Connection to TCP server through 4G or 2G network
- Operating mode either as transparent or Modbus-RTU/TCP protocol conversion from serial side to wired or mobile network
- Settable parameters: TCP server IP and remote port, network operator apn (with username and password), SIM card pin (with enabling), connection time-out, serial parameters (baud rate from 1,200 bps to 115,200 bps, stop bit, character length, parity)
- Programming via built-in web server
- 1 Ethernet port 10/100Mbps
- 1 RS485 port
- Supply 9...36VDC
- Operating temperature -40...75°C.

Compliance

Compliance with standards: EN/BS 60950-1.

			
	EXCGLA01 + EXCGLAX1	EXCM4G01	EXP1015
Transmission technology	2G/4G	2G/4G	GSM – GPRS (2G)
Connectivity with Synergy & Xpress	Yes	Yes	Yes
Device setup and supervision	Yes	Yes	Yes
Local memory	Yes	No	No
SMS and mail sending	No	No	Yes
Support for multiple devices	Yes, with RS485 or Ethernet	Yes, with RS485	No
Device compatibility	Devices with RS485 or Ethernet and modbus slave role, third party ones included	Devices with RS485 and modbus slave role, third party ones included	Only LOVATO Electric devices

Remote control and monitoring GSM modem via SMS

Compliant with Italian CEI 0-16 Standard, paragraph 8.8.6.5 and annex M, resolution 421/2014 of the ARERA



EXCGSM01

Order code	Description	Qty per pkg	Wt
		n°	[kg]
EXCGSM01	GSM Modem (modular - 4U). IP69K outside aerial with 2.5 m cable. RJ45-USB programming cable (included). 100...240VAC, 1 digital input, 1 analog input (0...10V, 0...20mA, NTC), 1 relay output, receiving and sending SMS messages for remote controls and alarm signals	1	0.340

Blue LED: GSM status

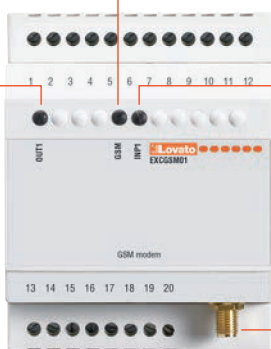
Off: not supplied

Flashing slowly: network registration OK

Flashing quickly: communication in progress

Relay output status

Digital input status



Aerial connector

RJ45 connector for programming

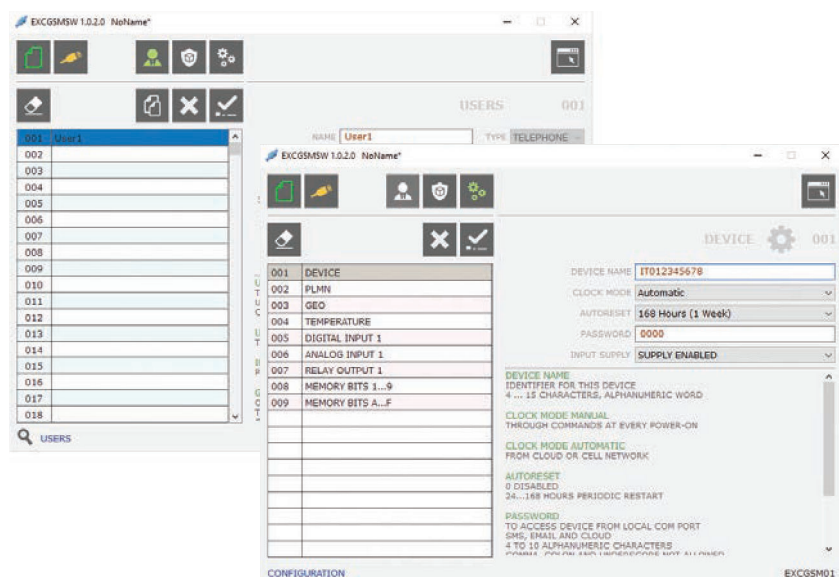
Software

To configure the EXCGSM01 modem (using the RJ45-USB programming cable included), the EXCGSMSW software must be used. This can be downloaded for free from the www.LovatoElectric.com website.

The software allows you to set:

- The users enabled to exchange messages with the modem
- The identifier of the modem, for example the active customer code (POD) in CEI 0-16 applications;
- The functions assigned to the digital output and input and to analog input;
- The texts of the SMS associated with the commands
- The logic of the actions taken following the SMS arrival, change of input status, alarm situations.

Configuration is also possible off-line, creating a file to transfer to the modem at another time.



Application requirements

With EXCGSM01 it is possible to remotely operate a relay output and obtain information on the system by sending programmable SMS. Using the configuration software (available for download free of charge from www.lovatoelectric.com) the user can control the relay output and both the digital and analog inputs.

The logic is based on events (for example, the activation of the digital input or the arrival of an SMS with specific text), to which the user can decide specific actions (reply either by SMS or voice message, or by switching the relay output).

The analog input can be connected to detectors of physical measures like pressure, fluid tank level or temperature to allow remote reading of values or sending text messages via SMS or alarms.

The EXCGSM01 modem interfaces with the cellular network to regularly update its internal clock and dawn/dusk settings, so that it can manage time-scheduled events properly.

Information can be retrieved from phone network cells relative to the position of the modem (reading position information and sending alarms via SMS).

Applications:

- Detection of boiler temperature thresholds
- Fluid tank level alarms
- Time and date based load management
- Remote lighting and air conditioning system control
- Detection of moving of rental equipment.

Use with CEI 0-16

The CEI 0-16 standard in paragraph 8.8.6.5 and in attachment M prescribes that the electricity production plants powered by wind or solar photovoltaic sources with power greater than or equal to 100kW, connected or to be connected to medium voltage grids, are equipped with GSM modem.

Thanks to this modem it is possible to manage the disconnection of the generation through the messages sent by the energy distributor.

Functional characteristics

- Connection to the GSM network for sending and receiving SMS messages
- Programmable message texts
- Command output piloted by SMS or internal logic, for example to send the remote disconnection command to the interface switch CEI 0-16
- Programmable digital input, for example to detect the status of the Interface switch (IS) and sending of successful IS opening and closing SMSs
- POD management (active user code)
- Management of the list of caller IDs (CLI) up to 5000 callers enabled
- Detection of mobile network coverage
- Full compatibility with medium-voltage IP LOVATO Electric PMVF30: no software/hardware updates or programming required
- **Compatibility with third-party IPs where the remote disconnection signal is transmitted via digital input (dry contact)**

For additional information contact our Technical support

Tel. + 39 035 4282422; E-mail: service@LovatoElectric.com.

Operational characteristics

MODEM

- 35mm DIN (IEC/EN/BS 60715) rail fixing
- 4 modules
- Supply: 100...240VAC
- Consumption: 5VAC
- 1 digital output 3A 250VAC
- 1 self-supplied digital input
- 1 analog input 0...10V, 0...20mA, NTC
- Housing for 3V and 1.8V SIM card
- SIM PIN management
- Temperature sensor
- Update time, sunrise and sunset via GSM network
- Position update via GSM
- Certified according to FCC rules, part 15B
- Operating temperature: -20...+60°C
- Protection rating: IP40 on front; IP20 on terminals.

AERIAL

- Quad band 850/900/1800/1900MHz
- Degree of protection: outside IP69K
- 2.5m cable
- Fixing via M10 hole:
 - with adhesive seal
 - with threaded pin and nut.

Compliance

Compliant with electrical safety standards: EN/BS 62368, EN/BS 62311.

Protective cover



PA96X48

Order code	Description	Qty per pkg	Wt
		n°	[kg]
PA96X48	Front IP65 protective cover for multimeters DMK0/1...	1	0.048

General characteristics

If high IEC degree of protection is needed, the protective cover gives to the device the necessary protection required.

Accessories



EXP8000



EXP8001



EXP8003



EXP8004



EXM8004



DMXP03



DMXP04



NTC01

Order code	Description	Qty per pkg	Wt
		n°	[kg]
EXP8000	Plastic insert for customising label for DMG6... and DCRL3/5	10	0.005
EXP8001	IP65 gasket seal for ATL500/600/601/610 and DCRL8	1	0.009
EXP8003	35mm/1.38" DIN rail mounting accessory for ADXL0018600..., ADXL0115600 and DCTL... up to 60Kvar	1	0.200
EXP8004	Fan for ADXL... soft starter	1	0.004
EXM8004	Set of sealable terminal covers for DMG100/101/110/200/210/300	1	0.020
DMXP03	Panel mounting for 3 modules devices	1	0.052
DMXP04	Panel mounting for 4 modules devices	1	0.054
NTC01	External/remote temperature sensor, with 3m/10ft long cable	1	0.150

Connecting cable



51C2

Order code	Description	Qty per pkg	Wt
		n°	[kg]
51C2	For PC ↔ LOVATO Electric device, 1.8m/6ft long	1	0.090

General characteristics

Connecting cable to link LOVATO Electric devices with RS232 port to personal computers.

Certification

Certification obtained: EAC.