



Digital multimeters DMG 600-610




Lovato
electric
ENERGY AND AUTOMATION

Digital multimeters DMG 600 - 610



are capable of viewing the measurements with high accuracy on the wide **LCD display**, which allow to control energy distribution networks.

- ✓ Easy and intuitive menu navigation
- ✓ LCD display with text in 5 languages
- ✓ Expandability with EXP... modules
- ✓ High measurement accuracy
- ✓ Display of voltage and current harmonics up to the 15th order
- ✓ Wide range for power supply, measurements and temperature
- ✓ Suitable for LV, MV and HV electric systems and installations

VERSATILITY, EXPANDABILITY AND HIGH MEASUREMENT QUALITY



The main features include an extended power supply voltage range (100...440VAC), high measurement accuracy ($\pm 0.5\%$ for voltage and current), expandability (using EXP modules) and LCD interactive interface for simple use.

Main measurements and functions include:

- Voltage: phase, line and system values
- Current: phase values (neutral current calculated)
- Power: apparent, active and reactive phase and total values
- Power Factor per phase and total
- Frequency of measured voltage value
- HIGH-LOW-AVERAGE value functions for all measurements
- Maximum demand of power and current values
- Voltage and current asymmetry
- Total harmonic distortion (THD): voltage and current
- Display of voltage and current harmonics up to the 15th order
- Energy meters for active, reactive, apparent partial and total values, per phase and system values
- Hour counter for programmable total and partial hours
- Phase active power unbalance.


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● LCD display

New icon type display, with white backlight to ensure good visibility in environments with low light conditions.

- Scrolling text with 4 characters to show:
- Alarm messages configured by the user
 - Help messages for the user
 - Description of setup menu and parameters.

The text is available in 5 languages (English, Italian, French, Spanish and Portuguese).



Type of measurement

● USB and Wi-Fi dongle



Through the optical port, direct connection to a PC USB port (using CX 01) or via WiFi (using CX 02) is allowed. CX 02 dongle (WiFi) can furthermore make:

- Copy of the parameters
All parameters in the DMG can be saved in the CX 02 memory and in case reloaded on the same device (backup function) or on a different one of the same type (replication of the configuration).
- Clone of the device settings
In addition to the copy of the parameters, the current values of energy meters and hour counters can be saved in memory as well, in order to fully replicate a DMG on another device of the same type or to restore the DMG to a previously saved state.

Flashing icon for alarms



● Alarms and notification by flashing display

To the limit thresholds or to the activation of a digital input, there are available 4 alarms with user-configurable text description. When an alarm occurs, an icon and a descriptive text appear on any page of the meter.

Setting a parameter, the user can activate the flashing of the display backlight in case of alarm. The alarm becomes visible even from a distance, saving a warning light indicating a global alarm.

Unit of measure

Measurement value



Bar graph, percentage of a full scale value

Subpage indication:

Instantaneous measurements, maximum, minimum, average values and maximum demand

Active energy meter always available in all pages

Scrolling text in case of alarms, messages for the user or parameter setup



● Optical port

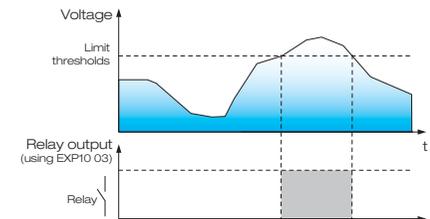
DMG 600 and DMG 610 are equipped with a front optical port to support programming through CX 01 and to use the functionality of CX 02 Wi-Fi dongle.

Advantages:

- No need to remove power from the panel to connect to the multimeter
- Electrical safety (no electrical connection)
- IP54 guaranteed
- Convenience of working on the front.

● Limit thresholds and protection functions

On all available measurements, the user can set up to 8 independent thresholds to generate alarms or activate outputs in excess of the set values. The user can decide the activation of the limit threshold on the overcoming of maximum, minimum values or both, with on and off delay to protect the system from unnecessary trippings and hysteresis thresholds to avoid the "bouncing" around the threshold.



Adding the EXP1003 expansion module to the DMG600-610 provides protection relay functions:

- Broad range of protection functions (maximum or minimum voltage, current, frequency, or power, ...)
- Relay activation (NC or NO logic) on a specific protection or on all at once
- Includes 2 changeover relays, independently configurable with different protection functions
- Protection functions activated by digital inputs.



● Expandability (1 slot)

The configuration of the devices in different installations can have many variants, for example the types of communication (USB, RS485, Ethernet) or the number of inputs and outputs required.

DMG 600 and DMG 610 support expandability by EXP... modules. The expansion modules shared with other devices lighten the costs of management

and first of all guarantee configuration flexibility at installation time and secondly ease of performance increasing when the system is already in operation.

The following EXP modules are available:

- Digital inputs and outputs (static type to generate energy pulses or relay type to control coils)
- USB, RS232, RS485 and Ethernet communication.

The module is recognized automatically by the base device which set it to be used. The particular shape of the back of the DMG lets the addition of the expansion module without increasing the space required inside the electrical panel, because the size of the EXP module is fully contained in the base module size, limited to 65mm only, including connectors.

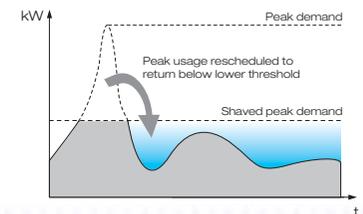


● Management of power "maximum demand"

Often in the contracts between user and utility, a limit on the maximum demand of active power, calculated as an average over a time window, exists. In order to help the user, DMG 600 and DMG 610 include features which allow the control of demand limits as follows:

- 4 methods of integration of active and reactive power:
 - Fixed window
 - Moving average
 - Synchronisation via digital input (typical solution used by utilities)
 - Synchronisation message via the serial interface (Modbus)

- Setting a threshold on the average power value, in order to activate outputs which can disconnect non-priority loads to limit the need of power or to notify the user about the need to reduce the loads.



● Sam1 APP

Furthermore, CX 02 dongle is the access point to the device through the Sam1 APP.

Thanks to Sam1, one can:

- See on smartphones or tablets all the measures of the multimeter
- Send commands, such as counters reset or enabling and disabling of multimeter outputs
- Set the parameters, save a copy in a file and retrieve it in case of need (the file can be sent via email as well)
- See active user alarms.

Sam1 APP can be downloaded from Google Play Store or Apple iTunes.



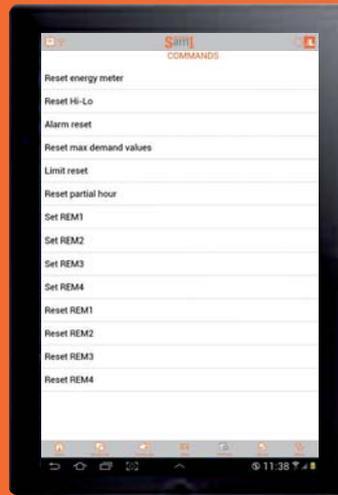
PARAMETER SETTING



MEASUREMENT VIEWING



SEND COMMANDS



ALARM VIEWING



● Xpress configuration and remote control software



provides for:

- Transfer parameter settings from PC to DMG 110 and vice-versa
- Read REM measurements
- Display events and alarms
- Send commands.

● Synergy energy management software

to supervise and control (via Web server) the electrical parameters measured by LOVATO Electric devices with a communication port.

In addition to providing datalogs and simple, user-configured Web pages, it can also be used to:

- Configure alarms (for sending by email)
- Make and view trend graphs
- Send commands to devices
- Energy usage by time slots.



HOW TO ORDER

LCD multimeters



DMG 600 - DMG 610

Order code Description

DMG 600	Backlight icon LCD, 72x46mm, auxiliary supply 100-440VAC / 120-250VDC, front optical port
DMG 610	Backlight icon LCD, 72x46mm, auxiliary supply 100-440VAC / 120-250VDC, front optical port and RS485 port

Operational characteristics

- Auxiliary supply voltage range: 100-440VAC / 120-250VDC
- Voltage measurement range: 50-720VAC
- Usage in medium and high-voltage systems with voltage transformers
- Rated input current: 1A or 5A
- Frequency measurement range: 45-66Hz
- True RMS measurements: for voltage and current
- Measurement accuracy:
 - Voltage: $\pm 0.5\%$ (50-720VAC)
 - Current: $\pm 0.5\%$ (0.1-1.1In)
 - Power: $\pm 1\%$ f.s.
 - Frequency: $\pm 0.05\%$
 - Active energy: Classe 1 (IEC/EN 62053-22)
 - Reactive energy: Class 2 (IEC/EN 62053-23)
- Non-volatile memory for data storage
- Communication protocol Modbus-RTU, ASCII and TCP
- Compatible with **Synergy** software and **Sam1** APP
- Flush-mount housing 96x96mm
- IEC degree of protection: IP54 on front; IP20 at terminals.

Certifications and compliance

Certifications obtained: EAC, cULus.
Compliant with standards: IEC/EN 61010-1, IEC/EN 61000-6-2, IEC/EN 61000-6-3, UL 61010-1, CSA C22-2 n°61010-1.

Expansion modules



EXP10...

Order code Description

Order code	Description
Inputs and outputs	
EXP10 00	4 opto-isolated digital inputs
EXP10 01	4 opto-isolated static outputs
EXP10 02	2 digital inputs and 2 static outputs, opto-isolated
EXP10 03	2 relay outputs rated 5A 250VAC
EXP10 08	2 opto-isolated digital inputs and 2 relay outputs rated 5A 250VAC
Communication ports	
EXP10 10	Opto-isolated USB interface
EXP10 11	Opto-isolated RS232 interface
EXP10 12	Opto-isolated RS485 interface
EXP10 13	Opto-isolated Ethernet interface with web server function

Communication ports and accessories



CX 01



CX 02



EXP80 00

Order code Description

CX 01	USB/optical dongle for PC – LOVATO Electric product connection, for programming, data download, diagnostics and firmware upgrade. Complete with cable, 1.8m long
CX 02	Wi-Fi dongle for PC – LOVATO Electric product programming, data download, diagnostics and cloning
EXP80 00	Plastic insert for customising label fixing

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