DIGITAL METERING INSTRUMENTS

DMG SERIES

Lovato electric

ENERGY AND AUTOMATION

BOOLEAN LOGIC
Output activation according to logic combinations of states and alarms on measures

WIDE RANGE OF VOLTAGE
Measurement voltage input up to 690VAC and auxiliary voltage input up to 440VAC

COMMUNICATION
Modbus via USB, RS232 or RS485, Ethernet, Prifibus

EXPANDABILITY
Input/output and communication modules

ROGOWSKI COILS
Kit composed by DMG611 multimeter, 3 Rogowski coils with currents from 100A to 6300A and calibration report

MAXIMUM FLEXIBILITY
of configuration and system upgrades

HARMONIC ANALYSIS
Voltages and currents up to the 63° order

ALARMS
with customizable texts

CONFIGURATION WITHOUT OPENING THE ELECTRICAL PANEL
via USB or Wi-Fi through communication devices

MANAGEMENT
of active power max demand

SOFTWARE

Synergy
Monitoring and energy efficiency software

Xpress
Configuration and remote control software

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Energy Management

DMG

Lovato electric
ENERGY AND AUTOMATION

## Digital metering instruments |

For the control of energy distribution system detecting when problems
occur that could put the quality and availability of electricity at risk.
The wide range and high expandability facilitates the choice of the most suitable product in
relation to actual or future measurement needs offering a perfect technical and economical
solution.
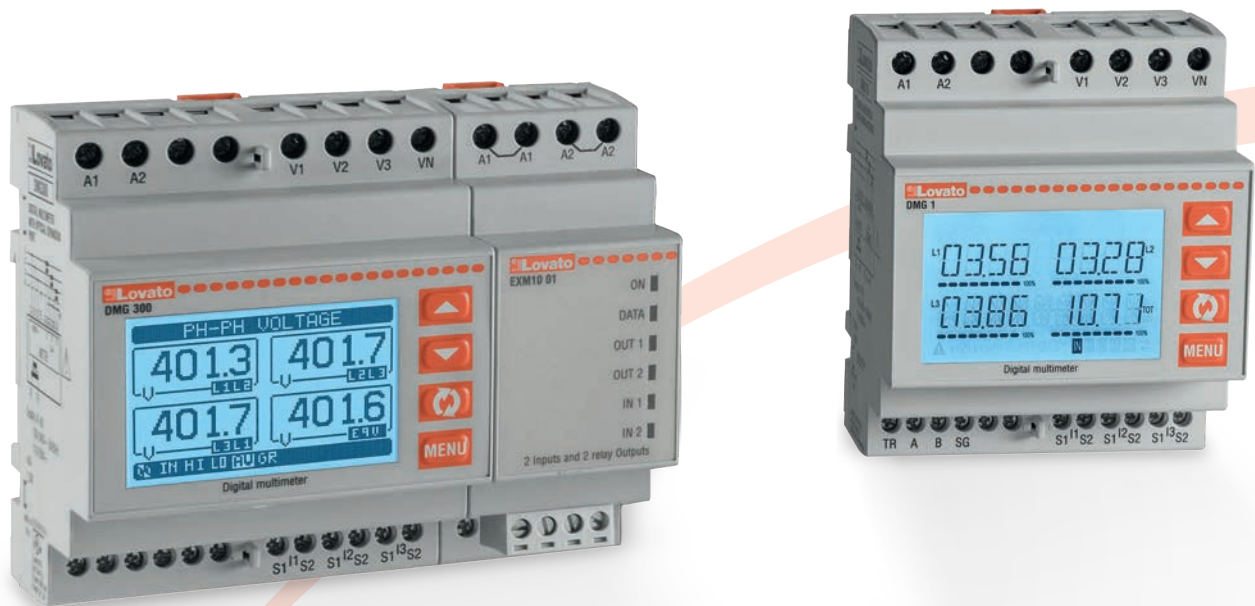
MEASURE SETS

- voltage (phase-phase, phase-neutral and neutral-earth)
- supply voltage (DMG... D048 only)
- phase current
- neutral current (calculated and real)
- power (active, reactive and apparent phase and total power)
- P.F. (power factor per phase and total)
- cosφ per phase
- active, reactive and apparent system energy
- frequency (frequency mesure of measured voltage value)
- voltage and current asymmetry
- total harmonic distortion (THD) of voltage and current
- harmonic analysis of voltage and current up to the 63° order

- maximum (HIGH), minimum (LOW) and medium (AVERAGE) functions for all measurements
- peak values (maximum demand) of power and current
- active power asymmetry
- meters for active, reactive, apparent partial and total energy with programmable tariff functions
- hour counter for programmable total and partial hours
- pulse counter for general use (pulse count for consumption of water, gas, etc. with expansion module only)
- energy quality analysis to EN 50160 Class B (with expansion module).

Lovato electric

ENERGY AND AUTOMATION

DIGITAL METERING INSTRUMENTS

> Flush mount
96x96mm

	DMG600	DMG610	DMG615	DMG611	DMG700	DMG800	DMG900	DMG900T + DMG900RD
Maximum rated voltage	600VAC	600VAC	600VAC	600VAC	690VAC	690VAC	690VAC	690VAC
Voltage and current measure accuracy	0.5%	0.5%	0.2%	0.2%	0.5%	0.2%	0.2%	0.2%
Active energy measure accuracy	Class 1	Class 1	Class 0.5s	Class 0.5s	Class 1	Class 0.5s	Class 0.5s	Class 0.5s
Single phase energy meter	■	■	■					
Harmonic analysis	15° order	15° order	15° order	31° order	THD only	31° order	63° order	63° order
Neutral-earth voltage								■
Neutral current	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated or measured via CT	Calculated or measured via CT
Boolean logic					■	■	■	■
Expandable with EXP... modules	1 module	1 module	1 module	1 module	4 modules	4 modules	4 modules	4 modules
Display type	Icons	Icons	Icons	Icons	Graphic	Graphic	Graphic	Graphic (DMG900RD)
Built-in communication port (Modbus)		RS485	RS485	RS485				RS485 or RS232 selectable
Communication port with EXP... modules	RS232 RS485 USB Ethernet	RS232 RS485 USB Ethernet	RS232 RS485 USB Ethernet	RS232 RS485 USB Ethernet	RS232 USB RS485 Ethernet	RS232/ RS485 USB Ethernet Profibus DP slave	RS232/ RS485 USB Ethernet Profibus DP slave GSM/GPRS	RS232/ RS485 USB Ethernet Profibus DP slave GSM/GPRS
Ethernet-RS485 gateway function						■	■	■
Energy quality according to EN 50160								■
Degree of protection	IP54	IP54	IP54	IP54	IP65	IP65	IP65	IP65 (DMG900RD)
USB communication via CX 01	■	■	■	■				
Wi-Fi communication via CX 02	■	■	■	■				

> Modular
4 modules

	DMG100	DMG110	DMG200	DMG210	DMG300
Maximum rated voltage	600VAC	600VAC	690VAC	690VAC	690VAC
Voltage and current measure accuracy	0.5%	0.5%	0.5%	0.5%	0.2%
Active energy measure accuracy	Class 1	Class 1	Class 1	Class 1	Class 0.5s
Single phase energy meter	■	■			
Harmonic analysis	15° order	15° order	THD only	THD only	31° order
Boolean logic					■
Expandable with EXM... modules					3 modules
Display type	Icons	Icons	Graphic	Graphic	Graphic
Built-in communication port (Modbus)		Built-in RS485		Built-in RS485	
Communication port with EXM... modules					RS232 USB/RS485 Ethernet
Ethernet-RS485 gateway function					■

>Rogowski

The DMG611R... kits are multimeters that, by reading the current through Rogowski coils, are the ideal solution for the installation of measuring points on systems where the classic solid-core or split-core CTs are inapplicable or too expensive.
The included calibration report is specific to each individual kit to guarantee measurement accuracy.

❚ **Measure kit:** DMG611 multimeter + 3 Rogowski coils

❚ **Calibration report:** all kits are calibrated during the testing process and come with the relevant calibration report

❚ **Integrated communication:** built-in RS485 with modbus RTU and ASCII protocols

❚ **Expandability:** support of EXP modules (EXP1013 Ethernet module with modbus TCP protocol included)

❚ **Front optical port:** to support programming through CX 01 dongle and to use the functionality of CX 02 Wi-Fi dongle

❚ **Safety:** it is not necessary to short the secondary before disconnecting the coil

MEASUREMENTS

- voltage, current, frequency
- active, reactive and apparent power
- power factor
- high, low and avarage value for all measurements
- maximum demand of power and current values
- voltage and current asymmetry
- unbalancing active power
- total harmonic distortion (THD) and harmonic analysis of voltage and current up to the 15° order
- energy meters for active, reactive and apparent
- hour counter.

SELECTION GUIDE

TYPE

DMG611R0100 (Ø50mm)
DMG611R0500 (Ø50mm)
DMG611R3000 (Ø150mm)
DMG611R6300 (Ø240mm)

10   25   100   150   315   500   3000   6300   [A]

▢ Rated   ▮ With suitable Ø
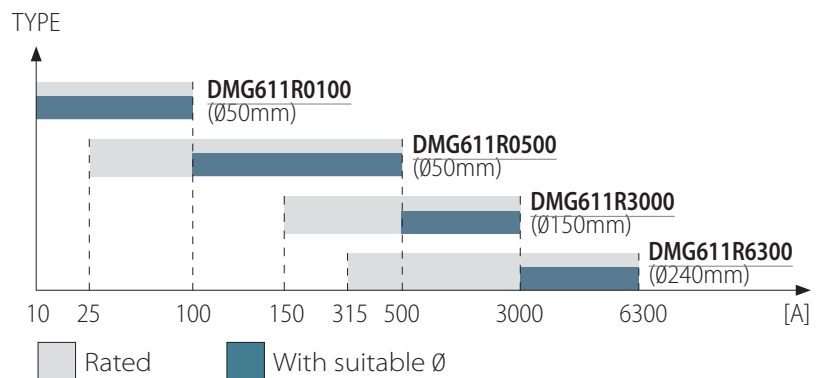
OPERATIONAL CHARACTERISTICS

VOLTAGE INPUTS
- auxiliary supply rated voltage: 100...440VAC/110...250VDC
- measurement range: 50...720VAC L-L

CURRENT INPUTS
- maximum current Imax: 100A, 500A, 3000A, 6300A
- measurement range:
  10...100% Imax (DMG611R0100)
  5...100% Imax (DMG611R0500...R6300)
- input type: Rogowski coils
- measure type: true RMS mesurements (TRMS)

MEASUREMENT ACCURACY
- current:
  ±0,5% (centered cable) ●
  ±1% (cable near the coil) ●
- voltage: ±0,5% (50...720VAC)
- active power: ±1%
- active energy: ±1%

ROGOWSKI COILS CONNECTION
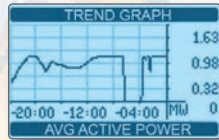- type of terminals: removable, 2-level push-in

CERTIFICATIONS AND COMPLIANCE
Certifications obtained: EAC.
Compliant with standards: IEC/EN 61010-1, IEC/EN 61010-2-030, IEC/EN 61000-6-2, IEC/EN 61000-6-3.
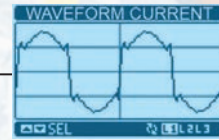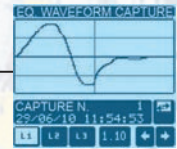
MULTIMETERS DMG SERIES

MONITORING

Power trend
and energy
consumption
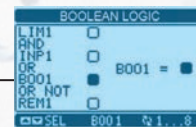monitoring

NETWORK

Network quality verification

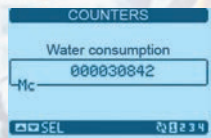## ANALYSIS

Energy quality analysis
according to EN50160

INFORMATION

PT 100 temperature
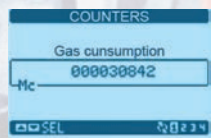4-20mA 0-10V
Impulse meter

Water

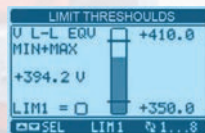Pressure

Gas

ALARMS

COMBINATION

Boolean logic

COMMUNICATION

Modbus RTU communication via USB,
RS232, RS485, Modbus TCP, profibus DP
slave

CONTROL AND DIAGNOSTIC

Gaphic or icons backlight display!

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ORDER CODES

Modular multimeter, non expandable

Order codes	Description
Icon LCD, auxiliary supply 100...240VAC/120...250VDC. Multilanguage: english, italian, french, spanish, portuguese and german	
DMG100	Harmonic analysis
DMG110	Harmonic analysis, built-in RS485 port
Graphic LCD display 128x80 pixel, auxiliary supply 100...240VAC/110...250VDC. Multilanguage: english, italian, french, spanish and portuguese	
DMG200 ❶	THD
DMG210 ❶	THD, built-in RS485 port

Modular multimeter, expandable

Order codes	Description
DMG300 ❶	Graphic LCD display 128x80 pixel, harmonic analysis, auxiliary supply100...240VAC/110...250VDC, expandable with modules EXM... series. Multilanguage: english, italian, french, spanish and portuguese

Expansion modules for DMG300

Order codes	Description
Inputs and outputs.	
EXM1000	2 digital inputs and 2 static outputs, opto-isolated
EXM1001	2 opto-isolated digital inputs and 2 relay outputs 5A 250VAC
EXM1002	4 opto-isolated digital inputs and 2 relay outputs 5A 250VAC
Communication ports.	
EXM1010	Opto-isolated USB interface
EXM1011	Opto-isolated RS232 interface
EXM1012	Opto-isolated RS485 interface
EXM1013	Opto-isolated ethernet interface
EXM1020	Opto-isolated RS485 interface and 2 relay outputs 5A 250VAC
EXM1030	Data storage, RTC with backup battery for data logging

Flush mount multimeters, expandable

Order codes	Description
Backlight icon LCD display 72x46mm, auxiliary supply 100...440VAC/120...250VDC	
DMG600	Armonic analysis, front optical port
DMG610	Armonic analysis, front optical port, built-in RS485 port
DMG615	**High accuracy measuring of active energy with Class 0,5s.** Armonic analysis, front optical port, built-in RS485 port
Graphic LCD display 128x80 pixel, auxiliary supply 100...440VAC/110...250VDC	
DMG700 ❶	THD
DMG800 ❶❷	Harmonic analysis

Multimeter with Rogowski coils, expandable

Order codes	Description
Backlight icon LCD display, armonic analysis, auxiliary supply100...240VAC/110...250VDC, built-in RS485 port. Current reading through 3 Rogowski coils included. 2mt cable length.	
DMG611R0100 ❼	Max current100A. Ø50mm
DMG611R0500 ❼	Max current 500A. Ø50mm
DMG611R3000 ❼	Max current 3000A. Ø150mm
DMG611R6300 ❼	Max current 6300A. Ø240mm

Communication devices for DMG6...

Order codes	Description
CX01	USB dongle for PC ↔ DMG6... connection, for programming, monitoring, diagnostics and firmware upgrade
CX02	Wi-Fi dongle for PC ↔ DMG6... connection, for programming, monitoring, diagnostics and cloning

Flush mount analyzers, expandable

Order codes	Description
DMG900 ❶❷	Backlight graphic LCD display 128x112 pixel, touch-screen, harmonic analysis, 4 current channels (neutral measurement), 100...440VAC/110...250VDC. Multilanguage: english, italian, french, spanish and portuguese
DMG900T ❷❸	Measurement transducer, harmonic analysis, 4 current channels (neutral measurement), 100...440VAC/110...250VDC, RS232 and RS485 ports
Remote display for DMG900T...	
DMG900RD ❹	Backlight graphic LCD display 128x112 pixel, touch-screen, with 3m long connecting cable

Expansion modules for flush mount multimeters and power analyzers

Order codes	Description
Inputs and outputs.	
EXP1000	4 opto-isolated digital inputs
EXP1001	4 opto-isolated static outputs
EXP1002	2 digital inputs and 2 static outputs, opto-isolated
EXP1003	2 relay outputs 5A 250VAC
EXP1004 ❺	2 opto-isolated analog inputs 0/4...20mA or PT100 or 0...10V or 0...±5V
EXP1005 ❺	2 opto-isolated analog outputs 0/4...20mA or 0...10V or 0...±5V
EXP1008	2 opto-isolated digital inputs and 2 relay outputs 5A 250VAC
Communication ports.	
EXP1010	Opto-isolated USB interface
EXP1011	Opto-isolated RS232 interface
EXP1012	Opto-isolated RS485 interface
EXP1013	Opto-isolated Ethernet interface
EXP1014 ❺	Opto-isolated Profibus-DP interface
EXP1015 ❻	GPRS/GSM modem, without antenna
EXP1030 ❺	Data storage, RTC with backup battery for data logging
EXP1031 ❻	Data storage, with Energy Quality (EN 50160 - class B), clock calendar (RTC) with backup battery for data logging

❶ For versions in english, czech, polish, german and russian add L01 after the code.
❷ For versions 12-24-48VDC auxiliary supply add D048 after the code.
❸ No simultaneous operations of serial ports. Consult Technical Service for information (Tel. 035 4282422; E-mail: service@LovatoElectric.com) or the instructions manual.
❹ Powered directly by DMG900T; direct link to DMG900T dedicated port.
❺ Only for DMG800/900.
❻ Only for DMG900.
❼ Multilanguage: italian, english, french, spanish, portuguese, german.

Accessories

DM
Current transformers
da 50A a 4000A

EXCM4G 01
Modem/Router 4G

EXCCON01
RS485-Ethernet converter

EXCGLA01
Gateway data logger

DIGITAL METERING INSTRUMENTS

LOVATO ELECTRIC S.P. A.

Via Don E. Mazza, 12
24020 Gorle (Bergamo), Italy
tel. 035 4282111
info@LovatoElectric.com

ENERGY AND AUTOMATION

www.LovatoElectric.com

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