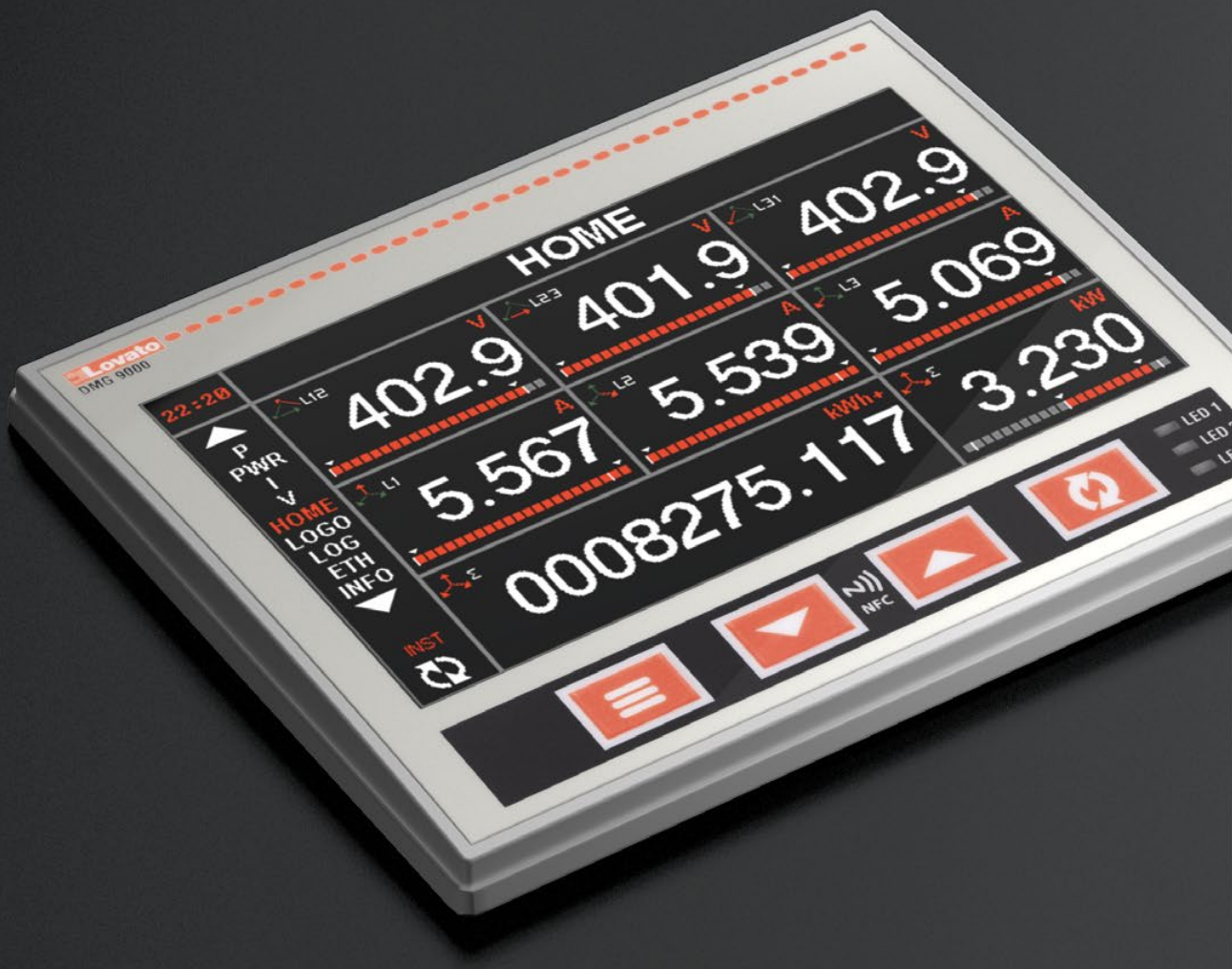
DIGITAL METERING INSTRUMENTS

DMG SERIES



Lovato electric

POWER ANALYZERS WITH WIDESCREEN LCD

WIDESCREEN COLOUR LCD

The large size of the colour LCD (4.3") allows for the optimal view of measures and parameters in a clear, simple and intuitive way.

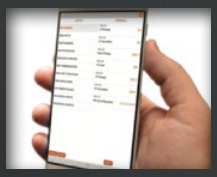
10 LANGUAGES

The language shown can be selected from a large number of choices: English, French, German, Italian, Spanish, Portuguese, Polish, Russian, Czech, Chinese..

PROGRAMMABLE **LEDs**

3 front LEDs are programmable and let the user know the status of the device at any time: alarms programmed by the user, status of digital inputs or outputs, emission of pulses indicating energy consumption, communication in progress.

NFC CONFIGURATION



Thanks to NFC technology, it is possible to configure and modify parameters (even when the device is not powered) through NFC LOVATO App, which can be downloaded for free from the App store for Android and iOS smart devices.

PLC LOGIC

Thanks to the built-in PLC logic, the power analyzers can perform simple automations related to timers and alarm states and digital inputs. Programming with "contacts"(**Ladder**) is simple and intuitive thanks to the use of Xpress configuration software downloadable for free from the website www.lovatoelectric.com.

HIGH ACCURACY LEVEL FOR **MEASUREMENTS**

The measurements are verified according to the recognized international standards for measuring instruments: IEC 62053-22 (class 0.5s), IEC 62053-24 (class 1) and IEC 61557-12.

MEASUREMENTS
CHARTS AND HARMONICS
STATISTICS

MEASUREMENTS

DMG power analyzers display all the measurements useful for a complete check of the electrical network. The voltage measurement input does not require external transformers **up to 600VAC**.

CHARTS AND HARMONICS

The electrical measurements are shown with waveform charts, polar diagrams and representations of the **harmonic spectrum up to the 63rd order,** useful tools to better understand the state of the system.

STATISTICS

The DMG9000 model also provides statistics on the **quality of the network** according to the **EN50160** standard - class C - (voltage dips, overvoltages, interruptions, low frequency noises and much more).

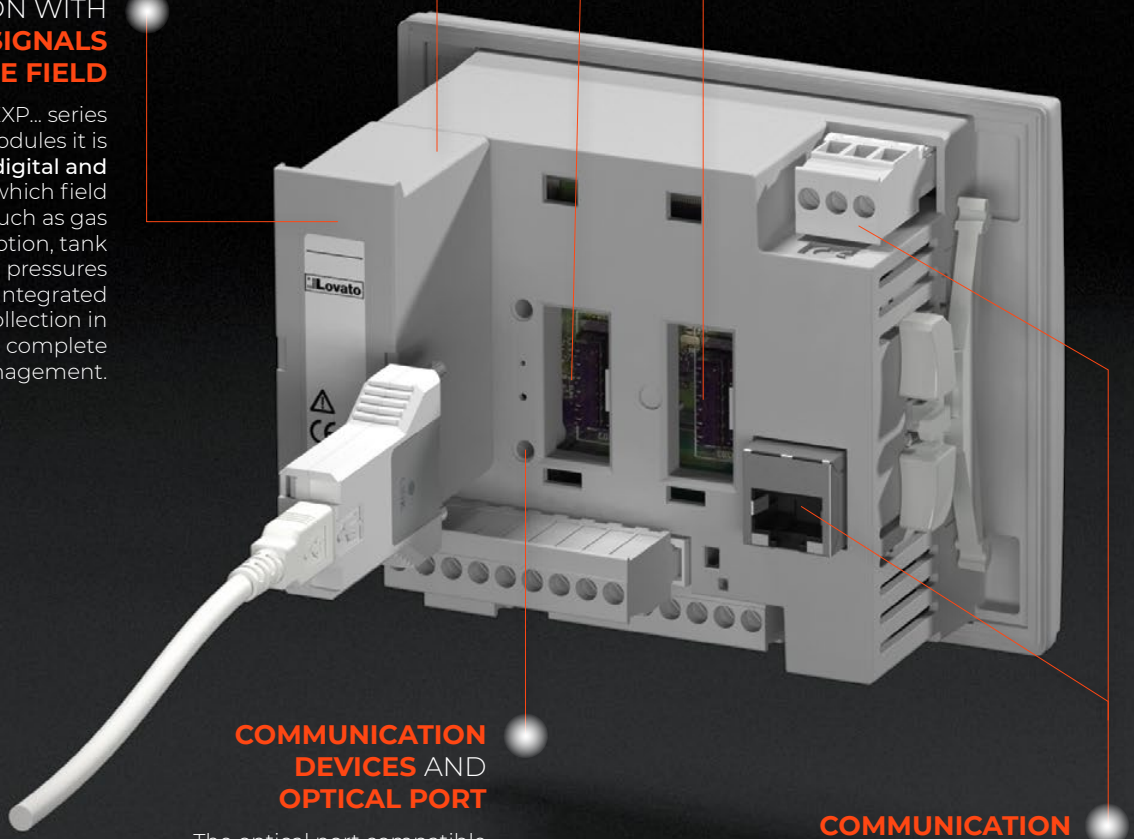
POWER ANALYZERS WITH WIDESCREEN LCD

EXPANDABILITY

Possibility to add **up to 3** EXP... series expansion modules (additional inputs, outputs and communication ports).

INTEGRATION WITH SIGNALS FROM THE FIELD

Thanks to the EXP... series expansion modules it is possible to add **digital and analog inputs** by which field measurements such as gas or water consumption, tank levels, temperatures, pressures and much more are integrated into the data collection in order to obtain a complete energy management.



COMMUNICATION DEVICES AND OPTICAL PORT

The optical port compatible with the communication devices CX01 and CX02 is available and allows, thanks to Xpress, software, the parameter configuration, the electrical network analysis and the firmware update of the power analyzer.

COMMUNICATION

Availability of models with built-in RS485 and Ethernet communication ports.

EASY BRANCH POWER MONITORING SYSTEM

Thanks to the EXS... modules, a simplified and very fast wiring can be achieved in panels where it is necessary to read the electrical parameters of different loads, drastically reducing the costs and the installation times.

Comparative table

	DMG7000	DMG7500	DMG8000	DMG9000
Built-in RS485 port	-	■	-	■
Built-in Ethernet port (with web-server)	-	-	■	■
Ethernet-RS485 gateway function	+ EXP1013 + EXP1012	+ EXP1013	+ EXP1012	■
Memory for data collection	-	-	■	■
Statistics of network quality according to EN50160	-	-	-	■
Neutral current measurement through dedicated CT	-	-	-	■
Neutral-Earth voltage measurement	-	-	-	■
Compatibility with EASY BRANCH power monitoring system	-	■	■	■

WEB-SERVER function for DMG8000 and DMG9000

SETTING OF ALL PARAMETERS

The programming of the parameters, as well as from the front panel, can also be done through the browser on a PC. The built-in web-server also allows the setting of the parameters of the Easy Branch, power monitoring system, such as the descriptions of the individual measurement points.

WEBSERVER AND BUILT-IN DATA MEMORY

A flash data memory allows archiving of historical data. Through the built-in webserver the user can:

- select the measures (up to 128);
- set the sampling frequency;
- download the .CSV file with the acquired informations.

For example, by sampling 20 measurements with 1 minute of sampling time, 10 days of data can be stored.

MEASUREMENT VIEW

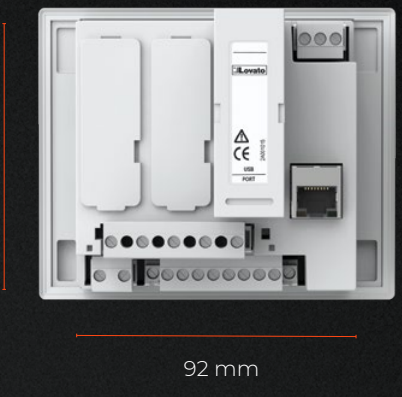
Representation of the measured values by means of tables and charts.

Cutout dimensions and **fixing**

The standard cutout dimensions (92x92mm) ensures a perfect compatibility with the usual front panel solutions. The fixing to the panel is carried out with 2 plastic clips that guarantee tightness and stability.

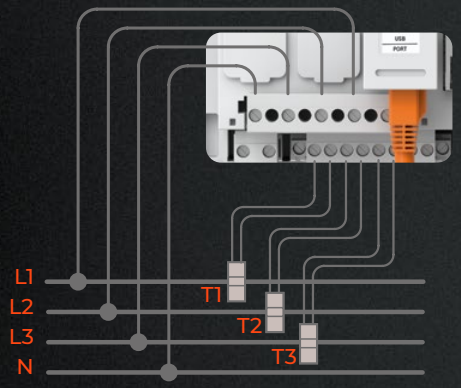
Degree of protection **IP65**

Possibility of use in harsh environments thanks to the gasket on the back which guarantees the **IP65** degree of protection.



EASY BRANCH POWER MONITORING SYSTEM / PLUG & PLAY

DMG7500 - 8000 - 9000
Power analyzer



EXS0000
Bus module for EASY BRANCH system

EXS4000
Current measuring module with 4 inputs for electronic RJ45 CTs

CABLE
Standard Ethernet cable cat.6

EXS3125
125A three-phase electronic current transformer with RJ45 cable (2m long)

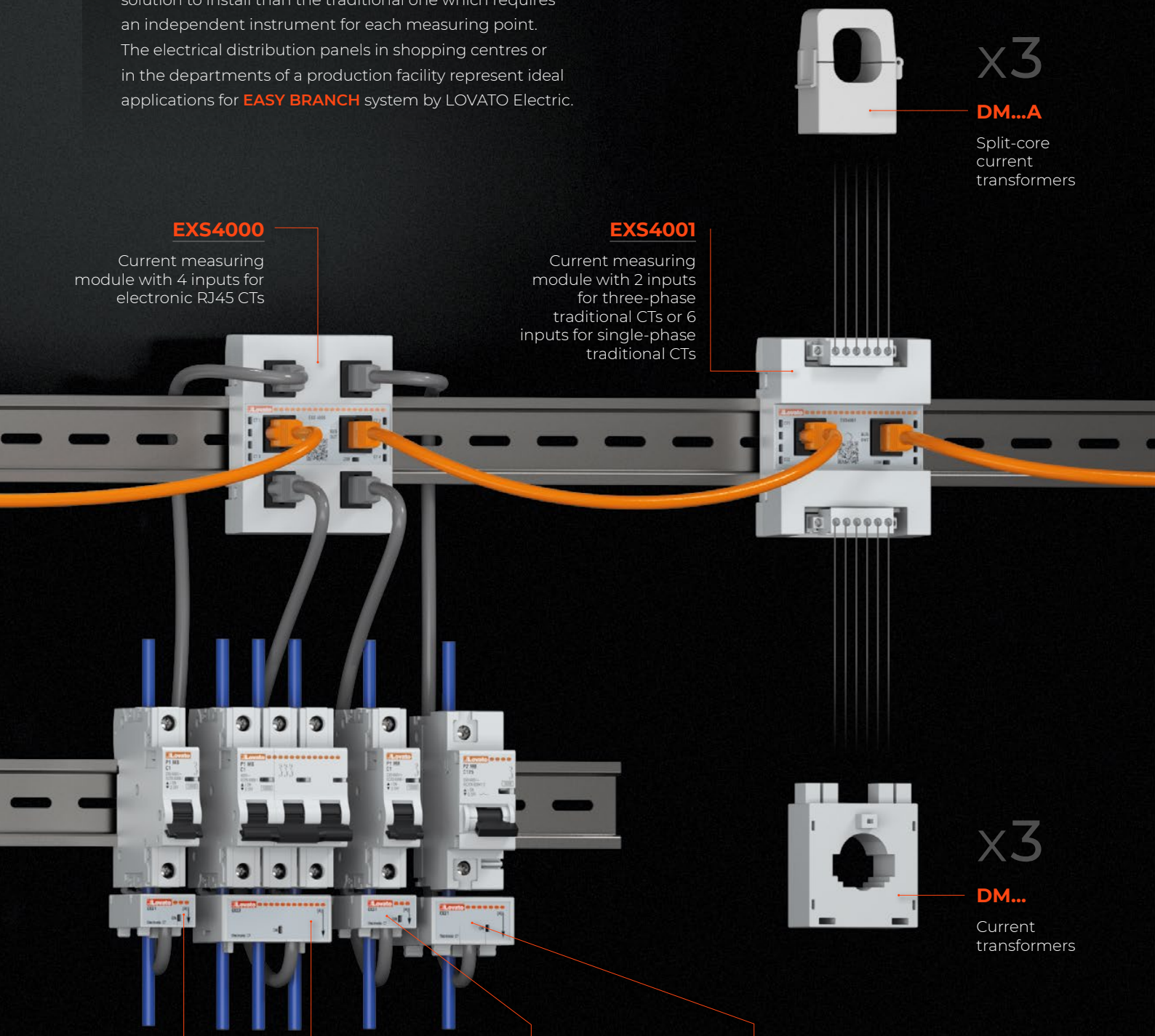
EXS3080
80A three-phase electronic current transformer with RJ45 cable (2m long)

EXS3063
63A three-phase electronic current transformer with RJ45 cable (2m long)

EXS1080
80A single-phase electronic current transformer with RJ45 cable (2m long)

ONLY ONE **INSTRUMENT** FOR THE MONITORING OF **33 THREE-PHASE LOADS**

When inside an electrical panel the parameters of several loads have to be monitored, **EASY BRANCH** power monitoring system is a more efficient and simple alternative solution to install than the traditional one which requires an independent instrument for each measuring point. The electrical distribution panels in shopping centres or in the departments of a production facility represent ideal applications for **EASY BRANCH** system by LOVATO Electric.



x3

DM...A

Split-core current transformers

EXS4000

Current measuring module with 4 inputs for electronic RJ45 CTs

EXS4001

Current measuring module with 2 inputs for three-phase traditional CTs or 6 inputs for single-phase traditional CTs

x3

DM...

Current transformers

EXS1063

63A single-phase electronic current transformer with RJ45 cable (2m long)

EXS3032

32A three-phase electronic current transformer with RJ45 cable (2m long)

EXS1032

32A single-phase electronic current transformer with RJ45 cable (2m long)

EXS1125

125A single-phase electronic current transformer with RJ45 cable (2m long)

System **components**

POWER ANALYZERS DMG7500, DMG8000, DMG9000

The power analyzers represent the heart of the system: they measure the electrical voltage in the switchboard and the input current, record the total measurements upstream of the distribution and the measurements of each individual monitored load available on their display. The electrical quantities can also be viewed via the built-in communication ports (RS485 or Ethernet).

BUS MODULE EXS0000

Installed in one of the expansion slots of the power analyzer, by using a standard Ethernet cable (cat.6) it connects and supplies **up to 8 current measuring modules EXS4...** which are automatically recognized without the need for settings by the installer.
When connecting 5 or more EXS4 current modules ... the EXS0000 bus module requires a 24VDC-200mA.
It's possioble to monitor up to 33 three-phase loads, 99 single phase loads. Including the loads connected to the power analyzer.

CURRENT MEASURING MODULE EXS4000

The module collects the measurements of the loads monitored by the electronic current transformers EXS3... (three-phase or single-phase) or EXS1... (single-phase). Each module measures **up to 4 three-phase loads or 12 single-phase loads** or a mixed single-phase and three-phase configuration. The module automatically recognizes the connected electronic current transformer and highlights, through diagnostic LEDs, the correct self-configuration of the measurement points and the correct coupling with the power analyzer.

ELECTRONIC CURRENT TRANSFORMERS EXS1... E EXS3...

They are current transducers suitable to be installed immediately downstream of the magnetic circuit breakers thanks to their compact size. Available **for single-phase or three-phase loads,** the diameter and pitch of the pass-trough holes have been designed to be in line with the ones of the MCBs:
- for sizes up to 63A: Ø = 7mm and 18mm pitch;
- for sizes up to 125A: Ø = 12mm and 27mm pitch.

They connect to the EXS4000 current monitoring module via pre-wired **2 meter RJ45 cable,** thus making the connection fast and fail-safe.
EXS3 ... can be programmed to manage even single-phase loads.

CURRENT MEASURING MODULE EXS4001

It offers the possibility of connecting monitored measuring points with traditional current transformers within the EASY BRANCH system, managing for each module **up to 2 three-phase loads or 6 single-phase loads** or a mixed single-phase and three-phase configuration. Current transformers of any type with secondary /5A or /1A can be used. The module highlights the successful coupling with the power analyzer through diagnostic LEDs.

TRADITIONAL CURRENT TRANSFORMERS DM...

Current transformers (CTs) type DM... are mounted in an electrical system to reduce the line current to a secondary value of 5A and compatible with EXS4001 current measuring modules.
They are available in many versions:
- with wire-wound primary for reduced currents;
- solid core type;
- high precision for very accurate measurements;
- split-core and pre-wired types which are suitable for updating the panels;
- **primary current from 5 to 4000A.**

Easy Branch system advantages

1. SIMPLE

ONLY **4 COMPONENTS** AND NO **SPECIAL CABLES** NEEDED

The EASY BRANCH system consists of a few elements to add to the power Analyzer: EXS0000 module to get the communication bus, the EXS4... module to measure currents and the EXS1..., EXS3 electronic current transformers... or traditional /5A or /1A CTs.
Up to 33 three-phase or 99 single-phase measuring points can be obtained!

No special cable is needed to connect the current measuring modules to EASY BRANCH bus: **a standard Cat.6 Ethernet cable is enough.**

2. FAST

DRAMATIC **REDUCTION** OF WIRING TIMES

In a monitoring system with traditional measuring instruments, 4 voltage and 6 current cables are required for each three-phase measuring point and two additional cables for the auxiliary power supply are added: a total of 12 cables to be connected for each measuring point. With the EASY BRANCH system, for each additional current measuring module (EXS4000) only one cable with **RJ45** terminal must be connected, getting 4 three-phase or 12 single-phase measurement points, each of which is connected with a cable with **RJ45** terminal, drastically reducing the wiring time.

3. FOOLPROOF

PERFECT WIRING WITHOUT **DELAYS**

The EASY BRANCH system, thanks to the RJ45 connections of the electronic CTs, delete wiring issue which cause errors in reading the electrical quantities and delay the commissioning of the switchboard.

4. PLUG&PLAY

SETTING TIME REDUCTION

EXS1... and EXS3... electronic transformers have a self-recognition system with the current module to which they are connected, avoiding the installer the need to set the CT primary and the type of connection. A LED on the electronic transformers indicates the correct power supply, while a LED on EXS4000 current measuring module indicates the correct coupling.

5. PRECISE

MEASUREMENTS ACCURACY

The EASY BRANCH system guarantees high measurement accuracy according to IEC61557-12 and IEC62053-22/23 standards.

6. COMPETITIVE

COMPARISON BETWEEN **EASY BRANCH** AND TRADITIONAL MEASURING SYSTEMS

If 5 three-phase loads are to be monitored in an electrical panel:

- **EASY branch system:**
  1 power analyzer, 1 display where to search for measurements, 1 EXS0000 bus module, 1 EXS4000 current measuring module, 4 three-phase electronic transformers and only 12 cables to be wired

- **Traditional system:**
  5 multimeters, 5 displays where to search for measurements, 15 current transformers and 60 cables to be wired.

Compared to a traditional measuring system, EASY BRANCH allows the reduction of both wiring and parameterization times, and of the components to be used. The result is considerable cost savings and a more sustainable approach.

POWER ANALYZERS
ORDER CODES

DMG...

Power analyzers with widescreen colour LCD

Order code	Description
Auxiliary supply 100...240VAC	
DMG7000	Expandable with 3 EXP... modules
DMG7500	Expandable with 3 EXP... modules, built-in RS485 port, compatible with EASY BRANCH power monitoring system
DMG8000	Expandable with 3 EXP... modules, built-in Ethernet port, data memory for logging, compatible with EASY BRANCH power monitoring system
DMG9000	Expandable with 3 EXP... modules, built-in RS485 and Ethernet port, data memory for logging, compatible with EASY BRANCH power monitoring system

EXP10...

Expansion modules

Order code	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 rated 5A 250VAC
EXP1004	2 analog inputs, opto-isolated 0/4...20mA or PT100 or 0...10V or 0...±5V
EXP1005	2 analog outputs, opto-isolated 0/4...20mA, 0-10V or 0...±5V
EXP1008	2 opto-isolated digital inputs and 2 relay outputs rated 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	Opto-isolated Profibus-DP interface


CX01


CX02

Communication devices

Order code	Description
CX01	USB/optical device with PC - LOVATO Electric product connecting cable, for programming, data download, diagnostics and firmware upgrade
CX02	Wi-Fi device for PC - LOVATO Electric product programming, data download, diagnostics and cloning

General characteristics

DMG... power analysers display electrical values on their large colour LCD display with exceptional accuracy to enable precise monitoring of power grids. They are designed in flush mount housing (cutout 92x92mm/3.62x3.62") with 3 slots for EXP series plug-in expansion modules to adapt them to a variety of applications.
The use of NFC technology allows the user to configure the unit and make settings with a smart device. The optical port on the back of the unit enables the user to make settings, run power grid diagnostics and update the unit's firmware. The graphic interface, available in 10 languages (English, French, German, Italian, Spanish, Portuguese, Polish, Russian, Czech and Chinese), has been designed to facilitate the display of data, including:
- Voltage (phase, phase-to-phase and system)
- Phase current (calculated neutral current, and measured neutral current on the DMG9000)
- Measurements on 4 quadrants
- Power (active, reactive and apparent phase and total power)
- Power factor (phase and total)
- Frequency
- Maximum (HIGH), minimum (LOW) and average (AVERAGE) of all measured values
- Peak power/current (max demand)
- Voltage and current asymmetry and active power unbalance
- Total harmonic distortion (voltage and current)
- Voltage and current harmonic analysis up to the 63rd order
- Active, reactive and apparent energy metering (partial and total)
- Hour meter (total and partial, programmable).

Operational characteristics
- Auxiliary power:: 100...240VAC / 110...250VDC ❶
- Voltage measurement range: 50...830VAC L-L
- can be used in medium and high voltage systems using VT
- Nominal input current: 5A or 1A with an external current transformer
- Frequency measurement range: 45...66Hz
- Accuracy (IEC/BS 61557-12):
  - voltage: Class 0.5 (Vref = 400VAC L-L), Class 0.2 (Vref = 50...480VAC L-N)
  - current: Class 0.2 (Iref = 5AAC)
  - power: Class 0.5 (Active), Class 1 (Reactive)
  - power factor: Class 0.5
  - frequency: Class 0.02
  - THD and harmonics V and I: Class 5
  - active energy: Class 0.5s (IEC/EN/BS 62053-22)
  - reactive energy: Class 1 (IEC/EN/BS 62053-24)
- Integrated data memory (DMG8000, DMG9000)
- Integrated communications ports (RS485 or Ethernet)
- Communications protocols Modbus-RTU, ASCII and TCP
- Compatible with Synergy, Xpress and App NFC
- Protection rating: IP65 for front panel.

Certifications and compliance

Compliant with standards: IEC/EN/BS 61010-1, IEC/EN/BS 61000-6-2, IEC/EN/BS 61000-6-4.

❶ For versions with 12...48VDC power, contact our Technical Service office(Tel. +39 035 4282422; Email: service@LovatoElectric.com).

EASY BRANCH SYSTEM
ORDER CODES


EXS0000


EXS4000


EXS4001

EASY BRANCH power monitoring system components

Order code	Description
Modules for EASY BRANCH system	
EXS0000	Bus module for EASY BRANCH power monitoring system
EXS4000	Current measuring module with 4 inputs for electronic RJ45 CTs
EXS4001	Current measuring module with 2 inputs for three-phase traditional CTs or 6 inputs for single-phase traditional CTs


EXS1063


EXS3063

Electronic current transformers for EASY BRANCH system

Single-phase	
EXS1032	32A with RJ45 cable, 2m long
EXS1063	63A with RJ45 cable, 2m long
EXS1080	80A with RJ45 cable, 2m long
EXS1125	125A with RJ45 cable, 2m long
Three-phase	
EXS3032	*32A (pitch 18mm) with RJ45 cable, 2m long
EXS3063	*63A (pitch 18mm) with RJ45 cable, 2m long
EXS3080	*80A (pitch 27mm) with RJ45 cable, 2m long
EXS3125	*125A (pitch 27mm) with RJ45 cable, 2m long

* Configurable as single-phase current transformer (3 single-phase measure per each EXS3...)

General characteristics

The EASY BRANCH multi-circuit metering system is a modern solution to the need for electrical parameter metering when more than one load is to be monitored inside a single electrical enclosure. Each DIN rail mounting current metering unit can monitor 2 or 4 measurement points and display the values on the DMG7500, DMG8000 or DMG9000 power analysers to which it is connected, thus centralising the display of data, which includes:

- Phase current
- Measurements on 4 quadrants
- Power (active, reactive and apparent phase and total power)
- Power factor (phase and total)
- Maximum (HIGH), minimum (LOW) and average (AVERAGE) of all measured values
- Peak power/current (max demand)
- Current asymmetry and active power unbalance
- Total harmonic distortion (current)
- Current harmonic analysis up to the 63rd order
- Active, reactive and apparent energy metering (partial and total).

The RJ45 port on the EXS4000 metering module provides foolproof connection of EXS1... and EXS3... electronic current transformers.

The values can also be monitored using the communications ports of DMG... power analysers, to which up to 8 current metering modules can be connected in cascade thanks to the integrated communications bus with standard Ethernet cable (cat. 6), which also provides power.

Connecting 5 or more EXS4... current metering modules requires a 24VDC-0.2A power supply. Each measurement point can be configured as single- or three-phase, up to a total of 33 three-phase or 99 single-phase points.

Operational characteristics of EXS4... current measuring modules

- Power supplied by the bus cable
- nominal input current:
  EXS4000: 32A, 63A, 80A, 125A depending on the connected EXS1... or EXS3... electronic transformer.
  EXS4001: 5A or 1A via external current transformer
- Accuracy (IEC/BS 61557-12):
  - current: Class 0.5 (Iref = 5AAC)
  - power: Class 1 (Active), Class 2 (Reactive)
  - power factor: Class 1
  - THD and current harmonics: Class 5
  - active energy: Class 1 (IEC/EN/BS 62053-21)
  - reactive energy: Class 2 (IEC/EN/BS 62053-23)
- Diagnostics LED indicates correct power supply and electronic current transformer recognition
- Mounts to 35mm din rail (IEC/EN/BS 60715).

Operational characteristics of EXS1... - EXS3... electronic current transformers

- Diagnostics LED to confirm connection
- Pre-wired cable: 2m
- RJ45 connector.

Certifications and compliance

Compliant with standards: IEC/EN/BS 61010-1, IEC/EN/BS 61000-6-2, IEC/EN/BS 61000-6-4.

DIGITAL METERING INSTRUMENTS

Digital metering instruments DMG... series enable the control of energy distribution systems 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.

MANAGEMENT

Of active power max demand

BOOLEAN LOGIC

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

ALARMS

With customizable texts

WIDE RANGE OF VOLTAGE

Measurement voltage input up to 690VAC and auxiliary voltage input up to 440VAC

EXPANDABILITY

Input/output and communication modules

Measure set

- voltage (phase and phase neutral)
- phase current
- neutral current (calculated and real)
- power (active, reactive and apparent phase and total power)
- P.F. (power factor per phase and total)
- 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 31° 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).

COMMUNICATION

Modbus RTU via USB, RS232,
RS485, Modbus TCP (Ethernet)

HARMONIC ANALYSIS

Voltages and currents up to the 31° order

ROGOWSKI COILS

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

MAXIMUM FLEXIBILITY

Of configuration and system upgrades

CONFIGURATION WITHOUT OPENING THE ELECTRICAL PANEL

Via USB or Wi-Fi through communication devices

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	-	-	-	-	USB RS232 RS485 Ethernet
Ethernet-RS485 gateway function	-	-	-	-	■

Flush mount / 96x96mm


	DMG600	DMG610	DMG615	DMG620	DMG611R
Maximum rated voltage	600VAC	600VAC	600VAC	600VAC	600VAC
Voltage and current measure accuracy	0.5%	0.5%	0.,2%	0.2%	0.5%
Active energy measure accuracy	Class 1	Class 1	Class 0,5s	Class 0,5s	Class 1
Single phase energy meter	■	■	■	■	■
Harmonic analysis	15° order	15° order	15° order	15° order	15° order
Neutral-earth voltage	Calculated	Calculated	Calculated	Calculated	Calculated
Expandable with EXP... modules	1 module	1 module	1 module	1 module	1 module
Display type	Icons	Icons	Icons	Icons	Icons
Built-in communication port (Modbus)	-	RS485	RS485	Ethernet	RS485
Communication port with EXP... modules	RS232 RS485 USB Ethernet	RS232 RS485 USB Ethernet	RS232 RS485 USB Ethernet	RS232 RS485 USB Ethernet	RS232 RS485 USB Ethernet
Degree of protection	IP54	IP54	IP54	IP54	IP54
USB communication via CX01 and Wi-Fi communication via CX02	■	■	■	■	■

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.

Integrated communication
Built-in RS485 with modbus RTU and ASCII protocols

Expandability
Support of EXP modules (EXP1013 Ethernet module with modbus TCP protocol included)

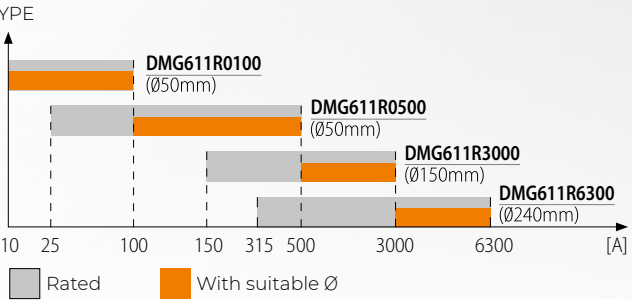
Calibration report
All kits are calibrated during the testing process and come with the relevant calibration report

Measure kit
DMG611 multimeter + 3 Rogowski coils

Front optical port
To support programming through optional interface USB (CX01) or Wi-Fi (CX02)

Safety
It is not necessary to short the secondary before disconnecting the coil

SELECTION GUIDE



MEASUREMENTS

- voltage, current, frequency
- active, reactive and apparent power
- power factor
- high, low and average 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.

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

Certification and compliance
Certifications obtained: EAC.
Compliant with standards: IEC/EN/BS 61010-1, IEC/EN/BS 61010-2-030, IEC/EN/BS 61000-6-2, IEC/EN/BS 61000-6-3.

DIGITAL METERING INSTRUMENTS
ORDER CODES

Modular LCD multimeters, non expandable

Order code	Description
Icon LCD, auxiliary supply 100...240VAC/120...250VDC.	
DMG100	Harmonic analysis. Multilanguage: Italian, English, French, Spanish, Portuguese and German
DMG110	Harmonic analysis. Built-in RS485. Multilanguage: Italian, English, French, Spanish, Portuguese and German
Graphic 128x80 pixel LCD, auxiliary supply 100-240VAC/110-250VDC	
DMG200	THD. Multilanguage: Italian, English, French, Spanish and Portuguese
DMG200L01	THD. Multilanguage: English, Czech, Polish, German and Russian
DMG210	THD, Built-in RS485. Multilanguage: Italian, English, French, Spanish and Portuguese
DMG210L01	THD, Built-in RS485. Multilanguage: English, Czech, Polish, German and Russian

Kits with CTs

Order code	Description
DMGKIT100060	Kit composed of one DMG100 multimeter and n°3 CTs 60/5A for Ø22mm cable
DMGKIT100100	Kit composed of one DMG100 multimeter and n°3 CTs 100/5A for Ø22mm cable
DMGKIT100150	Kit composed of one DMG100 multimeter and n°3 CTs 150/5A for Ø23mm cable
DMGKIT100200	Kit composed of one DMG100 multimeter and n°3 CTs 200/5A for Ø23mm cable

General characteristics
DMG... digital multimeters are available with a modular housing, 4 module size, and are equipped with a graphic backlight LCD (except DMG100/110 with icon display) capable of providing extremely clear, intuitive and flexible viewing of all electrical parameters of an installation.
For DMG110 and DMG210 versions, there is a built-in isolated RS485 interface.
Main measurements:
- 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 of all measurements
- Maximum demand of power and current values
- Asymmetric voltage and current
- Total harmonic distortion (THD) of voltage and current values
- Energy meters for active, reactive and apparent values
- Hour counter (total and partial, 1 on DMG200/210, 4 programmable on DMG100/110)
- Phase energy (DMG100/110)
- Harmonic analysis up to the 15th order (DMG100/110).

Operational characteristic
- Auxiliary supply voltage range: 100...240VAC / 110...250VDC
- Maximum rated measurement voltage:
  - 600VAC (DMG100/110)
  - 690VAC (DMG200/210)
- Voltage measurement range:
  - 50...720VAC phase-to-phase (DMG100/110)
  - 20...830VAC phase-to-phase (DMG200/210)
- Usage in medium and high-voltage systems with voltage transformers
- Rated input current: With external CT /5A (also 1A for DMG100/110)
- Current measurement range with CT up to 10,000A
- Frequency measurement range: 45...66Hz
- True RMS measurements for voltage and current values
- Accuracy:
  - Voltage: ±0,5% (50...720VAC for DMG1...) (50...830VAC) for DMG2...
  - Current: ±0,5% (0.1...1.1In)
  - Power: ±1% f.s.
  - Frequency: ±0.05%
  - Active energy: Class 1 (IEC/EN/BS 62053-21)
  - Reactive energy: Class 2 (IEC/EN/BS 62053-23)
- Communication protocol Modbus-RTU and ASCII (only for DMG110 and DMG210)
- Programming and remote control by software (only for DMG110 and DMG210; compatible with Synergy and Xpress software)
- Modular housing, 4 module
- EN degree of protection: IP40 on front; IP20 at terminals.

Certifications and compliance
Certifications obtained: cULus, EAC and RCM.
Compliant with standards: DMG100/110:
IEC/EN/BS 61010-1, IEC/EN/BS 61010-2-030,
IEC/EN/BS 61000-6-2, IEC/EN/BS 61000-6-3,
UL 61010-1, CSA C22.2 n° 61010-1,
UL 61010-2-030, CSA 22.2 n° 61010-2-030.
DMG200/210: IEC/EN/BS 61010-1, IEC/EN/BS 61000-6-2,
IEC/EN/BS 61000-6-4, UL 61010-1, UL508, CSA C22.2 n°14.

Modular LCD multimeters, expandable

Order code	Description
Graphic LCD, 128x80 pixel, auxiliary supply 100...240VAC/110...250VDC.	
DMG300	Harmonic analysis, expandable with modules series EXM... Multilanguage: Italian, English, French, Spanish and Portugues
DMG300L01	Harmonic analysis, expandable with modules series EXM... Multilanguage: English, Czech, Polish, German and Russian

Expansion modules for DMG300...

Order code	Description
Inputs and outputs	
EXM1000	2 digital inputs and 2 static outputs, opto-isolated
EXM1001	2 opto-isolated digital inputs and 2 relay outputs rated 5A 250VAC
EXM1002	4 opto-isolated digital inputs and 2 relay outputs rated 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 rated 5A 250VAC
EXM1030	Data storage, clock-calendar (RTC) with backup battery for data logging

General characteristics

DMG300... digital multimeters are available with a modular housing, 4 module size, and are equipped with a graphic backlight LCD capable of providing extremely clear, intuitive and flexible viewing of all electrical parameters of a system.
The very accurate measurements combined with their extreme compactness provide an ideal solution for every type of application.
Expandable with up to 3 module EXM... series by optical interface.
Main measurements:

- 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) of voltage and current values
- Harmonic analysis of voltage and current up to 31° order
- Energy meters for active, reactive, apparent partial and total values, programmable tariff functions
- Hour counter for programmable total and partial hours
- Pulse counter for general use: consumption pulse counting for water, gas, etc. with expansion module only.

Operational characteristics

- Auxiliary supply voltage range: 100...240VAC / 110...250VDC
- Voltage measurement range: 20...830VAC phase-to-phase 10...480VAC phase-neutral
- Usage in medium and high-voltage systems with voltage transformers
- Rated input current: With external CT, 5A or 1A
- Current measurement range with CT up to 10,000A
- Frequency measurement range: 45...66Hz
- True RMS measurements for voltage and current values
- Measurements accuracy:
  - Voltage: ±0,2% (50...830VAC)
  - Current: ±0,2% (0,1...1,1In)
  - Power: ±0,5% f.s.
  - Power factor: ±0,5%
  - Frequency: ±0,05%
  - Active energy: Class 0.5s (IEC/EN/BS 62053-22)
  - Reactive energy: Class 2 (IEC/EN/BS 62053-23)
- Communication protocol Modbus-RTU, ASCII and TCP (only with communication expansion modules)
- Programming and remote control by software (only with communication expansion modules); compatible with Synergy and Xpress software
- Modular housing, 4 module
- EN degree of protection: IP40 on front; IP20 at terminals.

Certifications and compliance

Certifications obtained: cULus, EAC, RCM.
Compliant with standards: IEC/EN/BS 61010-1, IEC/EN/BS 61000-6-2, IEC/EN/BS 61000-6-4, UL508, CSA C22.2 n° 14.

DIGITAL METERING INSTRUMENTS
ORDER CODES

Flush-mount multimeters, expandable

Order code	Description
Icon LCD 72X46mm/2.83x1.81", backlight, auxiliary supply 100...440/110...250VDC	
DMG600	Harmonic analysis, front optical port
DMG610	Harmonic analysis, front optical port, built-in RS485
DMG615	**High active energy measurement accuracy with Class 0.5s.** Harmonic analysis, front optical port, built-in RS485
DMG620	**High active energy measurement accuracy with Class 0.5s.** Harmonic analysis, front optical port, built-in Ethernet port

Flush-mount multimeters, expandable with Rogowski coils

Order code	Description
Icon LCD 72X46mm/2.83x1.81", backlight, harmonic analysis, auxiliary supply 100...440/110...250VDC, built-in RS485. Current reading through 3 Rogowski coils included. Cable length: 2mt.	
DMG611R0100❶	Max current 100A. Ø50mm
DMG611R0500❶	Max current 500A. Ø50mm
DMG611R3000❶	Max current 3000A. Ø150mm
DMG611R6300❶	Max current 6300A. Ø240mm

❶ Consult Technical support about versions with supply 12...48VDC (Tel. +39 035 4282422; Email: service@LovatoElectric.com).

CX01

CX02

Communication devices for DMG6...

Order code	Description
CX01	USB/optical device with PC - LOVATO Electric product connecting cable, for programming, data download, diagnostics and firmware upgrade
CX02	Wi-Fi device for PC- LOVATO Electric product programming, data download, diagnostics and cloning

General characteristics

DMG6... digital multimeters are capable of viewing the measurements with high accuracy on the wide graphic LCD, which allow to control energy distribution networks.
They are available with a flush-mount housing, (96x96mm/3.78"x3.78") and 1 expansion slot to fit plug-in expansion modules, suitable for numerous applications.
The main features include an extended power supply voltage range, high measurement accuracy, expandability and graphic interactive interface for simple use.
They are equipped with a front optical port for programming via USB (CX01) or WI-Fi (CX02) communication devices to allow:
- Configuration of parameters
- Parameters copy
- Cloning of stored data.

Main measurements:
- 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
- Harmonic analysis of voltage and current up to the 15° order
- Energy meters for active, reactive, apparent partial and total values
- Hour counter for programmable total and partial hours.

Operational characteristics

- Auxiliary supply voltage range:
  • 100...440VAC / 110...250VDC
- Voltage measurement range: 50...720VAC L-L
- Usage in medium and high voltage systems with voltage transformers
- Rated input current:
  By external CT 5A or 1A
- Current reading through Rogowski coils for DMG611...
- Frequency measurement range: 45...66Hz
- True RMS measurements: for voltage and current
- Measurement accuracy DMG600/610/611...:
  • Voltage: ±0,5% (50...720VAC)
  • Current: ±0,5% (0,1...1,1In)
  • Power: ±1% f.s.
  • Frequency: ±0,05%
  • Active energy: Class 1 (IEC/EN/BS 62053-21)
  • Reactive energy: Class 2 (IEC/EN/BS 62053-23)
- Measurement accuracy DMG615/620:
  • Voltage: ±0,2% (50...720VAC)
  • Current: ±0.2% (0.1...1.1In)
  • Power: ±0,5% f.s.
  • Frequency: ±0,05%
  • Active energy: Class 0.5s (IEC/EN/BS 62053-22)
  • Reactive energy: Class 2 (IEC/EN/BS 62053-23)
- Non-volatile memory for data storage
- Communication protocol Modbus-RTU, ASCII and TCP
- Compatible Synergy and Xpress
- Flush-mount housing 96x96mm/3.78"x3.78"
- EN degree of protection: IP54 on front.

Certifications and compliance

Certifications obtained: cULus (except DMG611... and DMG620), EAC and RCM.
Compliant with standards: IEC/EN/BS 61010-1, IEC/EN/BS 61010-2-030, IEC/EN/BS 61000-6-2, IEC/EN/BS 61000-6-3, UL 61010-1, CSA C22.2 n° 61010-1, UL 61010-2-030, CSA 22.2 n° 61010-2-030.

Expansion modules for DMG6...

Order code	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 rated 5A 250VAC
EXP1004	2 analog inputs, opto-isolated 0/4...20mA or PT100 or 0...10V or 0...±5V
EXP1005	2 analog outputs, opto-isolated 0/4...20mA, 0-10V or 0...±5V
EXP1008	2 opto-isolated digital inputs and 2 relay outputs rated 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	Opto-isolated Profibus-DP interface

Accessories

DM
Current transformers
from 40A to 4000A

EXCM4G01
Modem/Router
4G

EXCCON01
RS485-Ethernet
converter

EXCGLA01
Gateway data
logger

SOFTWARE

Visit the website **em.LovatoElectric.com**

Synergy
Monitoring and energy efficiency software.

Xpress
Configuration and remote control software.

Visit the website dedicated to energy efficiency to discover more! Frame this QR code with your smartphone.

Energy
Management

DIGITAL METERING INSTRUMENTS

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