AC ENERGY METERS
DME SERIES



Lovato electric

ENERGY AND AUTOMATION

Three-phase with or without neutral, non expandable



DMED300T2
DMED311
DMED302



DMED305T2
DMED330
DMED332

Order code	Description	Qty per pkg	Wt
		n°	[kg]
Digital meter for three-phase with neutral. 80A direct connection.			
DMED300T2	2 programmable static outputs, multi-measurements❶, 4U	1	0.360
DMED300T2UL	2 programmable static outputs, multi-measurements❶, cULus certified, 4U	1	0.360
new DMED311	RS485 interface, multi-measurements❶, 4U	1	0.360
DMED302	M-Bus interface, multi-measurements❶, 4U	1	0.360
Digital meter for three-phase with or without neutral. Connection by CT /1A and /5A.			
DMED305T2	2 programmable static outputs, multi-measurements❶, 4U	1	0.332
DMED330	RS485 interface, multi-measurements❶, 4U	1	0.332
DMED332	M-Bus interface, multi-measurements❶, 4U	1	0.332

Three-phase with or without neutral, expandable



DMED310T2

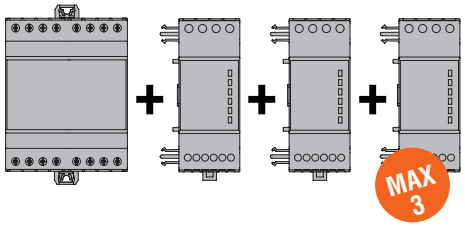
Order code	Description	Qty per pkg	Wt
		n°	[kg]
Digital meter for three-phase with or without neutral. Connection by CT /5A.			
DMED310T2	2 programmable static outputs, multi-measurements ❶, expandable with EXM... modules series, 4U	1	0.332

Order code	Description
DMED310T2 EXPANSION MODULES. 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
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 reserve energy for data logging



EXM1010

Maximum combination for DMED310T2



General characteristics
The energy meters are digital meters/analyzers of electric energy for systems with direct three-phase connection or by CT.

Operational characteristics
- LCD multifunction meter
- Nominal supply voltage: 380...415VAC (L-L); UL nominal supply voltage: 120VAC (L-N), 240VAC (L-L), 60Hz, direct two-phase + N
- Active energy measurement and accuracy: Class 0.5s (IEC/EN/BS 62053-22) for DMED305T2, DMED330 and DMED332; Class 1❷ (IEC/EN/BS 62053-21) for DMED300T2, DMED311 and DMED302; Class 0.5 (ANSI C12.20) for DME300T2UL
- Active energy measurement and accuracy: Class 2 (IEC/EN/BS 62053-23)
- Metrological LED with pulse emission for consumption indication
- Clearable partial active energy measurements
- 1 programmable digital input
- Built-in RS485 or M-Bus ports for pulse output models compatible with Synergy and Xpress
- Optical interface for EXM... expansion modules with DMED310T2
- Modular housing, 4 module
- Sealable terminal blocks, standard supplied
- EN degree of protection: IP40 on front; IP20 at terminals.

Synergy supervision and energy management software
See Section 36.

Xpress configuration and remote control software
See Section 36.

EXM series expansion modules
See page 35-3.

Certifications and compliance
Certifications obtained: EAC, RCM for all types, cULus for DMED300T2UL.
Compliant with standards: IEC/EN/BS 50470-1, IEC/EN/BS 61010-1, IEC 61010-2-030 for all DMED...; IEC/EN/BS 62052-11, IEC/EN/BS 62052-31 for DMED311..

❶ Multi-measurements:
- Total and partial active energy
- Total and partial reactive energy
- Voltage
- Current
- Active and reactive power
- Power factor
- Frequency
- Total and partial hour counter
- Average active power (calculation made using the last 15 minutes of data)
- Maximum demand.

❷ Class 1 according to IEC/EN/BS 62053-21, accuracy measured in the 0.75A-80A range: 0.5%.

Modular LCD multimeters, non expandable



DMG1...

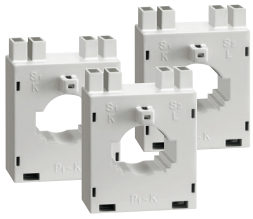


DMG200 - DMG210

Order code	Description	Qty per pkg	Wt
		n°	[kg]
DMG100	Icon LCD, auxiliary supply 100...240VAC/120...250VDC. Multilanguage: Italian, English, French, Spanish, Portuguese and German	1	0.294
DMG110	Icon LCD, built-in RS485 port, auxiliary supply 100...240VAC/120...250VDC. Multilanguage: Italian, English, French, Spanish, Portuguese and German	1	0.294
DMG200	Graphic 128x80 pixel LCD, auxiliary supply 100-240VAC/110-250VDC. Multilanguage: Italian, English, French, Spanish and Portuguese	1	0.294
DMG200L01	Graphic 128x80 pixel LCD, auxiliary supply 100-240VAC/110-250VDC. Multilanguage: English, Czech, Polish, German and Russian	1	0.294
DMG210	Graphic 128x80 pixel LCD, built-in RS485 port, auxiliary supply 100-240VAC/ 110-250VDC. Multilanguage: Italian, English, French, Spanish and Portuguese	1	0.300
DMG210L01	Graphic 128x80 pixel LCD, built-in RS485 port, auxiliary supply 100-240VAC/ 110-250VDC. Multilanguage: English, Czech, Polish, German and Russian	1	0.300

Kits with CT





DMGKIT100150

Order code	Description	Qty per pkg	Wt
		n°	[kg]
DMGKIT100060	Composed of one DMG100 multimeter and n°3 CTs 60/5A for Ø22mm cable	1	1.035
DMGKIT100100	Composed of one DMG100 multimeter and n°3 CTs 100/5A for Ø22mm cable	1	1.035
DMGKIT100150	Composed of one DMG 100 multimeter and n°3 CTs 150/5A for Ø23mm cable	1	0.856
DMGKIT100250	Composed of one DMG100 multimeter and n°3 CTs 250/5A for Ø23mm cable	1	0.856

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
- P.F.: 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, 360...440Hz
- 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)
- Non-volatile memory for data storage
- 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.

CURRENT TRANSFORMERS OF DMG... KITS
- Operating frequency: 50...60Hz
- Secondary output current: 5A
- Overload withstand: 120% Ipn
- Rated insulation voltage Ui: 720V
- Rated short time thermal current Ith: 40...60Ipn for 1 second
- Rated dynamic current Idyn: 2.5Ith for 1 second
- Insulation (dry type): class E
- Faston terminals
- EN degree of protection: IP30.

Synergy supervision and energy management software
See Section 36.

Xpress configuration and remote control software
See Section 36.

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.

Single-phase



DMED110T1
DMED111
DMED112



DMED115T1
DMED120T1
DMED121 - DMED122

Order code	Description	Qty per pkg	Wt
		n°	[kg]
Digital meter, with LCD screen.			
DMED100T1	40A direct connection, 1U 1 pulse output, 220...240VAC	1	0.086
DMED110T1	40A direct connection, 1U 1 program. static output, multi-measurements❶, 220...240VAC	1	0.090
DMED111	40A direct connection, 1U, RS485 interface multi-measurements❶, 110...240VAC	1	0.090
DMED112	40A direct connection, 1U, M-Bus interface multi-measurements❶, 110...240VAC	1	0.090
Digital meter with backlight LCD display.			
DMED115T1	40A direct connection, 2U, 1 program. static output, multi-measurements ❷, 220...240VAC	1	0.090
DMED120T1	63A direct connection, 2U 1 program. static output, multi-measurements ❶, 220... 240VAC	1	0.148
DMED121	63A direct connection, 2U, RS485 interface multi-measurements❶, 110...240VAC	1	0.148
DMED122	63A direct connection, 2U, M-Bus interface multi-measurements❶, 110...240VAC	1	0.148

General characteristics
The energy meters are instruments for energy consumption measurement in single-phase installations with direct connection.

Operational characteristics
- LCD meter: with 5+1 digit count for DMED100T1, DMED110T1, DMED111, DMED112; backlight with 6+1 digit count for DMED115T1, DMED120T1, DMED121, DMED122
- Direct connection
- Active energy measurement and accuracy:Class 1 (IEC/EN/BS 62053-21)
- Reactive energy measurement and accuracy:Class 2 (IEC/EN/BS 62053-23)
- Metrological LED with pulse emission for consumption indication
- Clearable partial energy measurement
- Built-in RS485 or M-Bus ports for pulse output models compatible with Synergy and Xpress
- Modular housing
- Sealable terminal blocks, standard supplied
- EN degree of protection: IP40 on front; IP20 at terminals.

Synergy supervision and energy management software
See Section 36.

Xpress configuration and remote control software
See Section 36.

Certifications and compliance
Certifications obtained: cULus (DMED100T1, DMED110T1, DMED120T1, DMED121), EAC (for all DMED... type), RCM (for all DMED...type, DMED122 except).
Compliant with standards: IEC/EN/BS 50470-1, IEC/EN/BS 61010-1 for all DMED... type; UL 61010-1, CSA C22-2 n° 61010-1 for DMED100T1, DMED110T1, DMED120T1, DMED121.

❶ Multi-measurements:
- Total and partial active energy
- Total and partial reactive energy
- Voltage
- Current
- Active and reactive power
- Power factor
- Frequency
- Total and partial hour counter
- Average active power (calculation made using the last 15 minutes of data)
- Maximum demand.

❷ Multi-measurements:
- Total and partial active energy
- Active power
- Average active power (calculation made using the last 15 minutes of data)
- Maximum demand.

ENERGY METERS DMR... SERIES

The energy meters DMR… series are suitable for active and reactive energy measurement and power monitoring applications. All the models are equipped with a built-in RS485 communication port and Modbus RTU protocol allowing an easy remote communication with supervision softwares.

Multi-measurement

- Imported and exported active energy
- Imported and exported reactive energy
- Voltage, current, frequency
- Active power, reactive power, apparent power, power factor
- Power max demand

Fully compliant CE requirements

- IEC standards for safety (EN 61010-1: 2010, EN 61010-2-030: 2010)
- EMC (EN 61326-1: 2013, EN 61326-2-3: 2013)



Multi-function

- kWh total (T1+T2), kWh(T1), kWh(T2)
- kWh partial, import and Export
- kVArh total (T1+T2), kVArh(T1), kVAh(T2)
- kW, kVAr, V, I, Hz, PF, total

Interfaces

- RS485 communication port with Modbus RTU protocol
- 1/2 programmable pulse outputs
- 2 pulse LEDs on the front (active and reactive energy)
- Dual tariff input (DMR121T2, DMR301T2, DMR330T2)

SOFTWARE

Synergy and Synergy cloud, for supervision and energy management.



ORDER CODES

Order codes	Installation type	Modules	Dimensions	Communication	Pulse output	Tariffs	Max current [A]
DMR121	1-ph, direct	2	36x100x63mm	RS485	2	1	63
DMR121T2	1-ph, direct	2	36x100x63mm	RS485	2	2	63
DMR301T2	3-ph, direct	4	72x100x66mm	RS485	1	2	80
DMR330T2	3-ph, CT /5A	4	72x94.5x65mm	RS485	2	2	5

TECHNICAL CHARACTERISTICS

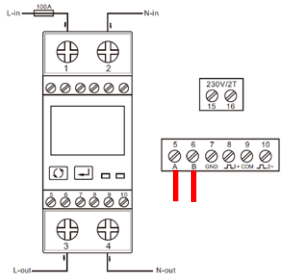




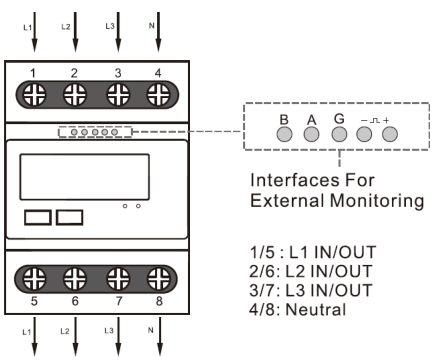
	DMR121 / DMR121T2	DMR301T2	DMR330T2
Nominal voltage (Un)	230V	230V/400V~	230V/400V~
Operational voltage	0.8 - 1.2 Un	0.8 - 1.2 Un	0.8 - 1.2 Un
Insulation capabilities - AC voltage withstand	4kV for 1 minute		
Insulation capabilities - Impulse voltage withstand	6kV - 1.2/50µS		
Nominal current (In)	10A	10A	1A/5A
Operational current range	0.04A - 63A	0.04A - 80A	0.04A - 6A
Over current withstand	30 Imax for 0.01s	30 Imax for 0.01s	20 Imax for 0.01s
Operational frequency range	50/60Hz		
Self consumption	≤ 2W/10VA	≤ 2W/10VA per phase	≤ 2W/10VA per phase
Pulse output 1	configurable	1000imp/kWh	configurable
Pulse output 2	1000imp/kWh	–	1000imp/kWh
Display	LCD with backlit		
Maximum reading	999999.9kWh	9999999kWh	999999.9kWh
Operating humidity	≤ 90%		
Storage humidity	≤ 95%		
Operating temperature	-25°C...+55°C		
Storage temperature	-40°C...+70°C		
Active energy accuracy	Class 1 IEC/EN/BS 62053-21		
Protection degree	IP40 on front; IP20 on terminals		

WIRING DIAGRAMS

DMR121...



DMR301T2



DMR330T2

