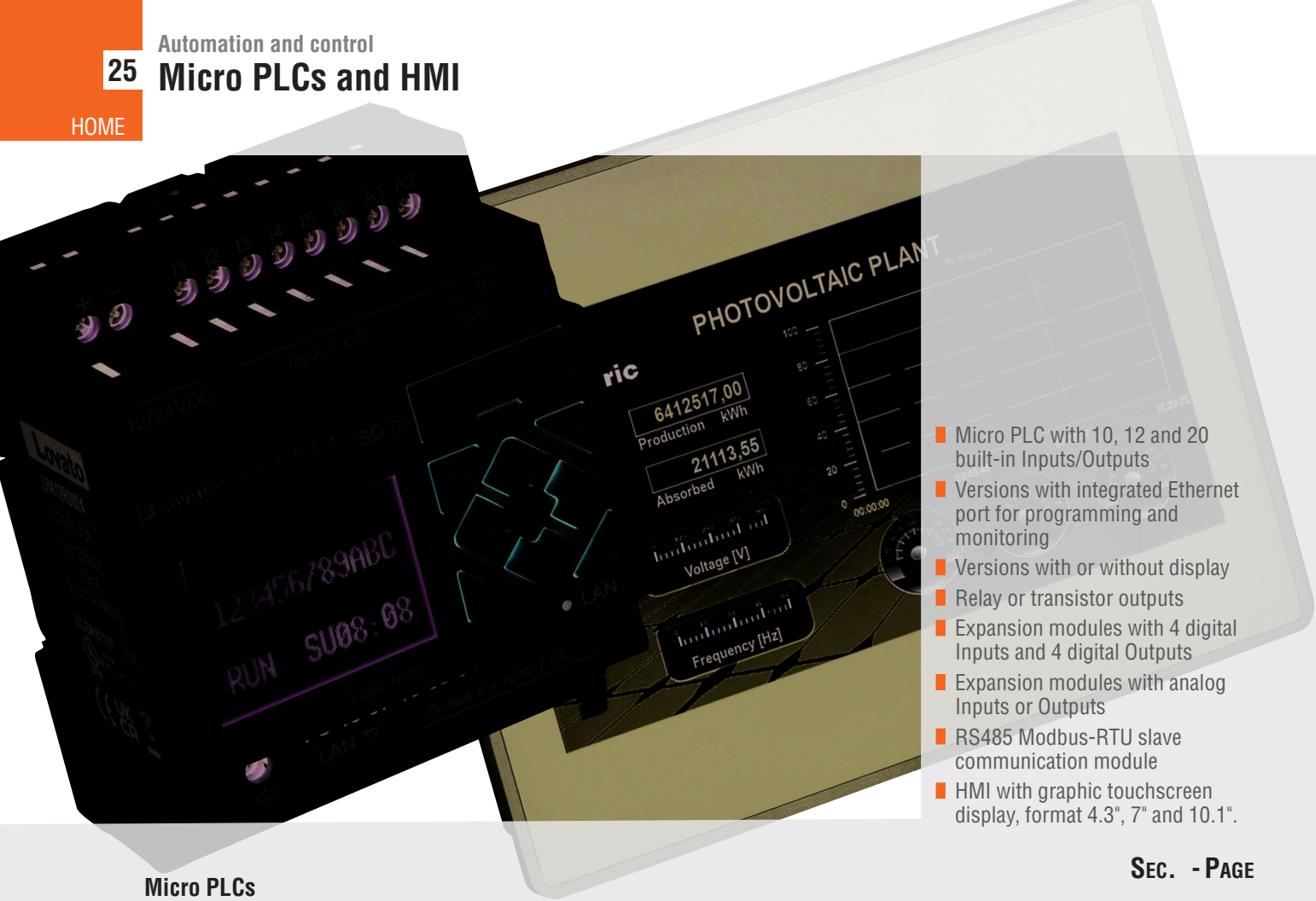
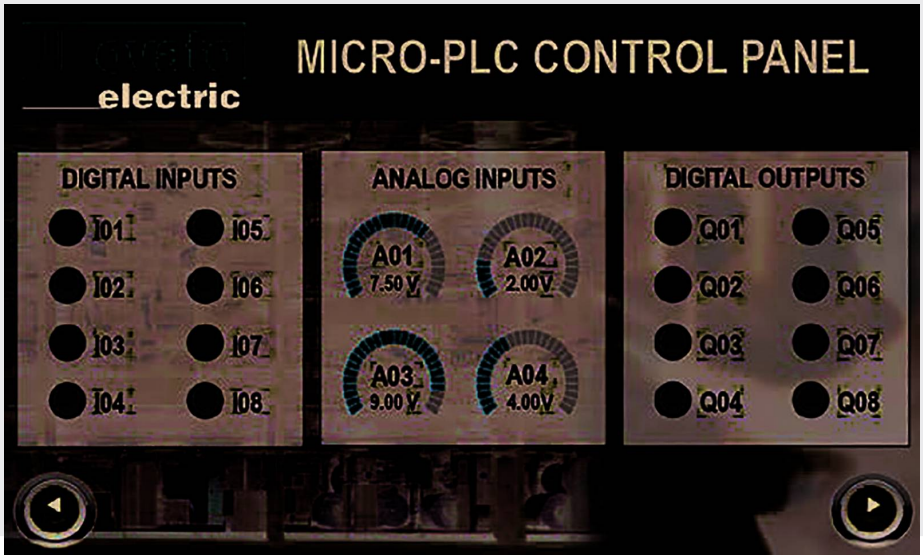
Micro PLCs and HMI



- Micro PLC with 10, 12 and 20 built-in Inputs/Outputs
- Versions with integrated Ethernet port for programming and monitoring
- Versions with or without display
- Relay or transistor outputs
- Expansion modules with 4 digital Inputs and 4 digital Outputs
- Expansion modules with analog Inputs or Outputs
- RS485 Modbus-RTU slave communication module
- HMI with graphic touchscreen display, format 4.3", 7" and 10.1".

	Sec. - Page
Micro PLCs	
Micro PLCs LRK series	25 - 6
Micro PLCs LRD series	25 - 7
Expansion and communication modules	25 - 8
Accessories	25 - 9
Kit	25 - 9
HMI	**25 - 11**
Dimensions	**25 - 12**
Wiring diagrams	**25 - 13**
Technical characteristics	**25 - 14**





Pag. 25-6

MICRO PLCs LRK SERIES

- Compact with great performance
- Base modules with 10, 12 or 20 Inputs/Outputs
- Integrated Ethernet port for programming, monitoring and web server
- Wide program memory
- Versions with or without display
- 12/24VDC or 100...240VAC power supply
- Relay outputs
- Expandable with expansion modules LRE type.



Pag. 25-7

MICRO PLCs LRD SERIES

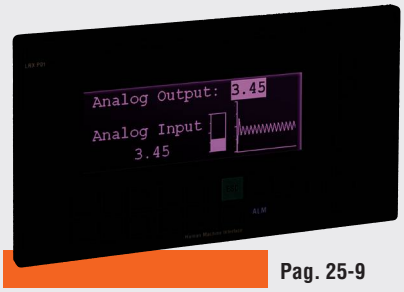
- Simple and functional.
- Base modules with 10, 12 or 20 Inputs/Outputs
- 12VDC, 24VDC, 24VAC or 100...240VAC power supply
- Relay or transistor outputs
- Expandable with expansion modules LRE type.



Pag. 25-8

EXPANSION AND COMMUNICATION MODULES

- Digital Inputs/Outputs
- Analog inputs (0...10V, 0/4...20mA)
- Analog outputs (0...10V, 0/4...20mA)
- Relay or transistor outputs
- PT100 temperature sensor inputs
- Modbus-RTU communication module
- 24VDC, 24VAC or 100...240VAC power supply.



Pag. 25-9

ACCESSORIES

- Program backup memory
- Power supply unit
- HMI operator panel with graphic LCD.



Pag. 25-9

KIT

- Micro PLCs LRD series complete with software and USB programming cable
- Training kits complete with micro PLC and Inputs/Outputs simulation board.



Pag. 25-11

HMI

- Graphic display with touchscreen
- Available in formats 4.3", 7" and 10.1"
- Programming software
- IP66, Type 2 and 4X.

		LRK series	LRD series
Built-in Ethernet port		●	–
LCD display		● (not present on LRK12RD024B)	●
Auxiliary power supply		versions: 12/24VDC,100-240VAC	versions: 24VDC,12VDC, 24VAC, 100-240VAC
Integrated Inputs/Outputs in the base module		10, 12 or 20	10, 12 or 20
Maximum number of Inputs/Outputs (I/O) ❶		56 I/Os with expansion modules (44 digital I/Os + 12 analog I/Os) + 172 I/Os with network connection (126 digital Network I/Os + 46 analog Network I/Os)	56 I/Os with expansion modules (44 digital I/Os + 12 analog I/Os)
Program memory		600 rows (ladder), 500 blocks (FBD)	300 rows (ladder), 260 blocks (FBD)
RS485 port		optional, integrated on type LRK20RD024RS	optional, integrated on type LRD20RD024P1
Programming		standard Ethernet cable	dedicated USB cable type LRXC03
Web server		●	–
Program backup memory		micro-SD card (32GB max)	dedicated module type LRXM00
Slot for battery for the retention of the clock time		● (optional CR1220 battery)	–
Basic functions	Arithmetic operations (addition, subtraction, multiplication, division)	●	●
	Timers	● (31)	● (31)
	Counters	● (31)	● (31)
	Analog comparators	● (31)	● (31)
	Real Time Clock	● (31)	● (31)
	HMI display pages	● (31)	● (31)
	Auxiliary memories (merkers M+N)	● (127 + 127)	● (63 + 63)
	Data registers	● (240)	● (240)
	Multiplexers	● (15)	● (15)
Advanced functions	Data-logging	●	–
	Astronomical clock	●	–
	Analog filter	●	–
	Max, min and average value	●	–
	PID	●	●
	Network I/O (control or remote I/Os between micro PLC connected in Ethernet)	●	–
	RS485 functions: remote I/O (master-slave), I/O link, Modbus RTU commands	LRK20RD024RS only	LRD20RD024P1 only

❶ Considering the base module with the highest number of built-in I/Os (type LR...20...).

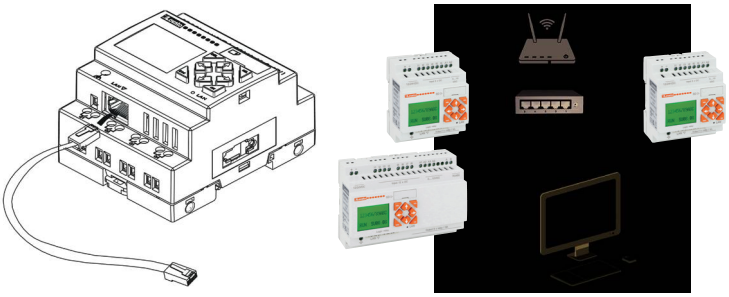
Lovato electric

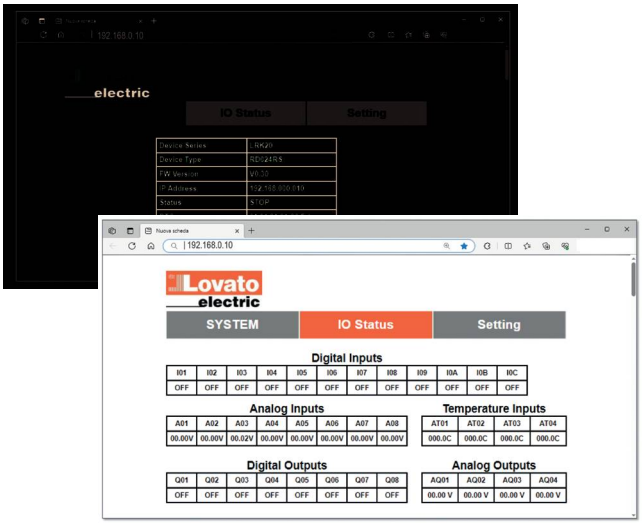
MICRO PLCs LRK SERIES
COMPACT WITH GREAT PERFORMANCE



BUILT-IN ETHERNET PORT

- local or remote programming with connection through IP address
- connection with standard Ethernet cable, without the need for special cables for programming
- support of Modbus-TCP communication port for the integration in supervision systems or interfacing with master intelligent devices such as HMI, PC or PLC
- built-in web server for the monitoring of the status and the main variables of the micro PLC from remote through a web browser.

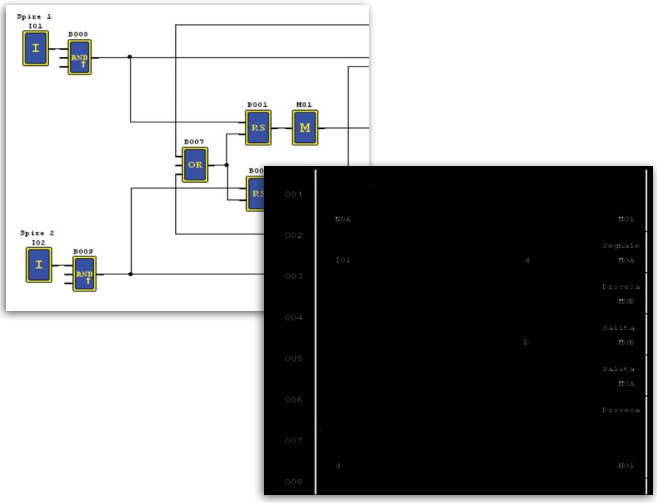




WIDE PROGRAM MEMORY

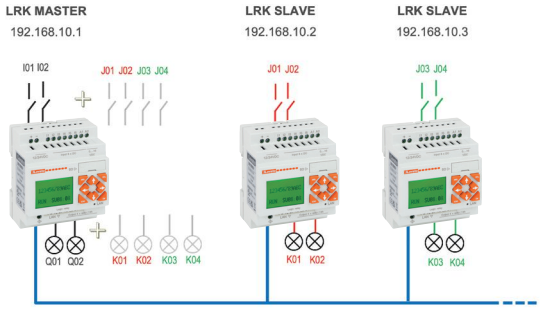
Double memory compared to micro PLC LRD series, for programs with medium-high complexity:

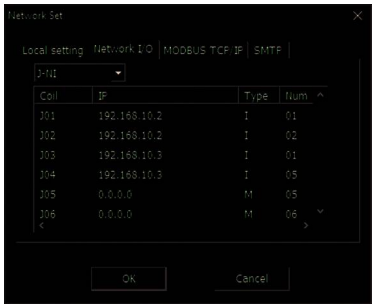
- **600 rows** for LADDER programming (contact scheme)
- **500 blocks** for FBD (function blocks).

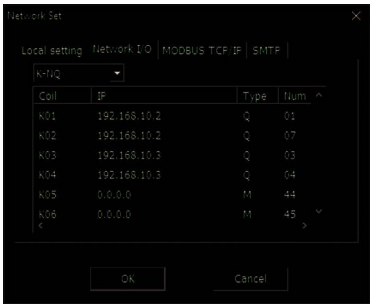


LARGE NUMBER OF MANAGEABLE INPUTS AND OUTPUTS

- up to 56 I/Os with the connection of expansion modules type LRE (44 digital I/O + 12 analog I/O)
- plus additional 172 I/Os controlled through network connection between more LRK base modules (126 digital Network I/Os + 46 analog Network I/Os): one LRK base module configured as master can control the I/Os of other LRK base modules configured as slaves connected on the same network.



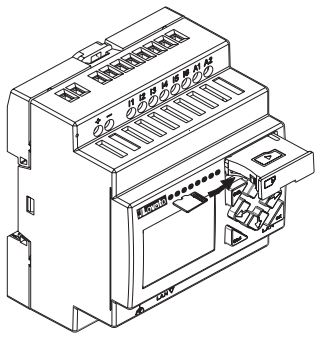


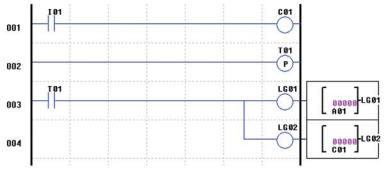


SUPPORT OF MICRO-SD CARD

- for program backup or data-logging
- support of standard micro-SD card (32GB max).

The micro-SD card allows the saving of the project to be transferred on other micro PLC LRK series, without the need of dedicated memory modules.
It can also be used for the data-logging function, to store up to 15 variables of the micro PLC, sampled at configurable time intervals, which are saved to a daily xls file on the micro-SD card.





	A	B	C
1	Time	Coil_Name	Current_Value
2	24/01/10 10:30:00	A01	252
3	24/01/10 10:30:00	C01	8
4	24/01/10 10:30:00	DR07	12
5	24/01/10 10:35:00	A01	345
6	24/01/10 10:35:00	C01	20
7	24/01/10 10:35:00	DR07	39

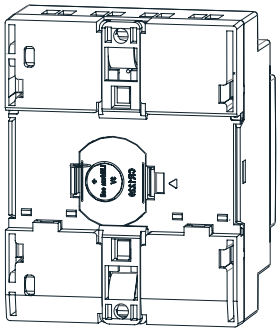
POWER SUPPLY 12/24VDC

The base modules with DC auxiliary power supply (type LRK...D024...) can be powered either at 12VDC or 24VDC, ensuring maximum flexibility for any application.
It is also available a version with auxiliary power supply 100...240VAC (type LRK10RA240).



SLOT FOR BATTERY FOR THE RETENTION OF THE RTC

On the back of the micro PLC, there is a slot for an optional CR1220-type battery to maintain the integrated date and time even in the absence of power supply.



RS485 PORT

The micro PLC type LRK20RD024RS, in addition to the Ethernet port, also integrates a second communication port RS485 type, which operates independently of the Ethernet port.



ASTRONOMICAL CLOCK

Functionality that automatically calculates the sunrise and sunset times of a specific location based on set geographical coordinates (latitude and longitude). It is used to control the activation of the outputs of the micro PLC between sunrise and sunset, for applications such as public lighting control or the management of lights in parking lots, fountains, shop windows, neon signs, and many others.



MICRO PLCs LRD SERIES
SIMPLE AND FUNCTIONAL



SYSTEM CONTROL AND SUPERVISION
- Contacts status viewing in simple pages on display
- Possibility to add the micro PLC to data networks. With Synergy supervision and energy management software, a server-multiclient structure can also be managed through web interface.

QUICK INSTALLATION OF CONTROL PANELS
- Fewer number of components
- Less wiring and number of connections.

REPEATABILITY
- Less errors during panel assembly
- Considerable time saving.

FLEXIBILITY
- Quick correction of abnormal conditions during the panel test
- Fast changes on control boards.

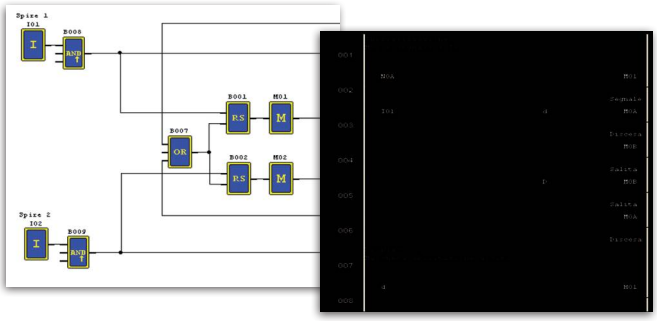
FUNCTION BLOCKS AND MEMORY

Timers (T) (delay on/off, recycle, pulsing...)	31
Real Time Clock (RTC) (daily, weekly, monthly and yearly mode)	31
Counters (C)	31
Analog comparators (G)	31
User's pages (H) - 16 characters - 4 lines	31
Auxiliary relays - Markers (M + N memory types)	63 + 63
Arithmetic operation: addition/subtraction and multiplication/division	31 + 31
Data registers (DR)	240

Possibility to save in the internal memory:
- Auxiliary memories
- Counter values
- Numerical variables.

PROGRAM MEMORY SIZE

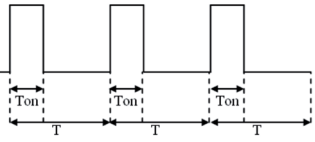
Language	
LADDER (contact scheme)	300 rows
FBD (function blocks)	260 blocks



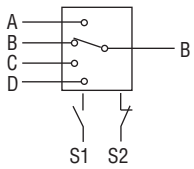
FUNCTIONS

PWM OUTPUT
Pulse train generation with programmable pulse time and frequency (only for base module with transistor outputs type LRD12TD024)

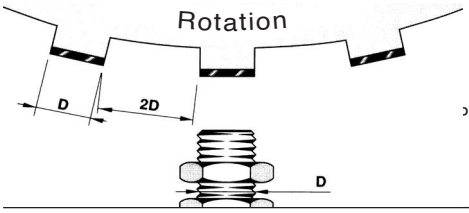
$$V_{out} = 24VDC \times \frac{T_{on}}{T}$$



MULTIPLEXER
Selection of 1 of 4 values according to the combination of two digital signals

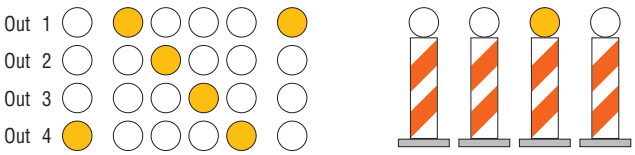


HIGH SPEED INPUT
Integrated on base modules with DC power supply

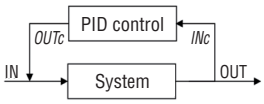


Position and speed detection

SHIFT FUNCTION - activation of pulsed outputs in sequence

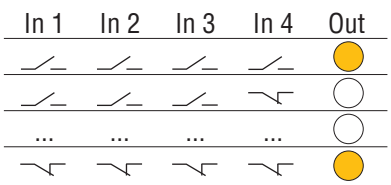


PID CONTROL

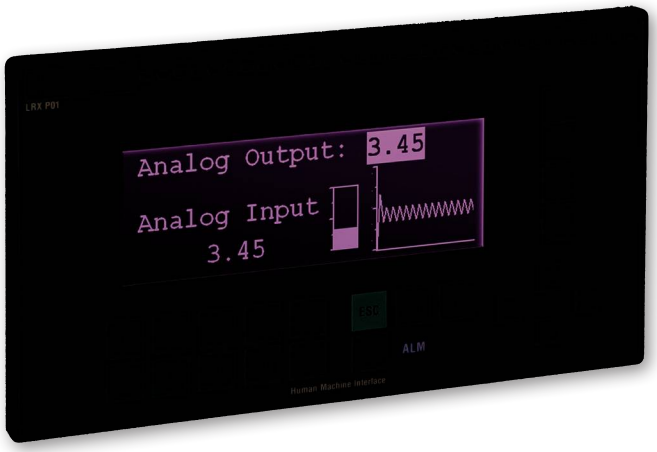


Example:
- IN: heating switch on and required temperature setting
- OUT: current room temperature
- INc: measured room temperature in an exact spot
- OUTc: temperature adjusting and controlling.

BOOLEAN LOGIC BLOCKS
Output activation based on a series of digital signals



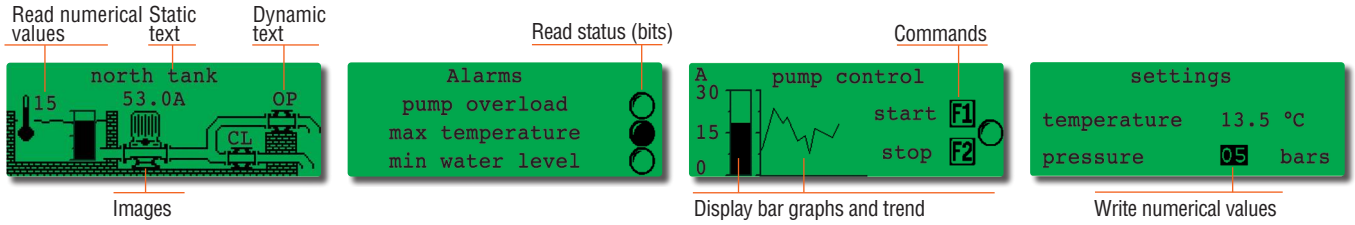
HMI Operator panel LRXP01



HMI INTERFACE

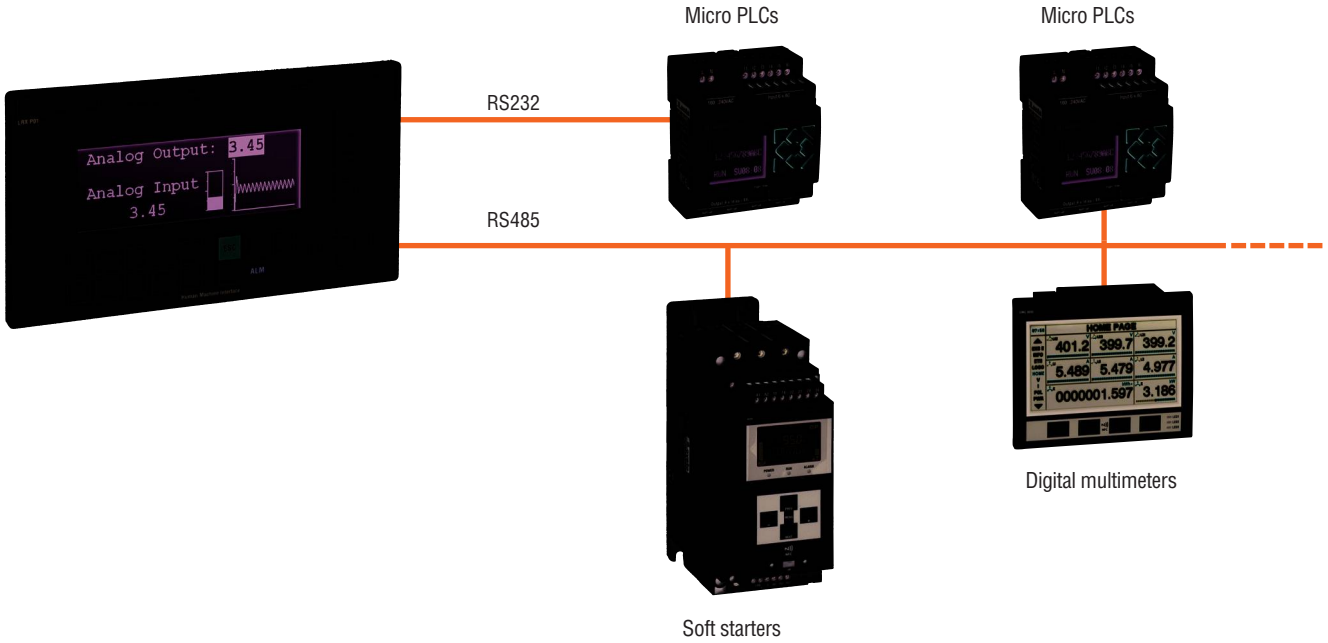
LRXP01 is an HMI operator panel, used with many types of PLCs or other intelligent controllers equipped with communication port with Modbus-RTU protocol.
With the HMI, the values of the PLC registers and the status of the relays can be controlled with the keys of the frontal keyboard, offering a simple and intuitive functioning of the machinery.
The LRXSWP01 editor software permits to create dedicated screens by taking advantage of the graphic display to show bitmaps, bar graphs and trends.

GRAPHIC BACKLIT LCD DISPLAY 192x64 PIXEL



COMMUNICATION MODES

LRXP01 supports Modbus-RTU protocol and can be connected to devices via the integrated RS232 and RS485 communication ports.



Micro PLCs
LRK series



LRK12RD024

new



LRK12RD024B



LRK20RD024RS

Order code	Auxiliary power supply	Inputs/ Outputs	Display	Built-in communic. port	Qty per pkg	Wt
					n°	[kg]
Base modules.						
LRK10RA240	100... 240VAC	6/4 relay	Yes	Ethernet	1	0.240
LRK12RD024	12/24 VDC	8/4 relay	Yes	Ethernet	1	0.240
LRK12RD024B	12/24 VDC	8/4 relay	No	Ethernet	1	0.240
LRK20RD024RS	12/24 VDC	12/8 relay	Yes	Ethernet + RS485	1	0.340
Expansion modules.						

See page 25-8.

General characteristics
- Base modules with 10, 12 or 20 built-in Inputs/Outputs
- Auxiliary power supply 12/24VDC or 100...240VAC
- Backlit LCD display, 4 rows x 16 characters, 10 languages (not present on type LRK12RD024B)
- Relay outputs
- Built-in Ethernet port for programming and monitoring
- Integrated web server
- Support of protocols Modbus-TCP and Modbus-RTU over TCP
- Programming from PC with Ethernet connection and software LRXSW, freely downloadable from the website www.LovatoElectric.com, or from the front keyboard (except for type LRK12RD024B)
- Ladder (contact scheme) or FBD (function blocks) programming language
- Program memory: 600 rows (ladder), 500 blocks (FBD)
- Expandability:
  - up to 56 I/Os with expansion modules type LRE (44 digital I/Os + 12 analog I/Os)
  - plus additional 172 remote I/Os via Ethernet connection with other base modules type LRK (126 digital Network I/Os + 46 analog Network I/Os)
- Slot for micro-SD card (32GB max) for program backup and data-logging
- Integrated Real Time Clock with optional battery type CR1220
- Base module type LRK20RD024RS with two built-in communication ports, Ethernet and RS485 types.

FUNCTIONS
- Arithmethic operations: addition, subtraction, multiplication and division between variables
- Analog comparators between variables
- Timers
- Counters
- Auxiliary relays (markers)
- Data registers
- Real Time Clock (RTC) blocks
- HMI display pages with texts
- High speed input (1kHz), only on base modules with DC power supply
- PID control
- Multiplexers
- Analog ramps
- Shift function
- Boolean logic blocks
- Password protection, 4 digits
- Astronomical clock
- Filter instructions (analog filter, calculation of maximum, minimum and average value)
- I/O networking (possibility to read and write variables of other base modules type LRK connected on the same Ethernet network in master-slave configuration)
- Data-logging with micro-SD card.

Operational characteristics
- Auxiliary power supply: 12/24VDC (LRK...RD024...) or 100...240VAC 50/60Hz (LRK10RA240)
- Relay outputs Ith 8A 240VAC
- Analog inputs 0...10VDC (on versions with DC power supply only)
- Operating temperature: -20…+50°C
- Storage temperature: -40…+70°C
- Relative humidity <90% non-condensing
- Modular housing
- 35mm DIN rail mounting (IEC/EN/BS 60715) or screw fixing (M4x20mm)
- Screw terminals
- Protection degree: IP20.

Certifications and compliance
Certifications obtained: cULus (except LRK10RA240).
Compliant with standards: IEC/EN/BS 61131-2, UL 61010-1, UL 61010-2-201, CSA C22.2 No. 61010-1, CSA C22.2 No. 61010-2-201:18.

Micro PLCs
LRD series



LRD10...
LRD12...



LRD20RD024P1

Order code	Auxiliary power supply	Inputs/ Outputs	Qty per pkg	Wt
			n°	[kg]
Base modules.				
LRD12RD024	24VDC	8/4 relay	1	0.241
LRD12TD024	24VDC	8/4 transistor	1	0.220
LRD20RD024	24VDC	12/8 relay	1	0.360
LRD12RA024	24VAC	8/4 relay	1	0.250
LRD20RA024	24VAC	12/8 relay	1	0.368
LRD10RA240	100...240VAC	6/4 relay	1	0.242
LRD20RA240	100...240VAC	12/8 relay	1	0.367
LRD20RD012	12VDC	12/8 relay	1	0.360
Base module with built-in RS485 communication port				
LRD20RD024P1	24VDC	12/8 relay	1	0.360
Expansion modules.				

See page 25-8.

General Characteristics
- Base modules with 10, 12 or 20 built-in Inputs/Outputs
- Auxiliary power supply 12VDC, 24VDC, 24VAC or 100…240VAC
- Backlit LCD display, 4 rows x 16 characters, 10 languages
- Relay or transistor outputs
- Programming from PC with USB cable type LRXC03 and software LRXSW, freely downloadable from the website www.LovatoElectric.com, or from the front keyboard
- Ladder (contact scheme) or FBD (function blocks) programming language
- Program memory: 300 rows (ladder), 260 blocks (FBD)
- Expandability up to 56 I/Os with expansion modules type LRE (44 digital I/Os + 12 analog I/Os)
- Optional memory module for program backup
- Base module type LRD20RD024P1 with built-in RS485 communication port.

FUNCTIONS
- Arithmethic operations: addition, subtraction, multiplication and division between variables
- Analog comparators between variables
- Timers
- Counters
- Auxiliary relays (markers)
- Data registers
- Real Time Clock (RTC) blocks
- HMI display pages with texts
- High speed input (1kHz), only on base modules with DC power supply
- PID control
- PWM outputs, only on base module type LRD12TD024
- Multiplexers
- Analog ramps
- Shift function
- Boolean logic blocks
- Password protection, 4 digits.

Operational characteristics
- Auxiliary power supply: 12VDC (LRD...D012), 24VDC (LRD...D024) or 100...240VAC 50/60Hz (LRD...A240)
- Relay outputs Ith 8A 240VAC
- Analog inputs 0...10VDC (on versions with DC power supply only)
- Operating temperature: -20…+55°C
- Storage temperature: -40…+70°C
- Relative humidity <90% non-condensing
- Modular housing
- 35mm DIN rail mounting (IEC/EN/BS 60715) or screw fixing (M4x20mm)
- Screw terminals
- Protection degree: IP20.

Certifications and compliance
Certifications obtained: cULus, EAC.
Compliant with standards: IEC/EN/BS 61131-2, UL508, CSA C22.2 n° 142.

Expansion and communication modules



LRE...

Order code	Auxiliary supply voltage	Inputs/ Outputs	Qty per pkg	Wt
			n°	[kg]
Expansion and communication modules for micro PLCs LRK and LRD series ❶.				
LRE02AD024	24VDC	2 analog outputs 0...10V/0...20mA	1	0.160
LRE04AD024	24VDC	4 analog inputs 0...10V/0...20mA	1	0.160
LRE04PD024	24VDC	4 PT100 temp. sensor inputs	1	0.160
LRE08RD024	24VDC	4/4 relay	1	0.171
LRE08TD024	24VDC	4/4 transistor	1	0.151
LRE08RA024	24VAC	4/4 relay	1	0.180
LRE08RA240	100...240VAC	4/4 relay	1	0.180
LREP00	24VDC	Communication module RS485, protocol Modbus-RTU	1	0.134

❶ The expansion modules are supplied with connector for the connection to the base module.

General characteristics
The expansion modules type LRE allow to expand the number of inputs and outputs of the LRK and LRD series micro PLCs. Several models are available, including:
– Digital inputs and digital outputs type relay or transistor
– Analog inputs configurable as type 0...10VDC or 0/4...20mA
– Analog outputs configurable as type 0...10VDC or 0/4...20mA
– Inputs for PT100 temperature sensors

Additionally, it is available an RS485 module to equip the micro PLCs without built-in communication with a serial port for interfacing with Modbus-RTU masters such as HMI, PLC, gateways or other intelligent devices for control and monitoring.
The LRE expansion modules are connected to the base module via a connector, provided as standard, and have independent auxiliary power supply terminals.
On each base module type LRK or LRD it is possible to install up to 8 expansion modules, according to the configuration shown in the section “Maximum configuration”.

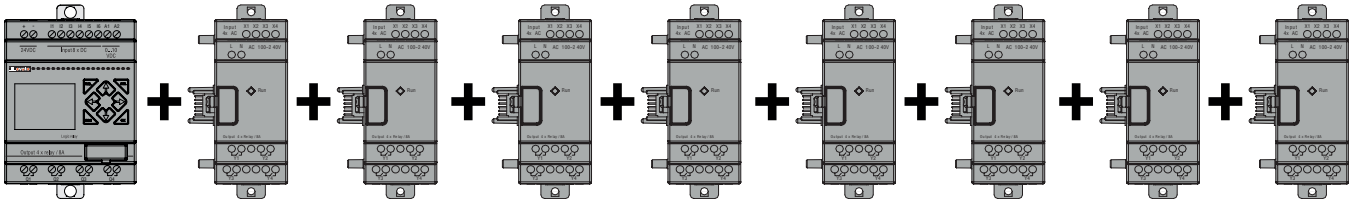
Certifications and compliance
Certifications obtained: cULus, EAC.
Compliant with standards: IEC/EN/BS 61131-2, UL508, CSA C22.2 n° 142.

INPUTS/OUTPUTS REFERENCE TABLE

BASE MODULES				TOT DIGITAL I/OS BASE MODULE + EXPANSIONS
Type	Power supply	Inputs	Outputs	Max I/Os
LRK12RD024 LRK12RD024B	12/24VDC	6 digital + 2 digital/analog	4 relay	12 + 24
LRK10RA240	100...240VAC	6 digital	4 relay	10 + 24
LRK20RD024RS	12/24VDC	8 digital + 4 digital/analog	8 relay	20 + 24
LRD12RD024	24VDC	6 digital + 2 digital/analog	4 relay	12 + 24
LRD12TD024	24VDC	6 digital + 2 digital/analog	4 transistor	12 + 24
LRD20RD012	12VDC	8 digital + 4 digital/analog	8 relay	20 + 24❷
LRD20RD024	24VDC	8 digital + 4 digital/analog	8 relay	20 + 24
LRD20RD024P1	24VDC	8 digital + 4 digital/analog	8 relay	20 + 24
LRD10RA240	100...240VAC	6 digital	4 relay	10 + 24
LRD20RA240	100...240VAC	12 digital	8 relay	20 + 24
LRD12RA024	24VAC	8 digital	4 relay	12 + 24
LRD20RA024	24VAC	12 digital	8 relay	20 + 24
EXPANSION AND COMMUNICATION MODULES				
LRE02AD024	24VDC	—	2 analog	—
LRE04AD024	24VDC	4 analog	—	—
LRE04PD024	24VDC	4 PT100	—	—
LRE08RD024	24VDC	4 digital	4 relay	—
LRE08TD024	24VDC	4 digital	4 transistor	—
LRE08RA240	100...240VAC	4 digital	4 relay	—
LRE08RA024	24VAC	4 digital	4 relay	—
LREP00	24VDC	RS485 communication module, Modbus-RTU slave		

❷ Expansion modules supplied at 24VDC.

Maximum configuration



Base module LRK or LRD 12 inputs + 8 outputs (max)
4 digital inputs + 4 digital outputs
4 digital inputs + 4 digital outputs
4 digital inputs + 4 digital outputs
4 PT100 temperature sensor inputs
2 analog outputs 0...10V or 0...20mA
2 analog outputs 0...10V or 0...20mA
4 analog inputs 0...10V or 0...20mA
RS485 Modbus-RTU (slave)

- 24 digital inputs (4 configurable as analog 0...10V input)
- 20 digital outputs (relay, transistor or mixed)
- 4 inputs for PT100 temperature sensor
- 4 analog inputs 0...10V, 0/4...20mA
- 4 analog outputs 0...10V, 0/4...20mA
- 1 RS485 communication module.

Note. The sequence and the maximum number of the product given above must be respected for correct operation.

Accessories



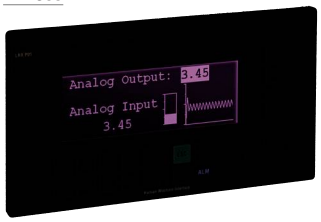
LRX1V3D024



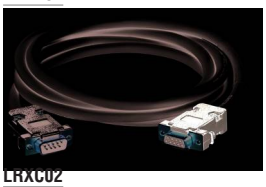
LRXM00



LRXC03



LRXP01



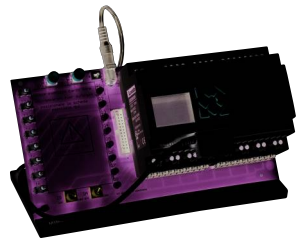
LRXC02

Order code	Descriprion	Qty per pkg	Wt
		n°	[kg]
For base modules LRD series.			
LRXM00	Program backup memory	1	0.011
LRXC00	PC (RS232)-LRD (1.5m) programming cable or LRXP01 (RS232)-LRD direct connection	1	0.083
LRXC03	PC (USB)-LRD (1.5m) programming cable	1	0.080
For base modules LRK and LRD series.			
LRX1V3D024	Power supply unit 100...240VAC/24VDC 1.3A	1	0.220
LRXP01	HMI operator panel, 24VDC, RS232, RS485 (Modbus-RTU Master)	1	0.200
LRXC02	PC (RS232)-LRXP01 programming cable	1	0.180

Kits



LRDKIT...



LRDDEM...

Order code	Description	Qty per pkg	Wt
		n°	[kg]
Kits.			
LRDKIT12RD024	Starter kit with LRD12RD024 base module, LRXSW software and LRXC03 cable	1	0.424
LRDKIT12RA024	Starter kit with LRD12RA024 base module, LRXSW software and LRXC03 cable	1	0.424
LRDKIT10RA240	Starter kit with LRD10RA240 base module, LRXSW software and LRXC03 cable	1	0.424
Training kits.			
LRDDEM12RD024	Training kit with LRD12RD024 mounted on inputs/outputs simulation board	1	0.920
LRDDEM20RD024	Training kit with LRD20RD024 mounted on inputs/outputs simulation board	1	1.060

Backup memory and power supply unit general characteristics
- The LRXM00 backup memory allows the saving of the user's program as backup copy or to be quickly transferred to other base module LRD series.
- The LRX1V3D024 power supply produces a DC voltage to supply the base and expansion modules when 24VDC is not available in the panel. The power supply can also be used to supply any 24VDC auxiliary circuits.

HMI operator panel LRXP01 general characteristics
- Auxiliary supply voltage 24VDC
- RS232 communication port for direct connection to micro PLC LRD series using cable type LRXC00
- RS485 port for communication with slave devices via Modbus-RTU protocol
- Programming via software LRXSWP01, freely downloadable from the website www.LovatoElectric.com
- Degree of protection: IP65.

FUNCTIONS
- Send commands
- Read status
- Static and dynamic texts
- Write variables
- Read variables with representation in numerical format, bar graphs or trends.

Programming software LRXSW
At any time and with extreme simplicity, micro PLCs LRK and LRD series can be set and reprogrammed to satisfy new requirements and improve the operation of a system.
Programming is simple and intuitive and can be done directly from the keyboard on front (except for type LRK12RD024B) or from PC with LRXSW software, freely downloadable from the website www.LovatoElectric.com.
The connection between the base module and the PC is done via Ethernet connection for the base modules LRK series and with USB cable type LRXC03 for base modules LRD series.
Two programming languages can be used: LADDER (contact scheme) or FBD (Function Block Diagram).
In addition to the project configuration, with LRXSW software it is possible to:
- Simulate the program "off-line" from PC, to test if it runs correctly even without a micro PLC connected
- Use the supervision mode to check the project "on-line" while running in real time on a micro PLC.

As an alternative to the LRXSW software, with the front keyboard it is possible to program the micro PLC "on-board", monitor the status of the Inputs/Outputs and all the variables of the micro PLC, and configure settings such as the date and time, operating mode, password and communication parameters (e.g. setting network parameters on base modules LRK series).

Certifications and compliance
Certifications obtained: cULus for power supply and HMI units and base module of kits, EAC.
Compliant with standards: IEC/EN/BS 61131-2, UL508, CSA C22.2 n° 142.

HMI LRH SERIES



HMI WITH COLOUR TOUCHSCREEN DISPLAY

The HMI LRH series have a graphic TFT display with 64k colours, touchscreen, easy to program and extremely flexible.
They can be interfaced with different type of devices, from PLC to any kind of intellingent controller provided with communication port, like multimeters, drives, process controllers.
The LRHSW programming software allows the configuration of the HMI in a simple and intuitive way, thanks to the graphical interface with which you can create customized screens to show images, trends, bar graphs, analog indicators, dynamic objects and other functionalities.
The HMI LRH series are the ideal solution for the supervision and control of small and large automation scenarios that are more and more required in the world of Industry 4.0.

WIDESCREEN DISPLAY WITH HIGH VISIBILITY

- TFT diplay with resistive touchscreen
- High brightness thanks to the LED backlighting
- 64k colours
- Available in formats 4.3", 7" and 10.1".

SIMPLICITY AND EFFICIENCY

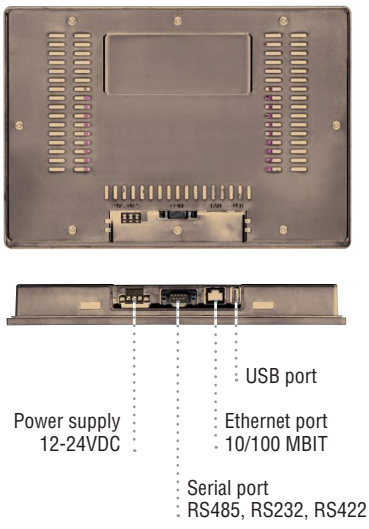
- Simple and elegant design with low energy consumption
- High robustness, thanks to the use of higly reliable industrial components
- Plastic enclosure, degree of the protection IP66, Type 2 and 4X.

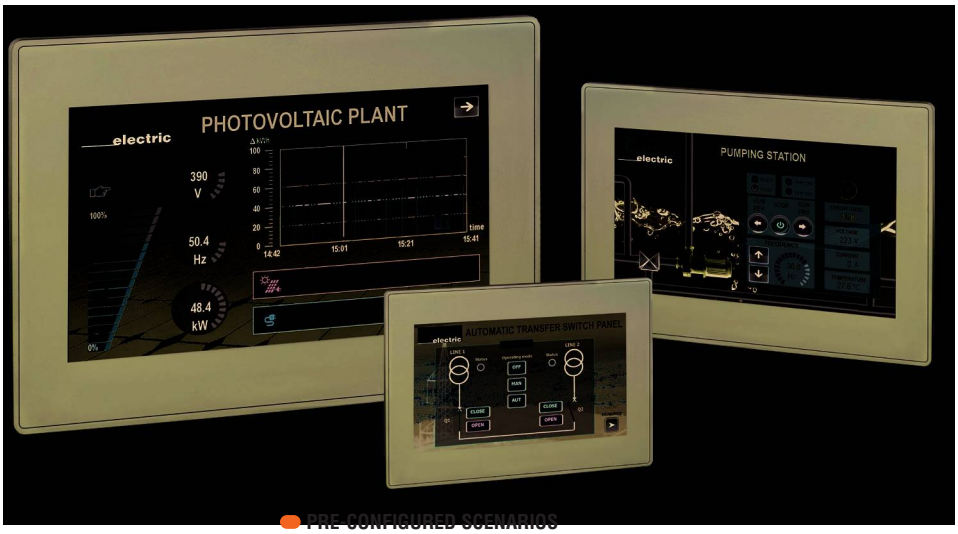
CONNECTIVITY FOR EASY INTEGRATION

- 3 built-in communication ports: Ethernet, USB and serial (type RS232-RS485-RS422, configurable via software LRHSW)
- Support of communication protocols Modbus-RTU Master/Slave, Modbus TCP Client/Server, OPC UA Client/Server, Simatic S7 Ethernet and MQTT.

POWERFUL AND INTUITIVE PROGRAMMATION

- High performance CPU
- Extensive gallery of widgets, objects and pre-configured scenarios for typical applications
- Data acquisition and display on numeric indicators, trends or graphical gauges
- Support of vector graphics, images, analog indicators, bar graphs
- Advanced functionalities: dynamic objects, alarms and events management, support of multilingual applications, recipes, tags editor, user and password management, script language
- Advanced properties of the objects: e-mail, events scheduler, etc
- Support HTML5 and JavaScript
- Possibility to simulate the program by working off-line.





PRE-CONFIGURED SCENARIOS

Preconfigured and ready to use scenarios for typical applications managed with LOVATO Electric products (remote control of a micro PLC, supervision of a pumping station with variable speed drive, monitoring of a photovoltaic system with energy meter, soft starter monitoring, control and supervision of a power factor correction plant, monitoring of an automatic transfer switch ATS panel, command and monitoring of a mains-generator application, etc.) freely downloadable from the website www.LovatoElectric.com.

HMI



LRHA04



LRHA07



LRHA10



EXCCAB02

Order code	Description	Q.ty per pkg	Wt
		n°	[kg]
HMI.			
LRHA04	4.3" TFT LCD display	1	0.400
LRHA07	7" TFT LCD display	1	0.600
LRHA10	10.1" TFT LCD display	1	1.000
Programming software for HMI.			
LRHSW01	User license for LRHSW software (downloadable from www.LovatoElectric.com), valid for 1 station	1	—
RS485 connection cable.			
EXCCAB02	RS485 connection cable for LRH, length 3m	1	0.150
Kits HMI and micro PLC.			
LRDKITHMIA04	Kit with micro PLC type LRD20RD024P1, HMI type LRHA04 and EXCCAB02 cable	1	1.000
LRDKITHMIA07	Kit with micro PLC type LRD20RD024P1, HMI type LRHA07 and EXCCAB02 cable	1	1.200

Model	LRHA04	LRHA07	LRHA10
SYSTEM RESOURCES			
Display	4.3" TFT 16:9	7" TFT 16:9	10.1" TFT 16:9
Colours	64K		
Resolution	480x272 pixel	800x480 pixel	1024x600 pixel
Brightness	200Cd/m²		
Dimming	Yes		
Touchscreen	Resistive		
CPU	ARM Cortex A8 300MHz	ARM Cortex A8 1GHz	ARM Cortex A8 1GHz
Operative system	Linux 3.12		
Flash	2GB	4GB	4GB
RAM	256MB	512MB	512MB
Application memory	60MB		
Real Time Clock, RTC backup, Buzzer	Yes		
INTERFACES			
Ethernet	1 (10/100 Mbit)		
USB	1 (Host v2.0, max 500mA)		
Serial	1 (RS232, RS485, RS422, software configurable)		
FUNCTIONALITIES			
Vector graphics	●		
Dynamic objects	●		
Font True Type	●		
Alarms	●		
Event list	●		
Recipes	●		
User management	●		
Trends	●		
Multi-language management	●		

General characteristics
- Widescreen display with resistive touchscreen
- Available in formats 4.3", 7" and 10.1"
- LED backlight
- Ethernet, USB and serial port (type RS232-RS485-RS422, configurable via software LRHSW)
- Lightweight and low-power design
- Highly reliable industrial components
- Powerful and intuitive programming with software LRHSW (downloadable from www.LovatoElectric.com), with 30-days trial license included
- Support of protocols Modbus-RTU Master/Slave, Modbus-TCP Client/Server, OPC UA Client/Server, Simatic S7 Ethernet and MQTT
- Support of vector graphics
- Rich library of preconfigured and ready to use graphical objects (widgets): static or dynamic images, buttons, sliders, lights, bar graphs, gauges, meters, media widgets, etc.
- Possibility to create custom widgets
- Tags editor to create, import or export tags
- Alarm handling with management of events and actions (e.g. alerts with pop-up messages, send email, write tags, etc.)
- Data-logging with presentation of the collected data in graphical trends and tables, with possibility to save the data in .CSV file
- Recipes data handling
- Scheduler to execute specific actions at set intervals, or on a time basis
- Automatic generation of customizable reports
- Multilingual projects management with texts in True Type font
- Data transfer function to exchange data between the devices connected to the HMI
- Powerful script language with JavaScript editor
- Web access: support of HTML5 technology to allow users to access HMI projects from a remote web browser running on a PC or on a mobile device (smartphone or tablet)
- Advanced user management with possibility to configure different levels of authorizations and permissions on the projects, with dedicated credentials
- Monitoring and remote control of the project running on the HMI from a PC with the software LRHSW Client, installed together with the programming software LRHSW
- On-line and off-line simulation of the applications.

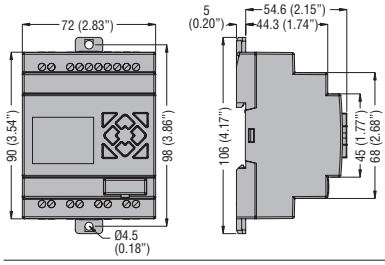
Operational characteristics
- Rated auxiliary power supply: 12/24VDC
- Operating range: 10...32VDC
- Operating temperature: 0...+50°C
- Storage temperature: -20...+70°C
- Humidity: 5-85% RH, non condensing
- Protection degree: IP66, Type 2 and 4X (front); IP20 (rear).

Preconfigured scenarios
Preconfigured and ready to use scenarios for typical applications managed with LOVATO Electric products (remote control of a micro PLC, supervision of a pumping station with variable speed drive, monitoring of a photovoltaic system with energy meter, soft starter monitoring, control and supervision of a power factor correction plant, monitoring of a mains-generator application, etc.) freely downloadable from the website www.LovatoElectric.com.

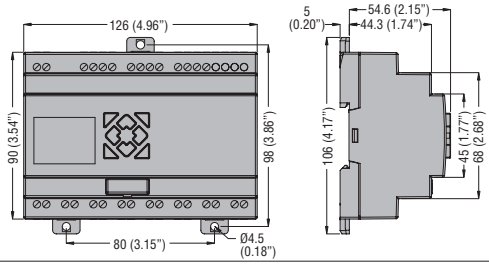
Certifications and compliance
Certifications obtained: cULus, EAC, RCM.
Compliant with standards: emissions EN/BS 61000-6-4, immunity EN/BS 61000-6-2 for installation in industrial environments; emissions EN/BS 61000-6-3, immunity EN/BS 61000-6-1 for installation in residential environments; UL508.

BASE MODULES

LRK10... - LRK12...
LRD10... - LRD12...

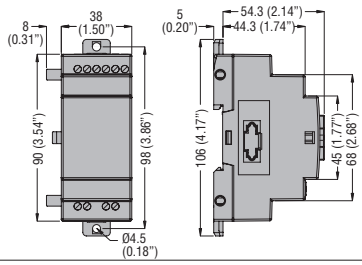


LRK20...
LRD20...



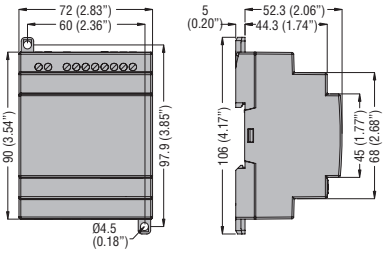
EXPANSION AND COMMUNICATION MODULES

LRE...

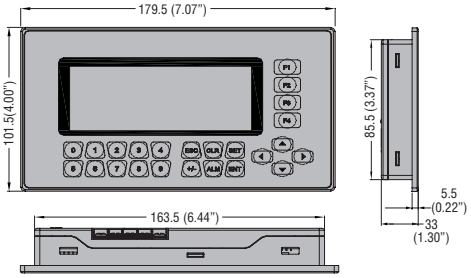


ACCESSORIES

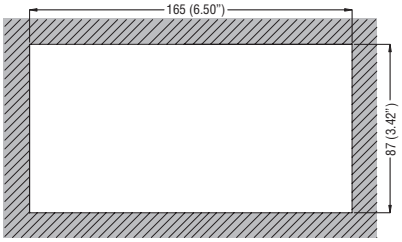
LRX1V3D024 power supply unit



LRXP01 HMI operator panel

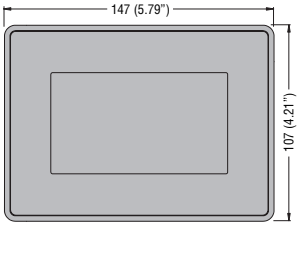


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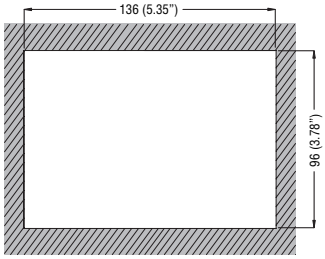


HMI

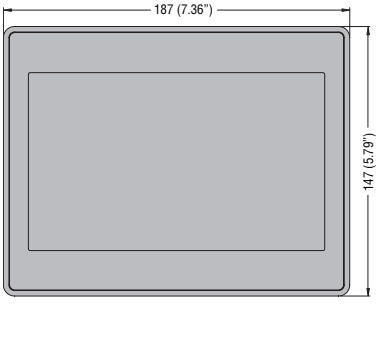
LRHA04



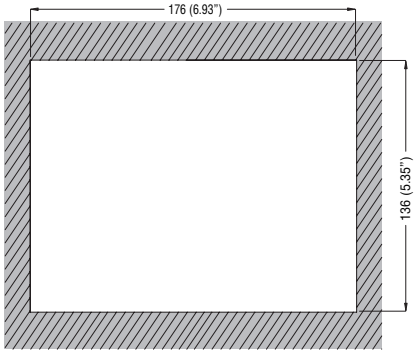
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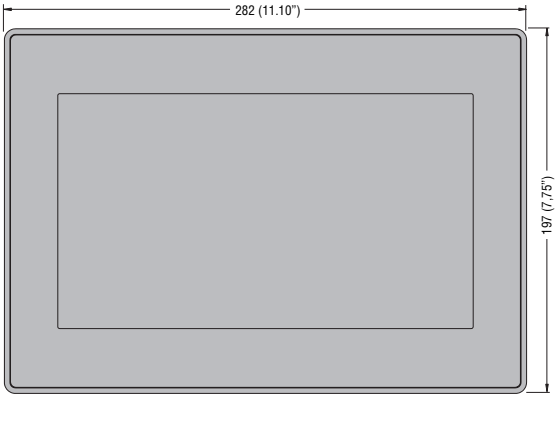
LRHA07



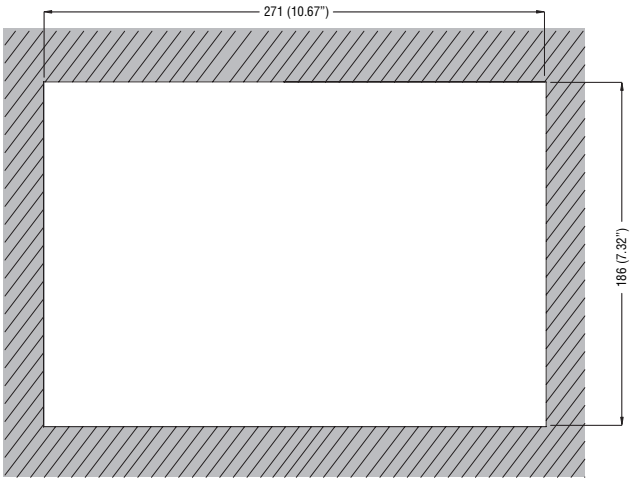
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LRHA10

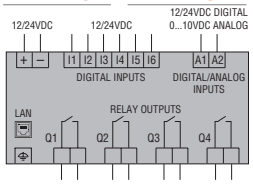


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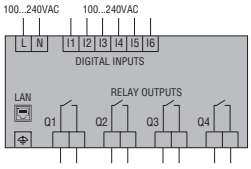


BASE MODULES

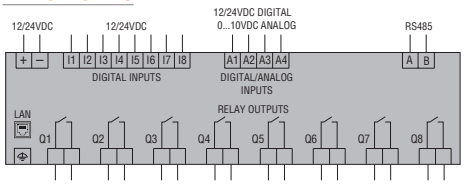
LRK12RD024 - LRK12RD024B



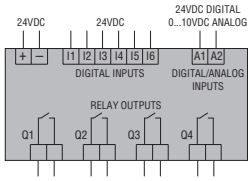
LRK10RA240



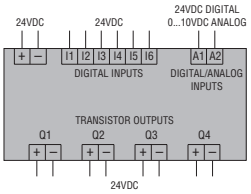
LRK20RD024RS



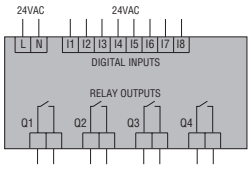
LRD12RD024



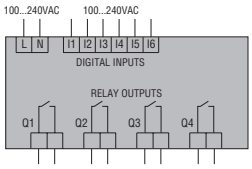
LRD12TD024



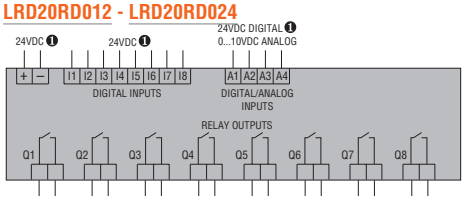
LRD12RA024



LRD10RA240

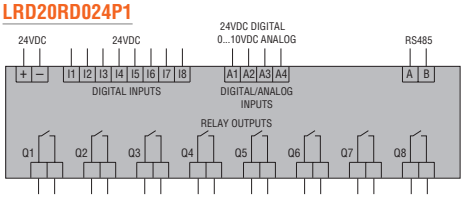


LRD20RD012 - LRD20RD024

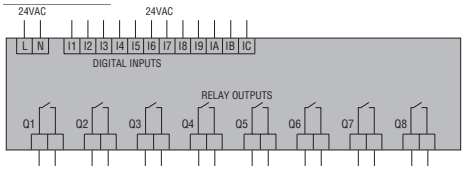


❶ 12VDC for LRD20RD012.

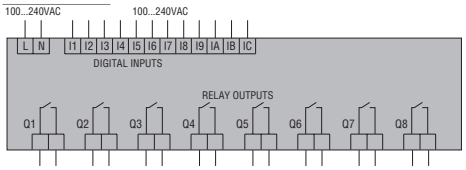
LRD20RD024P1



LRD20RA024

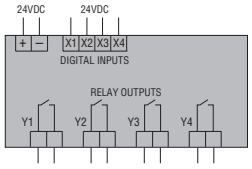


LRD20RA240

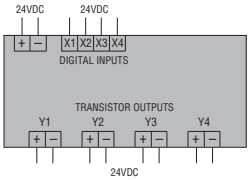


EXPANSION AND COMMUNICATION MODULES

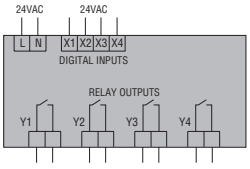
LRE08RD024



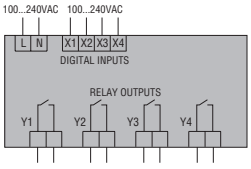
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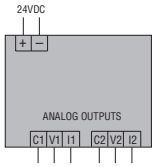
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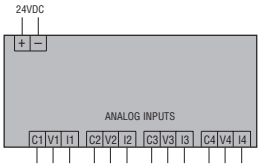
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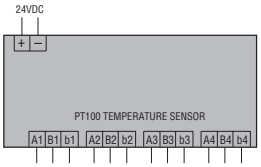
LRE02AD024



LRE04AD024



LRE04PD024



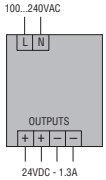
LREP00



ACCESSORIES

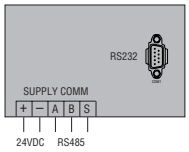
Power supply unit

LRX1V3D024



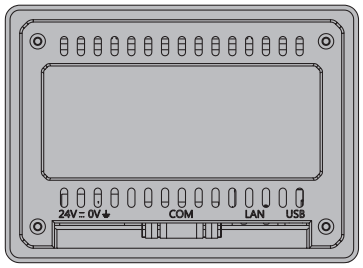
HMI operator panel

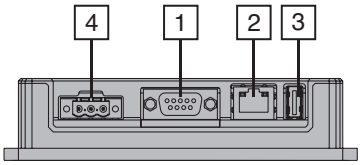
LRXP01



HMI

LRHA...





1 Serial port (RS232, RS485, RS422 configurable via software)
2 Ethernet port
3 USB port
4 Auxiliary power supply 12/24VDC

BASE MODULES		LRK…D024…	LRK…A240	LRD…D012	LRD…D024	LRD…A024	LRD…A240
AUXILIARY POWER SUPPLY							
Rated voltage		12/24VDC	100…240VAC 50/60Hz	12VDC	24VDC	24VAC 50/60Hz	100...240VAC 50/60Hz
Operating limits		10.0...28.8VDC	85...265VAC (47...63Hz)	10.4...14.4VDC	20.4...28.8VDC	20.4...28.8VAC (47...63Hz)	85...265VAC (47...63Hz)
Average current consumption		300mA (LRK12...) 400mA (LRK20...)	90mA	265mA	125mA (LRD12...) 185mA (LRD20...)	290mA	100mA
DIGITAL INPUTS							
Rated voltage		12/24VDC	100...240VAC 50/60Hz	12VDC	24VDC	24VAC 50/60Hz	100...240VAC 50/60Hz
Input voltage	State 0	<5VDC	<40VAC	<2.5VDC	<5VDC	<6VAC	<40VAC
	State 1	>10VDC (12V) >15VDC (24V)	>79VAC	>7.5VDC	>15VDC	>14VAC	>79VAC
Delay time	0 to 1	5ms	50/45ms (Ue=120VAC) 22/18ms (Ue=240VAC)	4ms (0.5ms for high speed inputs)	4ms (0.5ms for high speed inputs)	90ms	50/45ms (Ue=120VAC) - 22/18ms (Ue=240VAC)
	1 to 0	3ms	50/45ms (Ue=120VAC) 90/85ms (Ue=240VAC)	4ms (0.3ms for high speed inputs)	4ms (0.3ms for high speed inputs)	90ms	50/45ms (Ue=120VAC) - 90/85ms (Ue=240VAC)
ANALOG INPUTS (for base modules with DC power supply only)							
Input signal range		0…10VDC	—	0...10VDC		—	—
Display resolution		0.01VDC	—	0.01VDC		—	—
Current consumption at 10VDC		<0.17mA	—	<0.17mA		—	—
Bit conversion		12	—	10 (LRD12...) 8 (LRD20...)	8	—	—
Maximum cable length		≤30m shielded	—	≤30m shielded		—	—
DIGITAL OUTPUTS							
Type of output / IEC rated current Ith		Relay / 8A		Relay / 8A (LRD...R... / LRE08R... only) Transistor / 0.3A 24VDC (LRD...T... / LRE08T... only)			
Operative voltage		Max 250VAC /30VDC		Max 265VAC / 30VDC (LRD...R... / LRE08R... only) 10...28.8VDC (LRD...T... / LRE08T... only)			
AMBIENT CONDITIONS							
Operating temperature		-20...+50°C		-20...+55°C			
Storage temperature		-40...+70°C					
Relative humidity		20...90% non-condensing					
HOUSING							
Version		Modular for mounting on 35mm DIN rail (IEC/EN/BS 60715) or M4x20mm screw fixing					
Connections	Type of terminals	Screw					
	Conductors section	0.14...2.5mm² (26...14AWG)					
	Tightening torque	0.8Nm / 7.1lb.in		0.6Nm / 5.3lb.in			
	Maximum cable length	≤100m					
IEC degree of protection		IP20					

EXPANSION MODULES	LRE02AD024		LRE04AD024		LRE04PD024
AUXILIARY POWER SUPPLY					
Rated voltage	12VDC		24VDC		24VAC 50/60Hz
Operating limits	20.4...28.8VDC		20.4...28.8VDC		20.4...28.8VDC
ANALOGIC INPUTS/OUTPUTS					
Type of channels	2 outputs configurable for voltage or current		4 inputs configurable for voltage or current		4 inputs for PT100 temperature sensor
Operating limits	0...10V	0...20mA	0...10V	0...20mA	-100...+600°C
Display resolution	0.00...10.00V	0.00...20.00mA	0.00...10.00V	0.00...20.00mA	-100.0...+600.0°C
Resolution	10mV	40µA	10mV	40µA	0.1°C
Accuracy	±2.5%		±2.5%		±1%
Power consumption	70mA		70mA		70mA

COMMUNICATION MODULE	LREP00
Auxiliary power supply	24VDC
Baud-rate	4800...57600bps
Terminator resistor	Integrated 120 Ohm
Cable length	0.14...1.5mm² (26...16AWG)
Tightening torque	0.6Nm (5.4lb.in)

HMI OPERATOR PANEL	**LRXP01**
AUXILIARY POWER SUPPLY	
Rated voltage	24VDC
Operating limits	20.4...26.4VDC (-15%...+10%)
Power consumption	1.9W
AMBIENT CONDITIONS	
Operating temperature	0...+55°C
Storage temperature	-40...+70°C
Altitude	≤2000m
Relative humidity	10...95% non-condensing
Maximum pollution degree	2 (IEC/EN/BS 61131-3)
Vibration resistance	15g
Shock resistance	0.5g
Conductor section	0.4...3.3 mm² (22-12 AWG)
Tightening torque	1.8Nm / 10.4lb.in
IEC degree of protection	IP65

HMI	**LRHA04**	**LRHA07**	**LRHA10**
AUXILIARY POWER SUPPLY			
Rated voltage	12/24VDC		
Operating range	10...32VDC		
Max current consumption at 24VDC	0.25A	0.3A	0.38A
AMBIENT CONDITIONS			
Operating temperature	0...+50°C		
Storage temperature	-20...+70°C		
Relative humidity	5...85% non-condensing		
IEC degree of protection	IP66, Type 2, 4X (front); IP20 (rear)		

Switching power supplies



- Versions: modular and 35mm DIN rail mount
- Output voltage adjustment by front potentiometer
- Output short-circuit protection
- Built-in input voltage surge suppressor
- Used as power supply for DC electromechanical and electronic equipment
- Redundancy modules

SEC. - PAGE

Modular DIN rail mount switching power supplies
Single-phase modular compact power supplies with standard functionality 24...100W, PSN series ..... 26 - 2
Single-phase modular power supplies with maximum functionality and cULus 10...100W, PSL series ..... 26 - 2

Compact DIN rail mount switching power supplies with cULus
Single-phase compact power supplies with standard functionality 120...480W, PSN series ..... 26 - 3
Single-phase compact power supplies with basic functionality 30...120W, PSE series ..... 26 - 3

DIN rail mount switching power supplies with maximum functionality with cULus
Single-phase 5...480W ..... 26 - 4
Two-phase 100W ..... 26 - 4
Three-phase 120...960W ..... 26 - 4

Redundancy modules ..... 26 - 4

Dimensions ..... 26 - 5
Wiring diagrams ..... 26 - 7
Technical characteristics ..... 26 - 8



Page 26-2

MODULAR DIN RAIL MOUNT SWITCHING POWER SUPPLIES
- Single-phase
- Output voltage: 12 or 24VDC
- Output power: 10...100W.



Page 26-3

COMPACT DIN RAIL MOUNT SWITCHING POWER SUPPLIES
- Single-phase
- Output voltage: 24VDC
- Output power: 30...480W.



Page 26-4

DIN RAIL MOUNT SWITCHING POWER SUPPLIES
- Single, two and three-phase
- Output voltage: 24 or 48VDC
- Output power: 5...960W.



Page 26-4

REDUNDANCY MODULES
- Modular and 35mm DIN rail mount
- Output voltage: 12 or 24VDC
- Output current: 10 or 20A.

MODULAR DIN RAIL MOUNT SWITCHING POWER SUPPLIES





	PSN	PSL
Input type	Single-phase 100...240VAC	Single-phase 100...240VAC
Output type	12VDC or 24VDC	12VDC or 24VDC
Output power	12VDC: 24, 54, 90W 24VDC: 36, 60, 100W	12VDC: 10, 24, 33, 54, 72W 24VDC: 10, 24, 36, 60, 100W
Dimensions	Ultra compact	Standard
Operating temperature	-40...+70°C	-40...+71°C
Derating (typical)	Over 45°C	Over 60°C
Power on LED	●	●
Low voltage LED	–	●
Type of short circuit protection	Hiccup	Hiccup up to size 24W Fold forward for bigger sizes
cULus	–	●

DIN RAIL MOUNT SWITCHING POWER SUPPLIES







	PSN	PSE	PSL
Input type	Single-phase 100...240VAC	Single-phase 100...240VAC	Single-phase 100...240VAC (PSL1...) Two-phase 400...500VAC (PSL2...) Three-phase 400...500VAC (PSL3...)
Output type	24VDC	24VDC	24VDC o 48VDC (single-phase only)
Output power	120, 240, 480W	30, 50, 72, 100, 120W	Single-phase: 5...480W (24VDC), 30...480W (48VDC) Two-phase: 100W Three-phase: 120...690W
Dimensions	Ultra compact	Compact	Standard
Operating temperature (typical)	-40...+70°C (-20...+60°C for PSN112024L)	-25...+71°C	-35...+71°C
Derating (typical)	Over +50°C and under -25°C	Over 50°C	Over 60°C
Power on LED	●	●	●
Low voltage LED	–	–	●
DC OK output for available voltage	● (PSN112024 and PSN148024)	–	● (sizes ≥30W)
PFC	● (excluded PSN112024L)	–	● (sizes ≥120W)
Type of short circuit protection	Hiccup	Hiccup	Single-phase: fold forward (hiccup for sizes ≤18W) Two and three-phase: hiccup (fold forward for 480W)
cULus	●	●	●

Lovato electric

Modular compact power supplies with standard functionality PSN series



PSN1M03624

new

Order code	Rated output voltage	Rated output current	Output power	Qty per pkg	Wt
	[V]	[A]	[W]	n°	[kg]
Single-phase.					
PSN1M02412	12VDC	2	24	1	0.115
PSN1M05412		4.5	54	1	0.175
PSN1M09012		7.5	90	1	0.235
PSN1M03624	24VDC	1.5	36	1	0.115
PSN1M06024		2.5	60	1	0.175
PSN1M10024		4.2	100	1	0.235

General characteristics
The switching power supplies PSN series are suitable for installation in modular switchboards, used in both civil and industrial applications. The main selling point of this series is the extremely compact dimensions.

Protections:
– Output short circuit
– Output overvoltage
– Overload
– Input voltage peaks.

Indications:
– LED indicator for power on.

Operational characteristics
– Rated supply voltage: 100...240VAC
– Mains frequency: 50/60Hz
– Rated output voltage: 12VDC (PSN1M...12) / 24VDC (PSN1M...24)
– Output voltage adjustment by front potentiometer
– High efficiency up to 90%
– 35mm DIN rail (IEC/EN/BS 60715) mounting
– Screw terminals
– Modular DIN 43880 housing; number of modules:
  2 for PSN1M02412 and PSN1M03624
  3 for PSN1M05412 and PSN1M06024
  4 for PSN1M09012 and PSN1M10024
– IEC degree of protection: IP20 on terminals.

Compliance
Compliant with standards: IEC/EN/BS 62368-1, EN/BS 61558-1, EN/BS 55032, IEC/EN/BS 61000-4-2, IEC/EN/BS 61000-4-3, IEC/EN/BS 61000-4-4, IEC/EN/BS 61000-4-5, IEC/EN/BS 61000-4-6, IEC/EN/BS 61000-4-11.

Modular power supplies with maximum functionality and cULus PSL series



PSL1M010...



PSL1M03312
PSL1M03624

Order code	Rated output voltage	Rated output current	Output power	Qty per pkg	Wt
	[V]	[A]	[W]	n°	[kg]
Single-phase.					
PSL1M01012	12VDC	0.83	10	1	0.065
PSL1M02412		2	24	1	0.130
PSL1M03312		2.75	33	1	0.190
PSL1M05412		4.5	54	1	0.250
PSL1M07212		6	72	1	0.380
PSL1M01024	24VDC	0.42	10	1	0.065
PSL1M02424		1	24	1	0.130
PSL1M03624		1.5	36	1	0.190
PSL1M06024		2.5	60	1	0.250
PSL1M10024		4.2	100	1	0.380

General characteristics
Switching power supplies transform an AC input voltage into a DC output one. This type of equipment is used in industrial and domestic automation fields. The power supplies are equipped with switching technology offering very high efficiency in an extremely compact size. Dimensions are compatible with modular consumer panels and its plastic housing is suitable for building automation installations as well as industrial automation applications.
The wide range of power supply voltages and the choice of current outputs provide for the best adaptability to supply voltage needs of the most common electronic and electromechanical devices.

Protections:
– Output short circuit
– Output overvoltage
– Overload
– Input voltage peaks.

Indications:
– LED indicator for power on
– LED indicator for low voltage.

Operational characteristics
– Rated supply voltage: 100...240VAC
– Mains frequency: 50/60Hz
– Rated output voltage: 12VDC for PSL1M...12 types; 24VDC for PSL1M...24 types
– Output voltage adjustment by front potentiometer (except for PSL1M010...)
– High efficiency up to 89%
– 35mm DIN rail (IEC/EN/BS 60715) mounting
– Screw terminals
– Modular DIN 43880 housing; number of modules:
  • 1 for PSL1M010...
  • 2 for PSL1M024...
  • 3 for PSL1M03312 and PSL1M03624
  • 4 for PSL1M05412 and PSL1M06024
  • 5 for PSL1M07212 and PSL1M10024
– IEC degree of protection: IP20 on terminals.

Certifications and compliance
Certifications obtained: UL Listed for USA and Canada (cULus-File E318016) as Power Supplies in power circuit and motor-mounted apparatus category; EAC, RCM.
Compliant with standards: IEC/EN/BS 62368-1, IEC/EN/BS 61000-6-2, IEC/EN/BS 61000-6-3, UL508, CSA C22.2 n° 107-1.

Compact DIN rail mount power supplies with standard functionality PSN series



PSN112024

new

Order code	Rated output voltage	Rated output current	Output power	Qty per pkg	Wt
	[V]	[A]	[W]	n°	[kg]
Single-phase.					
PSN112024L❶	24VDC	5	120	1	0.410
PSN112024		5	120	1	0.490
PSN124024		10	240	1	0.600
PSN148024		20	480	1	0.980

❶ Version without active PFC.

General characteristics
PSN are switching power supplies for DIN rail mounting characterized by extremely compact dimensions. Available in versions with output power from 120W to 480W.

Protections:
– Output short circuit
– Output overvoltage
– Overload
– Input voltage peaks
– Overheating.

Indications:
– LED indicator for power on.

Operational characteristics
– Rated supply voltage: 100...240VAC
– Mains frequency: 50/60Hz
– Rated output voltage: 24VDC
– Output voltage adjustment by front potentiometer
– High efficiency up to 94%
– Active PFC function (except PSN112024L)
– Relay output for available voltage signaling (Rdy) on types PSN112024 and PSN148024
– 35mm DIN rail (IEC/EN/BS 60715) mounting
– Screw terminals
– IEC degree of protection: IP20 on terminals.

Certifications and compliance
Certifications obtained: cULus
Compliant with standards: IEC/EN/BS 62368-1, EN/BS 55032, IEC/EN/BS 61000-3-2, IEC/EN/BS 61000-4-2, IEC/EN/BS 61000-4-3, IEC/EN/BS 61000-4-4, IEC/EN/BS 61000-4-5, IEC/EN/BS 61000-4-6, IEC/EN/BS 61000-4-11, UL61010-1, UL61010-2-201.

Compact DIN rail mount power supplies with basic functionality PSE series



PSE105024

Order code	Rated output voltage	Rated output current	Output power	Qty per pkg	Wt
	[V]	[A]	[W]	n°	[kg]
Single-phase.					
PSE103024	24VDC	1.25	30	1	0.140
PSE105024		2.1	50	1	0.200
PSE107224		3	72	1	0.250
PSE110024		4.2	100	1	0.350
PSE112024		5	120	1	0.610

General characteristics
The PSE power supplies have compact dimensions and are DIN rail mountable. They are used to supply electromechanical and electronic devices with DC control, such as contactors, time relays, sensors, PLCs, DC motors, displays, SSRs and other equipment normally found in automation systems.
Versions with output power from 30W to 120W available.

Protections:
– Output short circuit
– Output overvoltage
– Overload
– Input voltage peaks.

Indications:
– LED indicator for power on.

Operational characteristics
– Rated supply voltage: 100...240VAC
– Mains frequency: 50/60Hz
– Rated output voltage: 24VDC
– Output voltage adjustment by front potentiometer
– High efficiency up to 89%
– 35mm DIN rail (IEC/EN/BS 60715) mounting
– Screw terminals
– IEC degree of protection: IP20 on terminals.

Certifications and compliance
Certifications obtained: cULus, EAC, RCM.
Compliant with standards: IEC/EN/BS 62368-1, IEC/EN/BS 61000-6-2, IEC/EN/BS 61000-6-3, UL508, CSA C22.2 No. 107.1.

DIN Rail mount power supplies with maximum functionality PSL series



PSL100524
PSL101024
PSL101824



PSL1030...
PSL1060...



PSL1100...



PSL1240...
PSL130024



PSL148024
PSL148048



PSL396024

Order code	Rated output voltage	Rated output current	Output power	Qty per pkg	Wt
	[V]	[A]	[W]	n°	[kg]
Single-phase.					
PSL100524	24VDC	0.21	5	1	0.120
PSL101024		0.42	10	1	0.120
PSL101824		0.75	18	1	0.150
PSL103024		1.25	30	1	0.270
PSL106024		2.5	60	1	0.340
PSL110024		4.2	100	1	0.430
PSL112024		5	120	1	0.920
PSL124024		10	240	1	1.380
PSL130024		12.5	300	1	1.400
PSL148024		20	480	1	1.920
PSL103048	48VDC	0.625	30	1	0.270
PSL106048		1.25	60	1	0.340
PSL110048		2.1	100	1	0.430
PSL112048		2.5	120	1	0.920
PSL124048		5	240	1	1.380
PSL148048		10	480	1	1.920
Two-phase.					
PSL210024	24VDC	4.2	100	1	0.500
Three-phase❶.					
PSL312024	24VDC	5	120	1	0.800
PSL324024		10	240❶	1	1.100
PSL348024		20	480❶	1	1.720
PSL396024		40	960❶	1	3.400

❶ Two-phase connection is admissible with a 25% output power derating.

General characteristics
Power supplies PSL... series are used to supply electromechanical and electronic devices with DC control, such as contactors, time relays, sensors, PLCs, DC motors, displays, SSRs and other equipment normally found in automation systems and networks.

Protections:
- Output short circuit
- Output overvoltage
- Overload
- Input voltage peaks.

Indications:
- LED indicator for power on
- LED indicator for low voltage.

Operational characteristics
- Rated supply voltage:
  100...240VAC (PSL1005...PSL1100...)
  115/230VAC self-configurable (PSL1120...PSL1480...)
  400...500VAC (PSL2... and PSL3...❶)
- Mains frequency: 50/60Hz
- Rated output voltage: 24VDC (PSL...24) / 48VDC (PSL...48)
- Output voltage adjustment by front potentiometer
- PFC function for types: PSL112024...PSL396024 PSL112048...PSL148048
- Parallel connection for types: PSL1100...PSL396024 (except for PSL312024)
- High efficiency up to 92%
- 35mm DIN rail (IEC/EN/BS 60715) mounting
- Screw terminals
- Plastic or metal housing depending on type
- IEC degree of protection: IP20 on terminals.

Certifications and compliance
Certifications obtained: UL Listed for USA and Canada (cULus-File E318016) as Power Supplies in power circuit and motor-mounted apparatus category; EAC, RCM.
Compliant with standards: IEC/EN/BS 62368-1, IEC/EN/BS 61000-6-2, IEC/EN/BS 61000-6-3, UL508, CSA C22.2 n° 107.1.

Redundancy modules



PSLRM1024



PSLR2024

Order code	Rated voltage	Rated output current	Qty per pkg	Wt
	[V]	[A]	n°	[kg]
Modular version DIN rail mount version.				
PSLRM1024	12...24VDC	10	1	0.075
DIN rail mount version.				
PSLR2024	24VDC	20	1	0.210

Indications (PSLR2024)

Input voltage A	Input voltage B	LED A	LED B	Relay A	Relay B
Within limits	Within limits	ON	ON	Energ.	Energ.
Within limits	<MIN or >MAX	ON	OFF	Energ.	De-energ.
<MIN or >MAX	Within limits	OFF	ON	De-energ.	Energ.
<MIN or >MAX	<MIN or >MAX	OFF	OFF	De-energ.	De-energ.

General characteristics
They are used for the redundancy connection of two or more power supplies to enhance the reliability of the DC supply. The redundancy modules ensure a perfect insulation between the power supplies connected.

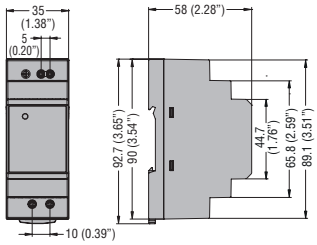
Indications (only for PSLR2024):
- LED indicator for DC voltage within limit
- Alarm relay.

Operational characteristics
- Rated input voltage:
  12...24VDC (PSLRM1024)
  24VDC (PSLR2024)
- Rated input current:
  10A (PSLRM1024)
  20A (PSLR2024)
- Rated output current :
  10A (PSLRM1024)
  20A (PSLR2024)
- Maximum output current:
  16A for 300s (PSLRM1024)
  30A for 300s (PSLR2024)
- Modular housing DIN 43880 2 modules (PSLRM1024)
- 35mm DIN rail (IEC/EN/BS 60715) mounting
- Screw terminals
- Plastic housing
- IEC degree of protection: IP20 on terminals.

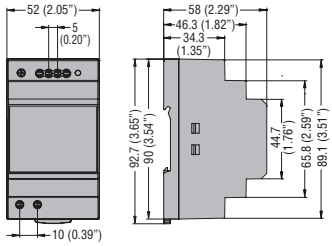
Certifications and compliance
Certifications obtained: cULus (only for PSLR2024), EAC, RCM.
Compliant with standards: IEC/EN/BS 60950-1 (only for PSLRM1024), IEC/EN/BS 62368-1 (only for PSLR2024), IEC/EN/BS 61000-6-2, IEC/EN/BS 61000-6-3, UL508 (only for PSLR2024), CSA C22.2 n°107.1 (only for PSLR2024).

MODULAR COMPACT DIN RAIL MOUNT SWITCHING POWER SUPPLIES WITH STANDARD FUNCTIONALITY PSN SERIES

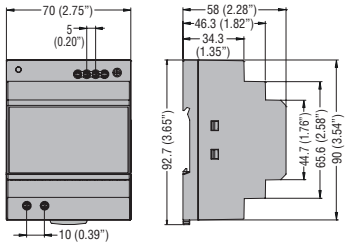
PSN1M02412 - PSN1M03624



PSN1M05412 -PSN1M06024

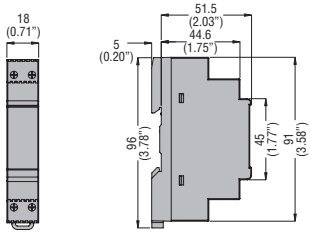


PSN1M09012 - PSN1M10024

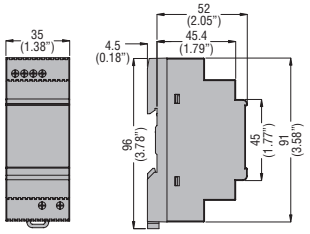


MODULAR DIN RAIL MOUNT SWITCHING POWER SUPPLIES WITH MAXIMUM FUNCTIONALITY PSL SERIES

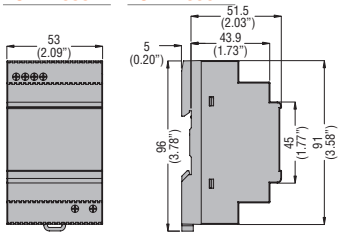
PSL1M010...



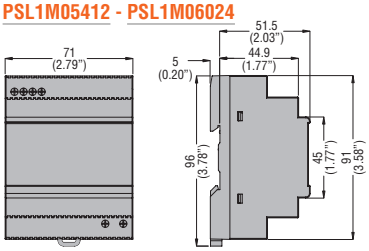
PSL1M024...



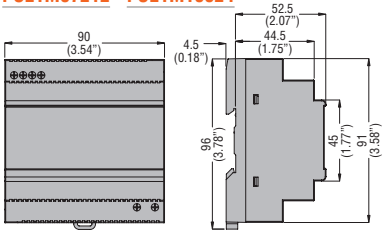
PSL1M03312 - PSL1M03624



PSL1M05412 - PSL1M06024

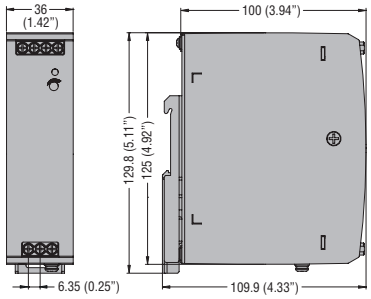


PSL1M07212 - PSL1M10024

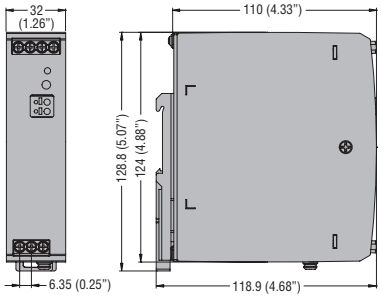


COMPACT DIN RAIL MOUNT SWITCHING POWER SUPPLIES WITH STANDARD FUNCTIONALITY PSN SERIES

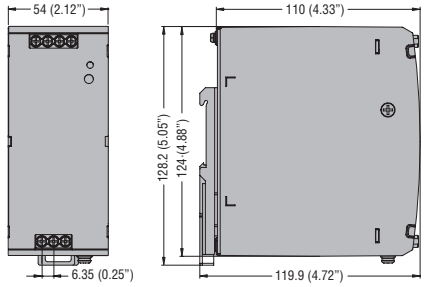
PSN112024L



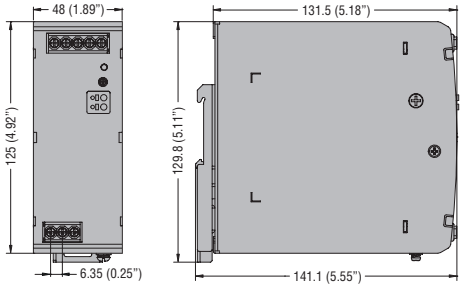
PSN112024



PSN124024

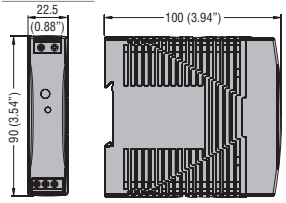


PSN148024

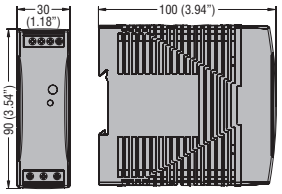


COMPACT DIN RAIL MOUNT SWITCHING POWER SUPPLIES WITH BASIC FUNCTIONALITY PSE SERIES

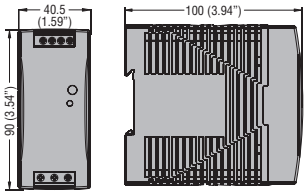
PSE103024



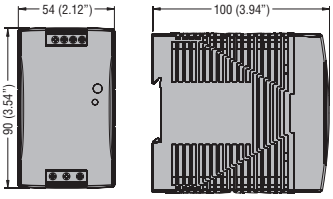
PSE105024



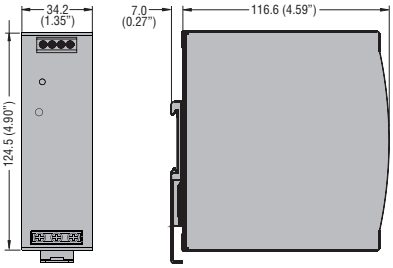
PSE107224



PSE110024

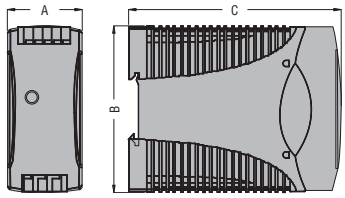


PSE112024



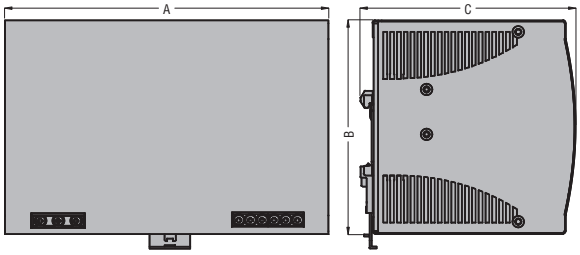
DIN RAIL MOUNT SWITCHING POWER SUPPLIES WITH MAXIMUM FUNCTIONALITY PSL SERIES

PSL100524...PSL110048
PSL210024



TYPE	A	B	C
PSL100524	22.5 (0.88")	90 (3.54")	115 (4.53")
PSL101024	22.5 (0.88")	90 (3.54")	115 (4.53")
PSL101824	22.5 (0.88")	90 (3.54")	115 (4.53")
PSL1030...	40.5 (1.59")	90 (3.54")	115 (4.53")
PSL1060...	40.5 (1.59")	90 (3.54")	115 (4.53")
PSL1100...	54 (2.12")	90 (3.54")	115 (4.53")
PSL210024	54 (2.12")	90 (3.54")	115 (4.53")

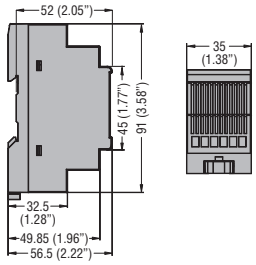
PSL112024...PSL148024
PSL312024...PSL396024



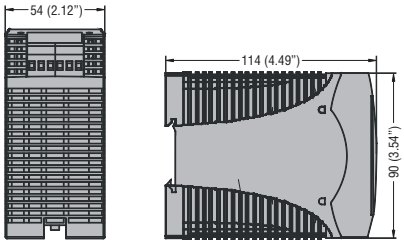
TYPE	A	B	C
PSL1120...	64 (2.52")	124.5 (4.90")	123.6 (4.87")
PSL1240...	83.5 (3.29")	124.5 (4.90")	123.6 (4.87")
PSL130024	83.5 (3.29")	124.5 (4.90")	123.6 (4.87")
PSL1480...	175.5 (6.91")	124.5 (4.90")	125 (4.92")
PSL312024	74.3 (2.92")	124 (4.88")	118.8 (4.68")
PSL324024	89 (3.50")	124 (4.88")	118.8 (4.68")
PSL348024	150 (5.90")	124 (4.88")	118.8 (4.68")
PSL396024	275.8 (10.86")	125.9 (4.96")	120.9 (4.76")

REDUNDANCY MODULES

PSLRM1024

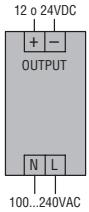


PSLR2024

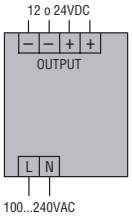


MODULAR COMPACT DIN RAIL MOUNT SWITCHING POWER SUPPLIES WITH STANDARD FUNCTIONALITY PSN SERIES

PSN1M02412
PSN1M03624

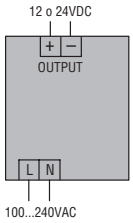


PSN1M05412 - PSN1M06024
PSN1M09012 - PSN1M10024

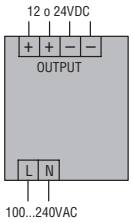


MODULAR DIN RAIL MOUNT SWITCHING POWER SUPPLIES WITH MAXIMUM FUNCTIONALITY PSL SERIES

PSL1M01012
PSL1M01024

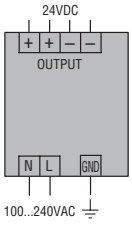


PSL1M02412 - PSL1M02424
PSL1M03312 - PSL1M03624
PSL1M05412 - PSL1M06024
PSL1M07212 - PSL1M10024

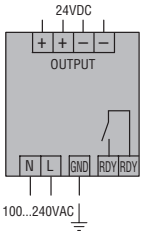


COMPACT DIN RAIL MOUNT SWITCHING POWER SUPPLIES WITH STANDARD FUNCTIONALITY PSN SERIES

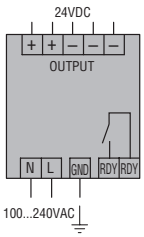
PSN112024L
PSN124024



PSN112024

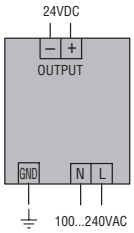


PSN148024

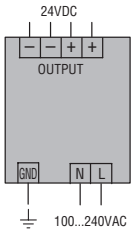


COMPACT DIN RAIL MOUNT SWITCHING POWER SUPPLIES WITH BASIC FUNCTIONALITY PSE SERIES

PSE103024

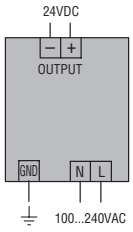


PSE105024 - PSE107224
PSE110024 - PSE112024

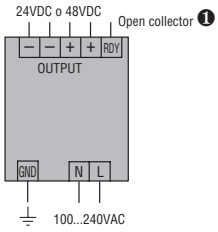


DIN RAIL MOUNT SWITCHING POWER SUPPLIES WITH MAXIMUM FUNCTIONALITY PSL SERIES

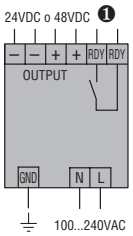
PSL100524
PSL101024
PSL101824



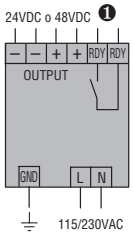
PSL1030...
PSL1060...



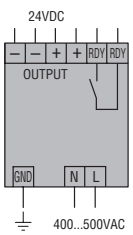
PSL1100...



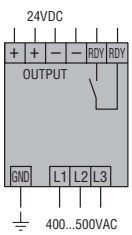
PSL1120...
PSL1240... - PSL130024
PSL1480...



PSL210024



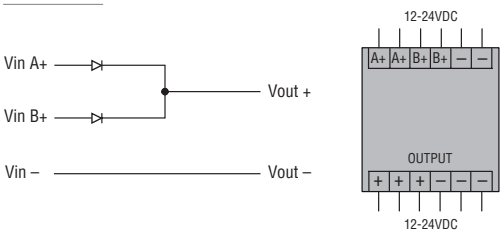
PSL312024 - PSL324024❷
PSL348024❷- PSL396024❷



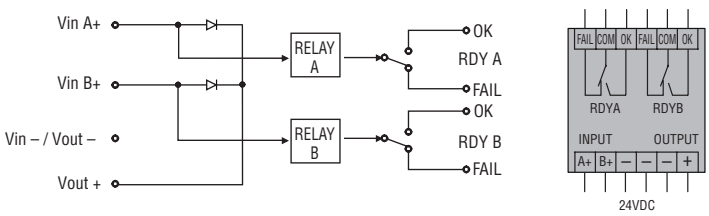
❶ Only for PSL1...24.
❷ Two-phase connection is permissible with a 25% output power derating.

REDUNDANCY MODULES

PSLRM1024



PSLR2024



MODULAR COMPACT DIN RAIL MOUNT SWITCHING POWER SUPPLIES WITH STANDARD FUNCTIONALITY **PSN** SERIES

TYPE Single-phase	**PSN1M02412 PSN1M03624**	**PSN1M05412 PSN1M06024**	**PSN1M09012 PSN1M10024**	
INPUT CHARACTERITICS				
Rated supply voltage	Multivoltage 100...240VAC			
Operating range	85...264VAC / 120...370VDC			
Consumption (max)	900mA (115VAC) 500mA (230VAC)	1.2A (115VAC) 800mA (230VAC)	3A (115VAC) 1.6A (230VAC)	
Frequency range	47...63Hz			
PFC	–			
Insulation voltage Input/output	4000VAC			
Internal fuse ❶	T3.15A 250VAC	T3.15A 250VAC	T6.3A 250VAC	
OUTPUT CHARACTERISTICS				
Voltage	12VDC (PSN1M...12); 24VDC (PSN1M...24)			
Voltage trimming (potentiometer)	10.8...13.8VDC (PSN1M02412) 21.6...29.0VDC (PSN1M03624)	10.8...13.8VDC (PSN1M05412) 21.6...29.0VDC (PSN1M06024)	12...13.8VDC (PSN1M09012) 21.6...29.0VDC (PSN1M10024)	
Rated current	2A (PSN1M02412) 1.5A (PSN1M03624)	4.5A (PSN1M05412) 2.5A (PSN1M06024)	7.5A (PSN1M09012) 4.2A (PSN1M10024)	
Temperature coefficient	±0.02%/°C	±0.02%/°C	±0.03%/°C	
Line adjustment	±0,5%			
Load adjustment	±1,5%			
Efficiency	88% (PSN1M02412) 88% (PSN1M03624)	88% (PSN1M05412) 90% (PSN1M06024)	88% (PSN1M09012) 90% (PSN1M10024)	
Overload protection	120%	120%	110...200%	
Output short-circuit protection	Hiccup			
Output overvoltage protection	≤ 16.5VDC (PSN1M...12) ≤ 36VDC (PSN1M...24)		≤ 20VDC (PSN1M...12) ≤ 35VDC (PSN1M...24)	
Ripple and noise	120mV (PSN1M...12); 150mV (PSN1M...24)			
Parallel connection (n° of units)❷	–			
INDICATIONS				
LED for power on	Yes			
LED for low voltage	No			
Output for available voltage signaling (Rdy)	No			
AMBIENT CONDITIONS				
Operating temperature ❸	-40...+70°C			
Derating of the output power	❹			
Storage temperature	-40...+85°C			
HOUSING				
Material	Plastic			

❶ No replacement by user.
❷ Minimum load of 150mA.
❸ Maximum surrounding temperature of 50°C for use according to UL508.
❹ See the derating tables in the technical manual.

MODULAR DIN RAIL MOUNT SWITCHING POWER SUPPLIES WITH MAXIMUM FUNCTIONALITY **PSL** SERIES

	PSL1M01012 - PSL1M01024	**PSL1M02412 - PSL1M02424**	**PSL1M03312 - PSL1M03624**	**PSL1M05412 - PSL1M06024**	**PSL1M07212 - PSL1M10024**
	Multivoltage 100...240VAC				
	90...264VAC / 120...375VDC				
	300mA	600mA	900mA	1.5A	1.7/2.2A
	47...63Hz				
	—				
	3000VAC (4242VDC)				
	T1A 250VAC	T2A 250VAC			T3.15A 250VAC
	12VDC (PSL1M...12); 24VDC (PSL1M...24)				
	—	12...14VDC (PSL1M...12) 24...28VDC (PSL1M...24)			
	0.83A (PSL1M...12) 0.42A (PSL1M...24)	2A (PSL1M...12) 1A (PSL1M...24)	2.75A (PSL1M...12) 1.5A (PSL1M...24)	4.5A (PSL1M...12) 2.5A (PSL1M...24)	6A (PSL1M...12) 4.2A (PSL1M...24)
	±0.03%/°C				
	±1%				
	±1%				
	79% (PSL1M...12) 80% (PSL1M...24)	84% (PSL1M...12) 85% (PSL1M...24)	83% (PSL1M...12) 84% (PSL1M...24)	84% (PSL1M...12) 86% (PSL1M...24)	86% (PSL1M...12) 89% (PSL1M...24)
	125...185%	120...160%	110...150%		
	Hiccup		Fold forward		
	15...16.5VDC (PSL1M...12) 30...33VDC (PSL1M...24)				
	50mV				
	—				
	Yes				
	Yes				
	No				
	-40...+71°C				
	from +61°C to +71°C by 2.5%/°C	from +56°C to +71°C by 2.5%/°C			from +61°C to +71°C by 2.5%/°C
	-40...+85°C				
	Plastic				

COMPACT DIN RAIL MOUNT SWITCHING POWER SUPPLIES WITH STANDARD FUNCTIONALITY **PSN** SERIES

TYPE Single-phase	**PSN112024L**	**PSN112024**	**PSN124024**	**PSN148024**
INPUT CHARACTERITICS				
Rated supply voltage	Multivoltage 100...240VAC			
Operating range	90...264VAC / 120...370VDC	85...264VAC / 120...370VDC		
Consumption (max)	3A (115VAC) 1.6A (230VAC)	1.5A (115VAC) 750mA (230VAC)	3A (115VAC) 1.5A (230VAC)	5.5A (115VAC) 2.5A (230VAC)
Frequency range	47...63Hz			
PFC	No	0.98 (115VAC), 0.94 (230VAC)	0.98 (115VAC), 0.95 (230VAC)	0.99 (115VAC), 0.99 (230VAC)
Insulation voltage Input/output	4000VAC	3000VAC		
Internal fuse ❶	T3.15A 250VAC	T4A 250VAC	T8A 250VAC	T8A 250VAC
OUTPUT CHARACTERISTICS				
Voltage	24VDC			
Voltage trimming (potentiometer)	24...28VDC			
Rated current	5A	5A	10A	20A
Temperature coefficient	±0.03%°C			
Line adjustment	±0.5%			
Load adjustment	±1%			
Efficiency	88%	94%	94%	94.5%
Overload protection	105...150%	105...200%	110...200%	150%
Output short-circuit protection	Hiccup			
Output overvoltage protection	≤ 33VDC	≤ 35VDC		29...35VDC
Ripple and noise	120mV	100mV	150mV	50mV
Parallel connection (n° of units)❷	–			
INDICATIONS				
LED for power on	Yes			
LED for low voltage	No			
Output for available voltage signaling (Rdy)	No	Yes	No	Yes
AMBIENT CONDITIONS				
Operating temperature ❸	-20...+60°C	-40...+70°C		
Derating of the output power	❹			
Storage temperature	-40...+85°C			
HOUSING				
Material	Metallic			

❶ No replacement by user.
❷ Minimum load of 150mA.
❸ Maximum surrounding temperature of 50°C for use according to UL508.
❹ See the derating tables in the technical manual.

COMPACT DIN RAIL MOUNT SWITCHING POWER SUPPLIES WITH BASIC FUNCTIONALITY **PSE** SERIES

	PSE103024	PSE105024	PSE107224	PSE110024	PSE112024
	Multivoltage 100...240VAC				
	85...264VAC / 120...375VDC				
	750mA	1.3A	1.7A	2.3A	2.9A
	47...63Hz				
	–				
	3000VAC (4242VDC)				
	T2A 250VAC		T3.15A 250VAC		
	24VDC				
	22.5...28.5VDC				
	1.25A	2.1A	3A	4.2A	5A
	±0.03%°C				
	±1%				
	±1%				
	Up to 86%	Up to 87%	Up to 89%	Up to 88%	Up to 89%
	140%			130%	140%
	Hiccup				
	28.8...32.4VDC				
	100mV				
	—				
	Yes				
	No				
	No				
	-25...+71°C				
	from +51°C (+46°C for PSE110024) to +71°C by 2.5%/°C				
	-40...+85°C				
	Plastic				Metallic

DIN RAIL MOUNT SWITCHING POWER SUPPLIES WITH MAXIMUM FUNCTIONALITY **PSL** SERIES

TYPE	Single-phase	**PSL100524**	**PSL101024**	**PSL101824**	**PSL103024** **PSL103048**	**PSL106024** **PSL106048**	**PSL110024** **PSL110048**
	Two-phase	—	—	—	—	—	—
	Three-phase	—	—	—	—	—	—
INPUT CHARACTERITICS							
Rated supply voltage		Multivoltage 100...240VAC					
Operating range		90...264VAC / 120...375VDC			85...264VAC / 90..375VDC		90...264VAC 120...375VDC
Consumption (max)		200mA	300mA	500mA	800mA	1.5A	2.4A
Frequency range		47...63Hz					
PFC		—					
Insulation voltage Input/output		3000VAC (4242VDC)					
Internal fuse ❶		T2A 250VAC					T3.15A 250VAC
OUTPUT CHARACTERISTICS							
Voltage		24VDC (PSL...24); 48VDC (PSL...48)					
Voltage trimming (potentiometer)		21.6...28.8VDC			24...28VDC 48...55VDC		22.5...28.5VDC 47...56VDC
Rated current		0.21A	0.42A	0.75A	1.25A 0.625A	2.5A 1.25A	4.2A 2.1A
Temperature coefficient		±0.03%/°C					
Line adjustment		±1%			±0.5%		±1%
Load adjustment		±2%			±0.5%		±1%
Efficiency		72%	76%	77%	86%	89%	86% 88%
Overload protection		110...165%			110...150%		110...140%
Output short-circuit protection		Hiccup			Fold forward		
Output overvoltage protection		30...34.8VDC			30...33VDC		
Ripple & noise		50mV					
Parallel connection (n° of units)❸		—					3
INDICATIONS							
LED for power on		Yes					
LED for low voltage		Yes			No		Yes
Output for available voltage signaling (Rdy)		No			only on types PSL1...24		
AMBIENT CONDITIONS							
Operating temperature ❹		-20...+71°C			-40...+71°C		-35...+71°C
Storage temperature		-25...+85°C			-40...+85°C		
Derating of the output power		from +61°C to +71°C by 2.5%/°C					
HOUSING							
Material		Plastic					

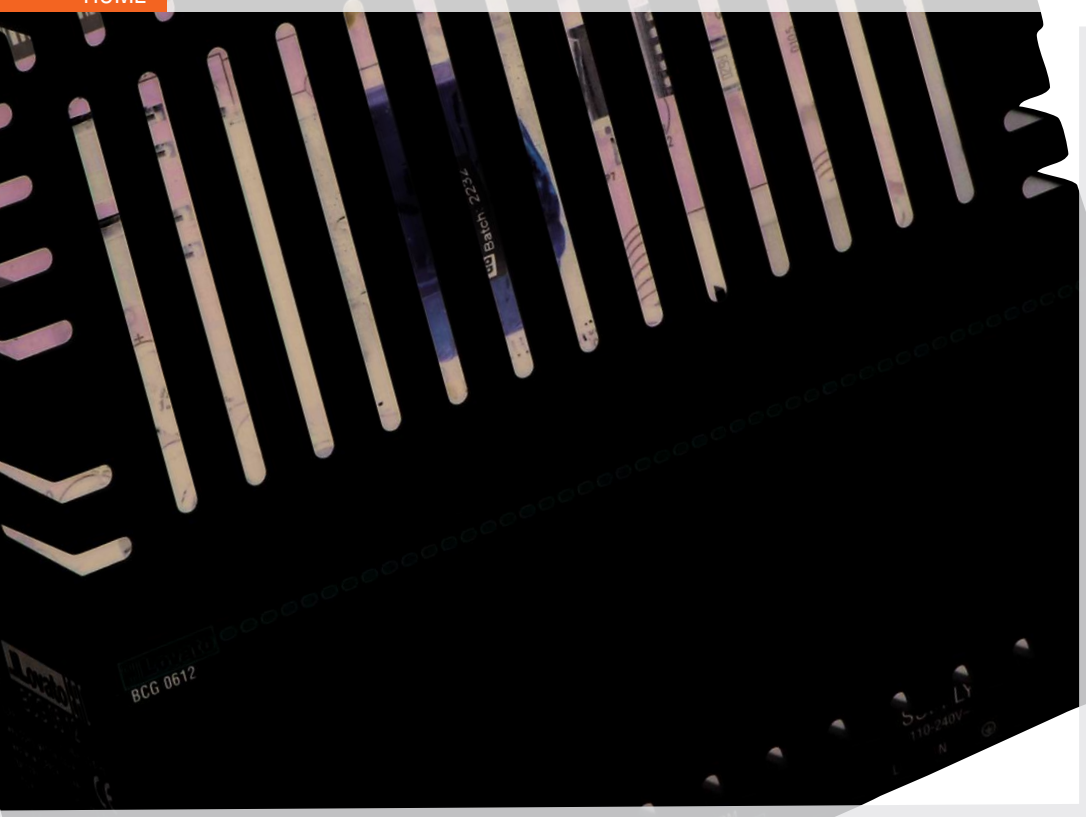
❶ No replacement by user.
❷ Two-phase connection is possible with 25% power derating, except types PSL2100... and PSL312024.
❸ Minimum load of 150mA.
❹ Maximum surrounding temperature of 50°C for use according to UL508.

	PSL112024 **PSL112048**	**PSL124024** **PSL124048**	**PSL130024**	**PSL148024** **PSL148048**	—	—	—	—	—
	—	—	—	—	**PSL210024**	—	—	—	—
	—	—	—	—	—	**PSL312024**	**PSL324024**	**PSL348024**	**PSL396024**
	Self-configurable 115/230VAC				400...500VAC ❷				
	90...132VAC / 180...264VAC 210...375VDC			90...264VAC 120...375VDC	340...575VAC 480...820VDC				
	2.8A	5.4A	6A	7A	750mA	500mA	850mA	1.4A	2.4A
	47...63Hz								
	0.7	0.75		0.97	0.55			0.65	0.8
	3000VAC (4242VDC)								
	T3.15A 250VAC	T6.3A 250VAC	T8A 250VAC	T10A 250VAC	T2A 600VAC			T3.15A 500VAC	T5A 500VAC
	24VDC (PSL...24); 48VDC (PSL...48)				24VDC				
	22.5...28.5VDC 47...56VDC		22.5...28.5VDC	22.5...28.5VDC 47...56VDC	22.5...28.5VDC				
	5A 2.5A	10A 5A	12.5A	20A 10A	4.2A	5A	10A	20A	40A
	0.03%/°C								
	±0.5%				±1%				
	±1%								
	86% 87%	89% 90%	89%	89% 90%	87%	89%	90%	90%	92%
	110...145%	120...145%		110...140%	115...135%		120...140%	110...135%	
	Fold forward				Hiccup			Fold forward	Hiccup
	30...33VDC (PSL...24) 60...66VDC (PSL...48)		30...33VDC	30...33VDC (PSL...24) 60...66VDC (PSL...48)	30...33VDC				
	50mV	100mV			50mV	100mV			80mV
	3				2	—	2	2	3
	Yes								
	Yes								
	only on types PSL1...24				Yes				
	-35...+71°C	-40...+71°C	-30...+71°C	-40...+71°				-30...+71°C	-40...+71°C
	-40...+85°C								
	from +61°C to +71°C by 2.5%/°C		from +56°C to +71°C by 2.5%/°C	from +61°C to +71°C by 2.5%/°C					3.5%/°C (>60°C)
	Metal				Plastic	Metal			

REDUNDANCY MODULES **PSLR...**

TYPE	**PSLRM1024**	**PSLR2024**
INPUTS CHARACTERISTICS		
Rated input voltage	12-24VDC	24VDC
Operating range	9...35VDC	21...28VDC
Number of input	2	2
Rated input current	10A	20A
OUTPUTS CHARACTERISTICS		
Output voltage drop	0.5V	0.5V
Corrente di uscita nominale	10A	20A
Rated output current	35V	30V
Maximum output current	16A for 300s	30A for 300s
INDICATIONS		
DC ON indicator for input A	No	Yes
DC ON indicator for input B	No	Yes
Power Rdy (Ready) output	No	Ok if input >20V (±5%) or <30V(±5%) Fail if input <20V (±5%) or >30V(±5%) Rating 1A 30VDC
AMBIENT CONDITIONS		
Operating temperature / Storage temperature	-40...+71°C / -40...+85°C	
HOUSING		
Material	Plastic	

Automatic battery chargers



- Switching and linear technology
- 1 charging level
- Versions for non-sealed and sealed lead-acid batteries, 1.25 to 12A ratings
- Charging current limitation selectable.

SEC. - PAGE

Automatic battery chargers for lead-acid batteries
Switching BCF series, modular version ..... 27 - 2
Switching BCG series ..... 27 - 3
Linear BCE series ..... 27 - 4

Dimensions ..... 27 - 5
Wiring diagrams ..... 27 - 6
Technical characteristics ..... 27 - 7



Page 27-2

SWITCHING BATTERY CHARGERS
MODULAR VERSION

- For lead-acid batteries up to 50Ah rating
- Rated output current:
  – 2.5 and 4.5A at 12VDC
  – 1.25 and 2.5A at 24VDC
- Electronic lock for shorted battery, reverse polarity and output overload
- Automatic reset at end of alarm conditions
- Output for alarm remote indication.



Page 27-3

SWITCHING BATTERY CHARGERS

- For lead-acid batteries up to 150Ah rating
- Rated output current:
  – 6A and 12A at 12VDC
  – 5A and 10A at 24VDC
- Electronic lock for shorted battery, reverse polarity and output overload
- Automatic reset at end of alarm conditions
- Output for alarm remote indication.



Page 27-4

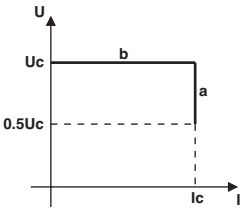
LINEAR BATTERY CHARGERS

- For lead-acid batteries up to 150Ah rating
- Rated output current:
  – 3A, 6A, 12A at 12VDC
  – 2.5A, 5A, 10A at 24VDC
- Electronic lock for shorted battery, reverse polarity, output overload and disconnected battery
- Output for alarm remote indication.

For lead-acid batteries



BCF...



a - constant current charge
b - constant voltage charge

Order code	Rated output current	Rated output voltage in DC	Qty per pkg	Wt
	[A]	[V]	n°	[kg]
1 charging level.				
BCF025012	2.5	12	1	0.332
BCF045012	4.5		1	0.336
BCF012524	1.25	24	1	0.332
BCF025024	2.5		1	0.332

Alarms	VDC ON GREEN LED	BAT LOW RED LED	RELAY
Correct output voltage	ON	OFF	Energised
Reverse polarity	ON	ON	Energised
Short circuit/ Overload	OFF	OFF	De-energised

Type	Maximum power consumption		dissipation	Internal fuse mains side (Type T)
	[VA]	[W]	[W]	[A]
BCF025012	80	40	6	2❶
BCF045012	150	70	9	2❶
BCF012524	80	39	6	2❶
BCF025024	150	77	9	2❶

❶ Not replaceable.

General characteristics
- Switching technology
- Wide range of auxiliary supply
- Screw fixing or 35mm DIN rail mount (IEC/EN/BS 60715).

Protection:
- Mains input fuse
- Battery output fuse
- Electronic lock in case of short circuit on battery terminals, reverse battery polarity and output overload
- Automatic reset at end of alarm conditions.

LED indications:
- Correct output voltage
- Reverse battery polarity.

Operational characteristics
- Auxiliary supply voltage: 100...240VAC ±10% 50/60Hz ±5%
- Fixed charging current
- Current limitation
- Charging current according to DIN 41773 standards
- Fixed clamping screw terminal block with captive screws
- IEC degree of protection: IP20.

Alarm output circuit
- Type of output: 3A 250VAC AC1 duty relay, normally energised.

Certifications and compliance
Certifications obtained: EAC; UL Recognized for USA and Canada (cURus - File E360865), as Power Supplies - Component. Products having this type of marking are intended for use as components of complete workshop-assembled equipment. Compliant with standards: IEC/EN/BS 62368-1, IEC/EN/BS 61000-6-2, IEC/EN/BS 61000-6-3, UL 60950-1, CSA C22.2 n°60950-1.

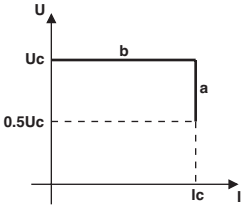
For lead-acid batteries



BCG...



BCGX00



a - constant current charge
b - constant voltage charge

Order code	Rated output current	Rated output voltage in DC	Qty per pkg	Wt
	[A]	[V]	n°	[kg]
1 charging level.				
BCG0612	6	12	1	0.532
BCG1212	12		1	0.710
BCG0524	5	24	1	0.532
BCG1024	10		1	0.710
Accessories.				
BCGX00	Adapter for 35mm DIN rail vertical mount of BCG0612 and BCG0524		1	0.022

Alarms	ON GRN LED	REV RED LED	ALA RED LED	CHG YEL RED	RELAY
Correct output voltage	ON	OFF	OFF	OFF	Energ.
Charging	ON	OFF	OFF	ON❶	Energ.
Low battery voltage	ON	OFF	ON	ON❷	De-energ.
Reverse polarity	OFF	ON	OFF	OFF	De-energ.
Short circuit / Overload	ON	OFF	ON	OFF	De-energ.

❶ Steady light if the charging current is more than approx. 30% of programmed current value.
❷ Flashing during Hiccup operating conditions.

Type	Maximum power consumption	dissipation	Internal fuse Mains side (type T)
	[VA]	[W]	[W]	[A]
BCG0612	230	97	14	4❸
BCG1212	284	190	29	6,3
BCG0524	364	158	20	6,3❸
BCG1024	630	311	41	8

❸ Not replaceable.

General characteristics
- Switching technology
- Wide auxiliary supply range
- High efficiency
- Two charging voltages selectable by DIP-switch
- Boost external control for full battery charging
- Hiccup function for battery recharging when its voltage is lower than 50% rated value
- Charging current limiting trimmer resistor
- Screw fixing or 35mm DIN rail mount (IEC/EN/BS 60715).

Protection:
- Input fuse on AC side
- Electronic lock in case of short circuit on battery terminals, reverse battery polarity and output overload
- Automatic reset at end of alarm conditions.

LED indications:
- Power on
- Charging operation (I>30% Ic)
- Overload or short circuit conditions
- Reverse battery polarity.

Operational characteristics
- Auxiliary supply voltage: 110...240VAC ±10% 50/60Hz ±10%
- Charging voltage selectable by DIP-switch
- Maximum charging current can be set with a trimmer on the front: 20...100% of the rated current value
- Current limitation
- Charging cycle according to DIN 41773 standards
- IEC degree of protection: IP20.

Alarm output circuit
- Type of output: 5A 30VDC duty relay, normally energised.

Certifications and compliance
Certifications obtained: EAC; UL Recognized for USA and Canada (cURus - File E360865), as Power Supplies - Component.
Products having this type of marking are intended for use as components of complete workshop-assembled equipment.
Compliant with standards: IEC/EN/BS 62368-1, IEC/EN/BS 61000-6-2, IEC/EN/BS 61000-6-4, UL 60950-1, CSA C22.2 n°60950-1.

For lead-acid batteries



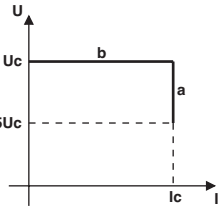
31BCE0312
31BCE2V524



31BCE0612
31BCE0524



31BCE1212
31BCE1024



a - constant current charge
b - constant voltage charge

Order code	Rated output current	Rated output voltage in DC	Qty per pkg	Wt
	[A]	[V]	n°	[kg]
1 charging level.				
31BCE0312	3	12	1	1.984
31BCE0612	6		1	4.832
31BCE1212	12		1	8.690
31BCE2V524	2.5	24	1	1.992
31BCE0524	5		1	4.960
31BCE1024	10		1	9.560

Alarms	ON GREEN LED	ALARM RED LED	CHARGE GREEN LED	RELAY
Correct output voltage	ON	OFF	OFF	Energ.
Charging	ON	OFF	ON	Energ.
Low battery voltage	ON	ON	OFF	De-energ.
Reverse polarity	ON	ON	OFF	De-energ.
Short circuit / Overload	ON	ON	OFF	De-energ.
Battery disconnected	ON	ON	OFF	De-energ.

Type	Maximum power consumption	dissipation	Mains fuse (type)
	[VA]	[W]	[A]
BCE0312	117	24	1 (T) ext ❶
BCE0612	222	46	4 (F) int
BCE1212	400	73	6.3 (F) int
BCE2V524	166	26	1 (T) ext ❶
BCE0524	317	40	4 (F) int
BCE1024	610	66	6.3 (F) int

❶ Not supplied; installed by customer.

General characteristics
- Linear technology
- Housing for internal panel mounting by screws.

Protection:
- Mains input fuse (except for BCE2V5 and BCE03)
- Battery output fuse
- Electronic lock in case of short circuit on battery terminals, reverse battery polarity, output overload (<0.5 Ue) and disconnected battery.

LED Indications:
- Power on
- Charge (I > 0.2 Ic)
- Alarm for protection tripping.

Operational characteristics
- Auxiliary supply voltage: 220...240VAC ±10%, 50/60Hz ±5%
- Charging current: 30...100% Ie adjustable
- Charging cycle according to DIN 41773 standards
- Current limitation
- Clamping screw terminal block with captive screws:
  - Removable for BCE03 and BCE2V5
  - Fixed for BCE05, BCE06, BCE10 and BCE12
- IEC degree of protection: IP00.

Alarms
Possible causes of alarm include:
- Low battery voltage
- Battery fuse blown
- Battery not connected
- Battery polarity inverted (reverse polarity).

BCE2V524 - BCE0312
These types have a static alarm output for the control of a relay or indicator, maximum 300mA duty.
If it is connected to a relay, this must be normally energised in absence of alarm. In alarm conditions with ALARM LED switched on or in absence of supply, the relay de-energises.

BCE0524 - BCE0612 - BCE1024 - BCE1212
These types have a normally energised relay alarm output. In alarm conditions with ALARM LED switched on or in absence of supply, the relay de-energises.

Alarm output circuit
BCE2V524 - BCE0312
- Type of output:
  - Negative static; NPN transistor❷
  - Maximum voltage applicable to load: +V battery terminal
  - Maximum output current: 300mA
  - Maximum overload current for 1 second: 2A
  - Dynamic over-voltage protection with inductive load.

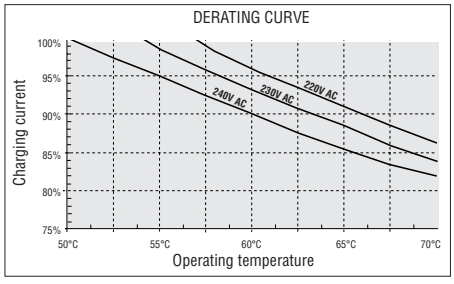
BCE0524 - BCE0612 - BCE1024 - BCE1212
- Type of output
  - Relay: 1 changeover contact (SPDT)
  - Rated voltage: 250VAC
  - IEC rated capacity in AC1 duty: 5A 250VAC Ith
  - IEC rated capacity in DC13 or DC14 duty: 5A 30VDC
  - Electrical life: >10^5 cycles
  - Mechanical life: >30x10^5 cycles.

❷ The output is not overload or short-circuit protected. It is however capable of switching on a 3W filament bulb.

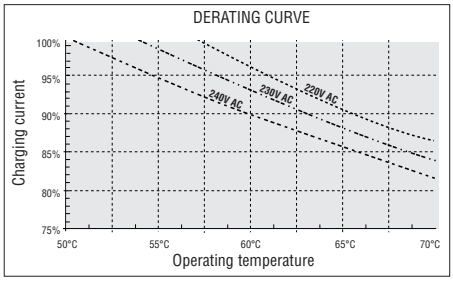
Certifications and compliance
Certifications obtained: EAC.
Compliant with standards: IEC/EN/BS 60950-1.

DERATING CURVES

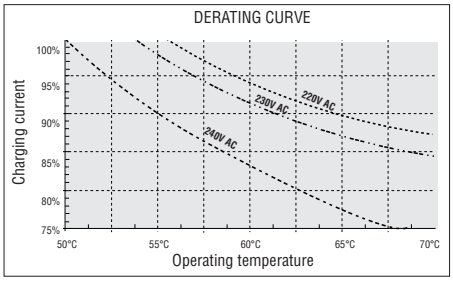
BCE2V524 - BCE0312



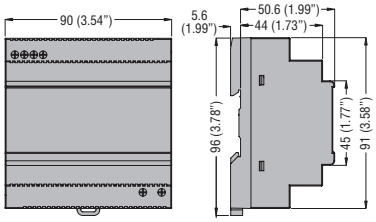
BCE0524 - BCE0612



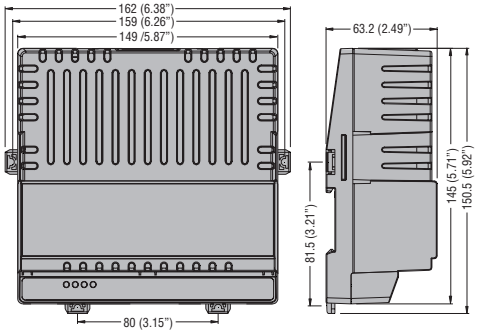
BCE1024 - BCE1224



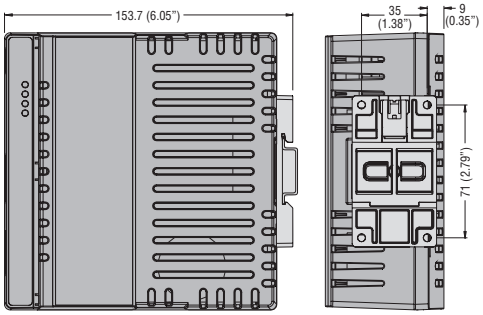
BCF...



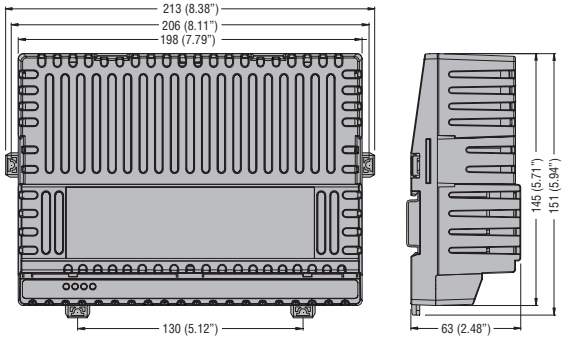
BCG0612 - BCG0524



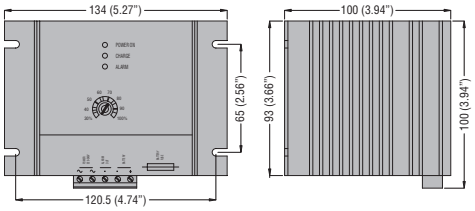
Mounting adapter BCGX00



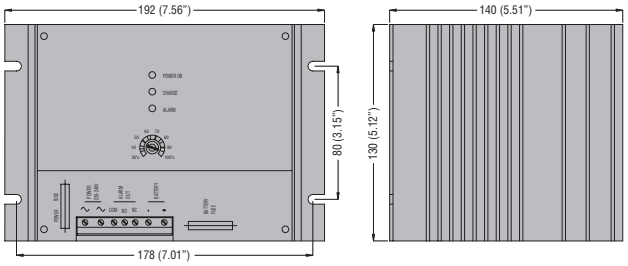
BCG1212 - BCG1024



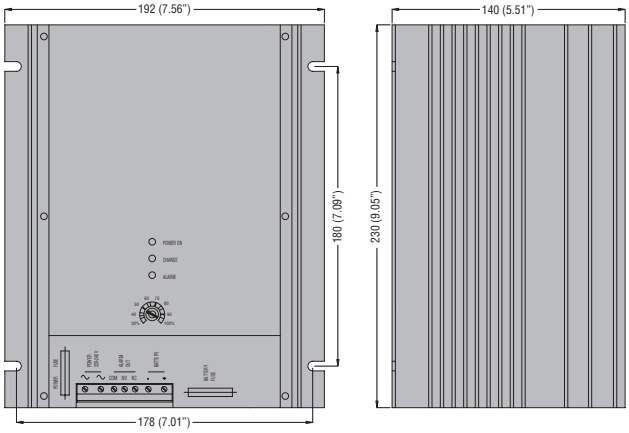
BCE0312 - BCE2V524



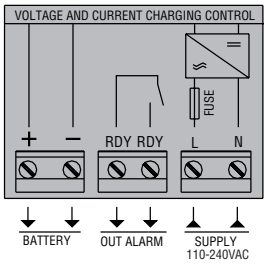
BCE0612 - BCE0524



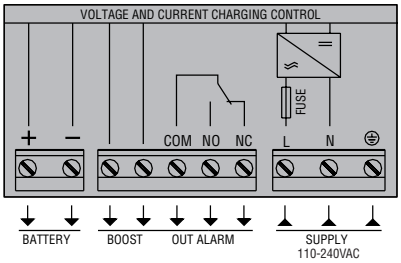
BCE1212 - BCE1024



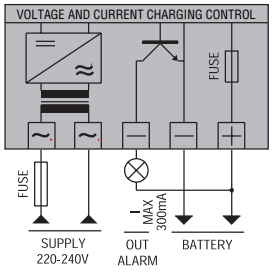
BCF...



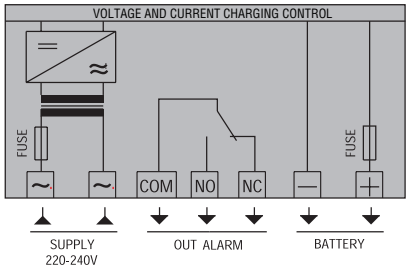
BCG...

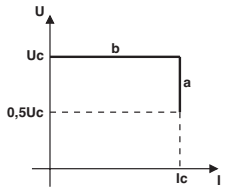


BCE2V5... - BCE03...



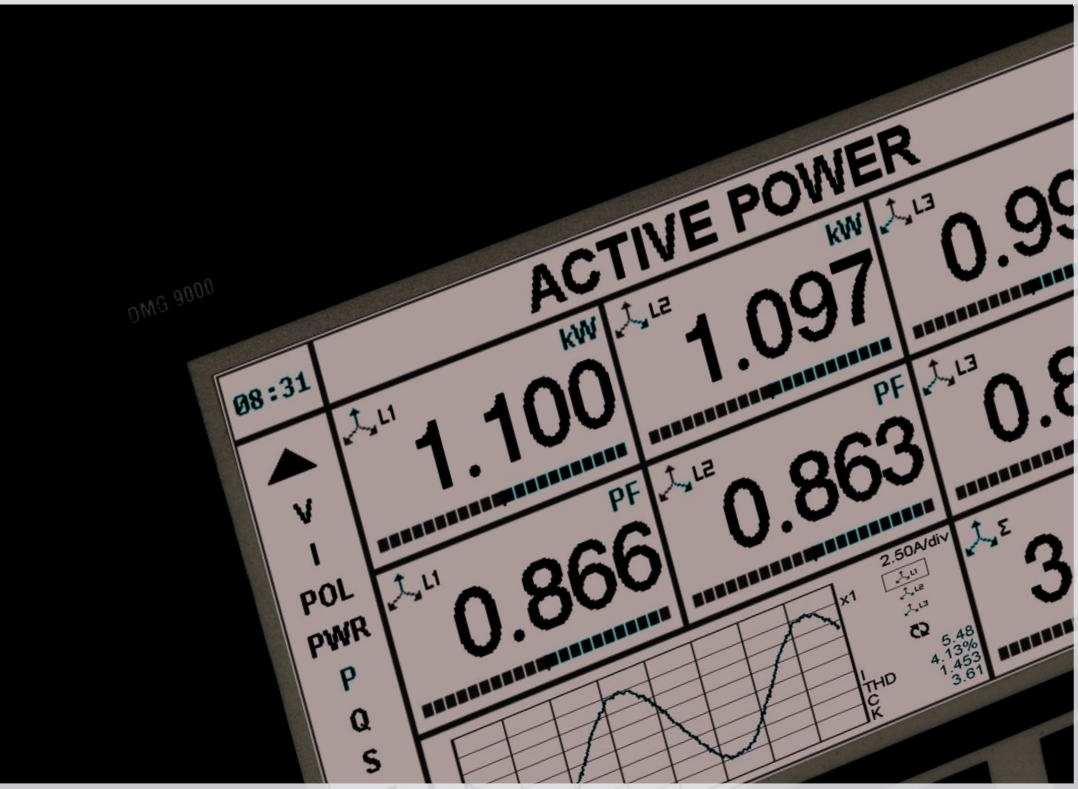
BCE05... - BCE06... - BCE10... - BCE12...



TYPE	BCF...	BCG...	BCE...
Description	Single phase automatic battery charger 1 charging level for lead-acid batteries	Single phase automatic battery charger 1 charging level for lead-acid batteries	Single phase automatic battery charger 1 charging level for lead-acid batteries
Supply voltage	100...240VAC ±10%; 50/60Hz ±5%	110...240VAC ±10%; 50/60Hz ±10%	220...240VAC ±10% 50/60Hz ±5%
Rated output voltage (Uoc)	12-24VDC		
Rated charging current (Ic)	2.5-4.5A (12VDC) 1.25-2.5A (24VDC)	6-12A (12VDC) 5-10A (24VDC)	3-6-12A (12VDC) 2.5-5-10A (24VDC)
CHARGING CYCLE			
Reference standards	DIN 41773		
Diagram	 a - constant current charge b - constant voltage charge		
End charging voltage Uc	12V battery: 13.6VDC (2.27V/cell) 24V battery: 27.2VDC (2.27V/cell)	12V battery with DIP2: – in pos. V1: 13.8V – in pos. V2: 13.5V (default) 24V battery with DIP2: – in pos. V1: 27.6V – in pos. V2: 27.0V (default)	12V battery: 13.8VDC (2.3V/cell) 24V battery: 27.6VDC (2.3V/cell)
Charging current	Fixed	Adjustable 20% to 100% Ic (using potentiometer/trimpot)	Adjustable 30% to 100% Ic (using potentiometer)
Current limit	Yes		
Boost	—	+4.4% Uc	—
PROTECTION			
Type	– Mains supply fuse – Charging inhibition due to: • Short circuit at battery terminals • Reverse battery polarity • Low voltage at battery poles (<0.5 Uoc) • Output overload	– Mains supply fuse – Charging inhibition due to: • Short circuit at battery terminals • Reverse battery polarity • Low voltage at battery poles (<0.5 Uoc) • Output overload	– Mains supply fuse (5, 6, 10, 12A types only) – Battery output fuse – Charging inhibition due to: • Short circuit at battery terminals • Reverse battery polarity • Low voltage at battery poles (<0.5 Uoc) • Disconnected battery
ALARM OUTPUT CIRCUIT			
Type of output	1 relay 3A 250VAC (AC1)	1 relay 5A 30VDC	Static (NPN transistor) ❶; relay with 1 c/o contact (SPDT), 5A 250VAC ❷
AMBIENT CONDITIONS			
Operating temperature	-40...+51°C	-30...+55°C (+55...+70°C with 1-5%Ic/°C derating by trimpot)	-10...+50°C
Storage temperature	-40...+85°C	-30...+80°C	-30...+80°C
HOUSING			
Version	Modular	Internal panel mount	Internal panel mount
Mounting	35mm DIN rail (IEC/EN/BS 60715)	35mm DIN rail (IEC/EN/BS 60715) or screw fixing	Screw fixing
IEC degree of protection	IP20	IP20	IP00
Cooling	Natural		
Connections	Fixed terminals	Fixed terminals	Removable/plug-in terminals❶ Fixed terminals❷

❶ For 2.5A and 3A types only.
❷ For 5, 6, 10 and 12A types only.

Energy meters and power analyzers



- Single and three-phase energy meters
- MID certified versions with UTF certificates
- cULus certified versions
- Eichrecht certified versions
- Power analyzer and multifunction digital metering instruments, expandable, with icon display, monochrome or colour
- Connection to single, two and three-phase and for power monitoring systems
- Ideal for distribution systems, electricity cogeneration and within machinery installations
- High measurement accuracy
- Totally programmable digital and analog inputs and outputs
- RS485, RS232, USB, Ethernet, Profibus DP and M-Bus communication ports
- Digital voltmeters, ammeters, wattmeters, frequency meters and cosφ meters.

	Sec. - Page
Energy meters	
Single-phase	28 - 12
Single-phase, MID certified	28 - 13
Three-phase with or without neutral	28 - 14
Three-phase with neutral, MID certified	28 - 15
Three-phase with neutral, Eichrecht certified	28 - 15
Three-phase with neutral, with UTF certificates	28 - 16
Data concentrator	**28 - 17**
Power analyzers and EASY BRANCH power monitoring system	
Power analyzer with widescreen colour LCD	28 - 18
EASY BRANCH power monitoring system	28 - 19
Multifunction digital metering instruments	
Modular LCD multimeters	28 - 20
Flush-mount LCD multimeters	28 - 22
Digital metering instruments	
Modular LED measuring instruments	28 - 23
Flush-mount LED measuring instruments	28 - 25
Accessories	
Communication devices, protection covers	28 - 28
Gateway data loggers, gateway, converter, GSM modem	28 - 29
Dimensions	**28 - 30**
Wiring diagrams	**28 - 31**
Technical characteristics	**28 - 34**



Page 28-12

ENERGY METERS

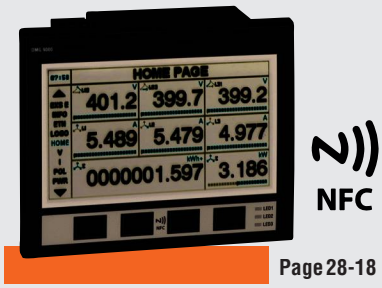
- Single-phase, three-phase with neutral, three-phase with or without neutral
- Direct connection or by current transformers
- MID or cULus certified versions
- Eichrecht certified versions
- Versions expandable with EXM... expansion modules
- Versions with built-in RS485 or M-Bus communication ports.



Page 28-17

DATA CONCENTRATORS

- Energy consumption data storage for network usage
- Connection up to 14 energy meters equipped with static output
- Expandable with EXM... expansion modules
- Built-in RS485 communication port.



Page 28-18

POWER ANALYZERS WITH WIDESCREEN COLOUR LCD

- Widescreen colour LCD display
- Flush-mount 92x92mm
- Versions with built-in RS485 communication port
- Versions with built-in Ethernet and data memory
- Versions expandable with EXP... expansion modules
- NFC and optical port
- Compatibility with EASY BRANCH power monitoring system.



Page 28-20

DIGITAL LCD MULTIMETERS AND POWER ANALYZERS

- Graphic or icon LCD
- Modular and flush-mount 92x92mm
- Versions expandable with EXM... and EXP... expansion modules
- Version with built-in RS485 communication port.
- Flush-mount version with current reading through Rogowski coils.



Page 28-23

LED MEASURING INSTRUMENTS

- Voltmeters, ammeters and wattmeters
- Modular and flush-mount 96x48mm versions.

SINGLE-PHASE DIRECT CONNECTION ENERGY METERS










Type	DMED100T1	DMED110T1	DMED111	DMED112	DMED115T1	DMED120T1	DMED121	DMED122
Maximum current	40A	40A	40A	40A	40A	63A	63A	63A
Display								
Vertical, no backlight	●	●	●	●				
Horizontal, backlight					●	●	●	●
Measurements								
kWh	●	●	●	●	●	●	●	●
kWh, kW with average and max demand		●	●	●	●	●	●	●
kvarh, kvar, V, I, Hz, PF, total and partial hour counter		●	●	●		●	●	●
Interface								
Pulse output	●							
Programmable output (pulses/thresholds)		●			●	●		
Built-in Modbus-RTU (RS485)			●				●	
Built-in M-Bus				●				●
MID version -25...+55°C❶	●	●	●	●		●	●	●
MID version -25...+70°C❷			●					
Compatibility with Synergy, Synergy Cloud and Xpress software			●				●	

THREE-PHASE ENERGY METERS









Type	DMED300T2	DMED311	DMED302	DMED305T2	DMED330	DMED332	DMED310T2
Maximum current	80A	80A	80A	CT /5 or CT /1	CT /5 or CT /1	CT /5 or CT /1	CT /5
Connection type							
Direct	●	●	●				
Via CT				●	●	●	●
Interface							
Programmable output (pulses/thresholds)	●			●			●
Built-in Modbus-RTU (RS485)		●			●		
Built-in M-Bus			●			●	
Expandability							
Communication (RS485, Ethernet, USB)							●
Relay outputs for load disconnection							●
Data memory (Data logger)							●
MID version -25...+55°C❶❹	●		●	●	●	●	
MID version -25...+70°C❷❹		●					
cULus version (ANSI C12.20)❸	●						
Compatibility with Synergy, Synergy Cloud and Xpress software		●			●		●

❶ For MID versions add "MID"
❷ For MID7 versions add "MID7"
❸ For UL versions add "UL"
❹ UTF certified versions available on request.

Energy meters and power analyzers

Energy meters, multimeters and power analyzers

THREE-PHASE ENERGY METERS



Type	DMED341MID7	DMED341MID7E	DMED341MID7ER
Maximum current	80A	80A	80A
Connection type Direct	●	●	●
Interface Programmable output (pulses/thresholds)	●	●	●
Built-in Modbus-RTU (RS485)	●	●	●
MID version -25...+70°C	●	●	●
Eichrecht version		●	●
MID version -25...+70°C also for reverse/exported energy			●
Compatibility with Synergy, Synergy Cloud and Xpress software	●	●	●

DIN RAIL MOUNTING (MODULAR) MULTIMETERS



Type	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	15th order	15th order	THD only	THD only	31st order
Boolean logic					●
Expandable with EXM... modules					3 modules
Display type	Icons	Icons	Graphic	Graphic	Graphic
Built-in communication port		RS485		RS485	
Communication port with EXM... modules					RS232 USB RS485 Ethernet
Ethernet-RS485 gateway function					●

FLUSH MOUNTING MULTIMETERS AND POWER ANALYZERS



Type	DMG600	DMG610	DMG611	DMG615	DMG620	DMG7000	DMG7500	DMG8000	DMG9000...
Maximum rated voltage	600VAC	600VAC	600VAC	600VAC	600VAC	600VAC	600VAC	600VAC	600VAC
Current reading	CT /5A or CT /1A	CT /5A or CT /1A	Rogowski coils❶	CT /5A or CT /1A	CT /5A or CT /1A	CT /5A or CT /1A	CT /5A or CT /1A	CT /5A or CT /1A	CT /5A or CT /1A
Voltage and current measure accuracy	0.5%	0.5%	0.5%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
Active energy measure accuracy	Class 1	Class 1	Class 1	Class 0.5s	Class 0.5s	Class 0.5s	Class 0.5s	Class 0.5s	Class 0.5s
Single-phase energy meter	●	●	●	●	●	●	●	●	●
Harmonic analysis	15th order	15th order	15th order	15th order	15th order	63rd order	63rd order	63rd order	63rd order
Neutral-earth voltage									●
Neutral current	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Measured
PLC logic						●	●	●	●
Display type	Icons	Icons	Icons	Icons	Icons	Colour graphic	Colour graphic	Colour graphic	Colour graphic
Built-in communication port		RS485	RS485	RS485	Ethernet		RS485	Ethernet	RS485 Ethernet
Expandable with EXP... modules	1 module	1 module	1 module	1 module	1 module	3 modules	3 modules	3 modules	3 modules
Communication port with EXP... modules	RS232 USB RS485 Ethernet	RS232 USB RS485 Ethernet	RS232 USB RS485 Ethernet	RS232 USB RS485 Ethernet	RS232 USB RS485 Ethernet	RS232 USB RS485 Ethernet Profibus DP	RS232 USB RS485 Ethernet Profibus DP	RS232 USB RS485 Ethernet Profibus DP	RS232 USB RS485 Ethernet Profibus DP
Data memory								●	●
Ethernet-RS485 gateway function						●	●	●	●
Energy quality according to EN 50160									●
Compatibility with EASY BRANCH power monitoring system							●	●	●
Degree of protection	IP54	IP54	IP54	IP54	IP54	IP65	IP65	IP65	IP65

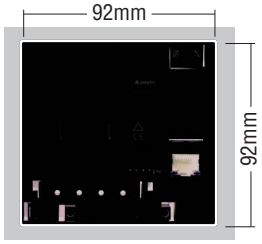
❶ Coils and calibration report included.

POWER ANALYZERS WITH WIDESCREEN COLOUR LCD
DMG SERIES



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.
The standard cutout dimensions (92x92mm) ensures a perfect compatibility with the usual front panel solutions.



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.



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 (**class 0.5**).

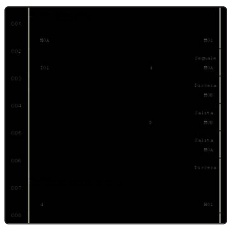
NFC CONFIGURATION

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 Google Play Store and 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.



	DMG7000	DMG7500	DMG8000	DMG9000
Built-in RS485 port	–	●	–	●
Built-in Ethernet port (with web-server)	–	–	●	●
Ethernet-RS485 gateway function	+ EXP1012 + EXP1013	+ 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	–	●	●	●

EVERYTHING UNDER CONTROL!

MEASUREMENTS

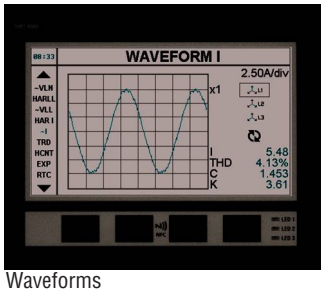
DMG power analyzers display all the measurements useful for a complete check of the electrical network. The voltage measurement input does not require external transformers **up to 600VAC**.

CHARTS AND HARMONICS

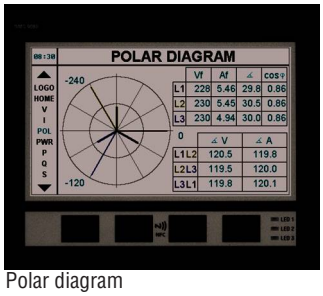
The electrical measurements are shown with waveform charts, polar diagrams and representations of the **harmonic spectrum up to the 63rd order** which is a useful tool to better understand the state of the system.

STATISTICS

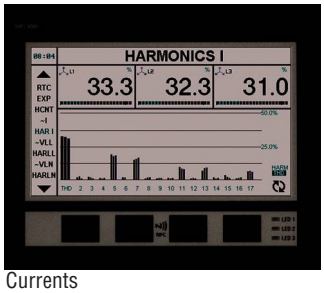
The DMG9000 model also provides statistics on the quality of the network according to the **EN50160** standard - class C - (voltage dips, overvoltages, interruptions, low frequency noises and much more).



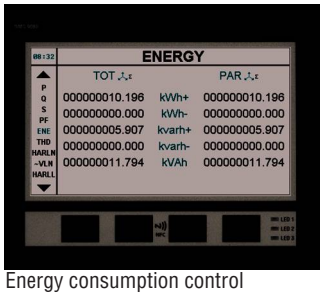
Waveforms



Polar diagram



Currents



Energy consumption control

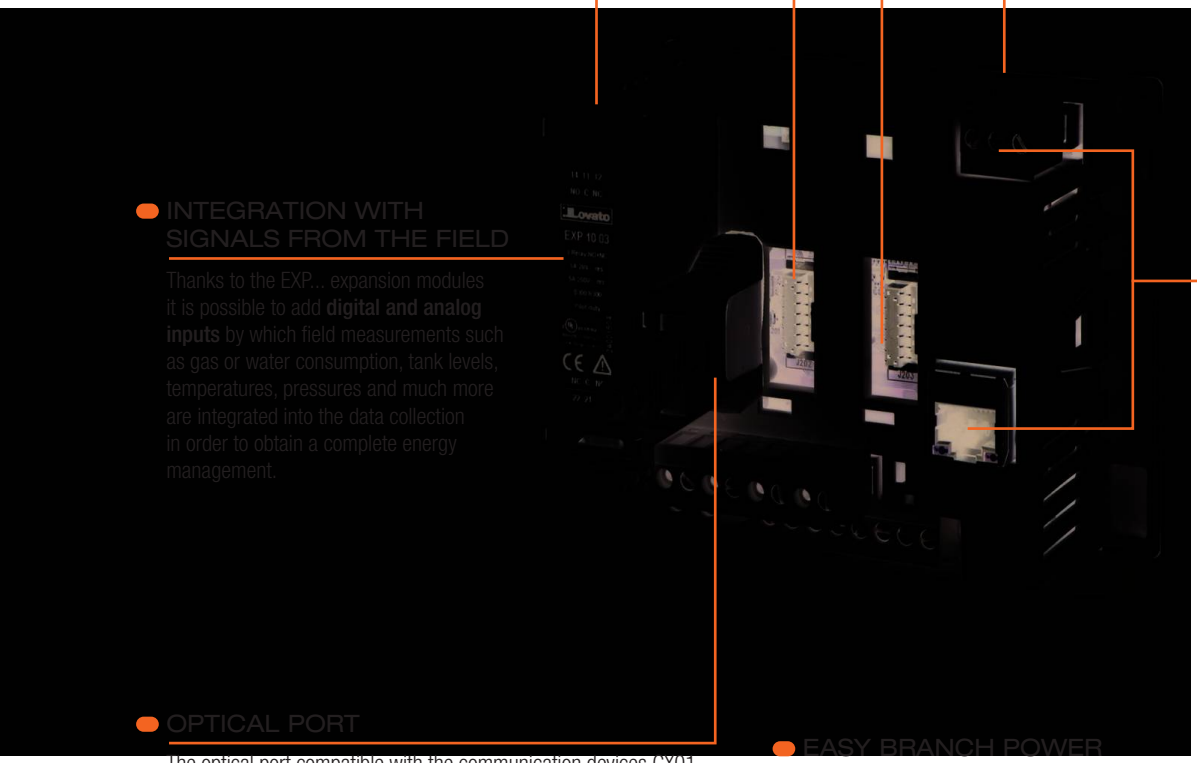
EXPANDABILITY AND COMMUNICATION

EXPANDABILITY

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

DEGREE OF PROTECTION: IP65

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



INTEGRATION WITH SIGNALS FROM THE FIELD

Thanks to the EXP... 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

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

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 diagnostics and the firmware update of the power analyzer.

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.



WEB-SERVER FUNCTION IN 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.

WEB SERVER AND BUILT-IN DATA MEMORY

A flash data memory allows archiving of historical data. Through the built-in web server the user can:
- select the measures (up to 128);
- set the sampling frequency;
- download the .CSV file with the acquired information.

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

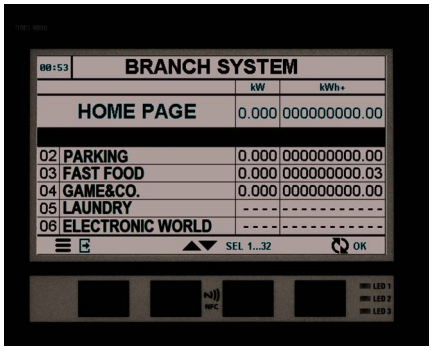
MEASUREMENT VIEW

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

EASY BRANCH POWER MONITORING SYSTEM

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.

SYSTEM COMPONENTS



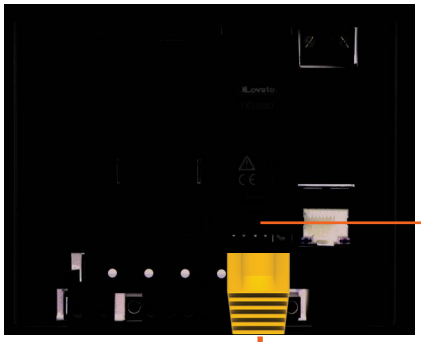
DMG7500 - 8000 - 9000
Power analyzer

DMG7500, DMG8000, DMG9000 power analyzers.

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).



On the DMG8000 and DMG9000 models, the system measurements can be viewed within a web page and can be recorded in the data memory to get historical trends.



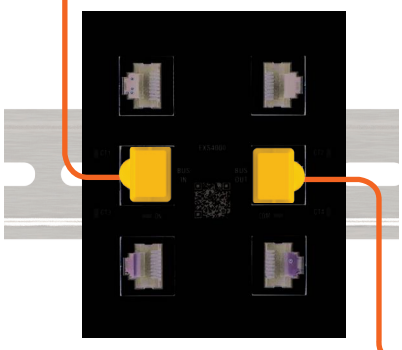
EXS0000
Bus module

EXS0000 bus module

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 - 0.2A power supply.

MAX 8 EXS4... current measuring modules can be connected to the EXS0000 bus module, to monitor up to:
- 33 three-phase loads;
- 99 single phase loads.

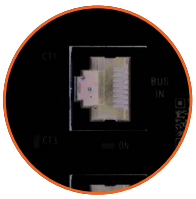
Including the loads connected to the power analyzer.



EXS4000
Current measuring module with
4 inputs for electronic RJ45 CTs

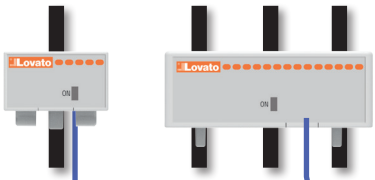
Current measuring module EXS4000

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.



Correct self-configuration LED





EXS1... - EXS3...
Electronic current transformer

Electronic current transformers EXS1... and EXS3...

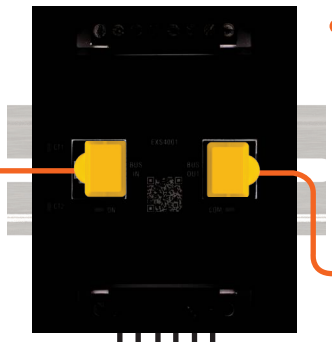
They are current transducers suitable to be installed immediately downstream of the magnetic circuit breakers thanks to their compact size. Available **for single-phase or three-phase loads,** the diameter and pitch of the pass-through holes have been designed to be in line with the ones of the MCBs:
- 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.

2m pre-wired cable

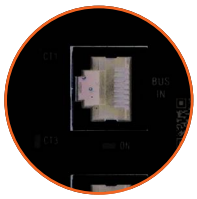


Correct coupling
signalling LED

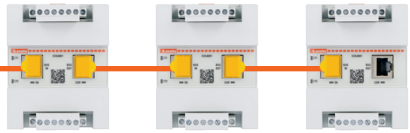


Current measuring module EXS4001

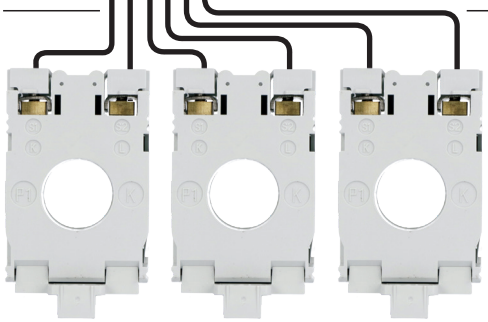
It offers the possibility of connecting monitored measuring points with traditional current transformers within the EASY BRANCH system, managing for each module **up to 2 three-phase loads or 6 single-phase loads** or a mixed single-phase and three-phase configuration. Current transformers of any type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



Correct coupling signalling LED



EXS4001
Current measuring module with 2 inputs for three-phase traditional CTs or 6 inputs for single-phase traditional CTs



DM...
Current transformers

Traditional current transformer 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.

Gateway data logger

A gateway data logger is the key device for the implementation of a modern and well-designed energy monitoring system.
It collects data from LOVATO Electric devices or from environmental sensors relating to any type of energy carrier (water, air, gas, electricity and steam) equipped with a compatible protocol.
The data collected, as well as being represented by the integrated web-server, can be transmitted to Synergy supervision software of LOVATO Electric or forwarded to remote servers in formats suitable for appropriate processing.



EXCGLB...
Gateway data loggers

Supervision software

All the data of the EASY BRANCH system are available on the central power analyzer and, through its communication ports, it is possible to collect them remotely by connecting directly with a browser if the model chosen is DMG8000 or DMG9000, or through Synergy software installed on a local server, or using Synergy Cloud if the gateway data logger EXCGLB... is added to the system.



SYNERGY
Supervision software

EASY BRANCH PLUG & PLAY SYSTEM ADVANTAGES

4 COMPONENTS 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!

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.

STOP TO WIRING MISTAKES!

In a monitoring system with traditional measuring instruments, 12 cables to be connected for each three-phase measuring point can cause various wiring errors (phase sequence, phase correspondence between voltages and currents, current transformers sense) which cause errors in reading the electrical quantities and delay the commissioning of the switchboard.
The EASY BRANCH system, thanks to the RJ45 connections of the electronic CTs, is foolproof!

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 (single-phase, three-phase). A LED on the electronic transformers indicates the correct power supply, while a LED on EXS4000 current measuring module indicates the correct coupling.

NO SPECIAL CABLES NEEDED

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

COMPARISON BETWEEN EASY BRANCH AND TRADITIONAL MEASURING SYSTEMS

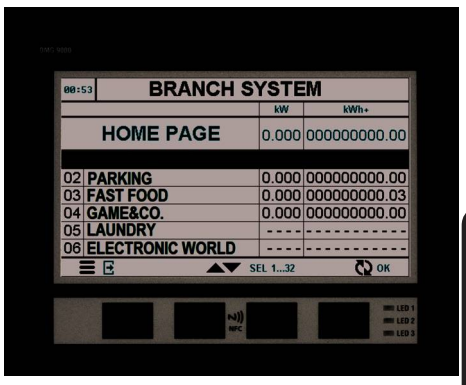
If 5 three-phase loads are to be monitored in an electrical panel:
- **EASY BRANCH SYSTEM**: 1 power analyzer, 1 display where to search for measurements, 1 EXS0000 bus module, 1 EXS4000 current measuring module, 4 three-phase electronic transformers and only 12 cables to be wired
- **TRADITIONAL SYSTEM**: 5 multimeters, 5 displays where to search for measurements, 15 current transformers and 60 cables to be wired.

The more the measuring points increase, the more the advantages in favour of the EASY BRANCH system are evident.

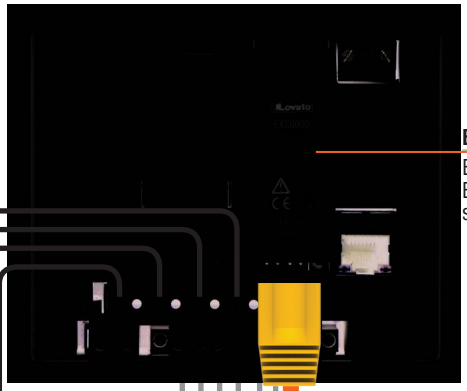
MEASUREMENT ACCURACY

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

PLANT MANAGEMENT WITH EASY BRANCH



DMG7500 - 8000 - 9000
Power analyzer

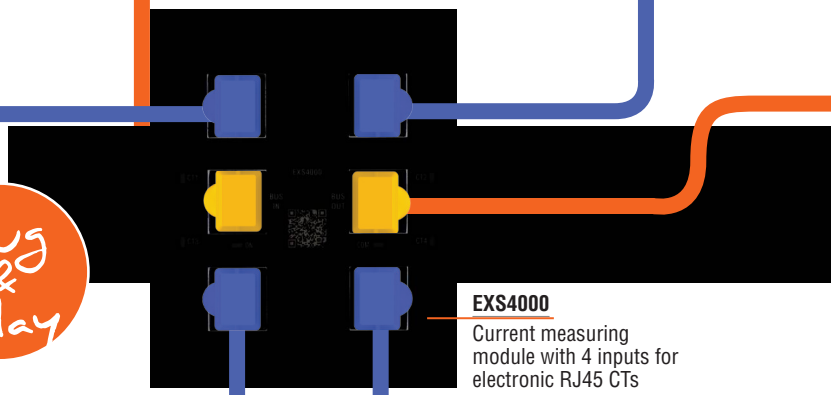


EXS0000
Bus module for EASY BRANCH system



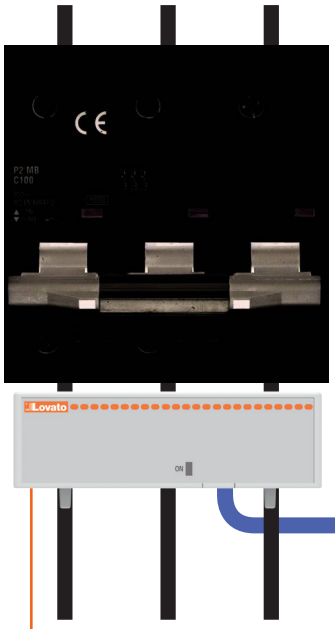
EXS1080
80A single-phase electronic current transformer with RJ45 cable, 2m long

L1
L2
L3
N
T1
T2
T3

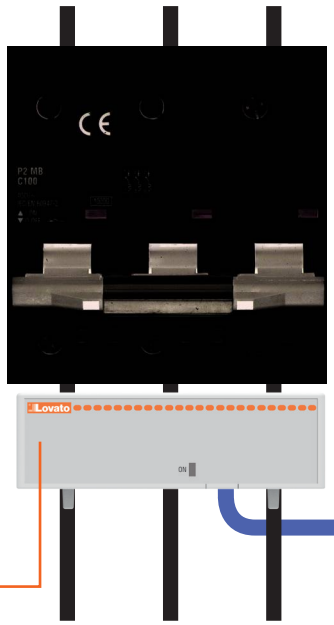


Plug & Play

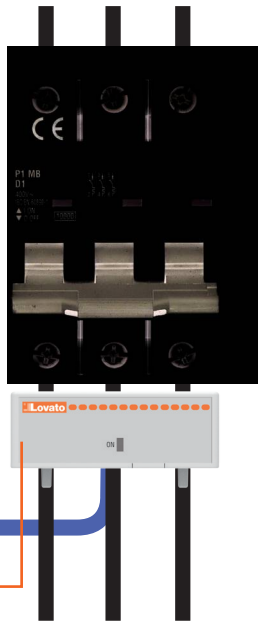
EXS4000
Current measuring module with 4 inputs for electronic RJ45 CTs



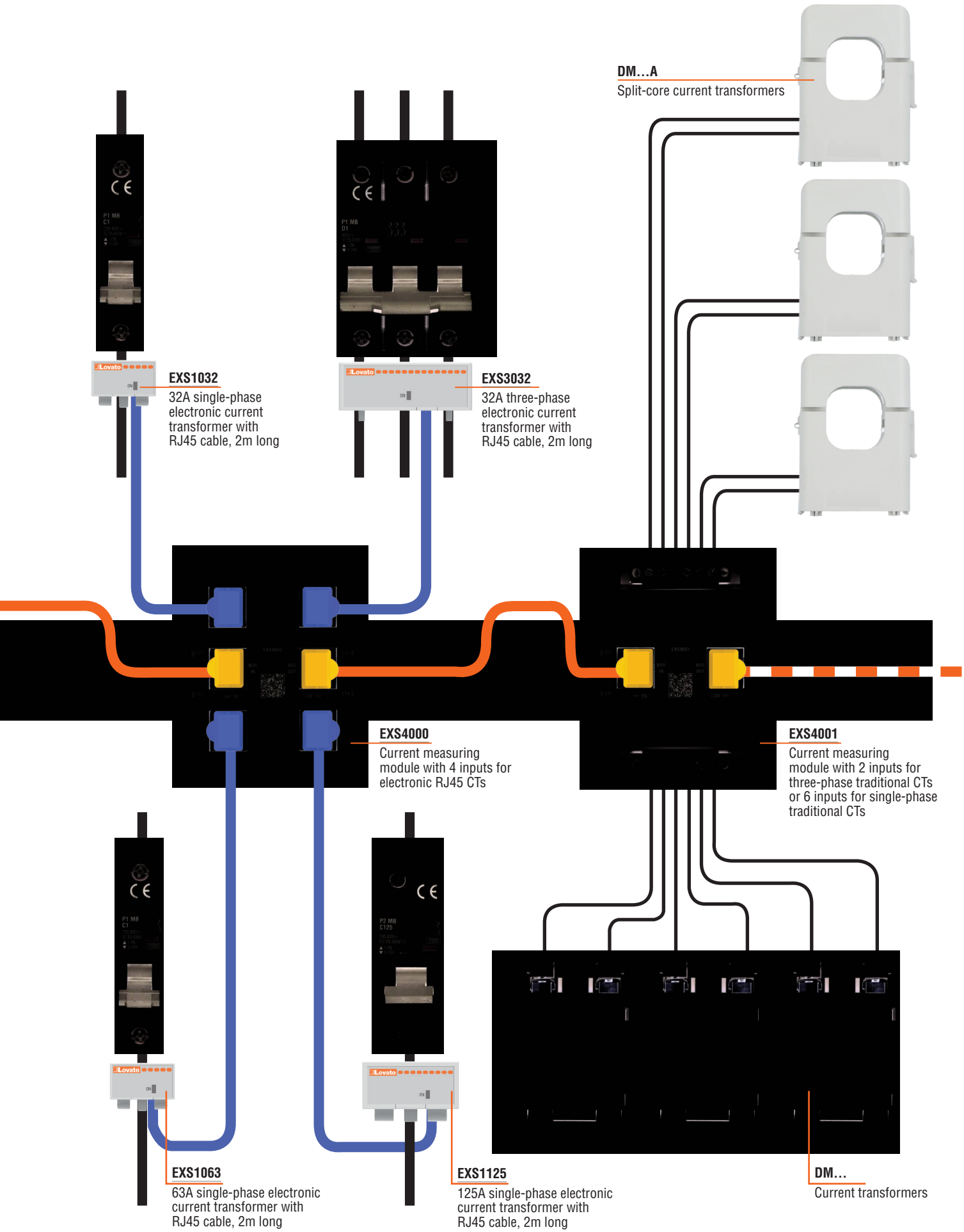
EXS3125
125A three-phase electronic current transformer with RJ45 cable, 2m long



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



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



DM...A
Split-core current transformers

EXS1032
32A single-phase electronic current transformer with RJ45 cable, 2m long

EXS3032
32A three-phase electronic current transformer with RJ45 cable, 2m long

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

EXS1125
125A single-phase electronic current transformer with RJ45 cable, 2m long

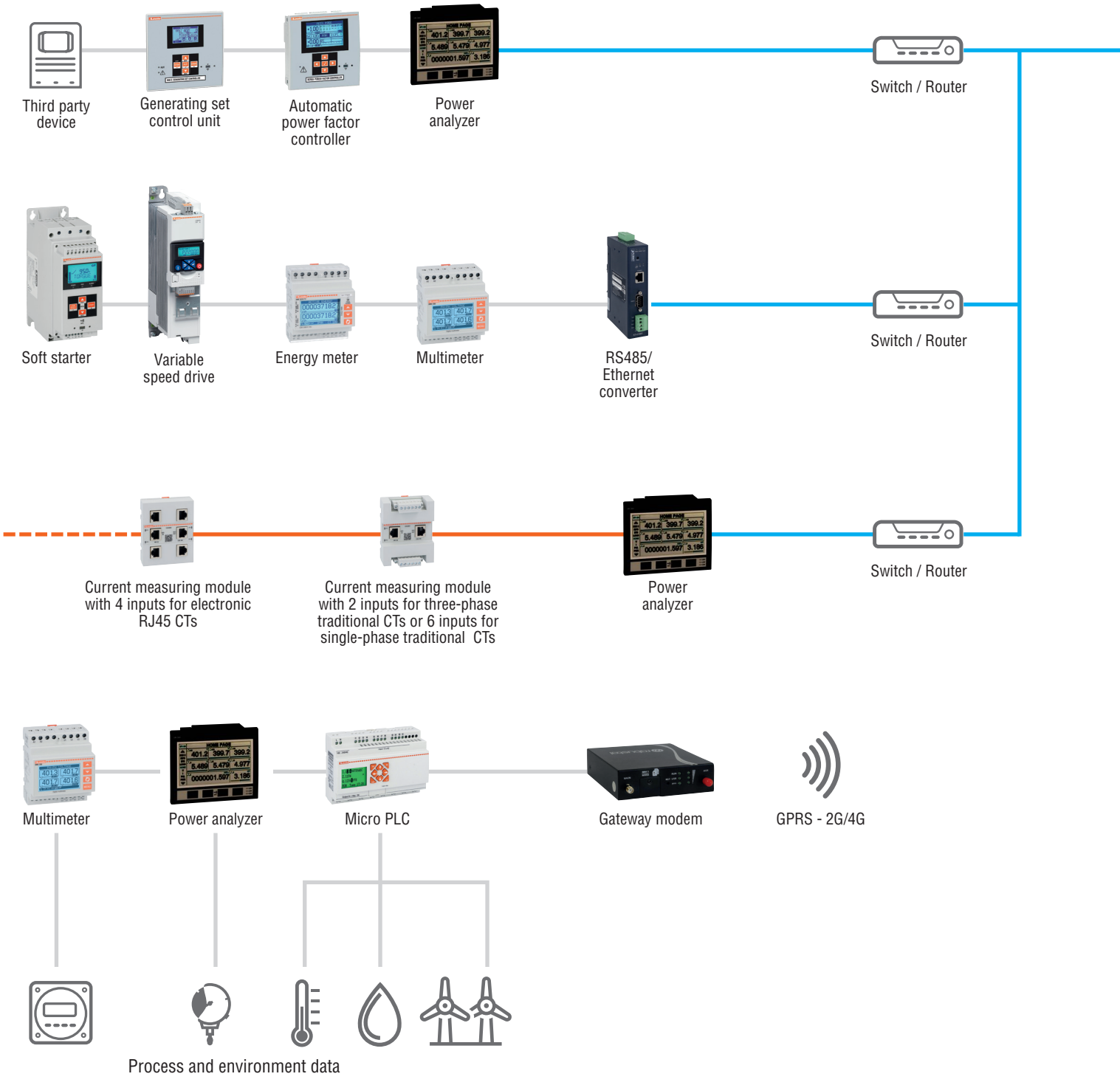
DM...
Current transformers

ENERGY MANAGEMENT SOLUTION BY LOVATO ELECTRIC

For the purpose of monitoring and energy saving, LOVATO Electric provides a complete and integrated solution consisting of:

- **hardware devices** for energy measurement and control (power analyzers, multimeters, energy meters, variable speed drives, soft starters, automatic power factor controllers, gateway data loggers, etc.);
- web based **software** to continuously monitor energy vectors via the Web.

Synergy by LOVATO Electric is an energy monitoring and analysis system with a professional, flexible and integrated approach from an Industry 4.0 perspective. Thanks to the LOVATO Electric **measurement devices** equipped with a communication port and through the web-based supervision platform, it is possible to monitor real time measurements, consult graphics, receive alarms, export customized reports and carry out commands and settings.



GATEWAY DATA LOGGER LOCAL WEB SERVER

LOVATO Electric **EXCGLB...** gateway data loggers provides access to an integrated web server which allows local consultation of the monitored data and acts as a gateway to Synergy supervision software.



Gateway data logger

Built-in web server information view



Pre-defined live pages, charts and data logs

MONITORING AND SUPERVISION SOFTWARE

Synergy

Synergy is a software which can be completely customized by the user who can thus have the key indicators of the monitored systems, be notified in the event of alarms for anomalies in consumption and monitor performance over time. It is open to the integration of third-party instrumentation thanks to the use of the MODBUS communication protocol and the ability to integrate any device equipped with analog or digital output.

Multi-device

Laptop Tablet Smartphone

Multi-users

Administrators Powerusers Users



Customizable Dashboard, Data Log and Reports

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.

Single-phase, MID certified

MID



DMED110T1MID
DMED111MID
DMED112MID

-25...+70°C



DMED111MID7



DMED120T1MID
DMED121MID
DMED122MID

Order code	Description	Qty per pkg	Wt
		n°	[kg]
Digital meter with LCD display.			
DMED100T1MID	40A direct connection, 1U 1 pulse output, 230VAC	1	0.090
DMED110T1MID	40A direct connection, 1U 1 programmable static output, multi-measurements ❶, 230VAC	1	0.090
DMED111MID	40A direct connection, 1U, RS485 interface, measurements❶, 230VAC	1	0.090
DMED111MID7	40A direct connection, 1U, RS485 interface, measurements❶, 230VAC, -25...+70°C	1	0.090
DMED112MID	40A direct connection, 1U, M-Bus interface, measurements❶, 230VAC	1	0.090
DMED120T1MID	63A direct connection, 2U 1 programmable static output, multi-measurements ❶, 230VAC	1	0.152
DMED121MID	63A direct connection, 2U, RS485 interface multi-measurements ❶, 230VAC	1	0.148
DMED122MID	63A direct connection, 2U, M-Bus interface multi-measurements ❶, 230VAC	1	0.148

General characteristics
The DME... series energy meters, MID certified, are needed for billing purposes between electricity suppliers and consumers and for energy consumption measurement in directly connected single-phase installations.
MID is the Measuring Instruments Directive of the European Union; instruments must be certified accordingly whenever used for monetary transactions in this territory.

Operational characteristics
- LCD meter: DMED100T1/110T1/111/112MID; backlight with 6+1 digit count for DMED120T1/121/122MID
- Direct connection
- Active energy measurement and accuracy:Class B (EN 50470-3)
- Reactive energy measurement and accuracy: Class 2 (IEC/EN/BS 62053-23)
- Metrological LED with pulse emission for consumption indication
- Clearable partial energy measurements
- Built-in RS485 or M-Bus ports for pulse output models compatible with Synergy and Xpress
- 70°C model ideal for electric vehicle charging stations
- 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: MID Class B (EN 50470-1, EN 50470-3), certifications per module B (type tests) + module D (production conformity).
Compliant with standards: EN 50470-1, EN 50470-3, TR50579.

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.

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
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

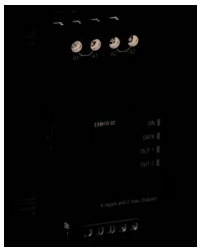
Three-phase with or without neutral, expandable



DMED310T2

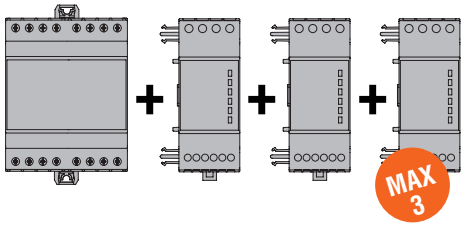
Order code	Description	Qty per pkg	Wt
		n°	[kg]
Digital meter for three-phase with or without neutral. Connection by CT /5A.			
DMED310T2	2 programmable static outputs, multi-measurements ❶, expandable with EXM... modules series, 4U	1	0.332

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%.

Three-phase with neutral, non expandable, MID certified

MID



DMED300T2MID
DMED311MID7
DMED302MID

new

-25...+70°C

Order code	Description	Qty per pkg	Wt
		n°	[kg]
Digital meter for three-phase with neutral. 80A direct connection.			
DMED300T2MID	2 programmable static outputs, multi-measurements❶, 4U	1	0.360
DMED311MID7	RS485 interface, multi-measurements❶, -25...+70°C, 4U	1	0.360
DMED302MID	M-Bus interface, multi-measurements❶, 4U	1	0.360
Digital meter for three-phase with neutral. Connection by CT /1A and /5A.			
DMED305T2MID	2 programmable static outputs, multi-measurements❶, 4U	1	0.332
DMED330MID	RS485 interface, multi-measurements❶, 4U	1	0.332
DMED332MID	M-Bus interface, multi-measurements❶, 4U	1	0.332



DMED305T2MID
DMED330MID
DMED332MID

Three-phase with neutral, non expandable, for electric vehicle charging stations, with Eichrecht certified versions



DMED341MID7
DMED341MID7E
DMED341MID7ER

new

-25...+70°C

Order code	Description	Qty per pkg	Wt
		n°	[kg]
Digital meter for three-phase with neutral. 80A direct connection, up to 70°C.			
DMED341MID7	RS485 interface, 1 programmable static output, multi-measurements❶, -25...+70°C, 4U	1	0.360
DMED341MID7E	RS485 interface, 1 programmable static output, multi-measurements❶, 4U, Eichrecht certified	1	0.360
DMED341MID7ER	RS485 interface, 1 programmable static output, multi-measurements❶, -25...+70°C, 4U, Eichrecht certified, imported/exported active energy certified	1	0.360

General characteristics
The DME... series energy meters, MID certified, are compulsory in Europe, are needed for billing purposes between electricity suppliers and consumers and for energy consumption measurement in directly or CT connected three-phase installations.
The DMED341MID7... types (4 DIN module three-phase direct insertion up to 80A) have been designed for use in **electric vehicle charging stations.**
- they are suitable for particularly demanding applications from the point of view of thermal exposure
- they are MID certified up to 70°C
- they integrate an RS485 communication port with Modbus RTU protocol.

In particular, the DMED341MID7E... also complies with the requirements of the VDE-AR-E 2418-3-100 2020 edition which is the standard used by charging station manufacturers to satisfy the obligations deriving from the German calibration law (Eichrecht) MessEG (Mess und Eichgesetz) MessEV (Mess und Eichverordnung).
In addition, the DMED341MID7ER is MID certified not only for the energy consumed (imported) but also for the energy produced (exported).

Operational characteristics
- LCD multifunction meter
- Nominal supply voltage: 230VAC (L-N); 400VAC (L-L)
- Voltage range: 187...264VAC (L-N); 323...456VAC (L-L)
- Active energy measurement and accuracy: Class B (EN 50470-3, IEC/EN/BS 62052-11 and IEC/EN/BS 62052-31 only for DMED311MID7 and DMED341MID7...)
- Reactive energy measurement and accuracy: Class 2 (IEC/EN/BS 62053-23)
- Metrological LED with pulse emission for consumption indication
- Clearable partial energy measurements
- 1 programmable digital input
- Built-in RS485 or M-Bus ports for pulse output models compatible with Synergy and Xpress
- 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.

Certifications and compliance
Certifications obtained:
DMED30..., DMED33... :MID Class B (EN 50470-1, EN 50470-3), certifications for module B (type tests) + for module D (production conformity).
DMED311MID7, DMED341MID7...: MID/MIR Class B (IEC/EN 62052-11, IEC/EN 62052-31, EN 50470-3), certifications for module B (type tests) + for module D (production conformity), Eichrecht (VDE-AR-E 2418-3-100) only for DMED341MID7E...
Compliant with standards:
DMED30..., DMED33... :EN 50470-1, EN 50470-3, TR50579.
DMED311MID7, DMED341MID7...: IEC/EN/BS 62052-11, IEC/EN/BS 62052-31, BS EN 50470-3, VDE-AR-E 2418-3-100 (only for DMED341MID7E...).

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.

Three-phase with neutral, MID certified

MID



DMED305F

new

Order code	Description	Qty per pkg	Wt
		n°	[kg]
Digital meter for three-phase with neutral, non expandable, complete with UTF certificates for installations in Italy.			
DMED300F	DMED300T2MID, complete with UTF certificates	1	0.360
DMED311F	DMED311MID7, complete with UTF certificates	1	0.381
DMED305F	DMED305T2MID, complete with UTF certificates	1	0.381
DMED330F	DMED330MID, complete with UTF certificates	1	0.381

General characteristics
The UTF (Finance Technical Office) certification is required in Italy in case of applications where taxes have to be paid due to energy production (Italian regulations for plants >20kW). The certificates must be associated to the energy meter (MID version) and to each single current transformer is needed (see page 29-5 for selection).
DME... energy meters, MID version, for three-phase systems with or without current transformers can be supplied with the certificates included (DME...F). DMED310F... can be expanded up to 3 EXM... modules.
If required, the fifth certificate relevant to the meter and current transformer combination can be supplied as well (see page 29-5).

Operational characteristics
- LCD multifunction meter
- Nominal supply voltage: 230VAC (L-N); 400VAC (L-L)
- Voltage range: 187...264VAC (L-N); 323...456VAC (L-L)
- Active energy measurement and accuracy: Class B (EN 50470-3)
- Reactive energy measurement and accuracy: Class 2 (IEC/EN/BS 62053-23)
- Metrological LED with pulse emission for consumption indication
- Clearable partial energy measurements
- 1 programmable digital input
- Models with 2 programmable static outputs and built-in RS485 compatible with Synergy and Xpress
- Modular housing 4 module
- Sealable terminal blocks, standard supplied
- EN degree of protection: IP40 on front; IP20 at terminals.

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.

Synergy supervision and energy management software
See Section 36.

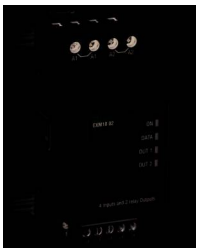
Xpress configuration and remote control software
See Section 36.

Certifications and compliance
UTF certificates are standard supplied.

Expandable



DMECD

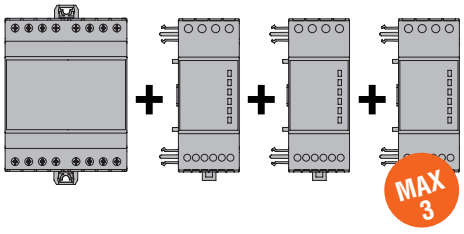


EXM1010

Order code	Description	Qty per pkg	Wt
		n°	[kg]
Data concentrator for general use.			
DMECD	With 8 programmable digital inputs, expandable, for pulse count, RS485 port	1	0.337

Order code	Description
DME CD 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
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 reserve energy for data logging

Maximum combination for DMECD



General characteristics
DMECD is equipped with 8 inputs, which can be increased up to a maximum of 14 with expansion modules EXM1000/1001/1002, that allow to indirectly interface devices without communication as long as they have at least one pulse output.
It is capable of pulse counting that comes in from the outputs of meters for energy, water, gas and other types of consumption: All data is viewed on its display or can also be available for PCs through its built-in RS485 interface using Synergy or Xpress software .
It can be expanded with up to 3 EXM... series modules by optical interface.
With the programmable functions, average values can be determined for instantaneous quantities, such as power, speed, production rate, gas and water consumption, etc.

Operational characteristics
- Backlight graphic LCD meter, multifunction
- Nominal supply voltage: 100...240VAC/110...250VDC
- Voltage range: 85...264VAC/93.5...300VDC
- 8 inputs, expandable with EXM... modules up to 14
- Built-in RS485 communication port
- Modbus-RTU, ASCII and TCP communication protocol
- Clearable total and partial counters for each channel
- Programmable general counters
- Calculation of derivative average values
- Mathematical operations among counters
- Modular housing, 4 module
- 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: cULus, EAC.
Compliant with standards: IEC/EN/BS 61010-1, IEC/EN/BS 61000-6-2, IEC/EN/BS 61000-6-3.

Power analyzers with widescreen colour LCD



DMG...

NFC

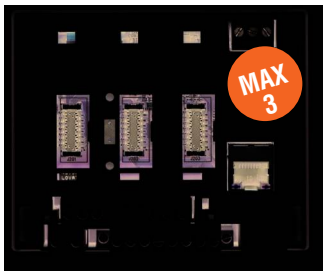
Order code	Description	Qty per pkg	Wt
		n°	[kg]
Auxiliary supply 100...240VAC.			
DMG7000	Expandable with 3 EXP... modules	1	0.375
DMG7500	Expandable with 3 EXP... modules, built-in RS485 port, compatible with EASY BRANCH power monitoring system	1	0.375
DMG8000	Expandable with 3 EXP... modules, built-in Ethernet port, compatible with EASY BRANCH power monitoring system	1	0.375
DMG9000	Expandable with 3 EXP... modules, built-in RS485 and Ethernet port, compatible with EASY BRANCH power monitoring system	1	0.375
Auxiliary supply 12...48VDC.			
DMG9000D048	Expandable with 3 EXP... modules, built-in RS485 and Ethernet port, compatible with EASY BRANCH power monitoring system	1	0.375

new

Expansion modules



EXP10...



Order code	Description	Qty per pkg	Wt
		n°	[kg]
Inputs and outputs.			
EXP1000	4 opto-isolated digital inputs	1	0.060
EXP1001	4 opto-isolated static outputs	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	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
EXP1008	2 opto-isolated digital inputs and 2 relay outputs rated 5A 250VAC	1	0.058
Communication ports.			
EXP1010	Opto-isolated USB interface	1	0.060
EXP1011	Opto-isolated RS232 interface	1	0.040
EXP1012	Opto-isolated RS485 interface	1	0.050
EXP1013	Opto-isolated Ethernet interface	1	0.060
EXP1014	Opto-isolated Profibus-DP interface	1	0.080

Communication devices



CX01



CX02

Order code	Description	Qty per pkg	Wt
		n°	[kg]
CX01	USB/optical device with PC ↔ LOVATO Electric product connecting cable, for programming, data download, diagnostics and firmware upgrade	1	0.090
CX02	Wi-Fi device for PC ↔ LOVATO Electric product programming, data download, diagnostics and cloning	1	0.090

General characteristics
DMG... power analyzers 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 power analyzer 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).

The EASY BRANCH multi-circuit measurement system
The DMG7500, DMG8000 and DMG9000... can also be used in multi-circuit applications when more than one load is to be monitored in the electrical switch board. All values are shown on the display or via the integrated communications interface.
Refer to page 28-19 for the components of the EASY BRANCH measurement system.

Operational characteristics
– Auxiliary power:
  • 100...240VAC / 110...250VDC
  • 12-48VDC (DMG9000D048)
– Voltage measurement range: 50...720VAC L-L
– Can be used in medium and high voltage systems using TV
– Nominal input current: 5A or 1A with an external current transformer
– Frequency measurement range: 45...66Hz, 360...440Hz
– Accuracy (IEC/BS 61557-12):
  • voltage: Class 0.2 (V=100...480VAC L-N, 174...830VAC L-L)
    Class 0.5 (V=50...100 VAC L-N, 87...174VAC L-L)
  • 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
  • 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.

Synergy supervision and energy management software
See Section 36.

Xpress configuration and remote control software
See Section 36.

Lovato App NFC
See Section 36.

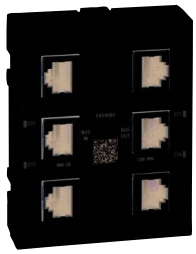
EXP series expansion modules
See page 35-3.

Certifications and compliance
Certifications: cETLus (in accordance with National Electrical Code (US) and Canadian Electrical Code).
Compliant with standards: IEC/EN/BS 61010-1, IEC/EN/BS 61000-6-2 and IEC/EN/BS 61000-6-4.

EASY BRANCH power monitoring system



EXS0000



EXS4000



EXS4001



EXS1063



EXS3063

Order code	Description	Qty per pkg	Wt
		n°	[kg]
Modules for EASY BRANCH system.			
EXS0000	Bus module for EASY BRANCH power monitoring system	1	0.090
EXS4000	Current measuring module with 4 inputs for electronic RJ45 CTs	1	0.140
EXS4001	Current measuring module with 2 inputs for three-phase traditional CTs or 6 inputs for single-phase traditional CTs	1	0.210
Electronic current transformers for EASY BRANCH system. Single-phase.			
EXS1032	32A single-phase electronic current transformer with RJ45 cable, 2m long	1	0.060
EXS1063	63A single-phase electronic current transformer with RJ45 cable, 2m long	1	0.060
EXS1080	80A single-phase electronic current transformer with RJ45 cable, 2m long	1	0.105
EXS1125	125A single-phase electronic current transformer with RJ45 cable, 2m long	1	0.105
Three-phase.❶.			
EXS3032	32A three-phase electronic current transformer ❶ with RJ45 cable, 2m long	1	0.080
EXS3063	63A three-phase electronic current transformer ❶ with RJ45 cable, 2m long	1	0.080
EXS3080	80A three-phase electronic current transformer ❶ with RJ45 cable, 2m long	1	0.135
EXS3125	125A three-phase electronic current transformer ❶ with RJ45 cable, 2m long	1	0.135
Traditional current transformers. See Section 29.			

❶ 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 analyzers 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 analyzers, 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 (connecting 5 or more EXS4... current metering modules requires a 24VDC-0.2A power supply)
- nominal input current:
  EXS4000: 32A, 63A, 80A or 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
  • 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 omega rail (IEC/EN/BS 60715).

Operational characteristics of EXS1... - EXS3... electronic current transformers
- Diagnostics LED to confirm connection
- Pre-wired cable: 2m
- RJ45 connector.

Synergy supervision and energy management software
See Section 36.

Xpress configuration and remote control software
See Section 36.

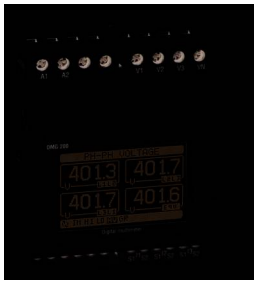
Lovato App NFC
See Section 36.

Certifications and compliance
Certifications: cETLus (in accordance with National Electrical Code (US) and Canadian Electrical Code).
Compliant with standards: IEC/EN/BS 61010-1, IEC/EN/BS 61000-6-2 and IEC/EN/BS 61000-6-4.

Modular LCD multimeters, non expandable



DMG1...

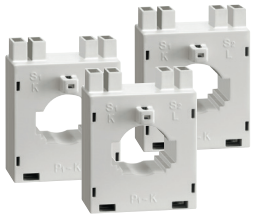


DMG200 - DMG210

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.

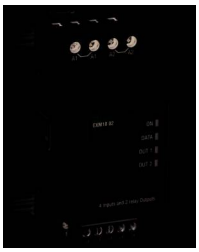
Modular LCD multimeters, expandable



DMG300

Order code	Description	Qty per pkg	Wt
		n°	[kg]
DMG300	Graphic 128x80 pixel LCD, harmonic analysis, auxiliary supply 100...240VAC/110...250VDC, expandable with modules series EXM... Multilanguage: Italian, English, French, Spanish and Portuguese	1	0.320
DMG300L01	Graphic 128x80 pixel LCD, harmonic analysis, auxiliary supply 100...240VAC/110...250VDC, expandable with modules series EXM... Multilanguage: English, Czech, Polish, German and Russian	1	0.320

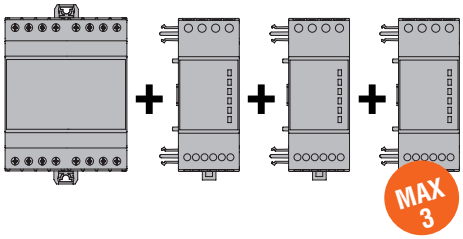
Expansion modules



EXM1010

Order code	Description
DMG300 AND DMG300L01 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
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

Maximum combination for DMG300 and DMG300L01



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
- P.F.: 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: 85...264VAC / 93.5...300VDC
- 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, 360...440Hz
- 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)
- Non-volatile memory for data storage
- 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.

Synergy supervision and energy management software
See Section 36.

Xpress configuration and remote control software
See Section 36.

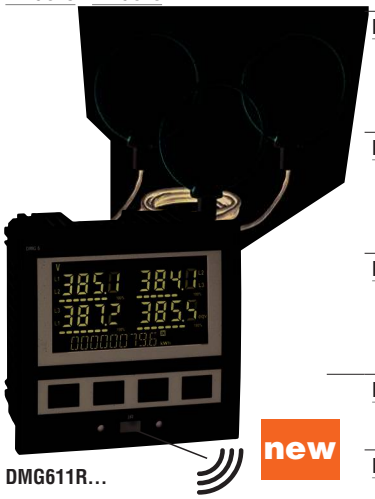
EXM series expansion modules
See page 35-3.

Certifications and compliance
Certifications obtained: UL Listed, for USA and Canada (cULus - File E93601), as Auxiliary Devices - Multimeters; EAC and RCM for all.
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.

Flush-mount LCD multimeters, expandable



DMG600 - DMG610
DMG615 - DMG620



DMG611R...

new

Order code	Description	Qty per pkg	Wt
		n°	[kg]
Icon LCD 72X46mm/2.83x1.81", backlight, harmonic analysis, auxiliary supply 100...440/110...250VDC, expandable with modules series EXP...			
DMG600	Front optical port, multilanguage❶	1	0.300
DMG610	Front optical port, built-in RS485 serial port, multilanguage❶	1	0.350
DMG611R0100	Front optical port, built-in RS485 serial port, multilanguage❶. Current reading through 3 Rogowski coils included, max current 100A	1	0.350
DMG611R0500	Front optical port, built-in RS485 serial port, multilanguage❶. Current reading through 3 Rogowski coils included, max current 500A	1	0.350
DMG611R3000	Front optical port, built-in RS485 serial port, multilanguage❶. Current reading through 3 Rogowski coils included, max current 3000A	1	0.350
DMG611R6300	Front optical port, built-in RS485 serial port, multilanguage❶. Current reading through 3 Rogowski coils included, max current 6300A	1	0.350
DMG615	Front optical port, built-in RS485 serial port, multilanguage❶. class 0.5s	1	0.350
DMG620	Front optical port, built-in Ethernet port, multilanguage❶. class 0.5s	1	0.350

❶ Italian, English, French, Spanish and Portuguese.

Expansion modules



EXP10...



Order code	Description
EXPANSION MODULES 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
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

Communication devices



CX01



CX02

Order code	Description	Qty per pkg	Wt
		n°	[kg]
CX01	USB/optical device with PC ↔ LOVATO Electric product connecting cable, for programming, data download, diagnostics and firmware upgrade	1	0.090
CX02	Wi-Fi device for PC ↔ LOVATO Electric product programming, data download, diagnostics and cloning	1	0.090

General characteristics
DMG6... digital multimeters are capable of viewing the measurements with high accuracy on the wide icon 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 icon 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
- P.F.: 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...250VDC❷
- 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, 360...440Hz
- True RMS measurements: for voltage and current
- Measurement accuracy:
  - 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 0.5 (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 software
- Flush-mount housing 96x96mm/3.78"x3.78"
- EN degree of protection: IP54 on front.

Synergy supervision and energy management software
See Section 36.

Xpress configuration and remote control software
See Section 36.

EXP series expansion modules
See page 35-2.

Certifications and compliance
Certifications obtained: cULus (except DMG611... and DMG620), EAC, RCM; UL listed for USA and Canada (cULus – File E93601), as Auxiliary Devices – Multimeters.
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.

❷ Consult Technical support about versions with supply 12...48VDC

Modular LED instruments single-phase, non expandable



DMK80R1



DMK81R1

Order code	Displayed measurements	Relay output	Qty per pkg	Wt
	n°	n°	n°	[kg]
Voltmeter.				
DMK80R1❶	1 voltage value 1 max voltage value 1 min voltage value	1	1	0.268
Ammeter.				
DMK81R1❶	1 current value 1 max current value 1 min current value	1	1	0.268

❶ Relay output with control and protection functions.

General characteristics
The DMK8... instruments are available with modular housing, 3 module size.
Measurements are True RMS values and provide for reliable operation even in the presence of harmonics.

Operational characteristics
- Auxiliary supply voltage: 220...240VAC
- Operating frequency: 50...60Hz
- True RMS measurements
- Max and min measurement storage
- 1 relay output with 1 changeover contact (SPDT)
- Modular DIN 43880 housing, 3 modules
- Terminals: 4mm^2
- EN degree of protection: IP40 on front; IP20 on terminals.

DMK80R1
- Voltage measurement range: 15...660VAC
- Operating frequency range: 45...65Hz
- Programmable VT ratio: 1.00...500.00
- Accuracy: ±0.25% f.s. ±1 digit

DMK81R1
- Current measurement range: 0.05...5.75A
- Operating frequency range: 45...65Hz
- Programmable CT ratio: 5...10,000
- Accuracy: ±0.5% f.s. ±1 digit

Control and protection functions
DMK80R1
- Voltage loss or failure: OFF/5...85%
- Maximum voltage: OFF/102...120%
- Minimum voltage: OFF/70...98%
- Time delay for max-min voltage or voltage loss ❷: 0.0...900.0 seconds.

DMK81R1
- Current loss: OFF/2...100%
- Maximum current: OFF/102...200%
- Maximum current instantaneous tripping: OFF/110...600%
- Minimum current: OFF/5...98%
- Time delay for max-min current or current loss ❷: 0.0...900.0 seconds.

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

❷ Independent adjustable delays.

Modular LED instruments three-phase, non expandable



DMK70R1



DMK71R1



DMK75R1

Order code	Displayed measurements	Relay output	Qty per pkg	Wt
	n°	n°	n°	[kg]
Voltmeter.				
DMK70R1❷	3 phase voltage values 3 phase to phase voltage values 3 max phase voltage values 3 max phase to phase voltage values 3 min phase voltage values 3 min phase to phase voltage values	1	1	0.264
Ammeter.				
DMK71R1❷	3 phase current values 3 max phase current values 3 min phase current values	1	1	0.272
Combined voltmeter, ammeter and wattmeter.				
DMK75R1❶❷	3 phase voltage values 3 phase to phase voltage values 3 phase current values 4 active power values, phase and total 3 maximum phase voltage values 3 maximum phase to phase voltage values 3 maximum phase current values 4 max active power, phase and total 3 minimum phase voltage values 3 minimum phase to phase voltage values 3 minimum phase current values 4 min active power, phase and total	1	1	0.280

❶ Connection also to single-phase.
❷ Relay output with control and protection functions.

General characteristics
The DMK7... instruments are available with modular housing, 3 module size.
Measurements are True RMS values and provide for reliable operation even in the presence of harmonics.

Operational characteristics
– Auxiliary supply voltage: 220...240VAC
– Operating frequency: 50...60Hz
– True RMS measurements
– Max and min measurement storage
– 1 relay output with 1 changeover contact (SPDT)
– Modular DIN 43880 housing, 3 module
– Terminals: 4mm^2
– EN degree of protection: IP40 on front; IP20 on terminals.

DMK70R1
– Voltage measurement range: 15...660VAC
– Operating frequency range: 45...65Hz
– Programmable VT ratio: 1.00...500.00
– Accuracy: ±0.25% f.s. ±1 digit

DMK71R1
– Current measurement range: 0.05...5.75A
– Operating frequency range: 45...65Hz
– Programmable CT ratio: 5...10,000
– Accuracy: ±0.5% f.s. ±1 digit

DMK75R1
– Voltage measurement range: 35...660VAC
– Current measurement range: 0.05...5.75A
– Frequency measure range: 45...65Hz
– Programmable VT ratio: 1.00...500.00
– Programmable CT ratio: 5...10,000
– Accuracy: Voltage ±0.25% f.s. ±1 digit
– Accuracy: Current ±0.5% f.s. ±1 digit

Control and protection functions
DMK70R1
– Phase loss or failure: OFF/5...85%
– Maximum voltage: OFF/102...120%
– Minimum voltage: OFF/70...98%
– Asymmetry: OFF/2...20%
– Phase sequence: OFF/L1-L2-L3/L3-L2-L1
– Maximum frequency: OFF/101...110%
– Minimum frequency: OFF/90...99%
– Time delay for max-min voltage, phase loss, asymmetry and min-max frequency ❸: 0.0...900.0 seconds.

DMK71R1
– Current loss: OFF/2...100%
– Maximum current: OFF/102...200%
– Maximum current instantaneous tripping: OFF/110...600%
– Minimum current: OFF/5...98%
– Asymmetry: OFF/2...20%
– Time delay for max-min current or current loss and asymmetry ❸: 0.0...900.0 seconds.

DMK75R1
Voltage
– Phase loss or failure: OFF/5...85%
– Maximum voltage: OFF/102...120%
– Minimum voltage: OFF/70...98%
– Asymmetry: OFF/2...20%
– Phase sequence: OFF/L1-L2-L3/L3-L2-L1
Current
– Current loss: OFF/2...100%
– Maximum current: OFF/102...200%
– Maximum current instantaneous tripping: OFF/110...600%
– Minimum current: OFF/5...98%
– Asymmetry: OFF/2...20%
Power
– Rated power: 1...10,000
– Maximum power: OFF/101...200%
– Maximum power instantaneous tripping: OFF/110...600%
– Minimum power: OFF/10...99%
Frequency
– Maximum frequency: OFF/101...110%
– Minimum frequency: OFF/90...99%
– Time delay for max-min voltage, max-min current or current loss, phase loss, asymmetry and min-max power ❸: 0.0...900.0 seconds.

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

❸ Independent adjustable delays.

Flush-mount LED instruments single-phase, non expandable



DMK0...

Order code	Displayed measurements	Relay output	Qty per pkg	Wt
	n°	n°	n°	[kg]
Voltmeter.				
DMK00R1❷	1 voltage value 1 max voltage value 1 min voltage value	1	1	0.323
Ammeter.				
DMK01R1❷	1 current value 1 max current value 1 min current value	1	1	0.323
Voltmeter or ammeter.				
DMK02❶	1 voltage or current value 1 maximum voltage or current value 1 minimum voltage or current value	–	1	0.290

❶ The DMK02 can operate as a voltmeter or ammeter. It is duly equipped with two front plates (V and A) which must be fitted by the user depending on which instrument is required and on the wiring scheme used.

❷ Relay output for control and protection functions.

General characteristics
The DMK0... instruments are available with flush-mount housing, 96x48mm/3.78x1.89".
Measurements are True RMS values and provide for reliable operation even in the presence of harmonics.

Operational characteristics
- Auxiliary supply voltage: 220...240VAC;
- Operating frequency: 50...60Hz
- True RMS measurements
- Max. and min. measurement storage
- 1 relay output with 1 changeover contact (for DMK...R1 only)
- Housing: flush-mount 96x48mm/3.78x1.89"
- Terminals: 4mm^2
- Degree of protection: IP54 on front; IP20 at terminals.

DMK00R1
- Voltage measurement range: 15...660VAC
- Operating frequency range: 45...65Hz
- Programmable VT ratio: 1.00...500.00
- Accuracy: ±0.25% f.s. ±1 digit

DMK01R1
- Current measurement range: 0.05...5.75A
- Operating frequency range: 45...65Hz
- Programmable CT ratio: 5...10,000
- Accuracy: ±0.5% f.s. ±1 digit

DMK02
- Voltage measurement range: 1...660VAC
- Current measurement range: 0.05...5.75A
- Operating frequency range: 45...65Hz
- Programmable VT ratio: 1.00...500.00
- Programmable CT ratio: OFF/5...10,000
- Accuracy: Voltage ±0.25% f.s. ±1 digit
  Current ±0.5% f.s. ±1 digit

Control and protection functions
DMK00R1
- Voltage loss or failure: OFF/5...85%
- Maximum voltage: OFF/102...120%
- Minimum voltage: OFF/70...98%
- Time delay for max-min voltage or voltage loss❸: 0.0...900.0 seconds.

DMK01R1
- Current loss: OFF/2...100%
- Maximum current: OFF/102...200%
- Maximum current instantaneous tripping: OFF/110...600%
- Minimum current: OFF/5...98%
- Time delay for max-min current or current loss❸: 0.0...900.0 seconds.

Certifications and compliance
Certifications obtained: UL Listed, for USA and Canada (cULus - File E93601), as Auxiliary Devices-Multimeters; EAC.
Compliant with standards: IEC/EN/BS 61010-1, IEC/EN/BS 61000-6-2, IEC/EN/BS 61000-6-3, UL508, CSA C22.2 n° 14.

❸ Independent adjustable delays.

Flush-mount LED instruments three-phase, non expandable



DMK1...

Order code	Displayed measurements	Relay output	Qty per pkg	Wt
	n°	n°	n°	[kg]
Voltmeter.				
DMK10R1❷	3 phase voltage values 3 phase to phase voltage values 3 maximum phase voltage values 3 maximum phase to phase voltage values 3 minimum phase voltage values 3 minimum phase to phase voltage values	1	1	0.330
Ammeter.				
DMK11R1❷	3 phase current values 3 maximum phase current values 3 minimum phase current values	1	1	0.336
Voltmeter, ammeter and wattmeter.				
DMK15R1❶❷	3 phase voltage values 3 phase to phase voltage values 3 phase current values 4 active power values, phase and total 3 maximum phase voltage values 3 maximum phase to phase voltage values 3 maximum phase current values 4 maximum active power values, phase and total 3 minimum phase voltage values 3 minimum phase to phase voltage values 3 minimum phase current values 4 minimum active power values, phase and total	1	1	0.350

❶ Connection also to single-phase.
❷ Relay output for control and protection functions.

General characteristics
The DMK1... instruments are available with flush-mount housing, 96x48mm/3.78x1.89".
Measurements are True RMS values and provide for reliable operation even in the presence of harmonics.

Operational characteristics
- Auxiliary supply voltage: 220...240VAC;
- Operating frequency: 50...60Hz
- True RMS measurements
- Max and min measurement storage
- 1 relay output with 1 changeover contact
- Housing: flush-mount 96x48mm/3.78x1.89"
- Terminals: 4mm^2
- Degree of protection: IP54 on front; IP20 at terminals.

DMK10R1
- Voltage measurement range: 15...660VAC
- Operating frequency range: 45...65Hz
- Programmable VT ratio: 1.00...500.00
- Accuracy: ±0.25% f.s. ±1 digit.

DMK11R1
- Current measurement range: 0.05...5.75A
- Operating frequency range: 45...65Hz
- Programmable CT ratio: 5...10,000
- Accuracy: ±0.5% f.s. ±1 digit.

DMK15R1
- Voltage measurement range: 35...660VAC
- Current measurement range: 0.05...5.75A
- Frequency measure range: 45...65Hz
- Programmable VT ratio: 1.00...500.00
- Programmable CT ratio: 5...10,000
- Accuracy: Voltage ±0.25% f.s. ±1 digit
  Current ±0.5% f.s. ±1 digit
  Power ±1% f.s. ±1 digit.

Control and protection functions
DMK10R1
- Phase loss or failure: OFF/5...85%
- Maximum voltage: OFF/102...120%
- Minimum voltage: OFF/70...98%
- Asymmetry: OFF/2...-20%
- Phase sequence: OFF/L1-L2-L3/L3-L2-L1
- Frequency
  - Maximum frequency: OFF/101...110%
  - Minimum frequency: OFF/90...99%
  - Time delay for max-min voltage, phase loss, asymmetry and min-max frequency ❸: 0.5...900.0 seconds.

DMK11R1
- Current loss: OFF/2...100%
- Maximum current: OFF/102...200%
- Maximum current instantaneous tripping: OFF/110...600%
- Minimum current: OFF/5...98%
- Asymmetry: OFF/2...20%
- Time delay for max-min current or current loss and asymmetry ❸: 0.5...900.0 seconds.

DMK15R1
- Voltage
  - Phase loss or failure: OFF/5...85%
  - Maximum voltage: OFF/102...120%
  - Minimum voltage: OFF/70...98%
  - Asymmetry: OFF/2...20%
  - Phase sequence: OFF/L1-L2-L3/L3-L2-L1
- Current
  - Current loss: OFF/5...85%
  - Maximum current: OFF/102...200%
  - Maximum current instantaneous tripping: OFF/110...600%
  - Minimum current: OFF/5...98%
  - Asymmetry: OFF/2...20%
- Power
  - Rated power: 1...10,000
  - Maximum power: OFF/101...200%
  - Max. power instantaneous tripping: OFF/110...600%
  - Minimum power: OFF/10...99%
- Frequency
  - Maximum frequency: OFF/101...110%
  - Minimum frequency: OFF/90...99%
  - Time delay for max-min voltage, max-min current or current loss, phase loss, asymmetry and min-max power ❸: 0.0...900.0 seconds.

Certifications and compliance
Certifications obtained: UL Listed, for USA and Canada (cULus - File E93601), as Auxiliary Devices-Multimeters; EAC.
Compliant with standards: IEC/EN/BS 61010-1, IEC/EN/BS 61000-6-2, IEC/EN/BS 61000-6-3, UL 508, CSA C22.2 n° 14.

❸ Independent adjustable delays.

Flush-mount LED multimeter three-phase, non expandable



DMK16R1

Order code	Displayed measurements	Relay output	Qty per pkg	Wt
	n°	n°	n°	[kg]
DMK16R1 ❶	3 phase voltage values 3 phase to phase voltage values 3 phase current values 4 active power values, phase and total 4 reactive power values, phase and total 4 apparent power values, phase and total 3 phase power factor values 1 frequency value 1 active energy value in kWh 1 reactive energy value in kvarh 1 hour counter 3 maximum phase voltage values 3 maximum phase to phase voltage values 3 maximum phase current values 4 maximum active power values, phase and total 4 maximum reactive power values, phase and total 4 maximum apparent power values, phase and total 3 minimum phase voltage values 3 minimum phase to phase voltage values 3 minimum phase current values 4 minimum active power values, phase and total 4 minimum reactive power values, phase and total 4 minimum apparent power values, phase and total 2 minimum and maximum power factor values	1	1	0.353

❶ Connection also to single-phase.

General characteristics
The DMK16R1 multimeter is available with flush-mount housing, 96x48mm/3.78x1.89”
Measurements are True RMS values and provide for reliable operation even in the presence of harmonics.

Operational characteristics
- Auxiliary supply voltage: 220...240VAC
- Operating frequency: 50...60Hz
- True RMS measurements
- Accuracy: Voltage ±0.25% f.s. ±1 digit
  Current ±0.5% f.s. ±1 digit
- Active energy accuracy: Class 2 (IEC/EN/BS 62053-21 and IEC/EN/BS 62053-23)
- Max and min measurement storage
- Voltage measurement range: 35...660VAC
- Current measurement range: 0.05...5.75A
- Frequency measurement range: 45...65Hz
- Programmable VT ratio: 1.00...500.0
- Programmable CT ratio: 5...10,000
- 1 relay output with 1 changeover (SPDT) contact
- Housing: flush-mount 96x48mm/3.78x1.89”
- Terminals: 4mm²
- EN degree of protection: IP54 on front; IP20 at terminals.

PROGRAMMABLE RELAY OUTPUT
- Voltage
  - Phase loss or failure: OFF/5...85%
  - Maximum voltage: OFF/102...120%
  - Minimum voltage: OFF/70...98%
  - Asymmetry: OFF/2...20%
  - Phase sequence: OFF/L1-L2-L3/L3-L2-L1
- Current
  - Protection inhibition max current: OFF/2...100%
  - Maximum current: OFF/102...200%
  - Maximum current instantaneous tripping: OFF/110...600%
  - Minimum current: OFF/5...98%
  - Asymmetry: OFF/2...20%
- Power factor
  - Maximum power factor: 0.10...1.00
  - Minimum power factor: 0.10...1.00
- Time delay for max-min voltage, max-min current or current loss, phase loss, asymmetry and min-max power factor ❷: 0.0...900.0 seconds.

Certifications and compliance
Certifications obtained: UL Listed, for USA and Canada (cULus - File E93601), as Auxiliary Devices-Multimeters; EAC.
Compliant with standards: IEC/EN/BS 61010-1, IEC/EN/BS 61000-6-2, IEC/EN/BS 61000-6-3, UL508, CSA C22.2 n° 14.

❷ Independent adjustable delays.

Communication devices



CX01



CX02



CX03

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

General characteristics
For general characteristics of these accessories see section 35.

Protection covers



PA96X48

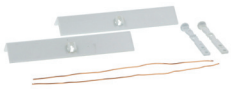
Order code	Description	Qty per pkg	Wt
		n°	[kg]
PA96X48	Front protection cover, IEC IP65 for DMK0/1...	1	0.048

General characteristics
When a higher front IP protection degree is needed, the covers can be installed on the corresponding devices and also provide a sealing feature.

Accessories



EXP8000



EXM8004



DMXP03



DMXP04

Order code	Description	Qty per pkg	Wt
		n°	[kg]
EXP8000	Plastic insert for customising label fixing for DMG6...	10	0.005
EXM8004	Set of sealable terminal covers for DMG100/110/200/210/300	1	0.020
DMXP03	Panel mounting plate adapter for DMK7... and DMK8...	1	0.052
DMXP04	Panel mounting plate adapter for DMED3... and DMG1..., DMG2... and DMG3...	1	0.054

Gateway data loggers



EXCGLB...

new

Order code	Description	Qty per pkg	Wt
		n°	[kg]
EXCGLB01	Gateway data logger, 1 RS485 port, 1 Ethernet port, Wi-Fi connection	1	0.190
EXCGLB02	Gateway data logger, 1 RS485 port, 1 Ethernet port, LTE connection, GNSS (GPS)	1	0.190
EXCGLB03	Gateway data logger, 1 RS485 port, 2 Ethernet ports, 4G (LTE) connection	1	0.190

General characteristics
For general characteristics of these accessories see section 34.

Gateway



EXCM4G01

Order code	Description	Qty per pkg	Wt
		n°	[kg]
EXCM4G01	4G Gateway with RS485 and Ethernet port, Modbus RTU/TCP protocol	1	0.300

General characteristics
For general characteristics of these accessories see section 34.

Converter



EXCCON02

new

Order code	Description	Qty per pkg	Wt
		n°	[kg]
EXCCON02	RS485/Ethernet converter, 9...48VDC, with Modbus RTU/TCP protocol conversion functionality	1	0.400

General characteristics
For general characteristics of these accessories see section 34.

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



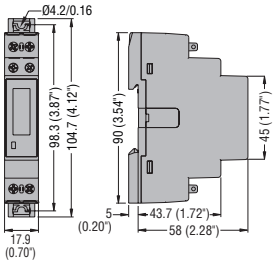
EXCGSM01

Order code	Description	Qty per pkg	Wt
		n°	[kg]
GSM Modem (modular - 4U). IP69K outside aerial with 2.5 m cable. RJ45-USB programming cable (included).			
EXCGSM01	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

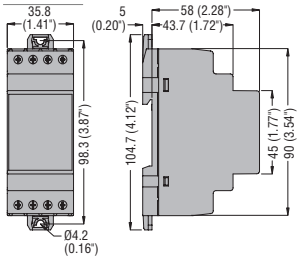
General characteristics
For general characteristics of these accessories see section 34.

ENERGY METERS

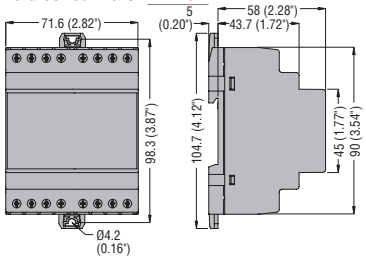
Digital meter **DMED100T1... - DMED110T1... - DMED111... - DMED112...**



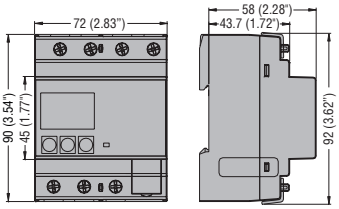
Digital meter **DMED115T1 - DMED120T1... - DMED121... - DMED122...**



Digital meter **DMED305T2... - DMED330... - DMED332... - DMED310T2**
Data concentrator **DMECD**

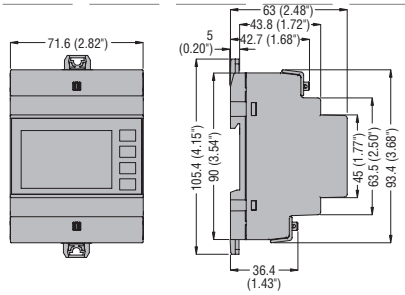


DMED300T2... - DMED311... - DMED302... - DMED341MID7

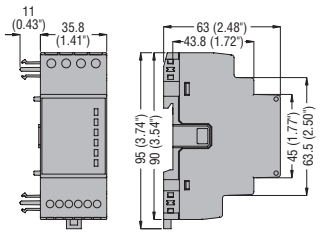


MULTIMETERS

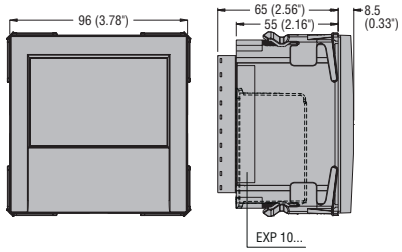
DMG100 - DMG110 - DMG200 - DMG210 - DMG300



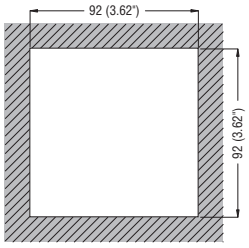
Expansion modules **EXM...**



DMG6...

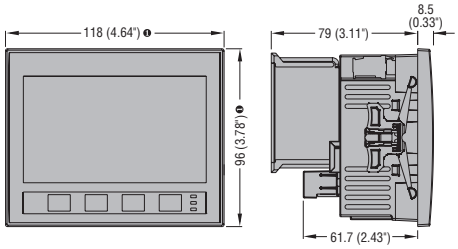


Cutout

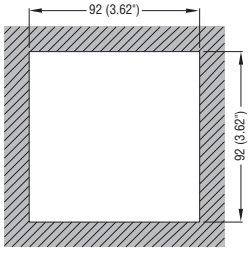


POWER ANALYZERS

DMG7000 - DMG7500 - DMG8000 - DMG9000...



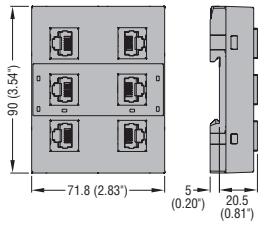
Cutout



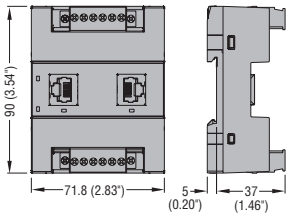
❶ Dimensions with gasket: 122x100mm/4.80x3.94".

CURRENT MEASURING MODULES

EXS4000

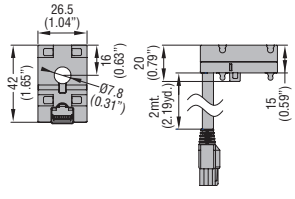


EXS4001

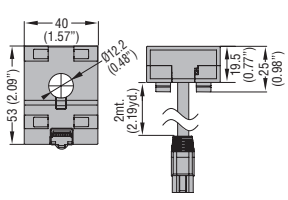


ELECTRONIC CURRENT TRANSFORMERS

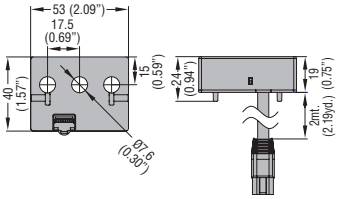
EXS1032 - EXS1063



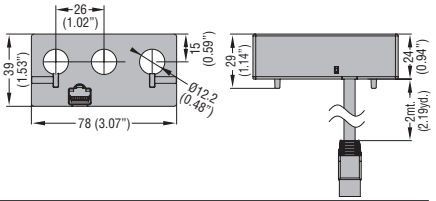
EXS1080 - EXS1125



EXS3032 - EXS3063

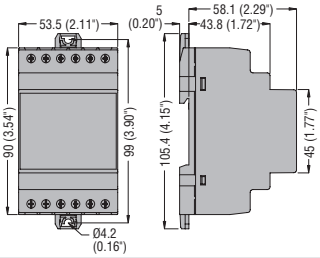


EXS3080 - EXS3125



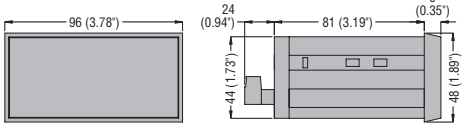
MODULAR DIGITAL METERING INSTRUMENTS

DMK7... - DMK8...

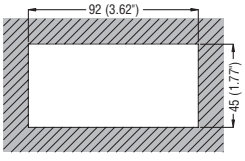


DIGITAL FLUSH-MOUNT METERING INSTRUMENTS

Instruments **DMK0... - DMK1...**

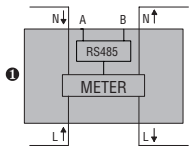


Cutout

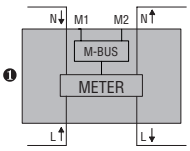


ENERGY METERS

DMED111...

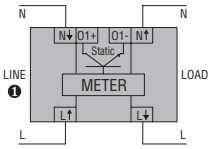


DMED112...

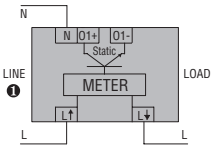


❶ 110-240VAC DMED111, DMED112...

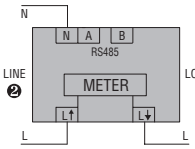
Digital meters DMED100T1... - DMED110T1...



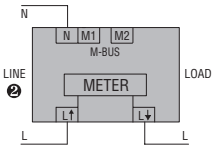
DMED115T1 - DMED120T1...



DMED121...

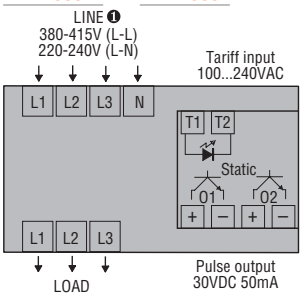


DMED122...

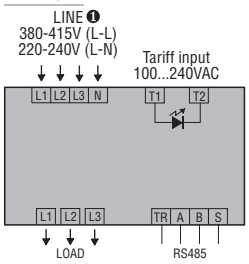


❶ 110-120VAC DMED...A120; 220-240VAC DMED...; 230V 50Hz DMED... T1 MID.
❷ 110-240VAC DMED121, DMED122...

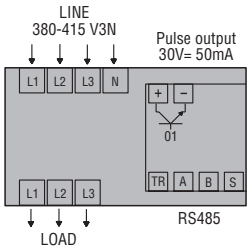
DMED300T2... - DMED300F



DMED311...

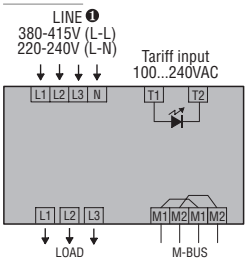


DMED341MID7...



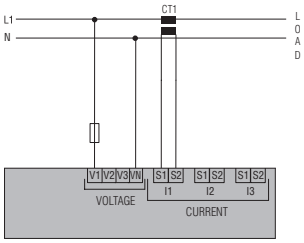
❶ 230V 50Hz (L-N), 400V 50Hz (L-L) DMED... T2 MID / DMED... F.

DMED302

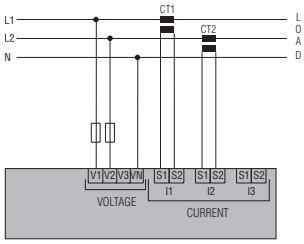


DMED305T2 - DMED330 - DMED332

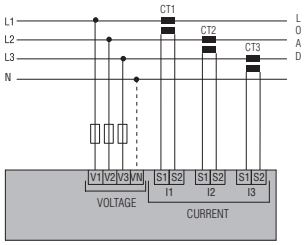
Single-phase



Two-phase

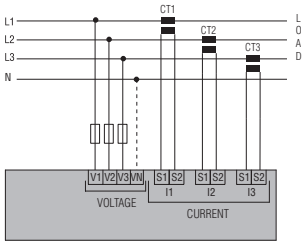


Three-phase with or without neutral

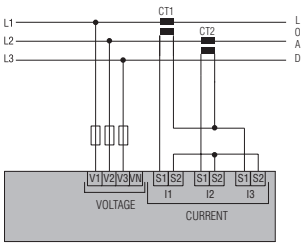


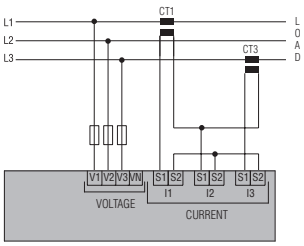
DMED310T2

Three-phase with or without neutral



Three-phase without neutral in ARON connection



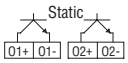


Tariff input

100...240VAC



Pulse output 30VDC 50mA for DMED305T2 - DMED310T2



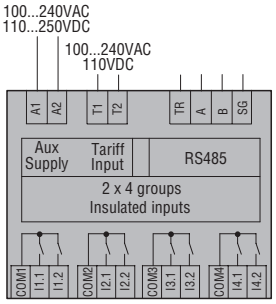
RS485 for DMED330



M-BUS for DMED332

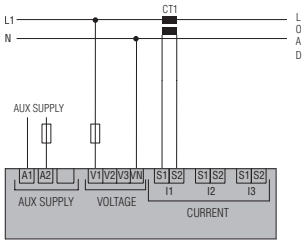


Data concentrator **DMECD**

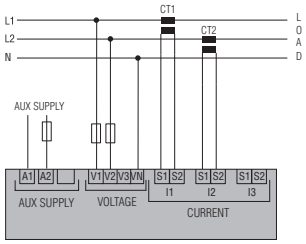


MULTIMETERS **DMG...**

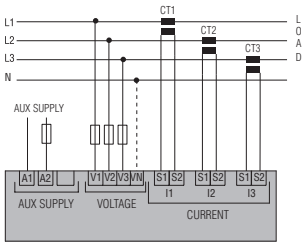
Single-phase



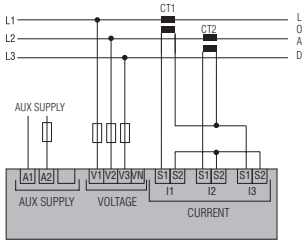
Two-phase

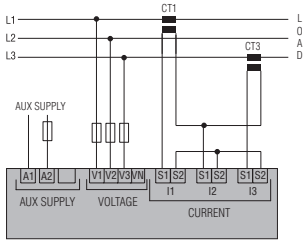


Three-phase with or without neutral

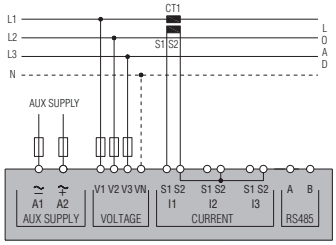


Three-phase without neutral in ARON connection





Balanced 3-phase connection with or without neutral



CODE	AUX SUPPLY
DMG100-110-200-210-300	100...240VAC 110...250VDC
DMG6...	100...440VAC 110...250VDC
DMG7000-7500-8000-9000	100...240VAC 110...250VDC

RS485 for DMG110 and DMG210



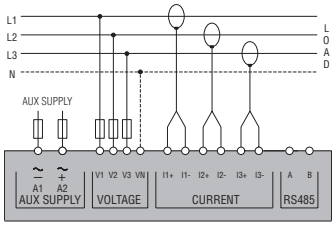
RS485 for DMG610



RS485 for DMG7500 and DMG9000



MULTIMETERS **DMG611...**

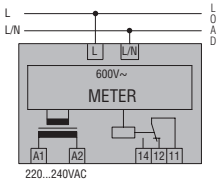


RS485 for DMG611

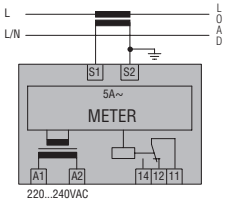


METERING INSTRUMENTS

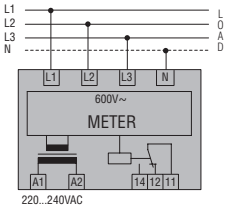
DMK80R1



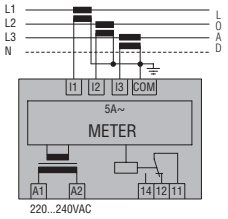
DMK81R1



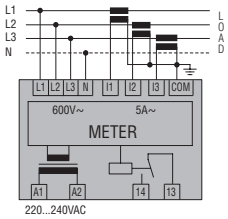
DMK70R1



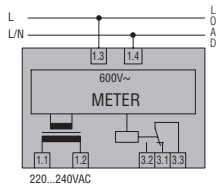
DMK71R1



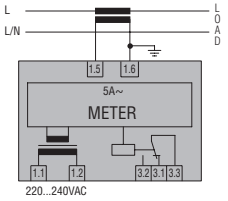
DMK75R1



DMK00R1

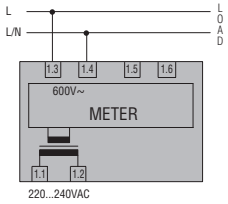


DMK01R1

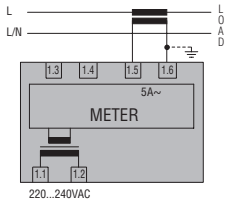


DMK02

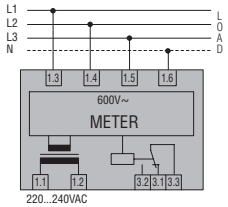
Voltmeter



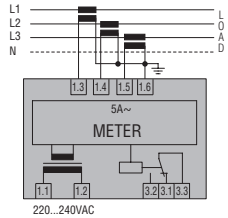
Ammeter



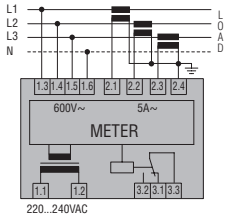
DMK10R1



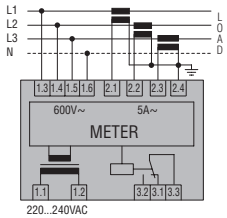
DMK11R1



DMK15R1



DMK16R1



TYPE	DMED100T1	DMED100T1MID	DMED110T1	DMED111/112	DMED110T1MID DMED111MID/MID7 DMED112MID	
	Single-phase	Single-phase	Single-phase	Single-phase	Single-phase	
AUXILIARY SUPPLY						
Rated voltage(Ue)	220...240VAC	230VAC	220...240VAC	110...240VAC	230VAC	
Operating voltage range	187...264VAC	187...264VAC	187...264VAC	93...264VAC	187...264VAC	
Rated frequency	50/60Hz	50Hz	50/60Hz	50/60Hz	50Hz	
Maximum power consumption	7VA			1VA	7VA	
Maximum power dissipation	0.45W			0.4W	0.45W	
CURRENT						
IEC maximum current (Imax)	40A			40A		
IEC minimum current (Imin)	0.25A			0.25A		
IEC rated current (Iref-Ib)	5A			5A		
IEC start current (Ist)	20mA			20mA		
Transition current (Itr)	0.5A			0.5A		
ACCURACY						
Active energy (per IEC/EN/BS 62053-21)	Class 1	Class B (EN 50470-3)	Class 1	Class 1/B	Class B (EN 50470-3)	
OUTPUTS						
LED rate	1000 flash/kWh			1000 flash/kWh		
Pulse rate	1000 pulses/kWh			1000 pulses/kWh		
Pulse duration	30ms			30ms		
STATIC OUTPUTS						
Pulse rate	10 pulses/kWh		1-10-100-1000 pulses/kWh programmable	1-10-100-1000 pulses/kWh programmable (only for DMED...T1...)		
Pulse duration	100ms			100ms		
External voltage	10...30VDC			10...30VDC		
Maximum current	50mA			50mA		
INSULATION						
IEC rated insulation voltage Ui	250VAC			250VAC		
IEC rated impulse withstand voltage Uimp	6kV			6kV		
IEC power frequency withstand voltage	4kV			4kV		
SUPPLY/MEASUREMENT CONNECTION CIRCUIT						
Type of terminals	Fixed			Fixed		
Conductor section (min...max)	1.5...10mm^2 (16...6AWG)			1.5...10mm^2 (16...6AWG)		
Maximum tightening torque	1.5Nm (14lb.in)			1.5Nm (14lb.in)		
CONNECTION (PULSE OUTPUT/RS485/M-BUS)						
Type of terminals	Fixed			Fixed		
Conductor section (min...max)	0.2...4mm^2 (24...12AWG)			0.2...4mm^2 (24...12AWG)		
Maximum tightening torque	0.8Nm (7lb.in)			0.8Nm (7lb.in)		
AMBIENT CONDITIONS						
Operating temperature	-25...+55°C			-25...+55°C (MID7: -25...+70°C)		
Storage temperature	-25...+70°C			-25...+70°C		
Relative humidity	<80%			<80%		
Maximum pollution degree	2			2		
Mechanical environment	Class M1			Class M1		
Magnetic environment	Class E2			Class E2		
HOUSING						
Material	Polyamide			Polyamide		

	DMED115T1	DMED120T1	DMED120T1MID DMED121MID DMED122MID	DMED121
	Single-phase	Single-phase	Single-phase	Single-phase
	220...240VAC	220...240VAC	230VAC	110...240VAC
	187...264VAC	187...264VAC	187...264VAC	88...264VAC
	50/60Hz	50/60Hz	50Hz	50/60Hz
	7VA			4.8VA
	0.45W			1.4W
	40A	63A		63A
	0.5A			0.5A
	10A			10A
	40mA			40mA
	1A			1A
	Class 1		Class B (EN 50470-3)	Class 1
	1000 flash/kWh			1000 flash/kWh
	1000 pulses/kWh			1000 pulses/kWh
	30ms			30ms
	1-10-100-1000 pulses/kWh programmable (only for DMED...T1...)			–
	100ms			–
	10...30VDC			–
	50mA			–
	250VAC			250VAC
	6kV			6kV
	4kV			4kV
	Fixed			Fixed
	2.5...16mm^2 (14...6AWG; 14...10AWG)			2.5...16mm^2 (14...6AWG; 14...10AWG)
	2Nm (26.5lb.in)			2Nm (26.5lb.in)
	Fixed			Fixed
	0.5...4mm^2 (20...11AWG)			0.5...4mm^2 (20...11AWG)
	1.3Nm (12.1lb.in)			1.3Nm (12.1lb.in)
	-25...+55°C (MID7: -25...+70°C)			
	-25...+70°C			-25...+70°C
	<80%			<80%
	2			2
	Class M1			Class M1
	Class E2			Class E2
	Polyamide			Polyamide

TYPE	DMED300T2... DMED311 DMED302	DMED300T2MID DMED311MID7 DMED302MID	DMED341MID7...	DMED310T2 DMED305T2	DMED305T2MID	DMED330 DMED332	DMED330MID DMED332MID
	3 phase with neutral	3 phase with neutral	3 phase with neutral	3 phase with and without neutral	3 phase with neutral	3 phase with and without neutral	3 phase with neutral
AUXILIARY SUPPLY							
Rated voltage (Ue)	380...415VAC (3ph-N) DMED...UL: 120VAC (LN) - 240VAC (L-L)	400VAC (3ph-N)	400VAC (3ph-N)	380...415VAC (3ph-N)	400VAC (3ph-N)	380...415VAC (3ph-N)	400VAC (3ph-N)
Voltage range	187...264VAC phase-neutral / 323...456VAC phase-phase						
Rated frequency	50/60Hz (UL: 60Hz)	50Hz	50Hz	50/60Hz	50Hz	50/60Hz	50Hz
Maximum power consumption	2.5VA (2.4VA DMED311...)		2.4VA	3.5VA			3.5VA
Maximum power dissipation	1W (0.8W DMED311...)		0.8W	2.7W			2.7W
CURRENT							
IEC maximum current (Imax)	80A		80A	5A		5A	5A
IEC minimum current (Imin)	0.75A		0.75A	0.05A		0.05A	0.05A
IEC rated current (Iref-Ib)	15A		15A	5A		5A	5A
IEC start current (Ist)	60mA		60mA	0.005A		0.005A	0.005A
IEC transition current (Itr)	1.5A		1.5A	0.25A		0.25A	0.25A
ACCURACY							
Active energy	Class 1	Class B (EN50470-3)	Class B (EN50470-3)	Class 0.5s DMED305T2 Class 1 DMED310T2	Class B (EN50470-3)	Class 0.5s	Class B (EN50470-3)
TARIFF CIRCUIT INPUT							
Rated voltage (Uc)	100...240VAC		—	100...240VAC			
Voltage range	85...264VAC		—	85...264VAC			
Frequency	50/60Hz		—	50/60Hz			
Maximum power consumption	0.9VA		—	0.25VA			
Maximum power dissipation	0.6W		—	0.18W			
LED							
Pulse rate	1000 pulses/kWh (2000 pulses/kWh DMED311...)		2000 pulses/kWh	1000 pulses/kWh			
Pulse duration	30ms						
STATIC OUTPUTS							
Pulse rate	1-10-100-1000 pulses/kWh programmable (except DMED311/302)		1-10-100 pulses/kWh	0,1-1-10-100 pulses/kWh programmable		—	—
Pulse duration	100ms for 1-10-100 pulses (except DMED311/302) 60ms for 1000 pulses (except DMED311/302)		100ms	100ms		—	—
External voltage	10...30VDC (except DMED311/302)		10...30VDC	10...30VDC		—	—
Maximum current	50mA (except DMED311/302)					—	—
INSULATION							
IEC rated insulation voltage Ui	250VAC (300VAC DMED311...)		300VAC	250VAC			
IEC rated impulse withstand voltage Uimp	6kV						
IEC power frequency withstand voltage	4kV						
SUPPLY/MEASURMENT CIRCUIT CONNECTIONS							
Type of terminals	Fixed			Fixed			
Conductor section (min...max)	2.5...16mm² (16...6AWG)			0.2...4mm² (24...12AWG) for supply/voltage measurement; 0.2...2.5mm² (24...12AWG) for current measurement			
Maximum tightening torque	2Nm (14lb.in)		3Nm (26.5lb.in)	0.8Nm (7lb.in)			
TARIFF CONTROL CIRCUIT CONNECTIONS							
Type of terminals	Fixed			Fixed			
Conductor section (min...max)	0.2...2.5mm² (24...12AWG)			0.2...4mm² (24...12AWG)			
Maximum tightening torque	0.49Nm (4.4lb.in)			0.8Nm (7lb.in)			
CONNECTIONS (PULSE OUTPUT/RS485)							
Type of terminals	Fixed			Fixed			
Conductor section (min...max)	0.2...1.3mm² (24...16AWG)			0.2...2.5mm² (24...12AWG)			
Maximum tightening torque	0.15Nm (1.7lb.in)			0.44Nm (4lb.in)			
AMBIENT CONDITIONS							
Operating temperature	-25...+55°C (MID7: -25...+70°C)						
Storage temperature	-25...+70°C						
Relative humidity	<80% non condensing						
Maximum pollution degree	2		2	2		2	
Mechanical environment	Class M1		Class M1	Class M1		Class M1	
Magnetic environment	Class E2		Class E2	Class E2		Class E2	
HOUSING							
Material	Polyamide						

TYPE	DMECD
AUXILIARY SUPPLY	
Rated voltage (Us)	100...240VAC/110...250VDC
Voltage range	85...264VAC/93.5...300VDC
Rated frequency	50/60Hz
Maximum power consumption	8.8VA
Maximum power dissipation	3.6W
ENERGY METER INPUTS	
Number of inputs	8
Input separations	1 common for every 2 inputs (insulated between each pair 500VRMS)
Type of input	Negative (NPN)
Maximum voltage at inputs	15VDC
Maximum input current	18mA (15mA typical)
High input signal	≥7.6V
Low input signal	≤2V
Maximum frequency	2000Hz
TARIFF CONTROL CIRCUIT	
Rated voltage (Uc)	100...240VAC/110VDC
Voltage range	85...264VAC/93.5...140VDC
Frequency	50/60Hz
Maximum power consumption	0.25VA
Maximum power dissipation	0.18W
RS485 SERIAL INTERFACE	
Baud-rate	Programmable 1200...38400bps
Insulation	1500VAC towards energy meter inputs. Double insulation towards supply and tariff inputs
INSULATION	
IEC rated insulation voltage Ui	250VAC
IEC rated impulse withstand voltage Uimp	6.5kV
IEC power frequency withstand voltage	3.6kV
SUPPLY CIRCUIT CONNECTIONS	
Type of terminals	Fixed
Conductor section (min...max)	0.2...4mm^2 (24...12AWG)
Maximum tightening torque	0.8Nm (7lb.in)
TARIFF INPUT CIRCUIT CONNECTIONS	
Type of terminals	Fixed
Conductor section (min...max)	0.2...4mm^2 (24...12AWG)
Maximum tightening torque	0.8Nm (7lb.in)
RS485 CONNECTION	
Type of terminals	Fixed
Conductor section (min...max)	0.2...4mm^2 (24...12AWG)
Maximum tightening torque	0.8Nm (7lb.in)
ENERGY METER INPUT CONNECTIONS	
Type of terminals	Fixed
Conductor section (min...max)	0.2...2.5mm^2 (24...12AWG)
Maximum tightening torque	0.44Nm (4lb.in)
AMBIENT CONDITIONS	
Operating temperature	-20...+60°C
Storage temperature	-30...+80°C
Relative humidity	<90%
Maximum pollution degree	2
HOUSING	
Material	Polyamide

TYPE	DMG100 - DMG110❶	DMG200	DMG210	DMG300	
AUXILIARY SUPPLY					
Rated voltage Us	100...240VAC/ 110...250VDC				
Voltage range	85...264VAC/ 93.5...300VDC				
Frequency range	45...66Hz, 360...440Hz				
Maximum power consumption	3.5VA	3.5VA	4.5VA	3.2VA	
Maximum power dissipation	1.2W	1.2W	1.7W	1.3W	
Microbreaking immunity	≥50ms	≥50ms	≥50ms	≥50ms	
VOLTAGE INPUTS					
Type of input	Three-phase + neutral				
Maximum rated voltage Ue	690VAC phase-phase (400VAC phase-neutral)				
Measurement range	20...830VAC phase-phase (10...480VAC phase-neutral)				
Frequency range	45...66Hz, 360...440Hz				
Method of measurement	True RMS				
Method of connection	Single, two, three-phase with or without neutral, balanced three-phase systems				
CURRENT INPUTS					
Rated current Ie	1A/5A	5A	5A	1A/5A	
Current reading through Rogowski coils	–	–	–	–	
Measurement range	0.025...1.2A / 0.025...6A	0.01...6A	0.01...6A	0.01...1.2A / 0.01...6A	
Method of measurement	True RMS				
Overload capacity	+20% Ie through external CT with 5A secondary				
Overload peak	50A for 1s				
INSULATION					
IEC rated insulation voltage Ui	690VAC				
IEC rated impulse withstand voltage Uimp	9.5kV				
IEC power frequency withstand voltage	5.2kV				
SUPPLY CIRCUIT/VOLTAGE MEASUREMENT CONNECTIONS					
Type of terminal	Fixed				
Conductor section (min...max)	0.2...4.0mm^2 (24...12AWG)				
Maximum tightening torque	0.8Nm (7lb.in)				
CURRENT MEASUREMENT CIRCUIT AND RS485❶					
Type of terminal	Fixed				
Conductor section (min...max)	0.2...2.5mm^2 (24...12AWG)				
Maximum tightening torque	0.44Nm (4lb.in)				
AMBIENT CONDITIONS					
Operating temperature	-20...+60°C				
Storage temperature	-30...+80°C				
Relative humidity	<90%				
Maximum pollution degree	2				
Measurement class	III				
HOUSING					
Material	Polyamide				

❶ RS485 communication port for DMG110, DMG210, DMG610 and DMG611 only.

	DMG6...	DMG7000	DMG7500	DMG8000	DMG9000
	100...440VAC 120...250VDC	100...240VAC 120...250VDC			100...240VAC 120...250VDC 12-48VDC (DMG9000D048)
	90...484VAC 93.5...300VDC	90...264VAC 93.5...300VDC			90...264VAC 93.5...300VDC 9...70VDC (DMG9000D048)
	45...66Hz, 360...440Hz	45...66Hz, 360...440Hz			
	9.5VA	15VA			
	3.5W	6W			
	≥50ms	≥50ms			
	Three-phase + neutral	Three-phase + neutral			
	600VAC phase-phase (300VAC phase-neutral)	600VAC phase-phase (300VAC phase-neutral)			
	50...720VAC phase-phase (30...360VAC phase-neutral)	50...720VAC phase-phase (30...360VAC phase-neutral)			
	45...66Hz, 360...440Hz	45...66Hz, 360...440Hz			
	True RMS	True RMS			
	Single, two, three-phase with or without neutral, balanced three-phase systems				
	1A/5A	1A/5A			
	20...6300A (for DMG611...)	–			
	0.025...6A	0.004...6A			
	True RMS	True RMS			
	+20% Ie by external CT with 5A secondary				
	50A for 1s				
	600VAC	600VAC			
	9.5kV	9.5kV			
	5.2kV	5.2kV			
	Removable				
	0.2...2.5mm^2 (24...12AWG)				
	0.5Nm (4.5lb.in)				
	Fixed	Removable			
	0.2...1.5mm^2 (24...12AWG)	0.2...2.5mm^2 (24...12AWG)			
	0.8Nm (7lb.in)	0.5Nm (4.5lb.in)			
	-20...+60°C				
	-30...+80°C				
	<90%				
	2				
	III				
	Polyamide				

TYPE		DMK10R1 DMK70R1	DMK11R1 DMK71R1	DMK15R1 DMK75R1	DMK16R1
AUXILIARY SUPPLY					
Rated voltage Us		220...240VAC			
Operating voltage range		0.85...1.1 Us			
Rated frequency		50...60Hz ±10%			
Maximum power consumption		3.6VA	3.6VA	3.6VA	3.9VA
Maximum power dissipation		1.8W	1.8W	1.8W	2.1W
VOLTAGE INPUTS					
Rated voltage Ue	phase-phase	600VAC	—	600VAC	600VAC
	phase-neutral	347VAC	—	347VAC	347VAC
Operating voltage range	phase-phase	15...660VAC	—	35...660VAC	35...660VAC
	phase-neutral	10...382VAC	—	20...382VAC	20...382VAC
Rated frequency		50...60Hz ±10%	—	50...60Hz ±10%	50...60Hz ±10%
Method of measuring		True RMS	—	True RMS	True RMS
CURRENT INPUTS					
Rated current Ie		—	5A	5A	5A
Measuring range		—	0.05...6A	0.05...5.75A	0.05...5.75A
Rated frequency		—	50...60Hz ±10%	50...60Hz ±10%	50...60Hz ±10%
Type of input		—	Shunts connected by external low voltage CT 5A max		
Type of measuring		—	True RMS	True RMS	True RMS
Overload capacity		—	+20% Ie	+20% Ie	+20% Ie
MEASURING ACCURACY					
Measurement conditions (Temperature +23°C ±1°C) (Relative humidity 45 ±15% R.H.)	voltage	±0.25% f.s. ±1 digit	—	±0.25% f.s. ±1 digit	±0.25% f.s. ±1 digit
	current	—	±0.5% f.s. ±1 digit	±0.5% f.s. ±1 digit	±0.5% f.s. ±1 digit
	power	—	—	1% f.s. ±1 digit	1% f.s. ±1 digit
	energy	—	—	—	Class 2
	frequency	—	—	±1 digit	±1 digit
RELAY OUTPUT					
Number and type of contact		1 changeover	1 changeover	1 changeover❶	1 changeover
Rated voltage		250VAC	250VAC	250VAC	250VAC
IEC/EN/BS 60947-5-1 designation		AC1 8A 250VAC / B300	AC1 8A 250VAC / B300	AC1 8A 250VAC / B300	AC1 8A 250VAC / B300
Electrical life (ops.)		10^5	10^5	10^5	10^5
Mechanical life (ops.)		$30x10^6$	$30x10^6$	$30x10^6$	$30x10^6$
INSULATION					
Rated insulation voltage Ui		600VAC	415VAC	600VAC	600VAC
CONNECTIONS					
Type of terminals		Removable (DMK1...); fixed (DMK7...)			
Maximum tightening torque		0.5Nm (4.5lb.in) for DMK1...; 0.8Nm (7lb.in) for DMK7...			
Conductor section (min...max)		0.2...2.5mm² (24...12AWG) for DMK0... 0.2...4.0mm² (24...12AWG) for DMK7...			
AMBIENT CONDITIONS					
Operating temperature		-20...+60°C	-20...+60°C	-20...+60°C	-20...+60°C
Storage temperature		-30...+80°C	-30...+80°C	-30...+80°C	-30...+80°C
HOUSING					
Material		Thermoplastic (DMK1...) / Polyamide (DMK7...)			

❶ One contact NO for DMK75R1.

TYPE		DMK00R1 DMK80R1	DMK01R1 DMK81R1	DMK02
AUXILIARY SUPPLY				
Rated voltage Us		220...240VAC		
Operating voltage range		0.85...1.1 Us		
Rated frequency		50...60Hz ±10%		
Maximum power consumption		3.6VA		
Maximum power dissipation		1.8W		
VOLTAGE INPUTS				
Rated voltage Ue		600VAC	—	600VAC
Operating voltage range		15...660VAC	—	15...660VAC
Operating voltage range, phase-phase		—	—	—
Rated frequency		50...60Hz ±10%	—	50...60Hz ±10%
Method of measuring		TRMS	—	TRMS
CURRENT INPUTS				
Rated current Ie		—	5A	5A
Measuring range		—	0.05...5.75A	0.05...5.75A
Rated frequency		—	50...60Hz ±10%	50...60Hz ±10%
Type of input		—	Shunts connected by external low voltage CT 5A max	
Type of measuring		—	True RMS	True RMS
Overload capacity		—	+20% Ie	+20% Ie
MEASURING ACCURACY				
Measurement conditions (Temperature +23°C ±1°C) (Relative humidity 45 ±15% R.H.)	cosφ	—	—	—
	voltage	±0.25% f.s. ±1 digit	—	±0.25% f.s. ±1 digit
	current	—	±0.5% f.s. ±1 digit	±0.5% f.s. ±1 digit
	frequency	—	—	—
ADDITIONAL ERRORS				
Relative humidity		±1 digit 60%...90% R.H..		
Temperature		±1 digit -20...+60°C		
RELAY OUTPUT FOR DMK... R1 TYPES ONLY				
Number and type of contact		1 changeover		
Rated voltage		250VAC		
IEC/EN/BS 60947-5-1 designation		AC1 8A 250VAC / B300		
Electrical life (ops.)		10^5		
Mechanical life (ops.)		$30x10^6$		
INSULATION				
Rated insulation voltage Ui		600VAC	415VAC	600VAC
CONNECTIONS				
Type of terminals		Fixed (DMK8...); Removable (DMK0...)		
Maximum tightening torque		0.8Nm (7lb.in) for DMK0... / 0.5Nm (4.5lb.in) for DMK8...		
Conductor section (min...max)		0.2...2.5mm² (24...12AWG) for DMK0... 0.2...4.0mm² (24...12AWG) for DMK8...		
AMBIENT CONDITIONS				
Operating temperature		-20...+60°C		
Storage temperature		-30...+80°C		
HOUSING				
Material		Thermoplastic (DMK0...) / Polyamide (DMK8...)		

Current transformers



- Primary current: 5...4000A
- Secondary current: 5A
- Solid and split-core types
- Instrument and accuracy versions
- Wound primary CT for low currents
- Busbar versions.

Current transformers — SEC. - PAGE

Wound primary type ..... 29 - 2
Solid-core ..... 29 - 2
Accuracy solid-core ..... 29 - 4
Current transformer kit with UTF certificates ..... 29 - 5
Compact prewired split-core ..... 29 - 6
Split-core ..... 29 - 7

Dimensions ..... **29 - 8**



Page 29-2

WOUND PRIMARY CURRENT TRANSFORMERS
- Primary current 5...30A
- Secondary current 5A
- Screw terminals.



Page 29-2

SOLID-CORE CURRENT TRANSFORMERS
- Primary current 40...4000A
- Secondary current 5A
- Busbar versions.



Page 29-4

ACCURACY SOLID-CORE CURRENT TRANSFORMERS
- Primary current 60...3000A
- Secondary current 5A
- Accuracy class 0.5s.



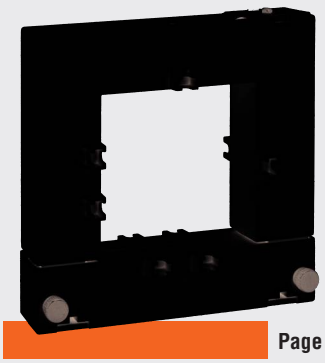
Page 29-5

CURRENT TRANSFORMER KIT WITH UTF CERTIFICATES
- Primary current 60...3000A
- Secondary current 5A
- Kit consisting of 3 transformers and related UTF certificates (Finance Technical Office).



Page 29-6

COMPACT PREWIRED SPLIT-CORE CURRENT TRANSFORMERS
- Primary current 100...600A
- Secondary current 5A
- Compact dimensions
- Cable supplied as standard, length 2m.



Page 29-7

SPLIT-CORE CURRENT TRANSFORMERS
- Primary current 100...4000A
- Secondary current 5A.

Wound primary type



DM0TW...

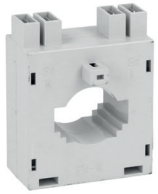
Order code	Primary current Ipn	Burden cl. 0.5	Burden cl. 1	Burden cl. 3	Qty per pkg	Wt
	/5 [A]	[VA]	[VA]	[VA]	n°	[kg]
Screw primary terminals.						
DM0TW0005	5	1.5	2.5	–	1	0.525
DM0TW0010	10	1.5	2.5	–	1	0.525
DM0TW0020	20	1.5	2.5	–	1	0.525
DM0TW0030	30	1.5	2.5	–	1	0.525

Solid-core



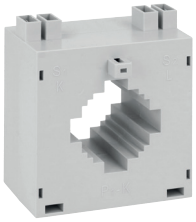
DM0T...

Order code	Primary current Ipn	Burden cl. 0.5	Burden cl. 1	Burden cl. 3	Qty per pkg	Wt
	/5 [A]	[VA]	[VA]	[VA]	n°	[kg]
For Ø22mm/0.87" cable.						
DM0T0040	40	—	—	1.25	1	0.200
DM0T0050	50	—	1.25	—	1	0.200
DM0T0060	60	—	1.5	—	1	0.200
DM0T0080	80	—	1.5	—	1	0.200
DM0T0100	100	—	1.5	—	1	0.200
DM0T0150	150	—	2	—	1	0.200



DM2T...

Order code	Primary current Ipn	Burden cl. 0.5	Burden cl. 1	Qty per pkg.	Wt
	/5 [A]	[VA]	[VA]	n°	[kg]
For Ø23mm/0.90" cable. For 30x10mm/1.18x0.39", 25x12.5mm/0.98x0.49", 20x15mm/0.79x0.59" busbars, width 52mm/2.05".					
DM2T0100	100	—	1	1	0.130
DM2T0150	150	—	1.5	1	0.130
DM2T0200	200	—	2	1	0.130
DM2T0250	250	—	2.5	1	0.130
DM2T0300	300	1.5	3	1	0.130
DM2T0400	400	2	3	1	0.130



DM3T...

Order code	Primary current Ipn	Burden cl. 0.5	Burden cl. 1	Qty per pkg.	Wt
	/5 [A]	[VA]	[VA]	n°	[kg]
For Ø30mm/1.18" cable. For 40x10mm/1.57x0.39", 30x20mm/1.18x0.79", 25x25mm/0.98x0.98" busbars, width 71mm/2.79".					
DM3T0200	200	—	5	1	0.260
DM3T0250	250	—	5	1	0.260
DM3T0300	300	2.5	5	1	0.260
DM3T0400	400	2.5	5	1	0.260
DM3T0500	500	2.5	5	1	0.260
DM3T0600	600	5	10	1	0.260
DM3T0800	800	5	10	1	0.260



DM33...

Order code	Primary current Ipn	Burden cl. 0.5	Burden cl. 1	Qty per pkg.	Wt
	/5 [A]	[VA]	[VA]	n°	[kg]
For Ø44mm/1.73" cable. For 51x41mm/2.01x1.61", 61x31mm/2.40x1.22" busbars, width 95mm/3.74".					
DM33T0800	800	5	10	1	0.476
DM33T1000	1000	5	15	1	0.476
DM33T1200	1200	5	15	1	0.476

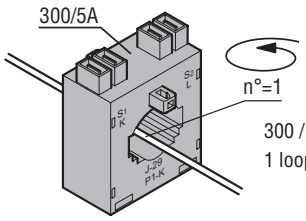


DM34...

Order code	Primary current Ipn	Burden cl. 0.5	Burden cl. 1	Qty per pkg.	Wt
	/5 [A]	[VA]	[VA]	n°	[kg]
For Ø44mm/1.73" cable. For 69x10mm/2.72x0.39", 50x30mm/1.97x1.18" busbars, width 95mm/3.74".					
DM34T1500	1500	5	15	1	0.476
DM34T1600	1600	5	15	1	0.476

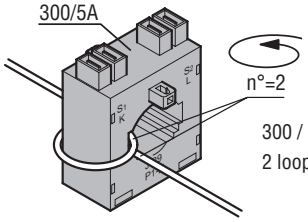
General characteristics

The current transformers (CTs) in the DM series are installed in an electrical system to reduce the line current to a secondary value of 5A compatible with the ammeter inputs of the digital multimeters or protection relays.
DM0TW... are instrument transformers in class 1/0.5 wound primary type and are normally used for low primary current values starting from 5A.
DM... are instrument transformers in class 1/0.5 without a primary winding and are normally used for high primary current values starting from 40A.
The number of loops of the primary cable does not modify the accuracy but converts the primary current value proportional to secondary current.



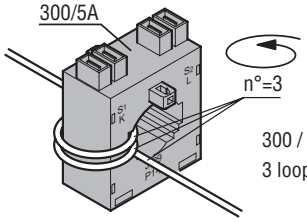
300 / 5A standard
1 loop = 300 / 5A

300:n/5A
300:1/5A=300/5A



300 / 5A
2 loops = 150 / 5A

300:n/5A
300:2/5A=150/5A



300 / 5A
3 loops = 100 / 5A

300:n/5A
300:3/5A=100/5A

Operational characteristics

- Operating frequency: 50...60Hz
- Secondary output current: 5A
- Overload withstand: 120% Ipn
- IEC rated insulation voltage Ui: 720V
- IEC rated short-time thermal current Ith: 40...60 Ipn for 1 second
- IEC rated dynamic current Idyn: 2.5 Ith for 1 second
- Insulation (dry type): Class E
- Terminals:
  - Faston for DM2T... and DM3T... types
  - Screw for DM0T..., DM33T and DN34T... types
- Sealable terminal covers for DM33T..., DM34T... types
- Fixing on 35mm DIN rail (IEC/EN/BS 60715) or by screws (fixing elements standard supplied with the product)
- EN degree of protection: IP30
- Ambient conditions:
  - Operating temperature: -25...+50°C
  - Storage temperature: -40...+80°C
  - Relative humidity, non condensing: 90%.

Certifications and compliance

Certifications obtained: EAC.
Compliant with standards: IEC/EN/BS 61869-2, IEC/EN/BS 61869-1.

Solid-core



DM35T...



DM37...

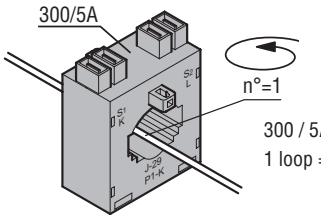


DM4T...

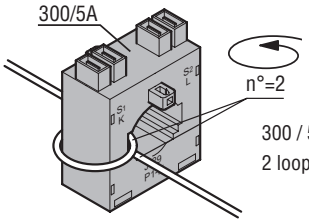
Order code	Primary current Ipn	Burden cl. 0.5	Burden cl. 1	Qty per pkg	Wt
	/5 [A]	[VA]	[VA]	n°	[kg]
For Ø66mm/2.60" cable. For 80x12,5mm/3.15"x0.49", 60x30mm/2.36x1.18", 50x50mm/1.97x1.97" busbars, width 105mm/4.13".					
DM35T0400	400	—	5	1	0.460
DM35T0500	500	5	5	1	0.460
DM35T0600	600	5	10	1	0.460
DM35T0800	800	10	15	1	0.460
DM35T1000	1000	15	20	1	0.460
DM35T1250	1250	15	20	1	0.460
For 101x56mm/3.98x2.20" busbars, width 128mm/5.04".					
DM37T2000	2000	10	15	1	1.000
DM37T2250	2250	10	15	1	1.000
DM37T2500	2500	10	15	1	1.000
DM37T3000	3000	10	15	1	1.000
For Ø86mm/3.38" cable. For 100x30mm/3.94x1.18", 80x50mm/3.15x1,97", 70x60mm/2.75x2.36" busbars, width 140mm/5.51".					
DM4T1000	1000	10	20	1	0.700
DM4T1250	1250	15	30	1	0.760
DM4T1500	1500	20	30	1	0.760
DM4T1600	1600	20	30	1	0.800
DM4T2000	2000	30	45	1	0.840
DM4T2500	2500	35	45	1	0.900
DM4T3000	3000	45	45	1	0.900
DM4T3500	3500	50	50	1	0.900
DM4T4000	4000	50	50	1	0.900

General characteristics

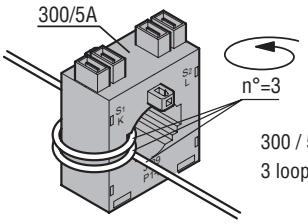
The current transformers (CTs) in the DM series are installed in an electrical system to reduce the line current to a secondary value of 5A compatible with the ammeter inputs of the digital multimeters or protection relays.
DM... are instrument transformers in class 1/0.5 without a primary winding and are normally used for high primary current values starting from 50A.
The number of loops of the primary cable does not modify the accuracy but converts the primary current value proportional to secondary current.



300:n/5A
300:1/5A=300/5A



300:n/5A
300:2/5A=150/5A



300:n/5A
300:3/5A=100/5A

Operational characteristics

- Operating frequency: 50...60Hz
- Secondary output current: 5A
- Overload withstand: 120% Ipn
- IEC rated insulation voltage Ui: 720V
- IEC rated short-time thermal current Ith: 40...60 Ipn for 1 second
- IEC rated dynamic current Idyn: 2.5 Ith for 1 second
- Insulation (dry type): Class E
- Terminals:
  - Screw for DM35T..., DM37T... and DM4T... types
- Sealable terminal covers only for DM35T... and DM4T... types
- Fixing on 35mm DIN rail (IEC/EN/BS 60715) or by screws (fixing elements standard supplied with the product)
- EN degree of protection: IP30
- Ambient conditions:
  - Operating temperature: -25...+50°C
  - Storage temperature: -40...+80°C
  - Relative humidity, non condensing: 90%.

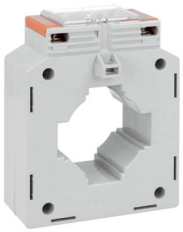
Certifications and compliance

Certifications obtained: EAC.
Compliant with standards: IEC/EN/BS 61869-2, IEC/EN/BS 61869-1.

Accuracy solid-core



DM1TP...



DM3TP...



DM4TP...



DM5TP...

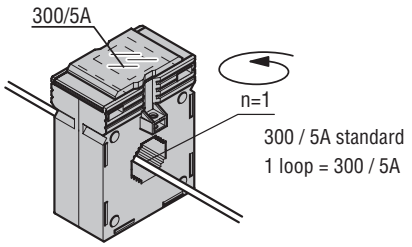
Version with UTF certificates.
See page 29-5.

Order code	Primary current Ipn	Burden cl. 0.5s	Burden cl. 0.5	Qty oer pkg	Weight
	/5 [A]	[VA]	[VA]	n°	[kg]
For Ø28mm/1.10"❶ cable. For 30x10mm/1.18x0.39", 25x12.5mm/0.98x0.49", 20x20mm/0.79x0.79" busbar, width: 75mm/2.95".					
DM1TP0060	60	1.5	1.5	1	0.560
DM1TP0080	80	2.5	2.5	1	0.580
DM1TP0100	100	2.5	3.75	1	0.480
DM1TP0150	150	2.5	3.75	1	0.480
DM1TP0200	200	2.5	3.75	1	0.480
DM1TP0250	250	2.5	5	1	0.480
DM1TP0300	300	2.5	5	1	0.480
DM1TP0400	400	5	5	1	0.480
DM1TP0500	500	5	5	1	0.480
For Ø28mm/1.10"❶ cable. For 30x10mm/1.18x0.39", 25x20mm/0.98x0.79", 20x20mm/0.79x0.79" busbar, width: 75mm/2.95".					
DM1TP0600	600	2.5	5	1	0.480
For Ø52mm/2.04"❶ cable. For 60x20mm/2.36x0.79", 50x25mm/1.97x0.98" busbar, width: 101mm/3.98".					
DM3TP0500	500	3.75	5	1	0.700
DM3TP0600	600	5	10	1	0.700
DM3TP0800	800	5	10	1	0.700
DM3TP1000	1000	5	10	1	0.700
For Ø80mm/3.15"❶ cable. For 82x30mm/3.23x1.18" busbar, width: 128mm/5.04".					
DM4TP1200	1200	–	10	1	0.800
For Ø85.5mm/3.37"❶ cable. For 100x20mm/3.94x0.79", 80x45mm/3.15x1.77" busbar, width: 144mm/5.67".					
DM5TP1000	1000	5	10	1	0.900
DM5TP1250	1250	7.5	10	1	0.900
DM5TP1600	1600	7.5	10	1	0.900
DM5TP2000	2000	10	15	1	0.900
DM5TP2500	2500	10	15	1	0.900
DM5TP3000	3000	10	15	1	0.900

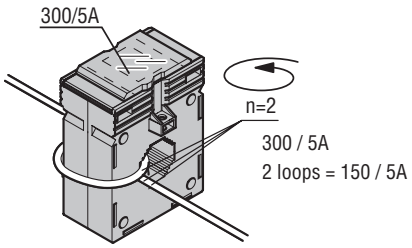
❶ Consult Technical support to inquiry about versions with Italian UTF certificates.

General characteristics

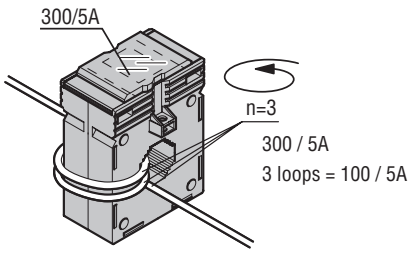
The DM...TP type accuracy current transformers (CTs) are installed in an electrical system to reduce the line current to a secondary value of 5A compatible with the ammeter inputs of the digital multimeters or protection relays.
DM...TP are accuracy current transformers in class 0.5s without a primary winding and are normally used for high primary current values starting from 60A.
The number of loops of the primary cable does not modify the accuracy but converts the primary current value proportional to secondary current.



300:n/5A
300:1/5A=300/5A



300:n/5A
300:3/5A=100/5A



300:n/5A
300:3/5A=100/5A

Operational characteristics

- Operating frequency: 50...60Hz
- Secondary output current: 5A
- Overload withstand: 120% Ipn
- IEC rated insulation voltage Ui: 720V
- IEC rated short-time thermal current Ith: 40...60 Ipn for 1 second
- IEC rated dynamic current Idyn: 2.5 Ith for 1 second
- Insulation (dry type): Class E
- Screw terminals
- Sealable terminal covers
- Fixing on 35mm DIN rail (IEC/EN/BS 60715) or by screws (fixing elements standard supplied with the product)
- EN degree of protection: IP30
- Ambient conditions:
  - Operating temperature: -25...+50°C
  - Storage temperature: -40...+80°C.
  - Relative humidity, non condensing: 90%.

Certifications and compliance

Certifications obtained: EAC.
Compliant with standards: IEC/EN/BS 61869-2, IEC/EN/BS 61869-1.

Current transformer kit with UTF certificates



DM...

Order code	Description of CTs included	Qty per pkg	Wt
		n°	[kg]
Kit comprising of three /5A and class 0.5s current transformers.			
DM1TP0060FKIT	3 DM1TP0060, complete with UTF certificate	1	1.440
DM1TP0080FKIT	3 DM1TP0080, complete with UTF certificate	1	1.440
DM1TP0100FKIT	3 DM1TP0100, complete with UTF certificate	1	1.560
DM1TP0150FKIT	3 DM1TP0150, complete with UTF certificate	1	1.680
DM1TP0200FKIT	3 DM1TP0200, complete with UTF certificate	1	1.620
DM1TP0250FKIT	3 DM1TP0250, complete with UTF certificate	1	1.620
DM1TP0300FKIT	3 DM1TP0300, complete with UTF certificate	1	1.680
DM1TP0400FKIT	3 DM1TP0400, complete with UTF certificate	1	1.680
DM1TP0600FKIT	3 DM1TP0600, complete with UTF certificate	1	1.680
DM3TP0500FKIT	3 DM3TP0500, complete with UTF certificate	1	2.160
DM3TP0600FKIT	3 DM3TP0600, complete with UTF certificate	1	2.160
DM3TP0800FKIT	3 DM3TP0800, complete with UTF certificate	1	2.280
DM4TP1200FKIT	3 DM4TP1200, complete with UTF certificate	1	2.280
DM5TP1000FKIT	3 DM5TP1000, complete with UTF certificate	1	2.820
DM5TP1250FKIT	3 DM5TP1250, complete with UTF certificate	1	2.760
DM5TP1600FKIT	3 DM5TP1600, complete with UTF certificate	1	2.880
DM5TP2000FKIT	3 DM5TP2000, complete with UTF certificate	1	2.940
DM5TP2500FKIT	3 DM5TP2500, complete with UTF certificate	1	3.120
DM5TP3000FKIT	3 DM5TP3000, complete with UTF certificate	1	2.940

System certificate



Order code	Description
DMCERTUTF	UTF system certificate

General characteristics

The UTF (Finance Technical Office) certification is required in Italy in case of applications where taxes have to be paid due to energy production (Italian regulations for plants >20kW). The certificates must be associated to the energy meter (MID version, see page 28-12 for selection) and to each single current transformer is needed.
The DM...TP type accuracy current transformers (CTs) can be provided in a kit version made by three CTs and relative UTF certificates.
If required, the fifth certificate relevant to the meter and current transformer combination can be supplied as well.
The DM...TP type accuracy current transformers (CTs) are installed in an electrical system to reduce the line current to a secondary value of 5A compatible with the ammeter inputs of the digital multimeters or protection relays.
DM...TP are accuracy current transformers in class 0.5s without a primary winding and are normally used for high primary current values starting from 60A.
The number of loops of the primary cable does not modify the accuracy but converts the primary current value proportional to secondary current (see page 29-4).

Operational characteristics

- 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
- Screw fixing terminals
- Sealable terminal covers
- Fixing on 35mm DIN rail (IEC/EN/BS 60715) or by screws (fixing elements standard supplied with the product)
- EN degree of protection: IP30.
- Ambient conditions
  - Operating temperature: -25...+50°C
  - Storage temperature: -40...+80°C.
  - Relative humidity, non condensing: 90%.

Compliance

Compliant with standards: IEC/EN/BS 61869-2, IEC/EN/BS 61869-1.

Compact prewired split-core



DM1TMA...



DM2TMA...

Order code	Primary current Ipn	Burden cl. 0.5	Burden cl. 1	Qty per pkg	Wt
	/5 [A]	[VA]	[VA]	n°	[kg]
24x24mm/0.94x0.94" hole. Cable supplied as standard, length 2m.					
DM1TMA0100	100	—	1.0	1	0.200
DM1TMA0150	150	—	1.0	1	0.200
DM1TMA0200	200	—	1.0	1	0.200
DM1TMA0250	250	—	1.0	1	0.200
36x38mm/1.42x1.50" hole. Cable supplied as standard, length 2m.					
DM2TMA0250	250	0.5	1.5	1	0.380
DM2TMA0300	300	0.5	1.5	1	0.380
DM2TMA0400	400	0.5	1.5	1	0.380
DM2TMA0500	500	0.5	1.5	1	0.380
DM2TMA0600	600	0.5	1.5	1	0.380

General characteristics

The DM...TMA type current transformers (CTs) are installed in an electrical system to reduce the line current to a secondary value of 5A compatible with the ammeter inputs of the digital multimeters or protection relays.
DM...TMA are instrument transformers in class 1 without a primary winding and are normally used for high primary current values starting from 100A.

Operational characteristics

- Operating frequency: 50...60Hz
- Secondary output current: 5A
- Overload withstand: 120% Ipn
- IEC rated insulation voltage Ui: 720V
- IEC rated short-time thermal current Ith: 40...60 Ipn for 1 second
- IEC rated dynamic current Idyn: 2.5 Ith for 1 second
- Cable supplied as standard, length 2m.
- Insulation (dry type): Class E
- Ambient conditions:
  - Operating temperature: -25...+50°C
  - Storage temperature: -40...+80°C
  - Relative humidity, non condensing: 90%.

Certifications and compliance

Certifications obtained: EAC.
Compliant with standards: IEC/EN/BS 61869-2, IEC/EN/BS 61869-1.

Split-core



DM1TA...



DM2TA...



DM3TA...



DM4TA...

Order code	Primary current Ipn	Burden cl. 0.5	cl. 1	cl. 3	Qty per pkg	Wt
	/5 [A]	[VA]	[VA]	[VA]	n°	[kg]
32x21mm/1.26x0.83" hole. Width: 89mm/3.50".						
DM0TA0100	100	—	—	1	1	0.900
DM0TA0150	150	—	1	2.5	1	0.900
DM0TA0200	200	—	2.5	—	1	0.900
50x80mm/1.97x3.15" hole. Width: 114mm/4.89".						
DM1TA0250	250	1	2		1	0.900
DM1TA0300	300	1.5	3		1	0.900
DM1TA0400	400	1.5	3		1	0.900
DM1TA0500	500	2.5	5		1	0.900
DM1TA0600	600	2.5	5		1	0.900
DM1TA0800	800	3	7.5		1	0.900
DM1TA1000	1000	5	10		1	0.900

Order code	Primary current Ipn	Burden cl. 0.5	cl. 1	Qty per pkg	Wt
	/5 [A]	[VA]	[VA]	n°	[kg]
80x80mm/3.15x3.15" hole. Width: 142mm/5.59".					
DM2TA0250	250	1	2	1	1.050
DM2TA0300	300	1.5	3	1	1.050
DM2TA0400	400	1.5	3	1	1.050
DM2TA0500	500	2.5	5	1	1.050
DM2TA0600	600	2.5	5	1	1.050
DM2TA0800	800	3	7.5	1	1.050
DM2TA1000	1000	5	10	1	1.050
DM2TA1250	1250	—	15	1	1.050
80x120mm/3.15x4.72" hole. Width: 142mm/5.59".					
DM3TA0500	500	—	4	1	1.250
DM3TA0600	600	—	5	1	1.250
DM3TA0800	800	3	7.5	1	1.250
DM3TA1000	1000	5	10	1	1.250
DM3TA1250	1250	7.5	15	1	1.250
DM3TA1500	1500	8	17	1	1.250
DM3TA2000	2000	—	17	1	1.250
80x160mm/3.15x6.30" hole. Width: 184mm/7.24".					
DM4TA2000	2000	15	20	1	3.160
DM4TA2500	2500	15	20	1	3.340
DM4TA3000	3000	20	25	1	3.500
DM4TA4000	4000	20	25	1	3.760

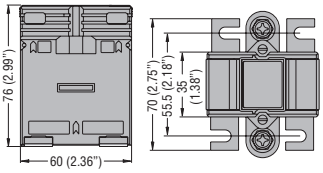
General characteristics
The DM...TA type current transformers (CTs) are installed in an electrical system to reduce the line current to a secondary value of 5A compatible with the ammeter inputs of the digital multimeters or protection relays.
DM...TA are instrument transformers in class 0.5/1 without a primary winding and are normally used for high primary current values starting from 250A.

Operational characteristics
- Operating frequency: 50...60Hz
- Secondary output current: 5A
- Overload withstand: 120% Ipn
- IEC rated insulation voltage Ui: 720V
- IEC rated short-time thermal current Ith: 40...60 Ipn for 1 second
- IEC rated dynamic current Idyn: 2.5 Ith for 1 second
- Insulation (dry type): Class E
- Screw terminals
- Sealable terminal covers
- Screw fixing (fixing elements standard supplied with the product)
- IEC degree of protection: IP30
- Ambient conditions:
  - Operating temperature: -25...+50°C
  - Storage temperature: -40...+80°C
  - Relative humidity, non condensing: 90%.

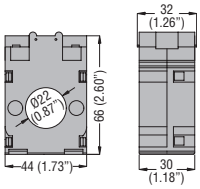
Certifications and compliance
Certifications obtained: EAC.
Compliant with standards: IEC/EN/BS 61869-2, IEC/EN/BS 61869-1.

CURRENT TRANSFORMERS

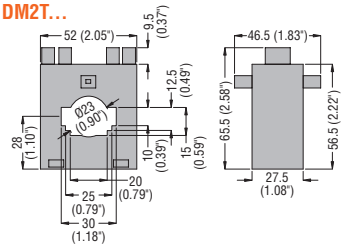
Wound primary **DM0TW...**



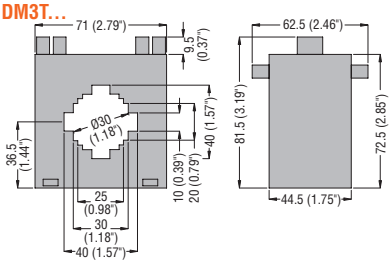
Solid core **DM0T...**



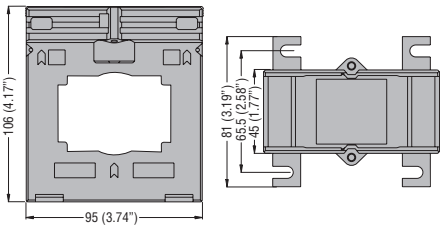
DM2T...



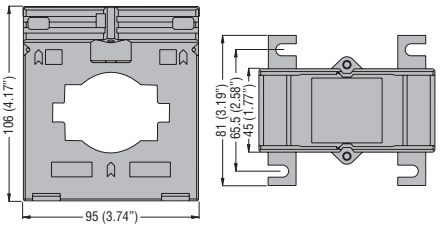
DM3T...



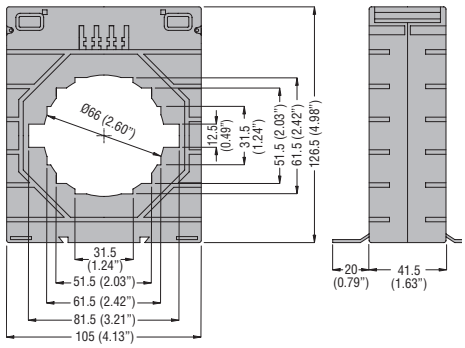
DM33T...



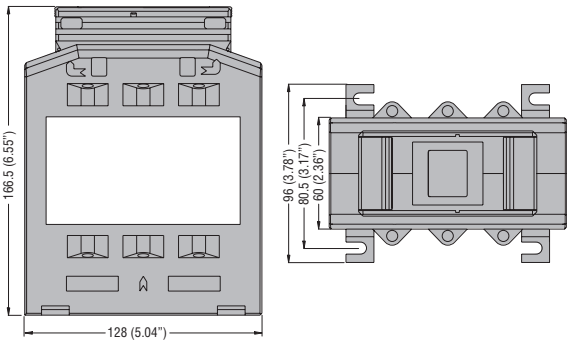
DM34T...



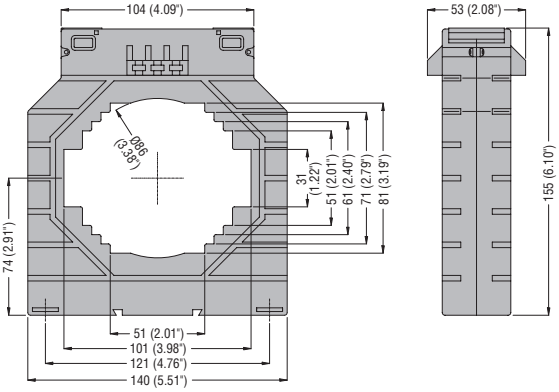
DM35T...



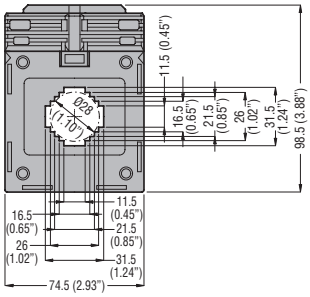
DM37T...



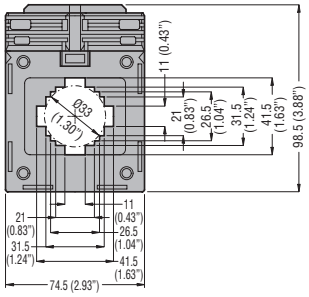
DM4T...

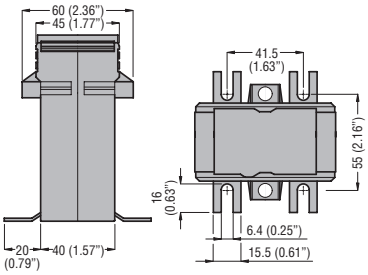


DM1TP0060... - DM1TP0300

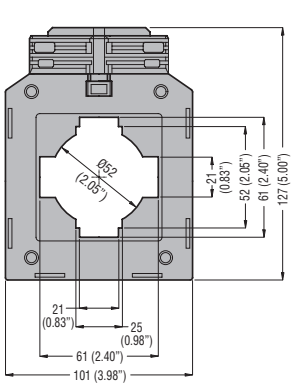


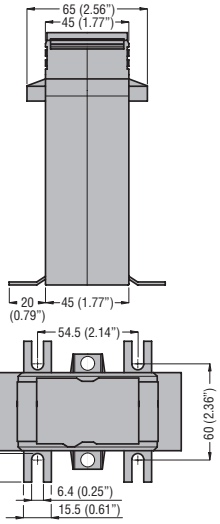
DM1TP0400... - DM1TP0600



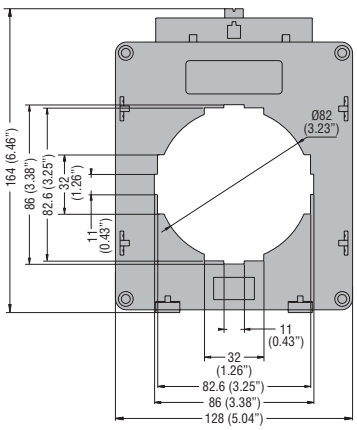


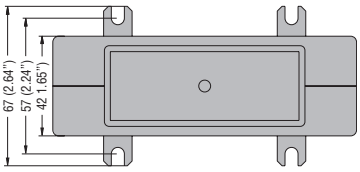
DM3TP...



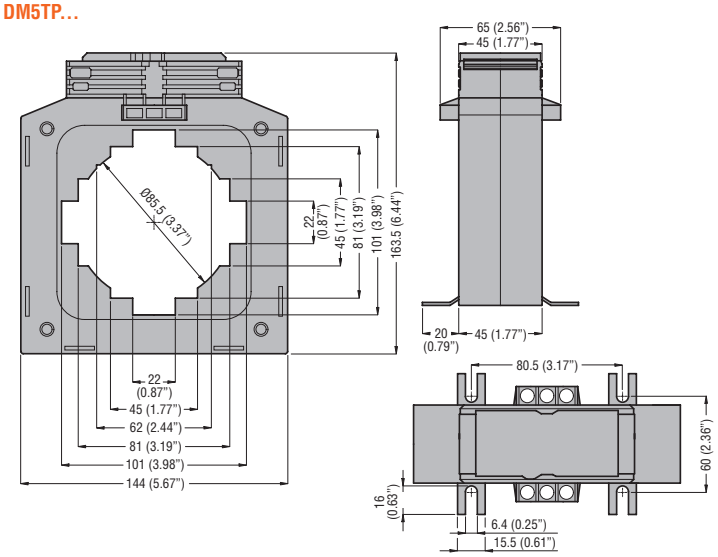


DM4TP1200



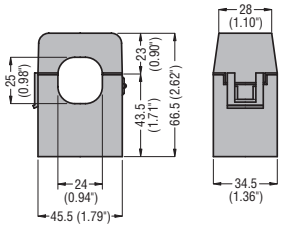


DM5TP...

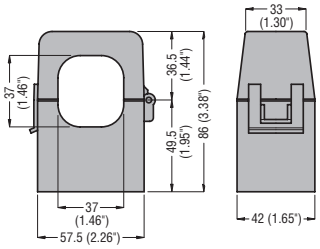


Compact prewired split-core

DM1TMA...

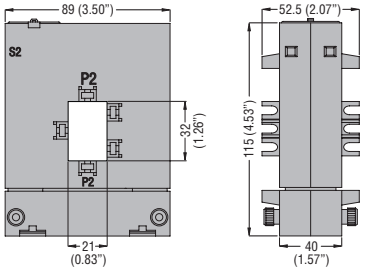


DM2TMA...

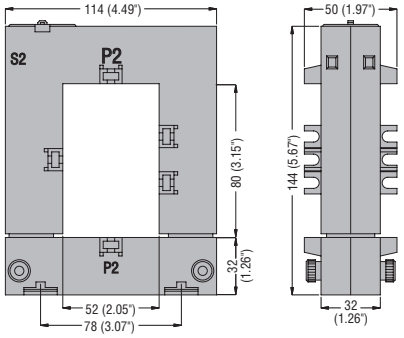


Split-core

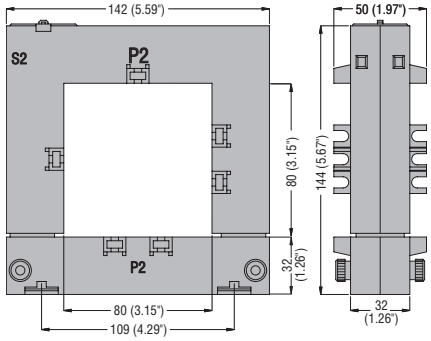
DM0TA...



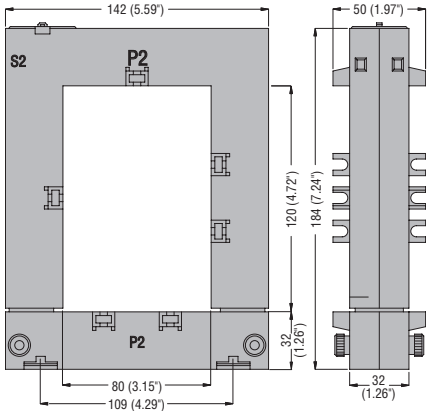
DM1TA...



DM2TA...



DM3TA...



DM4TA...

