

MEASUREMENT
AND CONTROL

EMS-D6



**Three-phase
power analyzer
for DIN rail**

www.control.it

control elettronica
ITALIAN DESIGN

Checks every parameter of



The **EMS-D6** is an Electrical Measurement Supervisor for displaying all the relevant system parameters in low/medium-voltage power distribution. It is capable of single-phase, two-phase or three-phase measurement and can be used in two-wire, three-wire, four-wire, TN, TT and IT systems.

Thanks to its compact design in **DIN 6 modules**, it is an ideal replacement for all conventional analog indicating instruments.

Higher voltages can be measured using voltage transformers.

For measuring current, either $x/1$ A or $x/5$ A current transformer or Rogowski coil sensors can be used.

■ EXAMPLES OF APPLICATIONS

PHOTOVOLTAIC PLANTS



BUILDINGS



THEATERS AND CINEMAS



your electrical installation



The graphical **LCD display** permits reading all parameters.

The **EMS-D6** has backlighting that can be read for optimal readability even under poor lighting conditions.

The combination of four function keys with the multi-language text displays makes intuitive user prompting possible.

Password protection is available on the front of the device to protect against unauthorized access.

This enables plant operators to detect faults and eliminate their causes before the protective devices disconnect the installation, which increases plant and operating safety and cuts costs.

PANEL BUILDERS



INDUSTRY



PRODUCTION PLANTS

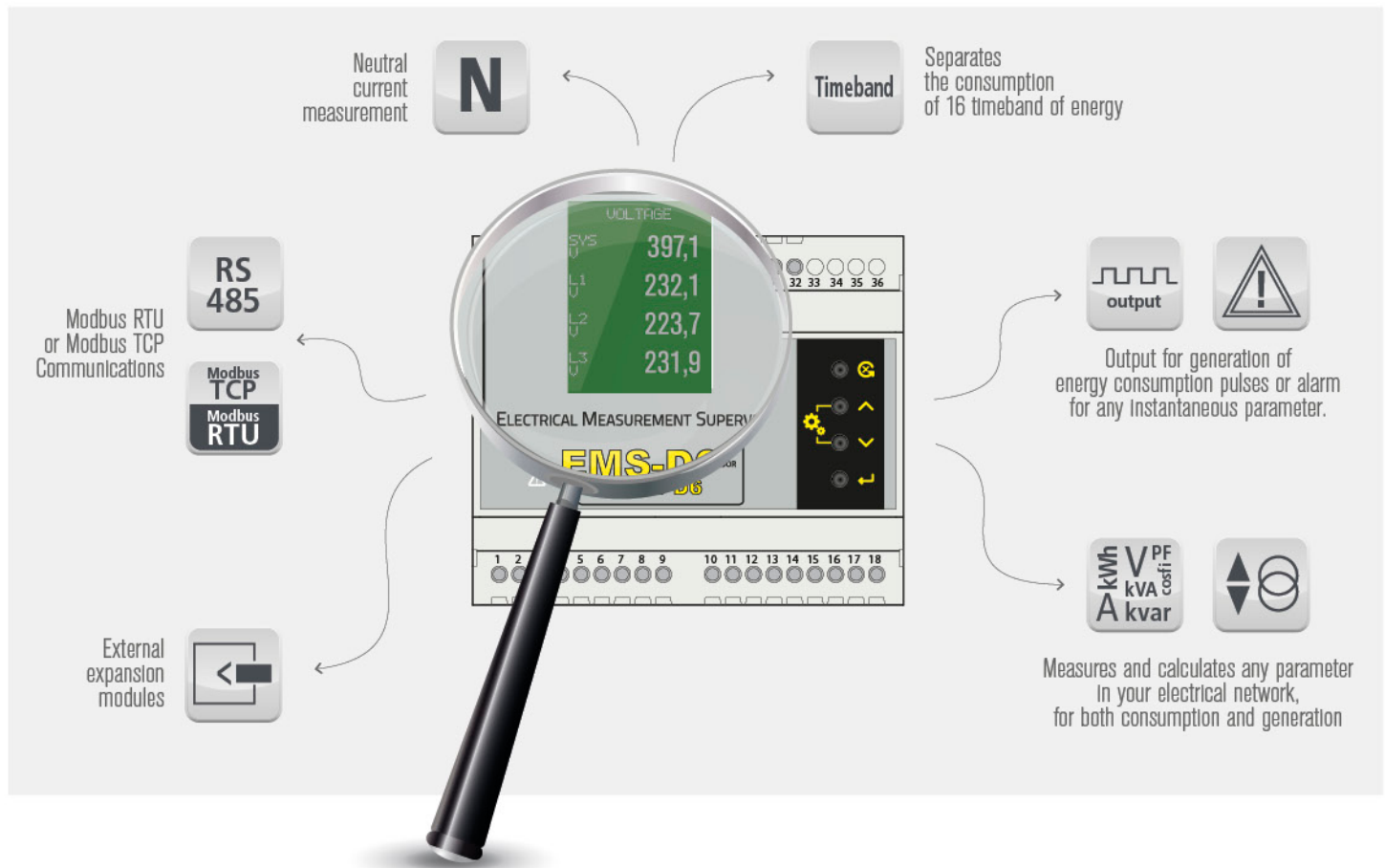


MEASURES AND CALCULATES ANY PARAMETER IN YOUR ELECTRICAL NETWORK

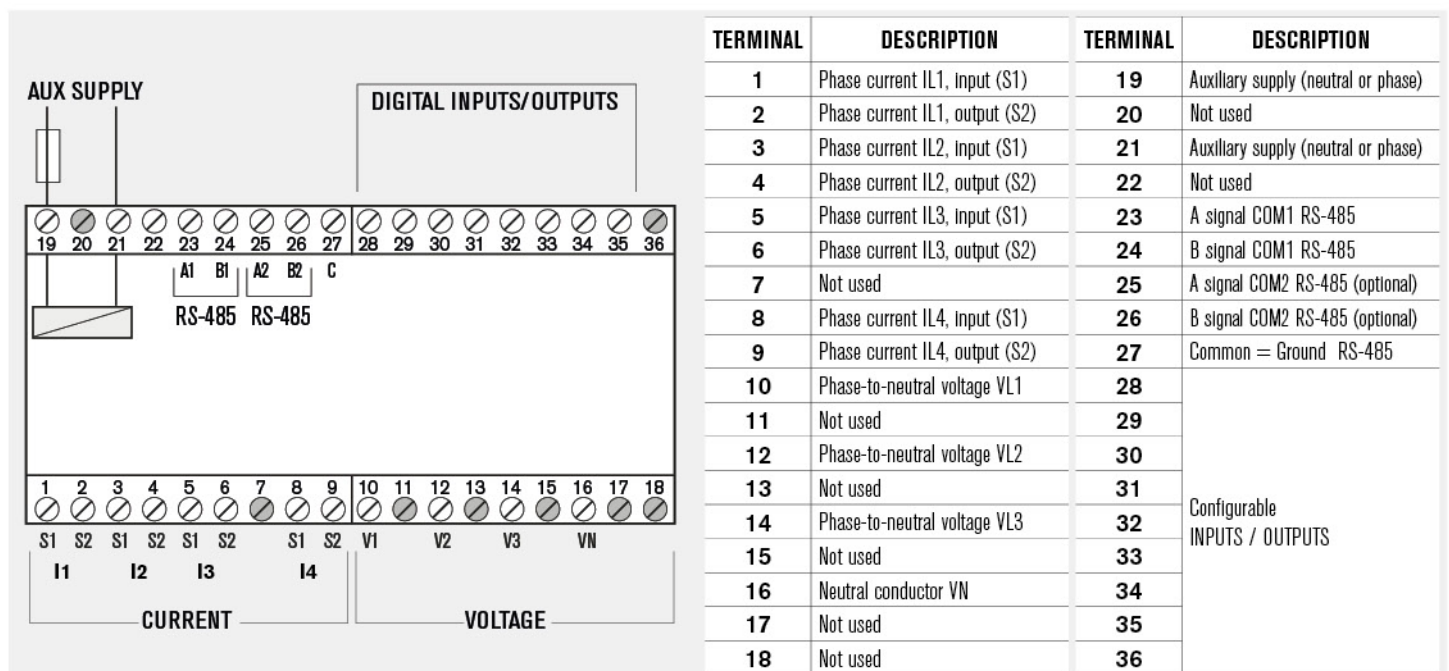


EMS-D6 provides real time measurements of many electrical parameters. The unit shows the maximum and minimum RMS values of any instantaneous variable as well as the harmonics up to the 21st harmonic.

EMS-D6 enables the control of electrical and energy variables in any type of installation, complying with the latest international regulations for the measurement and management of energy efficiency.



WIRING CONNECTION



■ WHEN, WHERE AND HOW MUCH POWER IS CONSUMED?

■ Applications summary

- **Replace multiple analog meters**

An ideal replacement for analog meters. Use it for stand-alone metering in custom panels, switchboards, switchgear, motor control center and UPS systems, etc.

- **Basic Metering**

The **EMS-D6** offers high-accuracy power, energy and demand measurements. These revenue accurate values can be used for bill verification, monitoring backup power on critical systems and offering cost-effective energy solutions.

■ Power management and EMS-D6

The **EMS-D6** can easily be integrated into a power management system using Modbus **RTU** (option), Modbus **TCP** (option) or **PROFIBUS-DP** (external module option). With communication, the **EMS-D6** transmits measured values to the supervisory systems, where the data can be further processed for display and control.

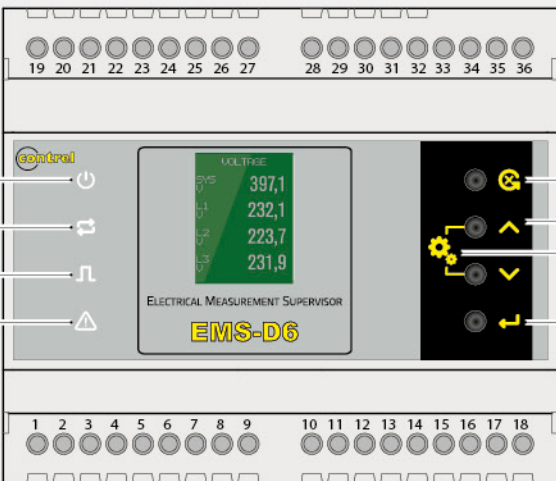
- **Cost allocation / Energy monitoring**

Perfect for monitoring right down to the tool level, the meter can help monitor cost centers, identify opportunities for demand control and check energy consumption patterns.

- **Sub-metering**

Low cost, high accuracy and simple retrofit installation enables economical measurement of commercial and residential tenant space. Integrate the EMS-D6 with existing energy management systems and RTUs. Reduce energy consumption by eliminating previously uncontrolled expenses.


■ KEYBOARD FUNCTIONS



The diagram shows the front panel of the EMS-D6 meter. It features a central LCD display showing voltage readings for three phases (L1, L2, L3) and a system voltage (SYS). To the left of the display are four function keys labeled 1 through 4. To the right are four more function keys labeled 5 through 8. The meter has two rows of terminal blocks at the top and bottom, numbered 19-27 and 28-36 on top, and 1-18 on the bottom.

LEGENDA	
1	LED ON: presence of auxiliary voltage
2	LED Data traffic on the RS-485 interface
3	LED Pulses output
4	LED used for general warning
5	Used to exit from viewing or settings menu
6	▲ and ▼ keys used to switch between visualization
7	SETUP used to enter into menu settings
8	ENTER key to confirm a choice

■ DISPLAY OF READINGS



The diagram shows a close-up of the LCD display. It displays the title 'VOLTAGE' at the top. Below it, there are four rows of data. Each row consists of a unit label (SYS, L1, L2, L3), a phase label (U), and a numerical value (397,1, 232,1, 223,7, 231,9). The display is green with white text.

LEGENDA	
1	Unit of the measured variable
2	Measured phase labels
3	Display title of the measured value
4	Measured value

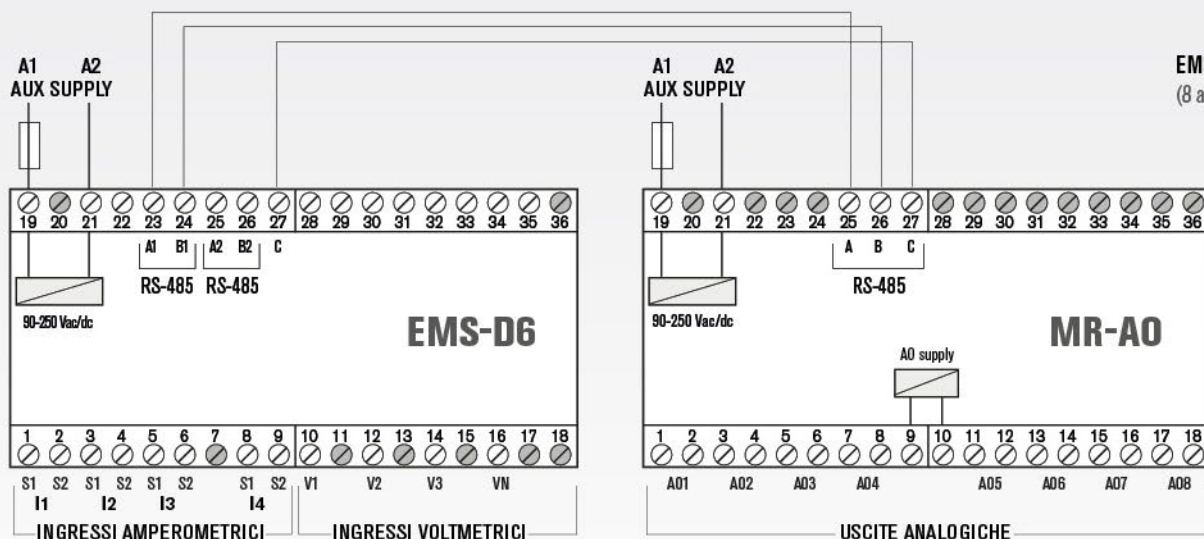
■ TECHNICAL CHARACTERISTICS

AUXILIARY SUPPLY	
Rated voltage	90-250 VAC/DC 20-60 VAC/DC (optional)
Rated frequency	50/60 Hz
External protection fuse (suggestion)	1 A time lag for 90-250 VAC/DC 3.15 A time lag for 20-60 VAC/DC
Max power consumption	Max 10 VA Min 3 VA
MEASURING INPUTS	
Frequency of the relative fundamental	50/60 Hz
Method of measuring	True RMS value
Measurement rate	Values on the display refreshed at least once per second
Harmonics	Up to 21th harmonics in accordance with EN 62053-22
AC VOLTAGE INPUTS	
Type of input	Three phase + neutral
Voltage range	30÷400 VAC (Vph-n) 52÷690 VAC (Vph-ph)
Permitted overvoltage	Max 480 VAC (Vph-n) Max 830 VAC (Vph-ph) CAT III Higher voltages only if using voltage transformers
Input resistance (ph-n)	1,8 MΩ
Power consumption per phase	0.09VA
AC CURRENT INPUTS	
Type of input	Isolated inputs by internal CT CT supplied by an external current transformer. Max 5A Rogowski coil
Current range	10 mA÷1 A / 1 A 50 mA÷5 A / 5 A (through CT sensors)
Overload	1.3 A for 1 A 6.5 A for 5 A (through CT sensors)
Power consumption per phase	0.001 VA
MEASURING ACCURACY	
Power factor / Cos φ	± 1.000
Active energy	Class 1 in accordance with EN 62053-21 Class 0.5S in accordance with EN 62053-22 (optional) Class 0.2S in accordance with EN 62053-22 (optional)
<i>When measuring on external current transformers or voltage transformers, the accuracy of the measurement depends on the quality of the transformer</i>	
DIGITAL OUTPUTS	
Number	2 or 4
Type	Photo-MOS (solid state)
External power supply	12÷250 VAC / 150 mA 10÷300 VDC / 150 mA
Insulation voltage	4 kV for a duration of 1 second
Functions	Pulse output (Ton min 30 ms / Toff min 30 ms) / status / alarm
RS485 SERIAL INTERFACE (optional)	
Number	2
Protocol	Modbus-RTU
Baud-rate	Programmable 4800 – 115200 bps
ETHERNET INTERFACE (optional)	
Baud-rate	RJ45 Ethernet 10BASE-T or 100BASE-T (auto-sensing)
Protocol supported	Modbus TCP
CONNECTIONS	
Type of terminal	Screw (fixed)
Number of terminals	36
Conductor cross section	0,127 - 2,082 mm ²
Tightening torque	0.5 - 0.6 Nm
Length of cable to strip	7mm
AMBIENT OPERATING CONDITIONS	
Operating temperature	-10÷60°C
Storage temperature	-20÷80°C
Relative humidity	5÷95%
HOUSING	
Version	6 module DIN
Degree of protection	IP20 terminals IP40 on front
Weight	200g
CERTIFICATIONS AND COMPLIANCE	
Reference standards	EN 61000-6-2:2006, EN 61000-6-4:2007, EN 61010-1:2013

EXTERNAL EXPANSION MODULES

Input/output and communication modules

INPUTS AND OUTPUTS	
MR-AO4	4 analog outputs 0/4...20mA or 0...10V or 0...5V or -10...10V or -5...5V
MR-AO8	8 analog outputs 0/4...20mA or 0...10V or 0...5V or -10...10V or -5...5V
MR-R8	8 relay outputs 5A 250VAC
MR-DI16	16 digital inputs
COMMUNICATION PORTS	
EMI-5s	Profibus-DP interface



Example:
EMS-D6 connected to a MR-AO8
(8 analog outputs expansion module)



EMS-D6

Example

EMS-D6
connectable to
MR-DI16
or to
MR-R8
or to
MR-AO8

MR-DI16

MR-R8

MR-AO8



**More than 45 years of experience
and constant evolution are the best
guarantee for our customers.**

Since 1975 Contrel has distinguished itself for the design, production and marketing of instruments for industrial electronic protection, for the measurement and control of energy consumption, as well as in insulation monitoring systems and alarm systems.

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