EMS 96

EASY AND INTUITIVE MENU NAVIGATION

GRAPHIC COLOR DISPLAY 3,5" WITH TEXT IN DIFFERENT LANGUAGES

EXPANDABILITY

ETHERNET, USB, RS485 AND PROFIBUS CONNECTION

HIGH MEASUREMENT ACCURANCY

THD (TOTAL HARMONIC DISTORTION) MEASUREMENT

REAL TIME CLOCK

WIDE RANGE OF NUMBER OF MEASURED ELECTRICAL PARAMETERS

EXPECTED POWER

GRAPHS

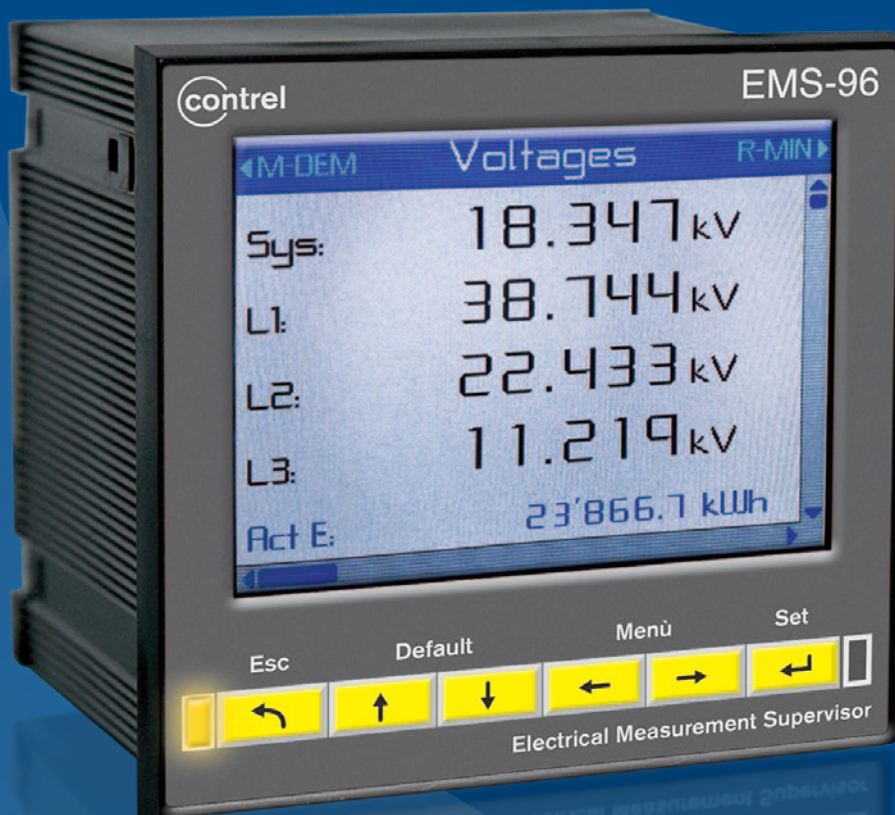**DETECTION** OF OVERVOLTAGE, VARIATIONS AND LOSS OF VOLTAGE

HARMONIC ANALYSIS

STORAGE WITH CLOCK CALENDAR

DIGITAL MULTIMETERS

AND

POWER ANALYZERS

WITH

BACKLIGHT GRAPHIC COLOR SCREEN

FLUSH
MOUNTING
DIN 96 x 96 mm

MICROENER

■ AUXILIARY POWER SUPPLY	
Voltage range	**90÷250Vac/dc**
Frequency range	**50/60 Hz**
Protection fuse	**1A Time Lag**
■ **POWER CONSUMPTION**	**8VA max - 1VA min (depending on the options and activities)**
■ **MEASUREMENT TYPE**	**True RMS value**
■ **MEASURES / PRECISION**	
Energy	**Factory Default : CEI EN 62053-21 compliant – Class 1 (1%)**
Option 0.5	CEI EN 62053-22 compliant – Class 0,5 S (0.5%)
Option 0.2	CEI EN 62053-22 compliant – Class 0,2 S (0.2%)
Frequency	40÷70 Hz
Power Factor	± 1.000
Cos Phi	± 1.000
Tan Phi	± tan 89.9°
THD	IEC62053-22 Compliant
Harmonics	Up to 20th Harmonics - IEC62053-22 Compliant
■ **MEASUREMENT RANGE**	
Voltage	**30÷400Vac phase-to-neutral (52÷693Vac phase-to-phase)**
Current **1A**	**10mA÷1A (for 1, 0.5S or 0.2S Class accuracy, depending on the option)**
Current **5A**	**50mA÷5A (for 1, 0.5S or 0.2S Class accuracy, depending on the option)**
■ **INSTALLATION**	
Distribution networks	**Low and medium voltage** **Single-phase connection** **Three-phase with neutral - Three-phase without neutral**
■ **VOLTAGE INPUTS**	
Inputs type	**3 phase inputs + Neutral**
Permitted Over Voltage	**480Vac phase-to-neutral (830Vac continuous phase-to-phase)** **Over-Voltage category : III (permanent installations)**
Input resistance	**>1.8MΩ**
Frequency range	**50/60Hz - Note : V1 terminal must be connected.**
Load (burden) for each input (phase-neutral)	**0.09VA**
■ **CURRENT INPUTS**	
Inputs type	**3 inputs isolated by internal current transformers**
	N option : additional input for neutral current with characteristics similar to phase inputs
Maximum continuous Overload **1A**	**1.3 A**
Maximum continuous Overload **5A**	**6,5 A**
Load (Burden) for each input	**0.00055 VAmax**
■ **OVERALL DIMENSION**	**96 mm x 96 mm x 130 mm**
■ **WEIGHT**	**450 gr**
■ **COMMUNICATION - RS485**	
Protocol	**Modbus RTU**
Standard	**RS485 half-duplex with optical isolation**
Baud Rate	**4.8 – 9.6 – 19.2 – 38.4 – 57.6 – 115.2 kbps**
Node ID	**1 ÷ 247**
Parity	**Even – Odd - None**
Stop bit	**1, 2**
■ **COMMUNICATION - PROFIBUS**	
Protocol	**Profibus with slave DP-V0**
Baud rate	**9.6Kbits/s - 3Mbits/s**
Address	**0-126**
Connector	**DB 9 female connector**

Display examples

The high-resolution graphic display (3,5")
provides informative presentations of line graphs,
FFT harmonic as bar diagram,
clear display of the kWh-month values,
measurement values in numerical form,
alarm management / event viewer
with dates and time stamp,
and many other features.
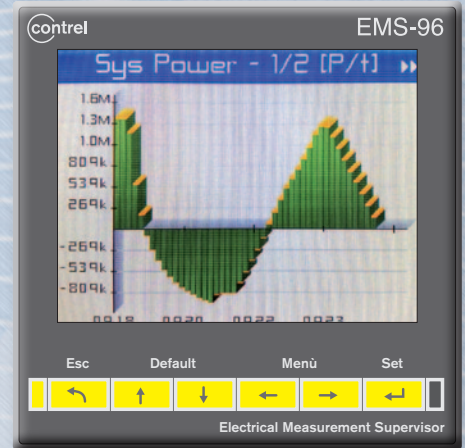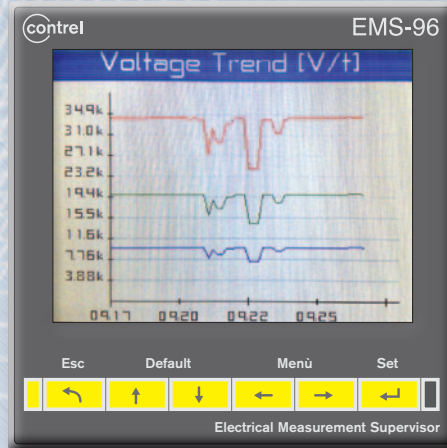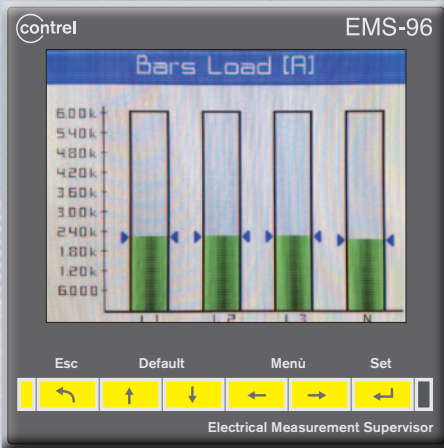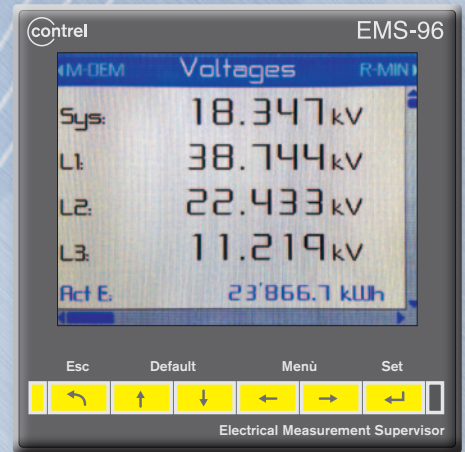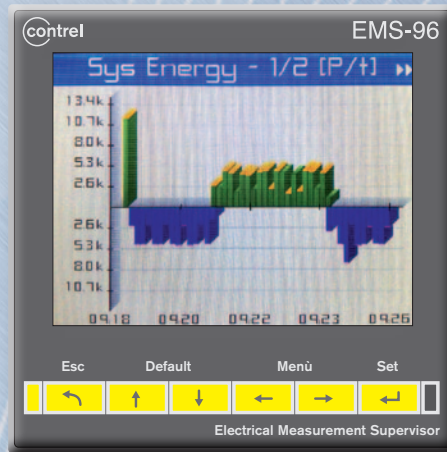
	COMMUNICATION - ETHERNET	
Protocol	**Modbus TCP, SNMP**	
Connector	**RJ45, WiFi**	
	DIGITAL INPUTS	
Number of Digital Inputs	**2, 4**	
Input voltage range	**Input rated voltage V_{INPUT} 24, 48, 115, 230 $V_{AC/DC}$**	
Input current	**Rated input current IINPUT @ VINPUT : 5mAMAX @ VIN=all voltages**	
Inputs configuration	**2 terminals (A-K) for each input : NPN, PNP, line-driver**	
Isolation voltage	**3.5KV for 60 sec.**	
Input Filter	**Digital**	
Pulse duration	**T_{ON_min} 30ms , T_{OFF_min} 30ms**	
	DIGITAL OUTPUTS	
Number of Digital Outputs	**2, 4**	
Type	**Photo-MOS (solid state); R_{ON} = 8Ωtyp. (12Ω$_{MAX}$)**	
Voltage / Current range	**10÷300V_{DC} 150mA$_{max}$; 12÷250V_{AC} 150mA$_{max}$**	
Voltage isolation	**4KV for 60 sec**	
Outputs functionality	• **Digital output programmed as alarm**	
	• **Selectable pulse period 60ms÷1000ms**	
	• **Programmable pulse polarity (active close or active open);**	
	• **Programmable pulse "weight";**	
Pulse duration	**T_{ON_min} 30ms - T_{OFF_min} 30ms**	
	CLOCK CALENDAR	
Data	**hours, minutes, seconds, day of week, date, month, year;**	
Update	**through Modbus command and synchronization from digital input or Modbus;**	
Data Backup	**1 week backup guaranteed**	
	STORAGE	
Storage with clock calendar. It provides for data logging of the measurement, storing events and alarms with time stamp.		
Type of memory	**Internal memory (factory default) - MicroSD card (option)**	

A FULLY MONITORED INSTALLATIONS

MEASUREMENT AND ANALYSIS OF ELECTRICAL PARAMETERS
The new EMS electrical network analyzer has advanced analysis functions which allow measurement of the main single-phase or three-phase electrical parameters: voltage, current, frequency, power factor, active and reactive power, active and reactive energy. The new analyzer allows the measurement and analysis in real time of electrical parameters, also verifying the quality of the energy thanks to **THD measurement.**

BIDIRECTIONAL METERING OF ENERGY allows both production and consumption of energy to be monitored with a single device. All informations monitored by the analyzer can be transmitted to remote locations through communication interfaces RS485, RJ45, with the support of numerous protocols including Modbus RTU, Modbus TCP/IP and Profibus DP. Interaction with the control and supervision systems is possible via different inputs and outputs, all programmable. EMS reads and displays the energy values measured in other energy meters connected to the network. This is achieved thanks to digital inputs, which are able to acquire the impulses generated by the meters in the installation. In this case, EMS acts as a data concentrator. It not only collects information from the electricity meters but also from the water and gas meters. EMS allows a complete, in-depth analysis of the quality of the network to be made thanks to measurement of the harmonic distortion rate of the voltage and current signals measured through to the 20 harmonic.

B THE ADVANTAGES OF MEASURING

VERSATILITY IN ITS DIFFERENT APPLICATIONS
AND COMPLETENESS OF FUNCTIONS - With the new front-panel EMS network analysers, Contrel offers the solution for fully display and monitor the electrical parameters of a single/three-phase system.

C LOWER ENERGY COSTS

• **Electricity submetering and cost distribution**
• **Load trend monitoring**
• **Peak management**
• **Power factor improvement**
• **Expected power**

D A GOOD QUALITY ELECTRIC NETWORK

• **Harmonic analysis**
• **Detection of overvoltage, variations and loss of voltage**

E UNINTERRUPTED SERVICE

- **Installation monitoring in real time**
- **Remote monitoring**
- **Load management by means of alarm thresholds**
- **Preventive maintenance for the equipment connected**

F THE ADVANTAGES OF COMMUNICATION

This device is able to transmit all measured parameters via the most advanced communication protocols, like Modbus RTU, Modbus TCP/IP and Profibus DP networks. For interaction with control and supervision systems are available digital pulse outputs to remotely control active and reactive energy consumption, the digital outputs can be fully programmed as threshold alarms and relay outputs.

G EASY TO INSTALL, EASY OF USE

The display provides the user with clear indications which guide him both to make settings and to understand and interpret the displayed values correctly, thanks to the wide visible area in the user's language.

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