



METERING INSTRUMENTS
DIGITAL MULTIMETERS AND ENERGY METERS
NETWORK ANALYZERS
DATA CONCENTRATOR
COMMUNICATION DEVICES

ENERGY METERS
DIRECT CONNECTION
OR BY CURRENT
TRANSFORMERS
MID CERTIFIED VERSIONS



EMT 4s

DIGITAL MEASURING INSTRUMENTS MEASUREMENT TRANSDUCER

The EMT-4s is the transducer version of the EMS-96, for DIN-rail mount. This device has the same characteristics as the EMS-96, but has no color display. Instead of the integrated display, the EMT-4s has an interface board that consent the connection in one of the following modes:

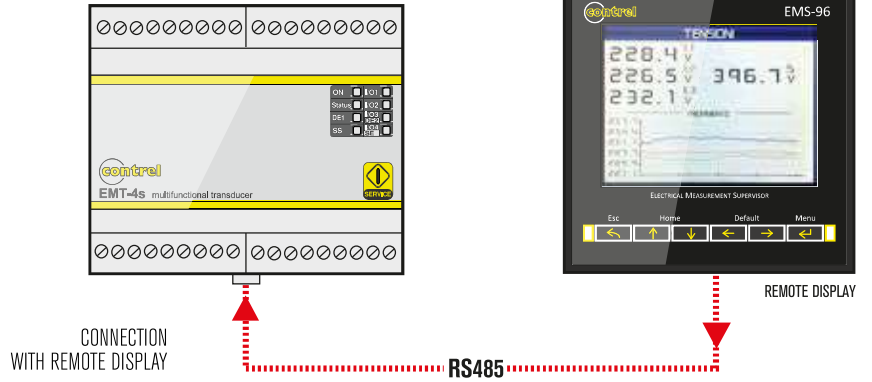
- RS485 communication port
- Remote display communication port



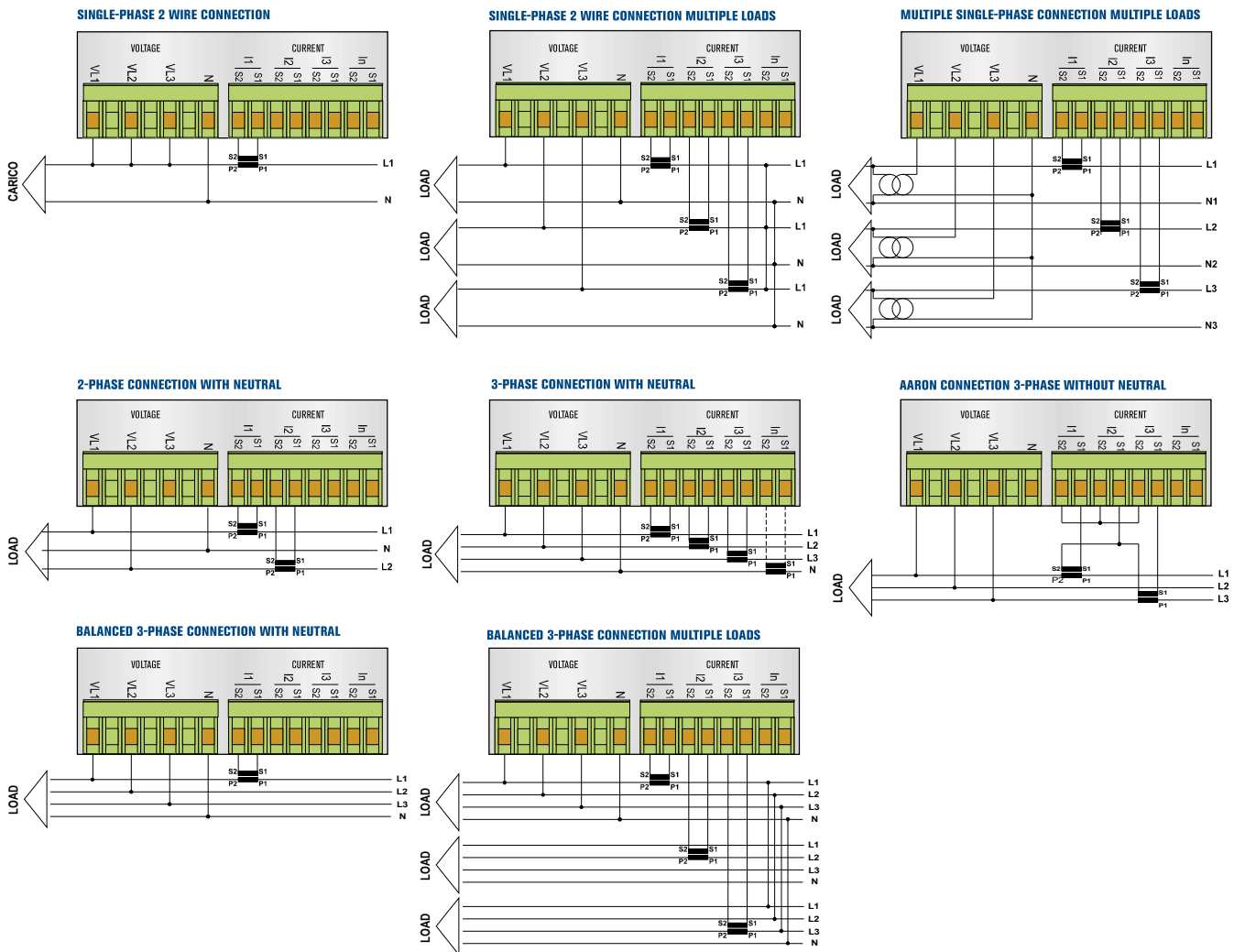
TECHNICAL CHARACTERISTICS		EMT-4s
AUXILIARY SUPPLY		
Nominal voltage Us		110 - 230 - 400 VAC
Operating voltage range		±15%
Power consumption		3VA
Frequency		50 - 60 Hz
VOLTAGE INPUTS		
Measurement range		52...693VAC L-L (30...400VAC L-N)
Method of measuring		True RMS value
Measuring input impedance		1,8MΩ
Method of connection		Single-phase, two-phase, three-phase or balanced three-phase system
CURRENT INPUTS		
Reference current		1A (option), 30A (option) or 5A
Measurement range		0,05...5A
Method of measuring		True RMS value
Overload capacity		6A by an external current transformer
Self-consumption		<0,5VA
ACCURACY		
Measures	Voltage	0,5%
	Current	0,5%
	Power	1 %
	Frequency	0,5%
	Active energy	Class 1
RS485 SERIAL INTERFACE		
Baud-rate		Programmable 4800...38400 bps
Protocol		Modbus RTU
INSULATION		
Insulation voltage		3kVAC for 1 minute
AMBIENT CONDITION		
Operating temperature		-5...+50°C
Storage temperature		-15...+60°C
HOUSING		
Version		6 modules
Degree of protection		IP52 on front IP20 Housing and terminals
Weight		430g
CERTIFICATIONS AND COMPLIANCE		
Reference standards		EN61000-6-2, EN61000-6-4, CISPR22-EN55022, EN62053-21, EN62053-22, EN62053-23
OPTIONS		
ORDER CODE	DESCRIPTION	
1A	Rated current inputs by external CT 1A	
TT - TTA	Current inputs by miniaturized closed CT (TT) or openable CT (TTA)	
N	Neutral current input or differential current input	
0.5 s	Active energy Class 0.5s	
0.2 s	Active energy Class 0.2s	
4DI	4 digital inputs	
4DO	4 digital outputs	
COMMUNICATION PORTS		
485	RS485 serial interface	
485M	RS485 serial interface (Master function)	

EMT 4s

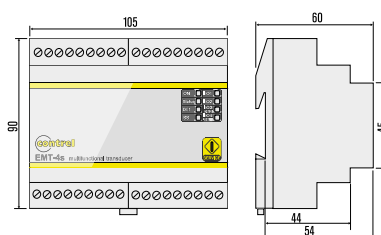
DIGITAL MEASURING INSTRUMENTS
MEASUREMENT TRANSDUCER



WIRING DIAGRAMS EMT-4s



MECHANICAL DIMENSIONS EMT-4s



EMT-1C/50 | 1C/300

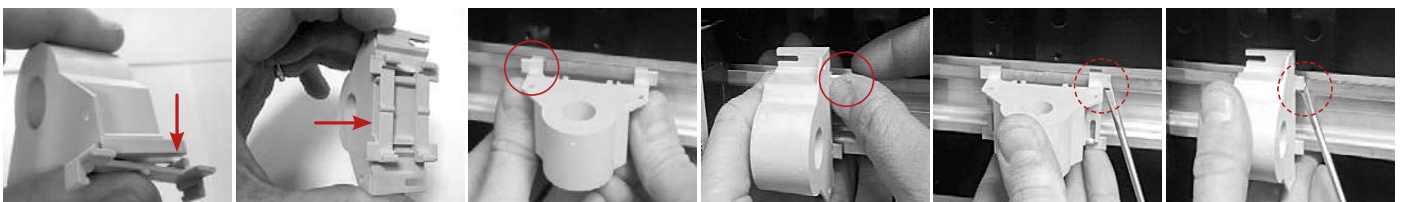
DIGITAL MEASURING INSTRUMENTS
**MODULAR
 MEASUREMENT
 TRANSDUCER**



TECHNICAL CHARACTERISTICS		EMT-1C/50	EMT-1C/50 LV	EMT-1C/300	EMT-1C/300 LV
AUXILIARY SUPPLY					
Nominal voltage U_s		9...30 VDC		9...30 VDC	
Operating voltage range		-		-	
Power consumption		< 1,3W		< 1,3W	
Frequency		50 - 60 Hz		50 - 60 Hz	
VOLTAGE INPUTS					
Measurement range		Up to 800 VAC or 1000 VDC	Up to 80 VAC or 100 VDC	Up to 800 VAC or 1000 VDC	Up to 80 VAC or 100 VDC
Method of measuring		True RMS value		True RMS value	
CURRENT INPUTS					
Measurement range		Fino a 50A AC/DC		Fino a 300A AC o 400A DC	
Method of measuring		True RMS value		True RMS value	
ACCURACY					
Measures	Voltage	0,5%		0,5%	
	Current	0,5%		0,5%	
	Power	0,5%		0,5%	
	Frequency	± 0,1		± 0,1	
	Active energy	Class 1		Class 1	
RS485 SERIAL INTERFACE					
Baud-rate		Programmable 1200 - 115200 bps		Programmable 1200 - 115200 bps	
Protocol		Modbus RTU		Modbus RTU	
INSULATION					
Insulation voltage		3 kV on bare wire for current measure 4 kV for Voltage measure		3 kV on bare wire for current measure 4 kV for Voltage measure	
AMBIENT CONDITION					
Operating temperature		-15...+65°C		-15...+65°C	
Storage temperature		-40...+85°C		-40...+85°C	
HOUSING					
Version		DIN rail clips for vertical/horizontal mounting		DIN rail clips for vertical/horizontal mounting	
Filling		Epoxy resin		Epoxy resin	
Degree of protection		IP20		IP20	
Weight		80g		370g	
CERTIFICATIONS AND COMPLIANCE					
Reference standards		EN61000-6-4/2006 + A1 2011; EN64000-6-2/2005 ; EN61010-1/2010		EN61000-6-4/2006 + A1 2011; EN64000-6-2/2005 ; EN61010-1/2010	

MOUNTING

The EMT-1C can be mounted in any position (see photo below), horizontal or vertical mounting, horizontal or vertical through the two hooks for DIN rail included in the box.



EMT-1C/50 | 1C/300

DIGITAL MEASURING INSTRUMENTS MODULAR MEASUREMENT TRANSDUCER

EMT-1C/50

The EMT-1C/50 is a Single-phase Power meter able to measure TRMS Current AC/DC, and Voltage.

On the RS485 Modbus are available : Irms, Vrms, Watt, Var, Va, Vpk, Ipk, Frequency, Cosφ, Energy bidirectional and THD.
The device is fully configurable by RS485.

CHARACTERISTICS:

- TRMS Measure, THD available
- 0,5 % Accuracy
- RS485 Modbus integrated
- Bidirectional Energy metering
- Din rail mounting in both side
- Fully configurable by interface software
- Bootloader for updating firmware

EMT-1C/50 LV

The EMT-1C/50-LV is the LOW VOLTAGE version of the Single-phase Power meter EMT-1C/50, able to measure the RMS AC or DC Current and Voltage.
On the RS485 Modbus are available:

Irms, Vrms, Watt, Var, Va, Vpk, Ipk, Frequency, Cosφ, Energy bidirectional and THD.
The device is fully configurable by RS485.

CHARACTERISTICS:

- LOW VOLTAGE VERSION
- TRMS Measure, THD available
- 0,5% Accuracy;
- RS485 Modbus integrated;
- Bidirectional Energy metering
- Din-rail mounting in both side
- Fully configurable by interfacesoftware
- Available measure register: MSW first, LSW first or hundredts

EMT-1C/300

The EMT-1C/300 is an Energy / Power Meter capable of measuring single-phase current and voltage AC RMS/ DC.
RS485 Modbus with over 200 registers.

Measure available: Irms, Vrms, Watt, Var, Va, Vpk, Ipk, Frecuenza, Cosφ, Import/Export energy, THD, min/MAX of RMS measurement.

Suitable for measurements with varying frequencies (Wind, Hydro, Shipbuilding Industries, Aviation), Telecommunication applications, Refrigeration, Motors.
Suitable for direct measurements between inverter and motor.

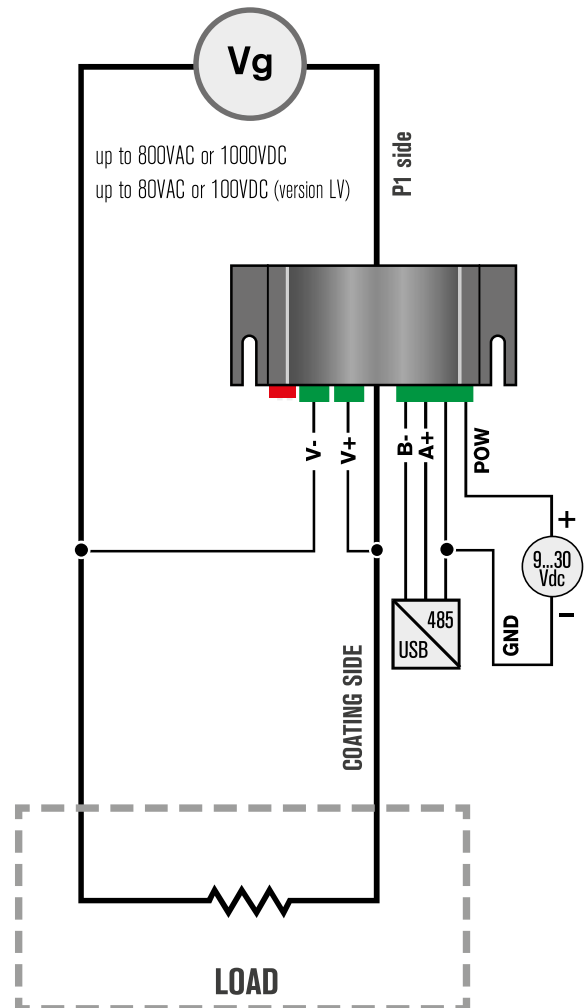
EMT-1C/300 LV

The EMT-1C/300-LV is the LOW VOLTAGE version of the Energy / Power Meter EMT-1C/300, capable of measuring single-phase current and voltage AC/DC TRMS.

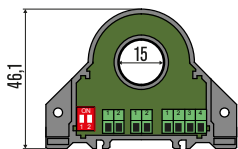
RS485 Modbus with over 200 registers.

Measure available: Irms, Vrms, Watt, Var, Va, Vpk, Ipk, Frecuenza, Cosφ, Import/Export energy, THD, min/MAX of RMS measurement.

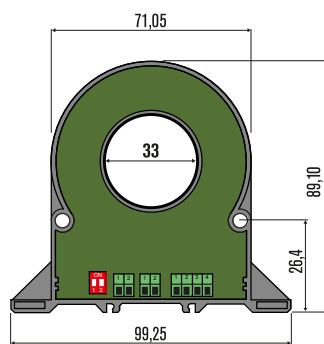
WIRING DIAGRAMS EMT-1C/50 E EMT-1C/300



MECHANICAL DIMENSIONS EMT-1C/50



MECHANICAL DIMENSIONS EMT-1C/300



EMS 96

DIGITAL MEASURING INSTRUMENTS NETWORK ANALYZER

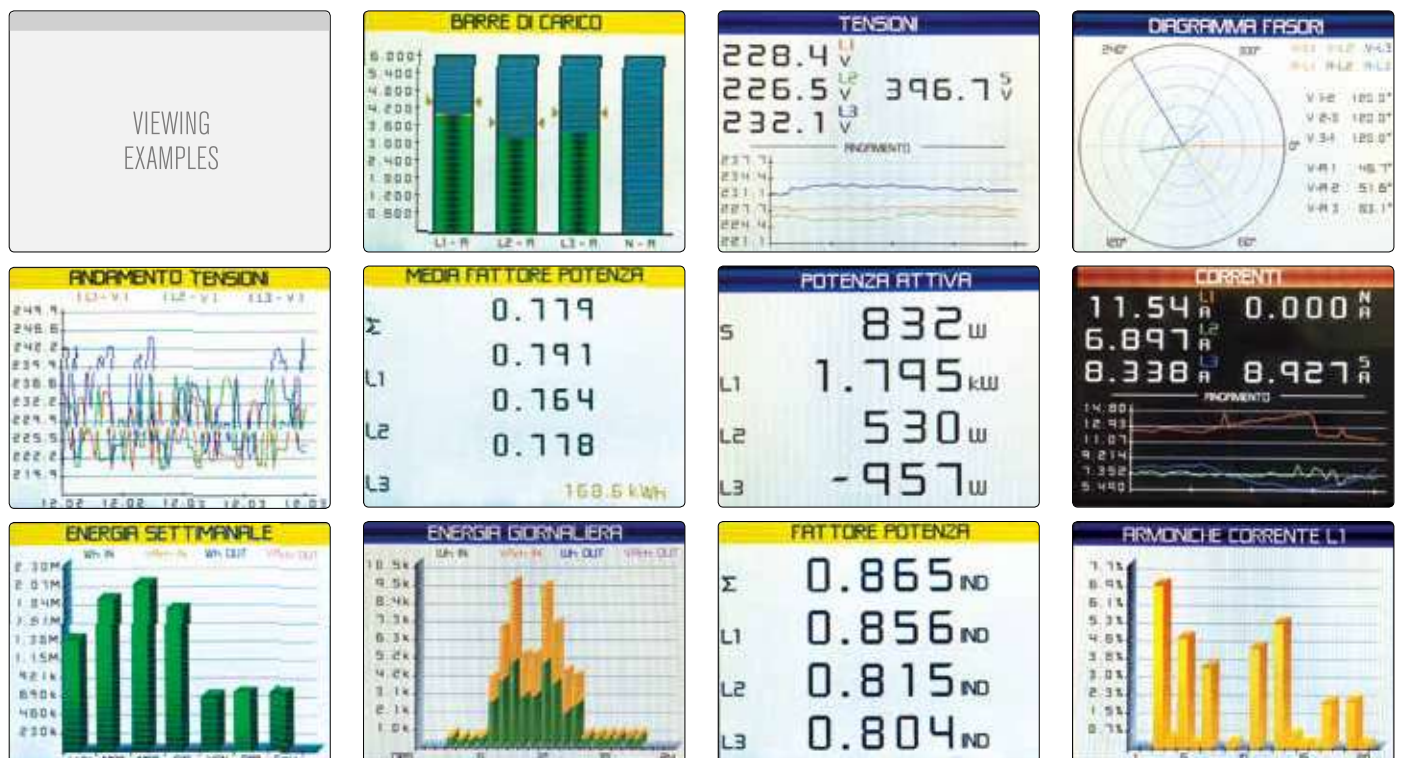
The **EMS-96** network analyzer has been designed to combine the maximum possible easiness of operation together with a wide choice of advanced functions. The TFT color display offers a user-friendly interface. The rich variety of functions, makes the EMS-96 the ideal choide for a wide rage of applications.



TECHNICAL CHARACTERISTICS		EMS 96
AUXILIARY SUPPLY		
Nominal voltage U_s		90 - 250 VAC/CC
Operating voltage range		$\pm 15\%$
Power consumption		8VA max
Frequency		50 \leftrightarrow 60 Hz
VOLTAGE INPUTS		
Measurement range		52...690VAC L-L (30...400VAC L-N)
Method of measuring		True RMS value
Measuring input impedance		$>1.8M\Omega$
Method of connection		Single-phase, two-phase, three-phase orbalanced three-phase system
CURRENT INPUTS		
Reference current		1A (option) or 5A
Measurement range		0,05...5A
Method of measuring		True RMS value
Overload capacity		+20% by an external current transformer
Self-consumption		0,05VA
ACCURACY		
Measures	Voltage	$\pm 0,5\%$
	Current	$\pm 0,5\%$
	Power	$\pm 0,5\%$
	Frequency	$\pm 0,2\%$
	Active energy	Class 1 - EN 62053-21, EN 62053-22
DIGITAL OUTPUTS		
Number of outputs		2
Pulse duration		TON_min 30ms, TOFF_min 30ms
Voltage		10...300 VCC - 12...250VAC
Max current		150 mA
INSULATION		
Insulation voltage		3.7kVAC for 1 minute
DISPLAY		
Display type		TFT
Format		320 x 240 pixel
Dimension		3,5"
AMBIENT CONDITION		
Operating temperature		-10...+50°C
Storage temperature		-15...+70°C
HOUSING		
Version		Flush mount 96 x 96 mm
Degree of protection		IP52 on front - IP20 Housing and terminals
Weight		440g
CERTIFICATIONS AND COMPLIANCE		
Reference standards		EN 62053-21, EN 62053-22, EN 50082-1, EN 61000-6-2, EN 61010-2

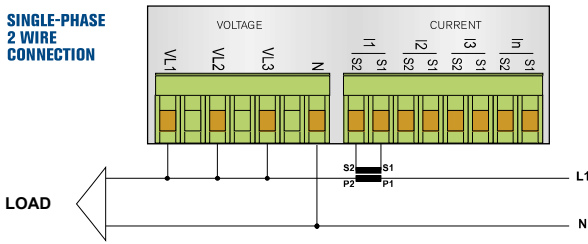
OPTIONS	
ORDER CODE	DESCRIPTION
C1	Auxiliary supply 20 ÷ 60 VCA/DC
1A	Rated current inputs by external CT 1A
TT - TTA	Current inputs by miniaturized closed CT (TT) or openable CT (TTA)
ACCURACY	
0.5 s	Active energy 0.2 s (EN 62053-21, EN 62053-22)
0.2 s	ACCURACY Active energy 0.2 s (EN 62053-21, EN 62053-22)
H	Detailed harmonic analysis (1...20 ^o), graph energy consumption , data logging
EXPANSION MODULES *	
4DI e 2DO	4 digital inputs and 2 digital outputs (energy count pulses function)
2DI e 4DO	2 digital inputs and 4 digital outputs (2 outputs for energy count pulses)
6DO	6 digital inputs (2 outputs for energy count pulses)
4AO	4 analog outputs
2AO	2 analog outputs
2DO e 4AO	2 digital inputs (energy count pulses) and 4 analog outputs
2DO e 2AO	2 digital inputs (energy count pulses) and 2 analog outputs
2DO e 4DO/R	2 digital inputs (energy count pulses) and 4 relays
RI-SIM e PT100	Insulation monitoring for out-voltage networks, 1 PT100 input and 2 relays
RI-R e PT100	Insulation monitoring for networks, 1 PT100 input and 2 relays
RI-SM e 2AI	Insulation monitoring for out-voltage networks, 2 analog inputst and 2 relays
RI-R e 2AI	Insulation monitoring for networks, 2 analog inputs and 2 relays
COMMUNICATION PORTS *	
485	RS485 serial interface
TCP	Ethernet interface with Modbus TCP function and RS485 serial interface
ETH-WEB	Ethernet interface with Web server function and RS485 serial interface
PF	Profibus-DP interface and RS485 serial interface
M-Bus	M-Bus interface and RS485 serial interface
485 (COM2)	Second RS485 serial interface
ETH-WEB/S	Ethernet interface with Web server function and RS485 serial interface (master function)

* You can select only one option

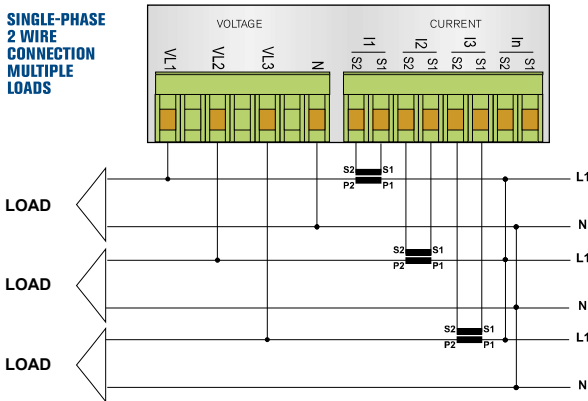


WIRING DIAGRAMS

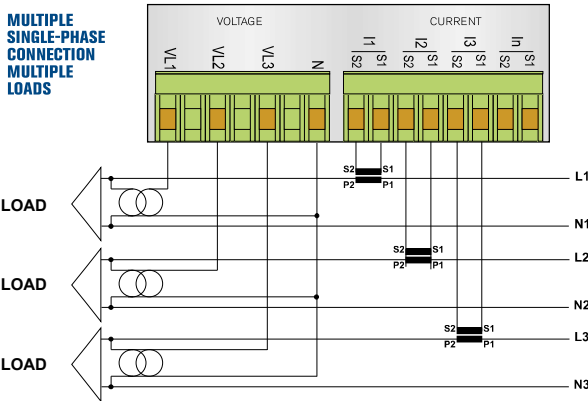
**SINGLE-PHASE
2 WIRE
CONNECTION**



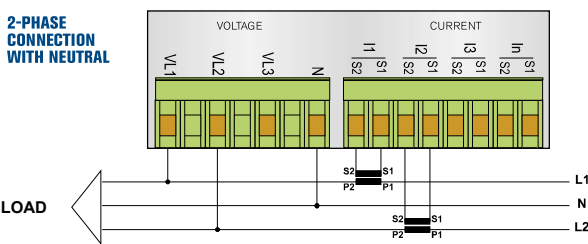
**SINGLE-PHASE
2 WIRE
CONNECTION
MULTIPLE
LOADS**



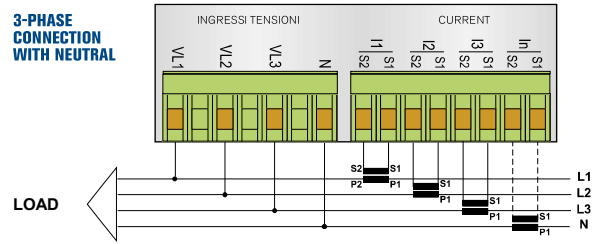
**MULTIPLE
SINGLE-PHASE
CONNECTION
MULTIPLE
LOADS**



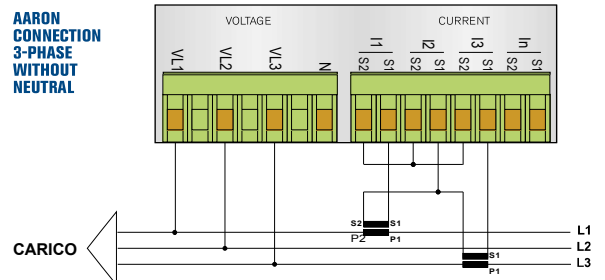
**2-PHASE
CONNECTION
WITH NEUTRAL**



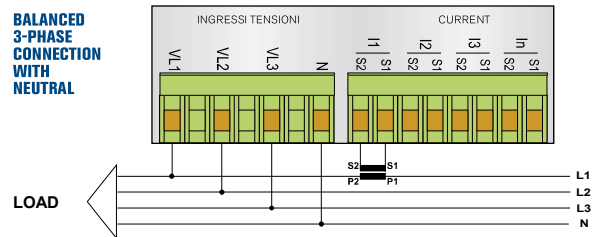
**3-PHASE
CONNECTION
WITH NEUTRAL**



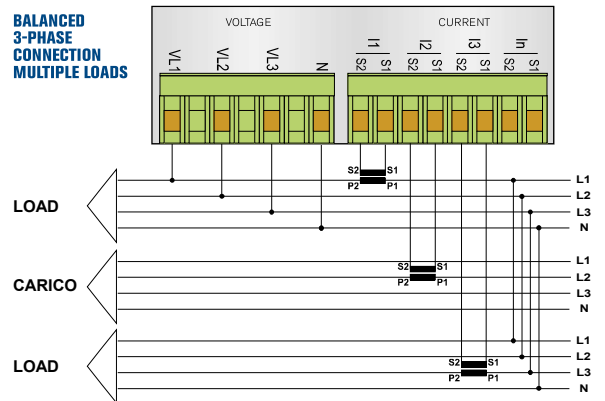
**AARON
CONNECTION
3-PHASE
WITHOUT
NEUTRAL**



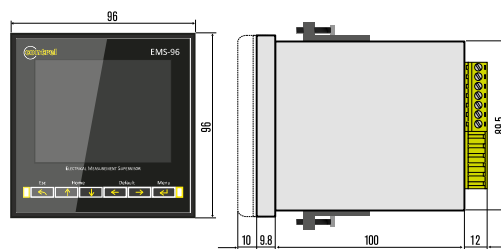
**BALANCED
3-PHASE
CONNECTION
WITH
NEUTRAL**



**BALANCED
3-PHASE
CONNECTION
MULTIPLE
LOADS**



MECHANICAL DIMENSIONS



EMA 10 | 11 | 14

DIGITAL MEASURING INSTRUMENTS - NETWORK ANALYZER



EMA 10



EMA 11



EMA 14

TECHNICAL CHARACTERISTICS		EMA 10	EMA 11	EMA 14
AUXILIARY SUPPLY				
Nominal voltage U_s		90 - 260 VAC/DC	90 - 260 VAC/DC	90 - 260 VAC/DC
Operating voltage range		$\pm 15\%$	$\pm 15\%$	$\pm 15\%$
Power consumption		5VA	5VA	5VA
Frequency		30 ÷ 500 Hz	30 ÷ 500 Hz	30 ÷ 500 Hz
VOLTAGE INPUTS				
Measurement range		10...600VAC L-L	10...600VAC L-L	10...600VAC L-L
Method of measuring		True RMS value	True RMS value	True RMS value
Measuring input impedance		2M Ω	2M Ω	2M Ω
Method of connection		Single-phase, two-phase, three-phase or balanced three-phase system	Single-phase, two-phase, three-phase or balanced three-phase system	Single-phase, two-phase, three-phase or balanced three-phase system
CURRENT INPUTS				
Reference current		1A (option) or 5A	1A (option) or 5A	1A (option) or 5A
Measurement range		0,01...5A	0,01...5A	0,01...5A
Method of measuring		True RMS value	True RMS value	True RMS value
Overload capacity		10A by an external current transformer	10A by an external current transformer	10A by an external current transformer
Self-consumption		0,2 VA	0,2 VA	0,2 VA
ACCURACY				
Measures	Voltage	$\pm 0,5\%$	$\pm 0,5\%$	$\pm 0,5\%$
	Current	$\pm 0,5\%$	$\pm 0,5\%$	$\pm 0,5\%$
	Power	$\pm 0,5\%$	$\pm 0,5\%$	$\pm 0,5\%$
	Frequency	$\pm 0,2\%$	$\pm 0,2\%$	$\pm 0,2\%$
	Active energy	Class 1	Class 1	Class 1
INSULATION				
Insulation voltage		3.7kVAC for 1 minute	3.7kVAC for 1 minute	3.7kVAC for 1 minute
DISPLAY				
Display type		Graphic LCD display	Graphic LCD display	Red LED 14 segments
Format		128 x 128 pixel	128 x 128 pixel	3 rows x 4 digit
Dimension		50 x 50 mm	70 x 70mm	50 x 50 mm
AMBIENT CONDITION				
Operating temperature		-10...+50°C	-10...+50°C	-10...+50°C
Storage temperature		-15...+70°C	-15...+70°C	-15...+70°C
HOUSING				
Version		Flush mouting 144 x 144 mm	Flush mouting 144 x 144 mm	Flush mouting 144 x 144 mm
Degree of protection		IP42 on front IP20 Housing and terminals	IP42 on front IP20 Housing and terminals	IP42 on front IP20 Housing and terminals
Weight		430 g	430 g	430 g
CERTIFICATIONS AND COMPLIANCE				
Reference standards		N 61010-1, EN62053-21, EN62053-22		

EMA 10 | 11 | 14

DIGITAL MEASURING INSTRUMENTS - NETWORK ANALYZER

OPTIONS

ORDER CODE	DESCRIPTION
C1	Auxiliary supply 20 ÷ 60 VCA/DC
1A	Rated current inputs by external CT 1A
0.5	Active energy 0.5
H	Detailed harmonic analysis (1...31°)
MEM1	1MB data memory
6DI	6 digital inputs

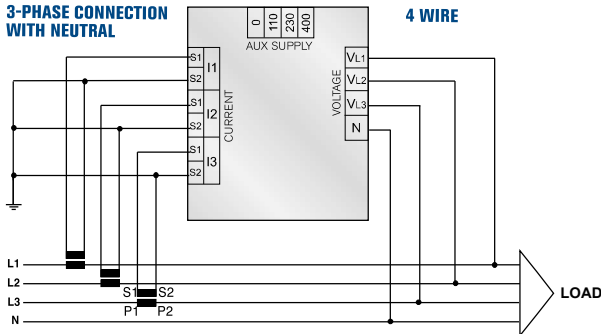
4DO	4 digital outputs
2 DI e 2 DO	2 digital inputs and 2 digital outputs
2 AO	2 analog outputs
4 AO	4 analog outputs

COMMUNICATION PORTS

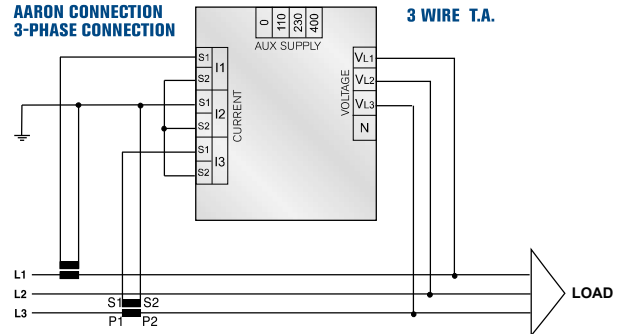
485	RS485 serial interface
ETH	Ethernet interface with Web server function
PF/S	Profibus-DP interface

WIRING DIAGRAMS EMA 10, 11, 14 - EMA 90

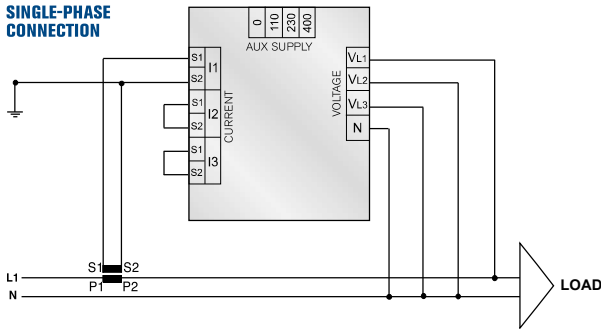
3-PHASE CONNECTION WITH NEUTRAL



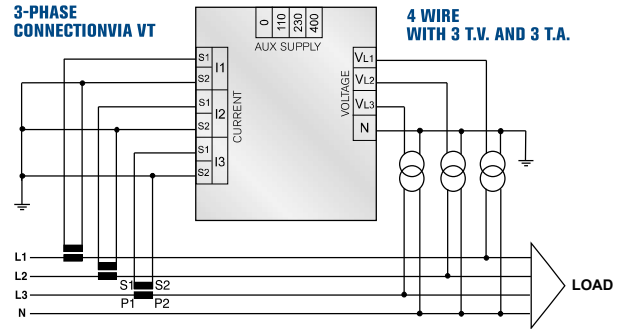
AARON CONNECTION 3-PHASE CONNECTION



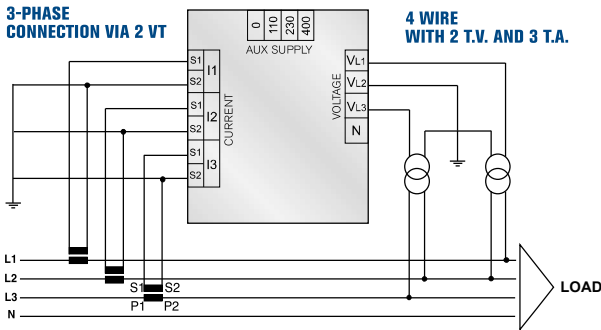
SINGLE-PHASE CONNECTION



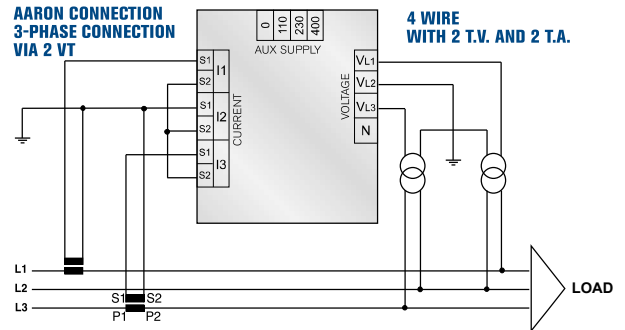
3-PHASE CONNECTION VIA VT



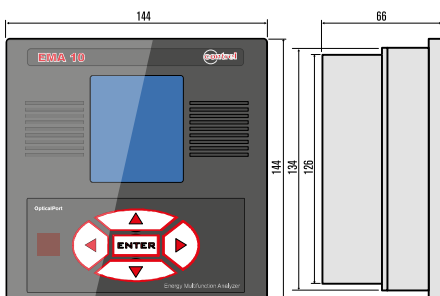
3-PHASE CONNECTION VIA 2 VT



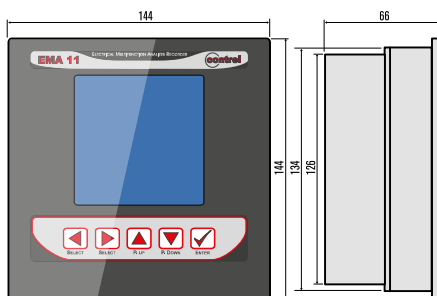
AARON CONNECTION 3-PHASE CONNECTION VIA 2 VT



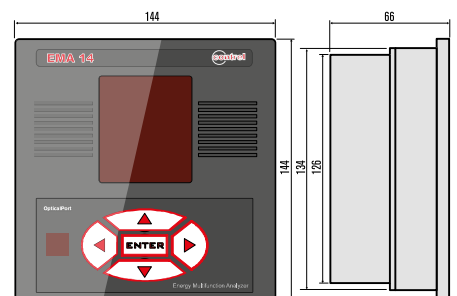
MECHANICAL DIMENSIONS EMA 10



MECHANICAL DIMENSIONS EMA 11



MECHANICAL DIMENSIONS EMA 14



EMA 90

DIGITAL MEASURING INSTRUMENTS NETWORK ANALYZER

TECHNICAL CHARACTERISTICS		EMA 90
AUXILIARY SUPPLY		
Nominal voltage U_s		90 - 260 VAC/DC
Operating voltage range		$\pm 15\%$
Power consumption		5VA
Frequency		30 ÷ 500 Hz
VOLTAGE INPUTS		
Measurement range		10...600VAC L-L
Method of measuring		True RMS value
Measuring input impedance		2M Ω
Method of connection		Single-phase, two-phase, three-phase orbanced three-phase system
CURRENT INPUTS		
Reference current		1A (option) or 5A
Measurement range		0,01...5A
Method of measuring		True RMS value
Overload capacity		10A by an external current transformer
Self-consumption		0,2VA
ACCURACY		
Measures	Voltage	$\pm 0,5\%$
	Current	$\pm 0,5\%$
	Power	$\pm 0,5\%$
	Frequency	$\pm 0,2\%$
	Active energy	Class 1
INSULATION		
Insulation voltage		3.7kVAC for 1 minute
DISPLAY		
Display type		Graphic LCD display
Format		128 x 128 pixel
Dimension		50 x 50 mm
AMBIENT CONDITION		
Operating temperature		-10...+50°C
Storage temperature		-15...+70°C
HOUSING		
Version		Flush mount 96 x 96 mm
Degree of protection		IP52 on front IP20 Housing and terminals
Weight		430g
CERTIFICATIONS AND COMPLIANCE		
Reference standards		EN 61010-1, EN62053-21, EN62053-22

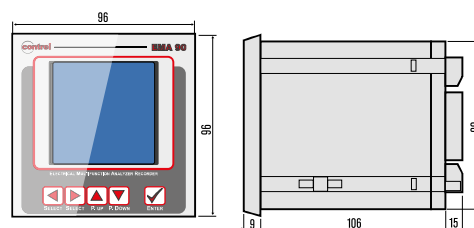
OPTIONS	
ORDER CODE	DESCRIPTION
C1	Auxiliary supply 20 ÷ 60 VCA/DC
1A	Rated current inputs by external CT 1A
0.5	Active energy 0.5
H	Detailed harmonic analysis (1...31°)
MEM1	1MB data memory
4DI	4 digital inputs
2DO	2 digital outputs
2DO/R	2 relays
1 AO	1 analog output



WIRING DIAGRAMS EMA 90

See page 24

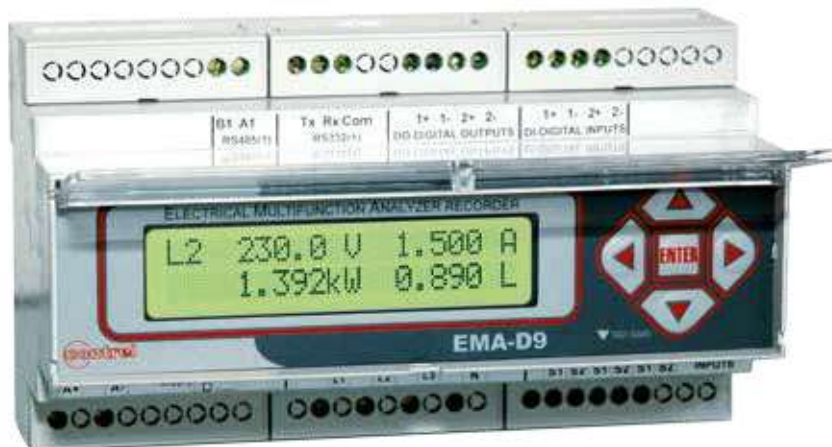
MECHANICAL DIMENSIONS EMA 90



COMMUNICATION PORTS	
485	RS485 serial interface
ETH	Ethernet interface with Web server function
PF/S	Profibus-DP interface

EMA D9

DIGITAL MEASURING INSTRUMENTS NETWORK ANALYZER



TECHNICAL CHARACTERISTICS		EMA D9
AUXILIARY SUPPLY		
Nominal voltage U_s		90 - 250 VAC/DC
Operating voltage range		$\pm 15\%$
Power consumption		5VA
Frequency		30 ÷ 500 Hz
VOLTAGE INPUTS		
Measurement range		10...600VAC L-L
Method of measuring		True RMS value
Measuring input impedance		2M Ω
Method of connection		Single-phase, two-phase, three-phase or balanced three-phase system
CURRENT INPUTS		
Reference current		1A (option) or 5A
Measurement range		0,01...5A
Method of measuring		True RMS value
Overload capacity		10A by an external current transformer
Self-consumption		0,2VA
ACCURACY		
Measures	Voltage	$\pm 0,5\%$
	Current	$\pm 0,5\%$
	Power	$\pm 0,5\%$
	Frequency	$\pm 0,2\%$
	Active energy	Class 1
INSULATION		
Insulation voltage		3,7kVAC for 1 minute
DISPLAY		
Technology		Alphanumeric LCD
Format		2 x 20 characters
Dimension		90 x 20 mm
AMBIENT CONDITION		
Operating temperature		-10...+50°C
Storage temperature		-15...+70°C
HOUSING		
Version		9 modules
Degree of protection		IP52 on front - IP20 Housing and terminals
Weight		500g
CERTIFICATIONS AND COMPLIANCE		
Reference standards		EN 61010-1, EN62053-21, EN62053-22

EMA D9

DIGITAL MEASURING INSTRUMENTS NETWORK ANALYZER

OPTIONS

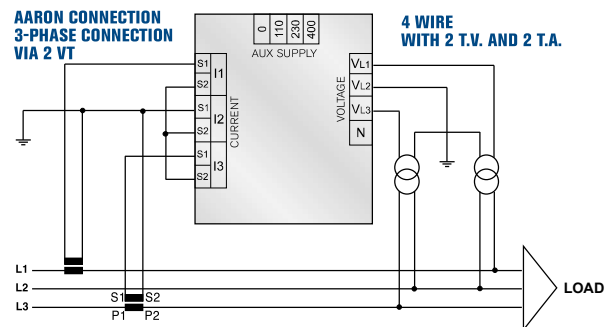
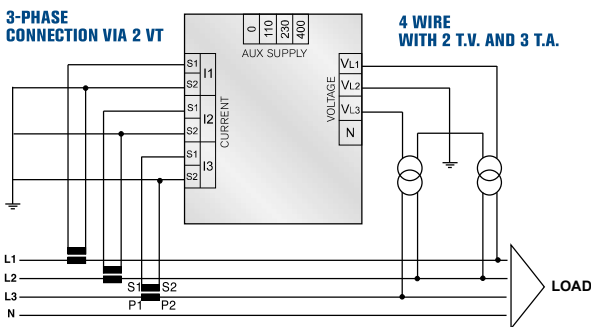
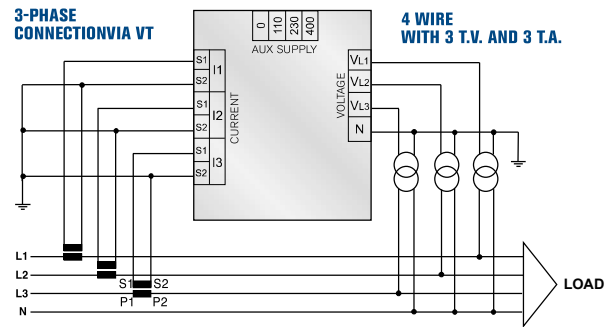
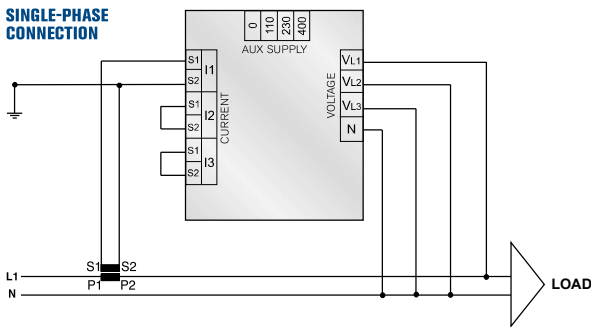
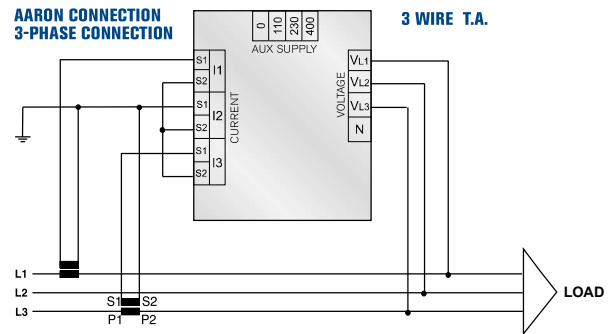
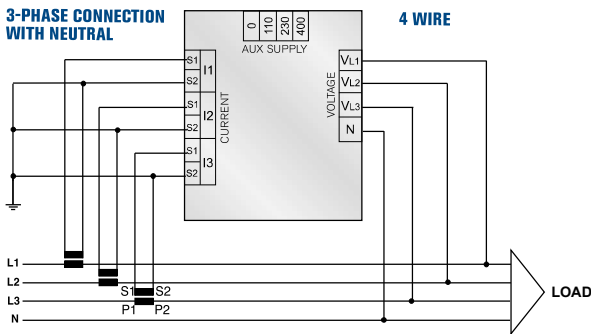
ORDER CODE	DESCRIPTION
C1	Auxiliary supply 20 ÷ 60 VCA/DC
1A	Rated current inputs by external CT 1A
H	Detailed harmonic analysis (1...31°)
MEM1	1MB data memory

4DI	4 digital inputs
2DO/R	2 relays
AO	Analog outputs (by external converter)

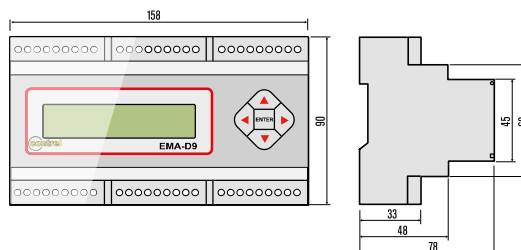
COMMUNICATION PORTS

485	RS485 serial interface
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WIRING DIAGRAMS EMA D9



MECHANICAL DIMENSIONS EMA D9



EMI 1 | 1R

COMMUNICATION DEVICES - RS232/RS485 CONVERTER



EMI 1



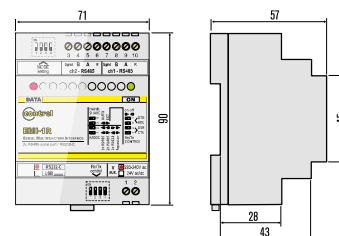
EMI 1R

TECHNICAL CHARACTERISTICS	EMI 1 - 1R
AUXILIARY SUPPLY	
Rated voltage Us	230VAC
Operating limits	±20%
Power consumption	7VA max
Frequency	50 - 60 Hz
RS232 SERIAL INTERFACE	
Data format	Serial asynchronous uart/nrz
Line length	15 m MAX
Type of terminal	DB-9
RS485 SERIAL INTERFACE	
Baud rate	1000 m MAX
	57600 bit/s MAX
USB 2.0	
Consumption	50 mA MAX
Voltage	4.25 ... 5.25 VDC
Terminals	MINI-B
INSULATION	
Insulation voltage	3.7kVAC for 1 minute
AMBIENT CONDITION	
Operating temperature	-20...+60°C
Storage temperature	-20...+80°C
HOUSING	
Version	4 modules
Degree of protection	IP20
Weight	300g
CERTIFICATIONS AND COMPLIANCE	
Reference standards	EN 50081-1, EN 50082-2

OPTIONS	
ORDER CODE	DESCRIPTION
Emi-1	RS232/RS485 converter , opto-isolated, 220-240VAC power supply (110-120VAC on request). Repeater drive for RS485 bus extension.
Emi-1R	RS232/RS485 converter DIN-rail mounting , opto-isolated, 220-240VAC power supply (110-120VAC on request). Repeater drive for RS485 bus extension.
Emi-1R USB	USB/RS485 converter DIN-rail mounting , opto-isolated, 220-240VAC power supply (110-120VAC on request). Repeater drive for RS485 bus extension.

Converter that can interface "slave" devices connected in an RS485 bus with a "master" equipped with RS232 interface port. When configured appropriately, it can also be used as RS485 repeater whenever the devices connected to the bus are many or the maximum distance among the bus devices is longer than the allowed. **Instead RS232 serial interface can provide USB port.**

MECHANICAL DIMENSIONS EMI-1R



TECHNICAL CHARACTERISTICS	EMI 1P-USB
AUXILIARY SUPPLY	
Rated voltage Us	From PC 5V @ 100mA
Type of connection	USB
RS485 SERIAL INTERFACE	
Type of terminal	Screw (removable)
Baud-rate	Max baud-rate 500Kbit/s
AMBIENT CONDITION	
Operating temperature	-10...+65°C
Storage temperature	-15...+80°C
HOUSING	
Degree of protection	IP20
Weight	100 g
CERTIFICATIONS AND COMPLIANCE	
Reference standards	EN 61000-6-4 / N 64000-6-2 EN 61010-1 / EN 60742

EMI-1P USB

DIGITAL MEASURING INSTRUMENTS
USB/RS485 CONVERTER



The EMI-1P USB is a Serial Converter Isolated up to 2.5kV, based on chip USB FTDI.

The simple use is guarantee by the Windows validation drivers that you download automatically when you have your PC connected to the network. This device allow you to connect in safety way to any Modbus devices on RS485.

EMI 3m

COMMUNICATION DEVICES - MODEM GSM-GPRS

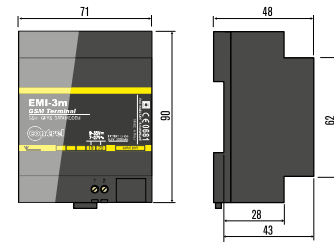
EMI-3m is an industrial DIN rail GSM modem for the transfer of data, SMS and faxes in GSM networks. Control by ITU, GSM, GPRS and Custom AT commands. EMI-3m come with either a Serial or USB interface and its modular enclosure fits easily into equipment or machinery. Designed to operate in harsh conditions, simplifies the development of M2M and IoT application. Quad band GSM / GPRS / EDGE communication with automatic or manual selection on bands 850 / 900 / 1800 / 1900 MHz for data, sms, fax and voice applications. Full Type Approved and compliant with ETSI GSM Phase 2+ and with Part 15 of the FCC Rules.

TECHNICAL CHARACTERISTICS	EMI-3m
AUXILIARY SUPPLY	
Rated voltage Us	9.5...35 VDC - 9.5...27 VAC
Operating limits	-
Power consumption	< 5W
Optional backup battery	Li-Poly
MODEM GSM/GPRS	
Frequency bands	Quad band 850 / 900 / 1800 / 1900 MHz
Output power	Class 4 for GSM850 Class 4 for GSM900 Class 1 for GSM1800 Class 1 for GSM1900
SIM INTERFACE	
Type of SIM	U-SIM compatible
GSM/GPRS ANTENNA CONNECTION	
Type of connector	SMA o FME
Type of connector	
Connection	RS232 (RJ45 connector)
Baud-rate	Programmable 300 ... 115200 bps
INSULATION	
Insulation voltage	3kVAC for 1 minute
AMBIENT CONDITION	
Operating temperature	-40...+85°C
Storage temperature	-40...+90°C
CERTIFICATIONS AND COMPLIANCE	
Comply with standards	EN 60950-1:2006, EN 60950-1 A11:2009, EN 60950-1 A1:2010, EN 60950-1 A12:2011, EN 50385:2002 EN 301 489-7 V1.3.1:2005-11, EN 301 489-1 V1.9.2:2011-09 EN 301 511 V9.0.2:2003-03

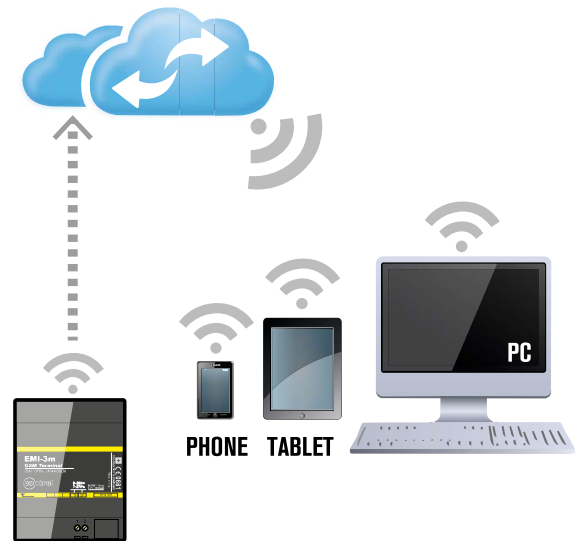
OPTIONS EXTERNAL GSM ANTENNA			
ORDER CODE			
STRIP + SMA		Adhesive antenna for non-metallic surfaces.	MiniSTUB SMA
STRIP + FME			MiniSTUB FME
MAGNETIC + SMA		Magnetic antenna for metallic surfaces.	MiniFINGER SMA
MAGNETIC + FME			MiniFINGER FME
BODY SMA		Body mount outdoor antenna. IP69K	FINGER SMA
BODY FME			FINGER FME



MECHANICAL DIMENSIONS EMI-3m



WIRING DIAGRAMS EMI-3m



EMI-3m
MODEM
GSM-GPRS

Multimeter
EMM-μD3h

Multimeter
EMM-μD3h

Modbus
RS485



EMI-10m
Gateway



Modbus
RS485

EMI 5s

COMMUNICATION DEVICES PROFIBUS DP/RS485 CONVERTER

Converter/Gateway to control equipments with Modbus protocol within an installation Profibus.



PROFIBUS CONNECTOR

PIN	FUNCTION	PINOUT
1	Shield	
2	Disconnect	
3	RxD/TxD-P (B)	
4	CNTR-P	
5	DGND	
6	VP	
7	Disconnect	
8	RxD/TxD-N (A)	
9	Disconnect	

TECHNICAL CHARACTERISTICS

EMI 5s

AUXILIARY SUPPLY

Rated voltage Us	80 ... 240 VAC/DC - 20 ... 60 VAC/DC
Power consumption	4 VA

PROFIBUS INTERFACE

Baud-rate	9.600 bps - 19.200 bps - 45.450 bps - 93.750 bps - 187.500 bps - 500.000 bps - 1.5 Mbps - 3 Mbps
Supported protocol	Profibus DP-VO
Type of connector	DB9F

INSULATION

Insulation voltage	3kV for 1 minute
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AMBIENT CONDITION

Operating temperature	-10...+60°C
Storage temperature	-25...+70°C

HOUSING

Version	6 module
Degree of protection	IP52
Weight	500g

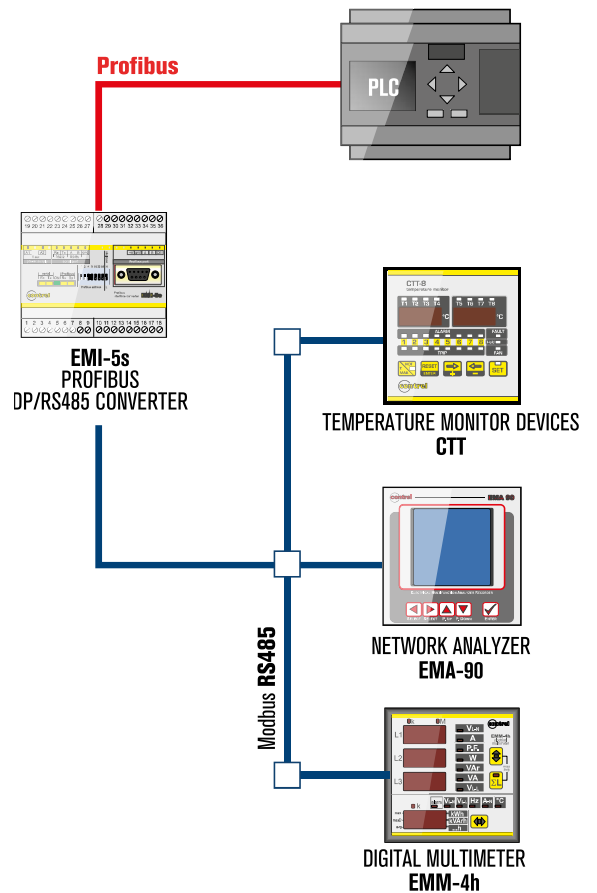
CERTIFICATIONS AND COMPLIANCE

Comply with standards	EN 61000-2, EN 61000-4
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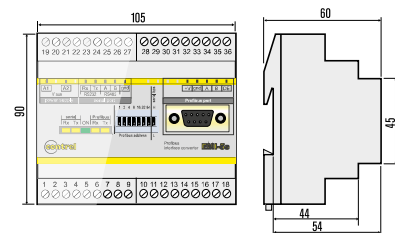
OPTIONS

ORDER CODE	DESCRIPTION
EMI-5s	For EMM, EMA, CTT and HRI instruments
EMI-5s-D	For energy meter MID approved

WIRING DIAGRAMS EMI-5s



MECHANICAL DIMENSIONS EMI-5s



COMMUNICATION DEVICES

The monitoring of electrical networks often use a high-speed Ethernet backbone to collect data from multiple devices and share information among users. The Ethernet Gateway **EMI-10L** can help to reduce the cost and complexity of connecting, configuring and managing a network of meters, sensors and other remote tools.

It provides reliable connectivity between Modbus serial devices and TCP/IP networks, without changing their existing infrastructure and is perfect for converting from a system based on a serial bus system based on Ethernet.

The **EMI-10L** allows users to configure the Ethernet parameters, the parameters of the serial communication and perform a possible solution of the problems through a web interface with a detailed diagnosis of the communication.

The **EMI-10L** supports 10BaseT and 100 BaseT.

This Ethernet gateway enables the integration of up to 32 serial Modbus devices.

BENEFITS

Increase your efficiency allowing you to make quick decisions based on data made available to you:

- Access simple, fast, shared information from all electrical network products via Modbus TCP / IP
- Network architecture and flexible modular
- Transfer of data to Modbus RS485 to Ethernet Modbus TCP / IP.

COMMUNICATION

- Use your existing LAN infrastructure to reduce the cost of lines of communication and network management
- Fast 10 or 100 megabits per second, Ethernet communications eliminates bottlenecks transferring monitoring data to the same network speed.

DESCRIPTION

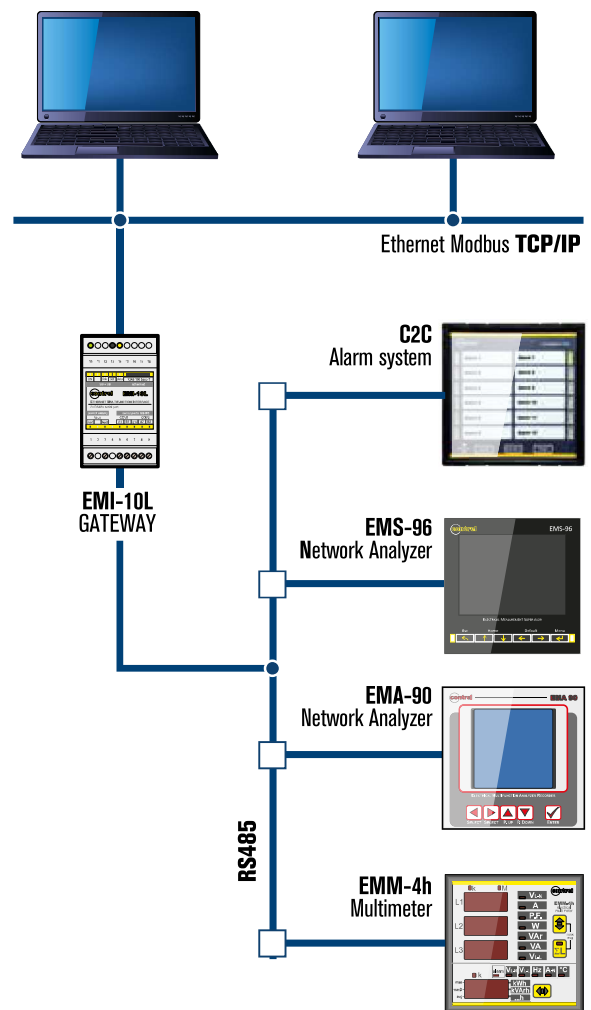
- Ethernet 10 / 100Base-T
- RS485 serial interface
- Integration of up to 32 serial devices Modbus
- Support for Modbus TCP/IP serial master
- Web interface for configuration, diagnostics and maintenance
- Customizable security through different levels of access (read-only access or full)
- Log-in safe with a password
- Languages available in Italian, English and German

TECHNICAL CHARACTERISTICS	EMI-10L / EMI-10M
AUXILIARY SUPPLY	
Rated voltage Us	100 ... 240 VAC - 24 VAC/DC
Power consumption	4 VA
RS485 SERIAL INTERFACE	
Baud rate	Programmable 1200 ... 115200 bps
Protocol	Modbus RTU
Number of connected instruments	32 max
ETHERNET INTERFACE	
Network interface	RJ45 Ethernet 10BASE-T o 100BASE-T (auto-sensing)
Protocols supported	HTTP, Modbus TCP/IP
INSULATION	
Insulation voltage	3kVAC for 1 minute
AMBIENT CONDITION	
Operating temperature	-10...+60°C
Storage temperature	-25...+70°C
HOUSING	
Version	3 modules
Degree of protection	IP52
Weight	100 g
CERTIFICATIONS AND COMPLIANCE	
Comply with standards	EN 60950-1:2001, EN 60950-1 A11:2004, IEC 60950-1:2005, EN 60950-1 A11:2006 A1:2010 A12:2011, EN 61000-2, EN 61000-4

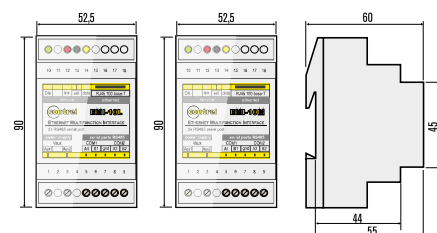
OPTIONS	
ORDER CODE	DESCRIPTION
EMI-10L	Ethernet Gateway
EMI-10M	Ethernet Gateway + log memory



SYSTEM ARCHITECTURE



MECHANICAL DIMENSIONS EMI-10L / EMI-10M



EML 16

DATA CONCENTRATOR

The data concentrator EML-16 provides a function of collected pulses and an interface to supervisory systems. The EML-16 can be applied as a tool for counting of consumption of energy meters, water, gas, heat, etc. It supports RS485 communication and TCP/IP communication.



TECHNICAL CHARACTERISTICS EML 16

AUXILIARY SUPPLY	
Rated voltage Us	90 ÷ 260 VAC/CC 20 ÷ 60 VAC/CC
Operating limits	±15%
Power consumption	4,5VA
Frequency	50 - 60 Hz
COUNTER INPUTS	
Number of inputs	16
Voltage presents on the inputs	24 - 48 - 115 - 230 VAC/CC
Current input	5mA max
Type of inputs filter	Digitale
RS485 SERIAL INTERFACE	
Baud-rate	Programmable 1200 - 115200 bps
Protocol supported	Modbus RTU
ETHERNET INTERFACE	
Network interface	RJ45 Ethernet 10BASE-T o 100BASE-T (auto-sensing)
Protocols supported	HTTP, Modbus TCP/IP
INSULATION	
Insulation voltage	2,5kVAC for 1 minute
AMBIENT CONDITION	
Operating temperature	0...+60°C
Storage temperature	-20...+80°C
HOUSING	
Version	6 module
Degree of protection	IP52 on front IP20 Housing and terminals
Weight	500 g
CERTIFICATIONS AND COMPLIANCE	
Reference standards	EN50082-1, EN50082-2, EMC 89/336/EEC

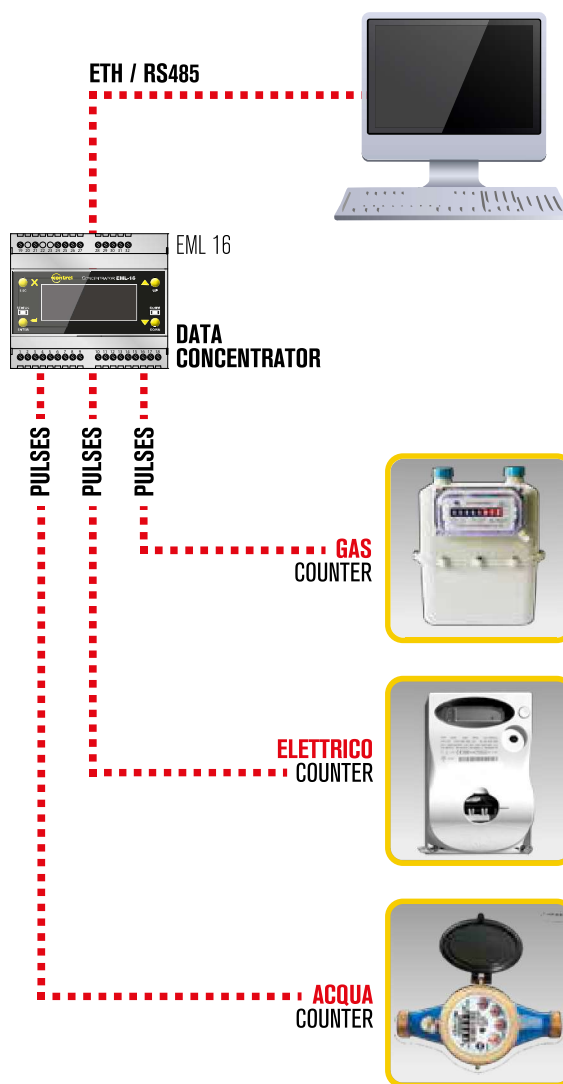
OPTIONS

ORDER CODE	DESCRIPTION
C1	20 ÷ 60 VAC/CC
24	Input voltage 24VAC/CC
48	Input voltage 48VAC/CC
115	Input voltage 115VAC/CC
230	Input voltage 230VAC/CC

COMMUNICATION PORTS

485	RS485 serial interface
ETH	Ethernet interface with Web server function

WIRING DIAGRAMS EML 16



MECHANICAL DIMENSIONS EML 16

