



Three-phase powermeter 9 DIN 43880 modules

General features

- True RMS measures
- 4 quadrants measuring
- 3 voltage channels with common neutral
- 3 insulated current channel (CT /5A)
- Backlighted LCD display (2 rows x 16 columns) with push button for page scrolling
- RS232/RS485 serial interface
- 512 kb non-volatile memory for data recording
- Non-volatile real time clock
- DIN 46277 rail (EN50022)

Available versions

- Product codes: EMsss-mmm-vvv-c
where:
sss: serial interface 232=RS232; 485=RS485
mmm: data memory size 128=128k; 512=512k
vvv: voltage channels rating 400=400V ;
100=100V (option)
c: current channels rating 5=5A; 1=1A (option)

Technical specifications

Measure circuits

- Nominal Voltage V_n : 3 channels 100 Vac or 400 Vac (depending on model)
- Nominal current I_n : 3 insulated channels 5 Aac or 1 Aac (depending on model).
- PT and CT ratio user selectable for MV/HV application
- Permanent overload: 1.2 V_n ; 1.2 I_n
- Voltage channels impedance: 1 MOhm

50/60 Hz networks measures

- Phase-Phase and Phase-Neutral voltage
- Phase current
- Active, reactive and apparent power
- Cosphi and PF
- Generated and consumed active energy
- Capacitive and inductive reactive energy
- Voltage and current thd and harmonics, up to 25th order (as % of fundamental)
- Frequency
- 2 Digital inputs counters (for pulse emitting meters)

Power supply

- 85-265 V AC/DC
- Consumption: 5 VA

Accuracy (class)

- Voltage: 0.5% reading \pm 2 digits
- Current: 0.5% reading \pm 2 digits
- Power: 1% reading \pm 2 digits

Recording

- Storage (single-phase or three-phase, with programmable interval from 1 minute to 24 hours) of average measure of voltages, currents, powers, cosphi/PF, pulses counts, THD and harmonics percentage of voltage and current, with memory size of 512 kB
- Up to 1000 recordable alarm events in an independent memory area

Display

- Backlighted 2 rows x 16 characters LCD
- Scrolling of measure pages through push button
- Remote messages displaying

Digital I/O

- 2 outputs programmable as pulse emitters, alarms or remotely controlled
- 2 inputs for pulse counting

Serial interface

- RS232 or RS485 (programmable address)
- Modbus RTU protocol

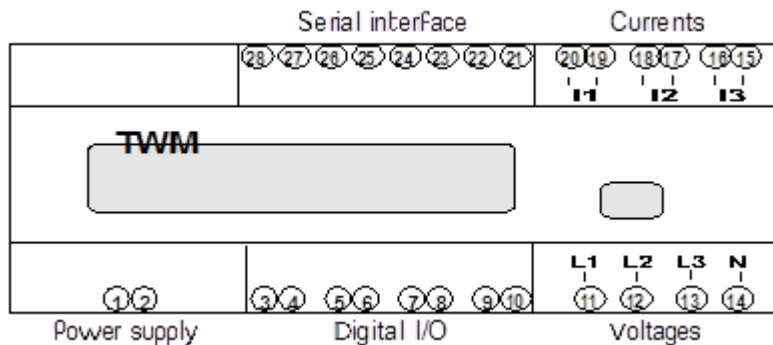
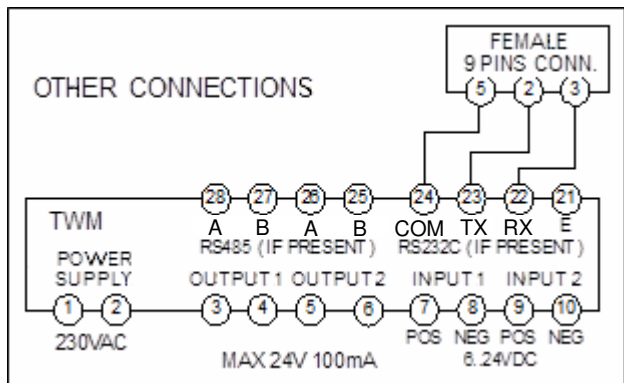
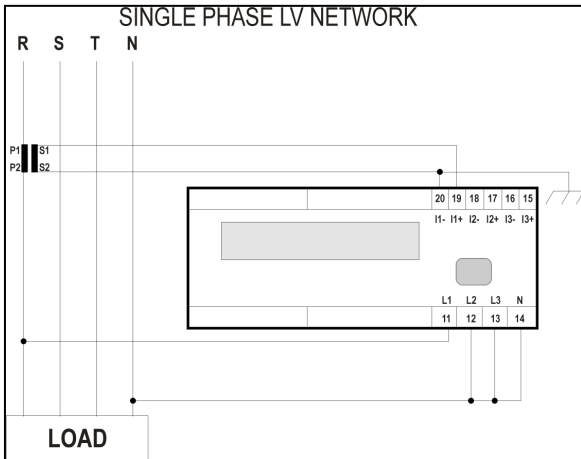
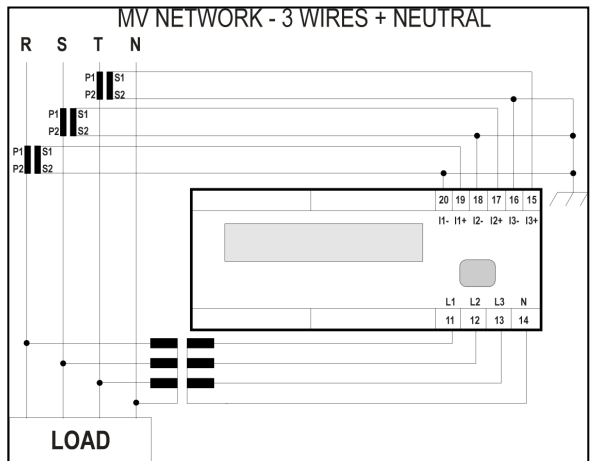
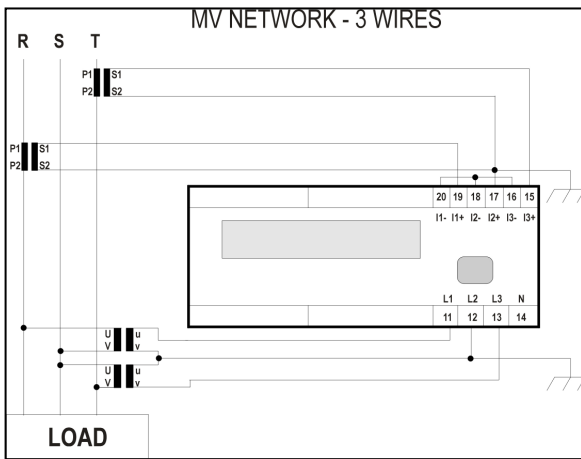
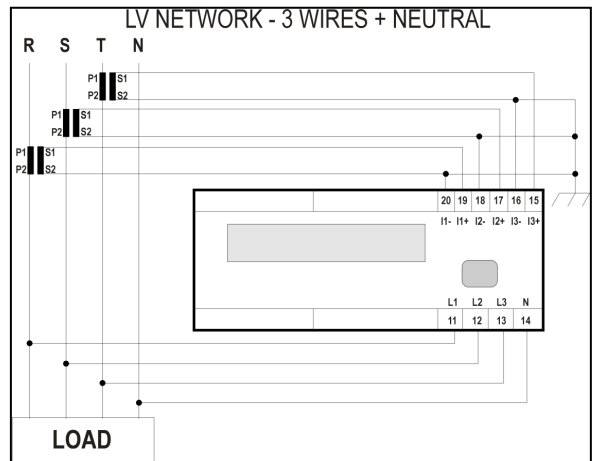
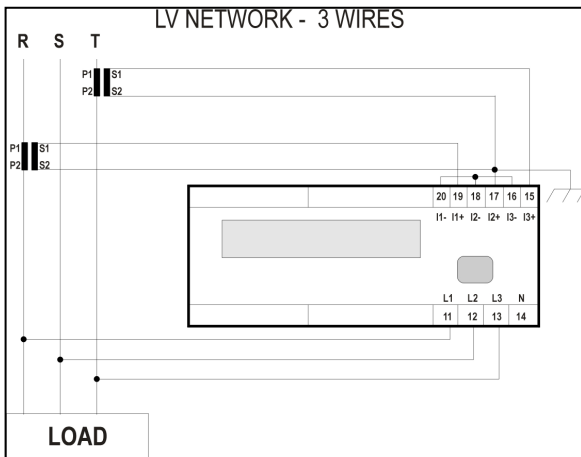
Clock – calendar

- dd-mm-yyyy hh:mm:ss format with \pm 30 sec/month accuracy

Mechanical specifications

- Size: 9 DIN 43880 modules, depth 58 mm
- Enclosure: plastic, self-extinguishing
- Weight: 800 g
- Protection degree: IP20

Wiring diagrams



Easy to use

TWM is really simple to use: it is possible to select sequentially all the measures pages by pressing the SELECT pushbutton.

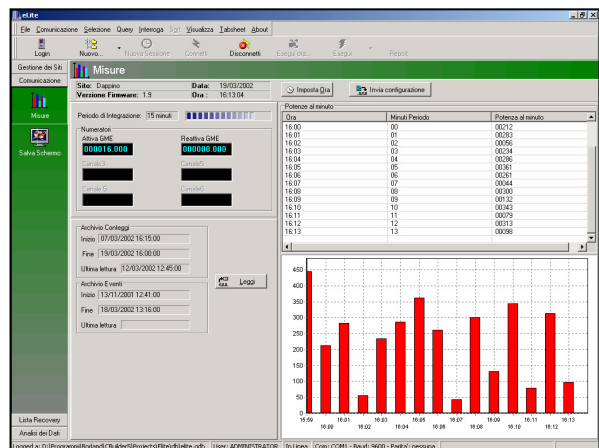
After a time of 30 seconds elapsed from last selection, the default page is automatically selected.

The currently active page is set as default page by keeping pressed the pushbutton for 3 seconds.

The factory set default page is the phase-to-neutral voltage.

In case of receiving messages via serial interface, the messages page is displayed until the SELECT button is pressed.

All operating parameters are programmable through software via serial interface and are stored in non-volatile memory. The unit can be equipped with the TWMLink software utility, allowing the unit setup via serial interface. For enhanced software packages (Equalink or EliteSQL), please contact the dealer.



TWM

Programmable parameters via serial interface using the PC software

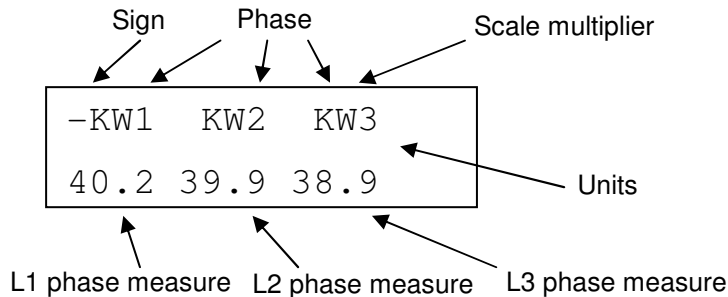
Parameter	Default value
Node address	1
PIN	-1
Network type	Three-phase
CT ratio	1
PT ratio	1
Voltage mode for recorder (phase-neutral or phase-phase)	Phase-Neutral
Measures to record	All
Integration period (minutes)	15
Daylight saving time (EU standard)	Enabled
Digital output operation (energy pulse emitter, remotely controlled, alarms)	None
Digital input operation	None
Energy quantum for energy pulse emitter	4000 pulses./kWh
Synchronization frequency	Automatic
Default frequency	50 Hz
Events to record	All
Lower voltage threshold	210 V
Upper voltage threshold	250 V
Alarm threshold	0 (disabled)
Alarm to monitor	None

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Displayed measure pages

All the measures pages have a common layout: the first line shows the measure units, the phase, the scale multiplier (k= kilo, M=mega) and sign, while the second line shows the numeric values, updated once per second.



Available measure pages:

1. Phase - neutral voltages:

V1	V2	V3
229	231	231

2. Phase - phase voltages:

V12	V23	V31
402	399	389

3. Phase currents:

I1	I2	I3
1.02	2.99	2.89

4. Three - phase active, reactive and apparent power:

kW	kVA	VAr
11.2	14.6	981

5. Phase active power:

W1	W2	W3
202	299	289

6. Phase apparent power:

VA1	VA2	VA3
102	199	189

7. Phase reactive power:

VAr1	VAr2	VAr3
1.02	1.99	1.89

8. Costs and Power Factor

Costi	PF
0.99 L	0.97 L

9. Frequency (forced: imposed frequency in absence of voltage on phase L1 or imposed from setup):

Freq. (Hz)
50 (forced)

10. Active energy (+ absorbed, - generated):

Ea+123456789.01
Ea-123456789.01

11. Reactive energy (+ inductive, - capacitive):

Ea+123456789.01
Ea-123456789.01

12. Voltage THD%:

THD ^{V1}	THD ^{V2}	THD ^{V3}
2.63	2.78	2.52

13. Current THD%:

THD ^{I1}	THD ^{I2}	THD ^{I3}
2.89	2.80	2.77

14. Date and time:

Time: 03:24:07
Date: 12/01/2001

15. Messages from serial interface:

No messages available.

16. Network and node address:

Network Id: 000
Node Id: 001