

Electrical Network Analyzers

X-Meter DIN



- > Bi-directional meter (Imported/delivered power)
- > 50 true measurements
- > Measurements in true value (true RMS)
- > Measurements on 4 quadrants
- > Graphic display, size of characters can be set
- > Full and clear indications of measurements
- > 6-key keyboard with buzzer
- > Configurable impulsive outputs of all measured quantities
- > Configurable alarm outputs of measured quantities
- > Graphic visualization of Tension, Current, Power and $\text{COS}\phi$ of last 3 days
- > 12 Power Totalizers on 4 quadrants that can be set to zero through password
- > Indication in Euros of absorbed and delivered power
- > Clock and calendar
- > Container of DIN guide 46277 (9 Modules)
- > Removable clamps to make installation easier
- > Temperature probe inside the instrument
- > Software TA and TV inversion function
- > Expansion and modularity (memory, digital inputs, GSM/GPRS modem, Ethernet, e-mail, quality of supply).

Opzioni

- XM1** - Memory extension and Communication
- XM2** - A-Bridge 232/485 Module and B-Bridge USB/485 Module
- XM3** - 8 Digital inputs Module
- XM4** - Gsm/Gprs modem Module
- XM5** - Ethernet network Module
- XM6** - Harmonics recording Module
- Es3** - Supervisory Software

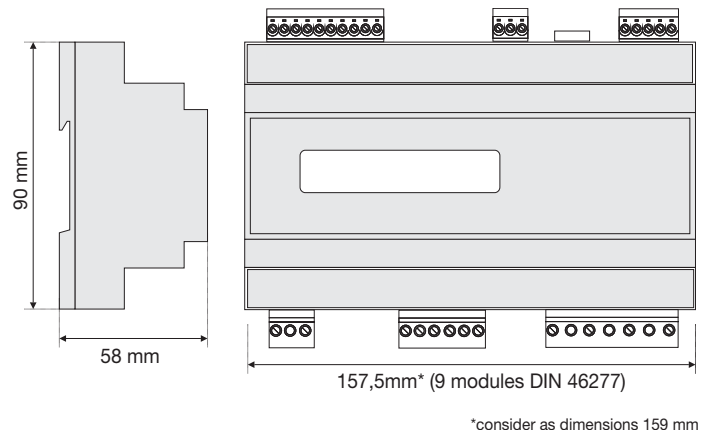
Technical features

<i>Measurements on grid 50/60HZ</i>	<i>Unità di misura</i>
<i>Voltage</i>	<i>Vac</i>
<i>Active Power</i>	<i>W</i>
<i>Reactive Power</i>	<i>VAr</i>
<i>Apparent Power</i>	<i>VA</i>
<i>Distorting power</i>	<i>VA</i>
<i>Three-phase equivalent current</i>	<i>A</i>
<i>Mains current</i>	<i>A</i>
<i>Cosϕ</i>	
<i>Power factor</i>	
<i>Active power delivered</i>	<i>Wh</i>
<i>Active power absorbed</i>	<i>Wh</i>
<i>Inductive reactive power</i>	<i>VArh</i>
<i>Capacitive reactive power</i>	<i>VArh</i>
<i>Frequency</i>	<i>Hz</i>
<i>Precision</i>	<i>+/-0.25% of full scale (V,I)</i> <i>+/-0.50% of full scale (OTHER)</i>
Power supply	
<i>Power voltage</i>	<i>100-250 Vac / 100-350 Vdc</i>
<i>Frequency</i>	<i>50-60 Hz</i>
<i>Consumption</i>	<i>5 Va</i>
General	
<i>Current inputs N.3</i>	<i>100 o 400 Vac</i>
<i>Voltage inputs N.3</i>	<i>A / 5</i>
<i>Impulsive outputs N.2 (Act./React.)</i>	
<i>Optomos outputs (N.1 Min N.1Max)</i>	<i>100 mA / 24 Vdc</i>
<i>Protection Degree</i>	<i>IP 20</i>
<i>Weight</i>	<i>400 gr</i>
<i>Dimensions L H W 9 modules DIN</i>	<i>157,5 x 90 x 58 mm</i>
<i>Graphic Display</i>	<i>Graphic</i>
<i>Operating temperature</i>	<i>-10°C + 55°C</i>
<i>Relative humidity</i>	<i>95% without condensate</i>

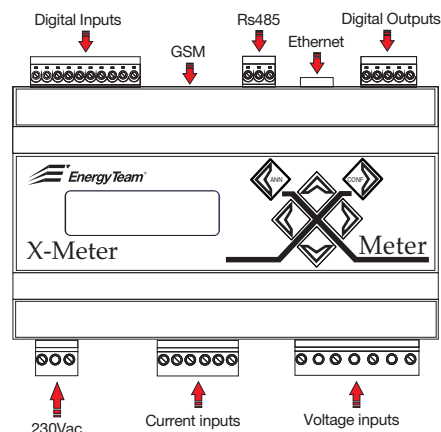
The advantages are clear:

This device costs like any other average multi-function one, but it has higher initial features (graphic display, impulsive outputs for power taken, short storage of consumption level in memory); in addition it can be transformed into a real Power Quality instrument without having to replace it. So you can made your X-Meter whenever and however you want. Check the list of available options.

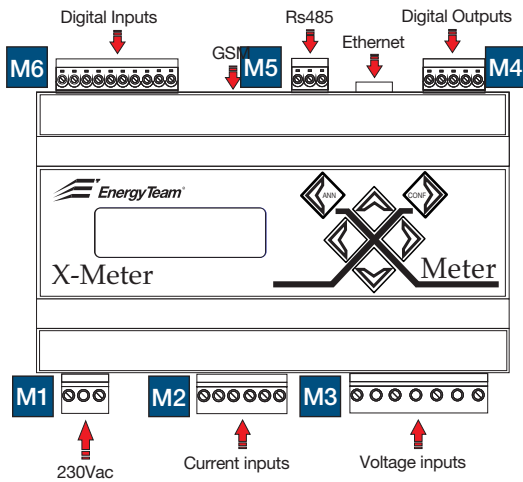
Dimensions



Inputs/Outputs

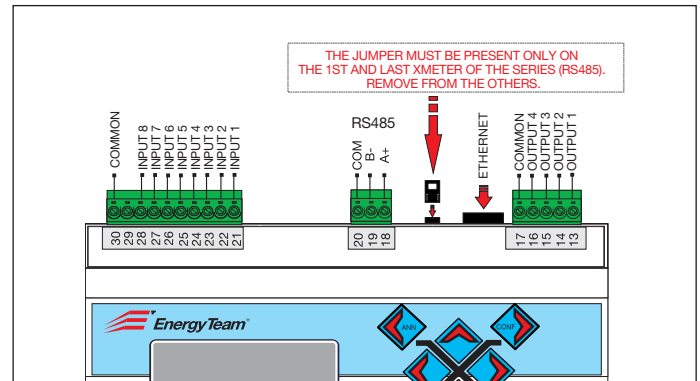


Input-Output clamps relative to cable sections

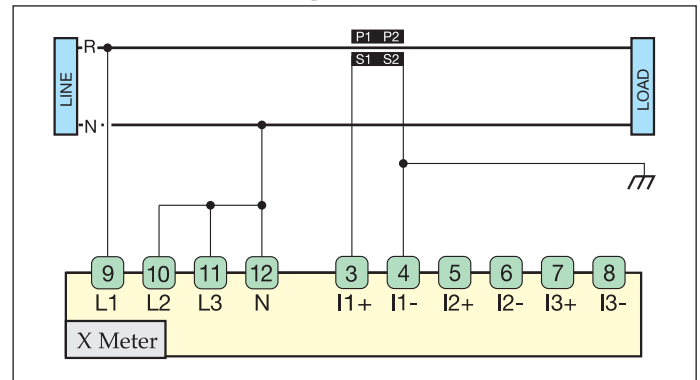


M1	Power supply Cable section maximum: \varnothing 2 mm ² (16AWG)
M2	Current Input Cable section maximum: \varnothing 2.5 mm ² (14AWG)
M3	Voltage inputs Cable section maximum: \varnothing 2.5 mm ² (14AWG)
M4	Digital outputs Cable section maximum: \varnothing 0.75 mm ² (18AWG)
M5	Rs485 Cable section maximum: \varnothing 0.75 mm ² (18AWG) Belden 9841
M6	Digital inputs Cable section maximum: \varnothing 0.75 mm ² (18AWG)

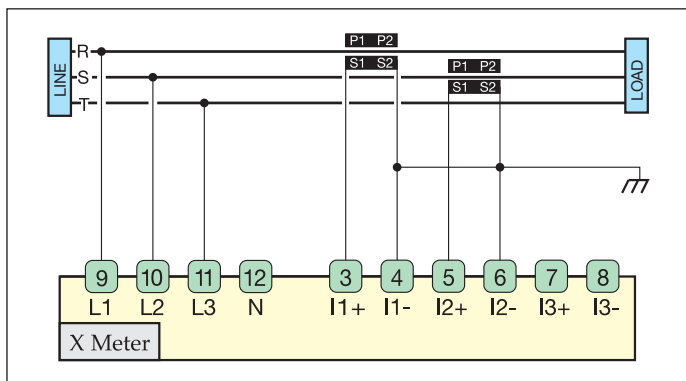
Serial I/O connection



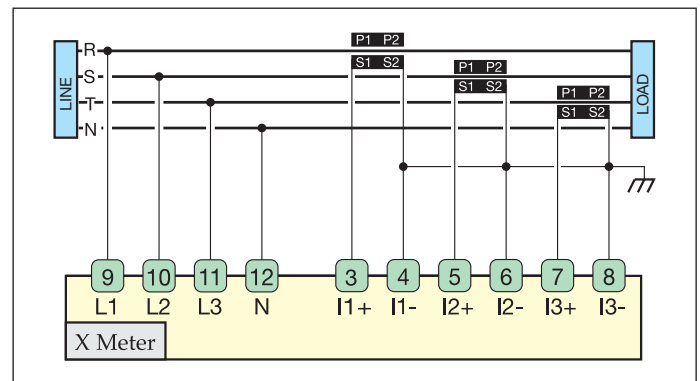
Direct insertion in a single-phase electrical network BT



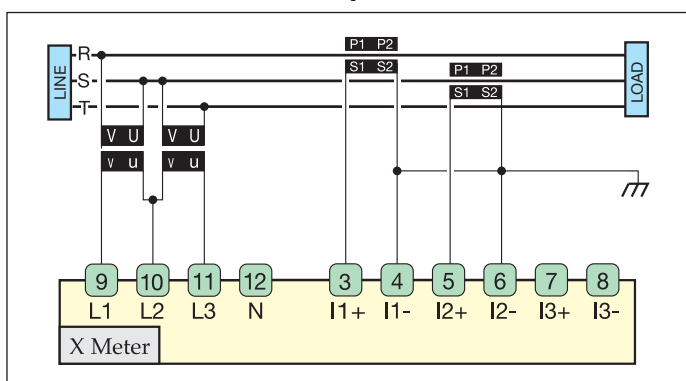
Direct insertion in a Three-phase electrical network BT



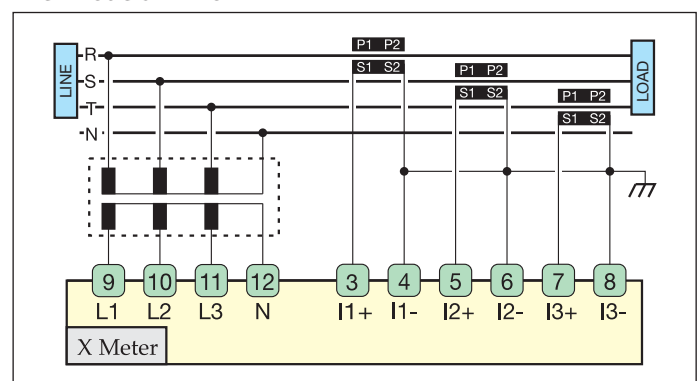
Direct insertion in a Three-phase electrical network BT, with neutral wire



Direct insertion in a Three-phase electrical network MT



Direct insertion in a Three-phase electrical network MT, with neutral wire



Options

XM1 - Memory extension and Communication

For interfacing the device to the Es3 software it's necessary to enable this function. This option allows a considerable increase in the storage capacity, thus allowing the device to record all the measured values by the instrument and to extend the memory capacity of the recordable days, up to a historical archive of 250 days (Integration time of 15' for the following values: line voltage and phase voltage, three-phase line current, three-phase active power, three-phase reactive power, three-phase power factor). In addition, by enabling the communication port RS485 through which it is possible to use the Personal Computer through BRIDGE module (not included), it is possible to connect a series of Energy Team's devices.

XM2 - A-Bridge Module 232/485; B-Bridge Module USB/485

The conversion module Bridge 232/485 with 230Vac in 4 DIN module container, can be used to convert the 485 signal coming from the X-Meter into serial 232, to communication port of the Personal Computer. It's also available the version USB/485. This module allows to convert the 485 signal coming from X-Meter into USB communication port of the Personal Computer. Galvanic insulation of the USB connection ensures the maximum protection to Personal Computer against noise, interferences and overvoltage from the field. Designed with industrial features. Isn't necessary a bulky external power supply because it is self-powered.

XM3 - 8 Digital inputs Module

Module n.8 self-powered digital inputs, powered at 12VDC. It allows to acquire the conditions, pulses coming from the outside gas, water and air meters, etc. Furthermore it is possible to store separately the various acquisition channels by checking the saved logs by means of the specific software (not included). This function is possible with at least the XM1 function enabled.

XM4 - GSM/GPRS Modules

The Gsm/Gprs Modem module inside the X-Meter device allows the forwarding of E-mails and SMS associated to conditions and alarms coming from the "field", connected with the XM3 function (8 digital inputs Module). In addition, thanks to this module it is possible to control the X-meter device by remote modality, for data publication service via Web, through our site www.energyteam.it. Our site can be accessed at any time and in any place through Password and User-Id. The displayed data can also be converted into Excel and Access format and they can be downloaded onto Your Personal Computer. The use is possible with at least the XM1 function enabled.

XM5 - Ethernet Module

The Ethernet board inside the device allows the connection of X-Meter to the Ethernet network or Intranet of the company from various data collection and monitoring stations through a simple IP address. This function is possible only with the XM1 functions and ES3 software enabled.

XM6 - Harmonics recording Module

Module for the harmonics measurement which allows to enable the measurement and storage function for the harmonics up to the 25th.

XM7 - Annual programmable clocks Module

The firmware module "programmable clocks with perpetual annual calendar" allows to enable the Nr. 4 Optomos outputs of the X-Meter DIN for the automatic control function to switch specific utilities on and off (controllable loads, ex: lights, motors, fans, etc.). For each X-Meter is possible programming up to 12 daily profiles + 2 special periods + 20 special days. Each profile defines 8 changes in state within the 24 hours/day for each of the 4 associated loads. Up to 128 X-Meter can be connected for a total of 512 controllable loads. The use is possible only with XM1 function enabled.

XM8 - Galvanically Insulated Analogical Channel

Inserted in a 1 Module DIN container, it allows to interface voltage or current signals coming from the field to the X-Meter device's inputs,

allowing the displaying and storing of the measured values. The X-Meter device is able to power up to 2 XM8 modules; any additional module have to be supported through a 12Vdc external supplier (not included). Are available 11 possible interface configurations for voltage and current signals. Guaranteed accuracy at 0.5% of full-scale.

XM9 Module for Interfacing probes PT100-500-1000

Inserted in a 1 Mod. Din container, it allows the interfacing of the PT100, PT500 and PT1000 probes to X-Meter's inputs, allowing the displaying and the storage of the detected temperatures. X-Meter device can supply up to 2 XM8 modules, eventual modules in excess have to be supplied by an external 12 Vdc supplier (not included). Accuracy is guaranteed at 0,5% Full-scale.

XM10 - Room temperature Module

Container suitable for wall installation. It can read the room temperature (range $-10^{\circ}\text{C} \div +65^{\circ}\text{C} \pm 1,5^{\circ}\text{C}$) and transfer it to the X-Meter device's inputs and to enable the displaying and storing of the measured temperatures. The X-Meter device is able to power up to 2 XM10 modules, any additional modules have to be supported through a 12Vdc external supplier (not included). It is particularly suitable to monitor and save the room temperatures in Ced, LV/MV panels, Warehouses.

XM11 - Room temperature and humidity Module

Container suitable for wall installation. It can read the room temperature and humidity and transfer it to the X-Meter device's inputs and to enable the displaying and storing of the measured temperatures and humidity. The X-Meter device is able to power up to 2 XM11 modules, any additional module have to be supported through a 12Vdc external supplier (not included). As applications it's particularly suitable to monitor and save the room temperatures and humidity values in the food sector. Humidity range (Relative hum. $0 \div 100\%$) Accuracy $\pm 2\%$ in the range of relative hum. 10% 90%; Temp. Range ($-10^{\circ}\text{C} \div +65^{\circ}\text{C}$). Accuracy $\pm 0,8^{\circ}\text{C}$ at $25^{\circ}\text{C} \pm 0,3^{\circ}\text{C}$.

XM12 - USB/GSM Modem (connection PC/X-Meter)

The GSM modem, for programmable data reading via remote mode, is easy to connect to a Personal Computer thanks to the integrated USB connection.

XM14 - Power Quality

This module allows to record the voltage gaps and peaks with a resolution of 10 ms. Is also available the function that allows the measure and the recording up to the 25th harmonic, both on voltage and current. It's also possible to enable a local alarm which warns when the event happens, previously set.

XM15 - Load interface relay Module

For using the 4 outputs and driving standard loads, inserted in 230Vac single phase networking, it's necessary to interface them to XM15 Module. Powered at 230 Vac, it provides 4 independent relays, with ability to switch any load up to 16A.

XM18 - Management loads

Through the control of the 4 outputs, carried out by a sophisticated algorithm, it's possible to intervene actively in the management of electrical loads, in order to remove or contain the contracted power exceeds with energy supplier.

XM UPS - UPS DIN Dedicated

Uninterruptible group very small in 6 modules Din container, with modern batteries (lithium polymer), dedicated to supply apparatus X-Meter to a maximum of 4 hours. Essential to maintain the alarm functions even in the absence of tension apparatus.

Supervision Software

Supervisory and control Software. You can request the technical documentation or visit our site www.energyteam.it

List of Measurements

Direct measurements for single-phase

- > Phase-neutral voltage L1-N
- > Phase-neutral voltage L2-N
- > Phase-neutral voltage L3-N
- > Phase-phase voltage L1-L2
- > Phase-phase voltage L2-L3
- > Phase-phase voltage L3-L1
- > Line current L1
- > Line current L2
- > Line current L3

Single-phase derived measurement

- > Bi-directional active power L1 (positive=imported (Q1 and Q4), negative=exported (Q2 and Q3))
- > Bi-directional active power L2 (positive=imported negative=exported)
- > Bi-directional active power L3 (positive=imported negative=exported)
- > Bi-directional reactive power L1 (positive=imported (Q1 and Q4))
- > Bi-directional reactive power L2 (positive=imported)
- > Bi-directional reactive power L3 (positive=imported)
- > Distorting power L1 (indication of presence of current harmonics)
- > Distorting power L2 (indication of presence of current harmonics)
- > Distorting power L3 (indication of presence of current harmonics)
- > Apparent power L1
- > Apparent power L2
- > Apparent power L3
- > Power factor L1
- > Power factor L2
- > Power factor L3

Main measurements of three-phase system

- > Three-phase equivalent voltage phase-neutral
- > Three-phase equivalent voltage phase-phase
- > Three-phase equivalent current
- > Three-phase active power (positive=imported (Q1 and Q4), negative=exported) / Bidirectional
- > Three-phase reactive power (positive=imported (Q1 and Q2) / Bidirectional)

Secondary measurements of three-phase system

- > Three-phase equivalent distorting power
- > Three-phase equivalent apparent power
- > Three-phase equivalent power factor
- > Calculated neutral current
- > Neutral-center voltage ideal star N-O
- > Frequency (measured on voltage input L)

Integrated power values of three-phase system

- > Imported active Energy (Q1 and Q4)
- > Imported active Power (Q1 and Q4)
- > Exported active Energy (Q2 and Q3)
- > Imported reactive Energy (Q1)
- > Imported reactive Energy (Q2)
- > Imported reactive Energy (Q3)
- > Imported reactive Energy (Q4)
- > Imported active power (Q2 and Q3)
- > Imported active power (Q1)
- > Imported active power (Q2)
- > Imported active power (Q3)
- > Imported active power (Q4)

Compliance

Applied standards

- > EN 55011(class A)
- > EN 61000-4-2 -EN 61000-4-5
- > EN 61000-4-6
- > EN 61000-4-11
- > EN 61000-4-3
- > EN 61000-4-4
- > EN 60204-1

