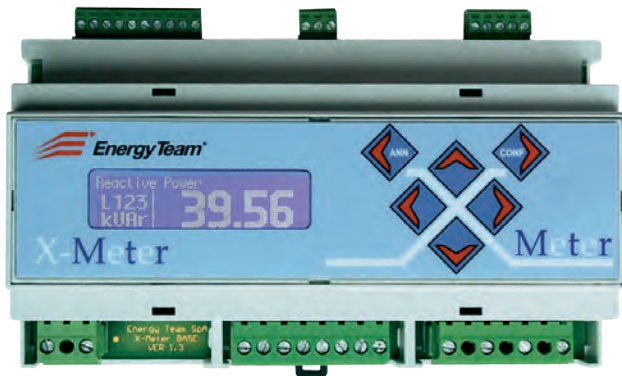# X-Meter DIN

Electrical mains analyzer and Datalogger in a single instrument
Available in two versions: 5A(**) or with voltage inputs (***)

> Bidirectional Meter (Imported/delivered power)
> 50 true measurements
> Measurements in true value (true RMS)
> Measurements on 4 quadrants
> Graphic display, font size can be set
> Full and clear indications of measurements
> 6-key keyboard with buzzer
> Configurable pulsed outputs of all measured quantities
> Configurable alarm outputs of measured quantities
> Graphic display of Voltage, Current, Power and COSf for the last 3 days
> 12 Power Totalizators on 4 quadrants that can be reset using a password
> Indication in Euros of absorbed and delivered power
> Clock and Calendar
> Container of DIN rail 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, email, quality of supply).

Clear advantages:
The cost of the device is comparable to that of other simple multifunction instruments but the X-Meter has better initial features (graphic display, pulsed outputs for absorbed power, short time storage of consumption levels) and it also can be upgraded and implemented to become a Power Quality device with no need to replace it. Create your X-Meter according to your exact needs, see the optional modules.

Options

XM1 - Memory Extension and Communication
XM2 - Mod.A Bridge 232/485 Mod.B Bridge USB/485
XM3 - Mod.8 Digital Inputs
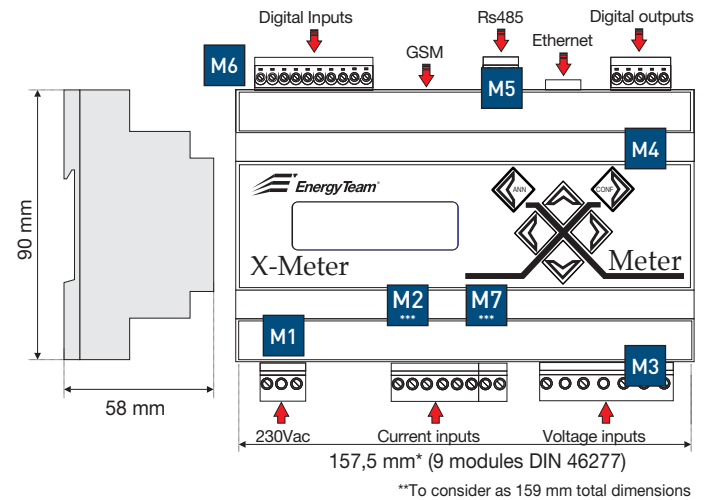**XM4** - Mod. GSM/GPRS Modem
XM5 - Mod. Ethernet Network
XM6 - Mod. Harmonic Recordings

Dimensions and Terminal boards

157,5 mm* (9 modules DIN 46277)

**To consider as 159 mm total dimensions

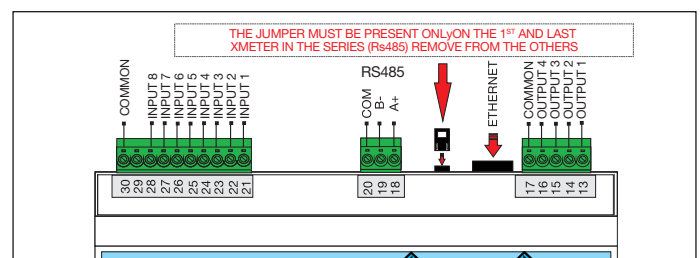|	
M1	**Power supply** - Maximum cable section: 2 mm2 (16AwG)
M2**	**Current input**- Maximum cable section: 2.5 mm2 (14AwG)
M7***	**Voltage signal inputs** (current measurements) Maximum cable section: 0.75 mm2 (14AwG)
M3	**Voltage inputs** - Maximum cable section: 2.5 mm2 (14AwG)
M4	**Digital outputs** - Maximum cable section: 0.75 mm2 (18AwG)
M5	**FS485** - Maximum cable section: 0.75 mm2 (18AwG) Belden 9841
M6	**Digital inputs** - Maximum cable section: 0.75 mm2 (18AwG)

I/O Serial Connections

Measurements on 50/60Hz g4rid	
Voltage	Vac
Active Power	W
Reactive Power	VAr
Apparent Power	VA
Distorting Power	VA
Three-phase equivalent current	A
Mains current	A
Cos$f$	
Power factor	
Active power delivered	Wh
Active power absorbed	Wh
Inductive reactive power	VArh
Capacitive reactive power	VArh
Frequency	Hz
Precision	+/- 0.25% of full scale Meas. Val. +/- 0.50% of full scale Deriv. Meas. Val.
Power supply	
Power voltage	100-250 Vac / 100-350 Vdc
Frequency	50-60 Hz
Consumption	5 Va
General	
Voltage inputs N.3	100 o 400 Vac
Current inputs	(**) 3 current inputs with 5ARMS voltage output
	(***) 3 inputs in specific current for sensors with 1VtRMS voltage
Pulsed outputs N.2 (Act/React)	
Optomos outputs (N.1 Min N.1 Max)	100 mA / 24 Vdc
Protection rating	IP 20
Weight	400 gr
Dimensions LxHxW 9 DIN modules	157.5 x 90 x58 mm
Graphic	Display
Operating temperature	-10°C + 55°C
Relative humidity	95% non-condensing

XM1 - Memory Extension and Communication

This module is essential for the instrument to communicate with the Energy Management software and to considerably improve the instrument's memory thus allowing the user to store all measurements for as long as 250 days with15 seconds integration time 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. Enable the instrument's RS485 communication port to connect the X-Meter to your PC and connect a series of devices together.

XM2 - 232/485 - USB/485 Bridge

The 232/485 Bridge conversion module with 230Vac power supply (in a 4 DIN module container), can be used to convert 485 signal coming from X-Meter's into 232 serial towards the PC's communication port (also available as USB/485). The USB connection's isolation ensures your PC maximum protection from disturbances or voltage surges coming from the field. This unique module was designed with industrial features and does not require any bulky external power supply as it is self-powered.

XM3 - 8 Digital Inputs

XM3, with 8 self-powered (12Vdc) digital inputs, is ideal for acquiring status and pulses coming from other meters (gas, water, compressed air, etc.) it is also possible to file data from various acquisition channels separately and inquire any of them with a software (not included - with XM1 enabled on the device).

XM4 - GSM/GPRS

GSM/GPRS modem module (together with the XM3) to make the device send emails and SMS's for alarms and status coming from the field. This module allows the remote reading of the X-Meter for online data publication service through our website. Accessed with a user ID and password to read your data that can also be converted into Excel and Access format and downloaded to your PC. This function is available with XM1 function enabled.

XM5 - Ethernet

This Ethernet card inside the device allows the X-Meter to be connected to the corporate network or intranet from various data collecting instruments and monitoring stations through an IP address. This function is only available with XM1 and Energy Management software enabled.

XM6 - Harmonics recording

Module for harmonics measurement up to the 25th which also allows data storing.

XM7 - Annual programmable clocks

This firmware module for programmable clocks with perpetual annual calendar lets the user enable 4 optomos outputs on the X-Meter DIN for automatic management of set utilities' switching ON and OFF (i.e. lights, motor, HVAC, etc.). Each X-Meter can manage up to 12 daily profiles, 2 special periods and 20 special days. Each profile defines 8 status changes within 1one day (24 hours) for each one of the 4 loads. Connect up to 128 X-Meter's for up to 512 loads' management. This function is only available with XM1 enabled.

XM8 - Galvanically Isolated analogic Channel

1 DIN module for voltage or current signals interfacing to the X-Meter's inputs for data visualisation and storage. The X-Meter can power up to two XM8 modules and any additional one must have its own 12Vdc power supply (not included).There are 11 possible interface configurations for voltage and current signals with 0,5% full scale precision guaranteed.

XM9 - PT100-500-1000 probe interface module

1 DIN module for PT100, PT500 and PT1000 temperature probes interfacing with the X-Meter's inputs to visualise and file the temperature data acquired. The X-Meter can power up to two XM9 modules and any additional one must have its own 12Vdc power supply (not included). 0,5% full scale precision guaranteed.

XM10 - Room temperature

This device acquires room temperature data (-10 °C +65°C ± 1.5°C) to send them to the X-Meter's for visualisation and storage. XM10 is suitable for wall fitting and the X-Meter can power up to two XM10 modules and any additional one must have its own 12Vdc power supply (not included). It is particularly suitable to monitor and manage room temperature in Data Centres, LV/MV panels, warehouses, etc.

XM11 - Room temperature and humidity

This device acquires room temperature and humidity data to send them to the X-Meter's for visualisation and storage. XM11 is suitable for wall fitting and the X-Meter can power up to two XM11 modules and any additional one must have its own 12Vdc power supply (not included). It is particularly suitable to monitor and manage room temperature and humidity in Food industry. Humidity Range (Relative Hum 0-100%) ±2% accuracy within the 10 to 90% range. Temperature Range (-10°C +65°C) ±0,8°C accuracy (±0.3°C at 25°C).

XM14 - Power quality

This module lets the user record voltage swells and values with 10 ms integration. XM14 can also measure and store harmonics up to the 25th, both voltage and current. An alarm can be set in advance to send and alert enabled when micro interruptions occur.

XM15 - Load interface relay module

To use the 4 outputs and manage the 220Vac single phase standard loads, they must be connected to an XM15 module. The module is 220Vac powered and the 4 relays are entirely independent and each one of them can manage loads up to 16A.

XM18 - Loads management

The 4 outputs' management is carried out by a sophisticated software that makes it possible to intervene and manage the loads to eliminate or reduce power usage according to the thresholds agreed with the Electricity supplier.

Monitoring Software

Energy monitoring and management software.
Visit our website www.energyteam.it/en/ for further technical information.

Openable current transformer with voltage output

CODE Item Energy Team	Internal Dimensions Pass-through (mm) [Ø]	External Dimensions (mm) [WxHxD]	Full scale (A)	Class
XXXXTA	24	46 x 66 x 34,2	50	1
XXXXTA	24	46 x 66 x 34,2	100	1
XXXXTA	24	46 x 66 x 34,2	150	1
XXXXTA	24	46 x 66 x 34,2	200	1
XXXXTA	24	46 x 66 x 34,2	250	1

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 active power L1 (positive=imported (Q1 and Q4),
> Bi-directional active power L2 (positive=imported),
> Bi-directional active 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-centre voltage ideal star N-O
> Frequency (measured on voltage input L)

Integrated power values of three-phase system

> EImported active power (Q1 and Q4)
> Imported active power (Q1 and Q4)
> Exported active power (Q2 and Q3)
> Imported reactive power (Q1)
> Imported reactive power (Q2)
> Imported reactive power (Q3)
> Imported reactive power (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

Instrument potential

> Monitor and store up to 50 values.
> Store up to 250 days' worth of data.
> Costs division for each installed device.

Storage of historical data

> Acquire and store status from the field.
> Acquire and store data from other meters with pulse output.

SMS
Plant's alarms and thresholds exceedance values

> Programmable clocks management
> Sending SMS and emails with status coming from the field.
> Sending SMS and emails with alarms set by the user on the measurements performed.

Acquisition from other meters

> Connection to PC and to other devices through a management software.
> Online data publication and remote access to the device.

Online data publication

EnergyTeam

Rogowski Flexy sensor

The non-intrusive flexible current sensor provides the ability to measure alternating current in any installation with a full rejection of DC component, very low power consumption, no saturation problems, very low temperature influence and very good linearity.

> Flexibility
> Magnetic sensor
> Hole for sealing the sensor and prevent tampering

Safety precautions
the current flexible sensor has been designed and tested to fulfill IEC 61010-1:2001/EN 61010-1 61010-2-32 safety standard.

Electrical Features	
Typical Voltage Output EoutRMS	100uV/A @50Hz
Frequency Range	50Hz - 60Hz
Accuracy	+/- 1% of range
Linearity (10% to 100%)	+/- 0.2%
Max. Temperature Coefficient	+/- 0.05%
Position sensibility (junction Cable)	+/- 2%
Electrical Safety	
Isolation	Double Isolation
Protection class	Protection class
Overvoltage Category	1000V CAT III / 600V CAT IV
Pollution Degree	2
Dielectric Rigidity	IEC/EN 61010-2-32:2002, 5.4kV 50Hz