

X-Meter 96C

Color LCD Touchscreen Network Analyzer for electrical panels.
Current measurement with CT, 1V Clamp on and Rogowski coils.



General	References
Consumption	5 VA
Nr.3 Voltage Inputs	100-400 Vac
Nr.3 Current Inputs	SEE OPTIONAL MODULES
Inputs/Outputs	SEE OPTIONAL MODULES
Protection degree	IP 20
Weight	300 gr
Maximum size LxHxW (including terminals)	96 x 96 x 68 mm (83mm including modules)
Size of the recessed part LxHxW (including terminals)	91 x 91 x 65 mm
Display	LCD TFT 3.5" 320x240 pixel 262k colors
User interface	Icons with touchscreen
Working temperature	-10°C + 55°C
Relative humidity	95% without condensation
Accuracy	+/- 0.25% Full-Scale, Measured Value +/- 0.50% Full-Scale, Measured Value Derived
Power Supply	110-240 Vac / 48-120 Vdc
Frequency	50-60 Hz

- > Bi-directional meter (Imported/delivered energy)
- > 50 true value Measurements (RMS) on 4 quadrants
- > The 96x96mm, 65mm deep (80mm including the modules) case can be inserted in standard panels.
- > Graphic display: 3.5" LCD TFT, 320x240pixel, 262k colors, with resistive touchscreen, for a clear and readable displaying of measurements.
- > Graphic displaying of voltage, Current, Power and COSφ data from the last 3 days.
- > 12 Power Totalizers on 4 quadrants that can be set to zero.
- > Indication in € for absorbed and delivered Energy.
- > TA to TV conversion function.
- > Temperature probe within the instrument.
- > Clock and calendar.
- > Optional module available with 4 Open Collector inputs and 2 Optomos Clean contact outputs, (with independent mass reference).
- > Different current measurement modules available:
 - with 5A CT's
 - with Rogowski probe from 10 to 2000 A, Ø 100 mm.
 - with Calmp-on 1V TC's. Øint: 24 mm, up to 200A.
- > Serial port: RS485
- > Protocol: Modbus and ETPRO

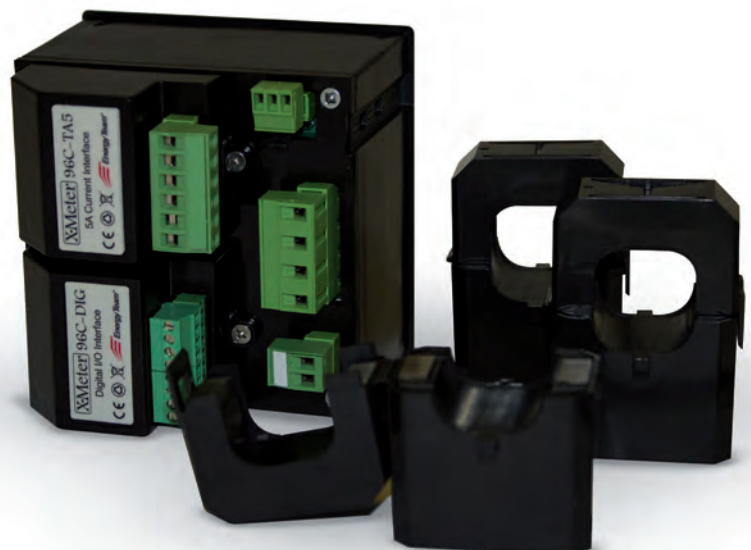
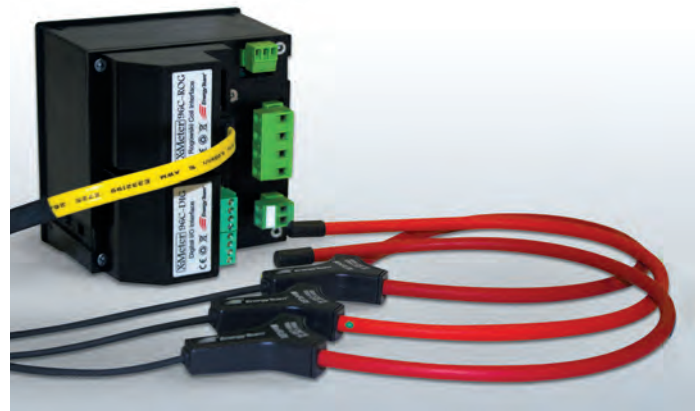
Optional modules available

- > Module for Current measurement 5A max (with CT's).
- > Module for Current measurement 125÷2000A (with Rogowski probes).
- > Clamp-on module for Current measurement with 1A CT's.
- > I/O module: 4 Open-collector Inputs + 2 Optomos Outputs (clean contact), with independent mass reference.

NOTE: 1 Current Measurement Module and 1 I/O Module can be added on one instrument at the same time.

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



List of Measurements



Rear view: terminals, optional modules and mounting brackets



Count of Exported Active Energy and relative cost

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 measurements

- > 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

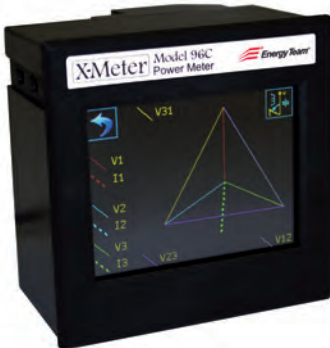
- > Three-phase equivalent voltage phase-neutral
- > Three-phase equivalent voltage phase-phase
- > Three-phase equivalent current
- > Three-phase active power (positive=imported, negative=exported) Bidirectional
- > Three-phase reactive power (positive=imported) Bi-directional

Secondary measurements of three-phase system

- > Three-phase equivalent distorting power
- > Three-phase equivalent apparent power
- > Three-phase equivalent power factor
- > Calculated neutral current
- > Ideal Neutral-center star Voltage, N-0
- > Frequency (measured on voltage input L)

Integrated Energy values of three-phase system

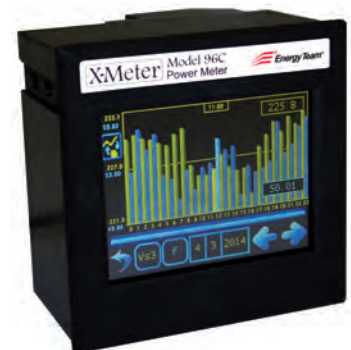
- > Imported active Energy, Bench 1
- > Exported active Energy, Bench 1
- > Imported Inductive Energy (Q1), Bench 1
- > Exported Capacitive Energy (Q2), Bench 1
- > Exported Inductive Energy (Q3), Bench 1
- > Imported Capacitive Energy (Q4), Bench 1
- > Imported active Energy, Bench 2
- > Exported active Energy, Bench 2
- > Imported Inductive Energy (Q1), Bench 2
- > Exported Capacitive Energy (Q2), Bench 2
- > Exported Inductive Energy (Q3), Bench 2
- > Imported Capacitive Energy (Q4), Bench 2



Phase diagram of the plant



Page of Electrical Measurements: Phase-Neutral voltage



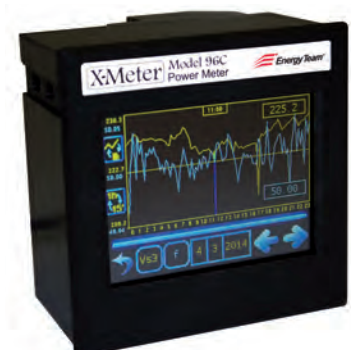
Hourly chart bar of the measurements in the historical archive



Setup, page 1



Page of Electrical Measurements: Three-phase system



Line graph of the measurements in the historical archive

Options X-Meter 96C

96C-TA5 - Current Interface

Currents measurement module: three 5A max inputs for CT connection.

96C-ROG - Rogowski Coil Interface

Current measurement module for Rogowski connection: selectable range 125-250-100-1000-2000A with a keypad, entire measurement chain's precision guaranteed (analyser+Rogowski coil): class 1.

96C-CC1 - 1Veff Current Interface

Current measurement module for 3 CT's (24mm diameter) with 1V output and fixed flow from 25 to 200A. Entire measurement chain's precision guaranteed (analyser+Rogowski coil): class 1.

96C-DIG - Digital I/O Interface

I/O module with 4 open collector inputs for clean contacts and two 24Vac or 100mA max Optomos outputs and independent mass reference.

XM1 - Memory Extension and Communication

This module is essential for the instrument to communicate with the Energy Monitoring software and to considerably improve the instrument's memory thus allowing the user to store all measurements for as long as 250 days with 15 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 96C 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 96C'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.

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 96C for automatic management of set utilities' switching ON and OFF (i.e. lights, motor, HVAC, etc.). Each X-Meter 96C can manage up to 12 daily profiles, 2 special periods and 20 special days. Each profile defines 8 status changes within 1 one day (24 hours) for each one of the 4 loads. Connect up to 128 X-Meter 96C's for up to 512 loads' management. This function is only available with XM1 enabled.

XM8 - Galvanically Isolated analog Channel

1 DIN module for voltage or current signals interfacing to the X-Meter 96C's inputs for data visualisation and storage. The X-Meter 96C 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

PT1000 temperature probes interfacing with the X-Meter 96C's inputs to visualise and file the temperature data acquired. The X-Meter 96C 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 96C's for visualisation and storage. XM10 is suitable for wall fitting and the X-Meter 96C 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 96C's for visualisation and storage. XM11 is suitable for wall fitting and the X-Meter 96C 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.

Monitoring Software

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