

# Power Quality Analyser

## MI 2884 Energy Master XA



The MI 2884 Energy Master XA is a hand-held three phase power quality analyser, specially designed for energy logging detection of harmonics, phasors and waveforms anomalies in the installation simply by connecting the device. Reducing energy use reduces energy costs and may result in a financial cost saving. Energy Master XA serves as a perfect tool for long term recording and later post processing of recorded data. Large easy-to-read graphical colour display enabling the user on site analysis and data checks. The handy Quick Set buttons makes the instrument more user friendly and are allowing faster data overview. Advanced PC SW package PowerView3 enables detailed analysis of recorded data, direct reading from the microSD memory card, analysis of long-term records and automatic creation of professional test report.

### MEASURING FUNCTIONS

- Voltage: TRMS, peak, crest factor (3-channel);
- Current: TRMS, peak, crest factor (4-channel);
- Power (active, reactive, apparent);
- Power measurements fully compliant with IEEE 1459 (active, non active, fundamental, harmonic, load unbalance) and classic (vector or arithmetic) method;
- Unbalance, flicker measurement;
- Harmonic and interharmonic analysis up to 50th harmonics, THD and TDD measurements;
- Energy (active, reactive, generated, consumed);
- Capturing and recording of power supply events (shutdowns, interruptions, swells, dips);
- Inrush currents monitoring and recording;
- Waveform/inrush displaying, snapshot and recording;
- Transients recording;
- Power quality analysis according to EN 50160, IEEE 519;
- Recording up to 7 adjustable alarms;
- Temperature measurement;
- Power factor, cos fi and tg fi.

### KEY FEATURES

- 3-voltage channels with wide measurement range: 0 ... 1000 Vrms (CAT III / 1000 V);
- 4-current channels with support for automatic clamp recognition and "on instrument" range selection;
- Automatic Smart Clamp detection and Smart Clamp range selection;
- Sampling frequency on transients recording 30.6 kSamples/sec;
- Compliance with power quality standard IEC 61000-4-30 Class S;
- Complete power quality analysis according to EN 50160 including signalling and interharmonics;
- Support for microSD memory card (8-GB supplied with the instrument) up to 32GB;
- Color-coded input terminals and terminal labels to suit your application region;
- Intuitive main menu and large icons that makes the equipment very easy to navigate and configure;
- Current clamp auto range selection;
- Powerful PC SW PowerView3 enables downloading, view, analysis of recorded data and professional report creation;
- Flexible clamps (without additional power supply) are included in the Euro and Advanced set.

### APPLICATION

- Energy consumption optimization;
- Power quality assessment and troubleshooting in low and middle voltage electrical systems;
- Checking power correction equipment performance;
- Long-term analysis;
- Predictive maintenance;
- Verification of electrical system capacity before adding loads.

### STANDARDS

#### Safety:

- EN 61010-1

#### Measurements:

- IEC/EN 61000-4-30, Class S;
- IEC/EN 61557-12;
- IEC/EN 61000-4-7, Class I;
- IEC/EN 61000-4-15;
- EN 50160;
- IEEE 1459

#### Electromagnetic compatibility (EMC):

- EN 61326

## TECHNICAL SPECIFICATION

### FUNCTION

#### Voltage inputs

Number of inputs  
Nominal voltage range (L - N)

#### AC+DC

4  
Phase (L-N): 50 ... 1000 VRMS  
Line (L-L): 50 ... 1730 VRMS  
10% ... 150% of nominal voltage  
IEC 61000-4-30 Class S,  $\pm 0.2\%$  of nominal voltage,  
7 kSamples per sec @ 50/60 Hz, sync with mains freq.  
42,5 ... 69,0 Hz  $\pm 10$  mHz

Measuring range

Accuracy

Sampling rate

Mains frequency range

#### Current inputs

Number of inputs

Measuring range:

Range 1:

Range 2:

Current clamp accuracy:

A 1588

A 1281

A 1069

A 1501 / A 1502 / A 1227 / A 1445

A 1503 / A 1446

#### AC+DC

4  
10.0 mVRMS ... 300.0 mVRMS  $\pm 0.5\%$  URMS  
50.0 mVRMS ... 3.000 VRMS  $\pm 0.5\%$  URMS  
50 mARMS ... 100 ARMS  $\pm 0.5\%$  of m.v.  
50 mARMS ... 1200 ARMS  $\pm 0.5\%$  of m.v.  
500 mARMS ... 200 ARMS  $\pm 1.0\%$  of m.v.  
3 ARMS ... 6000 ARMS  $\pm 1.5\%$  of m.v.  
6 ARMS ... 12000 ARMS  $\pm 1.5\%$  of m.v.

### Functions

#### Measuring range

#### Accuracy

Power (P, Q, S)

Depends on voltage and selected clamps

IEC 61557-12 Class 2

Energy

Depends on voltage and selected clamps

Active: IEC 62053-21 Class 2  
Reactive: IEC 62053-23 Class 3

Harmonics (DC ... 50th)

0 ... 20% of nom. voltage

IEC 61000-4-7 Class 1

Interharmonics (1 ... 50th)

0 ... 20% of nom. voltage

IEC 61000-4-7 Class 1

Flicker

0.2 ... 10

IEC 61000-4-15 Class F3

Mains signalling

0 ... 15% of nom. voltage

IEC 61000-4-30 Class S

Unbalance

Voltage: 0.5 ... 5.0%  
Current: 0.0 ... 20%

Temperature

-10 ... 85 °C

$\pm 0.5$  °C

Dips, Swell

10 ... 150% of nom. voltage

$\pm 0.2\%$  of nominal voltage  
 $\pm 1$  cycle

Interrupts

0 ... 10% of nom. voltage

$\pm 1$  cycle

### Recorders

Memory

8GB microSD, up to 32GB supported

#### General recorder

Integration period

1s ... 2h

Recorded signals

> 1000 (voltages, currents, harmonics, power...)  
Minimum, maximum, average and average ON value  
- Voltage events  
- Custom alarms

Duration

> 1 year (depends on size of SD card)

#### Waveform recorder

Duration

Up to 60 seconds of voltage and current waveform

Trigger

Manual, Voltage Events, Custom Alarms, voltage or current level (inrush)

#### Transient recorder

Sampling rate

30.6ksamples/sec

Duration

Up to 50 cycles of voltage and current waveform

Trigger

Manual, voltage envelope or level

### General

Display

4.3 inch color TFT (480 x 272)

Communication

USB

Power supply

110 ... 240 Vac or 6 x NiMh rechargeable batteries, size AA

Overvoltage category

CAT IV / 600 V or CAT III / 1000 V

Weight

0.96 kg

Dimensions

230 x 140 x 80 mm

## OPTIONAL ACCESSORIES – AC FLEX CURRENT CLAMPS

Part No.	A 1501 / A 1502	A 1503	A 1227 / A 1445	A 1446
Nominal range	30/300/3000A	60/600/6000A	30/300/3000A	60/600/6000A
Measurement range	3 ... 6000 A	6 ... 12000 A	3 ... 6000 A	6 ... 12000 A
Accuracy	±1%	±1%	±1%	±1%
∅	7/14 cm	27 cm	14/19 cm	27 cm
Sensor length	25/48 cm	90 cm	48/68 cm	90 cm
Overvoltage category	CAT IV / 600V	CAT IV / 600V	CAT IV / 600V	CAT IV / 600V
IP	IP 64	IP 64	IP 64	IP 64

## OPTIONAL ACCESSORIES – AC IRON CURRENT CLAMPS

Part No.	A 1588	A 1069	A 1281	A 1033
Nominal range	0.5/5/50A	10/100A	0.5/5/100/1000A	100/1000A
Measurement range	0.05 ... 100 A	0.5 ... 200 A	0.05 ... 1200 A	5 ... 1200 A
Accuracy	±0.5%	±1%	±0.5%	±2%
Jaw opening	4 cm	1.3 cm	5.2 cm	5.2 cm
Max. conductor	< 50 mm	< 50 mm	< 50 mm	< 15 mm
Overvoltage category	CAT II / 600V	CAT III / 600V	CAT III / 600V	CAT III/600V
IP	IP 40	IP 20	IP 20	IP 20

## OPTIONAL ACCESSORIES – AC/DC CURRENT CLAMPS

Part No.	A 1391 PQA	A 1717	A 1636
Nominal range	40/300 A	100/1000A	DC: 2000A AC: 1000A
Measurement range	2 ... 300 A	3 ... 1000 A	DC: 40 ... 2000 A AC: 20 ... 1000 A
Accuracy	±3%	±1%±1A	
Jaw opening	2.5 cm	5.1 cm	7.3 cm
Max. conductor	< 22 mm	< 52 mm	< 68 mm
Overvoltage category	CAT IV/600V	CAT III / 600V	CAT II / 600V
IP	IP 40	IP 40	IP 40

## OPTIONAL ACCESSORIES – I/U TRANSDUCER

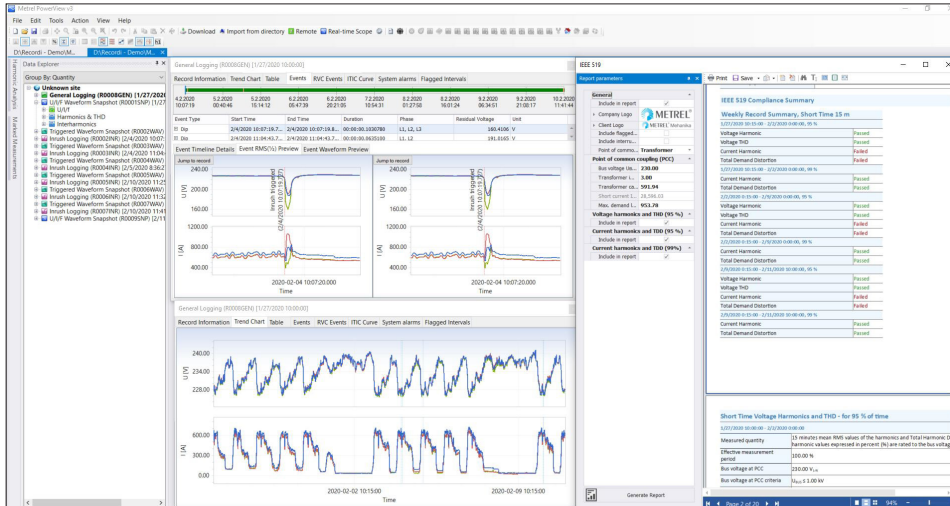
Part No.	A 1037
Nominal range	0.5/5 A
Measurement range	0.01 ... 10 A
Accuracy	±0.3%
Overvoltage category	CAT III/600V
IP	IP 40

## OPTIONAL ACCESSORIES

Photo	Order No.	Description
	A 1479	Wide range power supply
	A 1631	EV monitoring cable
	A 1565	Waterproof case for outdoor application and recordings (pylons, switchyards)
	A 1577	Waterproof case with a telescopic handle and smooth-running wheels
	A 1685	Professional waterproof case
	S 2014	Safety fuse adapter, 3 pcs
	S 2015	Safety flat clamp, 4 pcs
	A 1198	Magnetic contact probe
	A 1354	Temperature probe
	A 1648	Current clamp A 1281 extension cable, 5 m
	A 1673	Micro SD card 32GB
	A 1458	SanDisk microSD card reader

## PC SOFTWARE POWERVIEW 3

PC Software PowerView 3 software is a powerful platform for downloading, analysing recorded data and creation of power quality test reports. PC Software contains a package of functionalities needed for profound evaluation of power quality phenomena, data comparison and creation of complex test reports. It works in conjunction with Metrel new generation power quality analysers. For the instruments equipped with GPRS functionality PowerView3 enables remote control and data download.



## KEY FEATURES

- User friendly interface: wide range of quick buttons, possibility to customize the environment by dragging, docking and resizing the window tabs.
- Structure: downloaded data is organized into Windows Explorer-like tree structure.
- "Drag and drop": downloaded data can be easily organized into multiple sites and sub-site locations.
- Data filtering: data in a structure can be grouped by quantity or by phase.
- Views: depending on selected record type, different views are available (Record Information view, Trend Chart view, Table view, Waveform Scope view, Voltage Quality view, etc.)
- EN 50160 analysis: automatic voltage quality analysis in compliance with custom or predefined EN 50160 Power Quality criteria and quick report printing.
- Chart zoom: chart can be zoomed depending on selected in a table value range.
- Remote control: via GPRS communication remote handling of the instrument and its data can be executed.
- GPS synchronization: simultaneous measurement on the different network points by using 2 or more synchronized instruments.
- On-line monitoring: real-time observing of signals and parameters is possible via PowerView3 while instrument is measuring / recording in the background.
- Export of test results: test results can be filtered and exported to other programs (MS Excel, MS Word, CSV, TXT).
- Reports: automatic generation of test reports from the selected views and data with attached graphs according specific standards/national specification, like: IEEE 519, GOST 32144/33073, Energy report, Energy demand report Código de RED
- SW and FW update: PowerView3 checks for new versions of the application and downloads updates from the Internet if necessary.

## METREL D.D.

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Note! Photographs in this catalogue may slightly differ from the instruments at the time of delivery. Subject to technical change without notice.

## ORDERING INFORMATION



### MI 2884 Advanced set (AD)

- Instrument Energy Master XA
- A 1502 1-phase flexible current clamps 3000 / 300 / 30 A, 3 pcs
- Test probe, (brown, black, grey, blue), 4 pcs
- Crocodile clip, (brown, black, grey, blue), 4 pcs
- Voltage measurement lead, (brown, black, grey, blue), 4 pcs
- Labels for color coding
- microSD memory card 8.0GB
- microSD card reader
- PC SW PowerView3
- USB cable
- Power supply adapter
- 1.2 V NiMH rechargeable battery, 6 pcs
- Soft carrying bag
- Instruction manual
- Calibration certificate



### MI 2884 Euro set (EU)

- A 1227 1-phase flexible current clamps 3000 / 300 / 30 A, 3 pcs (instead of A 1502 flexible current clamps)



### MI 2884 Standard set (ST)

- Without flexible current clamps

