

# Class S Power Quality Analyser

## MI 2883 Energy Master



The MI 2883 Energy Master is a hand-held three phase power quality analyser, specially designed for energy logging and subsequently efficiency calculation. Reducing energy use reduces energy costs and may result in a financial cost saving. Energy Master serves as a perfect tool for long term logging 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-channels);
- Current: TRMS, peak, crest factor (4-channels);
- Power (active, reactive, apparent);
- Power measurements fully compliant with IEEE 1459 (active, non active, fundamental, harmonic, load unbalance);
- Unbalance, flicker measurement;
- Harmonic and interharmonic analysis up to 50th harmonics, THD measurement;
- Energy (active, reactive, generated, consumed);
- Capturing and recording of power supply events (shutdowns, interruptions, swells, dips);
- Power quality analysis according to EN 50160;
- Recording up to 7 adjustable alarms;
- Temperature measurement;
- Power factor,  $\text{tg } \phi$ .

### 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;
- 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;
- 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

- 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 1448;
- 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  
(with A 1227 / A 1502 flex clamps)  
Measuring range (with A1281 iron clamps)

#### AC+DC

4  
3 ... 6000 ARMS  $\pm 2\%$  of m.v.  
50 m ... 1200 ARMS  $\pm 1\%$  of m.v.

#### Functions

Power (P, Q, S)

Energy

Harmonics (DC ... 50th)

Interharmonics (1 ... 50th)

Flicker

Mains signalling

Unbalance

Temperature

Dips, Swell

Interrupts

#### Measuring range

Depends on voltage and selected clamps

Depends on voltage and selected clamps

0 ... 20% of nom. voltage

0 ... 20% of nom. voltage

0.2 ... 10

0 ... 15% of nom. voltage

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

-10 ... 85 °C

10 ... 150% of nom. voltage

0 ... 10% of nom. voltage

#### Accuracy

IEC 61557-12 Class 2

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

IEC 61000-4-7 Class 1

IEC 61000-4-7 Class 1

IEC 61000-4-15 Class F3

IEC 61000-4-30 Class S

$\pm 0.5$  °C

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

$\pm 1$  cycle

#### Recorders

Memory

#### General recorder

Integration period

Recorded signals

Duration

8GB microSD, up to 32GB supported

1s ... 2h

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

> 1 year (depends on size of SD card)

#### General

Display

Communication

Power supply

Overvoltage category

Weight

Dimensions

4.3 inch color TFT (480 x 272)

USB


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

CAT IV / 600 V or CAT III / 1000 V


0.96 kg

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

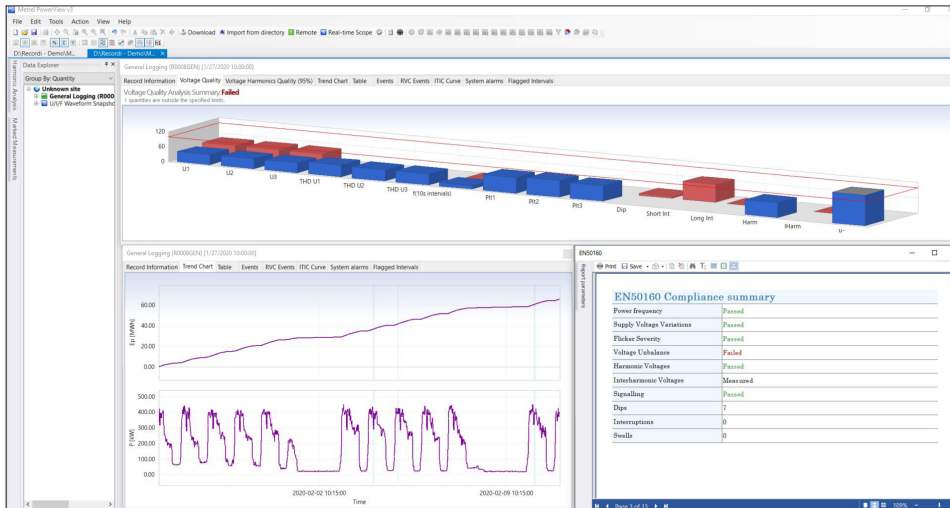
Part No.	A 1037
	
Nominal range	0.5/5 A
Measurement range	0.01 ... 10 A
Accuracy	±0.3%
Overvoltage category	CAT III/600V
IP	IP 40

## 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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## ORDERING INFORMATION



### MI 2883 Advanced set (AD)

- Instrument Energy Master
- 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 2883 Euro set (EU)

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



### MI 2883 Standard set (ST)

- Without flexible current clamps