Power Quality Analysers
Selection Guide for Power Quality Analysers

MEASUREMENTS	MI 2893 Power Master XT	MI 2892 Power Master	MI 2885 Master Q4	MI 2884 Energy Master XA	MI 2883 Energy Master
					
STANDARD					
IEC 61000-4-30 Compliance; Ed. 3.0	Class A (Independent certificate)	Class A (Independent certificate)	Class S (Independent certificate - 0,1%)	Class S (0,2%)	Class S (0,2%)
INPUTS					
Number of current measuring channels	4	4	4	4	4
Number of voltage measuring channels	4	4	4	3	3
Automatic range selection/auto-ranging	• / •	• / •	• / •	• / •	• / •
1-phase flexible current clamps 3000/300/30 A (included in Advance set (AD) and Euro set (EU) set)	4	4	4	3	3
MEASUREMENTS					
TRMS Current measurement (Min., Max., AvgON)	•	•	•	•	•
TRMS Voltage measurement (Min., Max., AvgON)	•	•	•	•	•
Scope function	•	•	•	•	•
On-line harmonics measurement	•	•	•	•	•
Frequency measurement	•	•	•	•	•
Power measurement (W, VA, VAr)	•	•	•	•	•
THD and harmonics analysis	•	•	•	•	•
Interharmonics analysis	•	•	•	•	•
Power Factor cos fi and tg fi	•	•	•	•	•
Registration of voltage events (sags, swells, interruptions)	•	•	•	•	•
Statistical evaluation	•	•	•	•	•
Current in neutral conductor	•	•	•	With optional clamp	With optional clamp
Phase diagram	•	•	•	•	•
Unbalance	•	•	•	•	•
EN 50160 Analysis / IEEE 519 / Energy consumption optimization	• / • / •	• / • / •	• / • / •	• / • / •	• / • / •
Flicker measurement	•	•	•	•	•
Transients measurement	• (1 MSamples/sec)	• (49 kSamples/sec)	• (49 kSamples/sec)	• (30 kSamples/sec)	
Waveform recording	•	•	•	•	
Inrush currents	•	•	•	•	
VFD (variable frequency drives)	•	•	•		
Photo voltaic efficiency measurement	•	•	•		
Energy measurement	•	•	•	•	•
Signalling	•	•	•	•	•
Temperature measurement	•	•	Optional	Optional	Optional
Integration period	1 ... 7200 s	1 ... 7200 s	1 ... 7200 s	1 ... 7200 s	1 ... 7200 s
Power measurements in compliance with IEEE 1459 / Classic (vector or arithmetic)	• / •	• / •	• / •	• / •	• / •
Simultaneous General / waveform	•	•	•	•	
Conection check	•	•	•	•	•
Colour coding	•	•	•	•	•
COMMUNICATION PORTS					
USB	•	•	•	•	•
RS232	For GPS only	For GPS only	For GPS only		
GPS time synchronisation	Optional	Optional	Optional		
Remote instruments control (4G / WiFi)	Optional	Optional	Optional		
Remote instruments control (Ethernet / Intranet)	• / •	• / •	• / •		
GENERAL					
Graphical LCD with backlight (480x272 4.3" color TFT)	•	•	•	•	•
On-site analysis of recorded data	•	•	•	•	•
Built-in power supply for flexible clamps	•	•	•	•	•
Maximal recording time	Over a year	Over a year	Over a year	Over a year	Over a year
Memory module size 8 GB supplied (up to 32 GB)	•	•	•	•	•
PC Software PowerView3	•	•	•	•	•
Maximal test voltage – interphase value	1730 V rms	1730 V rms	1730 V rms	1730 V rms	1730 V rms
Maximal test voltage – between phase and N conductors	1000 V rms	1000 V rms	1000 V rms	1000 V rms	1000 V rms
Maximum transient peak voltage	6 kV	6 kV	6 kV	6 kV	
Frequency range	50 Hz /60 Hz 42.500Hz ... 69.000Hz VFD (5 Hz - 120 Hz) 400 Hz	50 Hz /60 Hz 42.500Hz ... 69.000Hz VFD (5 Hz - 120 Hz) 400 Hz	50 Hz /60 Hz 42.500Hz ... 69.000Hz VFD (5 Hz - 120 Hz) 400 Hz	50 Hz /60 Hz 42.500Hz ... 69.000Hz	50 Hz /60 Hz 42.500Hz ... 69.000Hz
Over voltage category	CAT IV / 600 V CAT III / 1000 V	CAT IV / 600 V CAT III / 1000 V	CAT IV / 600 V CAT III / 1000 V	CAT IV / 600 V CAT III / 1000 V	CAT IV / 600 V CAT III / 1000 V
AC power supply	•	•	•	•	•
Built-in battery charger	•	•	•	•	•
Rechargeable batteries (NiMH)	6 x AA	6 x AA	6 x AA	6 x AA	6 x AA
Weight	1.10 kg	0.96 kg	0.96 kg	0.96 kg	0.96 kg
Dimensions (mm)	230 x 140 x 80	230 x 140 x 80	230 x 140 x 80	230 x 140 x 80	230 x 140 x 80

Power Quality Analysers
Differences between Power Quality Analysers

Class A

MI 2893 Power Master XT

Flagship of our line of Class A power quality analyzers with high sampling rate for transient capturing intended for professorial users specialized for investigating transients in the network and high accuracy measurements.

- Class A 0,1 % (independent certificate)
- Top tier PQA instrument
- General recorder
- Waveform recorder
- Transient recorder working simultaneously with waveform and general recorder (1 MSamples/sec)

MI 2892 Power Master

Advanced selection of power quality analysers and aimed primarily at dedicated professionals, who specialize in high accuracy measurements and analysis, whose validity is backed by a Class A independent certificate.

- Class A 0,1 % (independent certificate)
- Advanced PQA instrument
- General recorder
- Waveform recorder
- Transient recorder (49 kSamples/sec)

Class S

MI 2885 Master Q4

Designed for power quality assessment and troubleshooting in low and middle voltage electrical systems and checking power correction equipment performance and verification of electrical system capacity before adding new loads.

- Class S 0,1% (independent certificate)
- Intermediate PQA instrument
- General recorder
- Waveform recorder
- Transient recorder (49 kSamples/sec)

MI 2884 Energy Master XA

For advanced users interested in long term monitoring and analysis of electrical systems for the purpose of energy quality and consumption management and formulation of cost saving measures with additional simultaneous waveform, inrush recording and transient detection.

- Class S (0,2%)
- Enhanced PQA instrument
- General recorder
- Waveform recorder
- Transient recorder (30 kSamples/sec)

MI 2883 Energy Master

For users interested in long term monitoring and analysis of electrical systems for the purpose of energy quality and consumption management and formulation of cost saving measures.

- Class S (0,2%)
- Basic PQA instrument
- General recorder

Power Quality Analysers
Comparison between Power Quality Analysers

MODEL		MI 2893 Power Master XT	MI 2892 Power Master	MI 2885 Master Q4	MI 2884 Energy Master XA	MI 2883 Energy Master
						
STANDARD	IEC 61000-4-30 Compliance	Class A (independent certificate)	Class A (independent certificate)	Class S (Ind. certificate - 0,1%)	Class S (0.2%)	Class S (0.2%)
	EN 50160	•	•	•	•	•
GENERAL RECORDER MEASUREMENTS	Limited / Standard profile	• / •	• / •	• / •	• / •	• / •
	Voltage AC + DC	•	•	•	•	•
	Current AC +DC	•	•	•	•	•
	Frequency	•	•	•	•	•
	Power measurements in compliance with IEEE 1459 / Classic (vector or arithmetic)	• / •	• / •	• / •	• / •	• / •
	Energy	•	•	•	•	•
	Harmonics	•	•	•	•	•
	Interharmonics	•	•	•	•	•
	Flickers and RVC	•	•	•	•	•
	Phase diagram	•	•	•	•	•
	Signalling	•	•	•	•	•
	Under/Over voltage deviation	•	•	•	•	•
	Interrupts, Dips, Swells	•	•	•	•	•
	Alarms	•	•	•	•	•
	Phase diagram	•	•	•	•	•
	Neutral current	•	•	•	Optional	Optional
	Temperature	•	•	Optional	Optional	Optional
WAVEFORM RECORDER (TRIGGERS ON)	Events	•	•	•	•	
	Alarms	•	•	•	•	
	Level I (Inrush recorder)	•	•	•	•	
	Level U (Inrush recorder)	•	•	•	•	
	Time interval	•	•	•	•	
TRANSIENT RECORDER (TRIGGERS ON)	Envelope	•	•	•	•	
	Level (I, In, U, Un)	•	•	•	•	
	Transient selection between N / GND	• / •				
TROUBLESHOOTING FEATURES	On-line scope mode	•	•	•	•	•
	Waveform snapshoot	•	•	•	•	•
	GPS receiver	Optional	Optional	Optional		
	WiFi / 4G modem	Optional	Optional	Optional		
REMOTE COM	Ethernet / Intranet	• / •	• / •	• / •		
MICROSD CARD	8 GB	•	•	•	•	•
PC SW	PowerView3	•	•	•	•	•

Power Quality Analysers
Selection Guide for Clamps

Part No.		Smart Clamps	Description	Target application	MI 2893	MI 2892	MI 2885	MI 2884	MI 2883
A 1501		•	1-phase mini flexible current clamp 3000/300/30 A / 1V	Single phase flexible current clamp with three selectable measuring ranges. Does not require external power supply as it is powered by the measuring instrument.	•	•	•	•	•
A 1502		•	1-phase mini flexible current clamp 3000/300/30 A / 1V	Single phase flexible current clamp with three selectable measuring ranges. Does not require external power supply as it is powered by the measuring instrument.	•	•	•	•	•
A 1609		•	1-phase mini flexible current clamp 3000/300/30 A / 1V	Single phase flexible current clamp with three selectable measuring ranges. Does not require external power supply as it is powered by the measuring instrument.	•	•	•	•	•
A 1503		•	1-phase mini flexible current clamp 6000/600/60 A / 1V	Single phase flexible current clamp with three selectable measuring ranges. Does not require external power supply as it is powered by the measuring instrument.	•	•	•	•	•
A 1227		•	1-phase flexible current clamp 3000/300/30 A / 1 V	Single phase flexible current clamp with three selectable measuring ranges. Does not require external power supply as it is powered by the measuring instrument.	•	•	•	•	•
A 1445		•	1-phase flexible current clamp 3000/300/30 A / 1 V	Single phase flexible current clamp with three selectable measuring ranges. Does not require external power supply as it is powered by the measuring instrument.	•	•	•	•	•
A 1446		•	1-phase flexible current clamp 6000/600/60 A / 1 V	Single phase flexible current clamp with three selectable measuring ranges. Does not require external power supply as it is powered by the measuring instrument.	•	•	•	•	•
A 1582		•	1-phase flexible current clamp 3000/300/30 A / 1 V; high temperature	Single phase, high temperature (sensor: -20 to 200 °C, module: -20 to 70 °C) flexible current clamp with three selectable measuring ranges. Does not require external power supply as it is powered by the measuring instrument	•	•	•	•	•
A 1281		•	Current clamp 0.5/5/100/1000 A / 1 V	High accuracy current clamp for precise current and power measurements including leakage current measurement.	•	•	•	•	•
A 1588		•	Current clamp 0.5/5/50A / 1V	High accuracy current clamp for precise current and power measurements including leakage current measurement. Does not require external power supply as it is powered by the measuring instrument.	•	•	•	•	•
A 1783			Mini current clamps 20/200A	Mini current clamp for power measurements	•	•	•	•	•
A 1398 PQA			Current clamp 10A / 1V	High accuracy current clamp for precise current and power measurements including leakage current measurements.	•	•	•	•	•
A 1391 PQA			Current clamp AC/DC 40/300 A / 1 V	AC + DC current clamp for power measurements. Battery 9V.	•	•	•	•	•
A 1636			Current clamp AC/DC 1500 A	AC+DC current clamp intended for power measurements, specially for photo-voltaic inverters (DC side). Battery operated (9 V)	•	•	•	•	•
A 1717		•	Current clamp AC/DC 100/1000A / 1V	AC+DC current clamp intended for power measurements, specially for photo-voltaic inverters and DC/AC converters /DC side). Battery operated (9V). Requires A 1561 connection cable.	•	•	•	•	•
A 1037			Current transformer 5 A / 1 V	3-phase transformer for power measurements on distribution panels.	•	•	•	•	•

SMART CLAMPS KEY FEATURES:

- Cover wide current range;
- Are automatically recognized by the instrument;
- Are switchless (range selection on the instrument);
- Do not require external power supply.

Power Quality Analysers
Selection Guide for Clamps

Part No.		Type	Jaw opening/loop	Ranges	Measurement Ranges	RMS accuracy 50/60 Hz	Phase accuracy 50/60 Hz	RMS accuracy 1500 Hz	Phase accuracy 1500 Hz	Overvoltage category; IP
A 1501		s-Flex	fi 7 cm Sensor length: 25 cm	30 A 300 A 3000 A	3 A ... 60 A 5 A ... 600 A 50 A ... 6000 A	± 1 % ± 1 % ± 1 %	< 1°	± 3 %	< 10°	CAT IV / 600 V; IP 64
A 1502		s-Flex	fi 14 cm Sensor length: 48 cm	30 A 300 A 3000 A	3 A ... 60 A 5 A ... 600 A 50 A ... 6000 A	± 1 % ± 1 % ± 1 %	< 1°	± 3 %	< 10°	CAT IV / 600 V; IP 64
A 1609		s-Flex	fi 54 cm Sensor length: 175 cm	30 A 300 A 3000 A	3 A ... 60 A 5 A ... 600 A 50 A ... 6000 A	± 1 % ± 1 % ± 1 %	< 1°	± 3 %	< 10°	CAT IV / 600 V; IP 64
A 1503		s-Flex	fi 27 cm Sensor length: 90 cm	60 A 600 A 6000 A	6 A ... 120 A 10 A ... 1200 A 100 A ... 12000 A	± 1 % ± 1 % ± 1 %	< 1°	± 3 %	< 10°	CAT IV / 600 V; IP 64
A 1227		Flex	fi 14 cm Sensor length: 48 cm	30 A 300A 3000 A	3 A ... 60 A 10 A ... 600 A 60 A ... 6000 A	± 1 % ± 1 % ± 1 %	< 1°	± 3 %	< 10°	CAT IV / 600 V; IP 64
A 1445		Flex	fi 19 cm Sensor length: 61 cm	30 A 300A 3000 A	3 A ... 60 A 10 A ... 600 A 60 A ... 6000 A	± 1 % ± 1 % ± 1 %	< 1°	± 3 %	< 10°	CAT IV / 600 V; IP 64
A 1446		Flex	fi 27 cm Sensor length: 90 cm	60 A 600A 6000 A	6 A ... 120 A 20 A ... 1200 A 120 A ... 12000 A	± 1 % ± 1 % ± 1 %	< 1°	± 3 %	< 10°	CAT IV / 600 V; IP 64
A 1582		Flex	fi 19 cm Sensor length: 61 cm	30 A 300A 3000 A	3 A ... 60 A 10 A ... 600 A 60 A ... 6000 A	± 1 % ± 1 % ± 1 %	< 1°	± 3 %	< 10°	CAT IV / 600 V; IP 64
A 1281		Iron	Jaw opening: 5.2 cm Max. conductor size < 50 mm	0.5 A 5 A 100 A 1000 A	50 mA ... 1 A 0.5 A ... 10 A 10 A ... 175 A 100 A ... 1200 A	± 0,5 % ± 0,5 % ± 0,5 % ± 1,2 %	< 0.5°	± 1.5 %	< 1.5°	CAT III / 600 V; IP 20
A 1588		Iron	Jaw opening: 40 mm Max. conductor size < 50 mm	0.5A 5A 50A	50 mA ... 1 A 0.5 A ....10 A 5 A ... 100 A	± 0.5 % ± 0.5 % ± 0.5 %	< 0.5 °	± 1.5 %	< 3 °	CAT II / 600 V; IP 40
A 1783		Iron	Jaw opening: 24 mm Max. conductor size < 24 mm	20 A 200 A	50 mA ... 20A 500 mA ... 200 A	± 0,5 %	< 0.5 °	± 1.5 %	< 0.5°	CAT III / 600 V; IP 40
A 1398 PQA			Jaw opening: 13 mm Max. conductor size < 13 mm	10 A	0.5A .... 20 A	± 0.5%	< 0.45°	± 1.5 %	< 3°	CAT II / 300 V; IP 40
A 1391 PQA		Iron	Jaw opening: 2.5 cm Max. conductor size < 22mm	AC/DC 40 A 300 A	2 A ... 40 A 20 A ... 300 A	± 3 % ± 3 %	< 3°	± 3 %	< 10°	CAT IV / 600 V; IP 64
A 1636		Iron	Jaw opening: 7,3 cm Max. conductor size < 68 mm	AC/DC 1500 A	45 ... 1500 A	±3 % FS	< 3 °	±3 % FS	< 6°	CAT III / 600 V; IP 40
A 1717		Iron	Jaw opening: 5.1 cm Max. conductor size < 52 mm	AC/DC 100 A 1000 A	3 A ... 100 A 30 A ... 1000 A	±1 % m.v. ±1 A	< 0.5°	± 2 %	< 1.5°	CAT III / 600 V; IP 40
A 1037		Iron	N/A	0.5 A 5 A	10 mA ... 1 A 0.5 A ... 10 A	±0,3 % ±0,3 %	< 0.5°	± 1 %	< 1.0°	CAT III / 600 V; IP 40

Ranges are specified for pure sine wave, reduced crest factor (< 1.5),