Power Quality Analysers

MI 2893 Power Master XT

The MI 2893 Power Master XT is a hand-held three phase power quality analyzer with a large easy-to-read graphical color display enabling the user to detect harmonics, phasors, waveforms and transients with sampling frequency 1 MSamples/sec in the installation simply by connecting the device. The instrument is designed for a long term recording as well as for troubleshooting power quality problems in three-phase and single-phase power distribution systems. The handy Quick Set buttons makes the instrument more user friendly and are allowing faster data overview for troubleshooting. Advanced PC SW package PowerView3 enables detailed analysis of recorded data, direct and remote reading from the micro SD memory card, analysis of long term records and automatic creation of professional test report.

MEASURING FUNCTIONS

- Voltage: TRMS, peak, crest factor (4-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 un-balance) and classic (vector or arithmetic) method;**
- **VFD (variable frequency drive, 5 Hz – 110 Hz), 400 Hz;**
- Unbalance, flicker measurement;
- Harmonic and interharmonic analysis up to **50th harmonics, THD and TDD measurements;**
- **Energy (active, apparent, reactive, apparent, 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 with sampling frequency 1 MSamples/sec;**
- Power quality analysis according to EN 50160, IEEE 519;
- Recording up to 7 adjustable alarms;
- Temperature measurement;
- Power factor, tg fi.

KEY FEATURES

- 4-voltage channels with wide measurement range;
- 4-current channels with support for automatic clamp recognition and "on instrument" range selection;
- Automatic Smart Clamp detection and Smart Clamp range selection;
- Current clamp auto range selection;
- **Sampling frequency on transients recording > 1 MSamples/sec, on 8 channels simultaneously;**
- **Compliance with power quality standard IEC 61000-4-30 Class A;**
- 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 AD/EU set;
- Remote communication via Ethernet:
- GPS clock synchronization (optional).

APPLICATION

- **High speed transient capturing;**
- Energy consumption optimization;
- Power quality assessment and trou-bleshooting 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 A;
- IEC/EN 61557-12;
- IEC/EN 61000-4-7, Class I;
- IEC/EN 61000-4-15;
- EN 50160;
- IEEE 1448;
- IEEE 1459;
- IEEE 519

Electromagnetic compatibility (EMC):
- EN 61326

TECHNICAL DATA

FUNCTION		
Voltage inputs	**AC+DC**	
Number of inputs	5	
Nominal voltage range		
Three phase connection	Phase (L-N): 50 ... 1000 V RMS Line (L-L): 87 ... 1730 V	
Single phase connection	Phase (L-N): 50 ... 500 V RMS	
Measuring range	10 % ... 150 % of nominal voltage	
Three phase connection	10 % ... 110 % of nominal voltage	
Single phase connection	±6 kV	
Max. transient peak voltage	IEC 61000-4-30 Class A, ±0.1% of nominal voltage,	
Accuracy	7 kSamples per second @ 50/60 Hz, synchronization with main frequency	
Sampling rate	1.7 kSamples per second @ VFD (5 Hz - 110 Hz) 12.2 kSamples per second @ 400 Hz 42,5 ... 69,0 Hz ±10 mHz	
Mains frequency range	5 ... 110 Hz ± 10 mHz (VFD) 335,0 ... 465,0 Hz ± 100 mHz	
Current inputs	**AC+DC**	
Number of inputs	4	
Measuring range (with A 1227/A 1502 flex clamps)	3 ... 6000 ARMS ±1.5% of m.v.	
Measuring range (with A1281 iron clamps)	50 m ... 1200 ARMS ±0.5% of m.v.	
Functions	**Measuring range**	**Accuracy**
Power (P, Q, S, cos ϕ, PF...)	Depends on voltage and selected clamps	IEC 61557-12 Class 1
Energy	Depends on voltage and selected clamps	Active: IEC 62053-21 Class 1 Reactive: IEC 62053-23 Class 2
Harmonics (DC ... 50th) @50/60 Hz Harmonics (DC ... 13th) @400 Hz Harmonics (DC ... 20th) @VFD (5 - 16 Hz) Harmonics (DC ... 13th) @VFD (16 - 33 Hz) Harmonics (DC ... 5th) @VFD (33 - 110 Hz)	0 ... 20% of nom. voltage	IEC 61000-4-7 Class 1
Interharmonics (1 ... 50th) @ 50/60 Hz Interharmonics (1 ... 20th) @VFD (5 - 16 Hz) Interharmonics (1 ... 13th) @VFD (16 - 33 Hz) Interharmonics (1 ... 5th) @VFD (33 - 110 Hz)	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 A
Unbalance	Voltage: 0 ... 5% Current: 0 ... 20%	
Temperature	-10 ... 85 °C	±0.5 °C
Dips, Swell	10 ... 150% of nom. voltage	±0.2 % of nominal voltage ±1 cycle
Interrupts	0 ... 10% of nom. voltage	±1 cycle
Recorders		
Memory	8GB microSD, up to 32GB supported	
General recorder		
Integration period	1s ... 2h	
Recorded signals	> 1000 (voltages, currents, harmonics, power...) Minimal, maximal, average and average ON value per interval, including - Voltage events (dip, swell, interupt) - Custom alarms (up to 7 programmable alarms) - Signalling (up to two selectable frequecies) - Transients - Inrush	
Duration	> 1 year (depends on size of SD card at 10 min registration period)	
Waveform recorder		
Duration	Up to 60 seconds duration and 30 seconds pretrigger of voltage and current waveform Up to 1500 records	
Trigger	Manual, Voltage Events, Custom Alarms, Voltage or current level (inrush), Time interval	
Transient recorder		
Sampling rate	1 MSamples/sec; simultaneously on all 8 channels	
Duration	One cycle of voltage and current waveforms	
Trigger	Transient selection measurement between L-N/L-GND Envelope and level trigger simultaneously Transient recorder runs simultaneously with general and waveform recorder Set & go transient setup: predefined setup (low and high level) for current and voltage trigger	
General		
Display	4.3 inch color TFT (480 x 272)	
Communication	USB, Ethernet	
Time synchronisation	GPS receiver (A 1355)	
Power supply	With power supply adapter or 6 x NiMh rechargable batteries, size AA	
Overvoltage category	CAT IV / 600 V For three phase connection CAT III / 1000 V	
Weight	1,1 kg	
Dimensions	230 x 140 x 80 mm	

STANDARD SET

MI 2893 Advanced set (AD)
- Instrument Power Master XT
- 1-phase flexible current clamps 3000 / 300 / 30 A
- (A 1502), 4 pcs
- Test probe, (brown, black, grey, green, blue), 5 pcs
- Crocodile clip, (brown, black, grey, green, blue), 5 pcs
- Voltage measurement lead, (brown, black, grey,
- green, blue), 5 pcs
- Labels for colour coding
- Temperature probe
- microSD memory card 8.0GB
- microSD card reader
- PC SW PowerView3
- RS232, USB and Ethernet patch cable
- Power supply adapter
- 1.2 V NiMH rechargeable battery, 6 pcs
- Professional protective waterproof case (A 1685)
- Instruction manual
- Calibration certificate

MI 2893 Euro set (EU)
- With 1-phase flexible current clamps 3000 / 300 / 30 A (A 1227), 4pcs

MI 2893 Standard set (ST)
- Without flexible current clamps

Picture of MI 2893 EU set