






# Power Quality Analysers

## Selection Guide for Power Quality Analysers

| MEASUREMENTS  | MI 2893<br>Power Master XT  | MI 2892<br>Power Master   | MI 2885<br>Master Q4  | MI 2884<br>Energy Master XA   | MI 2883<br>Energy Master  |
|---|---|---|---|---|---|
|   |  |  |  |  |  |
| <b>STANDARD</b>   |   |   |   |   |   |
| IEC 61000-4-30 Compliance   | Class A<br>(Independant certificate)  | Class A<br>(Independant certificate)  | Class S<br>(0,1%)   | Class S<br>(0,2%)   | Class S<br>(0,2%)   |
| <b>INPUTS</b>   |   |   |   |   |   |
| 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<br>(included in Advance set (AD) and Euro set (EU) set) | 4   | 4   | 4   | 3   | 3   |
| <b>MEASUREMENTS</b>   |   |   |   |   |   |
| 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 and tg fi  | •   | •   | •   | •   | •   |
| Registration of voltage events (sags, swells,<br>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 /<br>Classic (vector or arithmetic)                   | • / •   | • / •   | • / •   | • / •   | • / •   |
| Simultaneous General / waveform / inrush  | •   | •   | •   | •   | •   |
| Conection check   | •   | •   | •   | •   | •   |
| Colour coding   | •   | •   | •   | •   | •   |
| <b>COMMUNICATION PORTS</b>  |   |   |   |   |   |
| USB   | •   | •   | •   | •   | •   |
| RS232   | For GPS only  | For GPS only  | For GPS only  |   |   |
| GPS time synchronisation  | Optional  | Optional  | Optional  |   |   |
| Remote instruments control (3G / WiFi)  | Optional  | Optional  | Optional  |   |   |
| Remote instruments control (Ethernet / Intranet)  | • / •   | • / •   | • / •   |   |   |
| <b>GENERAL</b>  |   |   |   |   |   |
| Graphical LCD with backlight  | 480 x 272 4.3 inch color TFT  | 480 x 272 4.3 inch color TFT  | 480 x 272 4.3 inch color TFT  | 480 x 272 4.3 inch color TFT  | 480 x 272 4.3 inch 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 (Free)   | •   | •   | •   | •   | •   |
| 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 PE 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  |   |   |
| Frequency range   | 50 Hz /60 Hz<br>42.500Hz ... 69.000Hz   | 50 Hz /60 Hz<br>42.500Hz ... 69.000Hz   | 50 Hz /60 Hz<br>42.500Hz ... 69.000Hz   | 50 Hz /60 Hz<br>42.500Hz ... 69.000Hz   | 50 Hz /60 Hz<br>42.500Hz ... 69.000Hz   |
| VFD (5 Hz - 110 Hz)   | VFD (5 Hz - 110 Hz)   | VFD (5 Hz - 110 Hz)   | VFD (5 Hz - 110 Hz)   | VFD (5 Hz - 110 Hz)   | VFD (5 Hz - 110 Hz)   |
| 400 Hz  | 400 Hz  | 400 Hz  | 400 Hz  |   |   |
| Over voltage category   | CAT IV / 600 V<br>CAT III / 1000 V  | CAT IV / 600 V<br>CAT III / 1000 V  | CAT IV / 600 V<br>CAT III / 1000 V  | CAT IV / 600 V<br>CAT III / 1000 V  | CAT IV / 600 V<br>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  |
| Battery life (typically)  | 3.5 h   | 5 h   | 5 h   | 7 h   | 7 h   |
| 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  |

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## Differences between Power Quality Analysers

### Class A

#### MI 2893 Power Master XT



Flagship of our line of Class A power quality analysers with high sampling rate for transient capturing intended for professional 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)
- 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%)
- Intermediate PQA instrument
- General recorder
- Waveform recorder

#### 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%)
- Basic 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
- Basic PQA instrument
- General recorder

# Power Quality Analysers

## Comparison between Power Quality Analysers

| MODEL   |  | MI 2893<br>Power Master XT  | MI 2892<br>Power Master   | MI 2885<br>Master Q4  | MI 2884<br>Energy Master XA   | MI 2883<br>Energy Master  |
|---|--|---|---|---|---|---|
|   |  |  |  |  |  |  |
| <b>STANDARD</b>                                 | IEC 61000-4-30 Compliance  | Class A<br>(independent certificate)  | Class A<br>(independent certificate)  | Class S<br>(0,1%)   | Class S<br>(0,2%)   | Class S<br>(0,2%)   |
|   | EN 50160   | •   | •   | •   | •   | •   |
| <b>GENERAL<br/>RECORDER<br/>MEASUREMENTS</b>    | 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   | •   | •   | •   | •   | •   |
|   | Phase diagram  | •   | •   | •   | •   | •   |
|   | Signalling   | •   | •   | •   | •   | •   |
|   | Under/Over voltage deviation   | •   | •   | •   | •   | •   |
|   | Interruptions, Dips, Swells and RVC  | •   | •   | •   | •   | •   |
|   | Alarms   | •   | •   | •   | •   | •   |
| Phase diagram                                   | •  | •   | •   | •   | •   |   |
| Neutral current                                 | •  | •   | •   | Optional  | Optional  |   |
| Temperature                                     | •  | •   | Optional  | Optional  | Optional  |   |
| <b>WAVEFORM<br/>RECORDER<br/>(TRIGGERS ON)</b>  | Events   | •   | •   | •   | •   | •   |
|   | Alarms   | •   | •   | •   | •   | •   |
|   | Level I (Inrush recorder)  | •   | •   | •   | •   | •   |
|   | Level U (Inrush recorder)  | •   | •   | •   | •   | •   |
|   | Time interval  | •   | •   | •   | •   | •   |
| <b>TRANSIENT<br/>RECORDER<br/>(TRIGGERS ON)</b> | Envelope   | •   | •   | •   | •   | •   |
|   | Level (I, In, U, Un)   | •   | •   | •   | •   | •   |
|   | Transient selection between N / GND  | • / •   | • / •   | • / •   | • / •   | • / •   |
| <b>TROUBLESHOOTING<br/>FEATURES</b>             | On-line scope mode   | •   | •   | •   | •   | •   |
|   | Waveform snapshot  | •   | •   | •   | •   | •   |
|   | GPS receiver   | Optional  | Optional  | Optional  | •   | •   |
|   | WiFi / 3G modem  | Optional  | Optional  | Optional  | •   | •   |
| <b>REMOTE COM</b>                               | Ethernet / Intranet  | • / •   | • / •   | • / •   | •   | •   |
| <b>MICROSD CARD</b>                             | 8 GB   | •   | •   | •   | •   | •   |
| <b>PC SW</b>                                    | PowerView3 (free of charge)  | •   | •   | •   | •   | •   |