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POWER QUALITY ANALIZER

PQA3



FEATURES

PQA3 is a measuring tool designed for those in need of an accurate and easy-to-use product. It is aimed at both users who want to understand their systems better, and Energy Managers, system installers, electricians, and maintenance workers, for diagnosis and intervention, or for the provision of integral consulting services on electrical power.

PQA3 allows users to:

- monitor loads, consumption and related costs;
- check if the new systems are dimensioned correctly;
- prevent overheating and lack of insulation due to high harmonics content;
- solve any power factor correction problems;
- identify and eliminate load peaks and excess demand, thereby reducing contractual power consumption;
- monitor power and consumption in the different time bands;
- check and assess the performance of UPSs, with AC/DC measurements;
- measure signals - including asymmetrical signals - for PWM controls on inverters;
- identify the cause of problems resulting from low quality power (presence of harmonics, interruptions, overloads, dips, unbalance in voltage phases, etc.), which may bring about a production standstill, and which may affect or reduce the life cycle of equipment and systems;
- identify fast fluctuations and variations in current and voltage signals;
- measure inrush current of electrical engines and equipment.

MADE IN EU

According to MTI specifications



DESCRIPTION

PQA3 is a leading device equipped with new functions for measuring and monitoring power consumption and for advanced power and power quality analysis. This device can measure, display, process and transmit all the parameters of a system.

With regard to the most common power analysers, its main unique features are as follows:

- ◆ new, modern, elegant design which makes this device a handheld product – and therefore, light and easy-to-use – with the best performance in its category
- ◆ Highly efficient 128x128 pixels backlit graphical LCD for high ductility display (multilingual menus, waveforms, histograms, menus, drawings, schemes, images customisation, etc.) and perfect viewing even from a distance
- ◆ 4 voltage measuring channels (3 with common neutral + 1 auxiliary independent) up to 600V CAT III, able to measure continuous voltage with an accuracy of $\pm 0.25\% + SF$ err.
- ◆ 5 current inputs (3 independent + 1 for neutral current + 1 auxiliary) able to measure continuous voltage with an accuracy of $\pm 0.25 + SF$ err.
- ◆ Equipped with flexible current clamps up to 3000A. Traditional full scale sensors, which can be set by the user, may also be used
- ◆ High performance battery pack with more than 24 hours of battery life, so that extended measurement campaigns can also be performed without using main power supply
- ◆ Powerful but compact external power supply, compatible with all types of sockets (USA/JP, EU, UK, AU)
- ◆ Membrane keypad with 10 double-function keys for easier scrolling of menus and access to different functions
- ◆ Calculation engine based on 16-bit microprocessor, allowing for the measurement of all standard quantities (V I P Q A F PF THD% etc.) in true root mean square (TRMS) value, as well as:
 - Measurement of minimum, average and maximum instant values on 4 quadrants (absorbed and generated).
 - Absorbed and produced power counters (kWh kVA kVar), which can be password-protected.
 - Power quality analysis by measuring:
 - ◆ current and voltage harmonics (all 7 input channels) up to the 50th order;
 - ◆ Network interruptions & micro-interruptions
 - ◆ Dips (brownouts)
 - ◆ Swells (overvoltages)
 - ◆ EN50160 test (reference standard for power quality)
 - Event log (last 5 alarms, 5 dips, 5 swells, 5 interruptions)
 - Power measurement during 4 time periods (tariffs), which can be set
 - For three-phase and each single phase!!!
 - 6 different electrical systems which can be analysed (single-phase; two-phase; 3-lead three-phase (unbalanced); 4-lead three-phase (unbalanced); 3-lead three-phase (balanced); 4-lead three-phase (balanced)).
 - Medium voltage connection available
- ◆ User can select the values to be displayed
- ◆ Multilingual menus (English, Italian, German, Spanish, French)
- ◆ Automatic connection test to check if electrical connections are correct
- ◆ Micro SD memory card for extended measurement campaigns
- ◆ Special PC software, allowing for advanced analysis of data stored on uSD card

TECHNICAL DATA

CASE: Dimensions 203x116x53mm - Material ABS with self-extinguishing V0 grade - Protection class IP30 - Weight 580 g

DISPLAY: Dimensions 68x68mm - Type 128x128 FSTN Negative dot matrix graphic LCD - Backlight White LED - Languages: English, Spanish, Italian, German, French

KEYPAD: Type Membrane keypad with 10 double-function keys

POWER SUPPLY: External power supply wall-plug switching; input 100-240VAC $\pm 10\%$ 47-63Hz with interchangeable plug; output 7.5VDC - 12W - Battery pack 4 x AA NiMH 2100mAh - Duration of the battery charge >24h

CONNECTIONS: Voltages Flexible cables L = 1.5m; 2.5mm² - 36A; 1000V CAT III - 600V CAT IV with a 4mm, 90° protected blade plug connector, and a crocodile clip with a 45mm opening (for sections up to 32mm) - Currents interchangeable amperometric sensors

FUNCTIONS: Traditional electrical analysis V, I, P, Q, S, F, PF, THD(V)%, THD(I)%, $\cos\phi$, ϕ , peaks, minimums, maximums, averages, max. demands, etc. - Neutral current Measured - Three phase counters kWh, kVAh, kVAh, both absorbed that generated - Counters for each single phase kWh, kVAh, kVAh, both absorbed that generated - Cogeneration - Waveforms V & I - Harmonics Values and histograms up to the 50th order - Sags Dips, swells & interruptions - Transients Overvoltages & overcurrents - Unbalance - Test EN 50160 - Inrush current - DC measures - K factor Up to the 25th order - Alarms Displayed - Alarms log 5 at display - Tariff bands 4 - Energy costs - Measurement campaigns unlimited, up to fill the memory card

CONNECTING SYSTEMS: Single phase - Two phase - Three-phase, 3-wires, balance - Three-phase, 3-wires, unbalanced - 4-phase, 4-wires, balance - 4-phase, 4-wires, unbalanced

MEASUREMENTS: Display refresh rate 1 sec. - Type of connections available: Three-phase (3 or 4 leads), two-phase (2 leads), and single phase grid - Type of grid which can be connected: Low and medium voltage (LV and MV)

VOLTAGE (TRMS):

3 channels with common neutral + 1 independent, auxiliary channel,			
Direct measurement:	Phase-phase:	7-1000VAC	40-70Hz
	Phase-neutral:	5- 600VAC	40-70Hz
	Aux:	5-1000VAC	40-70Hz 10-1400VDC
Measurement with VT	Ratio:	1-60000	Maximum value which can be displayed: 20MV
Permanent overload	Phase-phase:	1200VAC	
	Phase-neutral:	700VAC	
	Aux:	1200VAC	1700VDC
Sensitivity	5VAC Phase-neutral, 7VAC Phase-phase		10VDC

CURRENT (TRMS) Channels 5 independent channels

Measurement with current clamps Ratio: 1-60000 Sensitivity 2% of F.S.

POWERS Maximum value which can be displayed 500 kA

POWER COUNTERS: Maximum value before reset 99999999 kWh, kvarh, kVAh

ACCURACY

RMS voltages:	$\pm 0.25\% + 0.1\%FS$	@ RMS V < 350VAC
	$\pm 0.25\% + 0.05\%FS$	@ RMS V > 350VAC
RMS currents:	$\pm 0.25\% + 0.1\%FS$	@ RMS I < 5% IN clamp
	$\pm 0.25\% + 0.05\%FS$	@ 5% < RMS I < 20% IN clamp
	$\pm 0.25\% + 0.05\%FS$	@ 20% < RMS I < 50% IN clamp
	$\pm 0.25\% + 0.05\%FS$	@ > 50% IN clamp
Power	$\pm 0.5\% + 0.05\%FS$	

Power Factor (PF)	$\pm 0.5^\circ$
Frequency	± 0.01 Hz (40-70Hz)
Active power count (kW)	Class 0.5
Reactive power count (kVar)	Class 1

HARMONIC ANALYSIS Up to 50th order

ANALYSIS OF EN50160 parameters

Interruptions	>500mS
Dips	>500mS
Swells	>500mS

Transient ANALYSIS: Swells and overcurrents >150uS - Inrush current analysis RMS continuous sampling every 2 periods – Duration 1, 2, 5, 10 sec.

COMMUNICATION: USB to PC

DATA STORAGE: Internal memory 64kB

External memory Micro SD (2GB included)

OPERATING CONDITIONS:

Operating temperature	-10 to +55 °C
Storage temperature	-20 to +85 °C
Relative humidity	Max 95%
Maximum altitude a.s.l. (600V CAT III)	2000 m

EC COMPLIANCE: Directives 93/68/EEC (Low Voltage Electrical Equipment); 89/336/EEC and 2004/108/EC (EMC - Electromagnetic Compatibility); 2006/95/EC - 72/23/EEC (LVD - Low Voltage Directive); 2002/95/EC (RoHS - Restriction of Hazardous Substances); 2002/96/EC and 2003/108/EC (WEEE - Waste Electrical and Electronic Equipment);

REFERENCE STANDARDS: Safety EN 61010-1 Electromagnetic Compatibility (EMC) EN 61326 EN 61326/A1 EN 61326/A2 EN 61326/A3 Temperature IEC 60068-2-1 (Operating temperature) IEC 60068-2-2 (Storing temperature) Vibrations IEC 60068-2-6 Humidity IEC 60068-2-30 (Humidity) Overload IEC 60947-1