PRIMATA
Tecnologia Eletrônica

Technical Specifications

P56

Power Quality Analyzer

Presentation

The **Power Quality Analyzer P56** was designed to perform measurements in electric power distribution systems. It is the second generation of analyzers developed by **PRIMATA ELETRÔNICA**, aimed at meeting the demands of power distribution companies and other users in compliance with **PRODIST – Module 8 of ANEEL (Class S)**.

Weatherproof, portable and modern, the **Analyzer P56** features a data storage unit in **Pendrive**, supplied with **32GB of memory**. It has USB ports for communication, as well as a display and keypad that allow programming directly on the device.

The user interface is carried out through a **4.3" color touchscreen smart display**. In addition, it allows connection to a **local wireless interface** during installation through smartphone or tablet, for equipment programming, analysis of electrical quantities and visualization of **charts in real time**.

With its high memory capacity, the **Analyzer P56** calculates and records all parameters without restriction, and the **SMD Software** allows the user to analyze and filter only the necessary data, with different integration intervals. Thus, there is no need to pre-program or limit the electrical parameters to be recorded in the field.

Applications

- ✓ Analysis and measurement of power quality (voltages, currents, powers, frequency, harmonics, voltage and current unbalance, fluctuation, event logging, power quality KPIs);
- ✓ Attendance to PRODIST - ANEEL Module 8 (Class S);
- ✓ Transient oscillography;
- ✓ Bidirectional energy reports (four quadrants), power consumption and injected energy;
- ✓ Power tariff management, demand and ICMS credit analysis;
- ✓ Power factor correction, spectrum and harmonic distortion losses (voltage and current);
- ✓ Support in the definitions of capacitor filters, with voltage and current harmonic spectrum graphs and a list for detailed analysis of amplitudes and harmonic losses;
- ✓ Factor-K for transformer derating analysis and K-Factor (standard IEEE C57.110) for new transformers;
- ✓ Graphical analysis of motor in-rush current curve (>1s);

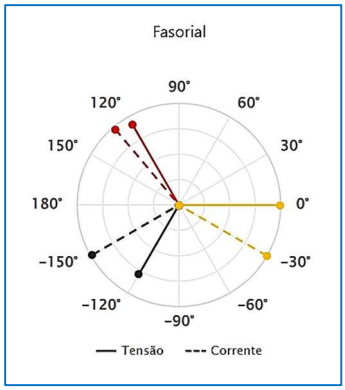
Recorded/Calculated Electrical Quantities

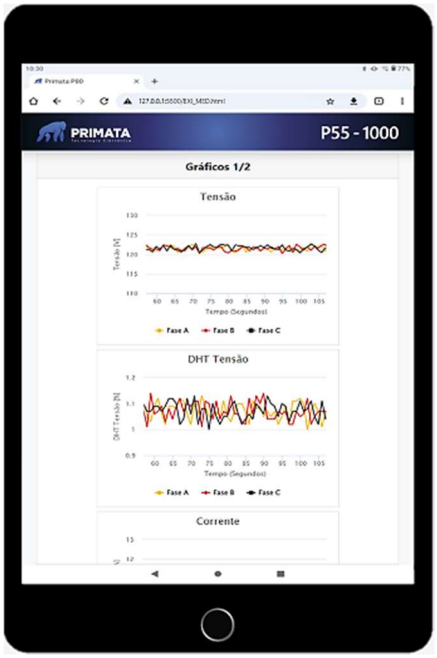
- ✓ RMS Voltage;
  - Neutral-Phase and Phase-Phase (A, B and C);
  - Instantaneous, Maximum, Minimum and Medium;
  - Ground neutral voltage;
- ✓ RMS Current (A, B and C);
  - Instantaneous, Maximum, Minimum and Medium;
- ✓ Calculated neutral current (theoretical);
- ✓ Measured neutral current (real);
- ✓ Active, reactive and apparent powers (single-phase and three-phase);
- ✓ Single-phase and three-phase power factor (IEC Standard 61557-12);
- ✓ Frequency (A, B and C);
- ✓ Total harmonic distortion rate (Voltage and Current);
- ✓ Fundamental harmonic (Voltage and Current);
- ✓ Individual harmonic distortion rate (up to 50th harmonic - Voltage and Current);
- ✓ Negative sequence voltage unbalance (%) (IEC Standard 61000-4-7);
- ✓ Negative sequence current unbalance in (%) (IEC Standard 61000-4-7);
- ✓ Voltage fluctuation severity (IEC 61000-4-15);
- ✓ Short Term Voltage Variation Event Record - STVV (IEC Standard 61000-4-30 - with RMS value calculated every 1 cycle) with CBEMA curve graphic;
- ✓ Transient Record (IEC Standard 61000-4-4);
- ✓ Signal oscillography with voltage and current waveform recording;
- ✓ Factor-K for transformer derating analysis and K-Factor (standard IEEE C57.110) for new transformers;
- ✓ Bidirectional Power (Four Quadrants) and Demand;

Wireless Local Interface

- ✓ Wi-Fi network generated by the Analyzer itself, allowing the user to connect to it via a smartphone* or tablet*, providing a graphical interface with real-time parameters.

*Smartphone or tablet are not supplied with the equipment;





Main Information Displayed in Real Time

Type	Description	Equipment Display	Wireless Local Interface
Programming	Display, addition, and deletion of programs	✓	✓
Real Time	Phasor diagram	✓	✓
Real Time	Electrical parameters graph	✓	✓
Real Time	instantaneous voltage values (phase-to-neutral and phase-to-phase)	✓	✓
Real Time	Total harmonic distortion of voltage per phase	✓	✓
Real Time	Instantaneous current values and neutral current	✓	✓
Real Time	Phase angle and angular difference	✓	✓
Real Time	Power factor	✓	✓
Real Time	Values of active, reactive and apparent power	✓	✓
Real Time	Grid frequency	✓	✓
Real Time	Registration Status	✓	✓
Real Time	Date and time of the equipment	✓	✓
Real Time	Battery status of the real-time clock	✓	✓
Real Time	USB pendrive connected to the device	✓	✓
Real Time	USB pendrive available memory	✓	✓
Real Time	Number of valid measurements for DRP/DRC reports	✓	✓
Real Time	Number of Transients	✓	✓
Installation Check	Verification of the correct installation of the analyzer	✓	✓
Installation Check	Visualization of the diagrams with the types of connections	✓	✗

Electrical Characteristics

Scale background (Voltage)	**520 Vac** or **1000 Vac (Phase-Phase)**
Resolution	0.1 V
Accuracy	± 0.5%
Scale background (Current)	**10A**, **200A**, **1000A**, **3000A** or **5000A**
Accuracy (centralized conductor)	± 0.2% of reading value ± 1.0% of sensor
Power supply – *Scale background of 520 Vac*	
Supply voltage	70 to 300 Vac (Neutral-Phase) or 5 Vdc (USB-B)

Supply method	Any of the phases or via USB-B for measurements below 70 Vac
Power supply – *Scale background of 1000 Vac*	
Supply voltage	70 to 300 Vac (Neutral-Phase) or 5 Vdc (USB-B)
Supply method	7 wires total – 5 for measurement and 2 exclusively for power supply
Measurement of ground neutral voltage	Yes
Neutral current	Calculated (theoretical) and Measured (real)
Consumption (fed by the 3 phases)	4.5 Wh in 127 V or 5.5 Wh in 220 V
Clock-calendar	With rechargeable NiCd battery (200 days autonomy without power)
Types of connection	Single-phase, 2-phase, 3-phase (Star), Delta (open and closed) and Indirect Measuring (using VTs and CTs)
Environmental operating conditions	
Level of protection	IP 659
Temperature	-10 to 60 °C
Humidity	0 to 100% without condensation
Isolation of connectors	600 V
Impulse/surge protection	4kV IEC Standard 61000-4-5 / ABNT NBR 5419
MTBF (Mean Time Between Failures)	32.000
Recording of absences	Yes
Electromagnetic shielding	Yes

Mechanical Characteristics

Dimensions	100 x 190 x 255 mm
Weight (without cables, clips and CTs)	2300 g
Cable length (voltage signals)	2.0 m
Cable length (current signals)	2.0 m
Color and touchscreen display	4.3" with a resolution of 480 x 272 pixels
Portable	Yes
Box	
Material	Engineering thermoplastic
Level of protection	IP 659
Connectors for signals	Circular panel connectors (at the bottom)
Device for pole fixing	Yes (on top)

Internal Control Program (Firmware)

Memory type	Removable (Pendrive)
Memory capacity	32GB (equivalent to 100* uninterrupted days of acquisition with records every 1 second, without the need to restrict the electrical parameters to be recorded)
Data storage	Independent programming for each acquisition
Programming of internal parameters	Date and time (automatic during connection to PC)
	Transformation ratios (voltages and currents)

* Autonomy is reduced depending on the volume of oscillographies recorded in the measurement period.

Communication

USB Port	115 kbps (High-speed direct computer connection)
Local Wireless Interface	Wi-Fi (Standard 802.11 b/g/n and Security WPA, WPA2)

Programmable Parameters

- ✓ Name and description of the acquisition;
- ✓ Start trigger type: immediate or by time (programmed);
- ✓ End trigger type: by date/time, by measures (number of valid measures for DRP/DRC reports) or indetermined;
- ✓ Start date and time (enabled for programmed trigger);
- ✓ End date and time (enabled for closure by date/time);
- ✓ Type of connection: star, open delta or closed delta;
- ✓ PTs transformation ratio;
- ✓ CTs transformation ratio;
- ✓ Nominal voltage (transient phenomena);
- ✓ Enable transient measurement, voltage threshold and variation threshold ;
- ✓ No need to pre-program or restrict the electrical parameters to be recorded;

Items Supplied with the Product

- ✓ Voltage clips **P10 – Dolphin Clip – CAT III 1000V / 32A**:
  - 05 clips: Neutral, Ground Neutral, Phase A, Phase B and Phase C;
  - 02 dedicated clips for power supply for full-scale range of 1000 Vac (Phase-to-Phase);
- ✓ Current sensors (4 CTs), flexible or rigid (clamp type):
  - Neutral, Phase A, Phase B and Phase C;
- ✓ Pendrive with 32GB memory for data storage;
- ✓ Touchpen;
- ✓ Banana extenders Ø4mm;
  - 03 extenders for the phases;
  - 01 extender for the neutral;
- ✓ USB cable for communication with computer;
- ✓ Bag for transport and storage of equipment and accessories;
- ✓ **SMD Software – Data Manipulation System;**

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