



**PRIMATA**  
Tecnologia Eletrônica

## Technical Specifications

# P54

**Power Quality Analyzer  
with Remote Access**



## Presentation

The **Power Quality Analyzer with Remote Access P54** is designed to perform measurements in electrical power distribution systems. It is the second generation of analyzers developed by **PRIMATA ELETRÔNICA**, aiming to meet the demands of the concessionaires and permissionaires of energy and other users.

Weatherproof, portable, intelligent and modern, the **Analyzer P54** has removable data storage unit in **Pendrive**, supplied with **32GB memory**, in addition to communication via USB ports, display and keyboard that allow programming directly in the equipment.

With the possibility of communication via **3G / 2G / GPRS Modem** and **Wi-Fi Modem**, the measured and recorded data can be monitored remotely, in real time, via web application **SMD\_NET**, which is the **PRIMATA ELETRÔNICA's Energy Monitoring Web Portal**.

For a more detailed graphical analysis, event analysis, export of files to other formats and reporting, the **Local SMD Software** complements the **SMD\_NET** web application. Thus, due to the native integration, simply **download remotely** the file containing the data acquisition through the **SMD\_NET portal**, to then deepen the analysis in the **Local SMD**.

The **Analyzer P54** integrates all measurements of electrical parameters at pre-defined intervals. As it has a high memory capacity, there is no need to pre-program or restrict 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, event logging, power quality KPIs);
- ✓ Attendance<sup>1</sup> to PRODIST - ANEEL Module 8 (Class S);
- ✓ 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;
- ✓ K-Rating calculation for new transformers (K-Factor), and transformer derating analysis (Factor-K);
- ✓ Energy comparison aiming at the identification of frauds and energy supervisory measurement;

<sup>1</sup> This equipment does not contemplate the phenomena of voltage fluctuation (flicker). For this application, consult the equipment **P52 - Voltage Quality Analyzer** and **P55 - Power Quality Analyzer**.

## Registered/Calculated Electrical Parameters

- ✓ RMS Voltage;
  - Neutral-Phase and Phase-Phase (A, B and C);
  - Maximum, Minimum and Medium;
  - Ground neutral voltage;
- ✓ RMS Current (A, B and C);
  - Maximum, Minimum and Medium;
- ✓ Calculated neutral current (theoretical);
- ✓ Measured neutral current (real);
- ✓ Active, reactive and apparent powers (single-phase and three-phase);
- ✓ Power factor (single-phase and three-phase);
- ✓ 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);
- ✓ Short Term Voltage Variation Event Record – STVV (IEC Standard 61000-4-30 – with RMS value calculated every 1 cycle) with CBEMA curve graphic;
- ✓ Factor-K for transformer derating analysis and K-Factor (standard IEEE C57.110) for new transformers;
- ✓ Bidirectional Power (Four Quadrants) and Demand;



## Main Information Displayed in Real Time

Information	Equipment Display	SMD_NET Portal
Programs in the analyzer with the configured parameters	✓	✓
Instantaneous voltage values (Neutral-Phase and Phase-Phase)	✓	✓
Instantaneous current values	✓	✓
Neutral current value	✓	✓
Total cumulative energy consumption	✓	✓
Total cumulative energy provided	✓	✓
Active, reactive and apparent power values	✓	✓
Power factor	✓	✓
Harmonic distortion rate per phase	✓	✓
Frequency	✓	✓
Number of valid measures for DRP/DRC reports	✓	✓
Verification of the correct installation of the analyzer	✓	x
Pen drive connected to the equipment	✓	✓
Available memory in the Pendrive (in days, hours or minutes)	✓	✓
Calendar clock battery status	✓	✓
Date / Time of equipment	✓	x
Equipment status (Online / Offline)	✓	✓
3G / 2G / GPRS / Wi-Fi Signal Level	✓	✓
Date / Time of network connectivity	✓	✓

## Communication

Interface	USB / GSM / GPRS / Pulse Output Port <sup>1</sup>
USB speed	115 kbps (High-speed direct computer connection)
Modem (*optional)	3G / 2G / GPRS
Modem (*optional)	Wi-Fi (Standard 802.11 b/g/n and Security WPA, WPA2)

<sup>1</sup> Port with pulse output is an optional item for calibration of the equipment.

## Applicable Software

- ✓ Local SMD – Data Manipulation System;
- ✓ SMD\_NET – Energy Monitoring Web Portal;



## Electrical Characteristics

<b>Power supply</b>	
<b>Supply voltage</b>	Maximum: 520 Vac (Phase-Phase) Minimum: 70 Vac (Neutral-Phase)
<b>Power phase</b>	Any of the phases
<b>Consumption (fed by the 3 phases)</b>	4.0 Wh in 127 V or 5.0 Wh in 220 V
<b>Clock-calendar</b>	With rechargeable NiCd battery (200 days autonomy without power)
<b>Full scale (tension)</b>	520 Vac (Phase-Phase)
<b>Resolution</b>	0.1 V
<b>Accuracy</b>	± 0.5%
<b>Scale background (current)</b>	10A, 200A, 1000A, 3000A or 5000A
<b>Accuracy (centralized conductor)</b>	± 0.2% of reading value ± 1.0% of sensor
<b>Measurement of ground neutral voltage</b>	Yes
<b>Neutral current</b>	Calculated (theoretical) and Measured (real)
<b>Types of connection</b>	Single-phase, 2-phase, 3-phase (Star), Delta (open and closed) and Indirect Measuring (using VTs and CTs)
<b>Environmental operating conditions</b>	
<b>Level of protection</b>	IP 659
<b>Temperature</b>	-10 to 60 °C
<b>Humidity</b>	0 to 100% without condensation
<b>Isolation of connectors</b>	600 V
<b>MTBF (Mean Time Between Failures)</b>	68400
<b>Recording of absences</b>	Yes
<b>Electromagnetic shielding</b>	Yes

## Mechanical Characteristics

<b>Dimensions (H x W x D)</b>	220 x 146 x 107 mm
<b>Weight (with cables and clips, without CTs)</b>	2700 g
<b>Cable length (voltage signals)</b>	2.0 m
<b>Cable length (current signals)</b>	2.0 m
<b>Display with backlight</b>	2 lines x 16 columns
<b>Portable</b>	Yes
<b>Box</b>	
<b>Material</b>	Thermoplastic with UV protection, high impact resistance and self-extinguishable
<b>Level of protection</b>	IP 659
<b>Connectors for signals</b>	Circular panel connectors (at the bottom)
<b>Device for pole fixing</b>	Yes (on top)

## Internal Control Program (Firmware)

<b>Minimum interval for events record</b>	16 milliseconds
<b>Data Integralization</b>	5, 10 or 15 minutes
<b>Memory type</b>	Removable (Pendrive)
<b>Memory capacity</b>	32GB (equivalent to more than 75 uninterrupted years with records every 5 minutes, without the need to restrict the parameters)
<b>Data storage</b>	Independent programming for each acquisition
<b>Programming of internal parameters</b>	Date and time (automatic during connection to PC)
	Transformation ratios (voltages and currents)





## Programmable Parameters

- ✓ Name and description of the acquisition;
- ✓ Type of trigger: immediate or by time (programmed);
- ✓ Type of termination: by date/time, by measures (number of valid measures for DRP/DRC reports) or undetermined;
- ✓ Start date and time (enabled for programmed trigger);
- ✓ End date and time (enabled for closure by date/time);
- ✓ Integration interval: 5, 10 or 15 minutes;
- ✓ Type of connection: star, open delta or closed delta;
- ✓ PTs transformation ratio;
- ✓ CTs transformation ratio;
- ✓ 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** (5 clips):
  - Neutral, Ground Neutral, Phase A, Phase B and Phase C;
- ✓ Current transformers (4 CTs), rigid (clamp type) or flexible sensor:
  - Neutral, Phase A, Phase B and Phase C;
- ✓ Pendrive with 32GB memory for data storage;
- ✓ USB cable for communication with computer;
- ✓ Connection cable for voltage signals;
- ✓ Connection cable for current signals;
- ✓ Bag for transport and storage of equipment and accessories;
- ✓ Local SMD Software – Data Manipulation System;
- ✓ SMD\_NET Application – Energy Monitoring Web Portal (optional);



Optional Accessory – Personalized Hardcase <sup>1</sup>



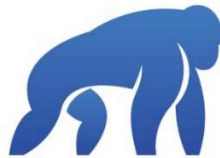
<sup>1</sup> The bag is not provided when the hardcase is purchased.

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PRIMATA ELETRÔNICA products are in constant improvement. Therefore, the technical specifications contained in this material may be changed without previous notice. Check our website for possible updates.



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Page 8 of 8