



**PRIMATA**  
Tecnologia Eletrônica

## Technical Specifications

# P53

## Power Meter for Energy Comparison



## Presentation

The **Power Meter for Energy Comparison P53** 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 in combating commercial losses from power distributors and billing measurement in consumer meters.

Weatherproof, portable, intelligent, modern and with high-precision, the **Power Meter P53** has removable data storage unit in **Pen drive**, 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 **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 P53** 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

- ✓ Energy comparison aiming at the identification of frauds and billing measurement;
- ✓ Identification of energy load curve;
- ✓ 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);
- ✓ K-Rating calculation for new transformers (K-Factor), and transformer derating analysis (Factor-K);

## Registered/Calculated Electrical Parameters

- ✓ RMS Voltage;
  - Neutral-Phase and Phase-Phase (A, B and C);
  - Maximum, Minimum and Medium;
- ✓ RMS Current (A, B and C);
  - Maximum, Minimum and Medium;
- ✓ Calculated neutral current (theoretical);
- ✓ 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);
- ✓ Individual harmonic distortion rate (up to 32nd harmonic – Voltage and Current);
- ✓ Factor-K for transformer derating analysis and K-Factor (standard IEEE C57.110) for new transformers;
- ✓ Bidirectional Power (Four Quadrants) and Demand;

## Applicable Standards

- ✓ Classes B and C from Meters Technical Regulations (*Portaria Inmetro nº 587*);

## 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	✓	✓
Verification of the correct installation of the analyzer	✓	x
Pen drive connected to the equipment	✓	✓
Available memory in the Pen drive (in days, hours or minutes)	✓	✓
Calendar clock battery status	✓	✓
Date / Time of equipment	✓	x
Equipment status (Online / Offline)	✓	✓
Wi-Fi Signal Level	✓	✓
Date / Time of network connectivity	✓	✓



## Communication

<b>Interface</b>	USB / Pulse Output Port <sup>1</sup>
<b>USB speed</b>	115 kbps (High-speed direct computer connection)
<b>Modem (*optional)</b>	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.

## 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>	3.5 Wh in 127 V or 4.5 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>	± 0.5% (clamp CTs) – Class C ± 1.0% (flexible CTs) – Class B
<b>Neutral current</b>	Calculated (theoretical)
<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>	68.400
<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>Data Integralization</b>	5, 10 or 15 minutes
<b>Memory type</b>	Removable (Pen drive)
<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)

## Applicable Software

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

## Programmable Parameters

- ✓ Name and description of the acquisition;
- ✓ Type of trigger: immediate or by time (programmed);
- ✓ Type of termination: by date/time 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** (4 clips):
  - Neutral, Phase A, Phase B and Phase C;
- ✓ Current transformers (3 CTs), rigid (clamp type) or flexible sensor:
  - Phase A, Phase B and Phase C;
- ✓ Pen drive 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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