WIDE RANGE. ACCURATE. PORTABLE.

The widest range portable constant voltage resistance instrument in today’s market, the PRS-801 is the choice of most ESD professionals. Why? Because the PRS-801 has an outstanding performance combination of measurement speed, wide range and accuracy. Its constant test voltage system is extremely stable and consistent with lab level, bench top instruments.

MEASUREMENT RANGE: THREE INSTRUMENTS IN ONE

The PRS-801’s wide range offers the maximum flexibility in measurement applications. In effect, it is 3 instruments in one because it functions as:

1. A low resistance range instrument for measurements from 0.1 to 1.0×10^4 Ω.
   Most competitive instruments do not measure accurately at or below 1.0×10^3 Ω. Thus, the typical ESD practitioner must carry a DMM for low resistance checks of ground connections. To ensure field accuracy, the PRS-801CC Calibration Shunt is used to confirm and adjust the accuracy of its 0.1 to 10 Ω resistance range.

2. Wide range audit instrument to meet ANSI/ESD S20.20 and TR53 procedures from 1.0×10^3 to 1.0×10^11 Ω. Measurement guidelines require accurate measurements from one decade below to one decade above the resistance requirements of a facility’s ESD program. The PRS-801 easily exceeds this requirement by as much as 3 decades, depending on program requirements.

3. Precision high resistance measurement instrument for packaging to S541 Standards, material and product testing and acceptance verification. Few competitive instruments can measure accurately up to or beyond 1.0×10^11 Ω, while the PRS-801 comfortably measures up to 2.0×10^14 Ω. There are no audit instruments or laboratory bench top instruments that perform in the PRS-801’s wide range.

MEASUREMENT FLEXIBILITY

Connect to virtually any 2-wire fixture or electrode configuration.

The PRS-801’s simple ¾-inch terminal spacing provides connectivity to a variety of electrodes and fixtures.

- Terminal design allows use of mechanically shielded or non-shielded banana plug leads
- BNC adapters with ¾-inch spacing mount directly to the PRS-801 terminals for measurements with wide range probes and fixtures
- An instrument reference allows use of a third wire instrument reference to minimize effects of extraneous fields on precision fixture measurements

MEASUREMENT SPEED: ELECTRIFICATION PERIOD

The PRS-801 is one of the fastest measurement instruments in today’s precision measurement market. Laboratory tests confirm the PRS-801 can measure from 0 to 1.0×10^12 Ω in 2.5 seconds. Thus, its specified electrification period (EP) is 8 seconds in accordance with ANSI/ESD STM 11.11 Surface Resistance of Planar Materials. Furthermore, its EP is automatically adjusted to insure a stable measurement is displayed.

MULTIPLE MODES OF OPERATION

The PRS-801 has Automatic, Manual and Auto-Manual operational modes, plus exponential display or standard numeric display in Ω, KΩ, MΩ, GΩ and TΩ. It’s easy to use and read. Measurements are summarized in decades using multiple LED’s from <10^3 to >10^14, whose colors are user programmable to be RED, GREEN or YELLOW/ORANGE.

Video tutorials of the PRS-801 Resistance System Set are available at www.prostatcorp.com/resistance-system-set
HIGH QUALITY TEST LEADS
Prostat’s 10-foot test leads supplied with each PRS-801 consist of hundreds of fine strands of copper that offer flexibility and accuracy. The outer insulation of each test lead is high grade silicon with an extremely high resistance to minimize measurement errors. These leads are designed for convenient audit measurements in the manufacturing environment up to $1.0 \times 10^{12} \Omega$.

The 30-inch high performance test lead harness is designed for PRS-801 precision high resistance measurements in the $10^{12}$ to $10^{14}$ range. It includes a shielded (-) negative test lead for accuracy and minimum electrical interference from personnel and equipment. The shield is connected directly to the PRS-801 instrument reference and fixture ground.

CONSTANT TEST VOLTAGES
PRS-801 has three Test Voltages ranges that provide stable test references for repeatable measurements. In AUTO mode, the instrument automatically selects the proper test voltage for the resistance being measured.

- $<10V$: 0.1 to $9.99 \times 10^3 \Omega$
  - $<10V$ is variable across this range from 0.1 mV to 9.99V

- $10V$ – Constant Voltage under Load
  - Constant at $1.0 \times 10^4$ to $9.99 \times 10^5 \Omega$
  - Target calibration is to within $\pm 0.01V$, and always within $\pm 1\%$

- $100V$ – Constant Voltage under Load
  - Constant at $1.0 \times 10^6$ to $2.0 \times 10^{14} \Omega$
  - Target calibration is to within $\pm 0.01V$, and always within $\pm 0.1\%$

DIRECT DATA DOWNLOAD WITH INCLUDED SOFTWARE
Not only does the PRS-801 make accurate measurements quickly, it documents measurement data immediately or in batch downloads to your Excel® Spreadsheet program. This minimizes transposition mistakes and speeds up precision measurements. The included PROSTAT® CONNECT software is easy to load and use. The PRS-801 connects to your computer’s USB port via an optional COM/USB adapter.

- In the Auto Connect mode, you can control the PRS-801 measurement sequence so that each data point is downloaded to the spreadsheet at the conclusion of each measurement. The Spreadsheet cursor automatically moves to the next data entry cell in preparation for the subsequent measurement.
- Once as many as 80 data points are stored in the PRS-801’s memory, they can be downloaded to a spreadsheet at a later time. Each data point will be placed in its own spreadsheet cell.
- When PROSTAT CONNECT is used, a backup Text file is maintained for every measurement set, its date, time and location should you desire.
- The PROSTAT CONNECT utility is now compatible with 32-bit and 64-bit version of Windows from XP all the way to Win8.

WHAT’S INCLUDED
- PRS-801 Resistance Meter
- PRS-800LB 10 foot Silicone Test Lead - Black
- PRS-800LR 10 foot Silicone Test Lead - Red
- PRS-801CIC Computer Input Cable
- PRS-801SSL Shielded Test Lead
- PRS-801TVL High Resistance Voltage Test Lead
- PRS-801CC Calibration Shunt
- PTB-915 Audit Test Bed
- PRS-801BC Bulldog Clip
- PSI-870MAC Metal Clip (2)
- PRS-801CON USB 2.0 to RS232 Serial DB9 Converter
- Software
- User Manual
Technical Specifications

RANGE
Resistance from 0.1 (1.0E-1)Ω to 200 Tera Ω (2.0E+14Ω). Maximum resistivity with ANSI/ESD STM S11.11 concentric ring 2.0E+15 Ω/square.

TEST VOLTAGES
Automatic Mode (Default): 0.01V to 10V Variable 1.0E-1 to 1.0E+4Ω
Constant Voltage: 10V: ± <0.2V 1.0E+4 to <1.0E+6Ω
100V: ± <2.0V 1.0E+6 to 2.0E+14Ω
Manual Mode: 0.01V to 10V Variable 1.0E-1 to <1.0E+5Ω
10V: ± <0.2V 1.0E+2 to 1.0E+9Ω
100V: ± <2.0V 2.0E+5 to 2.0E+14Ω

ACCURACY
Overall: ± <5% at ambient conditions (at 23°C and 30% Rh)
Nominal Range Tolerances:
1.0E-1 to 1.0E+1Ω: ±5% corrected for test lead resistance
1.0E+1 to 1.0E+10Ω: ±2.0% with 10’ test leads
1.0E+11: ±5.0% with 10’ test leads
1.0E+12: ±12% with 10’ test leads
1.0E+13 to 2.0E+14Ω: <30% or ±0.25 decade with grounded, shielded leads

DISPLAY
Multi-function 2-5/8” × 1-5/8” Liquid Crystal Display with 1/2” digit height
Displays 3-1/2 digits in Ω, or 1.0EXX in exponential format
Ω Display indicators: Ω, KΩ, MΩ, GΩ and TΩ.
Includes 19-segment analog scale (1-10 with 0.5 indication) with x1, ×10, ×100 multipliers
Number of Data Points in Memory (0-80)
Automatic Electrification Time (seconds), or
Display indicators: Ω, KΩ, MΩ, GΩ and TΩ.

Memory stores up to 80 data points (MEM # displayed after RESET)
RS-232 OUTPUT
Digital format: exponential power followed by integer

ELECTRIFICATION
Resistance Range Electrification Period
0.1Ω to <1.0E+6Ω <3.0 seconds
1.0E+6Ω to <1.0E+12Ω 8.0 seconds
1.0E+12Ω and greater 15.0 seconds
Note: Electrification period varies based on conditions and material stability.

POWER
Two 9-VDC alkaline batteries
Nominal battery life 25 hours in Automatic
Greater than 35 hours in Automatic Manual

DIMENSIONS
4.0” wide × 6.0” long × 2.0” deep

WEIGHT
22 ounces, with batteries

OPEN CIRCUIT CURRENT (I)
<4 ma @ 100V

RESISTANCE RANGE SELECT
2 Triangular Arrow Buttons: UP  and DOWN ¯.

TEST VOLTS
Manual selection of <10, 10 or 100V in Manual Mode

RECORD/RECALL
Turns Memory Register ON if OFF
Provides access to all data in Memory Register
Calculates and Displays Minimum, Maximum and Average of data stored in Memory Register

CLEAR
Erases all data in Memory Register; if in HOLD mode, discards the most recent Held Value

ON/OFF
Power-up, perform functional and battery tests
Power down if ON

BATT. TEST
Displays GOOD on LCD if acceptable voltage or LO if unacceptable

RESET
Enters (saves) data into Memory Register,
Clears HOLD and Display

TEST
Begins measurement sequence

BATTERY BUSS CUT OFF
ON/OFF Switch isolates batteries from instrument circuits for storage & transport

USEFUL MODES OF OPERATIONS
Auto Mode:
The instrument automatically selects and adjusts test voltage, resistance range, electrification period, then displays and Holds the measurement. The displayed measurement is the average of eight consecutive measurements, all within ±5% of each other. The measurement is “saved” in the Memory Register by pressing RESET. The instrument is now ready for the next measurement.

Manual Mode:
Allows operator to select resistance decade, test voltage and electrification period (EP)

Automatic Manual:
Same as Auto Mode with following exceptions:
• Allows operator to select starting resistance decade
• Always starts measurement from the last measurement value without resetting to zero. This extends battery life and speeds up measurement sequence.

DATA LOG & CALCULATION
In RECORD mode, the PRS-801 stores up to 80 measurements, and on demand will calculate and display the Minimum, Maximum and Average measurements stored in the register. Using its RS-232 output and cable accessory, the PRS-801 will communicate with computer serial ports. The instrument is supplied with the new PROSTAT® Audit Program on a 3-1/2 inch disc, which contains spread sheet templates for recording ESD Audit Program Data in Excel® software. The PRS-801 computer output and Program disk are compatible with the Semtronics SCCN™ ground monitoring system.

USAGE RECOMMENDATION
Designed for Intermittent use. Not intended for continuous use or production applications.

more info at:
www.prostatcorp.com/resistance-system-set

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