

PROSTAT[®] PRS-801 Resistance System Version r2.0



The PRS-801 is a unique, constant voltage, wide range ohmmeter with data logging, calculating and computer communication capabilities. Fully portable and battery operated, the PRS-801 measures resistance from <math><0.1</math> to \pm 5\%. It can be operated in Automatic, Automatic-Manual and Manual modes.

This sophisticated instrument digitally displays measurements in Ω , $K\Omega$, $M\Omega$, $G\Omega$ and $T\Omega$, and in exponential format, e.g., 1.5E08.

It simultaneously displays data with a fully synchronous analog scale using x1, x10 and x100 multipliers, and a bank of color programmable LED's ($<10^3</math> to $>10^{14}</math> Ohm). Multiple test voltages include 0.01-10V, 10V and 100V ranges, which may be selected automatically by the instrument to comply with industry measurement practices or manually by the operator.$$

The PRS-801 records and stores up to 80 measurements, and calculates Minimum, Maximum and Average of all stored data. Data may be downloaded to standard computer systems via the instrument's RS-232 Output Port, serial cable and supplied software for ESD Program documentation in Windows[®] Excel[®] spread sheets.

Fully automatic, the PRS-801 controls test voltage, resistance ranging and electrification period to make the most accurate and repeatable measurements available to ESD Auditors and laboratory technicians.

PRS-801 RESISTANCE SYSTEM VERSION r2.0 SPECIFICATIONS

- Range: Resistance from <math><0.1</math> (1.0E-1) Ohms to 200 Tera ohms (2.0E+14 ohms). Maximum Resistivity with S11.11 concentric ring 2.0E+15 ohms/square
- Test Voltages: Automatic mode Default: <math><0.01</math> to 10 volts Variable 1.0E-1 to 1.0E+4 Ohms
 Constant Voltage 10 volts $\pm <0.2</math> volts 1.0E+4 to 1.0E+6 Ohms
 At 10 & 100 Volts 100 volts $\pm <2.0</math> volts 1.0E+6 to 2.0E+14 Ohms$$
- Manual Mode: <math><0.01</math> to 10 volts Variable 1.0E-1 to 1.0E+5 Ohms
 10 volts $\pm <0.2</math> volts 1.0E+3 to 1.0E+9 Ohms
 100 volts $\pm <2.0</math> volts 2.0E+5 to 2.0E+14 Ohms$$
- Accuracy: Overall: $\pm <5\%</math> at ambient conditions (at 23°F and 30% Rh).
 Specific Range Tolerances:
 1.0E-1 to 1.0E+1 ohms: $\pm 5\%$ Corrected for Test Lead Resistance
 1.0E+1 to 1.0E+12 ohms: $\pm 2.0\%$ with 10-foot Test Leads
 1.0E+12 to 2.0E+14 ohms: $\pm 40\%$ or ± 0.25 Decade with Grounded, Shielded Leads$
- Display: Multi-function 2-5/8" x 1-5/8" Liquid Crystal Display with 0.5" digit height. Displays 3-1/2 digits in Ohms, or 1.0EXX in exponential format. Ohms Display indicators: Ω , $K\Omega$, $M\Omega$, $G\Omega$ and $T\Omega$. Includes 19-segment analog scale (1-10 with 0.5 indication) with x1, x10, & x100 multipliers. Number of Data Points in Memory (0 – 80). Automatic Electrification Time

LED Indicators: (seconds), or Time required to Manually obtain steady state measurement. Displays data HOLD, BATTERY status, MIN, MAX, AVG, REC and Test Voltage (<10, 10, or 100 V) 14 Color Programmable LED's from $<10^3$ to $>10^{14}$ ohms. Colors (RED, GREEN, YELLOW, or Blank/OFF) may be operator programmed in SETUP mode.

Timer: Times measurements In Seconds up to 99 seconds (Displayed on LCD)

Memory: Register stores up to 80 data points (MEM # Displayed after RESET)

RS-232 Output: Digital format: Exponential Power followed by Integer.

Response & Electrification: Response from >0.1 to $<1.0E06$ Ohms: <2.0 seconds
Average Measurement Period from 0.1 ohms to $1.0E12$ Ohms **2.5** Seconds. Calculated Electrification Period per ESD S11.11, **7.5** seconds 0.1 ohms to $10E+12$ Ohms. Programmed Electrification $1.0E+12$ to $>2.0E14$ Ohms: **15.0+** seconds

Power: Two 9-VDC alkaline batteries. Nominal battery life 25 hours.

Dimensions: 4.0" wide x 6.0" long x 2.0" deep.

Weight: 22 ounces, with batteries

Open Circuit Current (I): <4 ma @ 100 Volts

INSTRUMENT CONTROLS

Function/ Mode: Toggles Through Six Operation Modes:

<u>MODE</u>	<u>DISPLAYED UNITS</u>	<u>INDICATION</u>	<u>RESIST. RANGE</u>	<u>TEST VOLTS</u>	<u>TEST FUNCTIONS</u>
AUTOMATIC 1	1.0EXX IND Ω - T Ω	AUTO	AUTO.	AUTO.	AUTOMATIC RESISTANCE RANGE, TEST VOLTS, ELECTRIFICATION, DISPLAY HOLD SEE TABLE NOTE #1
AUTOMATIC 2	OHMS Ω - T Ω	AUTO	AUTO.	AUTO.	
MANUAL 1 SELECT DECADE	1.0EXX IND Ω - T Ω	MANUAL	MAN.	MAN. or AUTO	TEST ONLY; NO DISPLAY HOLD UL = UNDER DECADE LEVEL OL = OVER DECADE LEVEL SEE TABLE NOTE #2
MANUAL 2 SELECT DECADE	OHMS Ω - T Ω	MANUAL	MAN.	MAN. or AUTO	
MANUAL/ AUTOMATIC 1 SELECT STARTING DECADE	1.0EXX IND Ω - T Ω	AUTO & MANUAL	MAN. Start AUTO Run	AUTO.	MANUAL SETUP STARTING DECADE, AUTO ADJUST RANGE, TEST VOLTS, ELECTRIFICATION DISPLAY HOLD SEE NOTE #3
MANUAL/ AUTOMATIC 2 SELECT STARTING DECADE	OHMS Ω - T Ω	AUTO & MANUAL	MAN. Start AUTO Run	AUTO.	

Table Notes:

#1 AUTOMATIC: RESISTANCE RANGES IN AUTO 0.1Ω TO <2.0E+14Ω as follows

- @<10V: 0.1 TO <1.0E+04Ω (0.1Ω - < 10KΩ)
- @ 10V: 1.0E+04 TO <1.0E+06Ω (10KΩ - < 1MΩ)
- @100V: 1.0E+06 TO <2.0E+14Ω (1MΩ - <200TΩ)

#2 MANUAL: RESISTANCE RANGES IN MAN 0.1Ω TO <2.0E+14Ω as follows

- @<10V: 0.1 TO <1.0E+05Ω (0.1Ω - <100KΩ)
- @ 10V: 1.0E+03 TO <1.0E+09Ω (1KΩ - <1GΩ)
- @100V: 2.0E+05 TO <2.0E+14Ω (200KΩ-< 200TΩ)

#3 AUTO-MANUAL: (Same as AUTOMATIC)

RESISTANCE RANGES IN AUTO-MANUAL 0.1Ω TO <2.0E+14Ω as follows

- @<10V: 0.1 TO <1.0E+04Ω (0.1Ω - < 10KΩ)
- @ 10V: 1.0E+04 TO <1.0E+06Ω (10KΩ - < 1MΩ)
- @100V: 1.0E+06 TO <2.0E+14Ω (1MΩ - <200TΩ)

Resistance Range Select: 2 Triangular button Arrows: UP ↑ and DOWN ↓. Select Resistance Range in single decades in Manual and Automatic/Manual modes

Test Volts: Manual Selection of <10, 10 or 100 volts 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.

Send: Transmits data in Memory Register to RS-232 Output Port

Clear: Erases data in Memory Register; if in HOLD mode, discards most recent Held Value

ON/OFF Power-up, perform functional & 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

Automatic Function and Unparalleled Accuracy

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.

Data Log, Calculation & Computer Communication

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.

The PROSTAT PRS-801 Resistance System includes the following items

1. PRS-801 Resistance System Instrument with two 9V alkaline batteries
2. Two 10-foot leads (PRS-801 L) for general audit measurements up to 1.0x10¹² ohms.

3. One set (PRS-801 SSL) high resistance measurement leads, including: one shielded 42 inch sensing lead; and, one 42-inch power lead for precision measurements above 1.0×10^{12} ohms
4. PROSTAT[®] Connect software (PRS-CSW) for data transmission to Windows Excel spread sheets
5. One RS-232 output cable (PRS-801 CIC) for connection to a standard nine pin computer COM port.
6. One heavy duty, black "Bulldog" clip (PRS-801 BC)
7. Two Metal Alligator Clips (PSI-870-MAC)
8. One Insulated Test Plate (PRS-800-INS)
9. One Metal Test Plate (PRS-800-MTL)
10. Calibration Shunt for low range adjustment (PRS-801 CC)

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