



# Resistance System Set PRS-801

## Data Sheet

### Portable, precision resistance measurement from 0.1 to $2.0 \times 10^{14}$ ohms

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.

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  $1.0 \times 10^{12}$  ohms 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.



## RANGE

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

## TEST VOLTAGES

### Automatic Mode (Default):

0.01V to 10V Variable 1.0E-1 to 1.0E+4 $\Omega$

### Constant Voltage:

10V:  $\pm <0.2V$  1.0E+4 to  $<1.0E+6\Omega$

100V:  $\pm <2.0V$  1.0E+6 to 2.0E+14 $\Omega$

### Manual Mode:

0.01V to 10V Variable 1.0E-1 to  $<1.0E+5\Omega$

10V:  $\pm <0.2V$  1.0E+2 to 1.0E+9 $\Omega$

100V:  $\pm <2.0V$  2.0E+5 to 2.0E+14 $\Omega$

## ACCURACY

### Overall:

$\pm <5\%$  at ambient conditions (at 23°C and 30% Rh)

### Nominal Range Tolerances:

1.0E-1 to 1.0E+1 $\Omega$ :  $\pm 5\%$  corrected for test lead resistance

1.0E+1 to 1.0E+10 $\Omega$ :  $\pm 2.0\%$  with 10' test leads

1.0E+11:  $\pm 5.0\%$  with 10' test leads

1.0E+12:  $\pm 12\%$  with 10' test leads

1.0E+13 to 2.0E+14 $\Omega$ :  $<30\%$  or  $\pm 0.25$

decade with grounded, shielded leads

## DISPLAY

Multi-function 2-5/8"  $\times$  1-5/8" Liquid Crystal Display with 1/2" digit height

Displays 3-1/2 digits in  $\Omega$ , or 1.0EXX in exponential format

$\Omega$  Display indicators:  $\Omega$ , K $\Omega$ , M $\Omega$ , G $\Omega$  and T $\Omega$ . Includes 19-segment analog scale (1-10 with 0.5 indication) with  $\times 1$ ,  $\times 10$ , &  $\times 100$  multipliers

Number of Data Points in Memory (0-80)

Automatic Electrification Time (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 100V)

## LED INDICATORS

14 color LEDs from  $<10E-3$  to  $>10E+14\Omega$ .

Colors (red, green, yellow/orange or blank/OFF)

## TIMER

Time 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

## ELECTRIFICATION

### Resistance Range Electrification Period

0.1 $\Omega$  to  $<1.0E+6\Omega$   $<3.0$  seconds

1.0E+6 $\Omega$  to  $<1.0E+12\Omega$  8.0 seconds

1.0E+12 $\Omega$  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  $\times$  6.0" long  $\times$  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  $\bar{\cdot}$ . Select Resistance Range in single decades in Manual and Automatic/Manual modes.

## 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  $\pm 5\%$  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.

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