PROSTAT®

USER MANUAL

RESISTANCE METER

PRS-801B PRS-812B

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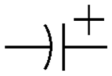
Warning! Important Safety Information

Please read the Safety Instructions before using your Meter.
Refer to the table below for an explanation of symbols which may be on your Prostat product.
In this manual, a Warning identifies conditions and actions that pose hazards to the user. A Caution identifies conditions and actions that may damage the Meter or the equipment under test.

<table>
<tr><td colspan="2">CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). THERE ARE NO USER SERVICEABLE PARTS INSIDE. REFER ALL SERVICING TO QUALIFIED PERSONNEL.</td><td> </td><td>AC voltage: Rated voltage marked with this symbol is AC voltage.</td></tr>
<tr><td> </td><td>This symbol indicates that high voltage is present inside. It is dangerous to make any kind of contact with any internal part of this product.</td><td> </td><td>DC voltage: Rated voltage marked with this symbol is DC voltage.</td></tr>
<tr><td> </td><td>This symbol indicates that this product has included important literature concerning operation and maintenance.</td><td> </td><td>Caution. Consult instructions for use: This symbol instructs the user to consult the user manual for further safety related information.</td></tr>
<tr><td> </td><td>This symbol indicates earth ground.</td><td>  </td><td>This symbol represents capacitance.</td></tr>
<tr><td> </td><td>This symbol indicates battery safety approval.</td><td> </td><td>Conforms to European Union directives.</td></tr>
<tr><td> </td><td>This product contains a Lithium-ion battery that successfully passed UN 38.3 testing ensure the safety of lithium ion or lithium metal batteries during shipping.</td><td> </td><td>Conforms to Great Britain directives.</td></tr>
<tr><td> </td><td colspan="3">This product contains a Lithium-ion battery. Do not mix with solid waste stream. Spent batteries should be disposed of by a qualified recycler or hazardous materials handler per local regulations.</td></tr>
<tr><td> </td><td colspan="3">This product complies with the WEEE Directive marking requirements. The affixed label indicates that you must not discard this electrical/electronic product in domestic household waste. Product Category: With reference to the equipment types in the WEEE Directive Annex I, this product is classed as category 9 "Monitoring and Control Instrumentation" product. Do not dispose of this product as unsorted municipal waste.</td></tr>
</table>

- This apparatus uses a battery pack. In your community, there might be environmental regulations that require you to dispose of batteries properly. Please contact your local authorities for disposal or recycling information.

- Never insert anything metallic into the open parts of this apparatus. This may cause a danger of electric shock.
- To avoid electric shock, never touch the inside of this apparatus. Only a qualified technician should open this apparatus.
- Do not drop or strike the product. If the product is damaged, contact a Prostat Authorized Service Center.
- This equipment is intended for use in electrostatic processes that are free from water, oil, solvent and other conductive contaminants. Exposure to such contaminants will cause failure of the electrical insulation system in the product
- This equipment may require proper grounding for accurate measurement in certain ranges.
- This equipment may get damaged if dropped. In such an event, it should be carefully examined and any necessary repairs be made by an authorized technician.
- Do not exert any pressure on the LCD display from the top.
- In rare cases cleaning the PRS-801B, case and display with a slightly dampened cloth may be required. Should this be required, use a very weak solution on of liquid soap and water. The cloth should be barely damp. DO NOT allow the instrument to become wet with the cleaning solution.
- DO NOT allow cleaning solution to enter the unit through apparatus openings. Should the unit become damaged with cleaning solutions, the warranty is voided.
- Do not expose this apparatus to dripping or splashing.
- Do not dispose of batteries in a fire.
- Do not short-circuit, disassemble, or overheat the batteries.

The Meter complies with:

Document	PRS-801B	PRS-812B
ESD TR53 Compliance Verification	●	●
ANSI/ESD S1.1 Wrist Straps	●	●
ANSI/ESD S4.1 Worksurfaces	●	●
ANSI/ESD STM9.1 Footwear	●	●
ANSI/ESD SP10.1 Automated Handling Equipment	●	●
ANSI/ESD STM11.12 Volume Resistance	●	●
ANSI/ESD STM12.1 Seating	●	●
ANSI/ESD S20.20	●	●
ANSI/ESD STM2.1 Garments	●	●
ANSI/ESD S7.1 Floor Materials	●	●
ANSI/ESD SP9.2 Foot Grounders	●	●
ANSI/ESD STM11.11 Surface Resistance	●	●
ANSI/ESD STM11.13 Two-Point Resistance	●	●
ANSI/ESD S13.1 Soldering Tools	●	●

01 INTRODUCTION

The PRS-801B Resistance System Set is a wide range meter capable of measuring resistance from 0.01 ohm to 2.00E+14 ohms (200 Teraohm). The PRS-801B uses a constant test voltage system that is extremely stable and consistent with lab level, bench top instruments.

The PRS-801B is one of the fastest resistance meter on the market. Its specified electrification period (EP) from 0 to 1.0×10^{12} ohms is 15 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. Laboratory tests confirm the PRS-801B can measure from 0 to 1.0×10^{12} ohms in 2.5 seconds.

Up to 999 measurements can be stored and recalled from the meter's internal memory. Included in the memory is the resistance value, the test voltage, the electrification period and the minimum, maximum and average of the values stored. Additionally, the system includes the Prostat Connect 2.0 Utility Software allowing you to download the internal memory from the PRS-801B into an Excel® Spreadsheet on your computer.

The PRS-812B's accurate wide range of 0.10 ohms to 1.00E+12 ohms, offers exceptional flexibility in measurement applications. The PRS-812B has Automatic, Manual and Auto-Manual operational modes, plus exponential display or standard numeric display in Ω, KΩ, MΩ, GΩ and TΩ.

Measurements are summarized in decades using multiple LED's from $<10^2$ to $>10^{12}$. Its internal memory allows to store up to 120 measurements, and will display the minimum, maximum and average. The PRS-812B meets the requirements of ANSI/ESD S4.1 and ANSI/ESD S7.1.

Both the PRS-801B and PRS-812B use a Li-ion battery pack, rechargeable via USB. Battery life exceed 480 hours when measuring in Auto-Manual mode and allows you to typically make approximately 8,000 measurements.

Resistance Meter Contents

Table 1 is a list of the items included with your Resistance Meter.

Part No.	Description	PRS-801B	PRS-812B
	Prostat Resistance Meter	•	•
801B-012	Rechargeable Li-ion Battery Pack	•	•
800LB	10-foot Silicone Test Lead - Black	•	•
800LR	10-foot Silicone Test Lead - Red	•	•
800PSL	Premium Shielded Test Lead	•	
800TVL	High Resistance Voltage Test Lead	•	
800S	Test Lead Shunt	•	•
PTB-915	Audit Test Bed	•	•
PRS-801BC	Bulldog Clip	•	•
PSI-870MAC	Metal Alligator Clip (2)	•	•
800B-001	AC/DC Power Supply with Multi-Blade Input	•	•
800B-002	USB 2.0 A to Micro-B Cable	•	•
	Connect 2.0 Software for Windows®	•	For firmware updates only

Table 1. Packing List

⚠ CAUTION!

Storage or use of this instrument in high humidity, damp or wet conditions may cause damage to the instrument's electronic circuits, effect performance and can increase the possibility of personnel shock or arc discharge.

⚠ WARNING!

Improper handling and use of energized circuits may cause arc discharge, which in turn may cause the ignition on of combustible materials or fumes. Do not use exposed energized circuits in flammable areas.

⚠ CAUTION!

The resistance meter contains electrostatic discharge sensitive (ESDS) components and includes precision alignment of circuit elements. Only Prostat trained and qualified instrument repair personnel should perform service.

⚠ WARNING!

To prevent electrical shock, do not touch energized circuits, leads or fixtures while grounded. Use pre-tested ground connections meeting local safety codes for personnel earth grounding. Refer to National Electrical Codes and ESD Association Standard ANSI/ESD S6.1 Grounding for information and procedures. Only qualified personnel should conduct ground test measurements.

02 GETTING STARTED

Battery Pack

The resistance meter operates using a 3 cell Li-ion battery pack. To comply with IATA shipping regulations, the meter is shipped at a 30% state of charge (SoC). Completely discharged batteries can cause the resistance meter not to start up when it is turned on. To reach full charge, charge for 2-3 hours with the meter turned off.

When fully charged, the batteries provide approximately 8,000 measurements or up to 48 hours of use when measuring at 100 volts, in Continuous Mode. Battery life exceeds this when used in Auto and Manual modes.

The battery status shows as an icon in the top left corner of the display:

- - Indicates full charge
- - Indicates approx. 20% of operations remains

When the battery capacity decreases to ≤ 20%, the bottom battery level segment will be flashing at 2 Hz rate.

To charge the batteries and power the instrument, use one of the two options as shown in Figure 1 and Figure 2.

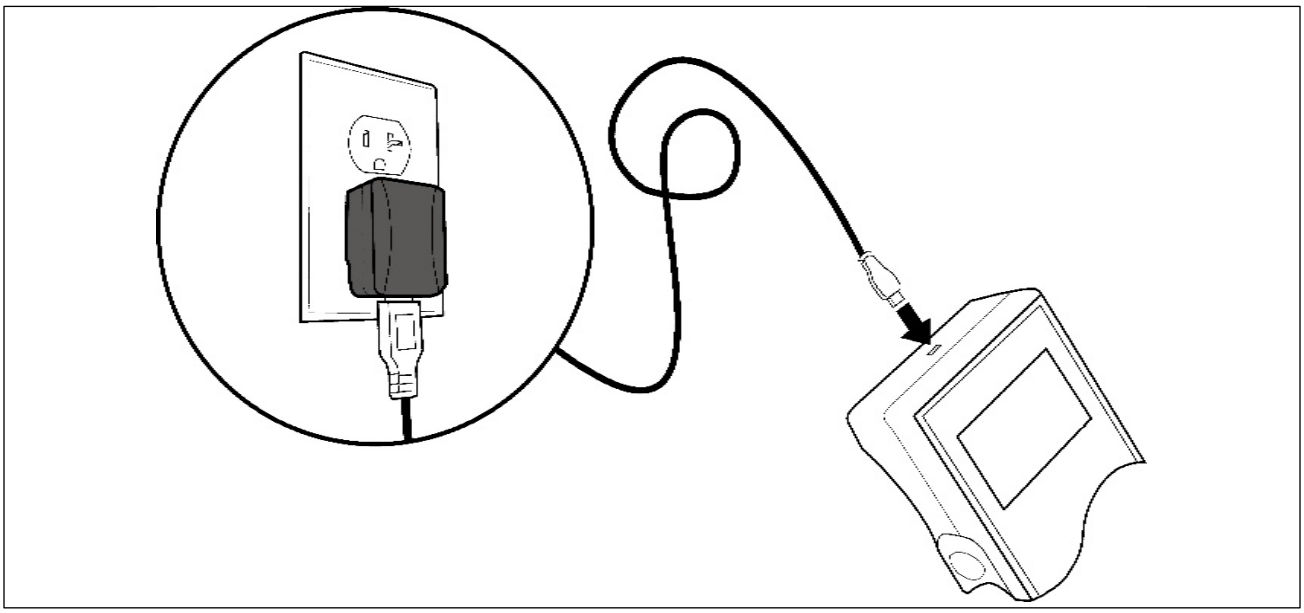


Figure 1. Connect the provided charger to an outlet to charge your Resistance Meter

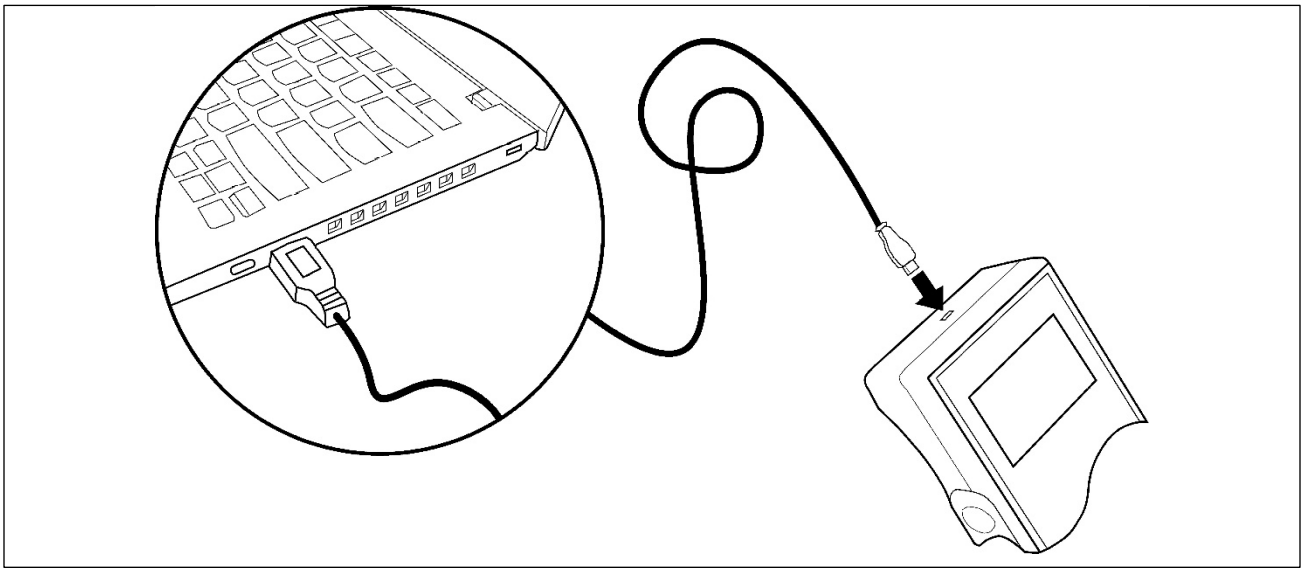


Figure 2. Connect the provided Micro USB Cable to a computer to charge your Resistance Meter

It is recommended to turn off the meter before plugging in the USB cable or wall charger. Once charging has begun, you may leave the meter in its off position, or leave it on. The meter is capable of making measurements while charging.

While the battery is charging, the state is represented by battery segments that grow from 1 to 5 segments in a 2.5 second period. This pattern is repeated until the battery is fully charged.

⚠ IMPORTANT CHARGING NOTE

Each time USB power is connected, the instrument performs one complete battery charging cycle. Once the battery reaches full charge, charging automatically stops. It is safe to leave the USB cable connected after charging is complete; however, the instrument will **not** automatically begin a new charging cycle if the battery voltage later decreases while the USB cable remains connected. To initiate another charging cycle, disconnect and reconnect the USB cable.

Resistance Meter Pushbuttons

The resistance meter uses twelve (12) button switches to perform many functions:

Button	Color	Name	Function
	White	POWER	Press and hold for 2 seconds (long press) to turn the meter ON or OFF.
MODE	White	MEASUREMENT MODE	Selects the measuring mode between Auto, Manual, Auto-Manual and Continuous.
FUNC.	White	FUNCTION	Enters Settings for different functions.
E / Ω	White	EXPONENTIONAL OHMIC	Toggles between scientific (0.00E00) and ohmic (0.00 Ω) measurements.
TEST VOLTS	White	TEST VOLTAGE	Press to select between less than 10 volts, 10 volts and 100 volts (in Manual Mode only)
RECORD RECALL	Red	RECORD RECALL	Press to enter the memory bank of the meter. Press again to display MIN, MAX and AVG.
CLEAR	White	CLEAR	Use to clear 1 or many measurements stored into memory.

SAVE	White	SAVE	Press at the end of a stable measurement to save into memory.
RESET	Yellow	RESET	Stops and resets the meter during a measurement.
TEST	Green	TEST	Press to make a measurement.

Table 2. Resistance Meter Pushbuttons

Display Features

The meter uses a large 6-digit HTN LCD display. The four-color segmented display consists of a battery status icon, electrification counter that is also used as the memory location, and a large measurement area in scientific or ohmic.

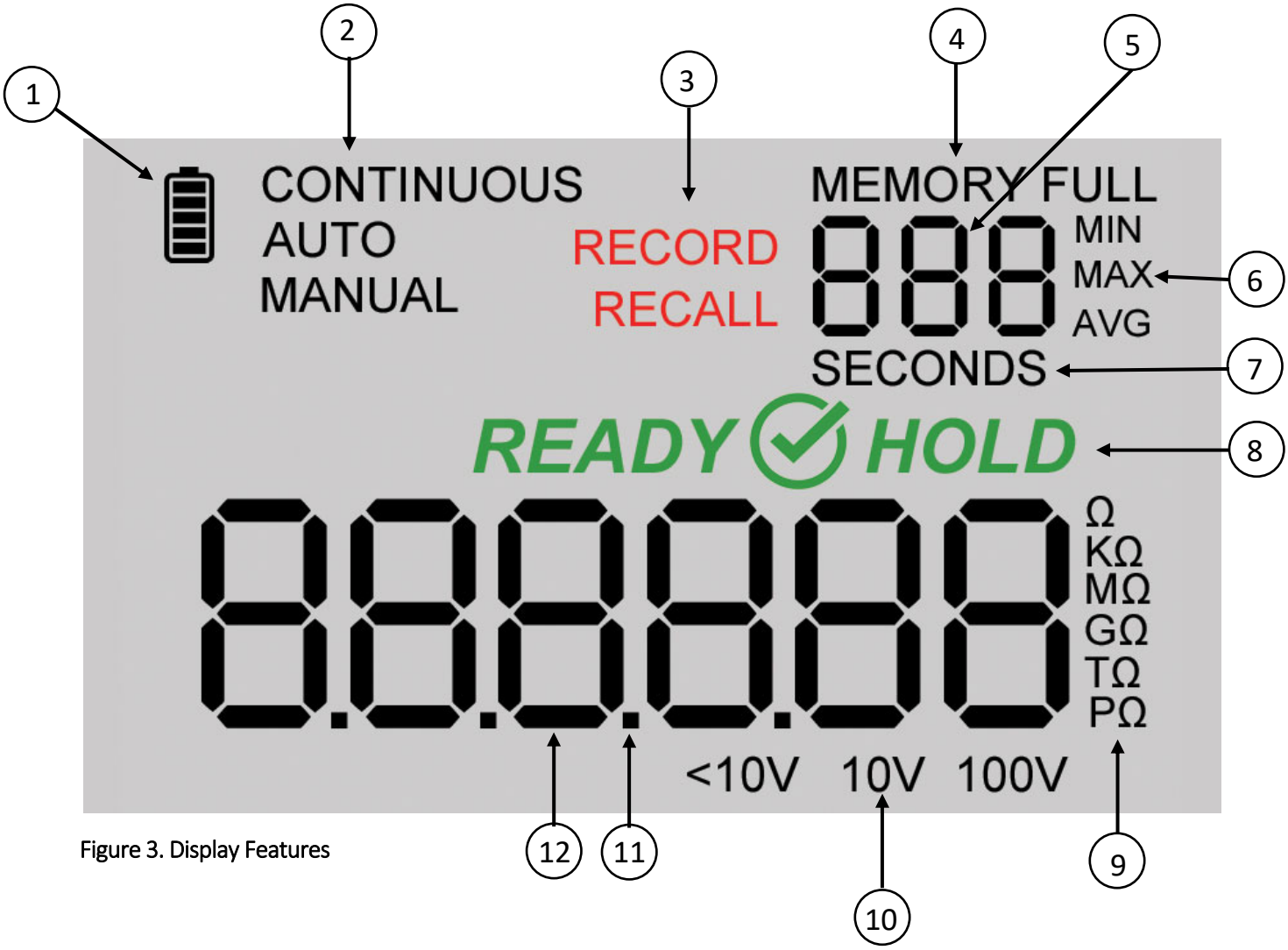


Figure 3. Display Features

Number	Feature	Indication
1		Indicates battery life status.
2	MEASUREMENT MODE	Toggles between Continuous, Auto, Manual and Auto-Manual modes.
3	RECORD RECALL	Toggles between Record when measuring, and Recall when accessing the memory.
4	MEMORY INDICATOR	Displayed when in Recall. FULL is displayed when the memory is full.
5	EP MEMORY LOCATION	Indicates the number of Seconds for the Electrification Period when in Record. Indicates the memory location when in Recall.
6	MIN, MAX, AVG	Displays the Minimum value, Maximum value, and Average of the measurements in Memory.
7	SECONDS INDICATION	Displayed while in Record.
8	READY HOLD	Indicated the meter is ready for operation. Indicates a stable measurement was attained.
9	OHMIC RANGE	Indicates the ohmic range of a measurement while in Record. Active only when Ω display format is selected.
10	APPLIED TEST VOLTAGE	Displays which voltage being applied during a measurement.
11	■	Decimal point.
12		Digital numerical value.

Table 3. Display Features

03 MEASUREMENT CONNECTIONS

The resistance meter has either two or three 4 mm safety-shielded banana jack inputs. Receptacles are separated by ¾ inch spacing (see **Figures 4 and 5**) to accommodate dual banana plug connectors. These connectors are used for the Prostat PRF-912B and PRF-922B microprobe resistance measurement fixtures.

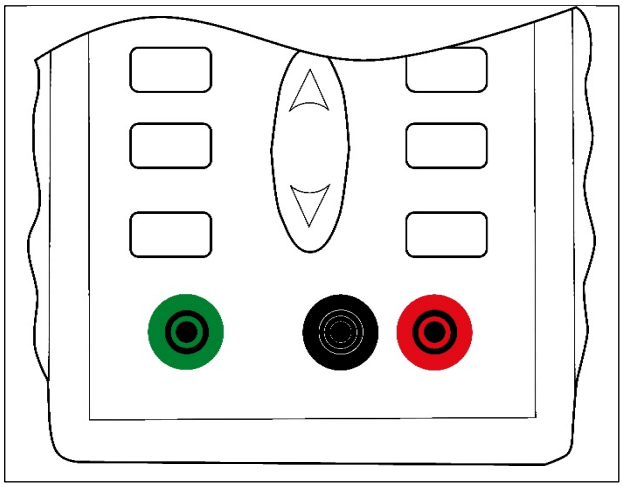


Figure 4. Input Connections for PRS-801B

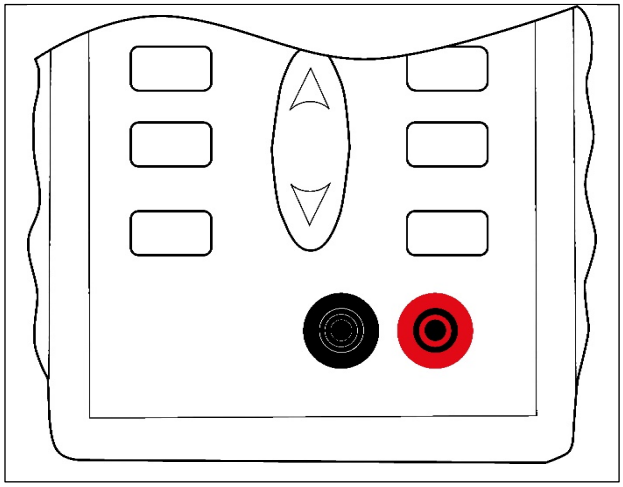


Figure 5. Input Connections for PRS-812B

Red Input

The red input is the Positive Test Voltage input. Connect the Prostat red lead to it.

Black Input

The black input is the Negative Current Sensing input. Connect the Prostat black lead to it.

Green Input (PRS-801B only)

The green input is used for shielding and grounding. Recommended for high resistance measurements.

TIP

Ensure the operator is grounded before inserting test leads to prevent electrostatic discharge to the meter.

> ⚠ **NOTE**
> To make measurements in the E-2 range (from 0.01 to 0.09Ω), you must short the leads together using the supplied shunt (Prostat 800S).

Range	Test Leads		Mode			
	800LB 800LR	800TVL 800PSL	AUTO	MANUAL	AUTO-MANUAL	CONTINIOUS
1.00E-02 to 9.99E-02 0.01 to 0.09 Ω		•		•		
1.00E-1 to 9.99E+11 0.10 to 999 GΩ	•	•	•	•	•	•
1.00E+12 to 2.00E+14 1 TΩ to 200 TΩ		•	•	•	•	•

Table 4. Recommended Mode and Test Leads for each resistance range

04 OPERATION

This meter is battery operated, do not connect with any other utility line. The lithium-ion battery pack is usually already installed when shipped. If you received it separately, you can easily install it inside the battery compartment.

Main Power

To turn the resistance meter on:

1. Press and hold ⏻ for 2 seconds to turn the meter **ON**.
   Note: If the battery level is less than 8%, the meter will not turn on. Charge the battery until the level reaches at least 8%.
2. The LCD displays the current firmware version number.
3. The LED's will illuminate incrementally from left to right.
4. READY will display for 2 seconds, then enter **AUTO** mode.

The resistance meter turns on within 7 seconds in its last setup configuration.

Measurement Modes

The PRS-801B uses 4 basic measurements modes, where the PRS-812B uses 3, as described in **Table 5**. The Mode currently selected is displayed next to the battery status icon.

MODE	RESISTANCE RANGE	TEST VOLTAGE	NOTES
Automatic	Automatic	Automatic	@<10V: 0.01 to <1.00E+04Ω @ 10V: 1.00E+04 to <1.00E+06Ω @100V: 1.00E+06 to 2.00E+14Ω
Manual	Manual	Manual or Automatic	@<10V: 0.01 to <1.00E+03Ω @ 10V: 1.00E+03 to <1.00E+11Ω @100V: 1.00E+06 to 2.00E+14Ω
Auto-Manual	Manual Start Automatic Run	Automatic	@<10V: 0.01 to <1.00E+04Ω @ 10V: 1.00E+04 to <1.00E+06Ω @100V: 1.00E+06 to 2.00E+14Ω
Continuous (PRS-801B only)	Automatic	Automatic	@<10V: 0.01 to <1.00E+04Ω @ 10V: 1.00E+04 to <1.00E+06Ω @100V: 1.00E+06 to 2.00E+14Ω

Table 5. Measurement Modes

Automatic Mode

When the resistance meter is turned **ON**, the default measurement mode is **AUTO**. This mode automatically controls the resistance range, test voltage and electrification period.

Manual Mode

Press MODE to switch mode to **MANUAL**. This mode allows the user to manually select the Resistance Range and/or Test Voltage. If the user does not set the test voltage, the test voltage is to be automatically set based on the selected resistance range. See **Table 4** for test voltages/resistance ranges.

Use the ▲ and ▼ arrows to select the desired resistance range. The appropriate LED illuminates to indicate the selected decade. Press to TEST VOLTS select the desired Test Voltage.

Auto-Manual Mode

Press MODE to switch mode to **AUTO-MANUAL**. This mode allows the user to manually select the Resistance Range. However, the Test Voltage is automatic. After the initial measurement in **Auto-Manual** is complete, subsequent measurements start from last measurement value.

Continuous Mode (PRS-801B only)

Press MODE to switch mode to **CONTINUOUS**. This is the same as for **Auto**. However, the Electrification Period is controlled by the user. The Electrification Period continues until **SAVE**, **RESET** or **CLEAR** is pressed.

If the Electrification Period exceeds 999 seconds, the **SECONDS** digits will wrap and go back to 000. The meter's firmware keeps track of the actual Electrification Period. For example, the meter may store 1005 seconds.

Making a Measurement

To make a measurement, follow these steps:

1. Press and hold ⏻ for 2 seconds to turn the meter **ON**.
2. By default, the active mode is **AUTO**.
3. Press MODE to toggle between the different modes.
4. Press TEST . The meter will begin measuring. Depending on the resistance range under test, the Electrification Period will automatically determine the best wait time for optimum accuracy. Refer to **Table 9** to see what the EP is for each of the range.
5. Once a measurement is stable, ✓ HOLD will be displayed.
6. To proceed with the next measurement, simply press TEST again.

Tables 6 and **7** are lists of visible readings and what the symbols mean during a live measurement:

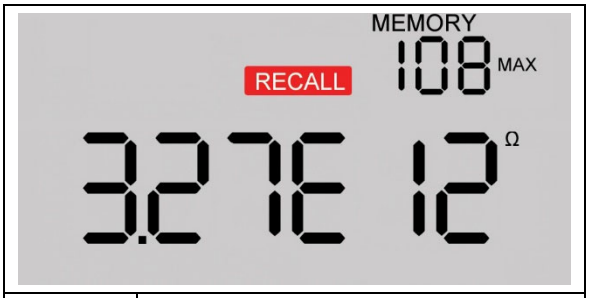
Symbol	Description
AUTO	Measurement Mode
Ω	Measurement in ohms 1.00E02 = 100 ohms
<10V	Test voltage applied during measurement
SECONDS	Electrification period in seconds
RECORD	Live Measurement

Table 6. Display in scientific format

Symbol	Description
AUTO MANUAL	Measurement Mode
GΩ	Measurement in gigaohms 1 gigaohm = 10^9 ohms
100V	Test voltage applied during measurement
SECONDS	Electrification period in seconds
RECORD	Live Measurement

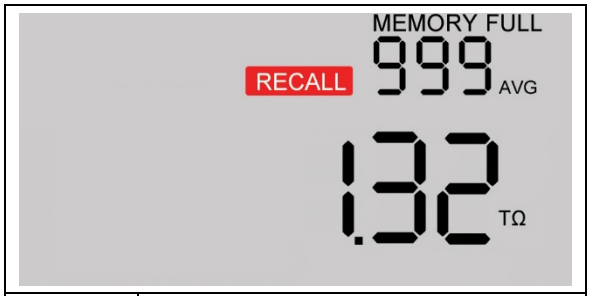
Table 7. Display in ohmic format

Tables 8 and 9 are lists of visible readings and what the symbols mean when accessing the memory:



Symbol	Description
MEMORY	Indicates how many data sets in memory
MAX	The highest measurement stored in memory (MIN also available)
Ω	Measurement in ohms 1.00E12 = 1 teraohm
RECALL	Access to internal memory

Table 8. Display in scientific format



Symbol	Description
MEMORY FULL	Indicates memory is full
AVG	The average of all measurement in memory
GΩ	Measurement in teraohms 1 teraohm = 10^{12} ohms
RECALL	Access to internal memory

Table 9. Display in ohmic format

Test Voltages

In order to make a resistance measurement, a test voltage is being applied. Tables 10 and 11 list the applied test voltage for each resistance range:

RESISTANCE RANGE	APPLIED TEST VOLTAGE
1.00E-2 to 9.99E3	<10 Volts (variable)
1.00E4 to 9.99E5	10 Volts (fixed)
≥1.00E6	100 Volts (fixed)

Table 10. Applied Test Voltage in AUTO, CONTINUOUS AND AUTO MANUAL Mode

RESISTANCE RANGE	APPLIED TEST VOLTAGE
1.00E-2 to 1.00E9	Variable
1.00E3 to 1.00E10	10 Volts (fixed)
≥1.00E5	100 Volts (fixed)

Table 11. Applied Test Voltage in MANUAL Mode

Electrification Period

When making a resistance measurement, the meter needs a period of time to stabilize and make sure the measurement displayed is the most accurate measurement.

Table 12 list the electrification period (EP) for each resistance range:

RESISTANCE RANGE	MEASUREMENT PERIOD	MINIMUM ELECTRIFICATION PERIOD
1.00E-2 to <1.00E6	2 seconds	3 seconds
1.00E6 to <1.00E12	2 seconds	8 seconds
1.00E12 to <1.00E13	Variable	15 seconds
1.00E13 to <1.00E14	Variable	15 seconds
>1.00E14	Variable	15 seconds

Table 12. Electrification period for each resistance range

Resistance Measurements under 0.10 ohm (PRS-801B only)

The meter is capable of making very low resistance measurements. For measurements with the PRS-801B that are under 0.10 ohm, follow these steps:

1. Press and hold ⏻ for 2 seconds to turn the meter ON.
2. Press MODE to select MANUAL modes.
3. Using the 800PSL and 800TVL Test Leads, you must null the leads resistance (see *Null Adjustment for Lead Resistance* for instructions).
4. Make sure to ground the green lead of the 800PSL to earth ground.
5. Press TEST . The meter will begin measuring.

Resistance Measurements 1.00E+12 (PRS-801B only)

The PRS-801B is a wide range resistance meter capable of making measurement up to 2.00E+14.

To get the most accurate measurement in those ranges, the Electrification Period is extended in those ranges. This allows the meter to stabilize and find the most accurate measurement.

Many factors may affect stability in those ranges. Here are some considerations when making measurement greater than 1.00E+12 ohms:

- Use the meter in CONTINUOUS mode and observer the display for stable measurement.
- Make sure the operator is grounded via ESD footwear/flooring or using a wrist strap.
- Use the Prostat 800PSL and 800TVL test leads.
- Do not hold or come in contact with the meter during the measurement.
- Minimize contact of the test leads with grounded surfaces.
- Remove all unnecessary static generators

For measurements with the PRS-801B that are above 1.00E+12 ohms, follow these steps:

1. Press and hold ⏻ for 2 seconds to turn the meter **ON**.
2. Connect the **800TVL** Test Lead to the red input jack of the meter.
3. Connect the **800PSL** Test Lead to the black and green jacks of the meter.
4. Make sure to ground the green lead of the **800PSL** to earth ground.
5. Press TEST . The meter will begin measuring.

> ⚠ **TIP**
> You can choose to make measurements in the E13 and E14 ranges in the **CONTINOUS** mode. In **CONTINIOUS** mode, you can save the reading displayed into memory without waiting for its electrification period.

Exponential and Ohmic Measurements

The resistance meter allows the LCD to display the measurements in either Exponential format (0.00EXX) or in Ohmic format (0.00) using the appropriate ohmic range (Ω, KΩ, MΩ. GΩ, TΩ, PΩ).

At any point while the meter is turned ON, press E/Ω to toggle between Exponential or Ohmic format. This feature is enabled once the meter display a stable measurement. It is also enabled during a live measurement or while scrolling through measurements saved into the memory.

Saving a Measurement

Depending on the model you have, the Resistance Meter has an internal memory capable of storing either 999 or 120 data sets.

Each data set saved in a memory location consists of the resistance measurement, the applied test voltage, electrification period and date & time.

To save a measurement into the internal memory, press SAVE once you have stable measurement. A stable measurement is indicated by displaying HOLD on the LCD. Note that **Ur** (Under Range) or **Or** (Over Range) measurements cannot be saved.

Accessing the internal Memory

You can access the memory of the resistance meter by pressing RECORD RECALL . When in memory, RECALL will be displayed, as well as **MEMORY** in the upper right corner of the LCD. The memory location displayed is the most recent measurement saved. The 3 digits displayed under Memory indicates the memory location.

Use the ▲ and ▼ arrows to scroll through the saved measurements. By pressing and holding either arrows for 2 seconds, the memory will scroll at a rate of 5 memory locations per second. By holding the key for an additional 5 seconds, the auto-scroll rate is increased to 25 memory locations per second.

To indicate that the memory is almost full, the word MEMORY will flash. If the memory is full, the words MEMORY and FULL is displayed and will be flashing together. The user will not be able to save anymore measurements until at least 1 data point is erased from memory.

Repeated presses of RECORD RECALL will cycle through MIN, MAX, AVG before returning to RECORD. The Minimum, Maximum and Average values displayed are calculated based on the entire memory.

Erase Measurement from Internal Memory

You can erase a single measurement from the memory by using the CLEAR button. When in RECALL mode, scroll through the saved measurements using the UP/DOWN arrows. To clear a selected measurement, press CLEAR once. The remaining data in memory is indexed down. Subsequent data in memory fills cleared locations.

To erase the entire memory at once, please refer to the FUNCTION section below.

05 FUNCTION

The resistance meter allows the user to access some internal settings and provide some customization. The section below describes what these are and how to set them.

Null Adjustment for Lead Resistance

To NULL lead resistance means to compensate for, or to subtract lead resistance from the measurement so that only the item or circuit resistance being measured is displayed. This is especially important when making low resistance measurements less than 1.0 or 2.0 ohms. Prostat leads have a combined resistance of approximately <0.35 ohms.

To adjust the resistance meter to compensate for lead resistance, connect the leads to the instrument and then short the leads together using the supplied shunt (Prostat 800S), and follow these steps:

1. Press FUNC. once to enter Null Adjustment function. LEAdS will be displayed.
2. Press FUNC. again. Short will displayed. The <2 LED will also be illuminated.
3. Press TEST . CAL is displayed while the Electrification Period begins.
4. Once a low measurement is stable, ✓HOLD will be displayed.

5. Press SAVE . The Nulling will be saved. The display automatically returns to LEAdS.
6. Press MODE to exit the Function.

Note: When the Null measurement is saved, it is not being saved with the actual measurements that have been saved.

Clear the entire Memory

To erase all the stored measurements at once from the meter's memory, perform the following steps:

1. Press FUNC. once. LEAdS will be displayed.
2. Press the ▼ arrow once. CLEAr is displayed.
3. Press CLEAR once. CLEAr will be flashing along with MEMORY and the number of stored measurements.
4. Press SAVE . A ✓ indicates that the memory was erased successfully.
5. Press MODE to exit the Function.

Enable or Disable Audible Prompts (PRS-801B only)

By default, the meter has the Sound enabled. You may disable the sound using the Function key:

1. Press FUNC. once. LEAdS will be displayed.
2. Press the ▼ arrow twice. Sound is displayed.
3. Press FUNC. again. Either On or OFF will be displayed in the upper right corner.
4. Press the ▲ arrow to enable (ON) or ▼ arrow to disable (OFF).
5. Press SAVE . A ✓ indicates that the change was successful.
6. Press MODE to exit the Function and make measurements.

Note: Audible for critical functions cannot be disabled, such as Low Battery and Error indication.

Changing LED Colors (PRS-801B only)

The user can change the colors for each of the LEDs, using Yellow, Red or Green. Follow these steps:

1. Press FUNC. once. LEAdS will be displayed.
2. Press the ▼ arrow three times. LEd is displayed.
3. Press FUNC. again. The first LED (<2) is illuminated.
4. Press the ▼ arrow to choose a color for the illuminated LED.
5. Press the ▲ arrow to select the next LED.
6. Press SAVE . A ✓ indicates that the change was successful.
7. Press MODE to exit the Function and make measurements.

06 COMMUNICATION WITH A PC (PRS-801B ONLY)

Measurements that you have saved into memory of your PRS-801B can be uploaded from and downloaded to a PC. A PC, Microsoft® Windows®, Microsoft® Excel®, USB cable (supplied), and Prostat® Connect 3.0 utility software are required.

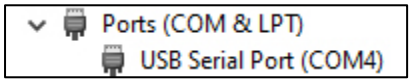
Note: Not compatible with the PRS-812B except for firmware updates.

Installation of the Drivers

The drivers used for communication between the resistance meters and Connect 3.0 is compatible with Microsoft Windows XP, Vista, 7, 8, 8.1, 10 and 11.

Virtual COM port (VCP) drivers cause the USB device to appear as an additional COM port available to the PC.

In most cases, Windows will have the drivers for the chip already pre-installed. When you connect your meter to your PC via USB for the first time, the drivers should automatically install and appear under **Ports (COM & LPT)** in **Device Manager**.



If no suitable driver is automatically found via Windows Update, a manual installation is required. To manually install the driver Windows 7, 8, 8.1, 10 and 11, follow these instructions:

1. Connect the meter to a USB port on your PC.
2. The drivers may be downloaded from the Prostat website at www.prostatcorp.com
3. Press the Windows Start button to bring up the start menu and select **Control Panel**.
4. From the Control Panel window select **Device Manager**.
5. In the Device Manager window there will be a device under **Other Devices** with a yellow warning symbol to indicate a problem (i.e. no driver installed).
6. Right click on the other device to bring up a menu.
7. From the displayed menu, select **Update Driver Software...**
8. The next windows displays the option for an automatic search or a manual search. Select the option to browse manually.
9. Click **Browse...** and located the drivers that you saved on your PC, then click **Next**.
10. A **Windows Security** dialog box may be displayed. Click **Install** to proceed with the installation.
11. When the installation is completed, a window will indicate the driver installed successfully.

This time the **Device Manager** does not display the driver under **Other devices**. Instead an entry for USB Serial Port under **Ports (COM & LPT)** is shown, which indicates that the installation is successful. The meter is now ready to communicate with Connect 3.0.

Connect 3.0 User Interface

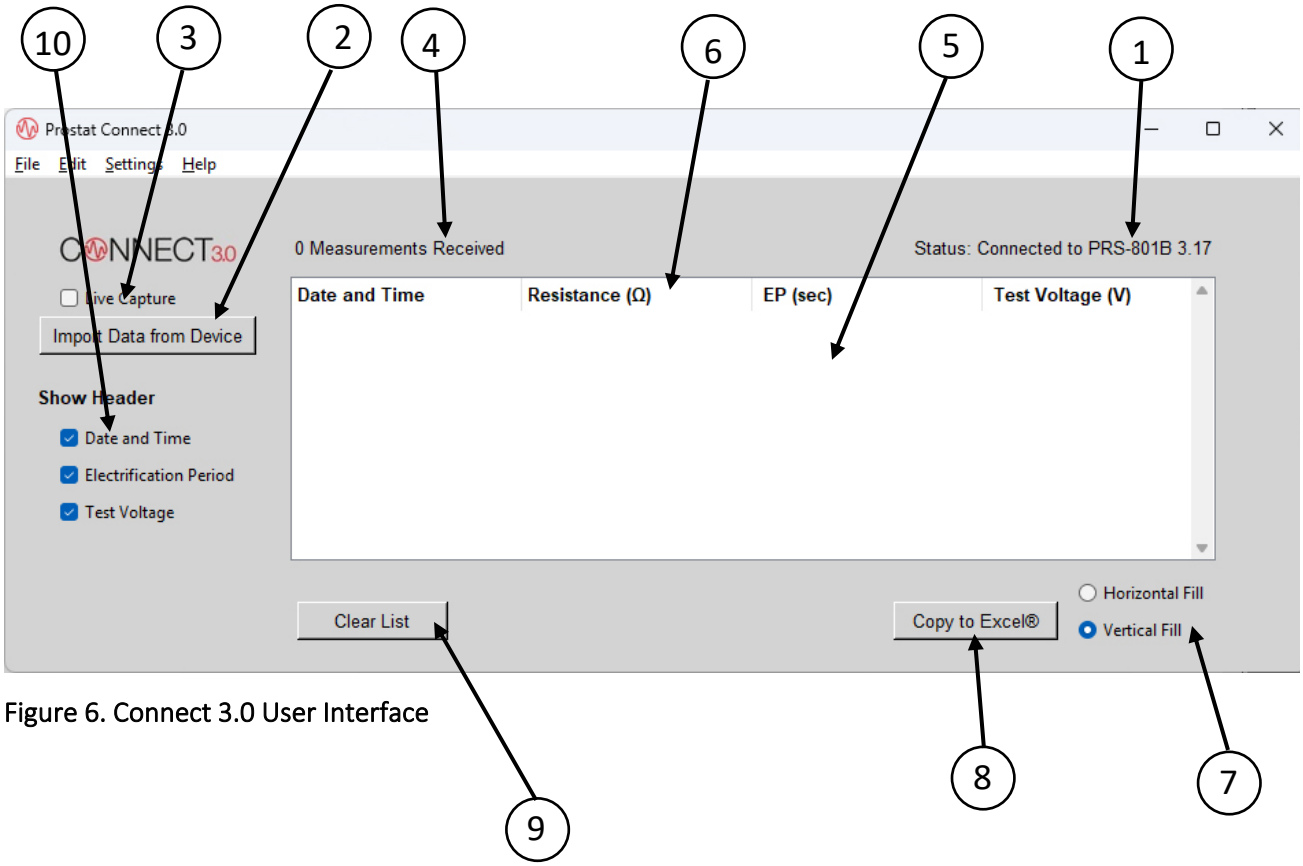


Figure 6. Connect 3.0 User Interface

Number	Feature	Indication
1	CONNECTION STATUS	Indicates the connection status of the meter by **Connected to PRS-8XXB** or **Not Connected.**
2	IMPORT DATA FROM DEVICE	Allows the user to acquire all data sets saved into the PRS-801B internal memory.
3	LIVE CAPTURE	When checked, will download live data set when **SAVED** is pressed on the PRS-801B.
4	MEASUREMENTS RECEIVED	Indicated how many data sets was acquired from the PRS-801B's memory (maximum of 999 data sets).
5	DATA SETS	Data Sets acquired form the PRS-801B is listed in this area.
6	DATA SETS HEADER	The header for each type of data imported.
7	HORIZONTAL FILL	Will copy data sets into Excel® using a **Horizontal Fill**.
	VERTICAL FILL	Will copy data sets into Excel® using a **Vertical Fill**.
8	COPY TO EXCEL®	With an Excel® Spreadsheet open, will copy the data set onto the spreadsheet.
9	CLEAR LIST	Clears the Data Set Imported from the PRS-801B. It will not delete the measurements from the PRS-801B.
10	SHOW HEADER	Allows the user to select which header to be displayed. Resistance is required.

Table 13. Connect 3.0 Features

Installation of the Connect 3.0 utility software

You can download Connect 3.0 from the Prostat website. The download will be a Zip file. Extract the file and place the Connect 3.0 onto your PC's desktop (or any location you prefer).

Starting the Utility

Before starting Connect 3.0, make sure the meter is connected to the PC via USB and turned on. To start Connect 3.0, double-click on the Connect 3.0 icon located on your desktop. (Multiple instances of Connect 3.0 may not be run concurrently on the same machine). You may need to right-click on the icon and select **Run as administrator**.

To confirm that the PRS-801B or PRS-812B is communicating successfully, Connect 3.0 displays **Connected to PRS-8XXB** under **Status**.

Setting the Date and Time of your PRS-801B

The user can set the date and time of the PRS-801B using its PC's date and time:

1. Connect your PRS-801B to your PC using the USB cable (supplied), as shown in Figure 2.
2. Press and hold ⏻ for 2 seconds to turn the meter **ON**.
3. From the Connect 3.0 Utility, click **Settings** and select **Set Device Clock**.
4. You will be asked to confirm to reset the clock of your PRS-801B. Click **Yes**.
5. Your PRS-801B is now set with your PC's Date and Time.

Download data from your PRS-801B

This will allow users to download the data saved into the meter's memory:

1. Make sure the PRS-801B is connected to the PC and powered **ON**.
2. From the Connect 3.0 Utility Software, click **Import Data from Device**.

The data set that was saved into the meter's memory has now been imported to Connect 3.0. The data includes the following:

- Date and Time of the measurement
- Resistance Measurement in ohms
- Electrification Period (EP) in seconds
- Test Voltage output

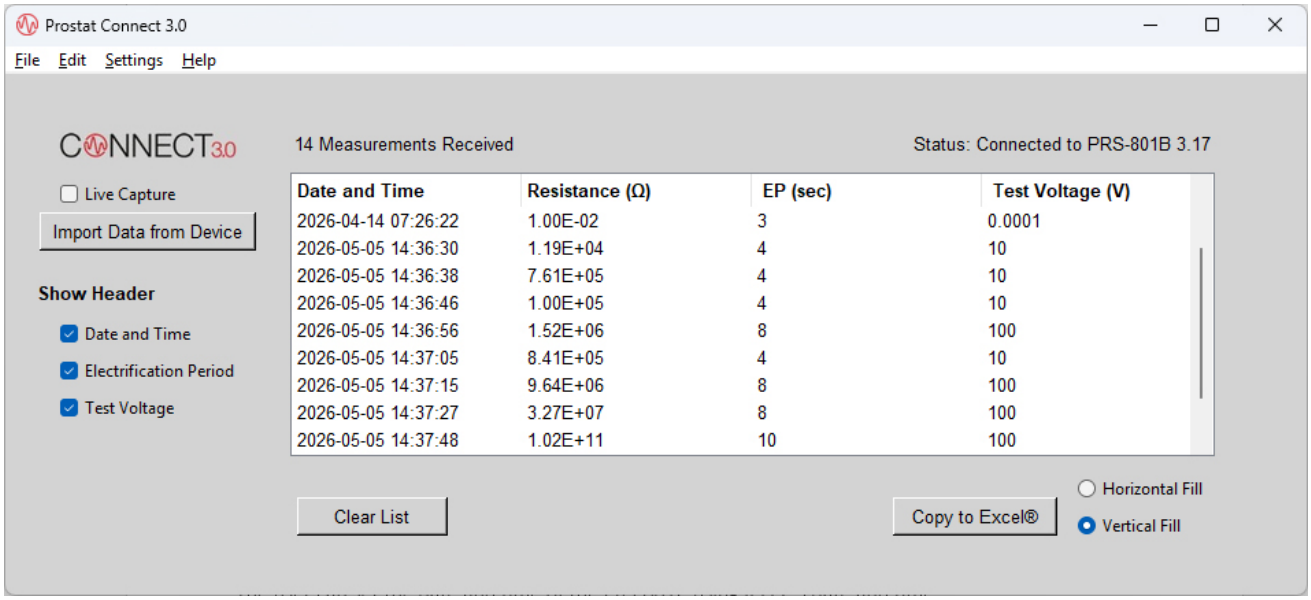
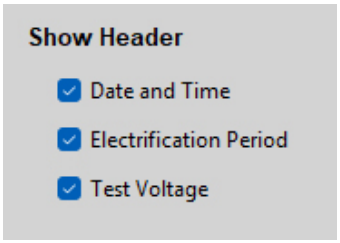


Figure 7. Import Data from the PRS-801B in Connect 3.0

You can choose to display all or some of this information by using the checkboxes to the right of the data sets. Resistance Measurement is the only required data in Connect 3.0.



To clear all the data sets you acquired from the PRS-801B, click the button **Clear List**.

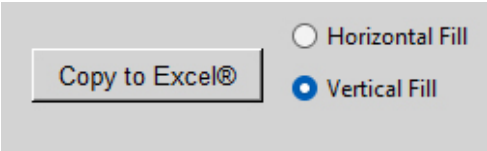
> ⚠ **NOTE**
> Acquiring all data from the PRS-801B does not delete the measurements stored on the PRS-801B. To delete some or all data from the PRS-801B, refer to the **Clear Function**.

Copy data to Microsoft® Excel®

Once you have downloaded the data form the PRS-801B to Connect 3.0, you may copy it to Excel:

1. Launch Excel® on the same PC where Connect 3.0 is running.
2. Place your cursor into the first cell you wish to copy the data.
3. In Connect 3.0, select whether you wish the data to copy horizontally, or vertically.

4. Click **Copy to Excel**.



Automatically download data to Connect 3.0 and Excel®

You can also choose to automatically download a measurement you're taking with the PRS-801B:

1. In Connect 3.0, put a checkmark next to **Live Capture**.
2. Make sure the PRS-801B is connected to the PC and powered **ON**.
3. On the PRS-801B, press TEST to make a measurement.
4. Once you have a stable measurement, press SAVE .
5. The stable measurement will be save into memory. It will also be downloaded to Connect 3.0 and automatically sent to your Excel® spreadsheet.

Backup data feature

Connect 3.0 allows you to create a backup file of the data you upload from your PRS-801B:

1. In Connect 3.0, click on **File**.
2. Click on **Save Data Set As…**.
3. Name the file and click **Save**.
4. All data uploaded on the same date will append to the same single CSV file.

By default, the Data Set will have a Description pre-filled with the current date and time. You can change that description to a more relevant name:

1. In Connect 3.0, click on **Edit**.
2. Click on **Data Set Description**.
3. Enter a description and click **OK**.

Update firmware

Firmware updates are available for both the PRS-801B and PRS-812B to add new measurement functions or fix bugs. The up-to-date firmware version is available through the latest Connect 3.0 available at www.prostatcorp.com.

To update firmware:

1. Download the most current version of Connect 3.0 on our website. The download will be a Zip file. Extract the file and place the Connect 3.0 onto your PC's desktop (or any location you prefer).
2. Connect your meter to your PC using the USB cable
3. Power your meter ON
4. Open Connect 3.0.
5. Select Help > Firmware Update
6. Follow instructions to complete your update. Do not disconnect from the PC until the upgrade is complete, as it might cause the meter to not turn on.

Note: A firmware update will not delete all user data such as measurement data stored on its internal memory.

07 MAINTENANCE AND USER ADJUSTMENT

Maintenance

The resistance meter is factory calibrated and other than battery replacement and external cleaning, general user maintenance is not required. The case has been sealed and BREAKING THE SEALS WILL VOID THE WARRANTY.

For complete service, disassembly, repair, and calibration information, contact Prostat or an Authorized Calibration Lab for assistance.

- Clean the meter case with a dry, soft, non-scratching cloth
- Do not use abrasives, solvents, or alcohol. These may damage the membrane switch.
- Carefully wipe the case and display until dust and dirt are removed

CAUTION

In rare cases cleaning the resistance meter case with a slightly dampened cloth may be required. Should this be required, use a very weak solution of liquid soap and water. The cloth should be barely damp. DO NOT allow cleaning solution to enter the unit through its openings. Should the unit become damaged through the use of cleaning solutions, the warranty will be voided.

Storage

If you store the resistance meter for an extended period of time, it is recommended to charge the Lithium-ion battery about every 6 months.

Storing the meter at -30°C to +60°C (-22 °F to +140 °F) is recommended.

Battery Replacement

WARNING

To prevent possible electrical shock, fire, or personal injury and for safe operation and maintenance of the Product, read instructions below carefully.

- Battery contain hazardous chemicals that can cause burns or explode. If exposure to chemicals occurs, clean with water and get medical aid.
- Use only the Prostat 801B-012 as a replacement battery.
- Do not disassemble the battery.
- Repair the product before use if the battery leaks.
- Use only Prostat approved power adapters to charge the battery.
- Do not disassemble or crush battery cells and battery packs.
- Do not keep cells or batteries in a container where the terminals can be shorted.
- Do not put battery cells and battery packs near heat or fire.
- Do not put in sunlight.

To replace the battery pack:

- Turn off the resistance meter.
- Remove all probes and test leads.
- Unlock the battery cover.
- Lift the battery cover and remove it from the resistance meter.
- Lift one side of the battery pack and disconnect the connector from the meter.
- Install a good battery pack.
- Place the battery cover into position and lock.

Note: Warranty on the battery pack limited to a defective battery pack and excludes normal end of life of the battery. The warranty does not cover defects that are caused by normal wear and tear, inadequate maintenance, insufficient ventilation, transportation, storage or faulty repair, misuse, neglect, accident or abuse, modification to the battery pack.

Travelling Information

Note: Laws and regulations for travelling with Li-Ion batteries or shipping Li-Ion batteries may differ from country to country.

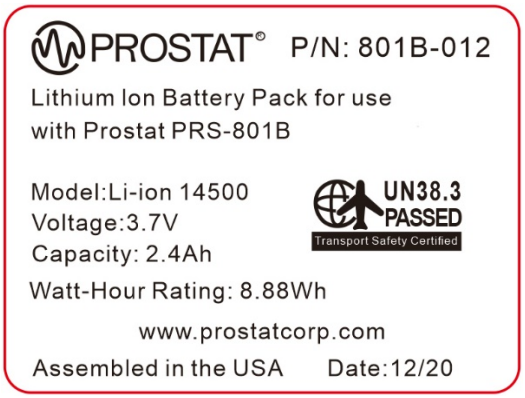
The resistance meter operates with a 3 cell Li-Ion battery pack with less than 100 watt hours (Wh). The 801B-012 has been tested and passed UN38.3 Transport Safety Certified. The battery pack is conveniently located under the battery cover and can easily be disconnected from the circuit if required.

Travelling with the resistance meter

Per Federal Aviation Administration (FAA) regulations, devices containing lithium ion batteries should be carried in carry-on baggage. If you plan to have your meter in a checked baggage, it must be completely powered off and protected to prevent unintentional activation or damage. It is recommended that you disconnect the battery during travel.

Travelling with a spare battery pack

The 801B-012 battery packs have been tested and were found to comply with the criteria of "UN Model Regulations, Manual of Test and Criteria, ST/SG/AC.10/11/Rev.7 Part III, subsection 38.3", also known as "UN38.3".



If you plan on travelling a spare 801B-012 battery pack, per FAA regulations, you must keep the spare Li-Ion battery pack in your carry-on baggage in the aircraft cabin.

Packing Instructions (P.I.)[1]

When battery is packaged separately (e.g. a replacement battery pack):	IATA P.I. 965 Section IB applies
When battery is packaged with the resistance meter, not contained in it:	IATA P.I. 966 Section II applies
When battery is contained within the resistance meter, then packaged:	IATA P.I. 967 Section II applies

[1] Per IATA 2021 regulations. Regulations subject to change without notice.

Calibration Information

The resistance meter specifications are based on a 1 year calibration cycle. Recalibration must be done by qualified personnel. Contact your local Prostat Authorized Calibration Lab for more information about recalibration.

To find the firmware version of your resistance meter, turn off the meter and turn it back on. During power up, the revision of the firmware will display for a few seconds.

Replacement Parts and Accessories

Table 14 is a list of user-replaceable parts for the resistance meter models. To order replacement parts, contact your Authorized Reseller. Table 15 is a list of optional accessories.

Part No.	Description
PRS-801B	Prostat Resistance System
PRS-812B	Prostat Resistance Meter
801B-012	Rechargeable Li-ion Battery Pack
800LB	10 foot Silicone Test Lead - Black
800LR	10 foot Silicone Test Lead - Red
800PSL	Shielded Test Lead
800TVL	High Resistance Voltage Test Lead
800S	Test Lead Shunt
PTB-915	Audit Test Bed
PRS-801BC	Bulldog Clip
PSI-870MAC	Metal Alligator Clip (2)
800B-001	AC/DC Power Supply with Multi-Blade Input
800B-002	USB 2.0 A to Micro-B Cable
801B-005	Rubber Side Grips - Black
812B-004	Rubber Side Grips - Grey
	Connect 3.0 Software for Windows®

Table 14. Replacement Parts and Accessories

The Prostat accessories listed below are compatible with the meter. For more information about these accessories and their prices, contact a Prostat Authorized Reseller.

Part No.	Description
PRS-801W	5lb Conductive Rubber Electrode
PRS-801-VW	Premium 5lb Conductive Rubber Electrodes
PRF-912B	Miniature Concentric Ring
PRF-922B	Miniature 2-Point Probe
PRF-911	Concentric Ring
PRS-800CS	Cable Spacers
PFA-860	Footplate

PFA-861H	Hand-Held Electrode
PCF-825B	Glove CAFÉ Fixture
Q007B	Grounding Cube
PMK-151C	Hard Carrying Case

Table 15. Optional Accessories

08 TROUBLESHOOTING

If your product seems to have a problem, first review this list of possible problems and solutions. If none of the troubleshooting tips apply, please visit www.prostatcorp.com and click Support or contact a Prostat Authorized Calibration Laboratory.

To keep your product in optimum condition, we recommend having it verified and calibrated on an annual basis by Prostat or an Authorized Calibration Laboratory.

The Resistance Meter will not turn on

If the battery level is less than 8%, the battery may be completely discharged. Using the provided USB cable, plug the meter in and try to turn it on (refer to the *Battery Pack* section of this manual for more information.)

If the meter doesn't turn on even after charging it, a new battery pack may be needed. Contact Prostat or your Authorized Reseller for ordering information.

Battery does not resume charging after being left plugged into USB

Disconnect and reconnect the USB cable to initiate a new charging cycle.

Not able to save a measurement

If the meter isn't successfully storing a measurement into memory, it is probably due to one of the following reasons:

- The memory of the meter is full. The memory limit is 999 for the PRS-801B and 120 for the PRS-812B (see **Table 9**).
- The measurement isn't a stable measurement. A stable measurement is required for saving it into memory. If HOLD isn't displayed with the measurement, you will not be able to save it (unless in **CONTINIOUS** mode).
- The measurement displayed is either Ur or Or. Ur and Or measurements cannot be saved into memory.

The display on the resistance meter is turned off while charging. How do I know if the meter is charging?

When the meter is connected to a PC or wall charger, the battery will be charging even if the meter is turned off. To see if the battery is charging, you can turn the meter ON at any time to view its status.

Inaccurate Measurements in Low Resistance

The meter is capable of measuring low resistance. If you aren't able to get an accurate measurement when measuring under 2 ohms, the test leads may need to be nulled, to remove any resistance from the leads (see *Null Adjustment for Lead Resistance* for more information).

I keep getting Ur when measuring under 0.10 ohm

If the PRS-801B is displaying Ur when measuring under 0.10 ohm, the meter may be in Auto or Auto-Manual mode. The meter must be in MANUAL mode in order to measure under 0.10 ohm (see *Table 5*).

In E13 and E14 ranges, it's taking the meter a long time to measure

In those ranges, the PRS-801B has a longer Electrification Period, which means the meter will run for a longer period of time before displaying a stable measurement (see *Resistance Measurements in the E13 and E14 Ranges* for more information).

You may consider making those measurements in CONTINOUS mode and save a steady measurement at any time while measuring.

It is recommended not to hold or handle the meter during measurements that are above 100GΩ.

Unable to change the test voltage when pressing TEST VOLTS

In order to manually select the test voltage, the meter must be in MANUAL mode. The other modes will automatically select the proper voltage.

What does Ur and Or mean on the display?

Ur (Under Range) represents a measurement that is under the range selected when in Manual or Auto-Manual.

Or (Over Range) represents a measurement that is over the range of the meter's capability or over the range selected when in Manual or Auto-Manual.

If the meter is in MANUAL or AUTO-MANUAL, use the Up or Down arrows to select a different range.

Connect 3.0 is not importing data sets from the resistance meter

Connect 3.0 is only compatible with the PRS-801B. Though the PRS-812B can be charged via a USB port on the PC, it can only be used to update firmware.

If the PRS-801B isn't communicating with Connect 3.0, you may need to manually install the drivers. Refer to *Installation of the Drivers* section for instructions.

I accidently disconnected the USB cable from the PC while updating the firmware and now my meter won't turn on

When updating the firmware of your resistance meter, disconnecting the USB cable before completing the update may corrupt the firmware and cause the meter to not turn on.

If this happens, follow these steps:

1. Disconnect the battery pack from the meter and reconnect it a few seconds later.
2. Press and hold CLEAR while pressing ⏻
3. CLEAr is displayed.
4. Connect your meter to your PC using the USB cable.
5. Power your meter ON.
6. Select Help > Firmware Upgrade.
7. Follow instructions to complete your update. Do not disconnect from the PC until the upgrade is complete, as it might cause the meter to not turn on.

QUESTIONS OR COMMENTS?

CALL	OR VISIT US ONLINE AT	WRITE
1-855-STATIC1 (782-8421)	www.prostatcorp.com/contact-us	Prostat Corporation 399 Wall Street, Suite G Glendale Heights, IL 60139

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