



# USER MANUAL

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## CHARGED PLATE MONITOR

CPM-766



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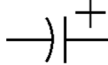






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# Warning! Important Safety Information

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.

<p><b>CAUTION:</b> 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.</p>		<p>AC voltage: Rated voltage marked with this symbol is AC voltage.</p>	
	<p>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.</p>		<p>DC voltage: Rated voltage marked with this symbol is DC voltage.</p>
	<p>This symbol indicates that this product has included important literature concerning operation and maintenance.</p>		<p>Caution. Consult instructions for use: This symbol instructs the user to consult the user manual for further safety related information.</p>
	<p>This symbol indicates earth ground.</p>		<p>This symbol represents capacitance.</p>
	<p>This symbol indicates battery safety approval.</p>		<p>Conforms to European Union directives.</p>
	<p>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.</p>		<p>Conforms to Great Britain directives.</p>
	<p>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.</p>		
	<p>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.</p>		

- 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.
- To avoid electric shock, do not touch the high-voltage ion collecting plate or the ion collecting plate connector while the apparatus is on.
- To avoid electric shock or fire hazard, do not operate this apparatus with the covers removed.
- To avoid injury or fire hazard, do not operate this apparatus in an explosive environment.
- 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.
- To prevent the apparatus from overheating, provide proper ventilation.
- 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.
- If you suspect there is damage to this apparatus, have it inspected by a qualified technician.
- Do not exert any pressure on the LCD display from the top.
- In rare cases cleaning the CPM-766, 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 Instrument complies with:

Document	CPM-766
ESD TR53 Compliance Verification	•
ANSI/ESD STM3.1 Ionization	•
ANSI/ESD SP3.3 Periodic Verification of Air Ionizers	•
ANSI/ESD SP3.4 Periodic Verification of Air Ionizers Performance Using a Small Test Fixture	•
IEC 61340-4-7 Ionization	•
ANSI/ESD STM97.2 Voltage Measurement in Combination with a Person	
ANSI/ESD S20.20	•

# 01 INTRODUCTION

The CPM-766 is an advanced Charged Plate Monitor that utilizes a microprocessor for assessing the effectiveness of air ionizers in neutralizing static charge within ionization systems. It offers the capability to conduct positive and negative decay tests, as well as balance (offset voltage) tests, enabling the determination of the operational efficiency of an ionization system. Compliant with the ESD Association Standard ANSI/ESD STM3.1 and IEC 61340-4-7 Ionization, the CPM-766 is suitable for testing various types of ionization systems.

The CPM-766 conducts both manual and automatic decay and balance tests to qualify and periodically verify ionizers. Its internal memory is capable of storing up to 200 test data. The test data includes balance averages, temperature and humidity, date and time and can be saved under specified locations and areas.

The CPM-766 is equipped with a Li-ion battery pack that can be recharged through a USB connection. With a battery life of over 250 hours when in standby, it enables you to conduct around 1000 tests on average.

When operating in Decay mode, an internal high voltage generator is utilized to charge the plate to a voltage up of 1250 volts. During the test, the CPM-766 observes the duration required for the conductive plate to decay from 1000 volts to the stopping voltage selected by the user.

In the Balance mode, the Charged Plate Monitor will measure the offset voltage on the floating plate to determine an imbalance of positive and negative ions of an ionizer. An offset voltage threshold can be set to 35, 100 volts or 200 volts, where the information on the display during the test turns red to notify the user.

The CPM-766 provides the ability to perform automated Decay tests that can include a Balance test, in sequence. The number of Decay cycles and Decay sequences are determined by the user.

In Manual Operation you will be able to isolate the plate, charge the plate up to  $\pm 1,250$  volts, ground the plate and control the timer for custom testing.

Using a large 5" color touchscreen LCD display, the CPM-766 displays clear, easy-to-use controls and a full keyboard that allows customization of labels, even while wearing gloves.

The CPM-766 is equipped with 2 standard ground jacks, an analog output jack, and a single USB-C port that provides connectivity to your PC for software updates and charging.

The 6" x 6" isolated plate is not detachable and cannot be removed.

## Before You Start

Table 1 is a list of the items included with your Charged Plate Monitor.

Part No.	Description	CPM-766
	Prostat Charge Plate Monitor	•
801B-012	Rechargeable Li-ion Battery Pack	•
PFP-861LL	72 inch Test Lead, Green	•
PFA-861H	Hand-Held Electrode	
PGA-710CGL	Charge Generation Lead	
800B-001	AC/DC Power Supply with Multi-Blade Input	•
700-001	USB 2.0 A to USB-C Cable	•
Q007B	Common Point Ground Connector	•
766-034	Microfiber Cloth - Black	•
CPM-700C	Carrying Case	•
	Autoanalysis 3.0 Software for Windows®	

Table 1. Accessories



### 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 charged plate monitor 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 charged plate monitor operates using a 3 cell Li-ion battery pack. To comply with IATA shipping regulations, the instrument is shipped at a 30% state of charge (SoC). Completely discharged batteries can cause the charged plate monitor not to start up when it is turned on. To reach full charge, charge for 3-4 hours with the meter turned off.

When fully charged, the batteries provide approximately up to 10 hours of continuous operation.

The battery status shows as an icon with the percentage in the top right corner of the display:



Indicates full charge



Indicates battery is less than 10% and should be plugged in for charging



Indicates battery is currently charging

When the battery level reaches 9%, the battery icon turns red and will play a sound to notify the user of a low battery status.

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



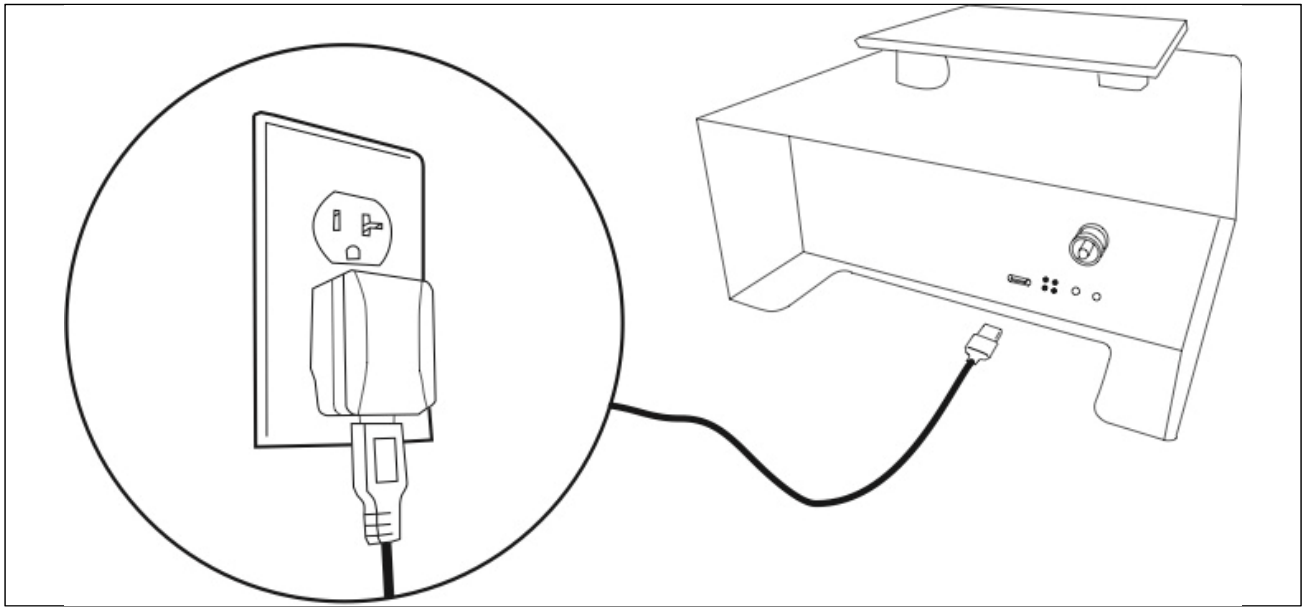


Figure 1. Connect the provided charger to an outlet to charge your Charged Plate Monitor

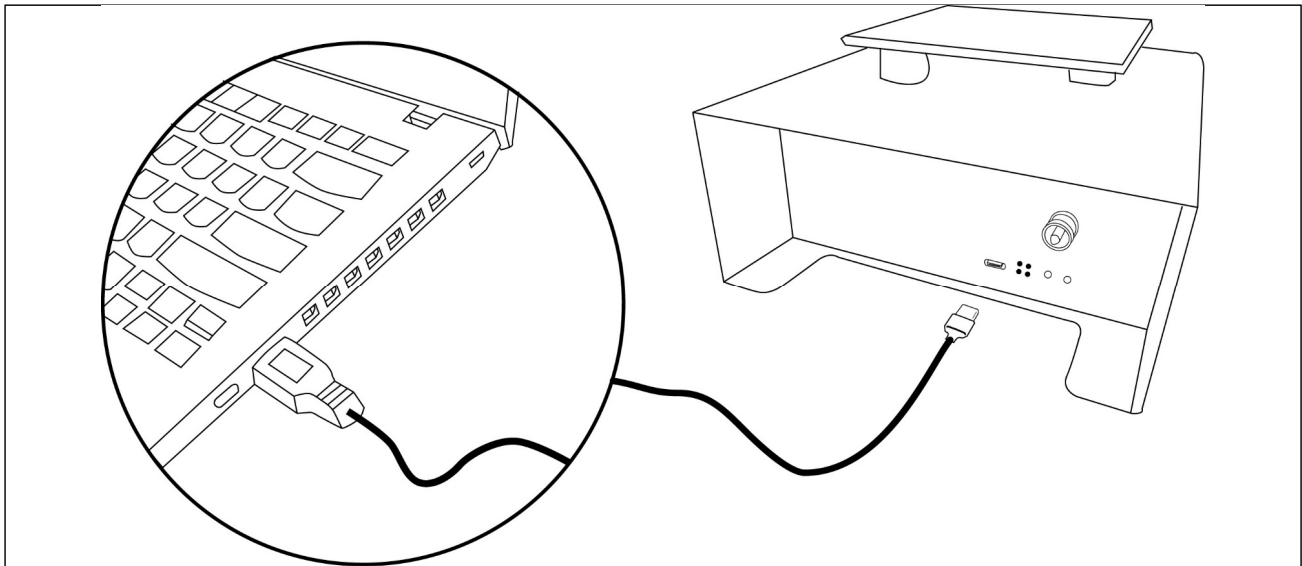


Figure 2. Connect the provided USB-C Cable to a computer to charge your Charged Plate Monitor

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

## Sleep Mode

The instrument automatically enters "Sleep Mode" and blanks the display if there is no function change for 10 minutes, unless the instrument is actively performing a test. Tapping anywhere on the active display awakens the instrument.

## Touchscreen Display

The touchscreen lets you interact directly with what is on the display. To change parameters, touch a target on the display. Touch targets are easy to recognize, such as large buttons, icons, menus, or keys on a virtual keyboard.

The touchscreen works when you must wear gloves for operation, including a combination of 0.3 mm rubber gloves and leather gloves with ARC 4 protection rating. For best practice, make sure you keep the distance between your finger and the screen to a minimum. For example, avoid pressing on the screen with a glove seam between finger and screen.

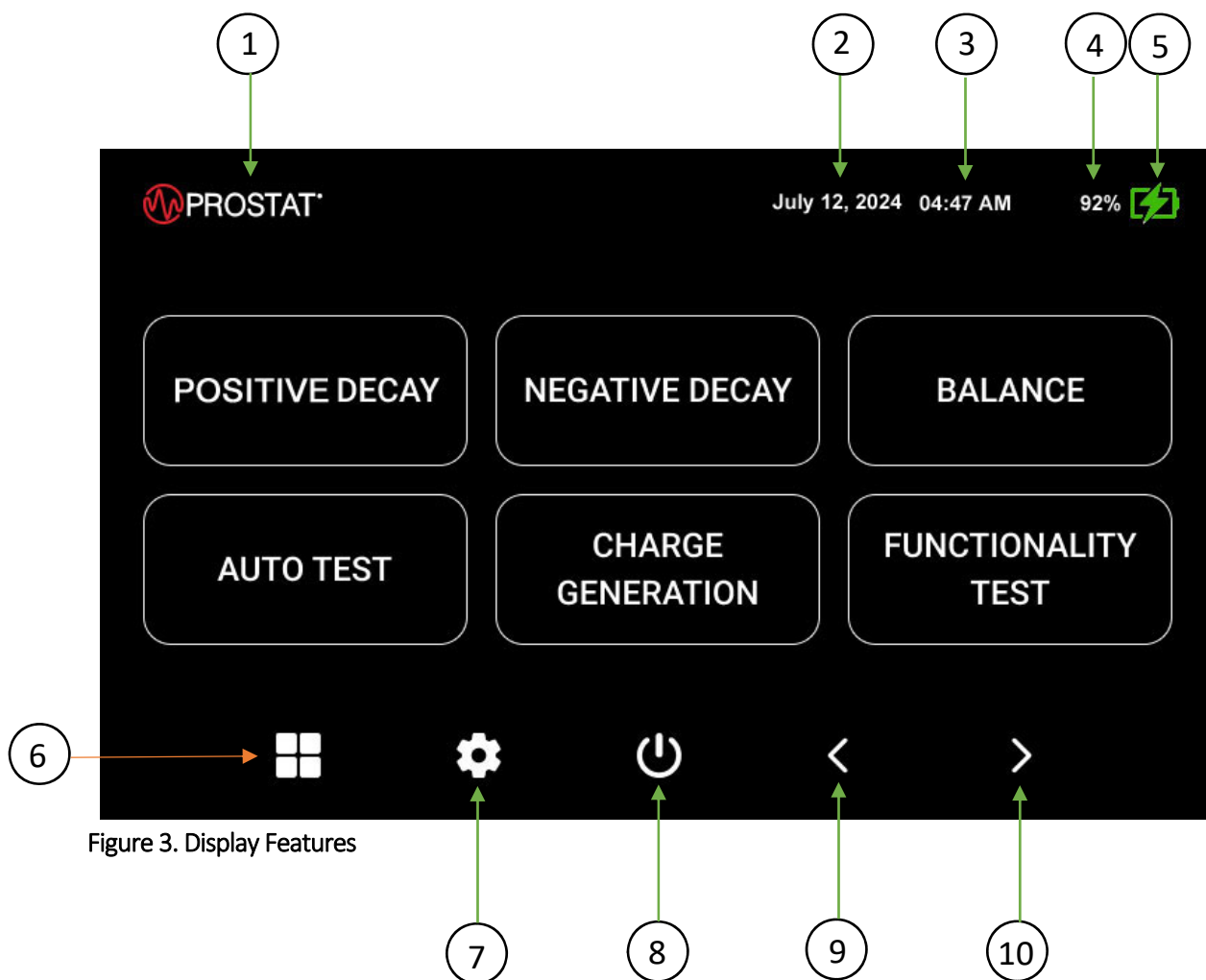


Figure 3. Display Features








Number	Feature	Indication
①	 PROSTAT™	The Prostat Logo.
②	DATE	Displays the date. The date can be configured in the Settings menu.
③	TIME	Displays the time. The time can be configured in the Settings menu.
④	BATTERY PERCENTAGE	Indicates how much charge remains in the battery.
⑤		Indicates battery life status.
⑥		Returns to Functions screen.
⑦		Enters the Settings menu.
⑧		Returns to Home screen from any other screens. Enters Sleep Mode when on Home screen.
⑨		Returns to previous screen (when available).
⑩		Goes to the next screen (when available).

Table 3. Display Features

# Rear and Side Panels

Table 4 is a list of the connectors and functions.

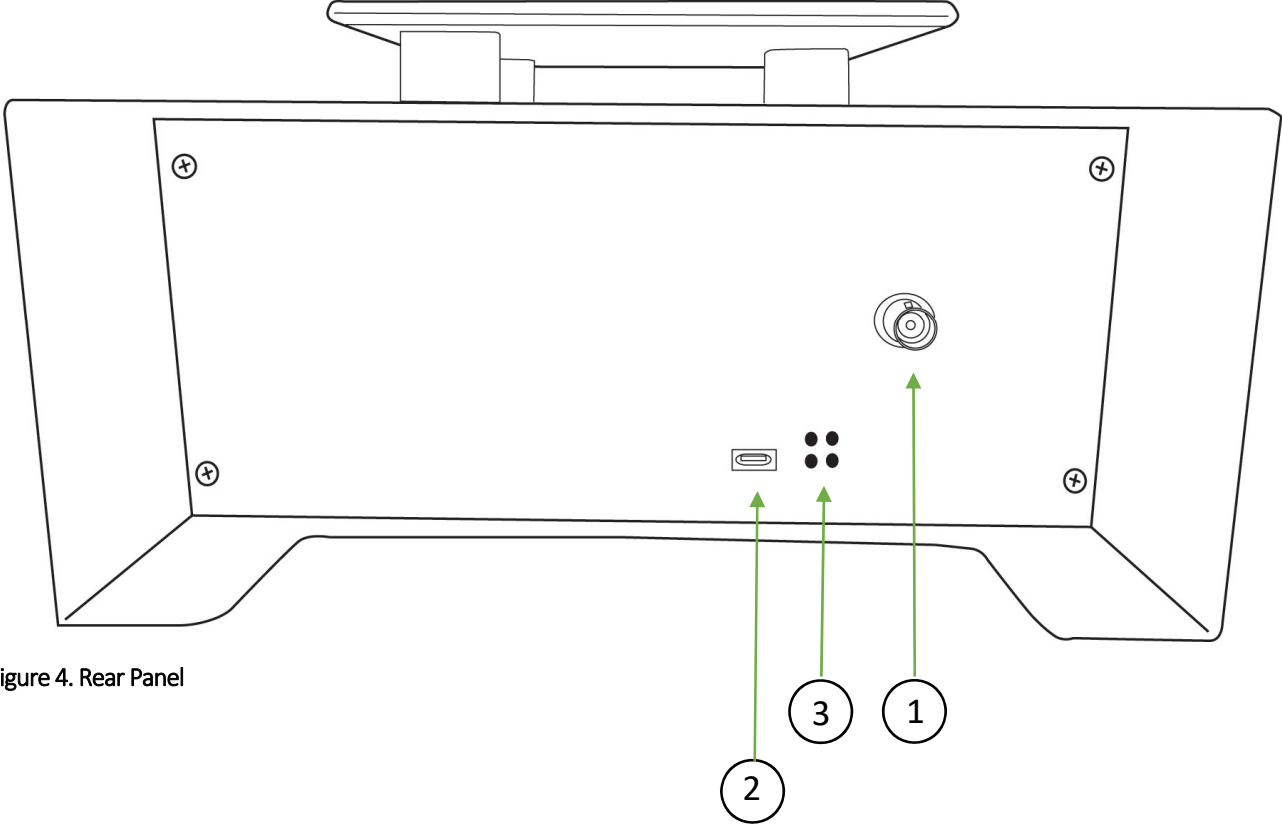


Figure 4. Rear Panel

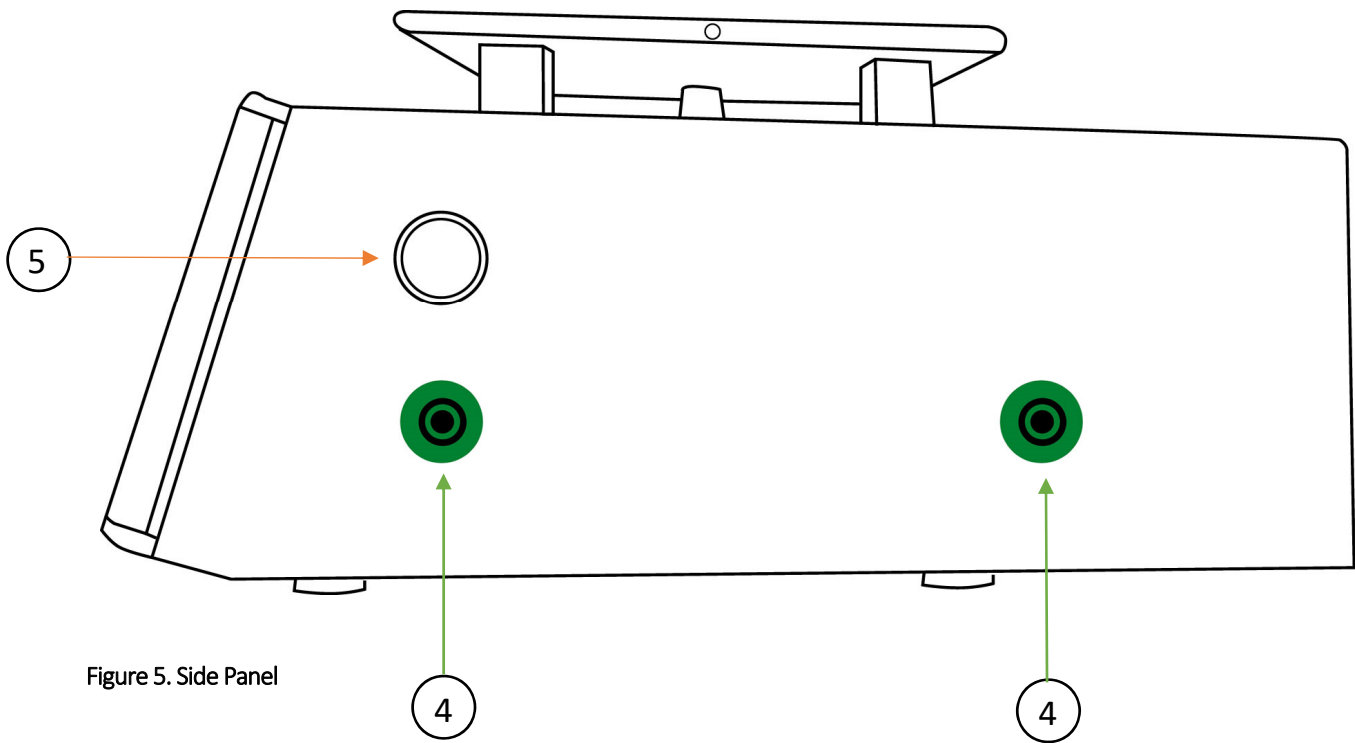


Figure 5. Side Panel

Number	Description
①	BNC Analog Output Connector
②	USB-C Connector
③	Temperature and Humidity Sensor
④	Earth Ground Connectors
⑤	Bluetooth Antenna

Table 4. Rear and Side Panel Connectors

## Power

The Charged Plate Monitor has 2 options for the power source:

- Li-Ion Battery
- USB-C

## Battery Power Source

This instrument 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 located at the bottom of the instrument.

## USB-C Power


You can power the instrument with the USB-C connection to a wall outlet adapter.

- Connect the USB-C cable to the Charged Plate Monitor
- Connect the other end of the USB cable to the wall outlet adapter

# 03 OPERATION

## Power

The Charged Plate Monitor can operate on battery power. Battery life up to 10 hours during normal testing operation.

When powering up the instrument for the first time, or after reconnecting the battery, the instrument will display a large power icon. Tap the large icon  to turn on the instrument.

The next screen will allow you to set the current date and time. When setting the current time, you can choose AM or PM. Tap **SAVE** to save your settings.

You can also choose to skip this step by tapping the **SKIP** button. If you decide to skip this step, the instrument will still operate but will not be displaying the date and time.

**Note:** If you choose to save a measurement, the instrument will prompt you to set a date and time.



After saving your date and time or skipping this step, the **Home Screen** will display the following information:

- Time (if this was set)

- Date (if this was set)
- Current Profile

The charge plate monitor automatically enters "Sleep Mode" and blanks the display if there is no function change or button press for 10 minutes, unless the instrument is actively making a measurement.

To force the instrument to enter "Sleep Mode":

1. Tap the  icon once to return to the **Home Screen**.
2. Tap the  icon again to turn off the instrument.

To turn the instrument back on:






1. Tap anywhere on the active display to turn the instrument back on.



## Touchscreen/Basic Navigation

The touchscreen lets you interact directly with what is on the display. To change parameters, tap a target on the display. Tap targets are easy to recognize, such as large buttons, icons, menus, or keys on a virtual keyboard.


The touchscreen works when you must wear gloves for operation, including a combination of 1 mm rubber gloves and leather gloves with ARC 4 protection rating. For best practice, make sure you keep the distance between your finger and the screen to a minimum. For example, avoid pressing on the screen with a glove seam between finger and screen.

Icons at the bottom of the screen are quick access for:


-  Functions Screen
-  Instrument Settings
-  Home Screen or Power
-  Previous Screen
-  Next Screen

Tapping the  and the  arrows at the bottom of the display will allow you to navigate through previous and next screens when necessary. If the current view only requires a single screen, these arrows will not be usable.

## Home Screen

The **Home** screen is the first screen to appear after plugging the battery in and setting the date and time. The Home screen display the Time, Date and the current Profile. To return to the Home screen from any other screens, press the .

## Functions Screen

The **Functions** screen is your primary access to all functions of the Charged Plate Monitor. Tap  at the bottom of the display to return to the Functions screen.

The Functions screen allows you to perform a number of tests:

Function Name	Description
POSITIVE DECAY	Performs a <b>Positive Decay</b> test using the Parameters set in Settings.
NEGATIVE DECAY	Performs a <b>Negative Decay</b> test using the Parameters set in Settings.
BALANCE (OFFSET VOLTAGE)	Performs a <b>Balance</b> test using the Parameters set in Settings.
AUTOMATED TEST	Performs a series of Positive and Negative Decay Test simultaneously using the Parameters set in Settings. A Balance Test can also be added.
MANUAL OPERATION	Allows you to perform manual tests.

Table 5. Charged Plate Monitor Home Screen Test Menu

Refer to Section 5 later in this manual for detail on each of these test functions.



## Test Setup

Two green ground inputs jacks are installed on the instrument. Both are installed on the side panel. The AC adaptor does not provide a ground connection. Grounding the instrument is required to ensure accurate and repeatable measurements.

For proper grounding, connect one end of the PFP-861LL Ground Lead to one of the green input jacks on the side panel of the instrument, and plug the other end to a ground reference, using the Q007B Grounding Cube.

## 04 SETTINGS

Tap  at the bottom of the display to enter the **Settings** menu.

### General Settings

The **General** settings menu is where you can configure:

- Date
- Time
- Temperature & Humidity
- Sound

**Date.** This is where you can set the date and display settings:

1. Tap on **Set Date** to change your current date or to set it if this was not set during initial setup.
2. Choose the format for the date with the toggle buttons:
  - a. **MM-DD-YYYY** (default): displays the date as Month-Day-Year (January 01, 2024)
  - b. **DD-MM-YYYY**: displays the date as Day-Month-Year (01 January 2024)
  - c. **YYYY-MM-DD**: display the date as Year-Month-Day (2024 January 01)

**Time.** This is where you can set the clock and display settings:

1. Tap on **Set Time** to change your current time or to set it if this was not set during initial setup.
2. Choose the clock type as 12 or 24 hour format with the toggle buttons:
  - **12-Hour Time** (default): displays the clock as *HH:MM XM* with AM/PM indicator
  - **24-Hour Time**: displays the clock as *HH:MM* in military time

**Temperature.** Choose how you would like the temperature to be displayed during the different tests. Select to display the temperature between **Fahrenheit (°F)** and **Celsius (°C)** with the toggle buttons. The default format is Fahrenheit (°F).

**Sound.** By default, the instrument has the Sound enabled. You may disable the sound by selecting **Sound OFF**.

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

## Test Parameters

The **Test Parameters** settings menu is where you set the test parameters for:

- Decay Test
- Balance Test
- Automated Test
- Test Start Delay
- Functional Test
- Walking Test Peaks (Pro version only)



### TIP

Each Test Parameters are saved under one for the profiles. It is recommended to setup names for at least 1 profile before setting test parameters. Refer to Profiles, Locations & Areas later in this manual for more details.

**Decay Test Parameters.** Choose the Stop Voltage and Maximum Decay Time:

- **Stop Voltage.** The default stop voltage is 100 volts. Choose between 100, 50 and 10 volts.
- **Maximum Decay Time.** If the instrument does not reach the stop voltage within this time, the unit will abort the test. Choose between 0 seconds and 600 seconds. By default, this setting is set to “no max” and the instrument will continue until the user cancels the test.

**Balance Test Parameters.** Choose the Balance Duration and Maximum Offset Voltage:

- **Offset Voltage Threshold.** Select between 35, 100 or 200 volts. 35 volts is the default.
- **Minimum Test Duration.** The default is 60 seconds.
- **Maximum Test Duration.** Default is 300 seconds.

**Automated Test Parameters.** This will determine how many cycles will run automatically when choosing **AUTOMATED TEST**.

- **Number of Decay Tests.** The default is 1. Choose between 1 and 10.
- **Alternating Pattern (+ - + -).** This selection will perform the decay tests in an alternating pattern. It will begin with a Positive Decay test, then a Negative Decay test, then back to a Positive Decay test, etc.
- **Sequential Pattern (+ + - -).** This selection will perform the decay tests sequentially. It will begin with all the Positive Decay tests first, then switch to the Negative Decay tests.

**Include Balance Test.** You can elect to include or not include a **BALANCE** test as part of the cycle for an Automatic Test. If this setting is set to **YES**, the Automated Test will begin a single Balance Test. The test will then continue with the Decay tests.

**Test Start Delay.** This is the time delay from when you push the start key, and when the test actually begins. This allows the user to exit the area to minimize their impact on the readings. Choose between 0 second to 15 seconds. Default is 0 second.

**Functional Tests.** This is where you can perform a Plate Voltage Retention test. You can also Zero the sensor if needed.

- **Plate Voltage Retention for 5 Minutes.** This selection will perform the test for 5 minutes in accordance with ANSI/ESD STM3.1 and IEC 61340-4-7.
- **Plate Voltage Retention for 1 Minute.** This selection will perform the test for 5 minutes in accordance with ANSI/ESD SP3.3.

**Note:** For each of the Plate Voltage Retention test, you can choose to perform the test for Positive or Negative, or chose to perform both sequentially by tapping **AUTOMATED RETENTION**.

- **Zero Sensor.** Allows you to zero the sensor for more accuracy. Tap **ZERO** to set the sensor to as close to 0 volt as possible. Tap **SAVE** when done.


## Profiles, Locations & Areas

The **Profiles, Locations & Areas** settings menu is where you set:

- Profiles – up to 3 profiles
- Locations – up to 20 locations
- Areas – up to 100 areas

**Profiles.** This is where you can name each profile, for up to 3. This is ideal for different users of the instrument or different type of tests to be performed with its own defined Test Parameters. Use the on-screen keyboard to input the name of a profile.

When you first receive your Charge Plate Monitor, the default profile will load the default Test Parameters.

1. Tap on **Profiles**
2. Using the toggles, choose which profile you wish to load
3. Use the  icon to rename any of the 3 profiles
4. Once a Profile is selected, any Test Parameters settings will be saved under the Profile

**Locations.** This is where you can name up to 20 locations. This is useful for naming different departments, divisions, or even countries.

**Areas.** This is where you can name each area of test, up to 100 areas. This is useful for naming a particular ionizer, work area or office.

**Note:** Each Profile can have its own Locations and Areas. When adding a location and area, these will be saved under the current Profile.

## Memory

**Memory.** View or clear test data from the internal memory:

1. Tap on **View Stored Measurements** to retrieve saved test data.
  - Each saved test is displayed by date and shows the type of test, as well as the Location and Area is set.
  - Tap on the test to review the test results
  - To delete a particular test, tap **Delete**
2. To delete all saved tests, tap on **Clear all Stored Measurements**
  - Warning: This will remove all the saved tests from the memory
  - This action cannot be undone

The **About** menu is a list of useful information about the Charged Plate Monitor:

- Model Number
- Firmware Version
- Resources
- Bluetooth Address
- Memory Usage

## 05 DECAY TEST

From the **Functions Screen**, you can choose to run a manual **POSITIVE DECAY** or **NEGATIVE DECAY** test. To perform a manual decay test, select the desired test.

Before you start, you may want to review the parameters for each of the tests below, including adding or selecting a location and area for each of the ionizers to be tested. You may also use one of the profiles for pre-set parameters and location/area.

During a **DECAY** test, a built-in high voltage generator charges the plate to 1250 volts  $\pm 5\%$ . During the test, the plate will discharge toward zero in the presence of ionization. The elapsed time of decay between 1000 volts and a selected stop voltage is displayed on the summary screen.

To perform a Decay test:

1. From the Functions Screen, tap **POSITIVE DECAY** or **NEGATIVE DECAY**. The screen displays a Zeroing Bar. The instrument will ground (zero) the floating plate. When the plate is zero, the display will show the voltage on the plate, which should be close to 0 volt.
2. You can also tap the **ZERO** button to re-zero the plate.
3. When ready to begin the test, tap **START TEST**. The decay test begins and will run until the Stop Voltage set in the settings is reached.
4. Tapping **CANCEL** will abort the test and return to the Functions Screen.
5. Once the test is completed the screen will display the Decay Time, Start Voltage, Stop Voltage, Temperature, Relative Humidity, Location/Area and Date/Time.
6. Tapping **SAVE** will save the results under the Location and Area selected.
7. From the summary screen, another Decay Test can be performed.



## CAUTION!

When charged, the plate voltage can be in excess of 1250 volts with respect to ground. Although the charges and potentials are below those that are normally detected by human senses, A SHOCK HAZARD EXISTS.

- Do not handle the plate assembly or touch the plate while conducting a test. A shock could result.
- Do NOT charge large capacitors with this device.

## 06 BALANCE (Offset Voltage)

During a **BALANCE** test, the plate is first grounded then released from ground and allowed to float to any voltage in response to air ion imbalances. It displays the plate voltage, test duration, and minimum and maximum peak voltages. (Nearby charge sources will also induce a voltage on the floating plate.)

To perform a Balance test:

1. Tap **BALANCE (OFFSET VOLTAGE)**. The screen displays a Zeroing Bar. The instrument will ground (zero) the floating plate. When the plate is zero, the display will show the voltage on the plate, which should be close to 0 volt.
2. You can also tap the **ZERO** button to re-zero the plate.
3. When ready to begin the test, tap **START TEST**. The balance test begins and will run for the duration set in the settings for the profile selected.
4. The plate voltage will turn red when the voltage exceeds the Maximum Offset Voltage from the Parameters.

5. Tapping **CANCEL** will abort the test and return to its previous screen.
6. Once the test is completed the screen will display the Plate Voltage, Test Duration, Min/Max Peak Voltages, the Average Voltage, Temperature, Relative Humidity and Location/Area.
7. Tapping **SAVE** will save the results under the Location and Area selected.
8. From the summary screen, another Balance Test can be performed.

## 07 AUTOMATED TEST

From the Functions Screen, you can choose to run an **Automated Test**. The Automated Test will perform a **BALANCE** test (if selected in the Parameters), followed by a **POSITIVE DECAY** and **NEGATIVE DECAY**. All three tests results will be displayed on the summary screen.

Before you start, you may want to review the settings for each of the tests below, including adding a location and area for each of the ionizers to be tested.

To perform an automatic test:

1. From the Functions Screen, tap **AUTOMATED TEST**. The screen displays a Zeroing Bar. The instrument will ground (zero) the floating plate. When the plate is zero, the display will show the voltage on the plate, which should be close to 0 volt.
2. It will also display the parameters set for the test.
3. When ready to begin the test, tap **START TEST**. The instrument will automatically run a **BALANCE** (if selected), **POSITIVE** and **NEGATIVE DECAY** test and proceeds to run the prescribed number of cycles.
4. The screen displays the current test in the cycle (i.e. Positive Decay 1 of 3)
5. Tapping **CANCEL** will abort the test and return to its previous screen.
6. Once the test is completed the screen will display the results for each test as well as averages.
7. Tapping **SAVE** will save the results under the Location and Area selected.
8. From the summary screen, another Auto Test can be performed.

## 08 MANUAL OPERATION

In Manual Operation the user has the ability to isolate the plate, charge the plate up to  $\pm 1,250$  volts, ground the plate and control the timer for custom testing.

To access the Manual Operation screen:

1. Tap **MANUAL OPERATION**. The screen displays a Zeroing Bar. The instrument will ground (zero) the floating plate. When the plate is zero, the display will show the voltage on the plate, which should be close to 0 volt.
2. You can also tap the **GND** button to re-zero the plate.

3. Tap the **CHARGE +** button to charge the plate to +1,250 volts
4. Tap the **CHARGE -** button to charge the plate to -1,250 volts
5. Tapping **EXIT** will abort the test and return to its previous screen.

## 09 PLATE VOLTAGE RETENTION

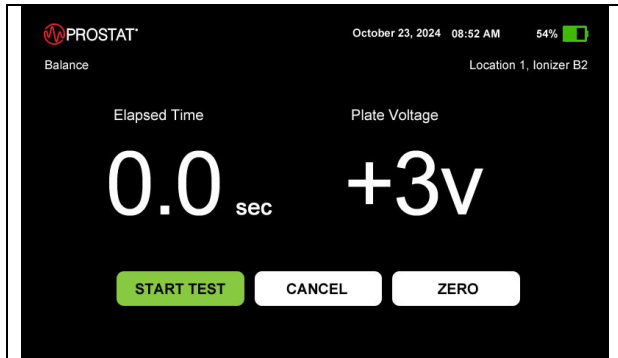
From the **Settings**, you can choose to verify if the isolated conductive plate retains the test voltage properly. The Plate Voltage Retention Test will verify that the conductive plate is retaining 90% of the charge applied for 5 minutes per ANSI/ESD STM3.1 or 90% for 1 minute per ANSI/ESD SP3.3.

To perform a plate voltage retention test:

1. Tap **Settings > Test Parameters > Functional Test > Plate Voltage Retention for 5 Minutes or 1 Minute > Positive or Negative Retention**.
2. The Automated Retention option allows the user to perform both a Positive and Negative test automatically.
3. The screen displays a Zeroing Bar. The instrument will ground (zero) the floating plate. When the plate is zero, the display will show the voltage on the plate, which should be close to 0 volt.
4. When ready to begin the test, tap **START TEST**. The retention test begins. The instrument will calculate the retention of the voltage on the conductive plate for 5 minutes (or 1 minute).
5. Tapping **CANCEL** will abort the test and return to its previous screen.
6. Once the test is completed the screen will display the Start Voltage, Stop Voltage, Percentage of Retention, Temperature & Humidity and Location/Area.
7. Tapping **SAVE** will save the results under the Location and Area selected.
8. From the summary screen, another Plate Voltage Retention Test can be performed.

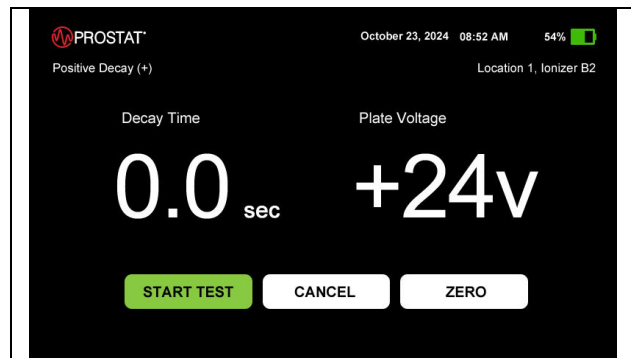
# 10 MEASUREMENT DISPLAY

Tables 3 and 4 are lists of visible readings and what the symbols mean during a live measurement:



Symbol	Description
Balance	Shows current test being performed
Location, Area	Shows the Location and Area, if selected
Elapsed Time	Duration of Balance test in seconds
Plate Voltage	Current charge on the plate in volts
START TEST	Tap to begin the test
CANCEL	Tap to cancel the test
ZERO	Tap to zero the plate again

Table 3. Display during a Live Balance Test

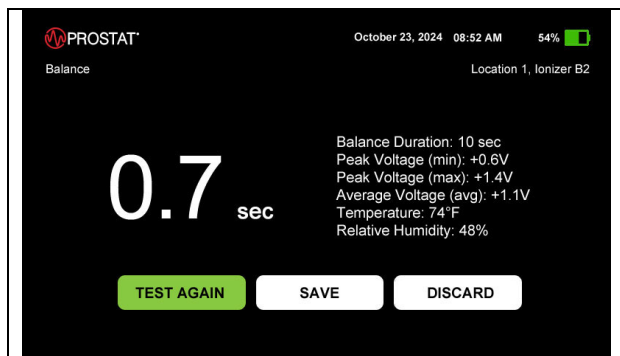


Symbol	Description
Decay (+ / -)	Shows current test being performed
Location, Area	Shows the Location and Area, if selected
Decay Time	Duration of Decay test in seconds
Plate Voltage	Current charge on the plate in volts
START TEST	Tap to begin the test
CANCEL	Tap to cancel the test
ZERO	Tap to zero the plate again

Table 4. Display during a Live Decay Test

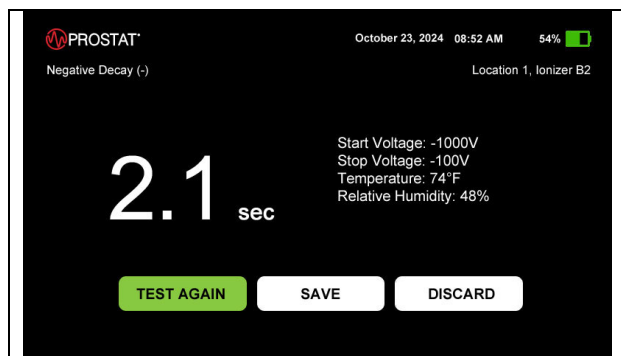


Tables 5 and 6 are lists of visible readings and what the symbols mean on the summary screen:



Symbol	Description
Balance Duration	The duration of the balance test
Peak Voltage	Min and max peak voltages
Average Voltage	The average between the peak voltages
Temperature	Temperature recorded in C or F
Relative Humidity	Relative Humidity recorded
TEST AGAIN	Tap to start a new test
SAVE	Tap to save the results into memory
DISCARD	Tap to exit without saving the results

Table 5. Display of a Balance test summary



Symbol	Description
Decay Time	Time of decay in seconds
Start Voltage	The starting voltage from parameters
Stop Voltage	The starting voltage from parameters
Temperature	Temperature recorded in C or F
Relative Humidity	Relative Humidity recorded
TEST AGAIN	Tap to start a new test
SAVE	Tap to save the results into memory
DISCARD	Tap to exit without saving the results

Table 6. Display of a Decay test summary

## 08 INTERNAL MEMORY

Test results can be saved into the instrument's internal memory under a selected location and area. Each test will be stamped with the date and time of when the test was performed.

To access any saved test results:

1. From Settings, tap **Memory**.
2. Tap on **View Stored Measurements**.
3. The screen will display how many measurements are stored.
4. The same screen will also list up to 8 data sets. The user can scroll to view more data sets.
5. Tap the Data Set to review.

## 09 ANALOG OUTPUT

### Using the Analog Output

An analog output jack is provided on the rear panel. The analog output is a BNC jack that can be used to connect the Charged Plate Monitor to an oscilloscope or other suitable devices. 1 volt at this output corresponds to 10 kV.

The BNC connector on the rear panel comes with connector cap (766-020) to protect the connector. To connect the unit to an external device, please remove the cap by twisting it counter-clockwise, as shows in **Figure 6**.

It is recommended to re-install the cap after its use for protection.

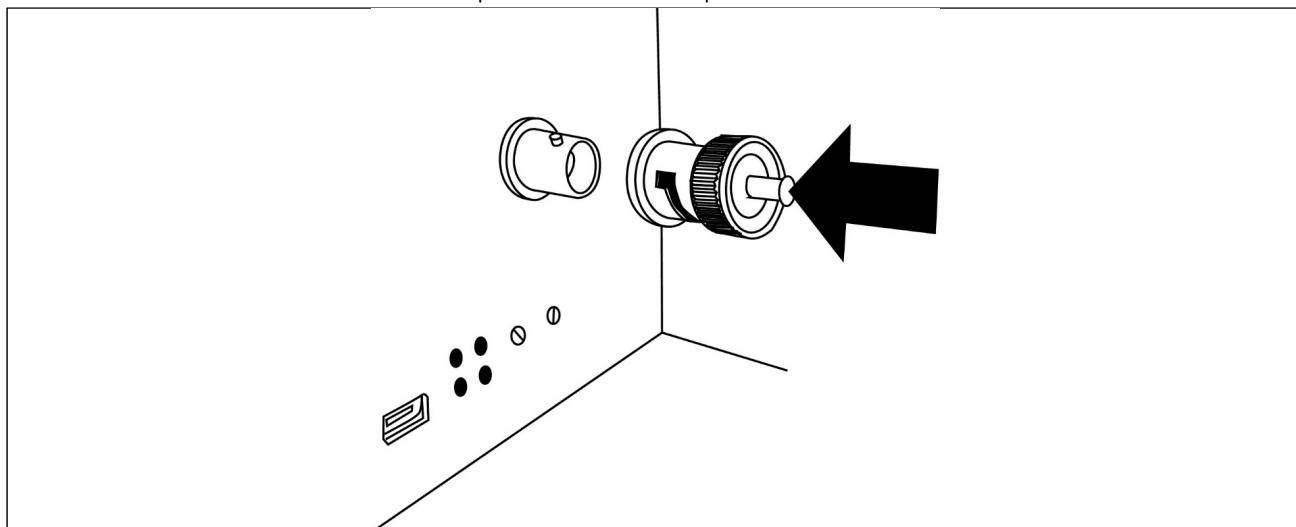


Figure 6. Remove the protective cap to connect the unit to an external device.

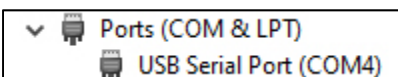
## 10 DRIVERS AND FIRMWARE

### Installation of the Drivers


The drivers used for communication between the Charged Plate Monitor and Connect 2.0 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 charge plate monitor 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 instrument to a USB port on your PC.
2. The drivers may be downloaded from the Prostat website at [www.prostatcorp.com](http://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 Input Device under **Human Interface Devices**  is shown, which indicates that the installation is successful. The instrument is now ready to communicate with Connect 2.0.

## Update Firmware

Firmware updates are available to add new measurement functions or fix bugs. The up-to-date firmware version is available through the latest Prostat Connect 2.0 available at [www.prostatcorp.com](http://www.prostatcorp.com).

To update firmware:

1. Download the most current version of Connect 2.0 on our website. The download will be a Zip file. Extract the file and place the Connect 2.0 onto your PC's desktop (or any location you prefer).
2. Power your meter ON and make sure the screen is on the home screen
3. Connect your meter to your PC using the USB cable
4. Open Connect 2.0
5. Verify the Connection Status in Connect 2.0 in the bottom right corner. It should display CPM-766
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.

**Note:** A firmware update will not delete settings, parameters or user data such as measurement data stored on its internal memory.



## NOTE

The only feature available for the Charge Plate Monitor in the Connect 2.0 is updating the firmware. Connect 2.0 does not allow for transferring measurements from the Charge Plate Monitor.

# 11 MAINTENANCE AND USER ADJUSTMENT

## Maintenance

The Charged Plate Monitor 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 instrument case with a dry, soft, non-scratching cloth
- Do not use abrasives, solvents, or alcohol. These may damage the touchscreen display.
- Carefully wipe the case and display until dust and dirt are removed



## CAUTION

In rare cases cleaning the charge plate monitor 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 Charged Plate Monitor 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 charge plate monitor.
- Remove all test leads and cables.
- Using a Philips screwdriver, unlock the battery cover.
- Lift the battery cover and remove it from the charge plate monitor.
- 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 screw it locked.

**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.*

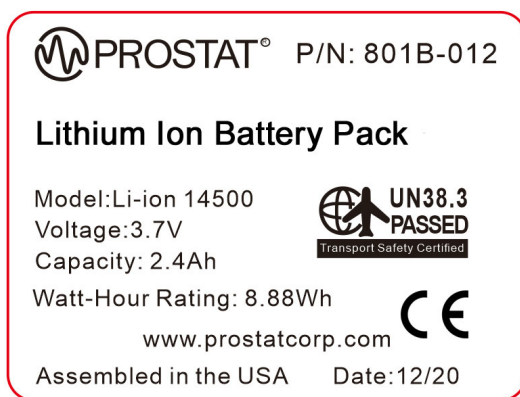
The charged plate monitor operates with a 3 cell Li-Ion battery pack with less than 100 watt hours (Wh). The 801B-012 has been tested and passed UN38.3 Transport Safety Certified. The battery pack is conveniently located under the battery cover and can easily be disconnected from the circuit if required.

### Travelling with the charge plate monitor

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.)<sup>1</sup>

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

<sup>1</sup> Per IATA 2021 regulations. Regulations subject to change without notice.

### Calibration Information

The charge plate monitor 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 Charged Plate Monitor, go to **Settings > About**.

## Replacement Parts and Accessories

**Table 14** is a list of user-replaceable parts for the charge plate monitor. To order replacement parts, contact your Authorized Reseller. **Table 15** is a list of optional accessories.

Part No.	Description
CPM-766	Charge Plate Monitor
801B-012	Rechargeable Li-ion Battery Pack
PFP-861LL	72 inch Test Lead
Q007B	Common Point Ground Connector
800B-001	AC/DC Power Supply with Multi-Blade Input
700-001	USB 2.0 A to USB-C Cable
CPM-700C	Carrying Case
766-020	Protective Cap for BNC Connector
766-034	Microfiber Cloth - Black

**Table 14. Replacement Parts and Accessories**

## 12 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](http://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 Charged Plate Monitor 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 instrument in and try to turn it on (refer to the *Battery Pack* section of this manual for more information.)

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

### **When attempting to upgrade the firmware, Connect 2.0 doesn't recognize my instrument**

In order for Connect 2.0 to recognize your instrument and upgrade its firmware, make sure the screen of your meter is turned on and in idle. If the screen is in sleep mode, or the battery is disconnected, Connect 2.0 will not be able to upgrade the firmware.

Once the instrument is turned on and in idle mode, plug in the USB cable to your computer. Start Connect 2.0 and you should see CPM-766 under Connection Status in the bottom right corner.

You can now select to upgrade the firmware from the Help menu.



















## QUESTIONS OR COMMENTS?

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

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Rev 2 8/22/2024