PROSTAT®

USER MANUAL

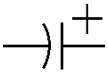
AUTOANALYSIS SYSTEM

PGA-712

Table of Contents

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.

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

- 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 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.

The Instrument complies with:

Document	PGA-712
ANSI/ESD STM97.2 Voltage Measurement in Combination with a Person	●
IEC 61340-4-5 Methods for characterizing the electrostatic protection of footwear and flooring in combination with a person	●
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 S20.20	●

01 INTRODUCTION

The PGA-712 is an advanced electrostatic analysis system designed for use with Prostat's PFK-100B Field Meter and Charge Plate Monitor Kit. The system records, plots, and analyzes static electricity behavior while automatically generating detailed reports on body voltage generation, electrostatic decay, ionizer performance, and more.

The PGA-712's analytical capabilities automatically calculate projected levels of Human Body Model (HBM) voltages. This helps identify the risk of reaching or exceeding hazardous discharge thresholds in ESD-sensitive environments.

By connecting the Field Meter's analog output to a computer via USB (using the included cables), the Autoanalysis Software transforms your setup into a digital chart recorder with integrated analysis and reporting tools.

It measures, records, analyzes, and graphs electrostatic data, then automatically constructs complete reports — including ambient temperature and relative humidity recorded during each test.

The PGA-712 system calculates ±3-sigma ranges of body voltage from walking and standing tests. It also plots the probability of reaching specific voltages, and calculates maximum, minimum, and average voltage values, fully complying with ANSI/ESD STM97.2 standards.

The included software provides instant mathematical and statistical analysis, assisting ESD Program Managers and Plant Auditors in evaluating the effectiveness of ESD control measures across device handling and transport procedures.

The PGA-712 is a powerful, flexible tool for electrostatic diagnostics and compliance verification, offering robust data logging and automated analysis to support high-reliability ESD programs.

Before You Start

Table 1 is a list of the items included with your PGA-712 Autoanalysis System.

Part No.	Description	
PGA-712	Autoanalysis Data Converter	•
700-001	USB-C Cable	•
700AC	Analog Connection Cable	•
PFA-861H	Hand-Held Electrode	•
PGA-710CGL	Charge Generation Lead	•
PGA-710CC	Calibration Shunt	•
PFM-700C [1]	Zipper Case	•
	Autoanalysis Software for Windows® - via download	•

Table 1. Accessories

[1] Only included when purchased individually. If the device is included in a Prostat kit, the PFM-700C is not included.

DISCLAIMER

The Autoanalysis analytical program function is based on operator input and the data supplied. Thus, the representative accuracy and value of system calculations are based on operator input and actions. Prostat is not responsible for data analysis results or the decisions made based on PGA-712 Autoanalysis System data analysis.

CAUTION!

There are no user serviceable parts in the unit. Do not open the PGA-712 Data Converter, or damage the warranty seal. Only authorized Prostat technicians can provide repair and mechanical updates. Opening the unit or damaging the seal will void the warranty.

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.

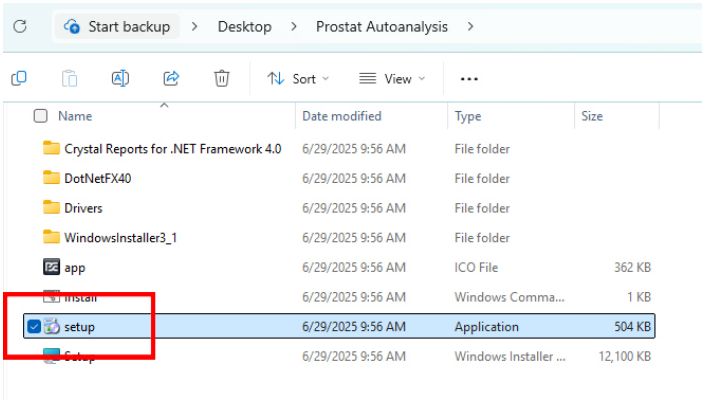
02 GETTING STARTED

Installing the Autoanalysis Software

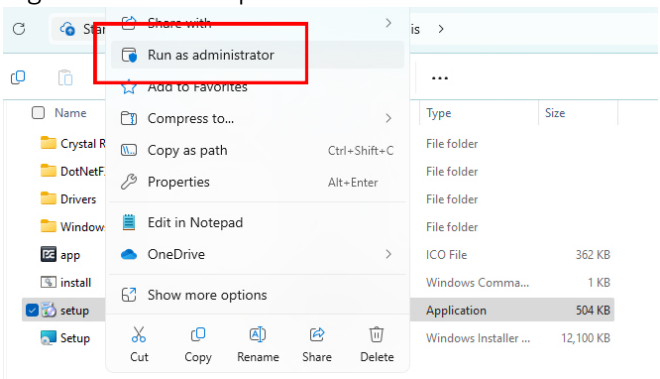
Follow the steps to install the Autoanalysis Software for Windows®:

1. Download the Autoanalysis software from https://www.prostatcorp.com/Autoanalysis
2. Extract the file and place it onto your PC's desktop (or any location you prefer).

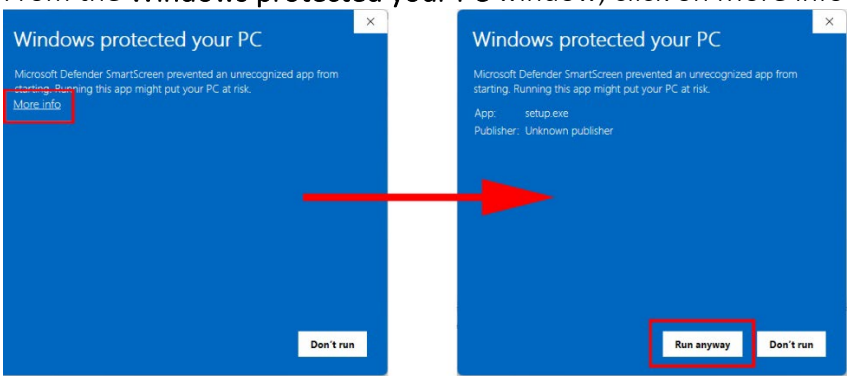
3. Open the folder named Prostat Autoanalysis.



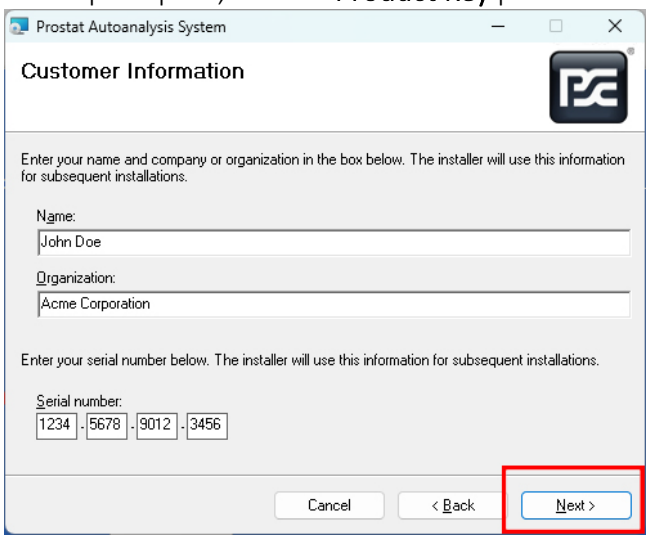
4. Right-click on setup.exe and select Run as Administrator.



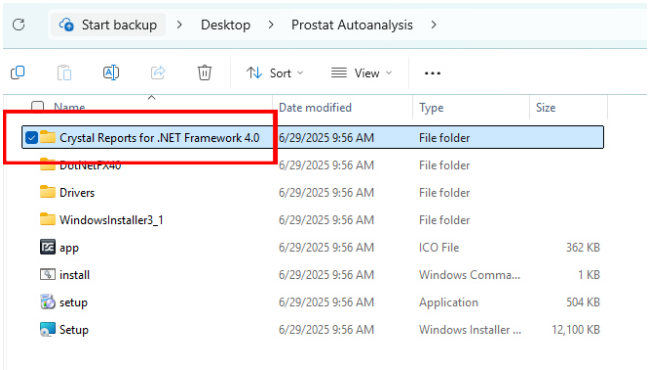
5. From the **Windows protected your PC** window, click on More info and then **Run Anyway**.



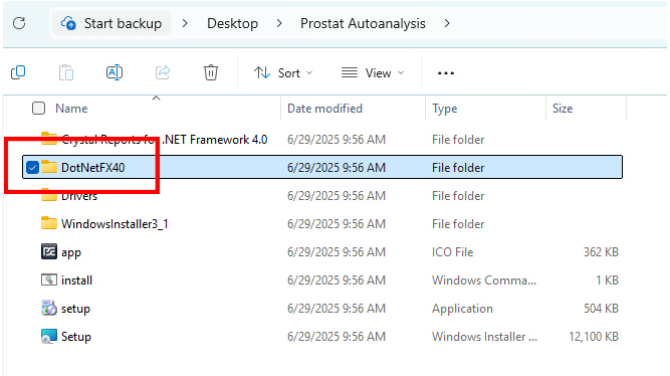
6. When prompted, use the **Product Key** provided on the card that came with your PGA-712.



7. If Crystal Reports was not installed, open the **Crystal Reports** folder and install the 32-bit or 64-bit file.



8. If not already installed, open the **DotNetFX40** folder and run the install file.



⚠ NOTE!

Administrative rights are required to install the Autoanalysis Software. You need to contact someone with amin rights or contact your IT department to complete installation.

02 SYSTEM SETUP AND CONNECTION

Power & Computer Connection

The PGA-712 doesn't use any batteries. It powers solely by a USB connection, meaning it relies on the power provided by a computer through a USB port, rather than an internal battery.

The PGA-712 works right out of the box with Windows® PCs – just plug into the USB port as follow:

1. Turn on your computer.
2. Connect the PGA-712 to your computer as shown in **Figure 1**.
3. Verify that the device appears in your computer's file management utility listing.

The PGA-712 is now ready to be used with its accessories.

Figure 1. Connecting the PGA-712 to your PC

NOTE!

Administrative rights may be required to install the drivers for the PGA-712. If so, contact someone with amin rights or contact your IT department to complete installation.

The LED indicates the status of the device, as described in **Table 2**:

LED Color	Flashing State	Status of the PGA-712
NO LIGHT	N/A	No power or disconnected from USB.
GREEN	Solid	Power on. Connected to a PC.
GREEN	Flashing every second	Currently Previewing or Recording.
ORANGE	Solid	Power on. No communication with the PC.
RED	Solid	Error.

Table 2. LED Lights

Connecting the Field Meter to the PGA-712

The PGA-712 has been designed to work in conjunction with the PFM-711B Electrostatic Field Meter and the CPM-720B Charge Plate Monitor Assembly.

CONSULT MANUAL

This manual does not cover the attachment of the charge plate to the field meter. For proper attachment of the CPM-720B to the PFM-711B, please consult the User Manual for the PFK-100B.

Connect one end of the 700AC Analog Cable to the output jack of the PFM-711B, and the other end to the input jack of the PGA-712, as shown in **Figure 2.**

Figure 2. Connecting the PFM-711B to the PGA-712B with the 700AC Analog Cable

> ⚠ **WARNING!**
>
> Do not exceed ±2.0-volt signal input to the PGA-712. Higher voltages may damage the unit and will void the warranty. Contact Prostat Customer Service for information regarding feasibility of connecting other than Prostat instruments and devices to the PGA-712.

Connecting the Charge Generation Lead

Connect the long red lead from the **PGA-710CGL Charge Generation Lead** to the banana jack of the **PFA-861H Hand-Held Electrode**, as shown in **Figure 3**.

Connect the short red lead from PGA-710CGL to the banana jack of the CPM-720B Charge Plate Assembly, as shown in **Figure 4**. The green lead connects to ground.

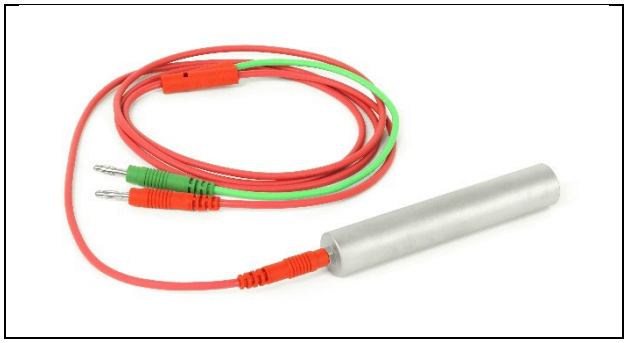


Figure 3. Connection to the Hand-Held Electrode

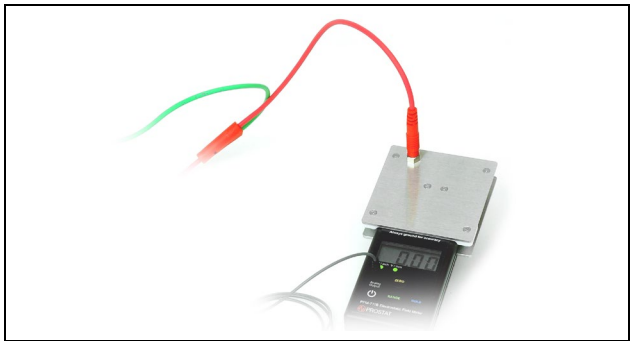


Figure 4. Connection to the Charge Plate Assembly

03 AUTOANALYSIS SOFTWARE

Getting Started with the Autoanalysis Software

Follow these initial steps to explore the Autoanalysis Software operational capabilities.

1. Power on your computer and PFM-711B Field Meter
2. On your computer, launch the Autoanalysis software
3. The **Session Wizard** automatically opens the Start Screen. Choose from:
    a. Start a New Session
    b. Load Saved Session file
    c. Import from Device (not available with the PGA-712)
    d. Start a New Session Wizard, or
    e. Close the Start Screen
4. Select **Start a New Session Wizard** and click **OK**. This will open the **Test Type** screen (Figure 5). Select a Test Type and provide the requested information to be included in test reports. See the Session Wizard section below for further details.
5. To open a fresh chart, simply select **Start a New Session**.
6. Click the **New Document** icon on the tool bar to open additional new files.

Session Wizard

The **Session Wizard** is used to enter test information, material identification, location and notes. All information entered in the wizard will be included in the generated charts and test reports.

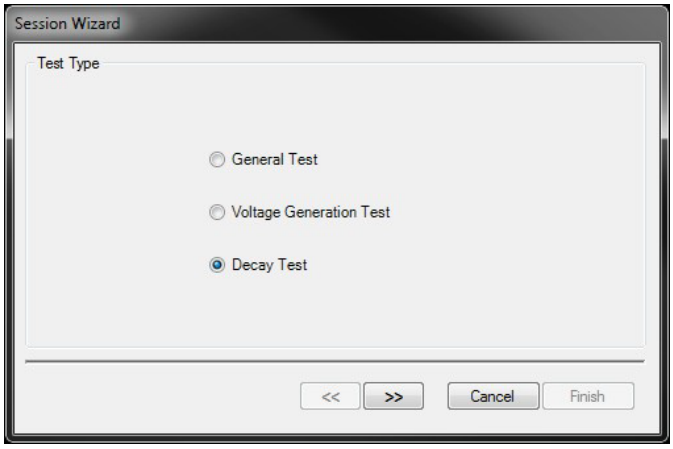


Figure 5: Use the first Session Wizard Window to Designate the Type Test

Information is entered in any of the basic test scenarios: General Test, Voltage Generation Test, and Decay Test. The wizard consists of an **Opening Screen**, two **General Information Screens** and Test Specialty screens for **Voltage Generation** and **Decay Tests**.

Opening Screen

The Opening Screen (**Figure 5**) is used to designate the type of test to be conducted. In the illustration, decay testing is the intent of the test.

General Information Screens

Two screens provide fields for a variety of descriptive and location information that is included on all charts and in detailed reports. The following two screens are included in all test type formats.

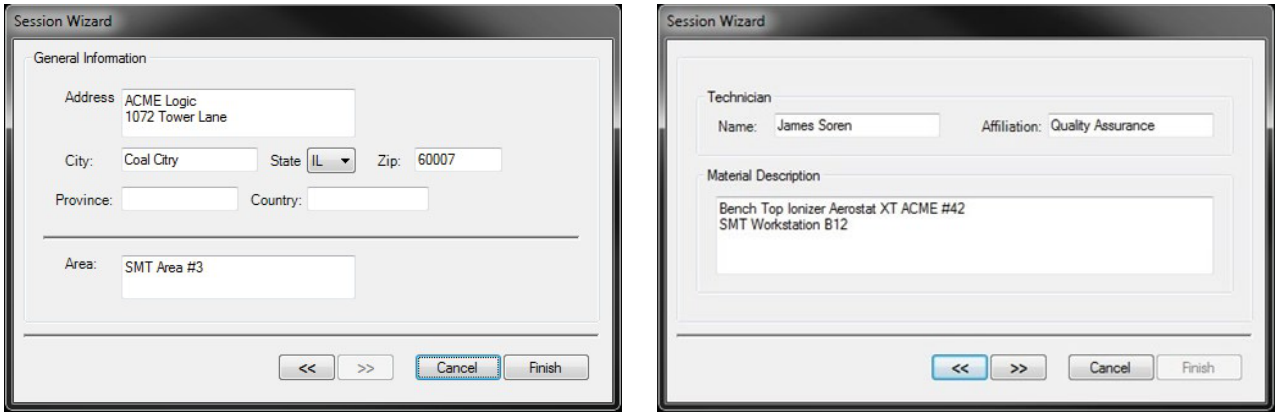


Figure 6: Technician, Material and General Information Screens

Decay Tests

Decay measurements are used primarily for ionization testing. Decay tests have a starting voltage where timing begins or is **Reset**, and a stopping voltage where timing stops, or is **Cutoff**.

The following screens and windows are used to enter **Reset** and **Cutoff** test voltages.

1. Designate the voltages used to Start and Stop the decay time period.
    a. The **Reset v**oltage starts the timing calculation period.
    b. **Cutoff** voltage ends the timing calculation period.
2. The Decay Window offers two means to designate **Reset** and **Cutoff** voltages.
    a. Standard **Reset** and **Cutoff** voltages are (See Figure 7-left):
    b. Check the **Custom** box to enter any two voltages for evaluation. Figure 7-right.

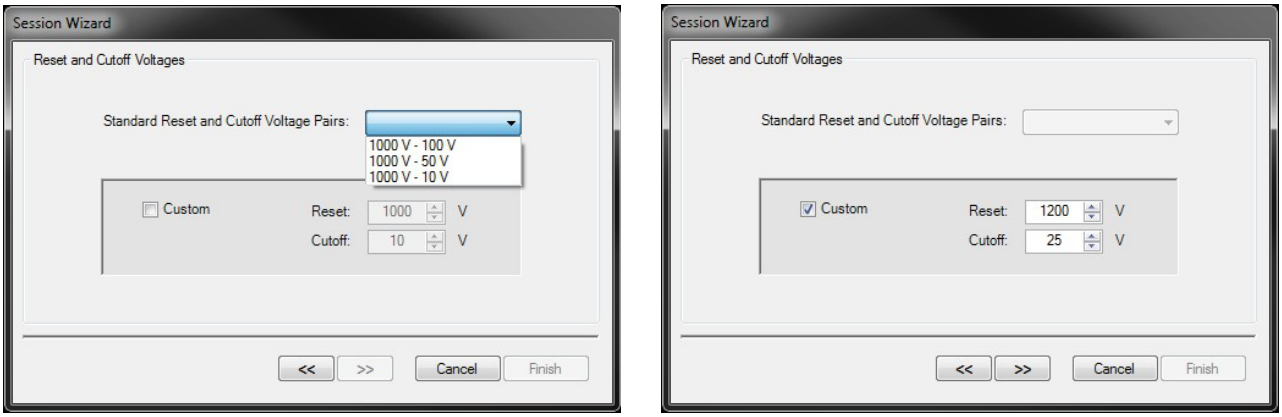


Figure 7: Standard Reset and Cutoff Voltages (left), or check the Custom Box (right) and Manually Enter

Voltage Generation Tests

Voltage generation measurements may take several forms. In many tests, the movement is repetitious, much like a walking measurement.

The **Step Cycles** screen of the Session Wizard (**Figure 8**) allows the operator to estimate the number of cycles before the measurements begin. The number can be changed later as necessary.

However, it is the number of cycles entered by the user that drive the software's initial algorithm analysis. Thus, it is important to be able to define the number of walking steps or test cycles so that automatic analysis proceeds effectively.

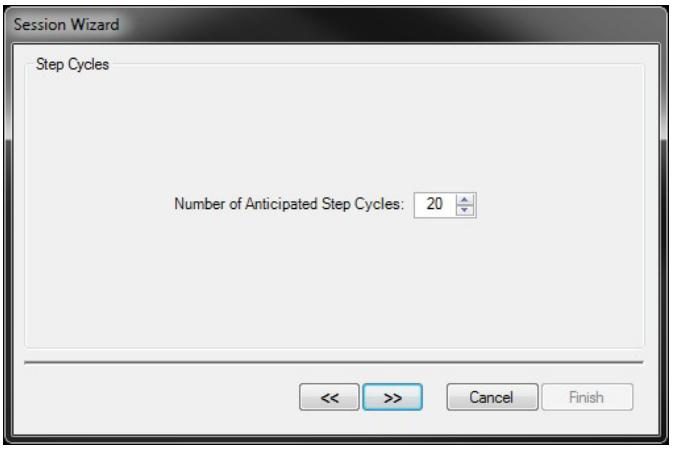


Figure 8: Enter the Number of estimated Voltage Generation Test Cycles

Customize Charts & Create Templates

A new file can be configured with various indicators, voltage lines, alignment arrows, etc. One could construct a template using various desirable features for future use.

When a new file is opened, record & control functions are activated. Use the following to add custom labels and reference lines.

1. Select **Document** on the toolbar
2. Select **Voltage Custom Labels** (see Figure 9)
3. The Voltage Label Properties window opens (see Figure 10)
4. Click the **Add**; 0.00 appears in the **Label Values** and the **Label Properties** windows.
5. In the **Behavior** section, **True** indicates the zero Label (0.00) and **Line** will appear in the chart.
6. In **Colors**, both **Label** and **Line** colors are individually selected using the drop-down arrow.

   In Figure 15, the zero Label and Line will be red. To change colors, press the down arrow(s) to open the color selection drop down menu(s). Choose from several colors (Figure 16) for customizing lines and labels.
7. **Value** allows different lines to be inserted in a chart at various voltage levels. For example, you can add colored lines at +100 and -100 volts to easily see any voltage generated peak that "exceeds ±100 volts".
8. Click the **Add** button and 0.00 appears in Label Value. To create a distinctive Label and Line at +100 volts enter "100" in the Data Value section.

   Open the **Color** drop-down menu for **LabelColor** and **LineColor** and select Blue. 100 will appear in the **Label Values** window.
9. Repeat for "-100", i.e., enter "-100" in the **Data Value** section. Open the **Color** drop-down menu and select Blue. -100 will appear in the **Label Values** window. See Figure 11. Click **OK** and your plotting chart resembles Figure 18.

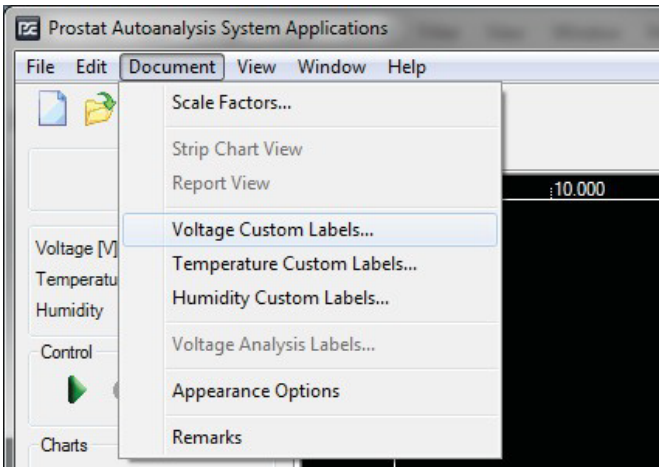


Figure 9: Customize Chart Using Voltage Labels and Lines

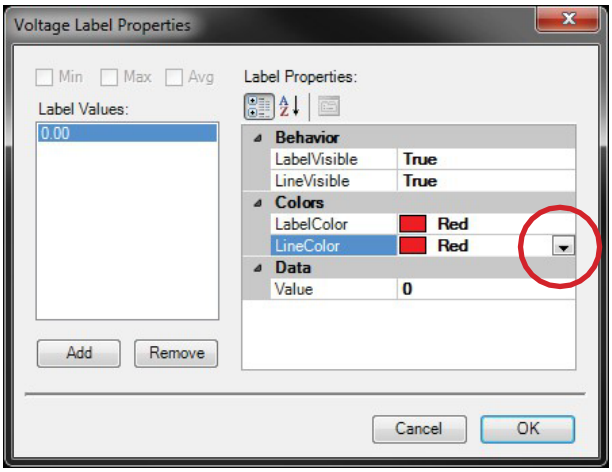


Figure 10: One can create various Chart Voltage Lines & Labels in several colors

Use the various scale adjustment arrows to center the 0.00 Line, adjust the chart voltage and time sweep ranges to meet anticipated test needs. Once prepared to your liking, and before recording data, save the chart as a template to reduce future setup time. For example, save the file as "ChgGen Template1.tst". Whenever the file is recalled the chart settings are as you left them and the file is ready to record data and be saved with a new name.

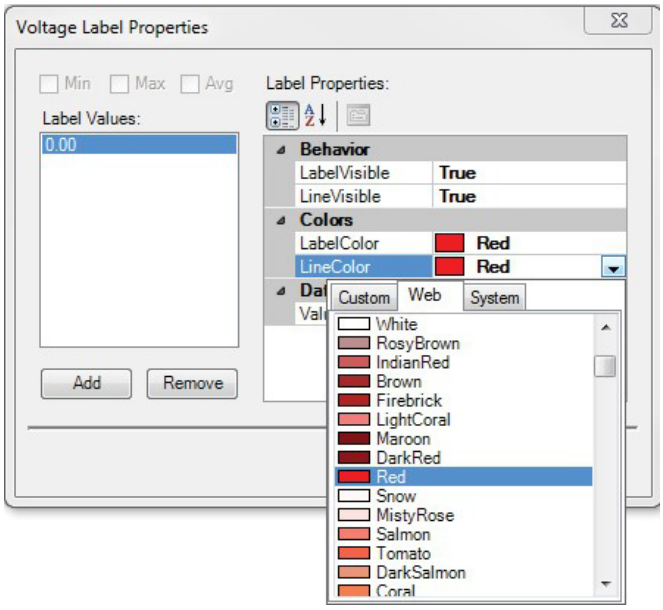


Figure 11: Color Drop down Menu Used to Change Label & Line Colors

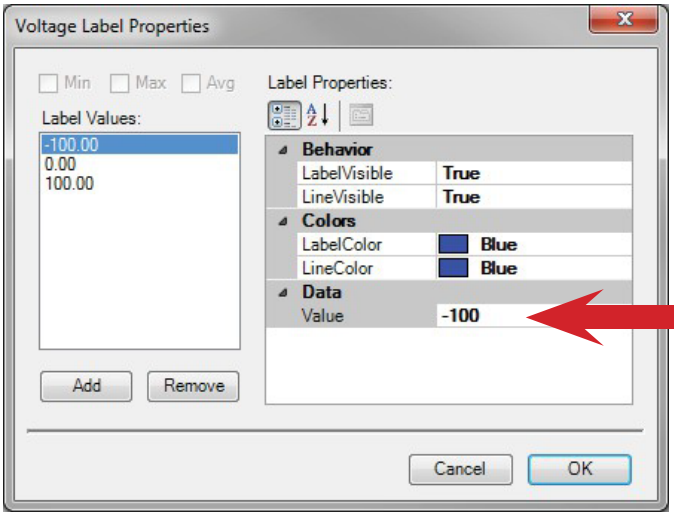


Figure 17: In the Data section enter Voltage Value where a Chart Line is desired

⚠ NOTE!

Creating Test Templates are convenient and save a great deal of time. However, once data is recorded and saved in a file it cannot be reused as a template.

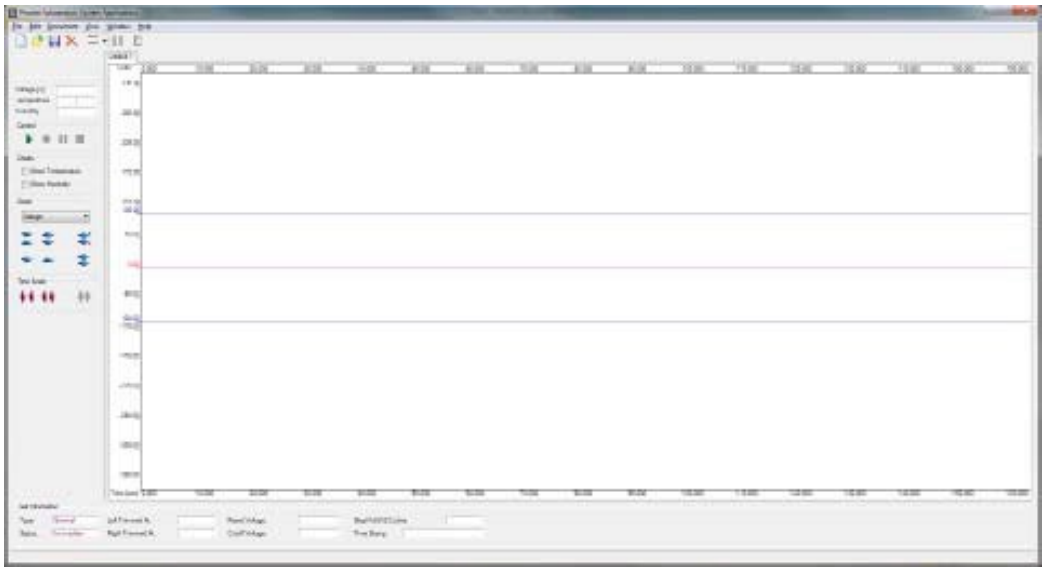


Figure 12: New Chart with Red Zero Line and Blue Labels and lines at ±100

Set Time & Date

In preparation to record and analyze data, confirm PGA-712 system date and time are correct.

1. Select **Edit** on the toolbar
2. Select **Device Control** (see Figure 13)
3. With the PGA-712 connected to the computer via USB cable, click the **Read** button under **Device Time**. The Device Time window will display the computer's current date and time settings.
4. Press the **Set Device Time** button to set the PGA-712's time clock to the computer.
5. Click **Done** to close the window.

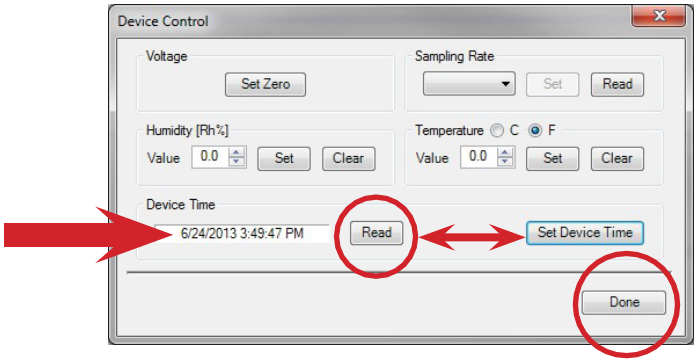


Figure 13: Use Edit drop down Menu to Access Device Control Window for setting Set PGA-710B Date & Time

Sampling Rate

The PGA-712's default **Sampling Rate** is 50 samples/second, which is suitable for most auditing and analysis applications. To confirm or modify the rate proceed as follows:

1. Select **Edit** on the toolbar

2. Select **Device Control** (see Figure 14)
3. With the PGA-712 connected to the computer via USB cable, click the **Read** button under **Sampling Rate**. The Sampling Rate window will display the computer's current sampling rate.
4. To change the sampling rate, click the drop-down menu arrow:
    a. Highlight the desired rate, i.e., 50, 100 or 200 samples per second
    b. Click **Set**
    c. Click **Done** in the **Device Control** window to complete the sampling rate change

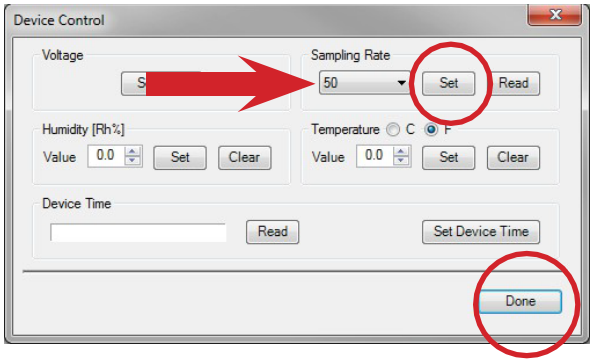


Figure 14: Use Edit Menu to Access Device Control Window to Set Sampling Rate per Second

Temperature & Relative Humidity Sensor Factory Calibration & Adjustments

To ensure the sensor is operating based on factory design and initial calibration, all adjustments or bias must be cleared from the sensor. To clear the software settings:

1. Select **Edit** on the toolbar
2. Select **Device Control** (see Figure 15)
3. Confirm the **Humidity (Rh%)** value window is set at 0.0, and click **Clear**
4. Click **Done** to close the window

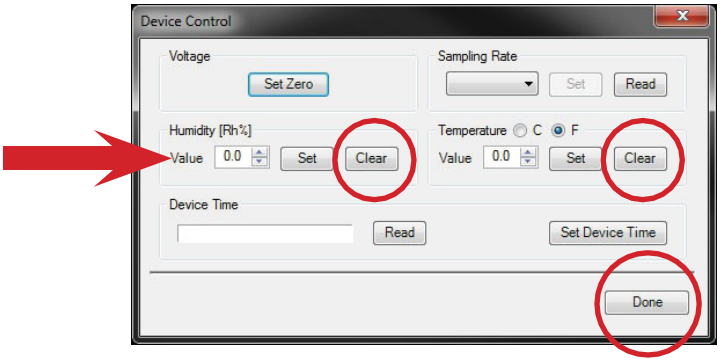


Figure 15: Clearing Humidity and Temperature Bias adjustments

Once the sensor is reset, use a calibrated temperature and humidity instrument as a reference to set the appropriate bias for the most accurate temperature and humidity measurements. Follow the instructions below for setting temperature and humidity bias.

Creating a Temperature or Relative Humidity Bias

If an acceptable temperature and humidity instrument is available, the PGA-712's sensor can be operationally adjusted to approximate the reference as follows (See Figure 16):

1. Select **Edit** on the toolbar
2. Select **Device Control**
3. Enter the reference humidity in the Value window and click the **Set** button
4. Enter the reference temperature in the Value window and click the **Set** button
5. Click **Done** to close the window

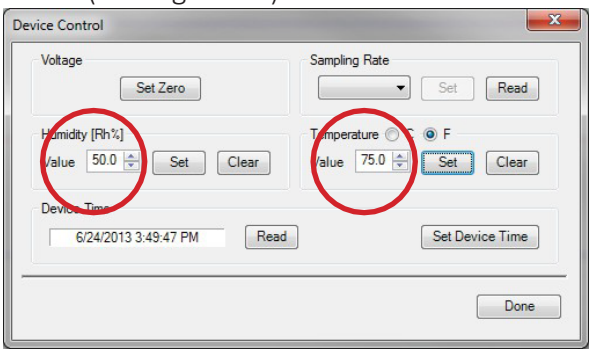


Figure 16: Adjusting Temperature and Humidity Bias

Once a new setting is entered into the software, temperature and humidity indications will be based on the existing sensor performance plus the influence of the new net setting bias. For example, if the existing

indication is 70°F and the setting input is 65°F, a -5° bias will be added to the sensor's measurement, and it will subsequently indicate 65°F. A similar adjustment can be made for relative humidity.

Open Current (Real Time) Measurement Digital Display

A left panel area includes real time measurements of voltage, temperature and relative humidity. To display an additional real time measurement window showing the values of voltage, temperature and relative humidity during the recording process:

1. Select **Edit** on the toolbar
2. Select **Current Measures** (see Figure 17)
3. Place the **Current Measures** window in a convenient location

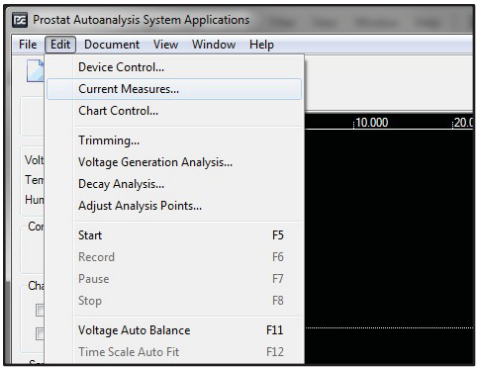


Figure 17: Access Current Measures through the Edit Menu

Data Recording Controls

The data recording Controls are located at the upper left corner of the screen. Refer to **Table 3** for their function:

Controls	Name	Functions
	Preview	Starts chart plot and indicates magnitude of data. Data is not recorded; it allows adjustments before recording.
	Record	Begins data entry to file. When recording, the circle becomes Red and the plot trace changes color.
	Pause	Allow stop and start of data entry during playback and when recording in General Measurement and Decay test modes. Pause does not function when recording Voltage Generation.
	Stop	Stops either Preview or Recording functions. If used to stop the preview function, when Preview is pressed again it resets the recording point to start ongoing Preview or Recording.

Table 3. Data Recording Controls

Several function keys are assigned to assist in chart control:

Shortcut Key	Function	Functions
F5	Preview	Starts chart display of voltage and measurement levels. **Note:** Data is not entered into the file during Preview.
F6	Record	Begins data capture of all measurement levels.
F7	Pause	Stops and Starts Chart recording and playback.
F8	Stop	Ends Preview, Recording or Playback.
F11	Auto Balance	Will align Preview or Recorded data to center of chart. Can also be used to automatically align Voltage, Temperature or Humidity.
F12	Auto Min/Max	Will automatically align display data to vertically utilize the entire chart view using the maximum and minimum data values.

Table 4. Short Cut Keys

Auxiliary Chart Control Window

When the Left Panel Control is closed to maximize the chart display the Auxiliary Chart Control window may be opened and positioned anywhere for operational convenience.

1. Select **Edit** on the toolbar
2. Select **Chart Control** (see Figure 18)
3. Place the **Chart Control** window in a convenient location

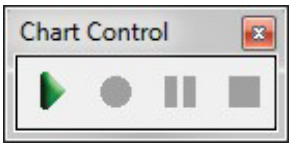


Figure 18: Auxiliary Chart Control Window

Display Temperature & Humidity Data

Temperature and Relative humidity are sensed and measured by the PGA-712. The sensor is mounted against the side wall of the case for exposure to ambient conditions. It measures temperature and humidity external to the PGA-712. Assuming the PGA-712 is stored in the area overnight, it requires only a few minutes for the system to reach optimum performance.

To display temperature and, or humidity, check the **Show Temperature** and **Show Humidity** boxes listed under **Charts** in the left panel (Figure 19). The default temperature display is Celsius (°C). To display Fahrenheit (°F) or both °C and °F:

1. Select **Document** on the toolbar
2. Select **Appearance Options** (see Figure 20)
3. Click **TempaxesVisibility** drop down menu arrow.
4. Select desired temperature scale(s).

The Appearance Options, Chart Properties window (Figure 20) establishes what is to be displayed, i.e., **Celsius (°C)**, **Fahrenheit (°F)** or both. Checking, or un-checking the **Show** boxes (Figure 20) determines whether or not the selected items are displayed in the chart.

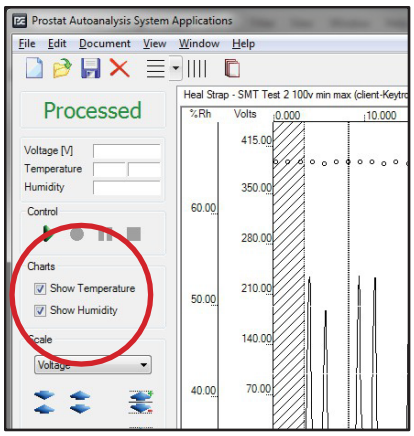


Figure 19: Check Show Temperature and Humidity Boxes to display related

> **NOTE!**
> See Temperature & Relative Humidity Sensor Factory Calibration & Adjustments for specifications and setting Rh or temperature bias.

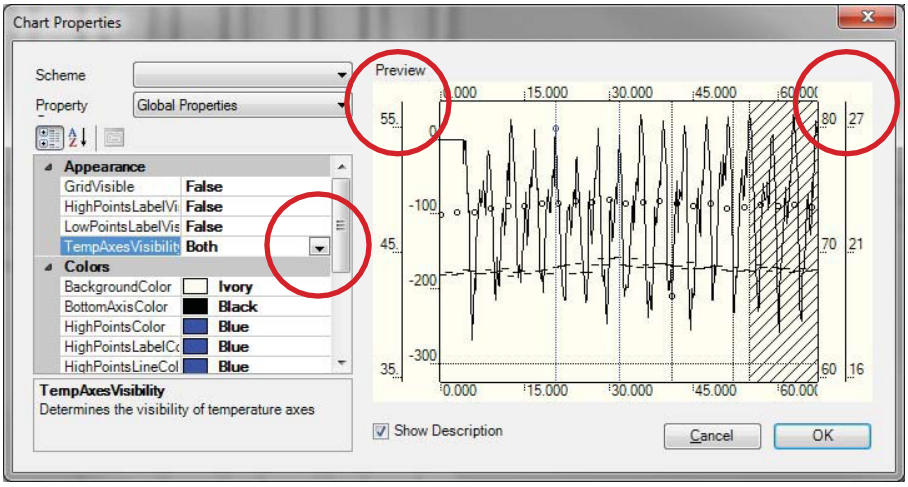


Figure 20: Chart Properties Window

04 BODY VOLTAGE GENERATION

Basics of Analyzing Body Voltage Generation

Once a recorded data file is established, use the following guidelines for analysis:

1. Trim unwanted data from beginning or ending traces by using the **Edit** menu and click on **Trimming…** A floating window will open (Figure 21).
2. Click the **Trim Left** tab and place the cursor on the plot trace at the selected point.

Repeat with **Trim Right**.

3. Take care in selecting trim points to clearly define data to be evaluated by the software.

QUICK TIP

The system's algorithm looks for patterns in **Minimum** and **Maximum** peak values. The user needs to define the beginning and end of a set of **Minimum** and **Maximum** peaks. Every **Minimum Peak** must have a **Maximum Peak**.

a. Position the **Left trim** point to define a starting point for the analysis. It should represent an initial **Minimum** or **Maximum** value. Referring to Figure 21, the **Left trim** cursor is placed before a **Minimum** peak as shown by the circle.
b. Position the **Right trim** point to define the ending point of the analysis. It should represent a final **Minimum** or **Maximum** value. Referring to Figure 21, the **Right trim** cursor is placed just after a **Maximum** peak as shown by the circle at the right of the figure.

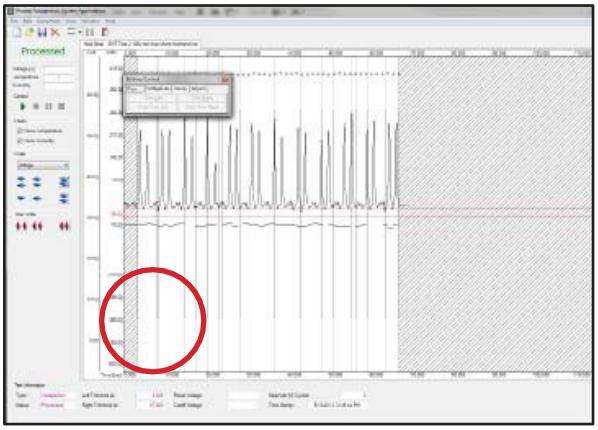


Figure 21: Trim Data Trace to Identify Range of Minimum & Maximum Peaks to be used for Analysis and reporting.

IMPORTANT NOTE!

Maximum Peaks are positioned vertically "Highest" on the chart, while **Minimum Peaks** are positioned "Lowest" on the chart.

4. Click the **Voltage Gen** tab and enter the number of step cycles or measurement peaks between the trim points on the chart and press **Analyze**. If a clear number of peaks are entered and the program confirms through its algorithm, it will display a series of **Min** and **Max** peaks with vertical lines for each step cycle as shown in Figure 22.
5. If a number of step cycles cannot be confirmed by the analysis program the message in Figure 23 appears requesting a change in the number of step cycles.

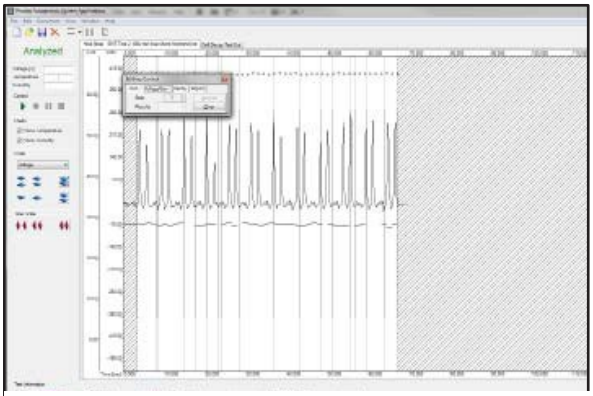


Figure 22: Representative number of Cycles entered in Voltage Generation

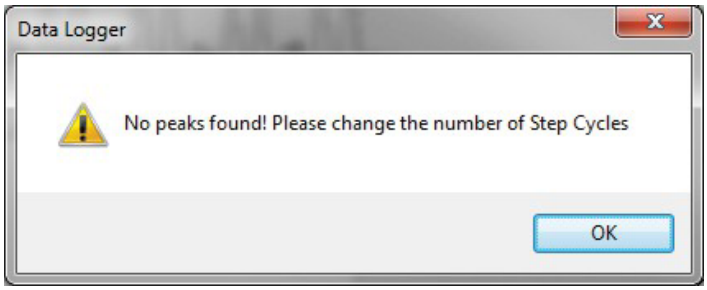


Figure 23: Error in Peaks entered in Edit Window. Click OK and enter new value

6. Click the **Adjust** tab in the **Editing Control** window as shown in Figure 24. This allows you to add or remove **Min** or **Max** peaks from the analysis.

   a. To include a minimum peak in the analysis click **Add Min**, place the cursor over the peak to be included and left click your mouse.

   b. To include a maximum peak in the analysis click **Add Max**, place the cursor over the peak to be included and left click your mouse.

   c. To eliminate a peak from the analysis select **Remove**, place the cursor over the vertical peak identification line and left click your mouse. If you have difficulty identifying the vertical line, expand the chart **Time Scale** and retry the remove function.

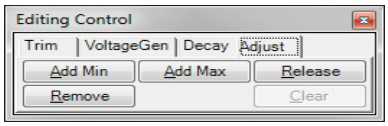


Figure 24: Click Adjust then Re- lease to begin the Autoanalysis

7. Once peaks for each walking step are identified, click Release to release the data (Figure 24) for analysis and report preparation. Once the data is released, 3 Sigma data (Figures 25 & 26) are calculated, displayed and a report can be generated.

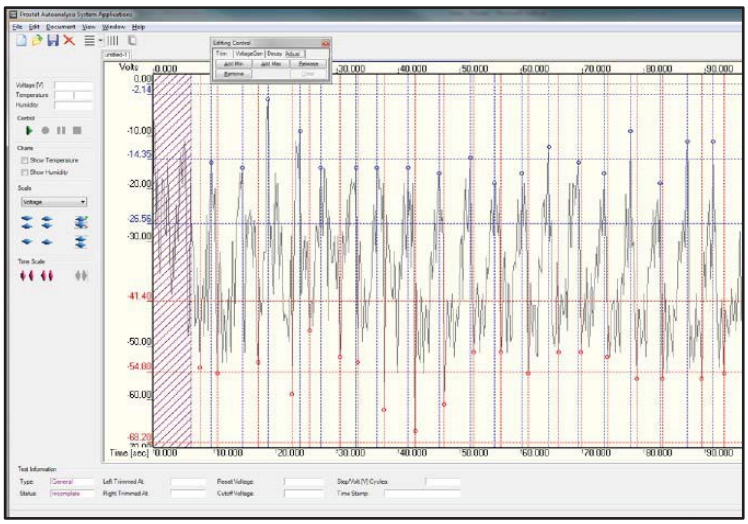


Figure 25: Releasing Data and Process the 3-Sigma Analysis for Minimum & Maximum peak sets

8. The 3-Sigma Analysis is calculated for the Maximum and Minimum data sets and displayed as follows (Figure 26):

    a. The average and standard deviation are calculated.

    b. Three times the standard deviation are added to the average to establish the highest end of the range.

    c. Three times the standard deviation are subtracted from the average to establish the lowest end of the range.

    d. The **Average**, **High** and **Low** ends of each range are identified and plotted on the chart.

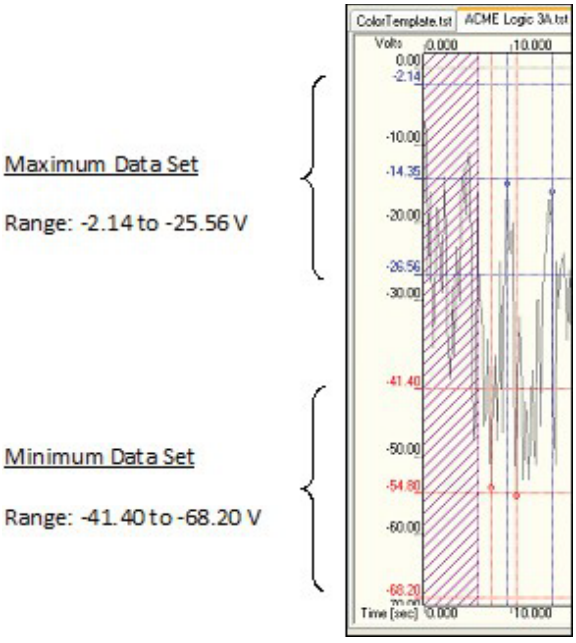


Figure 26: 3-Sigma Ranges are calculated and plotted for Minimum & Maximum Peak Sets

Chart Information: Test Information Status

As one proceeds through the recording, trim, edit and analysis phases, the lower portion of the chart screen provides Test Information and status. Status indications are as follows:

Incomplete: Data is not recorded; chart is blank.

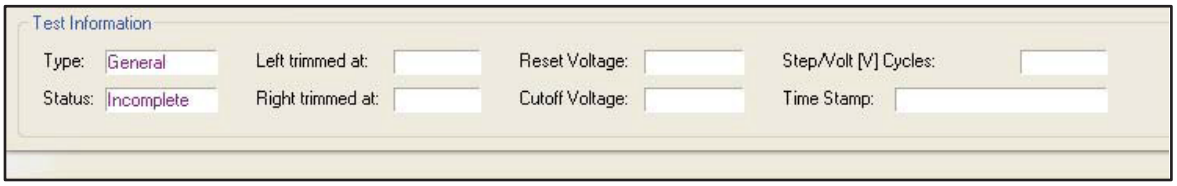


Figure 27: Chart Status Incomplete: No Recorded Data

Edited: Data is recorded but file is not yet analyzed

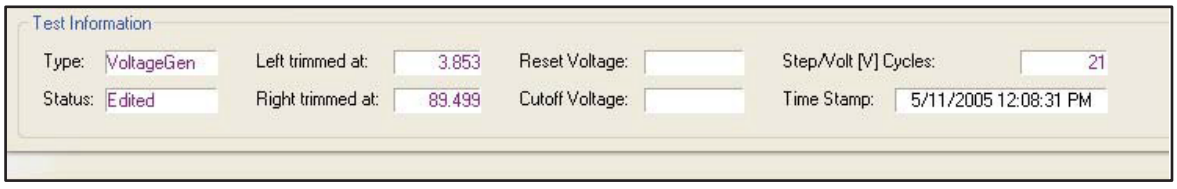


Figure 28: Chart Status: Data Recorded & Trimmed – Chart Not Analyzed

Analyzed: Data is trimmed and number of peaks identified

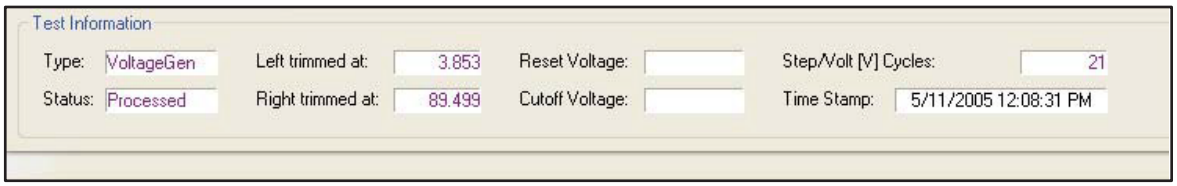


Figure 29: Chart Status: Data Trimmed and Peaks Identified

Processed: Data is adjusted and "Released" ±3 Sigma Calculated & Identified

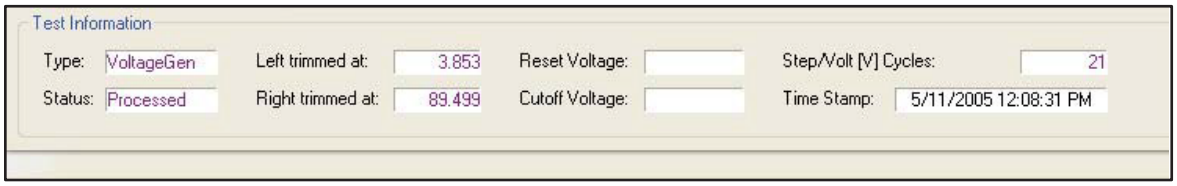


Figure 30: Chart Status: Data Evaluated and 3 Sigma Ranges Calculated

Generating Printed Charts & Reports

To generate printed charts and reports open the **Document** drop down menu and select **Report View** (Figure 31), which processes recorded data and provides a new screen view. Or, press the **Report** toggle button on the tool bar.

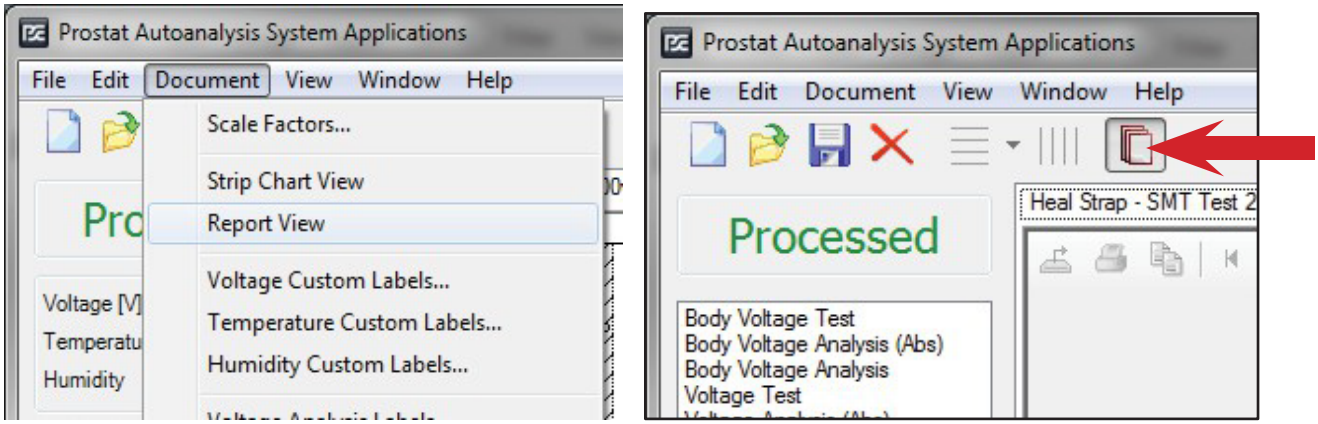


Figure 31: Select Report View from the Document drop down Menu or Click Toggle Chart/Report View. Then choose the desired Report type.

1. To view a printable 8.5x11 inch chart of body voltage generation (Figure 32), select **Body Voltage Generation**. A full chart will be displayed.

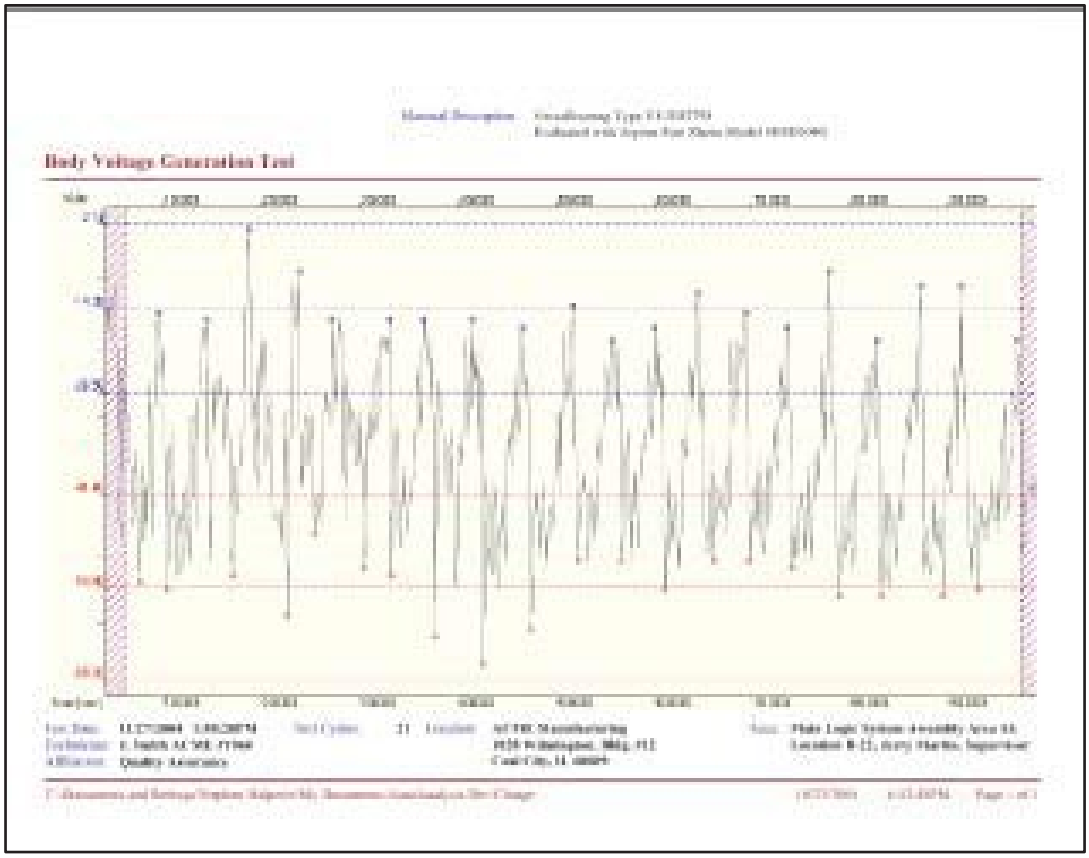
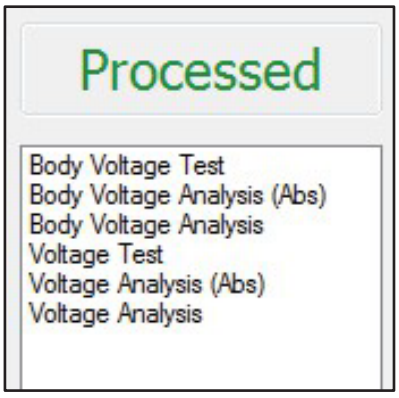
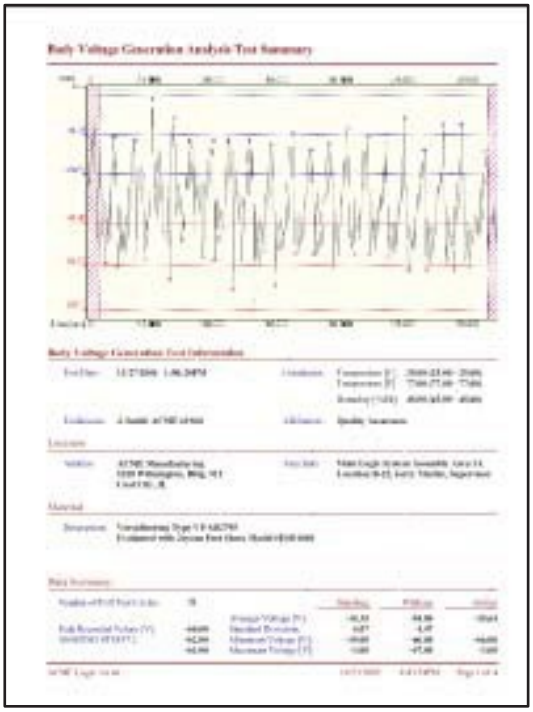


Figure 32: Selecting "Body Voltage Test" or "Voltage Test" from the Report Menu Generates a full-size landscape Chart of Test Data

2. To view and print a report, select **Body Voltage Generation Analysis (Abs)** meaning "absolute" graphic probability, or **Body Voltage Generation Analysis**. A three-page report shown in Figures 33 & 34 will be generated that includes the following information:
    a. A summary display of the generated chart
    b. All information entered in the New Session start menus, including Technician, Material Description, Location, Area, etc.
    c. A performance summary
    d. 3-Sigma analysis of Standing and Walking voltages
    e. Probability analysis of Standing and Walking voltages



3. To create a fourth page of remarks, press **Document** and select **Remarks** on the drop-down menu. All remarks entered in the opened window will appear on the fourth page of the report.



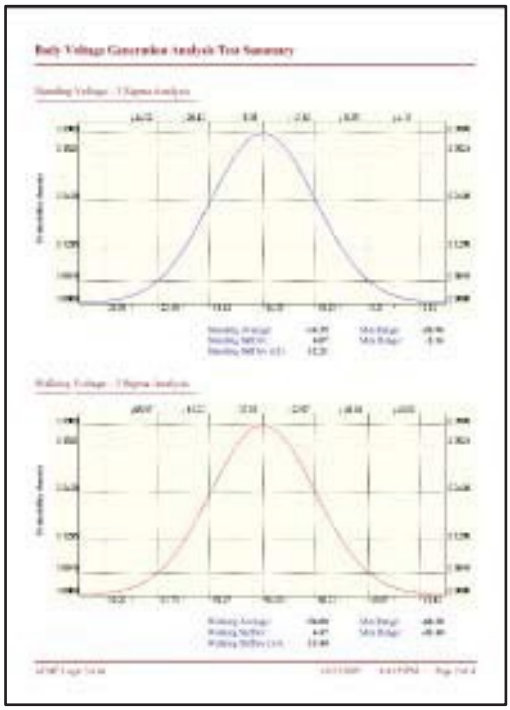


Figure 33: Report Pages 1 & 2. Front Page provides charted data with analysis points, general information and data summary. Pages 2 provides 3-Sigma ranges for Standing or minimum voltages, and Walking or maximum voltages.

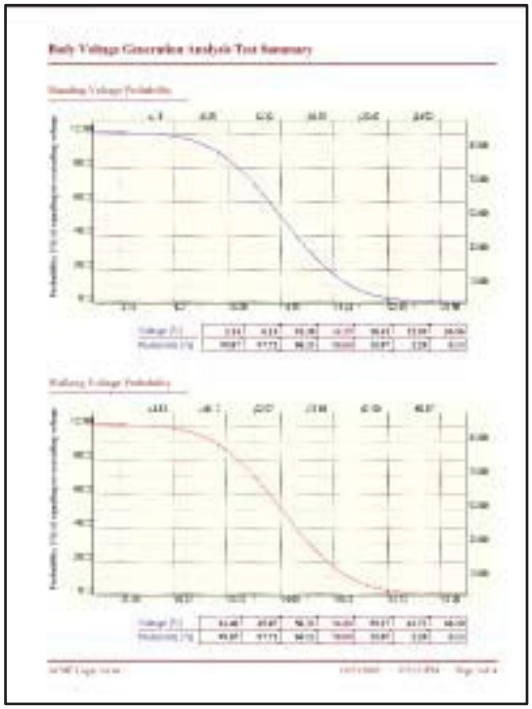


Figure 34: Report Pages 3 & 4. Page 3 displays Probability Analysis based on normal distribution of Aver- age and Standard Deviation information for Standing (Minimum) and Walking (Maximum) Voltage Data. Page 4 is optional and designed for Report Remarks.

⚠ NOTE!

Absolute (Abs) vs. Non-Absolute report simply means that the probability curves displayed on the third page of the report are draw without regard to positive or negative polarity data; the absolute data values are employed in the analysis. In this form all curves are draw from left to right as shown in Figure 34.

⚠ NOTE!

Selecting non-absolute report format allows the probability curve analysis to employ negative and positive data. Consequently, probability curves may be drawn either from Left to Right, or Right to Left as shown at the right in Figure 35.

Figure 35: Report Probability based on actual Data Polarity, i.e., not absolute

General Voltage Generation Measurements

Voltage Generation analysis can be conducted on a variety of objects and used to assessed operational procedures. Recording data in the voltage generation mode is similar to recording and analyzing body voltage. The major differences are the procedures used to obtain voltage generation, and selecting generic **Voltage Analysis** mode. One is limited only by their imagination in capitalizing on this feature. Illustrations include the following:

1. Personnel voltages while using a chair
2. Voltages generated by a rolling cart, or chair
3. Worksurface suppression analysis measurements
4. Voltages measured within equipment

05 VOLTAGE DECAY ANALYSIS

Basics of Voltage Decay Analysis

Decay testing is typically employed for evaluating ionizing systems, packaging dissipation, and other technical control elements where decay time is a useful measurement or analysis tool. A separate set of analysis procedures and **Session Wizard** details may be used for voltage decay measurements. For detailed information regarding Decay Testing, refer to the Autoanalysis How to Test Guideline.

Once a new file is opened, decay test data is recorded using the same chart controls described above for recording voltage generation. **Short Cut Keys** are also used for this function:

Open the **Editing Control Trim** window and enter desired decay test parameters if not previously entered through **Session Wizard**. In this illustration the decay test cycle time starts (resets) at ±1,000 volts and ends (cutoff) at ± 10 volts, as shown in Figure 36.

Figure 36: Use Edit Window to Set Decay Parameters

Once the **Decay Parameters** are set, click **Analyze** to begin the decay analysis process. This will insert vertical start and stop time lines in the chart area indicating those test cycles that have the entered parameters, in this case ±1,000 to ±10 volts. If the cycle does not meet these parameters, no vertical start stop time lines will be entered. Click **Adjust** then **Release** to complete the analysis. The horizontal voltage lines at ±1,000 and ±10 volts will be inserted at this point in the process.

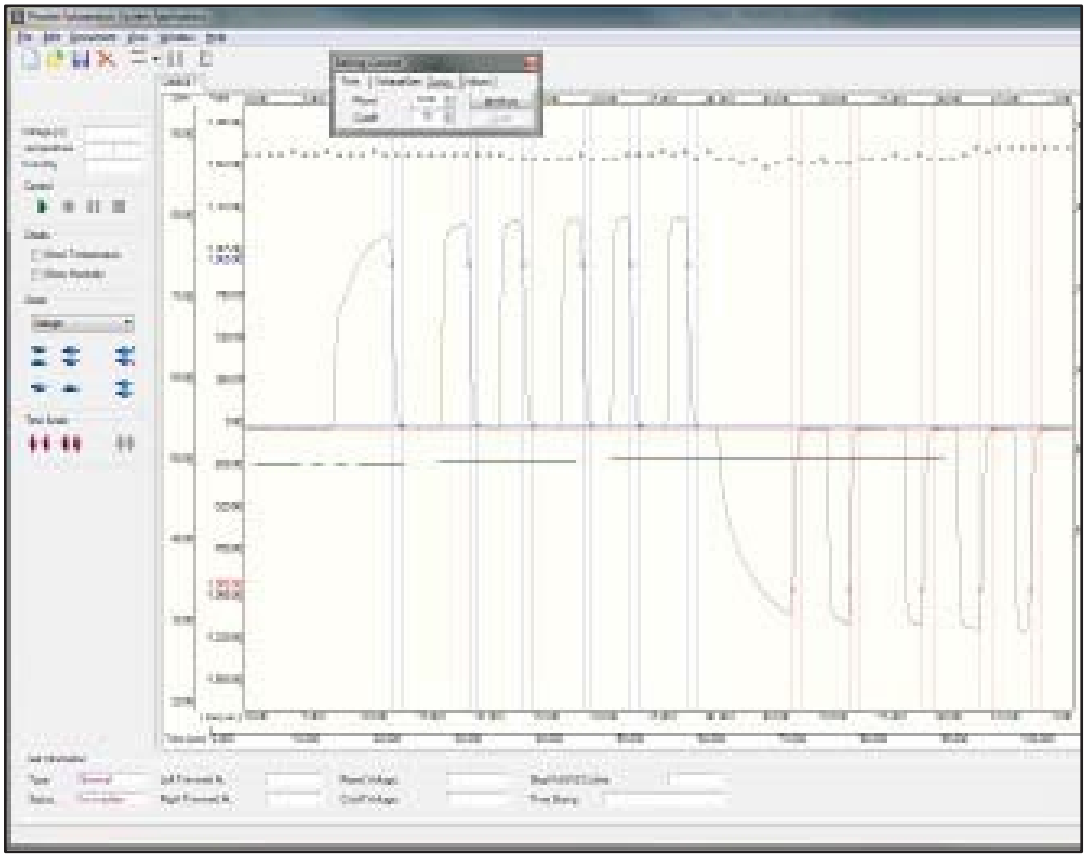


Figure 37: Click Analyze to Process Decay Data

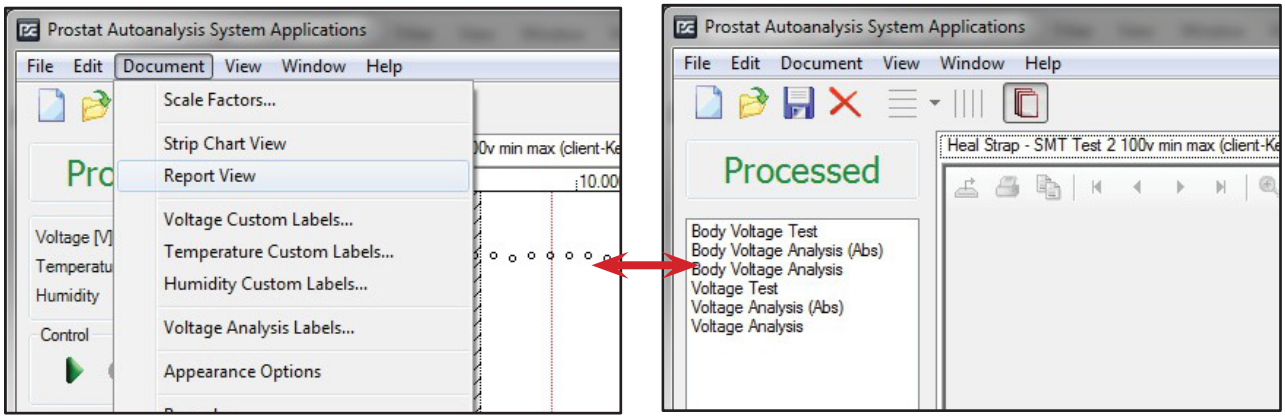


Figure 38: Use the Document Drop Down Menu or Report View Toggle Button to shift to Report View

To generate a written decay analysis report either open the **Document** drop down menu and select Report View or click on the **Report View Toggle** Button. Note that the Report View Toggle Button allows the view to shift between Strip Chart View and the Report View.

In **Report View** one may select a full-size chart that is produced in a landscape mode, or a detailed report produced in the standard portrait mode.

The decay reports and charts may be generated in a standard format as shown in Figure 40, or in a unique "assembled" format to compare each decay test cycle (Figure 41).

Assembled Decay Charts

In the "assembled" format, all decay cycles are compared to each other regardless of how long it required generating the entire test series.

In effect, the test set is "taken apart" by each test cycle and re-assembled in sequence. The **Positive** cycles are compared to the **Negative** cycles as shown in Figure 41. For example, the total decay time of all Positive cycles was slightly more than 4.8 seconds, while the total of all Negative cycles is approximately 5.7 seconds.

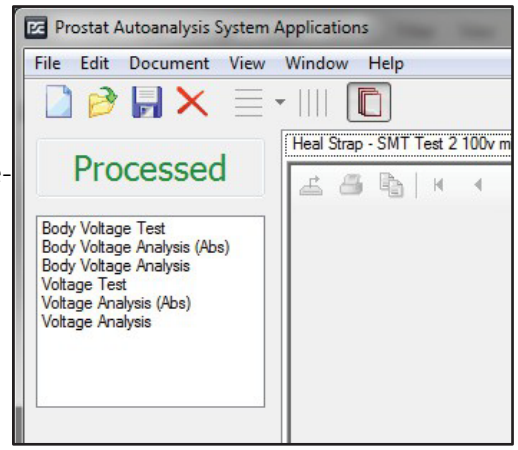


Figure 39: Use Voltage Analysis Formats for General Measurements

Figure 40: Page 1 of Standard Decay Report of Test Data

QUICK TIP

Decay testing may be adapted to assess a variety of dissipative materials and objects, including charge movement across materials, chairs, perform personnel decay analysis, as well as assess ionization systems.

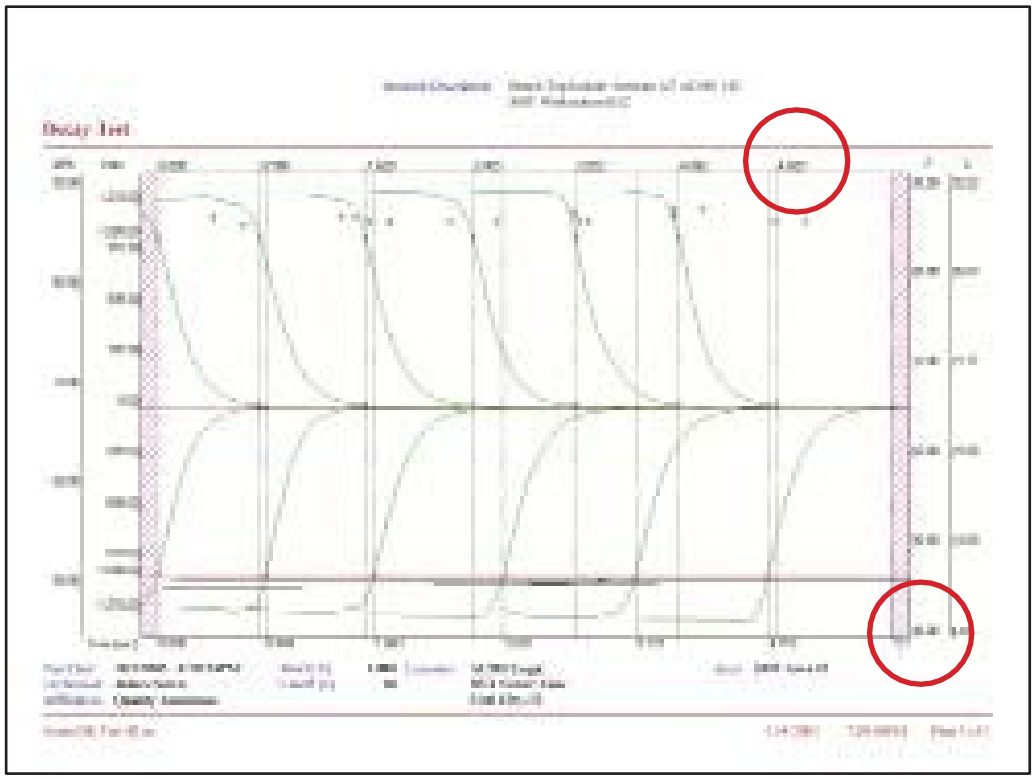


Figure 41: A Full-Size Landscape Chart in the "Assembled" Format

06 EXPORTING & IMPORTING DATA

Exporting & Importing Data to and from Excel® Spreadsheets

Data generated by the Autoanalysis system may be exported to an Excel® spreadsheet.

1. Open the **File** drop down menu and select **Export**.
2. File selection window will open allowing you to name or select the data **Target** file.
3. Once the Excel file is selected click **Save** and a new Excel file will be created containing all data acquired by the PGA-712 system.

Data generated by other measurement systems may be imported into the Autoanalysis software by way of an Excel® spreadsheet. Once imported, the data can be easily analyzed by the software and reports generated as though originally generated within the system.

> ⚠ **IMPORTANT NOTE!**
> To import data from an Excel® spreadsheet, the time detail should be in a single column and correlate to the respective voltage data in another column as discussed below.

To import data from an Excel® spreadsheet proceed as follows:

1. Select **Import** from the **File** drop down menu
2. File selection window will open allowing you to name and select the data source file. Highlight the desired file and click **Open**
3. The source file and an Autoanalysis import window (Figure 42) will be opened and superimposed on the sheet. The **Import From Excel Spreadsheet** window allows designation of the data to be imported for analysis by the Autoanalysis software.
4. Select the **Test Type** from the drop down "Type" window (Figure 43). Once imported, the **Session Wizard** will respond to the type designation.

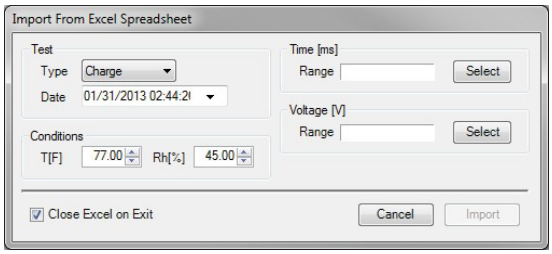


Figure 42: Autoanalysis Excel Spreadsheet Import Window

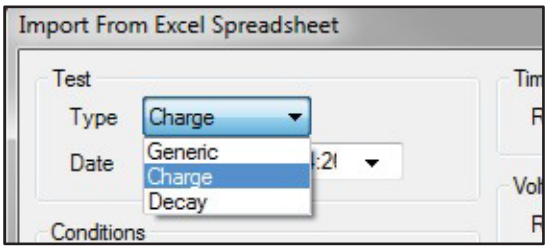


Figure 43: Test Type Window

5. The **Date** down arrow opens a calendar to designate the test date which will be "stamped" into the Autoanalysis software.
6. Using the **T[F]** and **Rh[%]** entry panels temperature and relative humidity can be included with the imported data.
7. To highlight and select data to be imported (Refer to Figure 43)
   a. Highlight the first Time reference cell and simultaneously press <Shift> <Ctrl> and <↓>. This will highlight all cells containing data in that column.
   b. Click the Time Select Range button in the Import Window and the time data range will be automatically entered.
   c. Highlight the first Value reference cell and simultaneously press <Shift> <Ctrl> and <↓>. This will highlight all cells containing data in that column.
   d. Click the Voltage [V] Select Range button in the Import Window and the voltage value data range will be automatically entered.

e. When both Time and Voltage data ranges have been properly entered, the Import button will be activated. Pressing this button will import the selected data and immediately generate a chart for analysis.

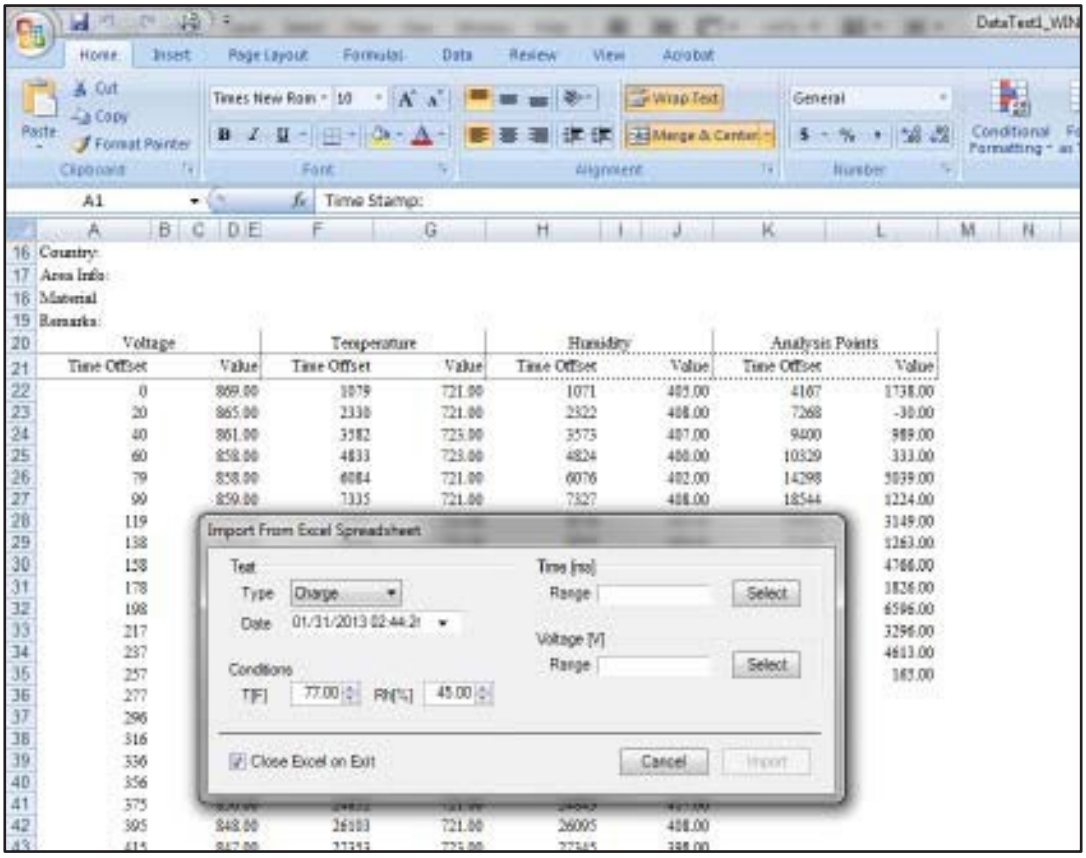


Figure 43: Import Data from Excel Spreadsheet

Exporting Reports

The **Export Report** function allows a completed test report to be exported in other file formats, including Acrobat (*.pdf), Microsoft Excel (*.xls), Microsoft Word (*.doc) and Text Rich Format (*.rtf) files.

1. One must be in the **Report View** with the designated report displayed before the **Export Report** function may be used.
2. Select the **Report View** on the **Document** drop down menu, or click the Toggle Chart/Report View.
3. Select the export report's file format
4. Provide a target location (Folder and Drive) and new file name
5. Click **Save** to export the file to its target location

07 MODIFYING XML CONFIG FILE DEFAULTS

Various chart color attributes can be accessed through the XML configuration file located in **Program File**s, application program folder. Advanced users can modify this file in order to change some options. Below you will find brief descriptions of some of these options.

Before modifying the configuration file, close the Autoanalysis software.

1. Open the configuration file (AutoAnalysis.exe.config) located in Program Files > Prostat Corporation > Prostat Autoanalysis System
2. Locate the Global Setting or color scheme you wish to modify, e.g,. BlackAndwhite, BlackBackground, etc.
3. Within the scheme locate the attribute you wish to change, e.g., Voltage, Humidity, Temperature, etc.
4. Identify the element, color or display you wish to modify. The variable is between "x"
5. Save the AutoAnalysis.exe.config file
6. Open the Autoanalysis System software and confirm the modification. The following are a few illustrations

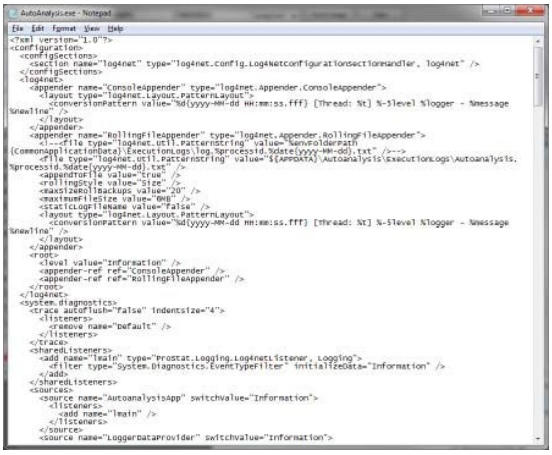


Figure 44: AutoAnalysis.exe.confg File

Global Settings

ShowStartScreen (valid values are **True** and **False**) – determines whether start screen appears each time you start the application. In order to switch this option off you can:

1. Modify this entry to **False** or…
2. Uncheck **Show start screen at startup** check box on the start screen (Figure 45) or…
3. In running application access View menu and uncheck **Show Start Screen at Startup** menu

Figure 45: Start Screen Options

ReportFolder – Determines subfolder where report definitions are stored. Unless you know what you are doing never change this setting.

UsePrintAppearanceScheme (valid values are **True** and **False**) – enables you to use different appearance schemes for printing. This option is set to ON (True) by default. Appearance options are

described in next section. If this option is set to False (OFF), your printout will appear as seen on the screen (WYSIWYG).

Color Scheme Modifications

Five basic color schemes are available for display and printing. Current color schemes are:

- Black and White
- Black Background
- General Color Printer
- Decay Color Printer
- Voltage Color Printer General Color Printer

The differences between each scheme are related to line, grid and background colors and scale displays that may be useful for various measurements. Line and grid scale colors, temperature type and other defaults can be modified within a color scheme. Some illustrations follow.

Colors: The changeable attribute is between quotation marks. Modify the color name between quotes, e.g., **"Gold"** to **"Lime"**, then perform File, Save. Open the Autoanalysis software and check to ensure the default change was correct and effective.

Temperature: The temperature scale default is **°C** and will be displayed on the right of the strip chart view when the **Show Temperature** box on the left panel is checked. The default within any scheme may be modified using the following procedure and scale designations.

1. Open the configuration file (**AutoAnalysis.exe.config**) See Figure 46
2. Locate the Global Setting or color scheme you wish to modify, i.e. BlackAndwhite, BlackBackground, etc.
3. Locate **TempAxesvisibility**
4. Change the value ="x" as follows:
   a. Celsius °C value = "1"
   c. Fahrenheit °F value = "2"
   d. Both °C & °F value = "3"
5. Save the **AutoAnalysis.exe.config** file

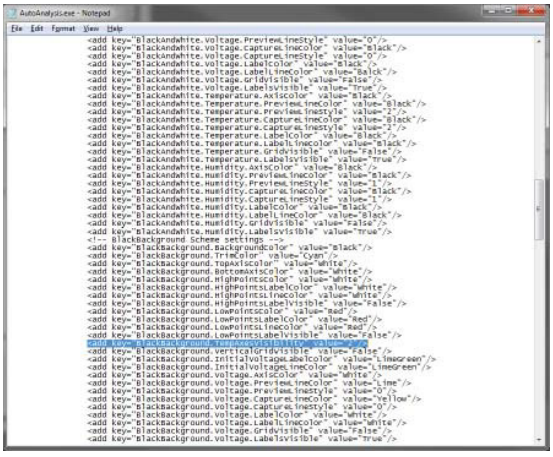


Figure 46: Modify Temperature Axis Scale for each Scheme

Appearance Scheme Settings

The Appearance scheme is a set of options that determine the appearance of a chart. Moreover, different schema can be used to display charts on your computer screen and you can use others for printing unless you set "UsePrintAppearanceScheme" described earlier to **False**. The Autoanalysis

Applications Software is delivered with 5 predefined appearance schemes. They are all defined in the XML config file described earlier.

DefaultAppearanceScheme – (valid values are the numbers defined in Available appearance schemes section described later) – the appearance scheme that will be used to display your charts on computer screen.

PrintAppearanceScheme – currently not used

PrintAppearanceScheme.General (valid values are the numbers defined in Available appearance schemes section described later) – the appearance scheme used to generate charts on general reports.

PrintAppearanceScheme.Decay (valid values are the numbers defined in Available appearance schemes section described later) – the appearance scheme used to generate charts on decay reports.

PrintAppearanceScheme.VoltageGen (valid values are the numbers defined in Available appearance schemes section described later) – the appearance scheme used to generate charts on voltage generation reports.

Available Appearance Schemes

Each entry in this section defines a name for an appearance scheme. The numbers next to AppearanceScheme key must be separated by a dot (for example AppearanceScheme.02). You can define as many as 100 different appearance schemes (numbers from 00 to 99). The numbers must be consecutive. The entries defined here appear in Print Options (Figure 47) and Appearance Options dialog boxes in the Autoanalysis software.

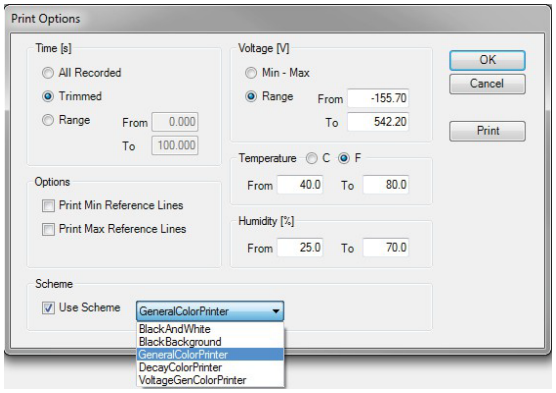


Figure 47: Print Options Dialog Box. Open in Report View mode using File Drop Down Menu

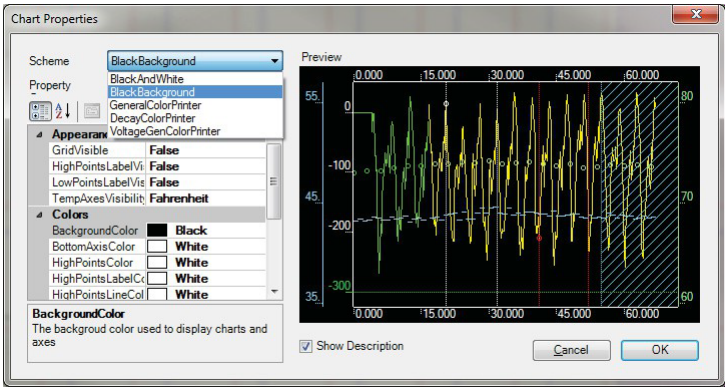


Figure 48: Document Appearance, Chart Properties Win- dow Allows Selection of Various Appearance Schemes

Schemes Settings

The names of the entries in scheme definition are self-explanatory. The important thing is that each entry is preceded by scheme name.

For example:
<add key=”BlackAndWhite.BackgroundColor” value=”White” />
defines background color (white in this case) in BlackAndWhite appearance scheme.

08 FIRMWARE UPDATE

Updating the 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.

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 PGA-712
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

The only feature available for the PGA-712 in the Connect 2.0 is updating the firmware. Connect 2.0 does not allow for transferring measurements from the PGA-712.

11 MAINTENANCE AND USER ADJUSTMENT

Maintenance

The PGA-712 is factory calibrated and other than 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.
- Carefully wipe the case and display until dust and dirt are removed

CAUTION

In rare cases cleaning the PGA-712 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

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

Calibration Information

The PGA-712 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.

Replacement Parts and Accessories

Table 5 is a list of user-replaceable parts for the charge plate monitor. To order replacement parts, contact your Authorized Reseller.

Part No.	Description
PGA-712	Autoanalysis Data Converter
700-001	USB-C Cable - 3 feet (1 meter)
700AC	Analog Cable
PGA-710CGL	Charge Generation Lead
PGA-710CC	Input Shorting Shunt
PFA-861H	Hand Held Electrode
PFM-700	Zipper Case

Table 5. 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 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.

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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