



DEFENDER SERIES

MULTIPAK™

Surge Protector / Power Conditioner

SX-DS-154 / SX-DS-156



User Manual

120V Firmware Revision 1.40 and higher
Software Revision 2.7 and higher

Patents and Published Patent Applications – The Product may be covered by one of more of the following patents or published patent applications:

U.S. Patent Nos: RE39,446; 6,728,089; 6,744,613; 6,947,266; 7,068,487; 7,184,252; 7,511,934; 7,541,696; and 7,551,412.

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Canadian Patent No. 2,461,332 and Canadian Patent Application No. 2,511,695

European Patent Application Nos. EP2482085 and EP 2469554

Trademarks and Service Marks



ESP	ENERGY INTELLIGENCE	MULTI-STAGE
ECOMMANDCENTER	NEXT GEN	PCS
DIGITAL QC	SURGEX	DEFENDER SERIES
ELIMINATOR SERIES	SURGE ELIMINATION	SERIES MODE
ICE	INRUSH CURRENT ELIMINATION	COUVS
ADVANCED SERIES MODE	AXESS	CERVELLA

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I. INTRODUCTION

The MULTIPAK is a state-of-the-art power protector/power conditioner engineered with real-time data acquisition and storage.

1. **Models:** This manual applies to the following MULTIPAK models:

Model Number	Voltage (AC RMS)	Current (AC Amps)	Receptacles	Input	Output
SX-DS-154	120	15	4	NEMA 5-15P	NEMA 5-15R
SX-DS-156	120	15	6	NEMA 5-15P	NEMA 5-15R

2. Key Features:

- Multi-Stage power protection technology
- Normal and Common Mode EMI Noise Filter
- Zero-Voltage Turn-On
- Zero-Current Turn-Off
- Inrush Current Elimination (ICE®)
- Wiring Fault Detection
- Catastrophic over/under Voltage Shutdown (COUVS®) with selectable thresholds
- Under Voltage Event Recorder (up to 999 events)
- Over Voltage Event Recorder (up to 999 events)
- Power Outage Event Recorder (up to 999 events)
- Surge Event Recorder (up to 999 events)
 - Records surges in all three modes: Line-Neutral, Line-Ground, Neutral-Ground
- Event Timestamp Recorder (up to 60 events)
 - Records time between events
- Additional features available when connected to a PC (detailed in Section IV: Diagnostic Software)

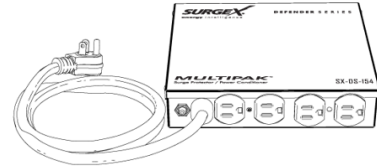
3. Technical Support:

- To download software and access further product information, visit <http://www.surgex.com>.
- For technical support, please contact SurgeX at 1-800-645-9721.

II. INSTALLATION INSTRUCTIONS

1. Installation:

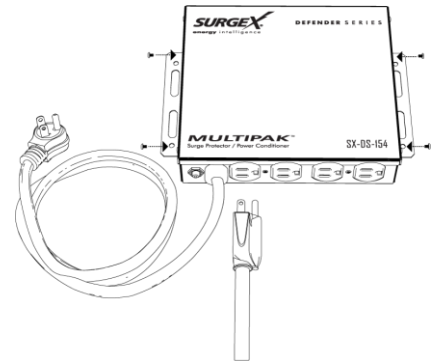
- a. Turn off the equipment you are connecting to the MULTIPAK, and unplug the equipment's power cord from the wall outlet.



- b. Connect Equipment

Connect the AC power cord of the equipment to be protected into one of the MULTIPAK convenience receptacles. Make sure that the total amperage of all equipment plugged into the MULTIPAK does not exceed the maximum branch circuit rating.

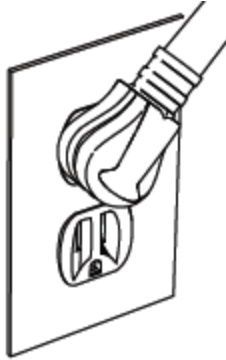
Please Note: Exceeding the branch circuit rating will cause the branch circuit breaker to trip.



- c. Connect the MULTIPAK to the Outlet: Plug the MULTIPAK input power cord into a properly grounded and compatible branch circuit outlet.

Please Note: Do not plug the MULTIPAK into a relocatable power tap.

- i. If the branch circuit outlet is correctly wired and the magnitude of the line voltage is acceptable, between 105 and 130 V_{RMS}, power will be connected to the outlets of the MULTIPAK and the **Green** "System On" LED will illuminate. Your equipment is now protected and installed correctly. You may now turn all connected equipment back on.
- ii. If the branch circuit outlet is incorrectly wired, the **Red** Wiring Fault" LED will illuminate. If this occurs, contact a licensed electrician to correct the outlet wiring. Refer to Section III.1: Hardware/MULTIPAK
- iii. If neither "System On", nor the "Wiring Fault" LED illuminates, there is either no voltage at the receptacle or the magnitude of the line voltage is not acceptable (less than 105 VRMS or above 130 VRMS). If this occurs, *verify that the MULTIPAK is operating properly. To test, plug the MULTIPAK into a known properly functioning outlet. If the "System On" LED still does not illuminate in the functioning outlet call SurgeX at 1-800-645-9721. If the "System On" LED illuminates, contact a licensed electrician to troubleshoot the abnormal voltage condition.*



CAUTION – Do not install this device if there is not at least 10 meters (30 feet) or more of wire between the electrical outlet and the electrical service panel.

La PRUDENCE - n'installe pas cet artifice s'il n'y a pas au moins 10 mètres (30pieds) ou plus de fil entre l'issue électrique et le comité de service électrique.

2. PC Setup and Driver Installation:

Data interface cable model XG-PCS-IC-1 (optional)

Please Note:

The MULTIPAK may be accessed by a PC while connected to AC power and equipment or while disconnected from AC power and equipment.

If accessed by a PC while connected to AC power: For best protection, it is recommended that the power cord of the computer is plugged into an available receptacle on the MULTIPAK.

Connecting the MULTIPAK to a PC allows for the availability of the following features:

- Import data stored in the MULTIPAK's device memory
- Import data from a stored data file
- Export data to a data file
- Export data to a report in PDF format
- Set over and under voltage shutdown thresholds
- Clear device memory
- Real-time AC voltmeter
- Enhanced Logging Mode

Equipment required for PC communication:

- MULTIPAK
- MULTIPAK Data Interface Cable (optional)
- MULTIPAK Diagnostic Software (Revision 2.7)
- PC running Windows 2000 or later with a CD-ROM and USB port and a minimum screen resolution of 1024 x 768

- a. Connect the MULTIPAK Data Interface Cable to your PC
 - i. Plug the USB end of the optional Data Cable into an available USB port on your PC.



- b. Install the MULTIPAK Driver Files
 - i. Automatic (requires Internet connection)

When you plug the USB into your PC, Windows will automatically detect the cable.

 1. When the “Found New Hardware” pop-up box appears, be sure to select “Yes, this time only” option for the device driver installation
 2. This installation could take a few minutes to search and download the driver files. Once the files are found, follow the on-screen instructions to install.
 3. Please Note: The drivers will first install the USB serial converter and will then install the USB serial port drivers separately.
 - ii. Manual

In the event that the automatic driver installation does not function or there is no Internet connection, select “Install Drivers” during the MULTIPAK Software Installation.

c. Configure PC Settings for COM Port

Note: The COM Port Settings procedure has been automated in software version 2.7. See Section II – 3 – c – ii – 3 for details.

i. Open Device Manager

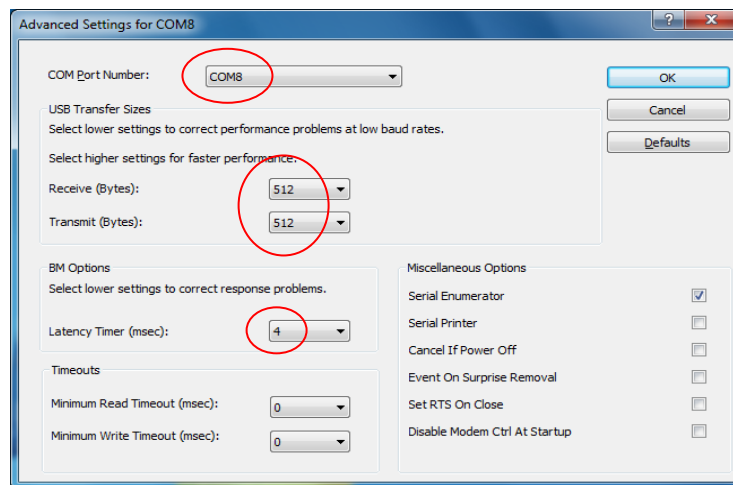
1. Windows 2000 / XP
 - a. Click on **Start** and then select **Run**
 - b. Type the following command in the “Open:” text box: **devmgmt.msc**
 - c. Click on the **OK** button
 - d. Device Manager will display
2. Windows 7 / Vista
 - a. Click on **Start** button
 - b. Type the following command in the “Search:” text box: **devmgmt.msc**
 - c. Click on the **OK** button
 - d. Device Manager will display

ii. In the Device Manager, Expand “Ports (COM & LPT)”

1. Locate the entry labeled “USB Serial Port (COMx)”, where x refers to the COM port number assigned by Windows
2. Right-click on “USB Serial Port (COMx)” and click “Properties”
3. USB Serial Port Properties pop-up box will display

iii. In the USB Serial Port Properties pop-up box:

1. Click the “Port Settings” tab and then click the “Advanced” button.
 - a. If the “COM Port Number” is not between 1 and 9, change the assigned value to a value between 1 and 9
 - i. **Make a note of the COM Port Number.**
It will be needed to configure the Diagnostic Software
(as noted in Section II – 3 – C : Select COM Port.)
 - b. In “USB Transfer Sizes”, change both the “Receive” and “Transmit” values to 512
 - c. In “BM Options”, change the “Latency Timer” value to 4
 - d. Leave all other settings at default
 - e. Press “OK”, and then press “OK” again

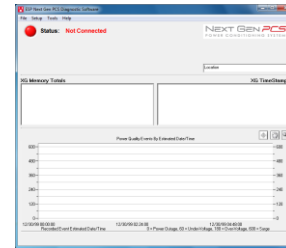


iv. Close Device Manager

3. Diagnostic Software Installation:

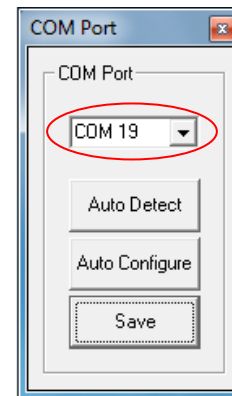
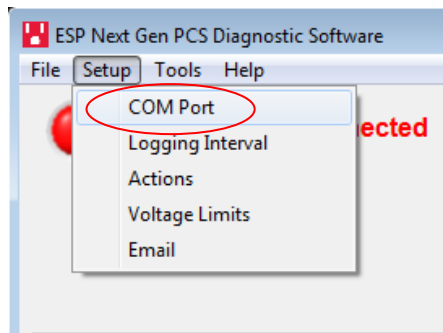
- a. Install Software:
 - i. Download Software Installer from www.surgex.com. Software is located on the MULTIPAK page in the Downloads tab.
 - ii. Unzip and run the installation utility.
 - iii. Follow the on-screen instructions to complete installation of the MULTIPAK Diagnostic Software.

- b. Starting the program: Open the Software on your PC (located under "Programs"). When you first open the program, it will look like the following. →



- c. Select COM Port:
 - i. Specify which COM port the MULTIPAK Diagnostic Software should communicate through by navigating to "Setup/COM Port".
 - ii. In the window that appears, use the drop box to select the appropriate COM port, and press "Save".

1. Be sure to use the same COM port number that was selected in Section II – 2 – C – iii: USB Serial Port Properties pop-up box.
2. The correct COM port number may be automatically detected by pressing the "Auto Detect" button while the MULTIPAK and Data Interface Cable are connected to the computer.
3. The COM Port Settings may be automatically configured by pressing the "Auto Configure" button. Windows Vista/7 users: For proper operation of this feature, right-click on the application shortcut and choose "Run As Administrator".



**Your PC is now set up correctly to communicate
with the MULTIPAK Product Line.**

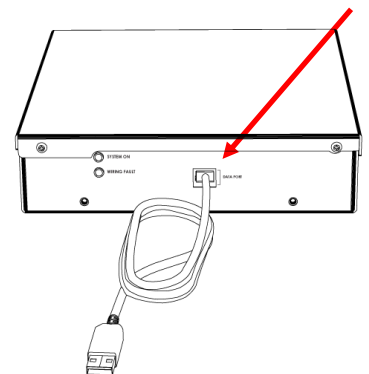
III. HARDWARE

1. MULTIPAK:

- a. Normal Operation
Plug the MULTIPAK input power cord into a properly grounded and compatible branch circuit outlet; the green “System On” LED will illuminate.
- b. Wiring Fault
When connected to an incorrectly wired branch circuit outlet, the Red LED will be illuminated.
- c. Abnormal Voltage
When the magnitude of the branch circuit outlet voltage is not acceptable*, the MULTIPAK will disconnect power to its outlets; refer to Section IV: Diagnostic Software for more information).
- d. Clearing Memory
The MULTIPAK is able to timestamp the 60 most recent power quality events (information stored in microcontroller non-volatile memory). The microcontroller memory contents can be cleared at any time by following this method:
 - i. Diagnostic Software:
The device microcontroller memory may be cleared from within the Diagnostic Software in the following location: “Tools/Clear Device Memory”. See Section IV – 4 - C: Tools Menu, for details.

2. Data Interface Cable:

- a. Overview
 - i. The MULTIPAK Data Interface Cable consists of a USB connection on one end and an RJ-11 connection on the opposite end.
 - ii. The USB connection plugs into an available USB port on your PC. The RJ-11 connection plugs into the RJ-11 jack (labeled “Data Port”) on the MULTIPAK.
- b. Instructions for Data Retrieval
 - i. Connect the MULTIPAK Data Interface Cable into the USB port on your PC.
 - ii. Connect the MULTIPAK Data Interface Cable into the RJ-11 jack (labeled “Data Port”) on the MULTIPAK
 - iii. Open the MULTIPAK Diagnostic Software.



IV. DIAGNOSTIC SOFTWARE

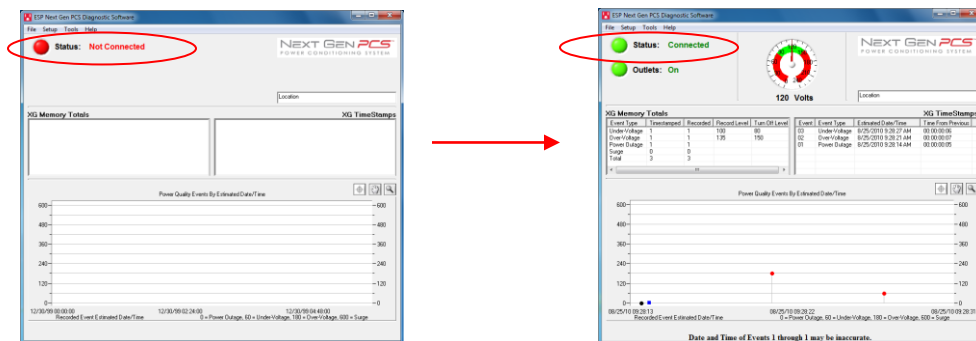
1. Starting the Program:

Open the SurgeX “Next Gen PCS” Diagnostic Software (located under “Programs” on your PC Start Menu).

- a. Please Note: A shortcut to this manual will also be in this location on your PC for future reference and troubleshooting.

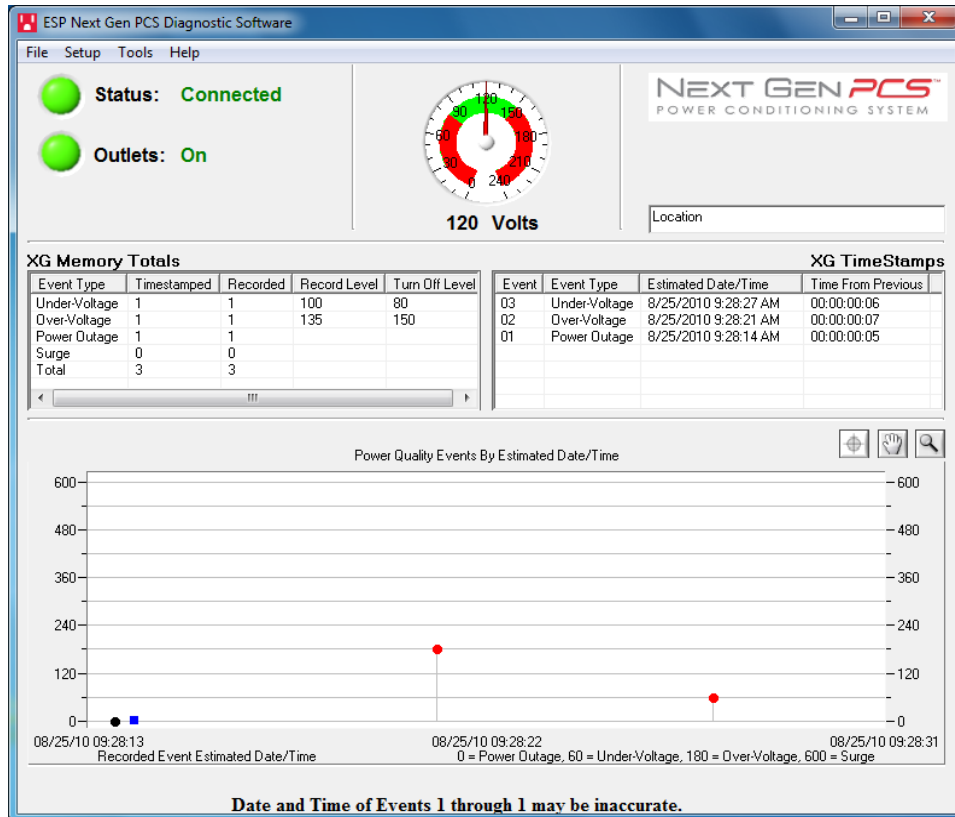
2. How to Connect to the MULTIPAK:

- a. Make sure that the USB Data Cable is connected to both the MULTIPAK and your PC (for instructions on how to connect the USB Data Cable, refer to Section III – 2 – B : Hardware/USB Data Interface Cable/Instructions for Data Retrieval – listed above)
- b. Press the red button beside “Status” to connect to the MULTIPAK. The Connection Status will change to **Green** and the top of the screen will indicate that it is connected.



3. GUI Overview:

After connecting successfully, several pieces of information gathered from the MULTIPAK will now be displayed on the Diagnostic Software Graphical User Interface.



- Connection Status: The current connection status is displayed to the right of the Connect / Disconnect button.
- Disconnect: Pressing the green button beside "Status" will terminate communications with the MULTIPAK.
- Location Textbox: The text entered in the textbox is included with data that is exported to a file.
- Voltmeter: A real-time AC voltmeter is displayed in the upper center, which displays the line voltage both numerically and as an analog meter.

- e. **Outlet Status:** The Outlet Status is displayed below the Connection Status. The current state of the outlets is displayed (either On or Off), and pressing the On/Off button will manually turn the output On and Off. When connected to the MULTIPAK during an abnormal voltage condition (power outage, under voltage, or over voltage), wiring fault (Reverse Polarity [Live/Neutral reversed], or Missing Ground), the On/Off outlet control is not available, and the corresponding abnormal voltage/wiring fault condition will be displayed beside the outlet status. **A ground connection may be made through the computer connection. It is recommended to determine the outlet wiring status with the MULTIPAK before connecting the MULTIPAK Data Interface Cable, or to use a laptop computer with its charger disconnected.*

- f. **Recorded Data Display:** The lower portion of the screen is a display of the data recorded and stored in the MULTIPAK's internal memory. Power quality event totals are listed in the "XG Memory Totals" table. The events are listed in the "XG Time Stamps" table in order of occurrence (with the most recent events at the top) with their corresponding estimated date and time of occurrence. The events are also graphically displayed on the "Power Quality Events By Estimated Date / Time" graph in order of occurrence by estimated date and time (the MULTIPAK does not currently record the duration of a power outage event). If additional power quality events are recorded while connected to the MULTIPAK, the data display will automatically update with the new information. The MULTIPAK Microcontroller can record up to 999 occurrences of each of the following:
 - i. Over Voltage Events
 - ii. Under Voltage Events
 - iii. Power Outage Events
 - iv. Surge Events

- g. **Timestamps:** In addition to the Recorded Data events, the MULTIPAK microcontroller also timestamps up to 60 recorded events.
 - i. The timestamp is a record of the elapsed time (up to 99 days, 23 hours, 59 minutes, and 59 seconds) since the last recorded event – this is the time difference between subsequent events, not the elapsed time from an initial starting point. Please note: The amount of elapsed time during power outages is not recorded.
 - ii. The MULTIPAK Diagnostic Software estimates the actual date and time of each event occurrence based on the recorded time difference between events, and the current date and time of the connected computer.
 - iii. The graph uses the values of 0%, 50%, 150%, and 600% for the graphical display of power outages, under voltages, over voltages, and surge events, respectively. The actual voltages during these events are not recorded and probably differ from the graphical values (0%, 50%, 150%, and 600%) shown.

4. Menu Items

a. File Menu:

- i. Import Data from XG: Manually import data stored in the MULTIPAK's internal memory.
- ii. Import Data from File: Import data from a previously stored data file. Does not require MULTIPAK connectivity.
- iii. Export Data to File: Exports the currently displayed data to a data file, which can be imported for future viewing. The data file may be saved as text (.txt) or comma-separated (.csv, suitable for viewing in MS Excel). Including the Enhanced Logging Mode data is optional.
- iv. Save Report: Saves a summary report of the currently displayed data in PDF format.
- v. Save Image: Saves a screenshot of the program as an image (.bmp) file.
- vi. Print: Prints a screenshot of the program.
- vii. Exit: Terminates connectivity with any connected MULTIPAK and exits the program.

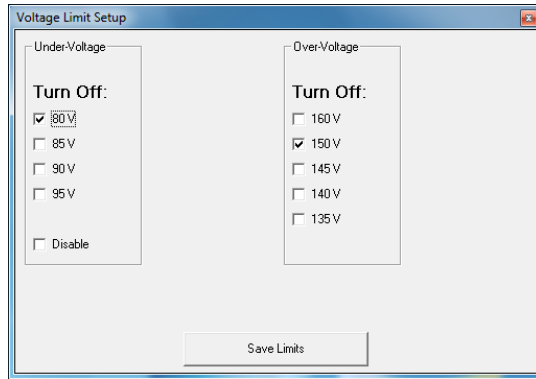
b. Setup Menu:

- i. COM Port: Selects which COM port the program should connect through. The COM port selection is saved to a configuration file and does not need to be chosen again the next time the program is run (unless a new MULTIPAK Data Interface Cable is used).
- ii. Logging Interval: Allows for the selection of the logging time interval between acquired line voltage data points when using the Enhanced Logging Mode feature. The logging time interval selections available are: 1 second, 2 seconds, 4 seconds, 10 seconds, and 30 seconds. When the line voltage is changing rapidly, additional data points will be recorded, regardless of the time interval selection.
- iii. Actions: Allows for the selection of which new event(s) will result in the sending of an email. *This feature is only available when the MULTIPAK is connected to a PC with an Internet connection and the MULTIPAK software running.*

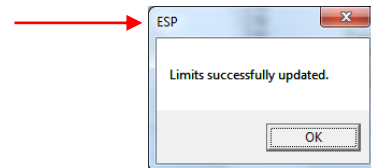
- iv. Voltage Limits: Displays the over voltage and under voltage shutdown thresholds currently in use, and allows for the selection of alternate values. **When Under Voltage Shutdown is Disabled, the MULTIPAK will not actively shut off connected equipment during an under voltage event. However, the MULTIPAK's power relays will drop out and disconnect equipment around 40V. This is because there is not enough voltage available to keep the relays latched.*
 - v. Email: Allows for the configuration of email settings. The software is pre-loaded with "courtesy account" settings that may be used for testing purposes. *The email feature is only available when the MULTIPAK is connected to a PC with an Internet connection and the MULTIPAK software running. This feature may not work with certain Internet Service Providers that block outgoing SMTP communications – check with your ISP for compatibility. Please contact your IT staff for assistance when configuring custom email settings.*
- c. Tools Menu:
- i. Cycle Power: Commands the MULTIPAK to perform a Power Cycle.
 - ii. Clear Device Memory: Permanently erases the events and timestamps contained in the MULTIPAK's microcontroller memory. Clearing the device memory does not affect voltage thresholds.
 - iii. Enhanced Logging Mode: Puts the MULTIPAK into Enhanced Logging Mode.
- d. Help Menu:
- i. Help Topics: Launches the MULTIPAK Help, which includes troubleshooting information for the MULTIPAK product and software, FAQ, and general information about power quality.
 - ii. Manual: Launches the MULTIPAK Manual that is installed with the software package.
 - iii. About: Displays the software revision of the MULTIPAK Diagnostic Software program, the firmware revision of the microcontroller in the connected MULTIPAK, the unique chip ID of the microcontroller in the connected MULTIPAK, and SurgeX's telephone number for technical support.

5. Voltage Limit Selection

- Navigate to "Setup/Voltage Limits" in the menu.
- The Voltage Limit selection screen will appear with the currently active limits selected:

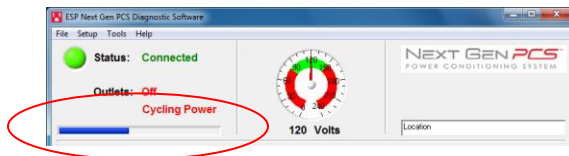


- To change the limits, check the boxes beside the desired values and press "Save Limits".
- When the new limits have been successfully saved in the MULTIPAK, the following message will be displayed:
- Press "OK" to complete the voltage limit selection process.



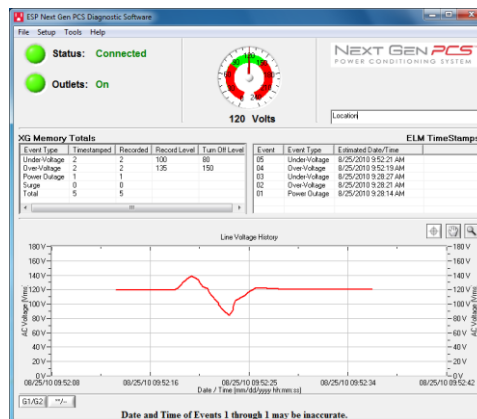
6. Cycle Power Command

- In addition to the basic On/Off outlet control, the MULTIPAK Diagnostic Software includes the ability to execute a power cycle.
- When commanded, the outlets will turn off, then back on, after a 90 second delay time.
- To perform a power cycle, navigate to "Tools/Cycle Power" in the menu. The software will explain that performing a power cycle will turn off power to connected equipment for 90 seconds. Press "Ok" to continue, or "Cancel".
- During the cycle, a progress bar will appear which will indicate the time until the outlets are turned back on:



7. Enhanced Logging Mode

- a. The Enhanced Logging Mode function of the MULTIPAK Diagnostic Software extends the logging and monitoring capabilities of the MULTIPAK while a PC is connected.
- b. **Enhanced Logging Mode can be started by navigating to “Tools/Enhanced Logging Mode”.**
 - i. The additional features available with the Enhanced Logging Mode are:
 1. Logging of individual line voltage measurements
 - a. The magnitude of the line voltage of each data acquisition point is recorded.
 - b. The date and time of each data acquisition point is recorded (based on Windows system time).
 - c. Adjustable logging interval; The time interval choices are 1, 2, 4, 10, or 30 seconds between data acquisition points.
 - d. If the line voltage is changing rapidly (faster than 2V/0.2 seconds), new data points will be recorded, regardless of the logging interval selection.
 - e. The line voltage is displayed visually, graphed against the current date and time (based on Windows system time).
 2. Date and Time stamping of new events recorded by the MULTIPAK
 - a. The date and time of each new power quality event recorded by the MULTIPAK’s microprocessor is recorded (based on Windows system time).
 3. Graph Display
 - a. The graph displaying the power quality events recorded by the MULTIPAK will be replaced by a graph of the line voltage (“Line Voltage History”)
 - b. The table (“XG TimeStamps”) displaying the time stamps of the power quality events recorded by the MULTIPAK will be replaced by a table (“ELM TimeStamps”) displaying the power quality events recorded by the MULTIPAK while in Enhanced Logging Mode.



8. Graph Overview

a. Graph Control

- i. The graphs used to display the recorded power quality events (normal mode) and line voltage (Enhanced Logging Mode) contain Zoom, Cross Hair, and Drag functions that are useful when analyzing data:



Legend: Press the L icon to display the Graph Legend to show the values of the timestamped data. Pressing the icon again toggles the legend off.



Zoom: Press the magnifying glass icon to enable Zoom mode. Pressing the icon again stops Zoom mode and restores the graph to its full display scale.



Cross Hair: Turns the cross hair on and off.

Drag: Enables/Disables Drag mode. When in Drag mode, press and hold the left mouse button somewhere on the graph, and move the mouse. The graph will be dragged in the corresponding direction.

- ii. Several control buttons are available below the graphs, depending on which mode is active:
 1. G1/G2: Toggles between Graph 1 (recorded power quality events) and Graph 2 (line voltage). Available after entering Enhanced Logging Mode.
 2. **/--: Toggles the data display of Graph 2 (line voltage) between linear and discrete data points. Available when Graph 2 is visible.
 3. Stop: Stops Enhanced Logging Mode. Available after entering Enhanced Logging Mode.

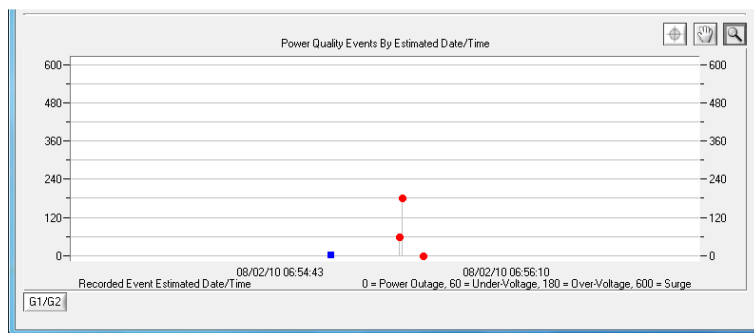
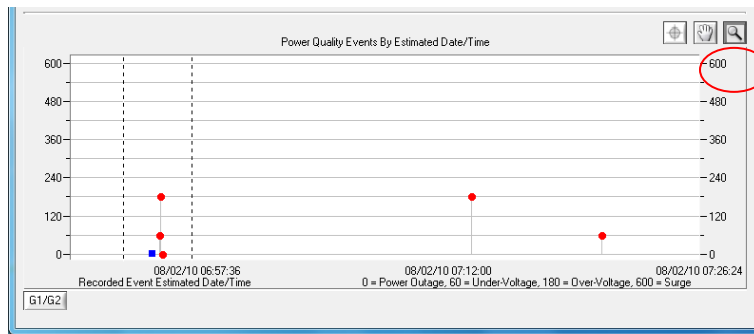
b. Graph Data

i. Power Quality Events Graph

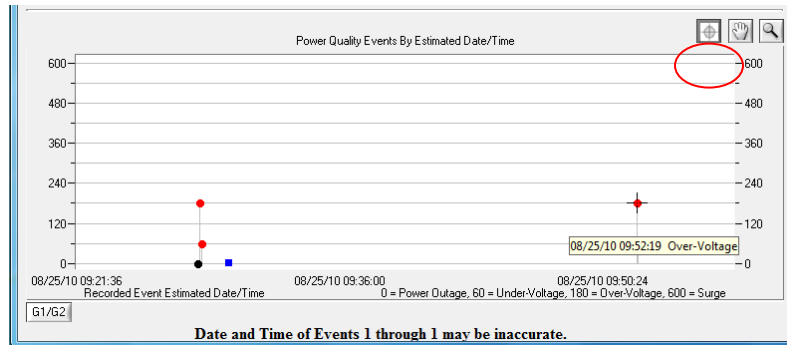
1. Overview

- a. The recorded power quality events graph displays the time-stamped power quality events (up to 60) recorded and stored in the MULTIPAK's internal memory. The events are plotted as individual data points.
- b. While the events are timestamped in the MULTIPAK's internal memory by the elapsed time since the previous recorded event, they are plotted on the graph with an estimated date and time, based on the connected computer's Windows system time. The duration of a power outage is not recorded, so the date and time of events prior to and including the most recent power outage may not be accurate. Events with an accurate estimated date and time are plotted with a red circle; events with a possibly inaccurate date and time are plotted with a black circle; the time the computer was connected is plotted with a blue square.
- c. All events recorded while a computer is connected to the MULTIPAK will have an accurate date and time stamp, since the computer will supply power to the MULTIPAK's microcontroller in the event of a power outage (as long as the computer stays on).

- d. The graph uses the values of 0%, 50%, 150%, and 600% for graphical display of power outages, under-voltages, over-voltages, and surge events, respectively; the actual voltages during these events are not recorded and probably differ from the graphical values (0%, 50%, 150%, and 600%) shown.
2. **Zoom Function:** The recorded power quality events graph may be zoomed along the X (time) axis. To zoom in on an area of the graph, press the magnifying glass icon, press and hold the left mouse button somewhere on the graph, then drag the cursor either left or right to define the zoom selection, and then release the left mouse button. The graph will now display the selected area. Press the magnifying glass icon again to restore the original full display.



3. **Cross Hair Function:** The cross hair tool is useful when determining the estimated date/time of an event, as well as the type of the event. Pressing the cross hair icon will place a cross hair on one of the graph's data points, and the corresponding date/time and type of that event will be displayed when the mouse pointer hovers over that point:

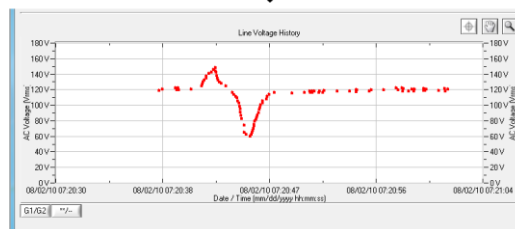
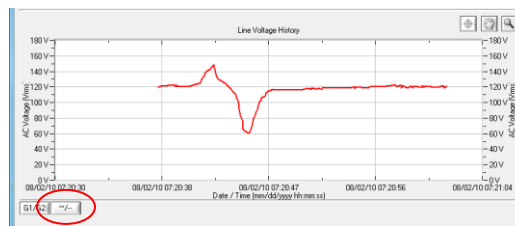


To move the cross hair to a different data point, simply position the mouse pointer over the data point of interest.

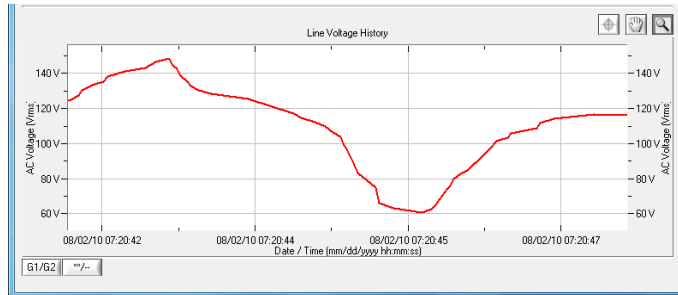
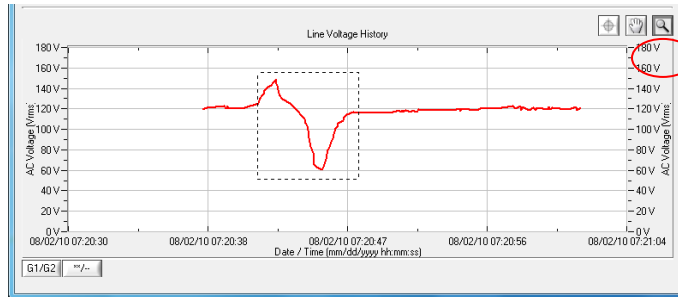
ii. **Enhanced Logging Mode Line Voltage Graph:**

The Enhanced Logging Mode line voltage graph displays the recorded line voltage in a strip chart style. Each voltage measurement is a discrete data point containing the magnitude of the line voltage and the date and time (based on Windows system time) of the measurement. Data points are acquired at a time interval determined by the selection made in "Setup/Logging Interval". The choices are 1 point per second, 1 point per 2 seconds, 1 point per 4 seconds, 1 point per 10 seconds, or 1 point per 30 seconds. If the line voltage is changing rapidly (faster than 2V in 0.2 seconds), data points will be recorded at a faster rate, regardless of the interval selection.

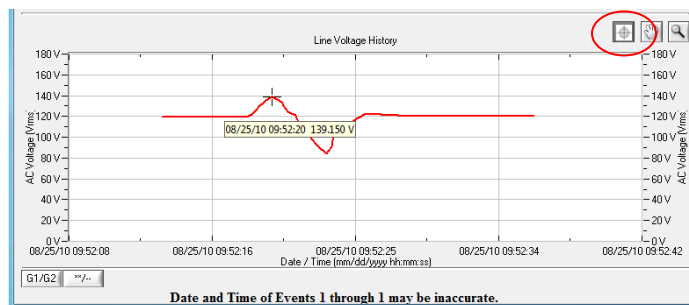
1. **Point/Line (**/-- button) Toggle:** The style of the graph can be toggled between individual data points and linear by pressing the "**/--" button.



2. **Zoom Function:** The line voltage graph may be zoomed along both the X (time) and Y (Voltage) axes. To zoom in on an area of the graph, press the magnifying glass icon, press and hold the left mouse button somewhere on the graph, drag the cursor to define the zoom selection, and then release the left mouse button. The graph will now display the selected area. Press the magnifying glass icon to restore the original full display.



3. **Cross Hair Function:** The cross hair tool is useful when determining the magnitude and date/time of a line voltage measurement. Press the cross hair icon to place a cross hair on one of the graph's data points, and the corresponding date, time, and magnitude of that data point will be displayed when the mouse pointer hovers over that point:



To move the cross hair to a different data point, simply position the mouse pointer over the data point of interest.

V. TROUBLESHOOTING

The MULTIPAK and Data Interface Cable contain no user-serviceable parts. Do not attempt product disassembly, as this will void the product warranty.

1. MULTIPAK:

Symptom	Possible Cause	What to Do
Red LED On, Green LED Off, No power at output	Incorrectly wired branch circuit outlet	Contact a licensed electrician to correct the branch circuit outlet wiring
Red LED Off, Green LED Off, No power at output	No voltage or unacceptable voltage at branch circuit outlet, or MULTIPAK output manually turned Off	Use the Communications Software to measure the voltage at the wall receptacle. Use the Communications Software to manually turn the outlets On. Plug the MULTIPAK into a known properly functioning outlet. If the "System On" LED still illuminates, contact a licensed electrician to troubleshoot the wall receptacle. If the "System On" LED still does not illuminate call SurgeX at 1.800.645.9721
Red LED Off, Green LED On, No power at output	Defective product	Contact SurgeX for product replacement at 1.800.645.9721

2. Diagnostic Software:

Symptom	Possible Cause	What To Do
Receive an error related to .ocx or .dll file when attempting to start software	ActiveX control not installed	Refer to Section II: Installation Instructions/Software Installation and Section IV: Diagnostic Software for instructions on re-installing the MULTIPAK Diagnostic Software
Part of the program screen is not visible on the computer monitor	The computer's screen resolution is set too low	Set the computer's screen resolution to a minimum of 1024 x 768
Software will not connect to the MULTIPAK	Correct COM port is not selected, the MULTIPAK Data Interface Cable is not connected, Serial-USB drivers are not installed, or MULTIPAK Data Interface Cable is connected to a wrong port on the MULTIPAK	Verify all connections and set the correct COM port, as detailed in Section II: Installation Instructions
Software will not send email	Email settings are incorrect, computer does not have an internet connection, ISP blocks outgoing SMTP communications	Verify that email settings are correct. Verify that the computer is connected to the Internet. Contact ISP regarding policies on outgoing SMTP communications.

VI. Specifications



Technical Specifications

SX-DS-154 (4x)

SX-DS-156 (6x)

Load Rating	15 Amps @ 120 Volts	15 Amps @ 120 Volts
Voltage Protection Rating (VPR)	330V All Modes	330V All Modes
EMI/RFI Filter, Normal Mode (50-ohm load)	> 30 dB 80kHz – 50MHz	> 30 dB 80kHz – 50MHz
EMI/RFI Filter, Common Mode (50-ohm load)	> 30 dB 70kHz – 50MHz	> 30 dB 70kHz – 50MHz
Overvoltage Shutdown	Adjustable from 135V to 160V. Restores at 130V	Adjustable from 135V to 160V. Restores at 130V
Undervoltage Shutdown	Adjustable from 80V to 95 V, or Disabled. Restores at 105V	Adjustable from 80V to 95 V, or Disabled. Restores at 105V
Dimensions	8.152" W x 7.272" D x 1.79" H	11.212" W x 7.272" D x 1.79" H
Weight	4.1 lbs.	5.0 lbs.
Temperature Range	5° to 35° C	5° to 35° C
Humidity Range	5% to 95% R.H., non-condensing	5% to 95% R.H., non-condensing
Agency Listings	ETL and cETL Certified to UL 1449 (pending)	ETL and cETL Certified to UL 1449 (pending)
FCC	Part 15 Class B	Part 15 Class B

* Specifications subject to change without notice.

This product, including its components and/or processes carried out thereby, are covered by one or more of the following:
U.S. Pat. No. 4,870,534. 4,870,528. 6,728,089. 6,744,613. 7,068,487. Can. Pat. No. 1,333,191. 1,332,439. Other Patents Pending.