



Quick Start Guide

Computer System Requirements

Supported Systems

- Operating System: Windows 7/8/10
- USB: USB 2.0 and later

Minimum Requirements

- Processor: Core i5 at 2.7 GHz
- RAM: 4 GB
- Free Hard Disk Space on C: drive: 20 GB

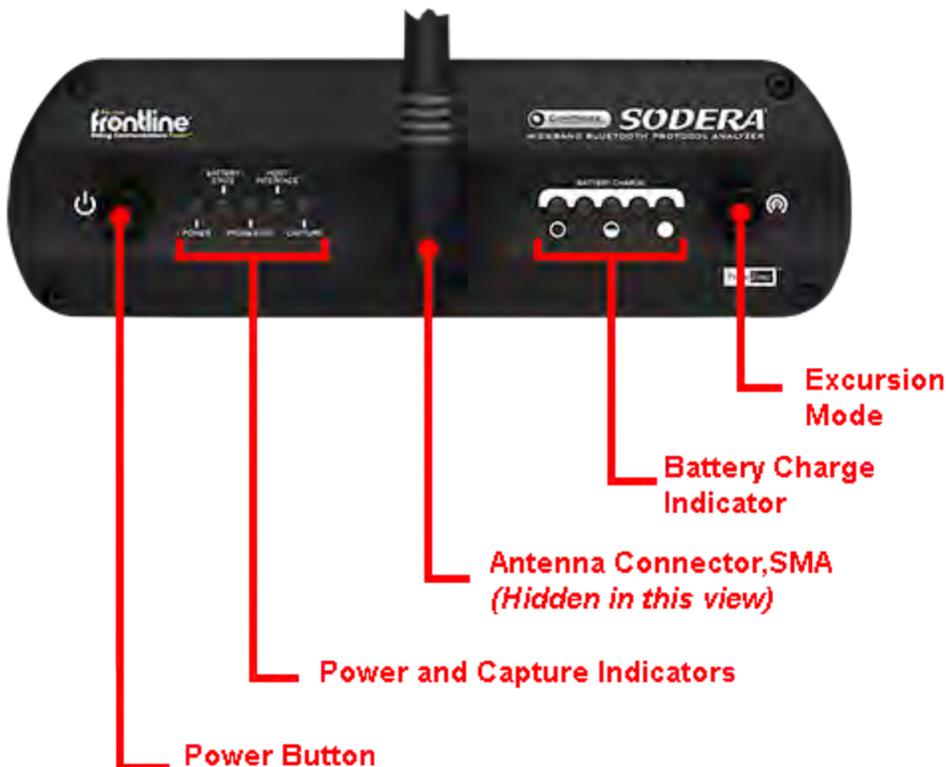
Install Software

- From Download: Download the latest ComProbe installer from FTE.com. Once downloaded, double-click the installer and follow the directions.

<http://www.fte.com/sodera-soft>

1. Front Panel Controls

Frontline Sodera™ front panel is shown below. The panel provides controls to power up and shut down the Frontline Sodera hardware, and it provides indicators to show the power, battery, and capture status.



Sodera Front Panel Controls and Indicators

Power On/Off Button: Press and hold the button for at least 1/2 second, and then release the button to power on or power off the system.

Pressing and holding the button for at least five seconds will initiate an **emergency shut down** sequence.

Status Indicators: Colored LEDs show the status of power and capture.

Table 1 - Sodera Front Panel Status Indicators

Indicator	Color	State	Status Indicated
Power	None	Off	Unit is powered off
	Green	Constant	Unit is switched on
	Red	Blinking	Unit is approaching its maximum thermal load and should be shut down.
		Constant	Unit has been automatically disabled due to thermal overload.
	Amber	Constant	Unit is powering down.
Battery State	None	Off	No battery present
	Green	Constant	Battery present and is at normal operating voltage
		Slow Flash	Battery charging
	Amber	Fast Flash	Battery fault
Host Interface	None	Off	No host interface is connected.
	Green	Constant	Host interface is connected.
	Amber	Constant	Internal error
Capture	None	Off	Unit is not actively capturing data
	Green	Constant	Unit is capturing data
	Red	Constant	Unit has engaged RF overload protection; the RF signal is too strong.

Antenna SMA Connector: Antenna attaching point.

Battery Charge : The following table shows the charge state of the installed battery. When the battery is not installed, all LEDs are off except when the unit is in the process of powering up. In that case they repeatedly light up in sequence.

Table 2 - Sodera Battery Charge State LED Indicators

Indicator LEDs	Charge Status
	Greater than 80%
	Between 60 and 80%
	Between 40 and 60%
	Between 20 and 40%

Table 2 - Sodera Battery Charge State LED Indicators(Continued)

Indicator LEDs	Charge Status
	Less than 20%
	Not Active

Excursion Mode: When configured for Excursion mode, pressing this button will begin data capture—the same as the Record/Recording button on the Sodera Window Capture Toolbar. The **Excursion Mode** button is inactive when Sodera is connected to a computer. To operate in the Excursion mode, the Sodera hardware must have been previously configured from the Frontline software prior to disconnecting from the computer. The Sodera hardware will retain those configuration settings when disconnected from the computer. Refer to the Frontline Sodera User Manual for Excursion mode operating details.

2. Rear Panel Connectors

The rear panel is shown below. The panel provides connectors for external power, ProbeSync™, HCI, and for connection to the computer hosting the Frontline software.



Sodera Rear Panel Connectors

+12VDC: Connection to the Frontline supplied AC-to-DC power adapter, or a 12 VDC auxiliary vehicle outlet system can be used.

ProbeSync™ IN/OUT: Used for synchronizing multiple capture devices. Sodera can act as a clock source (master) device providing the clock to synchronize timestamping with connected target (slave) devices. When operating as a master device the **OUT** RJ-45 connector provides the synchronizing clock. The synchronizing clock can be attached to a slave Frontline Sodera or a Frontline 802.11, for example. When operating as a slave device, the **IN** RJ-45 connector receives the synchronizing clock from a master Sodera unit.

HCI USB 1/HCI USB 2: USB Type B and a USB Type A connectors allow capture of HCI USB data. HCI USB 1 and HCI USB 2 are independent groupings of the Type A and Type B connectors. The HCI USB 1 connectors use the same Sodera unit internal interface as the Sodera HCI POD1 UART pins. Likewise the HCI USB 2 connectors use the same internal interface as the Sodera HCI POD2 UART pins. Therefore you cannot simultaneously capture USB and UART on the "1" interface or on the "2" interface. Refer to [1.1 Connecting for USB Capture, on page 1](#) and to [1.1 Connecting for HCI Capture, on page 1](#).

PC HOST : USB 2.0 port for connecting Sodera to the host computer where the Frontline software resides. This connector provides host computer command, control, and data transfer.

Note: At this time all other rear panel connectors are inactive.

3. Attach Antenna



Antenna Attachment Point

Remove the Frontline Soderas™ hardware from the box and attach the antenna to the SMA connector on the front panel.

4. Connecting for ProbeSync™

ProbeSync allows a Frontline Soderas unit and a 802.11 hardware to be connected together to run off of a common clock, ensuring precise timestamp synchronization while capturing *Bluetooth* and WiFi technologies.. One device will act as the *master* device by providing the clock to the *slave* device receiving the clock. The devices are connected in a daisy-chain configuration. The Soderas unit must be the *master* device. Refer to the following tables, to [2. Rear Panel Connectors, on the previous page](#), and to the 802.11 rear panel image below.

Table 3 - Soderas Synced to 802.11

Soderas	802.11	Soderas		802.11	
		PROBESYNC OUT	PROBESYNC IN	OUT	IN
Master	Slave	X			X

Using a CAT 5 Ethernet cable, less than 1.5 meters (4.9 feet), insert one end into the master device connector. Insert the other end into the slave device connector.

Each master/slave device will have a separate datasources window open. The *Bluetooth* and WiFi packets can be viewed in the Coexistence View for either datasource.



ComProbe 802.11 Back Panel

5. Applying Power

The Sodera hardware is powered by three methods: the Frontline supplied AC-to-DC adapter, an external DC power source that can include power from an automobile auxiliary power source and an optional internal battery.

To apply power to Sodera use one of the three methods:

1. Connect the provided AC-to-DC power adapter to the **+12VDC** connector on the rear panel and then connect the adapter into an AC source.
2. Connect a DC power source supplying +12 VDC directly to the **+12VDC** connector on the rear panel.
3. Install the battery.

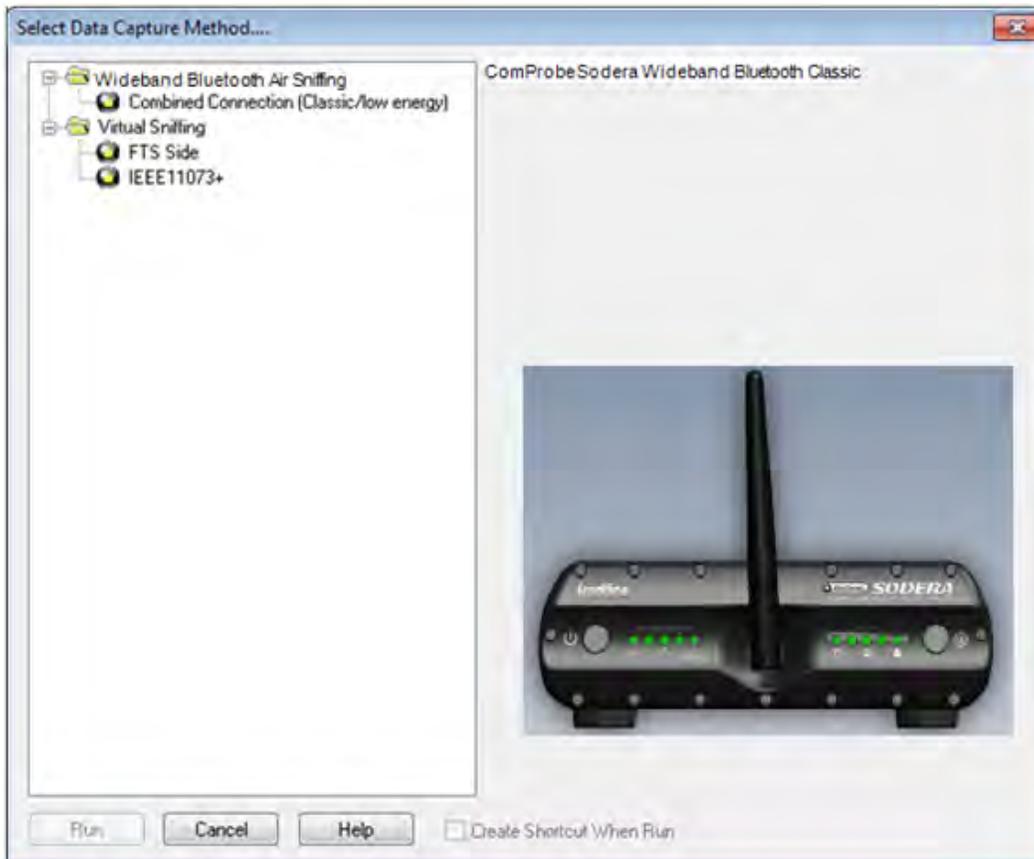
To start Sodera, depress the Power button on the front panel for at least 1/2 second and then release. This action will provide a clean start for Sodera hardware. The battery charge state indicator LEDs will repeatedly flash in sequence while the unit powers up.

The front panel **Power** indicator LED will be green.

Should the front panel **Power** indicator begin blinking red, the Sodera hardware is approaching thermal overload temperature between 50 °C and 60 °C (122 °F and 140 °F) and should be shut down. When the hardware reaches thermal overload it will automatically shut down and the **Power** indicator will be a constant red.

6. Sodera Data Capture Method

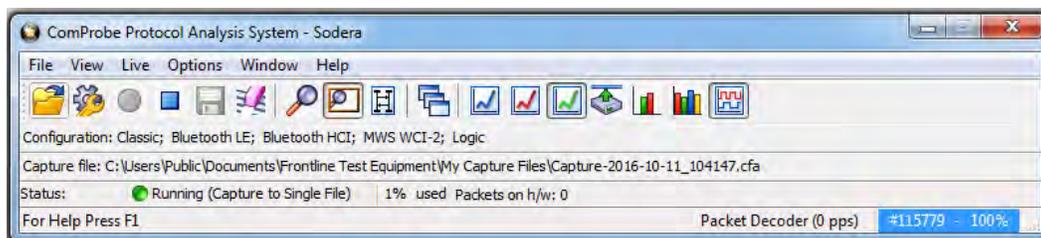
When the Frontline Sodera is connected to the Host PC running Frontline Protocol Analysis System software the **Select Data Capture Method...** window will display the Sodera options.



Sodera Data Capture Method

Select **Wideband Bluetooth, Bluetooth Classic/low energy (Frontline Sodera)**

Click on **Run**. The Frontline software will display the Sodera **Control** window.



Sodera Control Window

7. User Configuration Overview

Frontline[®] Sodera[™] is capable of simultaneously capturing and demodulating all RF channels and packet types defined in all *Bluetooth* specification versions up to and including 4.2. The user is not required to specify the addresses of the devices to be captured or their roles (master or slave) during the connection lifetime. Prior to capturing data the user does not need to enter any information (PIN, OOB, long term key, link key) used to encrypt or decrypt data. Sodera provides live simultaneous capture of all 79 Classic *Bluetooth* channels and 40 *Bluetooth* low energy channels storing data for both live and post-capture analysis.

Sodera[™] uses a two-stage capture-analysis process. First, **Record** will activate the Sodera[™] datasource to begin capturing data from all *Bluetooth* devices in range. In the **Analyze** stage, the user selects one or more wireless or wired devices for analysis and Sodera[™] will

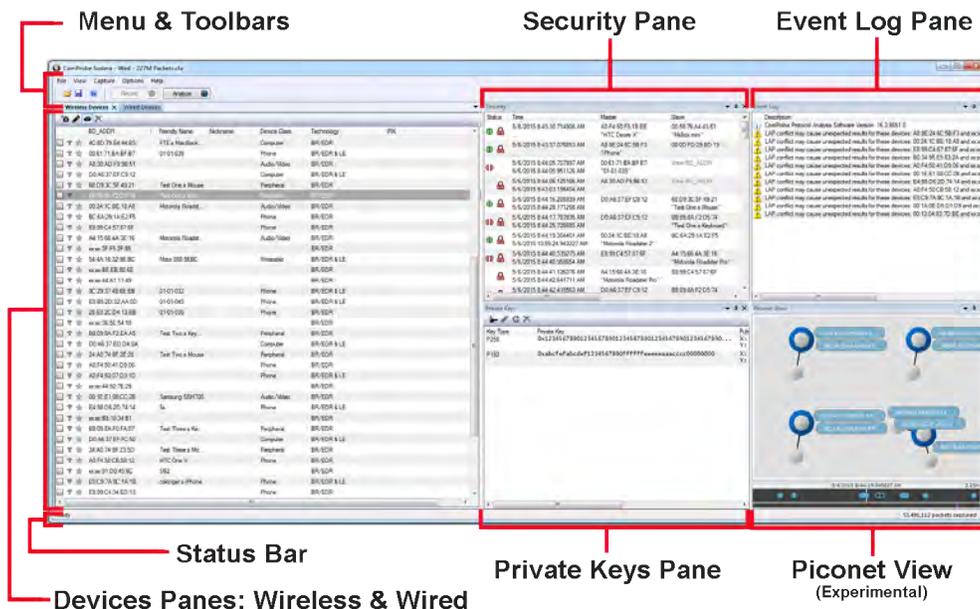
begin sending captured data that is to/from those devices to the Frontline analysis software. The data appears in the **Frame Display**, **Message Sequence Chart**, **Coexistence View**, **Bluetooth Timeline**, **low energy Bluetooth Timeline**, **PER Stats**, **Event Display** etc.

If any keys needed for decryption are known from past captures those keys are automatically applied to the devices under test. Prior to protocol analysis the user can enter any unknown keys. Sodera will identify the specific key necessary for data decryption, for example Link Key, Passkey, PIN, Temporary Key. Decryption keys are entered into the Sodera Security Pane

Status	Time	Master	Slave	PIN / TK	Link Key
	1/29/2015 11:57:17.238978 AM	56:9A:E8:A2:37:01 (rand)	80:EA:CA:29:11:11 "DA14580 Keyboard"	n/a	Unable to validate
	1/29/2015 11:57:31.603776 AM	00:1E:AB:4C:4F:52 "CSR8510 Nanosira M2..."	00:1B:DC:06:07:15 "EtherMind"	n/a	Enter link key
	1/29/2015 11:57:35.345492 AM		xxxx:D1:50:56:A0	n/a	Unable to validate
	1/29/2015 11:57:40.005038 AM	00:1E:AB:4C:4F:52	00:1B:DC:06:07:15	n/a	Enter link key
	1/29/2015 11:57:47.651298 AM	"CSR8510 Nanosira M2..."	"EtherMind"		
	1/29/2015 11:57:40.455574 AM	04:DB:56:E1:85:3D	20:C3:8F:F5:54:03	n/a	Unable to validate
	1/29/2015 11:57:51.165953 AM				
	1/29/2015 11:57:47.651298 AM	00:1E:AB:4C:4F:52	00:1B:DC:06:07:15	n/a	Enter link key

Sodera Security Pane

The user can configure the datasource from the Options menu. The default settings are sufficient for capturing most *Bluetooth* connections. Details of the configuration settings are in the Frontline Sodera User Manual available for download from FTE.com or in Frontline Sodera on-line help.



Sodera Window

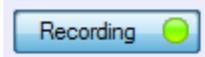
8. Set in Target: Record—Begin Capture

When starting a capture session

- the active status of all devices is cleared in the **Wireless Devices** and **Wired Devices** panes ,
- the **Security** pane is emptied, and
- the **Event Log** pane retains all prior logged events.



On the Capture Toolbar, click on the **Record** button, or select **Record** from the **Capture** menu option. When the **Record** button changes to **Recording**, Soderia hardware is capturing data from all active *Bluetooth* devices within range and is recording data on the PC.



On the Capture Toolbar, clicking on the **Recording** button, or selecting **Recording** from the Capture menu options will halt live capture.

The **Wireless Devices** and **Wired Devices** pane populates with any newly discovered devices. Selecting devices for analysis can be done while recording.

Note: The Capture Toolbar **Analyze** button will be grayed out until some wireless devices have been selected for analysis.

The **Security** pane will show all encrypted *Bluetooth* links.

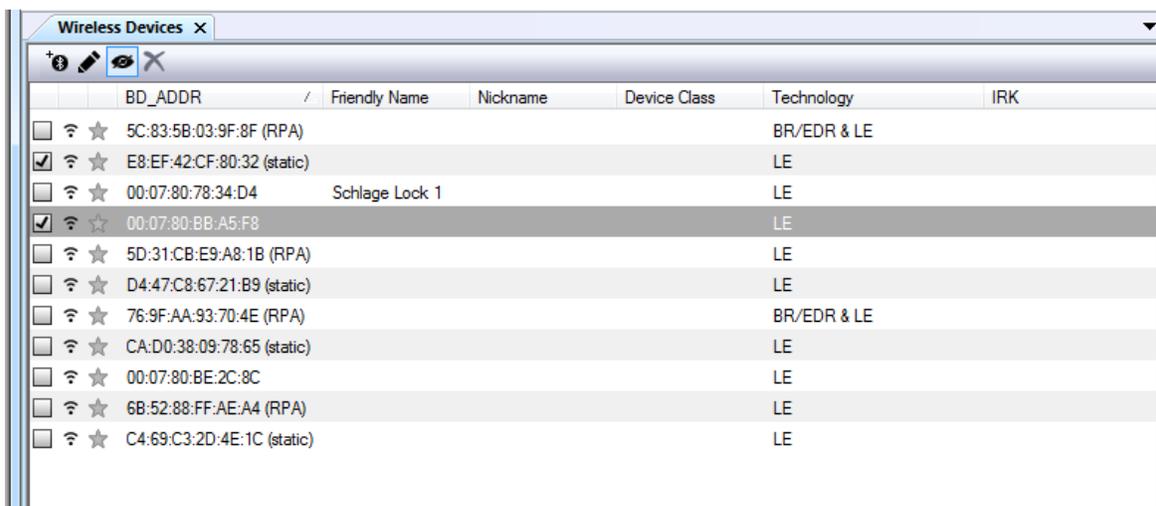
The **Event Log** pane will begin to populate with information, warnings, and error messages.

The **Status Bar** will show a running total of captured packets.

Note: Starting a new capture session will clear all unsaved data from both the Set in Target hardware and the Frontline software. If it has not been saved, then a pop-up warning message will appear.

9. Set in Target: Selecting Devices for Analysis

Once a Set in Target capture session starts by clicking on **Record** on the Capture Toolbar, data from all active devices within range or data from wired connections is being captured. To analyze the data using the Frontline software, you select specific devices of interest to include in the analysis.



	BD_ADDR	Friendly Name	Nickname	Device Class	Technology	IRK
<input type="checkbox"/>	5C:83:5B:03:9F:8F (RPA)				BR/EDR & LE	
<input checked="" type="checkbox"/>	E8:EF:42:CF:80:32 (static)				LE	
<input type="checkbox"/>	00:07:80:78:34:D4	Schlage Lock 1			LE	
<input checked="" type="checkbox"/>	00:07:80:BB:A5:F8				LE	
<input type="checkbox"/>	5D:31:CB:E9:A8:1B (RPA)				LE	
<input type="checkbox"/>	D4:47:C8:67:21:B9 (static)				LE	
<input type="checkbox"/>	76:9F:AA:93:70:4E (RPA)				BR/EDR & LE	
<input type="checkbox"/>	CA:D0:38:09:78:65 (static)				LE	
<input type="checkbox"/>	00:07:80:BE:2C:8C				LE	
<input type="checkbox"/>	6B:52:88:FF:AE:A4 (RPA)				LE	
<input type="checkbox"/>	C4:69:C3:2D:4E:1C (static)				LE	

Set in Target Wireless Devices Pane

In the **Wireless Devices** and **Wired Devices** pane, place a check in the row of each active device  /  to be analyzed. Active devices can also be selected while the recording is in process.

Note: Data filtered by the device selection is an “OR” function, not an “AND” function. When selecting device1, device2, device3,... the recorded data filtered into the analyzer is data involving device1 OR device2 OR device3 OR However, if in the Options menu, analysis if LE Empty packets is selected an AND function is included. For example: (device2 AND LE Empty packets) OR (device3 AND LE Empty packets).

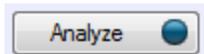
The following table lists some common data capture and device selection scenarios.

Table 4 - Common Data Capture and Device Selection Scenarios

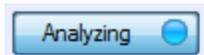
Scenario	Wireless Devices Pane Selection
Analyzing traffic between a slave Device Under Test (DUT) and its master.	Select only the slave DUT for analysis
Analyzing all traffic on a piconet	Select the Master for analysis
Analyzing all traffic involved in Inquiries	In the Set in Target Options menu select Analyze Inquiry Process Packets in the Options menu

The Set in Target is now ready to begin protocol- and event-level analysis.

10. Set in Target: Starting Analysis



The analysis begins by clicking on the **Analyze** button, or selecting **Analyze** from the **Capture** menu. Alternatively, click on the **Start Analyze** button  in the **Control** window. The Set in Target hardware will begin sending captured packets involving the selected device to the Frontline software.



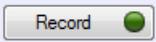
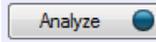
Once analysis has begun, you cannot change the device selection. All device rows in the **Wireless Devices** and **Wired Devices** pane are grayed-out. To stop the analysis, click on the **Analyzing** button. You can then change your device selection and restart analysis by clicking on the **Analyze** button.

To stop the Analysis click on the **Analyzing** button or click on the **Control** window **Stop Analyze** button .

Conducting analysis from a capture file is identical to the live capture method.

11. Capturing Set in Target Analyzed Data to Disk

Note: **Record** is not available in Viewer mode. **Analyze/Analyzing** is available in Viewer mode, allowing different analyses to be performed on previously recorded and saved captures.

1. Click the **Record**  button on the Standard Toolbar. Soderia will begin capturing data from all wireless devices within range and from all connected wired devices.
2. In the **Wireless Devices** and **Wired Devices** pane select the active devices for analysis
3. Click on **Analyze**  button, or click the **Start Analyze** button  to begin capturing to a file. This **Start Analyze** button is located on the **Control** window, **Event Display**, and **Frame Display**.
4. Files are placed in My Capture Files by default and have a .cfa extension. Choose **Directories** from the **Options** menu on the **Control** window to change the default file location.
5. Watch the Status Bar on the **Control** window to monitor how full the file is. When the file is full, it begins to wrap, which means the oldest data will be overwritten by new data.

6. Click the **Analyzing** button, or click the **Stop Analyze** button  to stop analyzing. .
7. To clear captured data, click the **Clear**  icon .
 - If you select **Clear** after stopping analysis, a dialog appears asking whether you want to save the data.
 - You can click **Save File** and enter a file name when prompted .
 - If you choose **Do Not Save**, all data will be cleared.
 - If you choose **Cancel**, the dialog closes with no changes.
 - If you select the **Clear** icon while a capture is occurring:
 - The capture stops.
 - A dialog appears asking if you want to save the capture
 - You can select **Yes** and save the capture or select **No** and close the dialog. In either case, the existing capture file is cleared and a new capture file is started.
 - If you choose **Cancel**, the dialog closes with no changes.

12. Sodera Technical Specifications/Service Information

- Dimensions: 159 mm wide X 57 mm tall" X 165 mm deep" (6.3" X 2.3 " 6.5" X mm)
- Weight: 1.0 kg (2.2 lb)
- Humidity: Operating: 0% - 90% (0 °C – 35 °C)
- Temperature: -10 °C to +40 °C (14 °F to +104 °F)
- Power Input: 12 VDC (tip positive)
- Max Power: 25 W
- Battery: NB2037FQ31



Caution: There is a risk of explosion if the battery is replaced by an incorrect type. Dispose of old batteries according to your local regulations.

Service Notes

The Sodera hardware does not contain any user serviceable items. Any repairs and maintenance must be performed by a service technician that has been trained and approved by Frontline.

Before any service is performed on Sodera, all power sources must be removed. This includes removing the battery and disconnecting any power sources from the 12 VDC input power connector on Sodera. Typical power sources include external AC/DC power supplies or auxiliary power sources from a vehicle.

Internal Fuse Information

- Manufacturer: Littlefuse
- Type: OmniBlok
- Current rating: 5A
- Speed rating: Very Fast Acting
- Voltage rating: 125V ac/dc

This quick start guide provides sufficient information to begin the data capture. Detailed hardware and software information is contained in the Frontline Sodera User Manual. The manual is available on FTE.com.

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