frontline SD

SD 2.0 Protocol Analyzer

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/sd-soft

1. Hardware Setup - Part 1

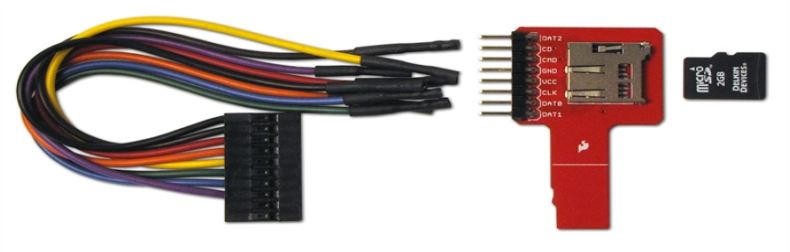
Once you have installed the software and the device drivers, the next step is to set up the hardware.

Provided with the Frontline SD hardware is one of two Secure Digital (SD) Input/Output (IO) adapters: 1) the standard SD card adapter, and 2) the micro SD card adapter. Provided with each is a cable that must be connected to the adapter prior to the connecting the adapter to the Frontline SD hardware. The following tables lists the Frontline SD Hardware pinout, with corresponding cable color-code and the adapter pinout. In addition the table shows the pin designation for the SD 4-bit and 1-bit high-speed mode and the SPI mode.

Table 1 - SDIO Pinout

Pin	SD 4-bit Mode		SD 1-bit Mode		SPI Mode	
1	CD/DAT3	Data Line 3	-	-	CS	Card Select
2	CMD	Command Line	CMD	Command Line	DI	Data Input
3	VSS1	Ground	VSS1	Ground	VSS1	Ground
4	VDD	Supply Voltage	VDD	Supply Voltage	VDD	Supply Voltage
5	CLK	Clock	CLK	Clock	SCLK	Clock
6	VSS2	Ground	VSS2	Ground	VSS2	Gound
7	DAT0	Data Line 0	DATA	Data Line	DO	Data Output
8	DAT1	Data Line 1/Interrupt	IRQ	Interrupt	IRQ	Interrupt
9	DAT2	Data Line 2/ Read Wait	RW	Read Wait	-	-

Standard SD Adapter and Cable



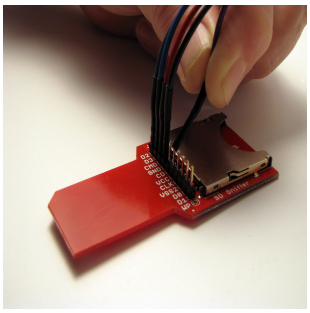
Micro SD Adapter and Cable

Table 2 - Frontline SD Adapter Wiring List

Frontline Hardware	Adapter Cable Wire Color	Standard Adapter Pin/Label	Micro Adapter Pin/Label
GND	Black	4/GND	4/GND
CLK	Brown	7/CLK	6/CLK
CMD	Red	3/CMD	3/CMD
DAT0	Orange	9/D0	7/DAT0
DAT1	Yellow	10/D1	8/DAT1
DAT2	Green	1/D2	1/DAT2
CD	Blue	5/CD	2/CD
	Blue*	5/D3*	-
VDD	Purple	6/VCC	5/VCC
* 4-bit mode			

Connect Cable to Adapter

1. Refer to the SDIO Pinout table and the Frontline SD Adapter Wiring list for the SD mode and adapter you will be using.
2. Identify the wire color associated with the pin on the adaper for the appropriate mode.
3. Place the cable wire free end pin over the appropriate pin on the adapter and gently push on until fully seated.



Connect Frontline SD Hardware

1. Plug the standard SD card adapter with the connectors into the 10 pin slot of the Frontline SD hardware by matching the color coding on the wires to the label on the hardware .

SD2.0 Hardware Interface

2. On the other side, attach the USB cable to the USB Mini B receptacle ().

SD 2.0 Hardware Interface - Analysis Side Showing USB mini-B Receptacle

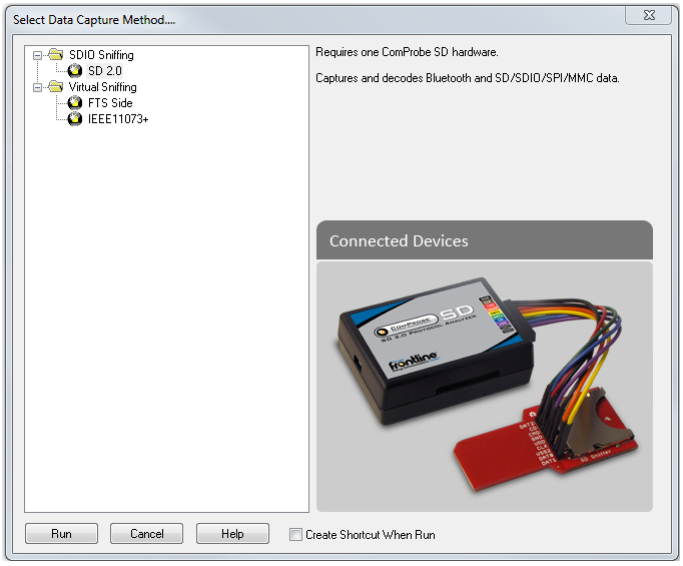
That is it for the hardware setup right now. We are not done yet, but after you start the application and make some configurations settings, you will set up the rest of the hardware then. That comes in Hardware Setup – Part 2. But for now, let's continue to the next section.

2. Selecting Data Capture Method

Now that the test devices are on, the SD hardware properly connected to the PC, the next step is to open the Frontline software.

Open "Frontline (*version #*)" from the Start menu or from the Desktop folder (2). The launch wizard will appear:

Double click **SD 2.0** to open the **Control** window.



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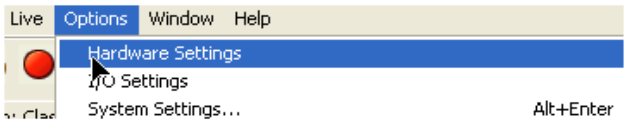
3. Hardware Settings

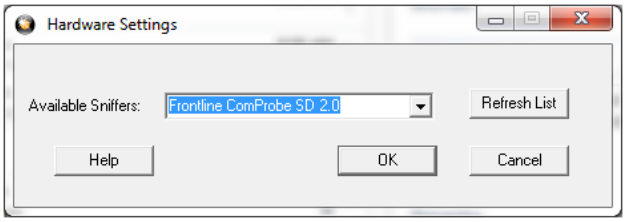
The **Hardware Settings** dialog is used to select a device to sniff/scan. To access the **Hardware Settings** dialog:

Select **Hardware Settings** from the **Options** menu on the **Control** window .



Select an SD unit from the drop-down list and click the **OK** button.

If no SD units are found, the list will be blank. You can also select **Refresh List** to make sure the list is up to date.



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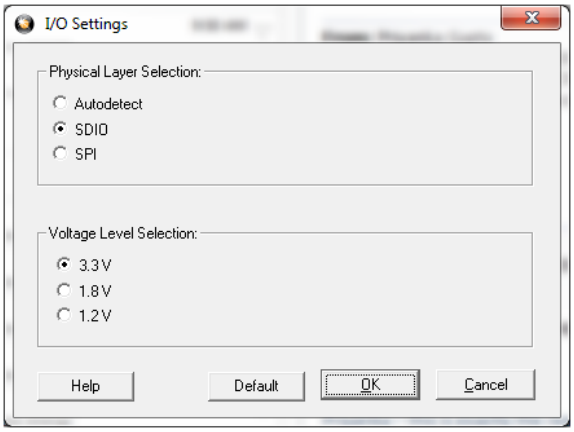
4. I/O Settings



The **I/O Settings** dialog for the Frontline SD unit has three radio buttons which you use to select the **Physical Layer**. Generally, you will not change default settings shown.

The default for **Physical Layer Selection** is **SDIO**, which you will use the majority of the time.

If you know the **Physical Layer** is a Serial Peripheral Interface, select **SPI**.

If you are not sure if the **Physical Layer** is **SDIO** or **SPI**, select **Autodetect**. The software will attempt to automatically determine the physical layer and select it for you. Note, however, that **Autodetect** is not accurate every time.

The default **Voltage Level Selection** is **3.3 V**.

Click on the OK button when you have completed your I/O selections.

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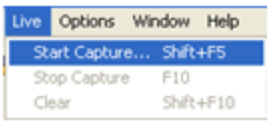
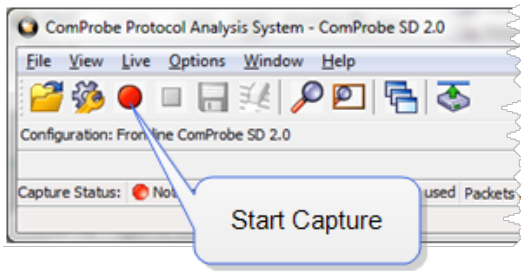
5. Start Capture

You might be thinking why I should select **Start Capture** before the hardware setup is complete. You select **Start Capture** first is so that all pre-connection traffic is captured. If you connect all the hardware before starting capture, you might miss data.



So, now that the SD hardware is installed, devices turned on and identified. It's time to sniff the communication between the devices.

Select **Start Capture** on the **Control** window toolbar or from the **Control** window **Live** menu.



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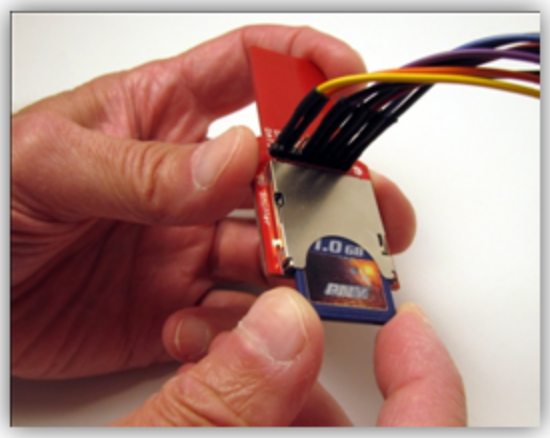
6. Hardware Setup - Part 2

You have already seen how to connect the SD card adapter to the Frontline SD hardware and the USB cable to the analysis PC. Now let's continue with the rest of the hardware setup.

There are two ways to complete the setup. First let's look at what to do if you are using the card that fits in the slot on the IC board. Then we will identify what to do if you want to wire the Pin Header because you do not want to use the standard SD form factor connection.

Device Under Test Connection

1. Insert the Device under Test (DUT), such as a micro SD MMC memory card into the slot on the IC board ().



Device Under Test Connection Setup

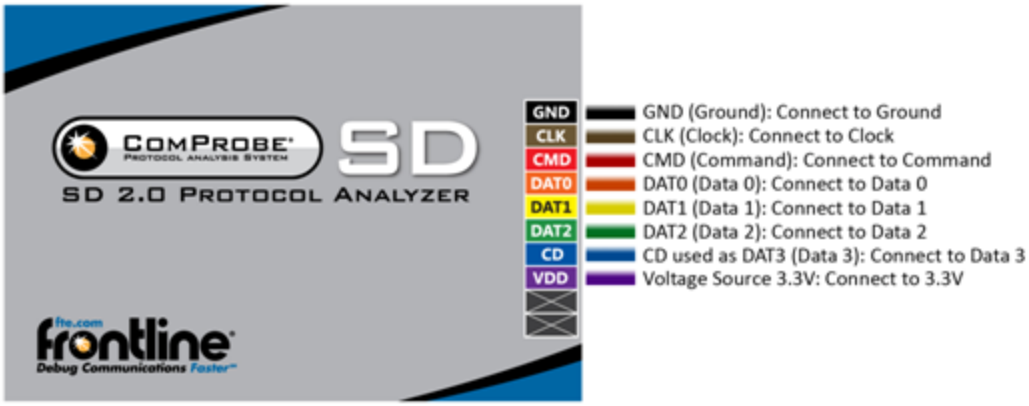
2. Insert the other end of the IC board into the SD slot on the test PC ().

Plugging IC Board to the Analysis PC

That is the complete hardware setup if you are using a memory card. It is different if you want to connect directly to the Pin Header.

Pin Header Connection

In addition to using the standard connection, you can also connect directly to the Pin Header on the IC board. To do that, follow the wire schematic in , below.



Pin Header

Once you have made the connections to the Pin Header, you are ready to capture and analyze data. With this method you do not have to plug the board into the SD slot on the analysis PC.

If you have done everything correctly, you will start capturing data.

For information on analyzing data with Frontline software, please see the Frontline User Manual, in the Documentation folder under the Frontline <version #> desktop folder.

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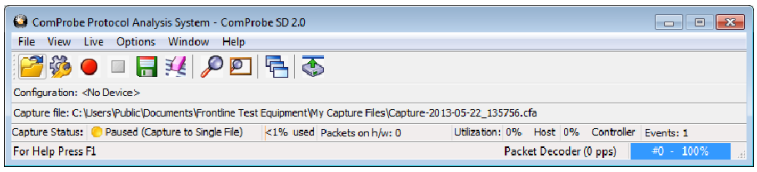
7. Analyze Data

From the Control window toolbar select the following icons to view and analyze the captured data.



- **Event Display** - for framed data, used to conduct byte-level analysis.
- **Frame Display** - for framed data, used to conduct protocol-level analysis.
- **Extract Data/Audio** - pull out data from various decoded protocols. Once you have extracted the data, you can save them into different file types, such as text files, graphic files, email files, .mp3 files, and more.

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

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