Quick Start Guide

CONTENTS

PACKING LIST

- CD Case containing ComProbe® SD software CD-ROM

- SD/SDIO/SPI/MMC hardware interface with ribbon connector

- Certified USB 2.0 cable for analysis PC

MINIMUM SYSTEM REQUIREMENTS

- PC with Windows XP 32 bit, (Service Pack 2 or higher), Windows 7 (32 and 64 bit).

- Pentium 2 GHz processor

- RAM requirements: 2 GB minimum

- 50 MB free hard disk space (capture file size is limited only by disk size)

- USB 2.0 High Speed enabled port

PURPOSE

This document is designed to get your data capture and analysis feet wet. What we are going to do in this guide is show you how to set up devices, install drivers, configure ComProbe SD, and capture data. In later sections you will see how to use the software to analyze the captured data. We want to provide a solid foundation for early success in capturing data and using some of the tools to view and analyze what you capture.

INTRODUCTION

With the proliferation of portable electronic devices and the need for greater storage capacity came the Secure Digital (SD) memory card, a non-volatile data storage format that has gained wide spread popularity for its small size, ease of use and low power consumption. Today, the SD format is found in thousands of product models representing a wide variety of consumer applications, from cameras to game consoles to mobile phones.

The ComProbe SD Protocol Analyzer supports applications and systems using the standard SD form factor connection as well as embedded applications (via. Pin header for signal connections), and allows developers and testers to decode not only basic SD (SD and SPI mode) protocol layer, but the *Bluetooth* data over SD/SDIO physical layer as well.

SOFTWARE INSTALLATION

The first step is to install the software.

1. Insert the "Product CD" or run the installer from **fte.com**.

2. From the Launch dialog select "Install ComProbe." Be patient, the software takes a few moments to load.

3. Select "OK" on the first dialog.

4. Select "Live Product" and "Install".

5. On the next dialog, select "Next" to continue.

6. On the *Licensing Agreement* dialog, select "I accept the terms of the license agreement" and click "Next".

7. On the *Choose Destination Location* dialog, click "Next" to install to the default location.

8. On the *Ready to Install the Program* dialog, click "Install".

9. On the final dialog, click "Finish" to complete the installation.

DRIVER INSTALLATION

The next thing you have to do is load the **ComProbe SD Protocol Analyzer** device drivers.

1. Insert the "USB cable" into the USB port on the SD/SDIO/SPI/MMC hardware interface.

2. Insert the "other end of the USB cable" into the PC.

3. The hardware will power up and the first "Found New Hardware Wizard" appears. Select "No, not this time" and "Next".

4. On the next dialog select" Install from a list or specific location" and "Next".

5. Select "Browse" and navigate to either C:\Program Files\Frontline Test System II\Frontline ComProbe 1.6.24.0\Drivers\ComProbe SD or where the driver files have been saved.

6. Select the folder and click "Open" and click "OK".

7. Select "Next" on the following screen.

8. You may get a security warning. Select "Continue Anyway".

9. Finally select "Finish" to complete the installation.

HARDWARE SETUP – PART 1

Once you have installed the software and the device drivers, the next step is to set up the hardware.
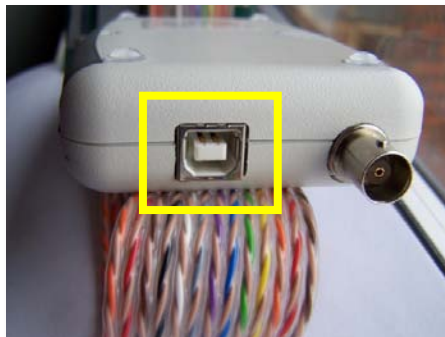
1. Plug the ribbon connector into the 28-pin slot at one side of the SD/SDIO/SPI/MMC hardware interface (Figure 1).

Figure 1: SD/SDIO/SPI/MMC hardware interface with ribbon connector

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

Figure 2: SD/SDIO/SPI/MMC hardware interface – Analysis side showing USB-B receptacle

3. Attach the other end of the USB cable to the analysis PC.

Note: The **Power** *light on the top of the* SD/SDIO/SPI/MMC hardware interface *turns blue when you plug in the USB cable correctly.*

OK, that's it for the hardware right now. We are not done, 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 on to the next page.
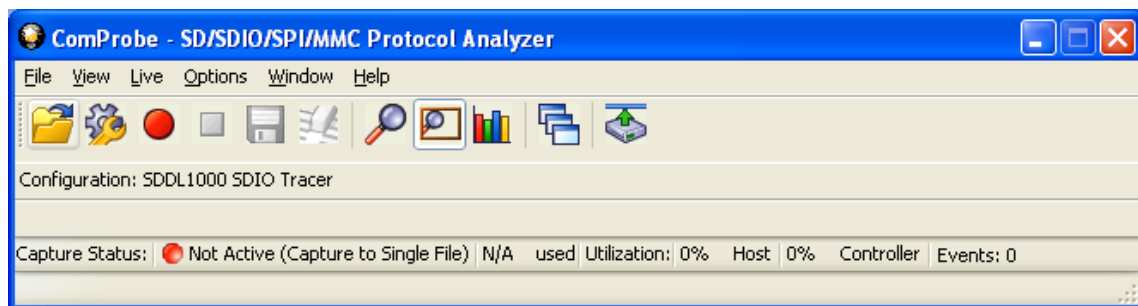
OPENING/SELECTING DATA CAPTURE METHOD

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

1. Open "Frontline ComProbe" from the Start menu or from the Desktop folder (Figure 3).

ComProbe SD will open with the Control Window.
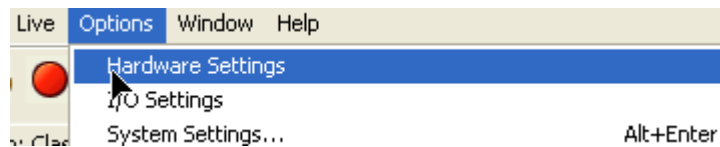
Figure 3: Control window

HARDWARE SETTINGS

The Hardware Settings dialog is used to select a device to sniff/scan. To access the Hardware Settings dialog:
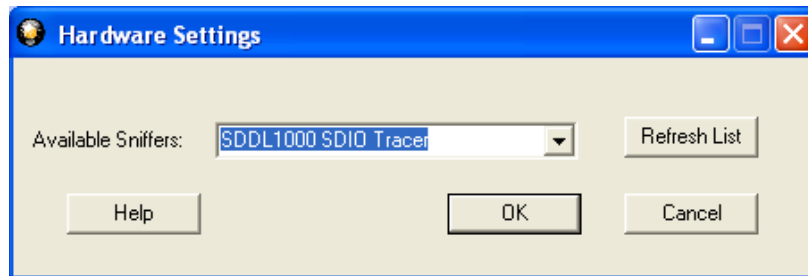
1. Select "Hardware Settings" from the Options menu on the Control window (Figure 4).

Figure 4: Options menu showing Hardware Settings menu item

2. Select a "device" from the drop-down list and select "OK" (Figure 5).
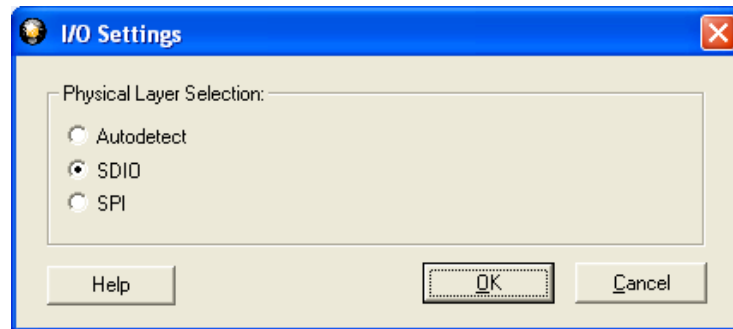
Figure 5: Hardware Settings

If no devices are found, the list will be blank. You can also select Refresh List to make sure the list is complete.

I/O SETTINGS

The I/O Settings dialog for the ComProbe SD has three radio buttons which you use to select the Physical Layer (Figure 6). Generally, you will not change this setting.
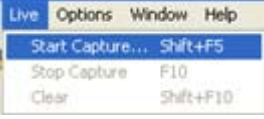
- The default for ComProbe SD is "SDIO", which you will use the majority of the time.

- 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.

START SNIFFING

So, now we have our ComProbe installed, devices turned on and identified. It's time to sniff the communication between the devices.

1. Select "Start Capture" on toolbar or from the Live menu on top.

*Note: The **Status** light on the top of the SD/SDIO/SPI/MMC hardware interface turns green when you select Start Capture. You will also see green LED glowing on the IC board indicating that the IC board is properly powered.*

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

So, let's continue with the rest of the hardware setup on the next page.

HARDWARE SETUP – PART 2

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

Note here that 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 (Figure 7).

Figure 7: Device under test connection setup
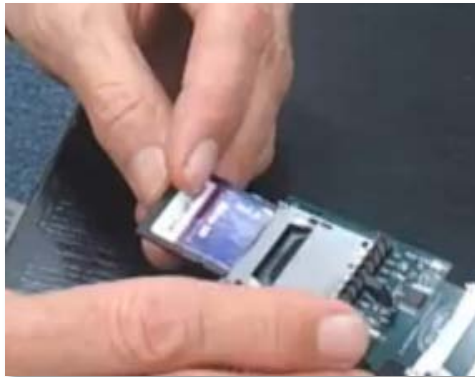
2. Insert the other end of the IC board into the SD slot on the test PC (Figure 8). The red LED on the IC board starts to glow indicating that the SD slot is properly powered.

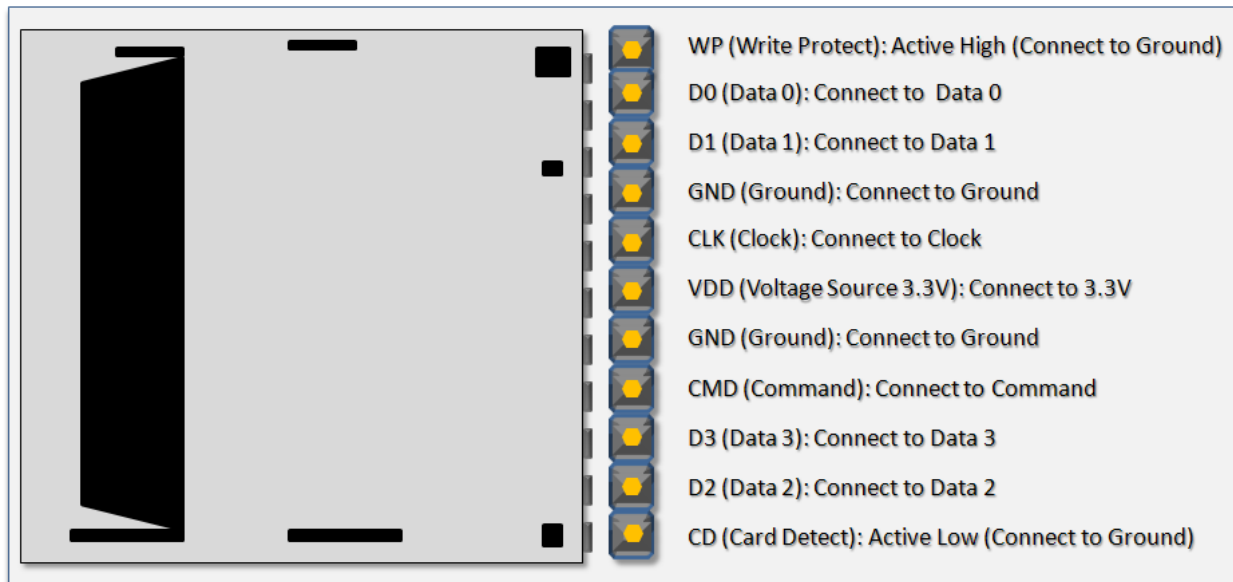**Figure 8:** Plugging IC board to the analysis PC

*Note: The **Activity** light starts to flash when you plug the board into the analysis PC and begin to capture data.*

That's if you are using a memory card. It's 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 Figure 9 below.

Figure 9: Pin header

WP (Write Protect): Active High (Connect to Ground)

D0 (Data 0): Connect to Data 0

D1 (Data 1): Connect to Data 1

GND (Ground): Connect to Ground

CLK (Clock): Connect to Clock

VDD (Voltage Source 3.3V): Connect to 3.3V

GND (Ground): Connect to Ground

CMD (Command): Connect to Command

D3 (Data 3): Connect to Data 3

D2 (Data 2): Connect to Data 2

CD (Card Detect): Active Low (Connect to Ground)

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. In the next section we will explain a little about the many different options you have for viewing and analyzing the data. Go to the **Analyzing Data** section next in this guide to learn how to use Frontline analysis tools.

ANALYZING DATA

Control Window

First of all, we have the Control window, which appears as the small rectangular window at the top of your screen (Figure 10).
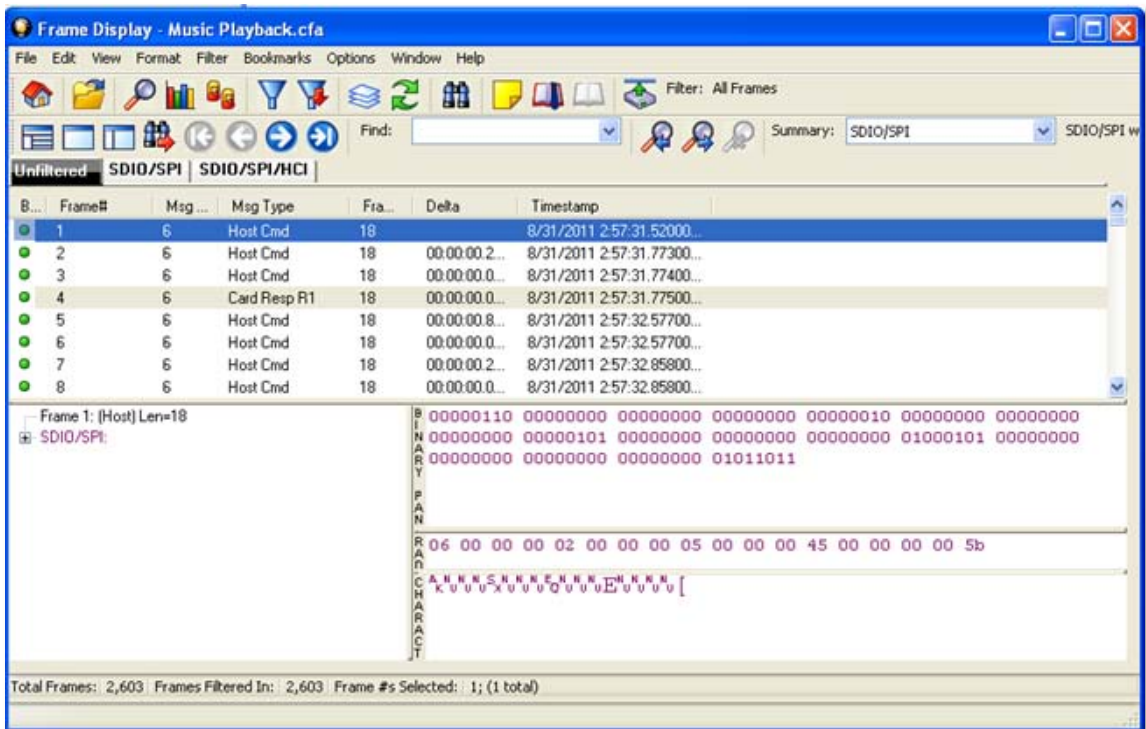
Figure 10: Control window
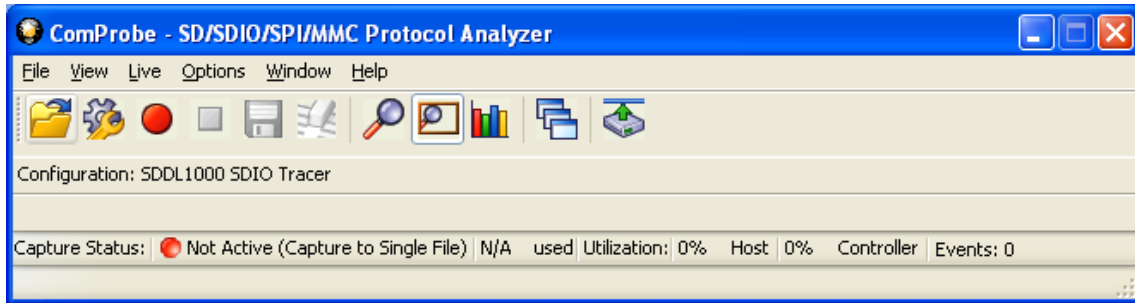
ComProbe software is organized around this window. The Control window allows you to control data capture and access the other windows used to view data.

Frame Display

Click the Frame Display icon on the Control window toolbar to open Frame Display (Figure 11).
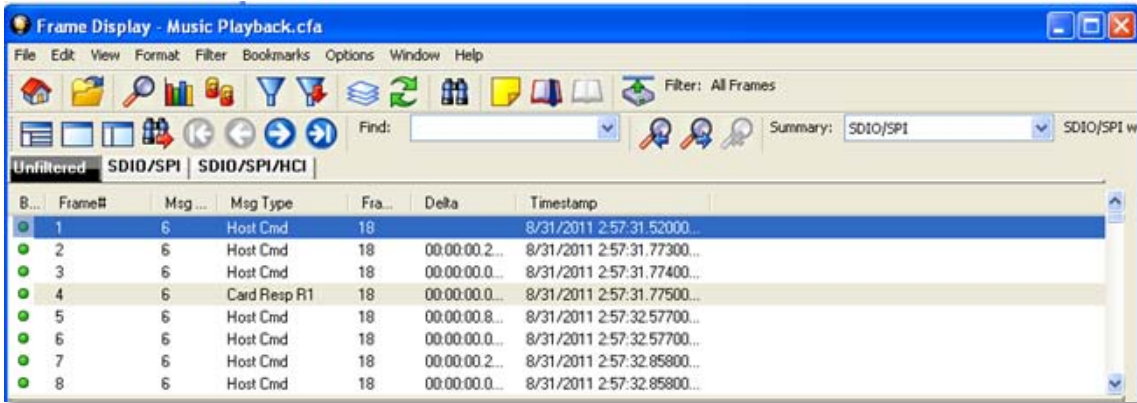
Figure 11: Frame Display

Panes

Frame display allows you to see an amazing amount of information from your protocols. The Frame Display is divided into panes, where each pane shows a different view of the data.

- The Summary pane (Figure 12) stretches across the top of the display. Each line in the Summary Pane represents one frame.

Figure 12: Summary Pane

- The Decode pane (Figure 13) contains a detailed decode of the frame/transaction selected in the Summary pane, and is located on the left side of the Frame Display window.

Figure 13: Decode Pane

- The three smaller panes on the bottom right of the Frame Display show the data in hex, binary and ASCII (Figure 14). The user can choose to have these panes show the data in other radixes or character sets. Select any field in the Decode pane and the corresponding bit(s) or byte(s) will be selected in the data panes.

Figure 14: Data Pane
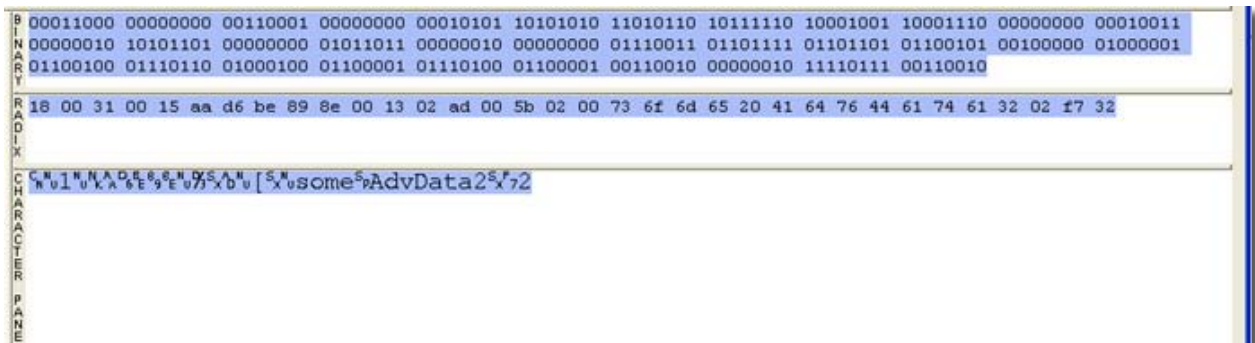
Frame Errors

Frame numbers in red indicate an error in the frame. Select the frame, and look at the top of the Decode pane to determine the type of error.

Scrolling versus Static View

Click the *Lock/Resume* icon to have the Summary pane scroll to always show the latest frames captured. Click the *Lock/Resume* icon again to stop the Summary pane from scrolling.

Protocol Tabs

The frame display has a series of Protocol Tabs that allow you to filter on a specific protocol quickly and easily. For more advanced filtering option please consult the online *Help*.

Display Synchronization

The system synchronizes the display in the Frame Display with the Event Display. Select a frame in the Frame Display and the other windows automatically update to highlight the bytes in the selected frame. Select a byte in the Message Sequencing Chart and the Frame Display and Event Display updates to show the frame containing the byte.

Duplicate Displays

The *Duplicate* icon creates a second window of the same type, identical to the first. The advantage of additional Displays is that you can look at two different groups of data at the same time. For example, you can look at the start of an interaction in one Frame Display and the end of that same interaction in the other and compare the two.

Bookmarks

Bookmarks let you mark frames of interest so they can be easily found later. Bookmarked frames appear with a magenta triangle icon next to them except in the Event Display where they appear as a dashed line around the start of frame marker. You can navigate between bookmarks using the Find feature or by pressing F2 to go to the next bookmark. To make a new bookmark, right-click on the frame and choose *Add Bookmark* from the menu.

Searching

You can search for strings or patterns in your data or in the frame decode, for errors, control signal changes, bookmarks, special events, and time. Click the Find icon to open the Find window. Click the *Help* button for more information on the different types of searches.

TECHNICAL SUPPORT

Technical support is available in several ways. The online help system provides answers to many user related questions. Frontline's website has documentation on common problems, as well as software upgrades and utilities to use with our products.

Web: http://www.fte.com, click Support

Email: tech_support@fte.com

If you need to talk to a technical support representative, support is available between 9am and 5pm, U.S. Eastern time, Monday through Friday. Technical support is not available on U.S. national holidays.

Phone: +1 (434) 984-4500

Fax: +1 (434) 984-4505