Chapter 3: Hardware Communications

Hardware communications are a vital part of WinTDR. While WinTDR can run and analyze previously acquired data without a TDR device, communications with a TDR device is why WinTDR was really designed. In this chapter we will talk about how to communicate to TDR hardware quickly and reliably. WinTDR currently supports communication through serial ports on your computer to the Tektronix 150x B/C TDR device. Plans to extend that to the Campbell TDR100 device is in progress.

When starting WinTDR you might notice, no searching for hardware takes place, the user is in control of connecting to the hardware. Though the user is responsible for connecting to the TDR device, questions like "What COM did I hook it up to?" or "Do I have to set the SP232 jumper settings?" do not even have to be asked. Connection is just one click away.

Tektronix 150x B/C Interfacing

Connecting to the 150x B/C ▦

WinTDR communicates to the Tektronix TDR hardware through the SP232 Interface. You will need the following items:
- Tektronix 150x B/C Metallic TDR Cable Tester
- Tektronix SP232 (RS232 Interface)
- Make or purchase probes (See Chapter 10 about Probe Assembly)
- Serial Cord with 25-pin port on one end and 9-pin port on the other end.

Now do the following with these items:
- Plug the SP232 interface into the Tektronix TDR and screw it in tight. Make sure it is securely nestled in. (Refer to page 1-4 of the SP232 manual)
- Plug in the 25-pin end of the serial cable to the SP232 interface.
- Plug the 9-pin end of the serial cable to the COM port on the back of the computer. While connection can happen quicker when using COM 1, if you do not know which port is COM 1, it does not matter which port you connect it to.
- Plug the probe into the coaxial cable receptor located on the lower left had corner of the fact of the TDR.
- Turn on the TDR. Ensure a waveform appears in the LCD.

At this point, attempt to connect to the TDR by clicking from the WinTDR menu "Communications" – "Activate Tektronix 150X B/C." (NOTE: You can also connect by clicking the ▦ icon from the Tool bar).

If all goes well, after a brief moment, in the status bar you should see "TekTDR:COM#:19200". You are now connected to the TDR. If all does not go well, an error box will pop-up explaining the reason why it could not connect and possible solutions

to the problem. Follow those suggestions; if you are still unable to connect to the TDR see Trouble Shooting at the end of this manual.
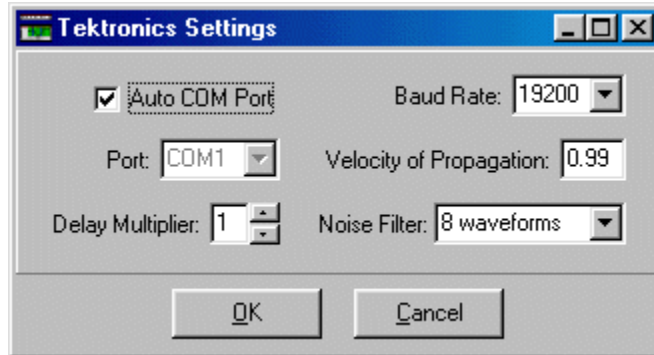
Changing the Tektronix Settings 🖳

Figure 1. The Tektronix Settings Window.

To change the settings of how WinTDR will connect to the Tektronix hardware you can click the main menu "Communications" – "Tektronix Settings" (or using the Tool bar icon). Below is a description of what each option does.

Auto COM Port This check box determines if you want WinTDR to search for the TDR itself, on all available COM ports or if the user wants to specify it themselves.

Port This is the port that the TDR should be located on. If Auto COM Port is checked this option is grayed out. Otherwise, the user will have to specify what COM port is connected to the TDR.

Delay Multiplier The TDR has a certain time it takes to communicate back to the computer depending on baud rate and serial cable length. WinTDR will wait a certain time before it expects a reply from the TDR. The WinTDR will wait "Delay Multiplier" multiplied by that wait time for a reply.

NOTE: This setting should be 1 unless the program itself suggests the user to raise it to a higher value.

Baud Rate This is the baud rate, or communication speed, at which WinTDR and the Hardware should communicate. The higher the baud rate, the less the user will have to wait when retrieving data from the TDR.

NOTE: The Tektronix TDR only supports up to 19200. To use different baud rates you do NOT have to change the SP232 Jumper Settings, but it is recommended that they be set to either 19200 or 9600 for quick connectivity.

Velocity of Propagation   This is the speed of a signal down the cable given as a percentage of the speed of the signal in free space. This percentage is given by a decimal number (99% is .99). See the 150x B/C manual for more information regarding Vp.

NOTE: When using coaxial cables, this should rarely be changed from 0.99.

Noise Filter   Sets how many waveforms will be average together (internally in the TDR) before the waveform is retrieved. (See "noise" in the 150x B/C Glossary for more information).