DORDT UNIVERSITY

I COMPUTER CONNECTION TO OSCILLOSCOPE

The lab computers have a program called *OpenChoice Desktop* which allows one to do a screen capture from the oscilloscope, or to upload front-panel oscilloscope settings into a text file on the computer, or to download settings from a text file on the computer to the oscilloscope, or to capture data from the oscilloscope and put it into a spreadsheet file.

Be sure the oscilloscope is turned on and start the OpenChoice Desktop program. Use the "Select Instrument" button in OpenChoice Desktop to select the oscilloscope on the USB connection. (It is usually the only choice available.) When you achieve this, "TBS 1072B-EDU," the model number of your oscilloscope, should show up in OpenChoice Desktop underneath the "Select Instrument" button. The Oscilloscope is now communicating with the OpenChoice Desktop program.

The chief rivals to USB as an interface are GPIB and RS-232. GPIB is more feature-rich for the purpose but also more expensive. USB is now fast enough so that the advantages of GPIB are only worthwhile in a limited set of situations. An RS-232 connection lacks certain specific and valuable timing capabilities that GPIB has and that USB can rival. On some expensive equipment GPIB might be the only choice available in the hardware. Since the advent of USB, it has become popular to plug a GPIB-to-USB adapter into a USB port on the computer and then plug USB instruments into the adapter. (This is how we do it at Dordt University when we need GPIB.) Interestingly, these adapters preserve the unique timing advantages of GPIB since all communication between the computer and the instrument (s) goes through the same USB port.

The GPIB interface is also known as the Hewlett Packard Interface Bus, HPIB, or the IEEE-488 interface bus. This local area network technology was invented by Hewlett Packard in the 1960's for networking of lab instruments. Later the IEEE standardized it. For obvious marketing reasons, Tektronix, and most other manufacturers, prefer to call it the GPIB rather than the HPIB. Although it is an old networking technology, it has some unique capabilities, which keep it in service to this day. In industry GPIB is still occasionally desired.

RS-232 is not really a computer network, just a point-to-point connection. This limits RS-232 to use with only one, two, or maybe up to four instruments per computer. When it works, RS-232 is OK, but it can be very hard to set up and use correctly since there are many optional software and hardware parameters that are not set automatically for the user. RS-232 is definitely not "plug-and-play." In spite of these drawbacks to RS-232 it remains popular in industry because (1) it is the least expensive connection technology, and (2) there is a large installed base of RS-232 capable instruments, so engineers generally know how to set it up and use it well in spite of its many optional parameters. (In our lab, the Fluke DMM and Instek signal generators connect to the computer via RS-232.) Since most computers no longer have RS-232 ports, a RS-232-to-USB adapter is usually used. These adapters preserve none of the advantages of USB for the instrument attached on the RS-232 side. Instead, the resulting connection performs entirely at the lower level of an RS-232 connection.

II SCREEN CAPTURE

On OpenChoice Desktop, click on the "Screen Capture" tab (near the top of the window) and then the "Get Screen" button. From there you can use the "Copy to Clipboard" on-screen button to copy the screen capture to the Windows clipboard and later past it into a Word (or any other) document.

You also can save the screen capture as if it was a photograph. Use the "Save As" on-screen button to do this. This is useful if want to save screen shots but you have have not yet started written up your report but you. Usually "Save as type" PNG is the best choice of file format. You can view the saved file using any standard image editing software or photo viewer, for example Irfanview is loaded on the lab computers.

In OpenChoice Desktop you have a choice of Bitmap (BMP), Joint Photographic experts Group (JPG), Portable Network Graphics (PNG) or Tagged Image File Format (TIFF) to choose from when saving a screen shot. Bitmap files are uncompressed. They will take up a relatively large amount of disk space. It is pretty rare here at Dordt University that you would need this unwieldy format. Portable network graphics format uses lossless data compression. It is usually the best choice (reasonably small file, fastest loading and viewing) for saving a screen-shot as a photograph. The JPG format will usually yield the smallest file size, but it is a lossy format that will make the saved screen capture look a little fuzzy or blotchy compared to PNG or BMP. The TIFF type allows for lossy or lossless compression, multiple images in one file, and a bunch of other options. However it is a dated standard and is becoming less popular as time passes. It is included in OpenChoice Desktop for computability with older image editing software. It is a poor choice compared to PNG unless you specifically need TIFF for compatibility with something.

III SAVE/RECALL SETTINGS

Click on the "Get & Send Settings" tab (near the top of the window) in OpenChoice Desktop. Then click on the "Get Settings" button. A text file appears. Use the "Save As" button to save the file somewhere. You can now open Windows Notepad and view or edit the file you just saved. You may have to turn on word-wrap in notepad in order to view the whole file. You may edit this file and then upload it to the oscilloscope to change settings, or you may just save the file so that you may upload your previous settings unchanged at a later time.

Any time you want to save the settings so that you can easily return to them later, you may use this feature. Just set the oscilloscope up using the front panel knobs and buttons and then save all the settings in a file using OpenChoice Desktop.