GXSTOOLs V3.0 User Manual

XS Board utilities with a graphical user interface

Limited Warranty

GXSTOOLS Components

The GXSTOOLs package contains these utilities:

GXSTEST: This utility lets the user test an XS Board for proper functioning.

GXSSETCLK: this utility lets the user set the clock frequency of the programmable oscillator on an XS Board.

GXSLOAD.EXE: This utility lets the user download FPGA and CPLD configuration files and HEX files to an XS Board.

GXSPORT.EXE: This utility lets the user send logic inputs to an XS Board by toggling the data pins of the PC parallel port.

Instructions for using these utilities are presented in the following sections.

GXSTEST

You start GXSTEST by clicking on the GXSTEST icon placed on the desktop during the GXSTOOLs installation. This brings up the screen shown below.
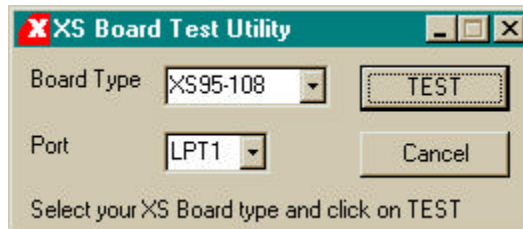
Your next step is to select the parallel port that your XS Board is connected to from the port pulldown list. GXSTEST starts with parallel port LPT1 as the default, but you can also select LPT2 or LPT3 depending upon the configuration of your PC.

After selecting the parallel port, you select the type of XS Board you are testing from the associated pulldown list. Then click on the TEST button to start the testing procedure. GXSTEST will program the microcontroller and the FPGA or CPLD to perform a test procedure. Status messages will be printed at the bottom of the GXSTEST window as the testing proceeds. At the end of the test, you will receive a message informing you whether your XS Board passed the test or not.

GXSSETCLK

You start GXSSETCLK by clicking on the icon placed on the desktop during the GXSTOOLs installation. This brings up the screen shown below.

Your next step is to select the parallel port that your XS Board is connected to from the port pulldown list. GXSSETCLK starts with parallel port LPT1 as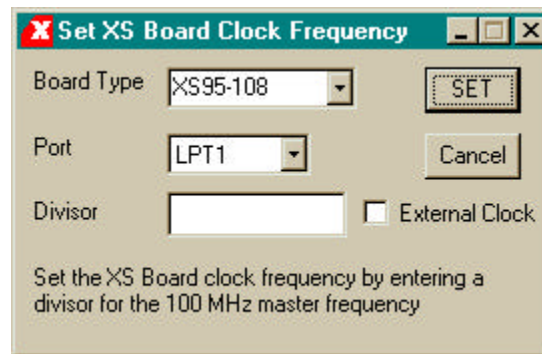 the default, but you can also select LPT2 or LPT3 depending upon the configuration of your PC. After selecting the parallel port, you select from the pulldown list the type of XS Board you have connected to the PC parallel port.

Next you must enter a divisor between 1 and 2052 into the text box. Once programmed, the oscillator will output a clock signal generated by dividing its 100 MHz master frequency by the divisor. The divisor is stored in non-volatile storage in the oscillator chip so you only need to use GXSSETCLK when you want to change the frequency.

An external clock signal can be substituted for the internal master frequency of the programmable oscillator. Checking the external clock checkbox will enable this feature in the programmable oscillator chip. Of course, you are then responsible for providing the external clock to the XS Board.

Clicking on the SET button will start the oscillator programming procedure. Status messages will be printed at the bottom of the GXSSETCLK window as the programming proceeds. You will also receive instructions on how to set the shunts on the XS Board jumpers to place the oscillator into its programming mode. At the end of the programming, you will receive a message informing you that your XS Board clock has been set.
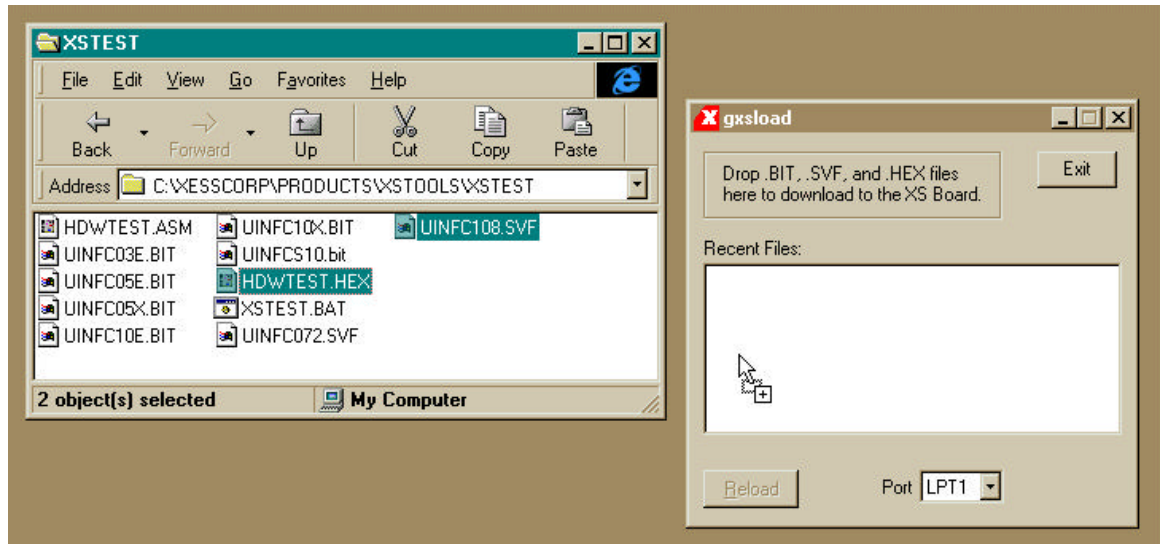
GXSLOAD

You start GXSLOAD by clicking on the icon placed on the desktop during the GXSTOOLs installation. This brings up the screen shown below.

Your next step is to select the parallel port that your XS Board is connected to as shown below. GXSLOAD starts with parallel port LPT1 as the default, but you can also select LPT2 or LPT3 depending upon the configuration of your PC. If you are programming an XS40 Board with an Atmel serial EEPROM, you can also check the EEPROM box to enable the programming of the EEPROM. In most cases, however, you will leave the box unchecked so that the FPGA or CPLD on the XS Board will be programmed.
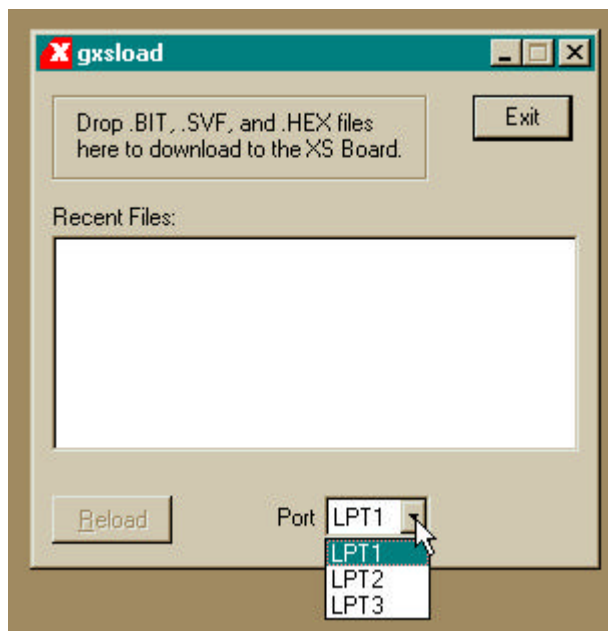
After setting the parallel port and EEPROM flag, you can download files to the XS Board simply by dragging them to the GXSLOAD window as shown below. Once you release the mouse left-button and drop the files, GXSLOAD will begin sending the files to the XS Board through the parallel port connection. If you drag & drop a non-downloadable file (one with a suffix other than .BIT, .SVF, or .HEX), GXSLOAD will ignore it.

During the process, GXSLOAD will display the name of the file currently being downloaded below the Recent Files window as shown below.
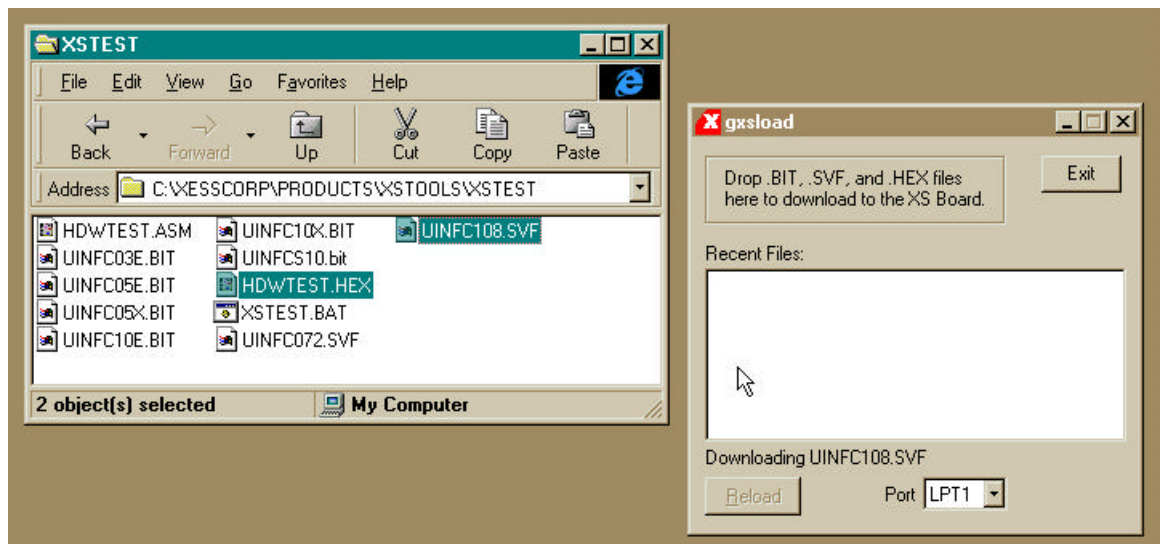

Once the downloading is finished, the file names are added to the Recent Files window and the Reload button is enabled. Now you can download these files to the XS Board just by clicking on the Reload button. This is a useful shortcut to have as you make changes to your design in Foundation and need to test the modifications.
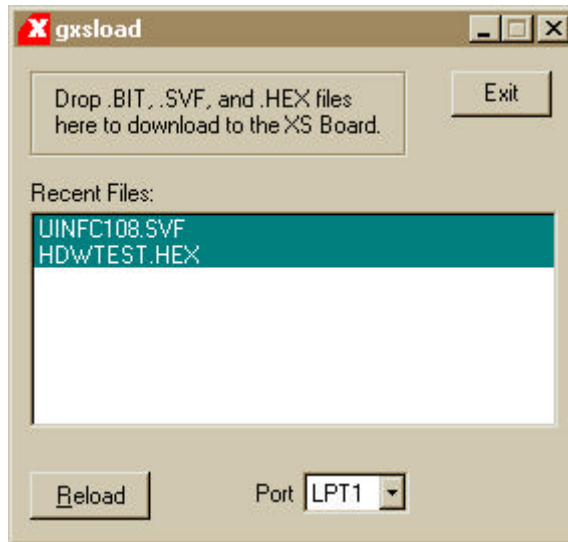
The Recent Files window records the name of each file you download. As shown below, a scrollbar will appear once you have dropped more than eight files on the GXSLOAD window. You can click your mouse on multiple file names to toggle their selections on or off. Then clicking on the Reload button will download the highlighted files to the XS Board.
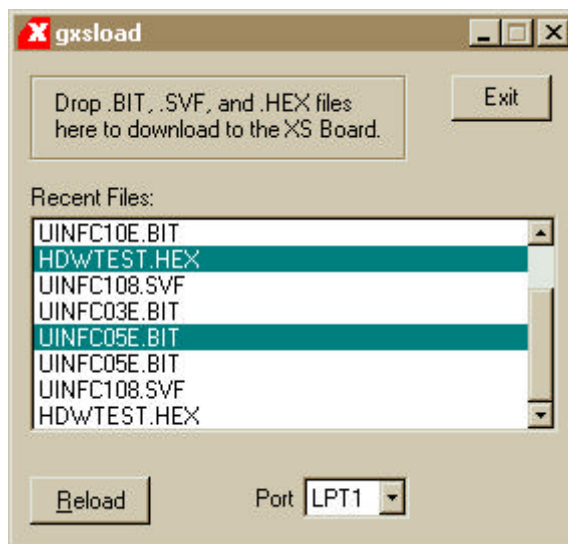
Note that the Reload button is disabled if you do not select any files to be downloaded. This situation is shown below.
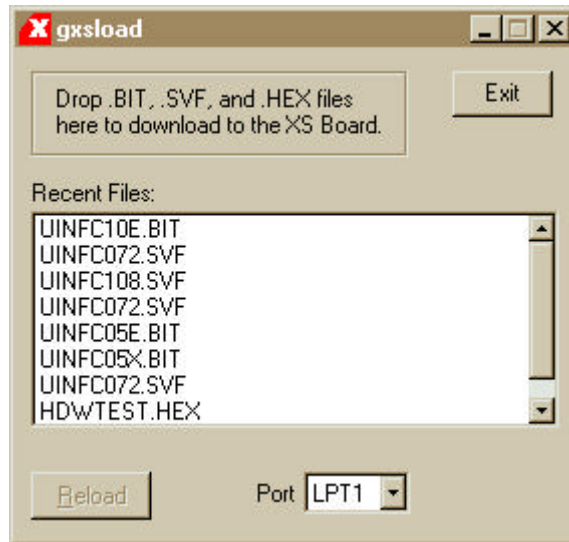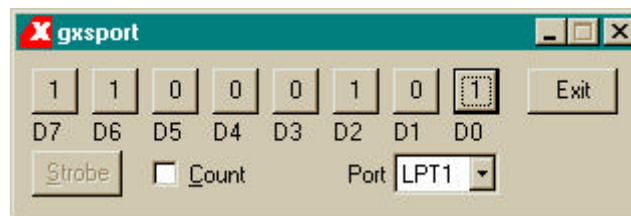
GXSPORT

Once you have loaded the XS Board with a configuration file using GXSLOAD, you can

then use GXSPORT to exercise the functions of your design. Click on the GXSPORT icon to bring up the window shown below.

The window contains several controls which perform the following functions:

■ The Port list box lets you select the parallel port that your XS Board is connected to just like you did with the GXSLOAD program.

■ There are eight buttons, each of which is associated with one of the eight data bits of the parallel port. On startup, each button is labeled with the binary value currently output on the associated data pin. When you click one of these buttons, the displayed binary value toggles **but this new value does not appear on the data pin until you press the Strobe button** (see below).

■ The Strobe button transfers the bit values displayed on the data button to the data pins of the parallel port. The Strobe button is enabled if at least one value on a data button is different from the actual value output on its data pin. The Strobe button is disabled if the value on each data pin matches the value on its associated button, because then there is no need to transfer the values.

- If you check the Count box, the value output on the data pins will increment every time you click on the Strobe button. In this case, the Strobe button will stay enabled.

- Clicking the Exit button terminates GXSPORT without updating the data pins with any new values that may have been entered.