USB Additions to SPIGen Version 5.0.X

Version 5.0.X of the SPIGen program has several new features that were added to support the new USB to SPI interface and the latest Freescale evaluation board products that incorporate the USB to SPI feature.

Once SPIGen is launched, the initial Window, shown above, called the "Not Configured" screen appears.

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At this point, the SPIGen program is not connected to either the parallel port or the USB port of the user's computer.
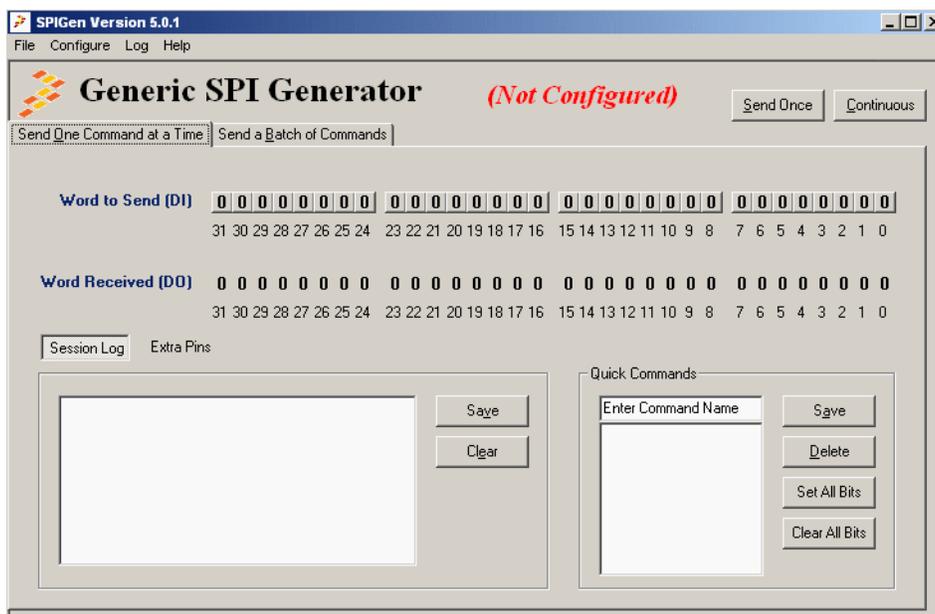
Figure 1. SPIGen Initial Screen

The first step the user must take is to select the "Configure" menu item, shown above the Freescale logo in the screen shot above.

1   The Edit Configuration Menu

Clicking on the "Configure" menu item will cause an "Edit Configuration" drop down menu item to be displayed:
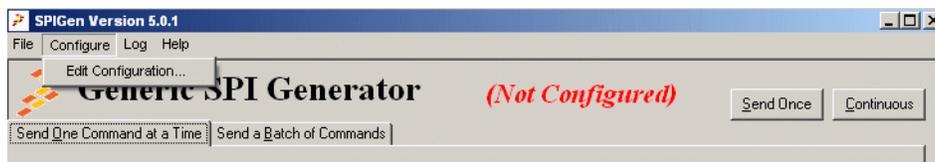
Figure 2. SPIGen Edit Configuration

Clicking on the "Edit Configuration" menu item will bring up the **General Tab** of the "SPI Configuration" tabbed window, shown below:
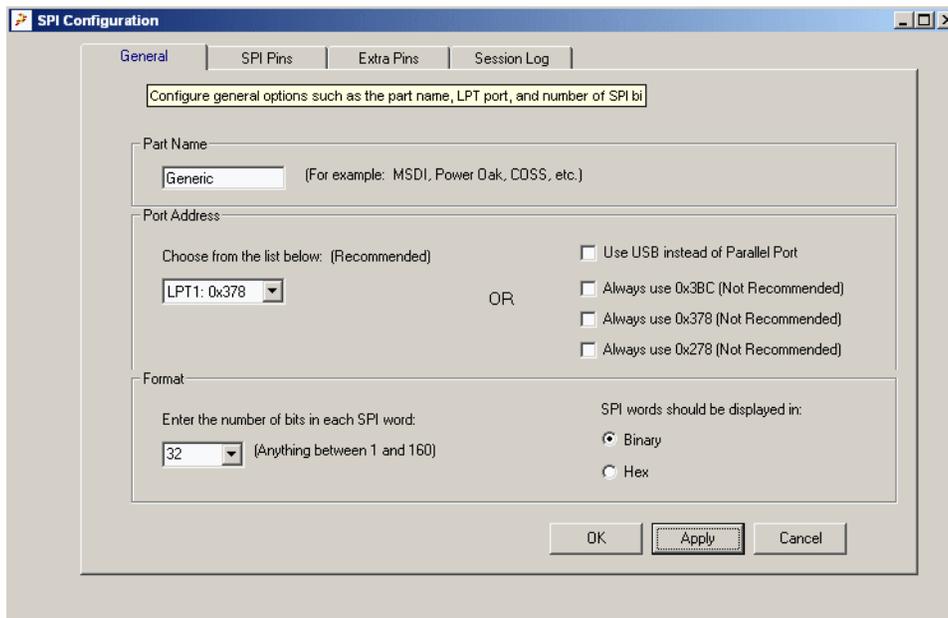
Figure 3. SPIGen Configuration Menu

The major difference between this screen and that of SPIGen version 4.0.0, is the addition of the **"Use USB instead of Parallel Port"** check box. When this box is checked, and stays checked, it indicates two things:

1. 1) The SPIGen program is connected to the USB port for communication.
2. 2) The USB port is active and a valid USB to SPI device is attached to the USB port.

If the check mark goes away, it indicates that a USB to SPI device is not attached or the software for this device is not properly installed.

Another point to note is that, at this time, the USB to SPI interface only supports a maximum of 40 bits of data in the SPI word, not 160, as is supported with the parallel interface. If there is sufficient demand for higher numbers of bits in the SPI word, future generations of the SPIGen program will provide this.

Figure 4. Use USB Instead of Parallel Port

The remainder of this document presumes that the "Use USB instead of Parallel Port" check box has been selected, and the check mark is visible. (See below)

2   The SPI Pins Tab

Clicking on the **"SPI Pins Tab"** will bring up the following screen:
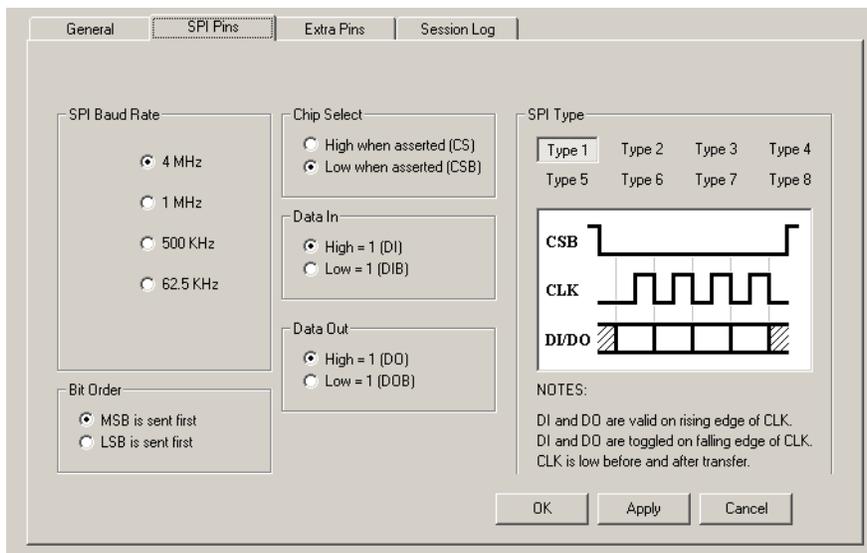
Figure 5. SPI Pins Screen

There are two differences between this screen and the **"SPI Pins Tab"** screen in SPIGen version 4.0.0.

The SPI Baud Rate is programmable in the USB to SPI interface due to the ability of the MCU to provide four different SPI baud rates., 4 MHz., 1 MHz., 500 KHz., and 62.5 KHz. The radio buttons allow the user to select the preferred SPI baud rate.

The SPI Type for the USB to SPI interface is also limited to types 1, 2, 3 and 4. Selecting types 5, 6, 7,and 8 will default back to types 1, 2, 3 and 4 respectively. This is due to the definition of the MCU's SPI module.

The other features of this screen, Bit Order, Data Out, Data In and Chip Select are the same for either the USB or Parallel interface.

3   The Extra Pins Tab

Clicking the **"Extra Pins Tab"** brings up the following screen:
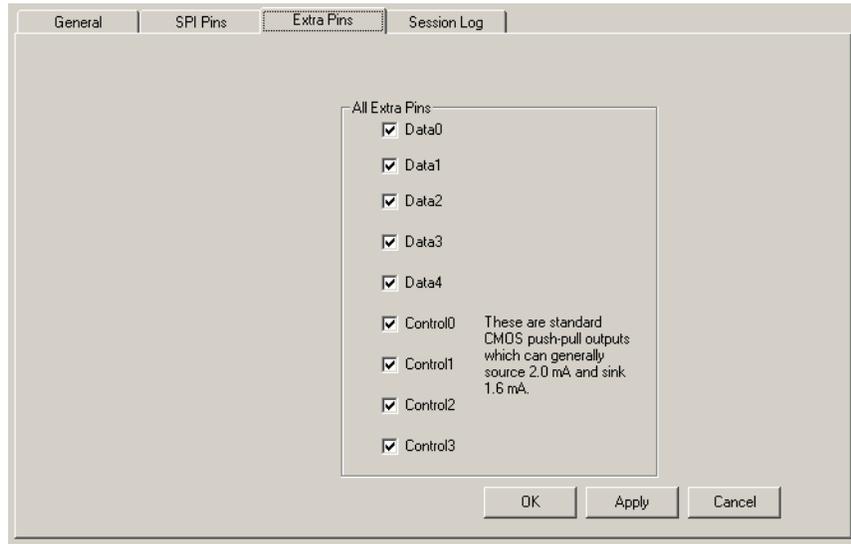
Figure 6. Extra Pins Screen

This screen differs significantly from the Extra Pins screen in the Parallel Port mode. While there are the same nine outputs, Data 0 - Data 4 and Control 0 - Control 3, there is no selection of which pins these signals are assigned to. In the USB to SPI hardware, there is a jumper mapping of these signals to pins on the DB-25 connector, so essentially the same customization is available except it is in hardware rather than software.

Another difference is that these nine signals are all "present" by default. In the parallel mode case, these signals have to be enabled one at a time, and assigned to pins. All nine signals are MCU outputs and therefore their drive fan out is limited to that of a standard CMOS output.

4 The Session Log Tab

The Session Log Tab should be identical for the Parallel or USB modes.

5 The Send a Batch of Commands Tab

The Main Program Screen contains a tab called **"Send a Batch of Commands"**. This screen should be:
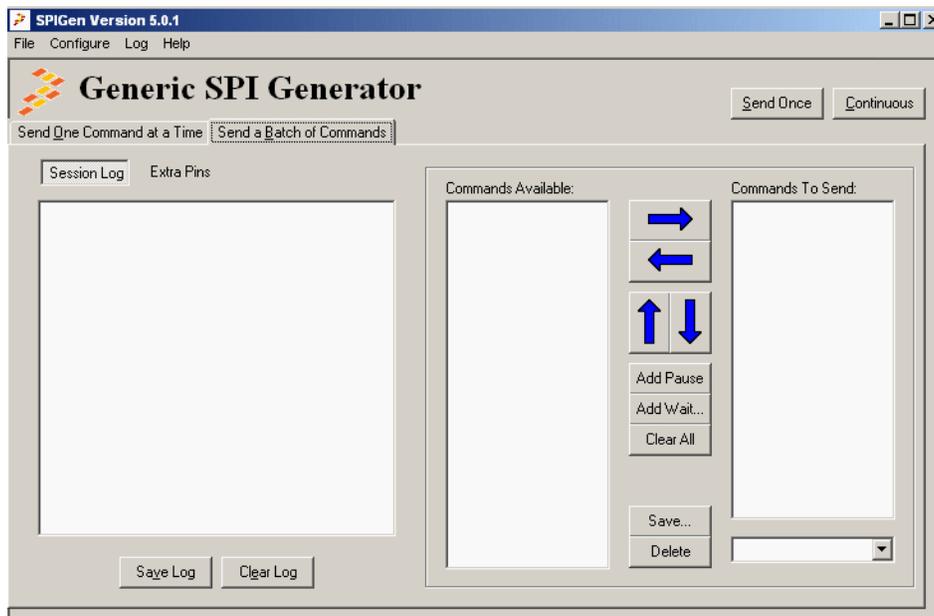
Figure 7. Send a Batch Command Screen

identical to the Parallel Mode screen. Any command batches that send SPI messages should work exactly the same as those in the Parallel Mode.

In the next screen however, there is a slight difference that should be noted.

In the sending of the Extra Bits in a batch command file, the Extra Bits will be sent exactly the same as in the Parallel Mode case. The slight difference is in the logging of the Extra Bit commands in the Session Log.

As can be seen from the screen capture, the batch commands sent are all Data 0 and Control 0 extra bit commands, yet the log indicates SPI messages being sent and received. These SPI message in the log should be ignored because, in fact no SPI messages were sent, just extra bit messages. The fact that the USB interface always sends and receives 8 bytes is interpreted by the SPIGen program as an issued and received SPI message. If time permits, this will be corrected in the next release of SPIGen.
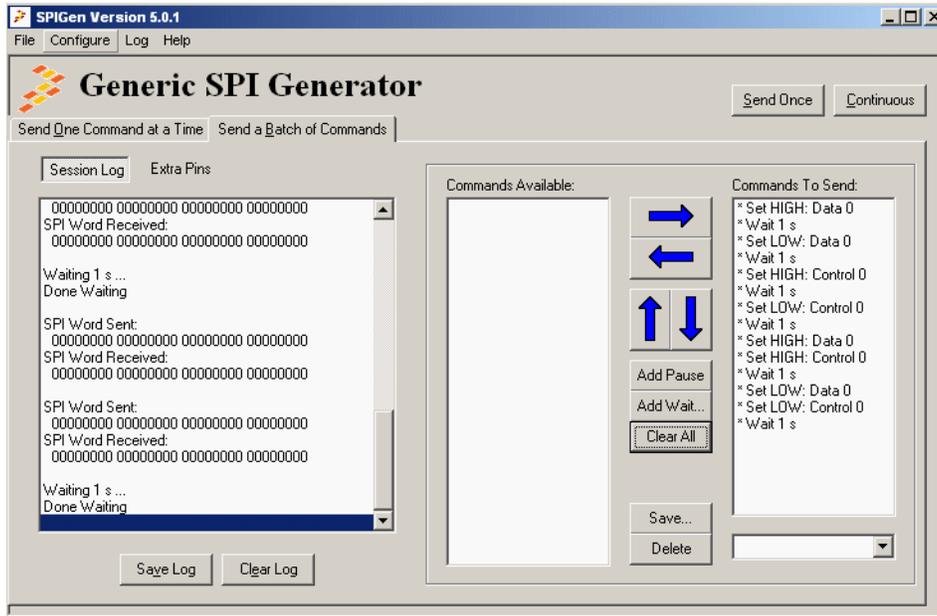
Figure 8. Batch Log Screen

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