Blackhawk USB560v2 Operating Mode Details and Instructions

Blackhawk
by EWA Technologies, Inc.™

Powering DSP Development™

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Blackhawk USB560v2 Operating Mode Details and Instructions

The following document describes the operating modes of the Blackhawk USB560v2 STM emulator (USB560v2). It also covers instructions for debugging and maintaining the device's firmware that may not be covered in the installation guide.

Operating Modes

The USB560v2 has two operating modes, normal and safe. Both modes are described in the following two sections.

Normal Mode

The typical mode of operation (or Normal Mode) of the USB560v2 is the default boot mode. This will allow the USB560v2 to enumerate with Microsoft Windows or be detected on Linux systems. In this mode all JTAG functions are enabled.

During boot, normal mode can be detected via the two, bi-color USB560v2's LEDs. On power up, during the 20 second boot process, the USB LED will be red to start and turn green upon successful enumeration with Windows or Linux. The MODE LED will blink green on and off during the boot process.

Once the boot process has completed both LEDs will be a steady green (see Figure 1).

Figure 1- Normal Mode LED States

Safe Mode

The USB560v2 is running an embedded version of the Linux operating system. Safe mode is a protected version of Linux the runs from a different location than normal mode. It is a safeguard in case the USB560v2 cannot boot into normal mode. It is also used to update the USB560v2 with new application firmware when necessary.

Corrupted flash, for example, may prevent the USB560v2 from booting into normal mode. While rare, this could be caused by ESD, ground loops, or electrical surges during power up or power down. Placing the USB560v2 into safe mode can allow end users to fix the corrupt flash.

Safe mode can also be entered when the USB560v2 is powered on 10 or more times without completing the boot process. This is covered in more detail in the section, "*Placing the USB560v2 into Safe Mode*".

Safe mode can be detected upon power up and during the 20 second boot period when the MODE LED is solid red. Once the boot process has completed the MODE LED will blink red on and off (see Figure 2).

Figure 2 - Safe Mode LED States

Unknown Mode

While the USB560v2 has two modes, it is possible for the device to enter an unknown mode. Should this happen, it is recommended that you contact Blackhawk technical support or try to take the steps to place the unit into safe mode and update the unit's firmware.

Updating the Blackhawk USB560v2 Firmware

The following section describes the steps to update the application firmware for the USB560v2.

It is important to note that updating the firmware should only be done if required or instructed by Blackhawk technical support.

1. Connect the emulator to your computer and confirm it has powered up and enumerated with Windows or Linux. For Windows, the USB560v2 should be visible in the Blackhawk Control Panel Window (see Figure 7). If developing on Linux, use the `lsusb` command in a terminal window (see Figure 3). The USB560v2 will be identified by the id `0b1e:0009`.

2. Start the Bh560v2 Configuration utility. The icon (Figure 4) should be located on the desktop. Once started the utility should identify the USB560v2. Highlight the entry in the devices section at the top (refer to Figure 5).
3. Press the "`Update`…" button highlighted in Figure 5. This will display a File Selection Dialog. Using the dialog's controls, browse to the folder with the updated firmware. As of this writing the file name and version is `USB560v2_firmware_5.0.573.0`. Depending on the CCS version installed, the path to the file will be similar to:

   `<ccs>\ccs_base\emulation\Blackhawk\Bh560v2\firmware`

   It is important that you select the proper firmware file or the device may be rendered useless. The proper file will contain **USB560v2** in the name. **Do not use the xds560 or mezzanine firmware files.** Once the correct file is selected the update process will take over and update the USB560v2. When completed the output log will indicate "`Done`" in the output.

If you have any problems or question before, during or after the update process, please contact Blackhawk technical support.

```
user@linux-ubuntu:/home/user> lsusb
Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 002 Device 001: ID 1d6b:0001 Linux Foundation 1.1 root hub
Bus 001 Device 002: ID 0b1e:0009 EWA Technologies, Inc. (EWA)
user@linux-ubuntu:/home/user>
```

Figure 3- Example lsusb Command Output, Linux

Figure 4- Bh560v2Config Utility Icon

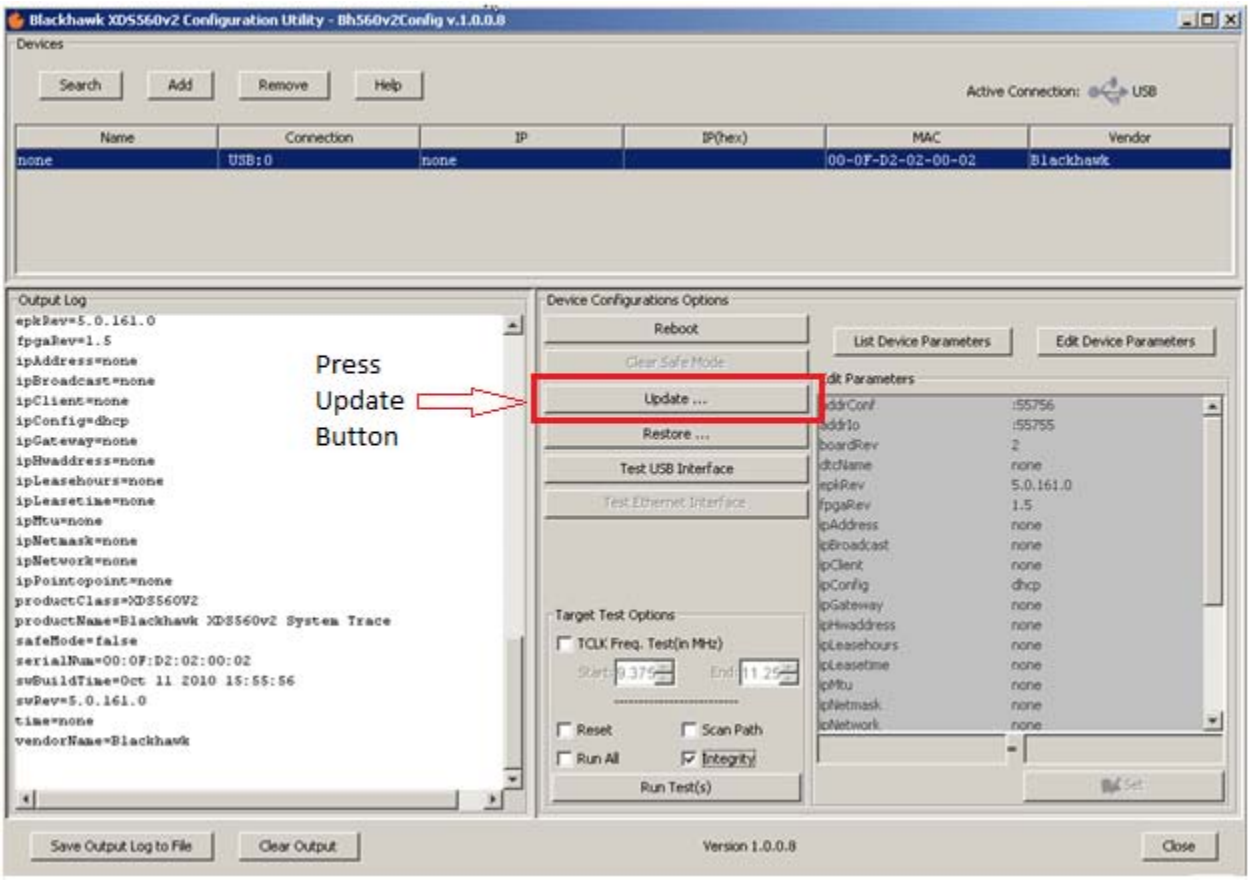

Figure 5- Bh560v2 Config Utility, Update Button

Placing the USB560v2 into Normal Mode

The following section describes the process to place the USB560v2 into normal mode.

1. Connect the emulator to your computer and confirm it has powered up and enumerated with Windows or Linux. For Windows, the USB560v2 should be visible in the Blackhawk Control Panel Window (see Figure 7). If developing on Linux, use the `lsusb` command in a terminal window (see Figure 3). The USB560v2 will be identified by the id `0b1e:0009`.
2. Start the Bh560v2 Configuration utility. The icon (Figure 4) should be located on the desktop. Once started the utility should identify the USB560v2. Highlight the entry in the devices section at the top (refer to Figure 6).
3. Once the unit is highlighted and the utility confirms safe mode, the `Clear Safe Mode` button will be enabled.
4. Press the `Clear Safe Mode` button and the unit will be reset for normal mode. This process will reboot the unit and may take 20 seconds to complete.

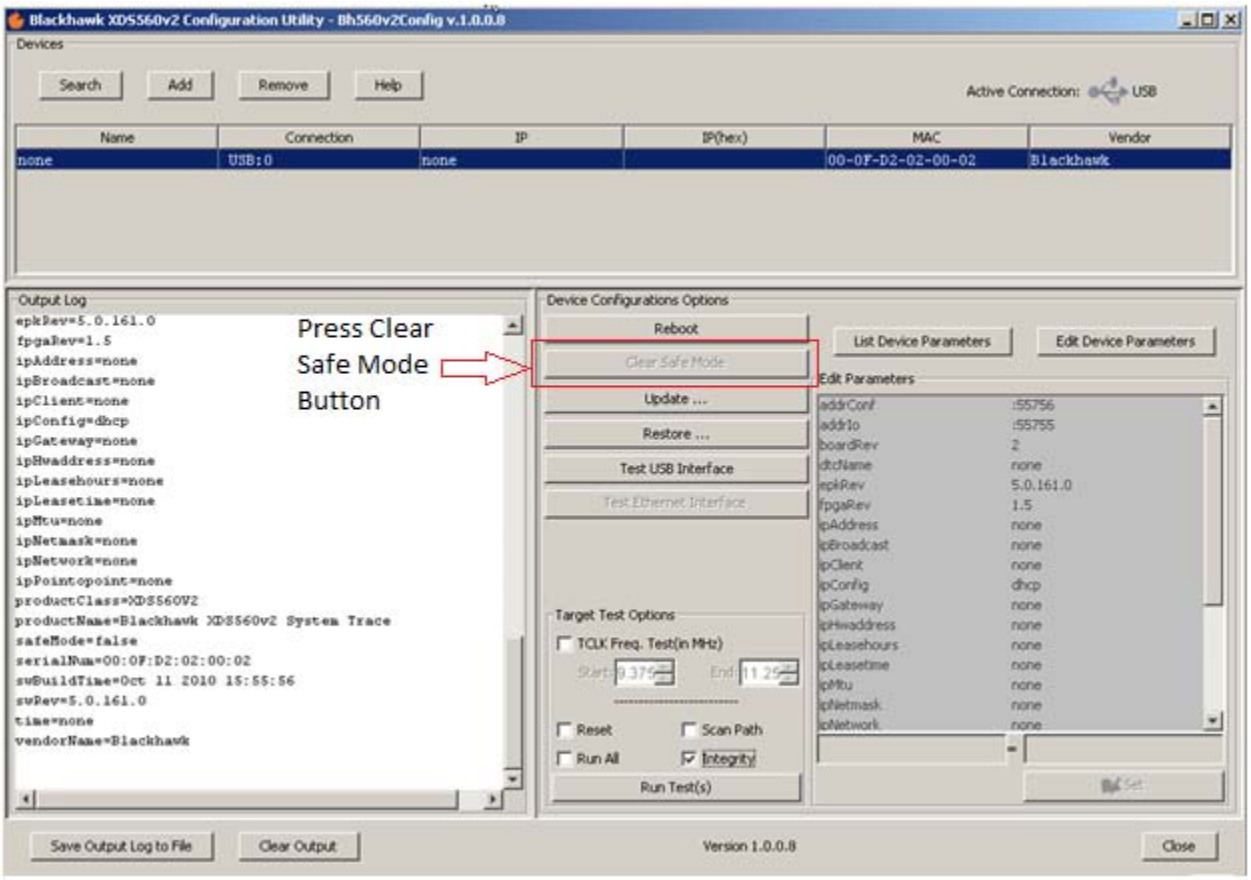

Figure 6 - Bh560v2Config Utility, Clear Safe Mode

Placing the USB560v2 into Safe Mode

The following section describes the process to place the USB560v2 into safe mode. **It is recommended that this process not be used unless directed by Blackhawk technical support.**

The USB560v2 firmware has an internally programmed unsuccessful boot counter. When this counter reaches 10, the USB560v2 will boot into safe mode. The primary purpose for this counter is to reclaim use of the emulator should a problem with the application firmware preventing the unit from booting properly into normal mode.

1. To enter safe mode, the USB560v2 will need to be power cycled at least 10 times. To do this, you should first connect the USB cable to the USB560v2.
2. Then connect the USB cable other end to an available USB port on your PC (Windows or Linux). After 3-5 seconds, disconnect the USB cable from the port on your PC. We recommend using the PC's USB port for this process of connecting and disconnecting the USB cable.
3. Repeat this process 10-12 times.
4. Safe mode can be identified when the MODE LED powers on red (see Figure 2).
5. Once in safe mode, the unit should enumerate properly with Windows or Linux and you can follow the instructions in the section labeled, "*Updating the Blackhawk USB560v2 Firmware".*

If the USB560v2 fails to enter safe mode after repeated attempts, please contact Blackhawk technical support.

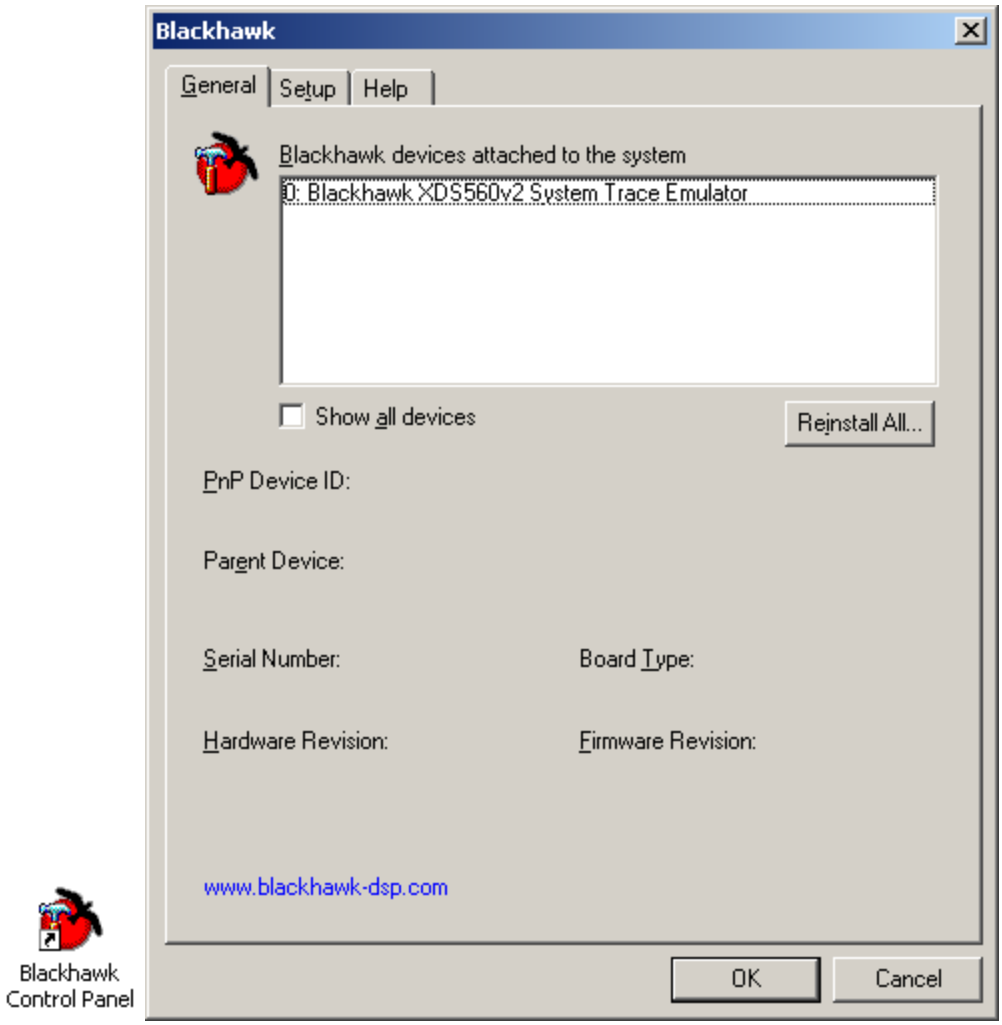

Figure 7 - Blackhawk Control Panel and Shortcut Icon, Windows