

XDS110 Support Notes



Overview

The XDS110 support directory contains the following:

- `xdsdfu` -- Console application to program the XDS110's firmware.
- `xds110reset` -- Console application to reset the board using the XDS110.
- `firmware.bin` -- Current firmware for the XDS110.
- `boot_loader.bin` -- Current boot loader for the XDS110.

This document includes instructions for how to use `xdsdfu` and `xds110reset`. At the end of the document are instructions for alternate methods of flashing and recovering a bricked XDS110.

The Windows installer also installs the OS drivers necessary to connect to the XDS110.

The Linux installation includes a `udev` directory with the rules file needed to use the XDS110 as a user account. An installer script for the rules file is also included.

Mac and Linux systems require `libusb` to be installed. Go to libusb.info for more details.

`xdsdfu` Flash Utility

The `xdsdfu` console application allows you to update the firmware and set the serial number of the XDS110 debug probe. Note that Code Composer Studio will automatically update the XDS110 to the current firmware when starting a debug session. `xdsdfu` is only required for firmware updates when Code Composer Studio is not being used.

`xdsdfu` Options

`xdsdfu` accepts the following command line options. All commands except the `-e` command will operate on the first XDS110 found. While using `xdsdfu`, be sure to have only one XDS110 plugged into the computer.

`-e`

Show information about all XDS110s connected to the computer.

`-m`

Switch into DFU mode if XDS110 is currently in runtime mode. The XDS110 reconfigures itself as a Tiva Firmware Update device and waits for instructions to program the flash.

`-f <FILE>`

Download the given firmware file to the XDS110.

-n <TEXT>

Set XDS110 serial number to any four character string (no spaces). This option preserves the board prefix (if any) which is the first four characters of the serial number.

-s <TEXT>

Set XDS110 serial number to any eight character string (no spaces). This option replaces the entire serial number which overwrites the board prefix value.

-r

Must be used in combination with another option. Reset the XDS110 on completion of the other operation.

-? or -h

Display the help text.

Updating the Firmware Using xdsdfu

To program the firmware, follow these steps:

1. Plug the XDS110 debug probe into your computer. Make sure that you only have one XDS110 class debug probe plugged in. The xdsdfu program will attempt to flash the first XDS110 debug probe it finds.
2. Run the following two commands from directory with xdsdfu:

```
xdsdfu -m  
xdsdfu -f firmware.bin -r
```

You may need to pause after the first command to give the OS time to recognize that the XDS110 has reconfigured as a different USB device.

Once the second command has completed, the firmware is updated, and the XDS110 should be ready to use.

Setting the Serial Number Using xdsdfu

You can set the XDS110 serial number using the xdsdfu program. This will allow you to have more than one XDS110 connected to your system by letting the host locate the specific one to use.

Viewing the Current Serial Number

1. Plug the XDS110 debug probe into your computer.
2. Run the following command from directory with xdsdfu:

```
xdsdfu -e
```

xdsdfu will display the status, firmware revision, and serial number of all XDS110s connected to the computer.

Setting the Serial Number with Board Prefix

Some LaunchPads and EVM boards with XDS110 will use a four character prefix to identify the board as part of the serial number. To preserve the board ID while setting a serial number follow these steps:

1. Plug the XDS110 debug probe into your computer. Make sure that you only have one XDS110 class debug probe plugged in. The xdsdfu program will attempt to flash the first XDS110 debug probe it finds.
2. Run the following two commands from directory with xdsdfu:

```
xdsdfu -m  
xdsdfu -n xxxx -r
```

where xxxx is a serial number, any combination of letters and numbers, from 1 to 4 characters in length.

You may need to pause after the first command to give the OS time to recognize that the XDS110 has reconfigured as a different USB device.

Once the second command completes, the serial number is set, and the debug probe should be ready to use.

Setting the Complete Serial Number String

If you don't need to preserve the board prefix ID, then you may do the following to set the entire serial number string. But note that certain tools require a board prefix to properly identify the target board. If you overwrite the board prefix, these tools will fail to operate correctly.

1. Plug the XDS110 debug probe into your computer. Make sure that you only have one XDS110 class debug probe plugged in. The xdsdfu program will attempt to flash the first XDS110 debug probe it finds.
2. Run the following two commands from directory with xdsdfu:

```
xdsdfu -m  
xdsdfu -s xxxxxxxx -r
```

where xxxxxxxx is a serial number, any combination of letters and numbers, from 1 to 8 characters in length.

You may need to pause after the first command to give the OS time to recognize that the XDS110 has reconfigured as a different USB device.

Once the second command completes, the serial number is set, and the debug probe should be ready to use.

xds110reset Reset Utility

The xds110reset console application allows you to reset the LaunchPad or target board using the nSRST pin of the JTAG connection. This is equivalent to pressing a reset button on the board, but done under the command of the XDS110 debug probe.

To reset the board, run the xds110reset command. The XDS110 will pull the nSRST signal low momentarily triggering a board reset.

xds110reset Options

xds110reset accepts the following command line options:

-a, --action <NAME>

Choose a specific action to perform. NAME may be "assert", "deassert", or "toggle". If not specified, toggle will be executed by default.

-d, --delay <VALUE>

Set the on-time for the reset toggle in milliseconds. This has no effect if action is "assert" or "deassert". If not specified, the delay will be set to 50 ms.

-s, --serial <TEXT>

Select the XDS110 probe by serial number. TEXT is the serial number to use, up to eight characters. If not specified, the first XDS110 found will be used.

-h, --help

Display the help text.

xds110reset Example

The following example toggles the reset pin, asserting the pin for 100 ms, using XDS110 with serial number "01234567":

```
xds110reset -a toggle -d 100 -s 01234567
```

Updating Firmware Using a JTAG Connection

In the case that the XDS110 fails to enumerate as a USB device, you can attempt restore functionality by updating the firmware using a JTAG connection. Contact your vendor for details on how to attach a JTAG cable and for what programmer tool you should use. Perform the following steps to restore the firmware:

1. Connect the flash tool to the XDS110's CPU using JTAG connection.
2. Use the flash tool to erase the entire flash of the XDS110.
3. Flash the boot_loader.bin file to address 0x0000.
4. Power cycle the XDS110 (unplug and re-plug it into the USB port).

5. Use the xdsdfu utility to update the firmware as detailed above.

The firmware is now updated, and the XDS110 debug probe should be ready to use.

Recovering a Bricked XDS110 without JTAG

In the case that your XDS110 fails to enumerate as a USB device, or it fails to enter DFU programming mode, you can attempt the following steps to force it into DFU mode to recover:

1. Ground the JTAG TDO pin of the XDS110's Tiva CPU. This is pin 97 on the 128 pin device. (Check the TM4C1294NCPDT datasheet for the pin location; it is located on a corner and easy to access.)
2. Unplug and re-plug the XDS110 into the host computer while the pin is grounded.
3. The XDS110 should now be in DFU programming mode.
4. Remove the connection to ground while the XDS110 remains powered.
5. Use the xdsdfu utility to update the firmware as detailed above.