

Application Note:

xPico 200 Series – JTAG Programming



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Revision History

Date	Rev.	Comments
November 2021	A	Initial document.

For the latest revision of this product document, please check our online documentation at www.lantronix.com/support/documentation.

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Overview

This Application Note is designed to help Lantronix xPico 200 Series users perform JTAG-based firmware programming of the modules. When customers design the xPico 200 series modules into their products without exposing the UART pins for typical firmware programming methods, the JTAG interface will be the only way to program or update the device firmware.

Hardware and Software Requirements

The JTAG Programming Hardware Checklist below contains the hardware required to perform JTAG programming of the xPico 200 series modules. This application note uses Olimex and Tag-Connect hardware and adapters. There are numerous JTAG programmers available – other brands and adapter types may also work.

Note: *The hardware adapters and tools are not provided by Lantronix and should be purchased from an electronics supply business or the manufacturer of the hardware.*

The software needed to accomplish JTAG programming (`xPico200Recovery.zip`) is supplied by the Lantronix support team or Field Applications Engineer.

JTAG Programming Hardware Checklist

1. Olimex ARM-USB-TINY-H USB to JTAG Programmer/Debugger
2. Tag-Connect 2050 IDC (Cable, SKU TC2050-IDC)
3. Tag-Connect TC2050-ARM2010 ARM 20-pin to TC2050 Adapter (PCB Adapter, SKU TC2050-ARM2010)
4. (Not pictured) USB 2.0 cable, Type-A to Type-B
5. (Not pictured) A Windows 10 PC with an exclusive USB port (no USB hub)

Items 1, 2, and 3 are shown in Figure 1 below.

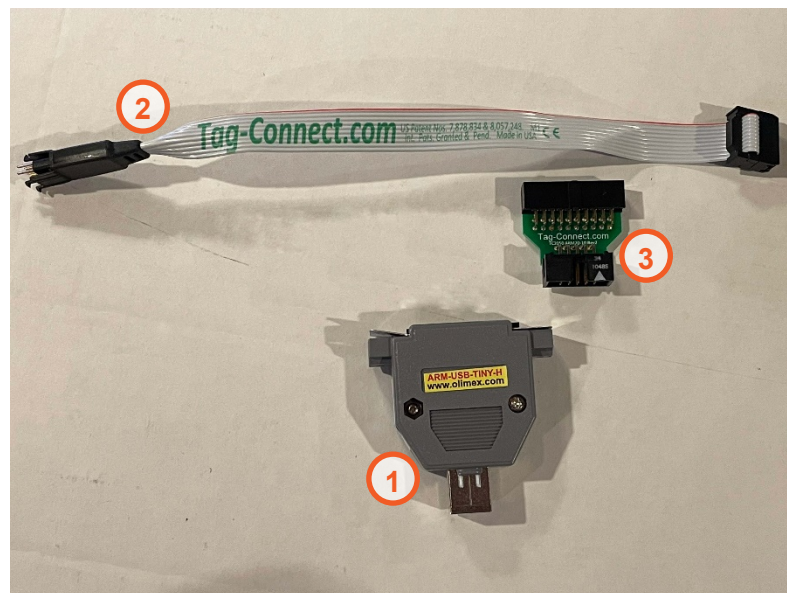
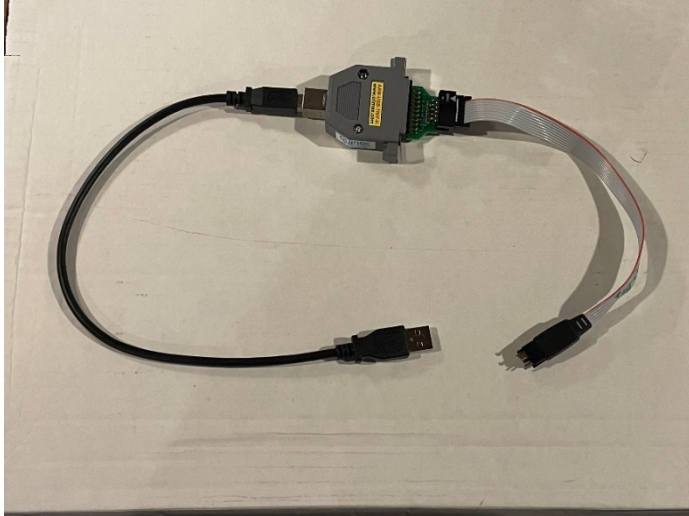


Figure 1. JTAG Programming - Required Hardware

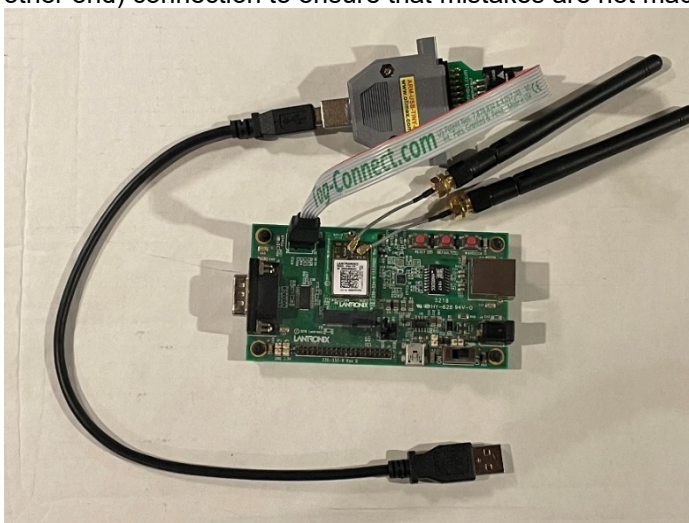
JTAG Hardware Setup

Perform the following steps to connect the Olimex and Tag-Connect adapters to the xPico 200 Evaluation Kit.

1. Connect the Olimex and Tag-Connect adapters to the USB cable as shown in the image below. Note that the grey ribbon cable 10-pin and PCB 20-pin adapter are keyed which will prevent any mistakes in assembly.

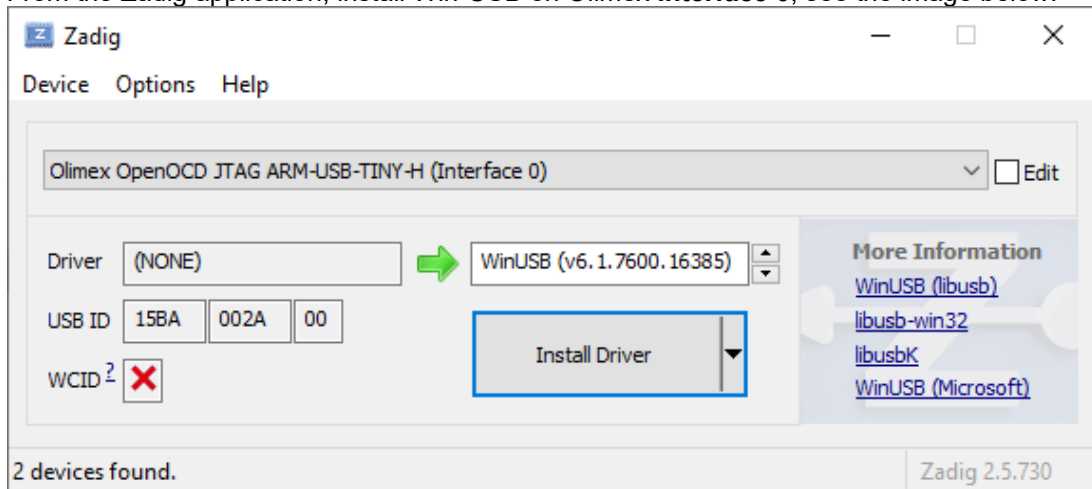


2. Using the xPico 200 Series Eval Kit, plug the Tag-Connect grey cable JTAG connector into J1 of the Evaluation Kit as shown below. This is a keyed (2-pins on one end and 1 on the other end) connection to ensure that mistakes are not made.

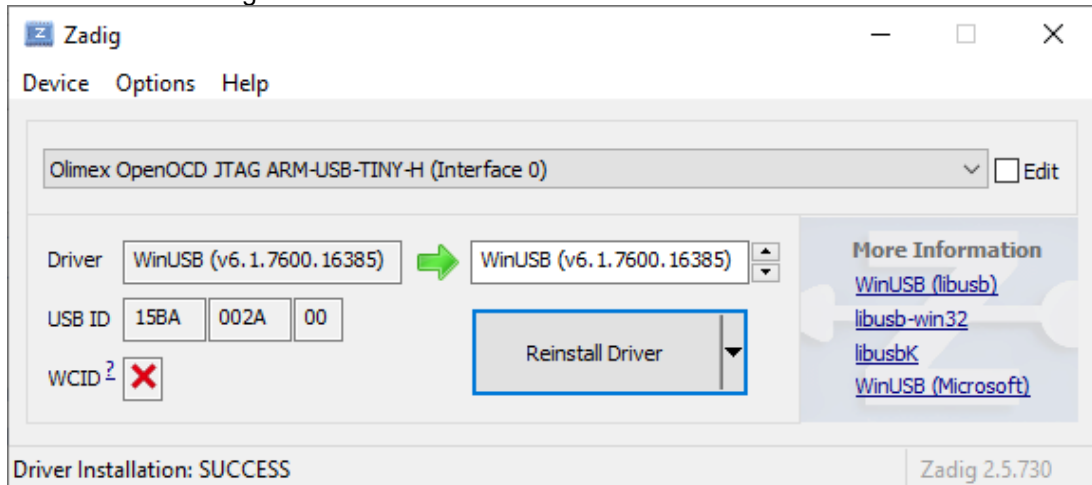


Software Instructions

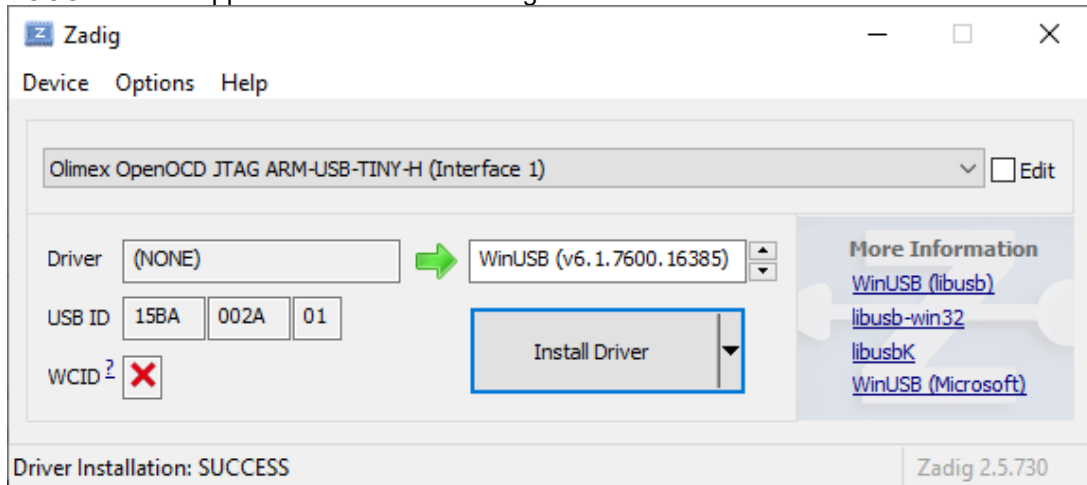
1. Obtain a Windows 10 computer to work from.
2. Extract the contents of the .zip file (filename is xPico200Recovery.zip) to the C:\ directory.
3. Connect the Olimex ARM-USB-TINY-H to a USB port on the PC; a "Setting up device.." message will appear.
4. Wait for the "Device is ready" message to appear.
5. From the extracted files, locate and run zadig-2.5.exe.
6. From the Zadig application, install Win-USB on Olimex **Interface 0**; see the image below.



7. Click **Install Driver**. Once complete, the message "Driver Installation: SUCCESS" will appear as shown in the image below.



8. Install Win-USB on Olimex **Interface 1**. When complete, the message "Driver Installation: SUCCESS" will appear as shown in the image below:



- Note:** If issues arise when trying to install the Win-USB drivers from Zadig to the Olimex JTAG programmer, isolate the USB cable being used with the Olimex to an exclusive USB port on the PC (no USB hubs).
If programming fails, but the Olimex "Interface X" is displayed numerically (where X is 0 or 1):
1. Select **Advanced Mode** under the **Options** menu
 2. Select the desired interface
 3. Click **Reinstall Driver**

9. Perform the above Olimex driver installation steps just one time per PC.
10. Copy the desired firmware image into the `C:\xPico200Recovery\` directory. It must have a name of the form `xPico200_*_partition1.signed.rom`, where * is the version.
11. From the extracted files, run the `msys2_shell` shortcut file to open your MINGW64 window.
12. In the window, type `cd /c/xPico200Recovery` to set the directory.
13. Connect the JTAG to the board you want to program.
14. Type `make download` to install the firmware.
15. Type `make run` to run the firmware.
16. You may combine Steps 14 & 15 as `make download run` to install and run with a single command.