

# USRP E310/E312 JTAG/AVR INTERFACE CABLE ACCESSORY KIT

This cable kit is intended only for expert USRP E310/E312 users that require the ability to reprogram or debug the Xilinx Zynq ZC7Z020 FPGA over JTAG, or to update the AVR PMU firmware. This guide includes assembly instructions for the cable accessory kit only. It does not include instructions on how to perform these operations. For additional assistance, please contact [support@ettus.com](mailto:support@ettus.com).

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## Kit Contents

Your kit includes the following items:

- One of the following cable accessory adapters:
  - CABLE ASSY, ADAPTER, E310 JTAG TO XILINX JTAG AND AVR, 4" (143597A-04)
  - CABLE ASSY, ADAPTER, E310 JTAG TO XILINX JTAG AND AVR, 24" (143597A-24)
- CCA, E310 JTAG ADAPTER (146880A-01)
- CCA, AVR JTAG ADAPTER (146881A-01)
- CCA, XILINX JTAG ADAPTER (146878A-01)

In addition to the kit contents, you must provide the following additional items:

- Xilinx Platform USB cable
- ATATMEL-ICE programming cable
- T8 Torx driver

## Assembling the Kit

Complete the following steps to connect the adapter boards, disassemble your device, and assemble your USRP E310/E312 JTAG/AVR Interface Cable Accessory Kit.

### Connecting Adapter Boards

1. Align the L-shaped E310 JTAG adapter board with the connectors facing upwards.

2. Align the E310 JTAG (f)-to-Xilinx JTAG and AVR (f) cable so that the white 12-pin connector is facing the appropriate port on the E310 JTAG adapter board. The white cable label should be horizontally aligned with the black ports on the opposite end of the E310 JTAG adapter board, as shown in Figure 1.
3. Connect the aligned cable to the E310 JTAG adapter board.

**Figure 1**



- a. The other end of the cable has two connectors. Connect them to the Xilinx JTAG and AVR JTAG adapter boards, as described below and shown in Figure 2.
- b. Identify the branch of the cable with the white label and connect it to the Xilinx JTAG adapter board.
- c. Connect the remaining branch of the cable to the AVR JTAG adapter board.

**Figure 2**



← XILINX JTAG Adapter Board

← AVR JTAG Adapter Board

4. Connect a Xilinx Platform USB cable to the 14-pin black receptacle on the Xilinx JTAG adapter board.
5. Connect an ATATMEL-ICE programming cable to the 10-pin black receptacle on the AVR JTAG adapter board.

## Disassembling the Device

Complete the following, appropriate steps for your model to disassemble the device.

### USRP E310

1. Remove the four screws from the top of the USRP E310 enclosure with a T8 Torx driver.
2. Carefully lift the top cover to expose the motherboard.

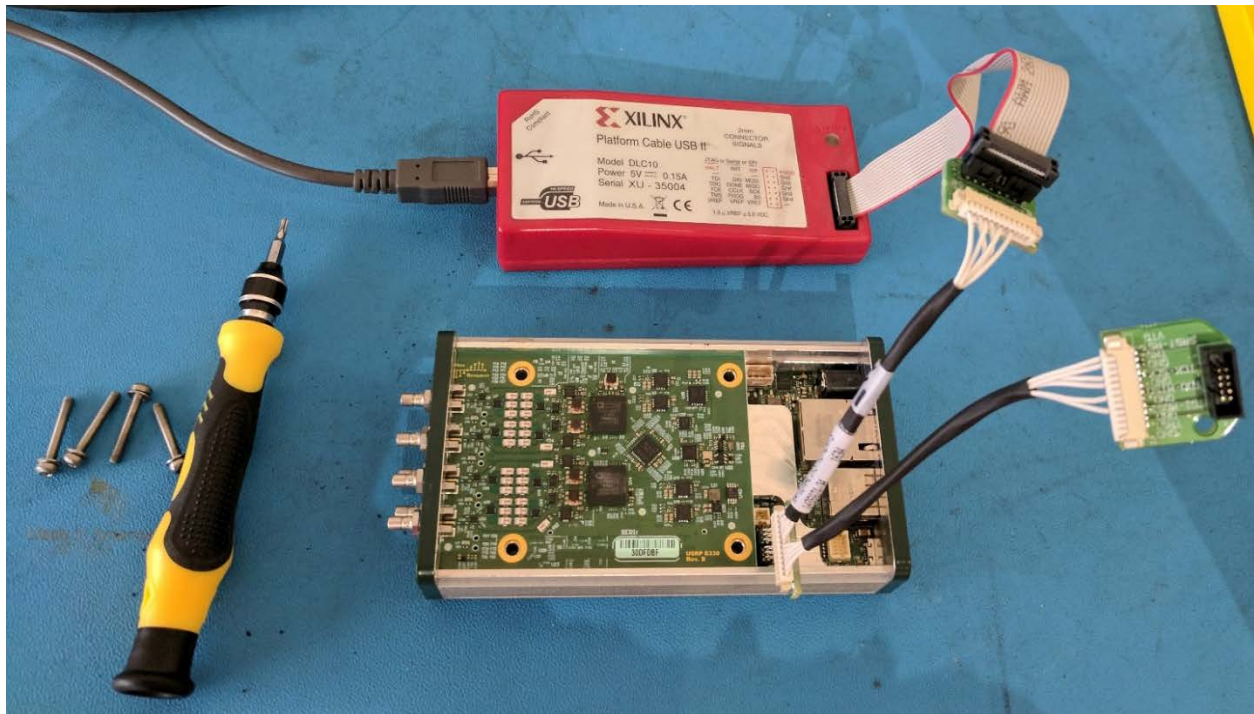
3. Connect the black connectors on the E310 JTAG adapter board to the J11 and J13 ports on the E310 motherboard with orientation denoted by the silkscreen markings of the E310 JTAG adapter, as shown in Figure 3.

**Caution:** The J11 and J13 ports are very fragile. Align the connectors carefully and do not press too hard when inserting the connectors. Ensure they are fully seated to avoid physical damage to the device.

**Figure 3**



**Figure 4**



## USRP E312

1. Remove the rear panel (the panel with the power jack) of the USRP E312 with a T8 Torx driver.
2. Slide the top cover off.
3. Carefully unplug the Li-Ion battery cell.
4. Remove the four screws from the metal battery tray.
5. Lift the battery tray to expose the motherboard as shown in Figure 5.

Figure 5



## Finalizing Setup

1. Connect a 6 V/3 A AC power supply to the USRP E310/E312.
2. Press the power button on the front panel to turn on your device.
3. Perform JTAG operations as desired.

