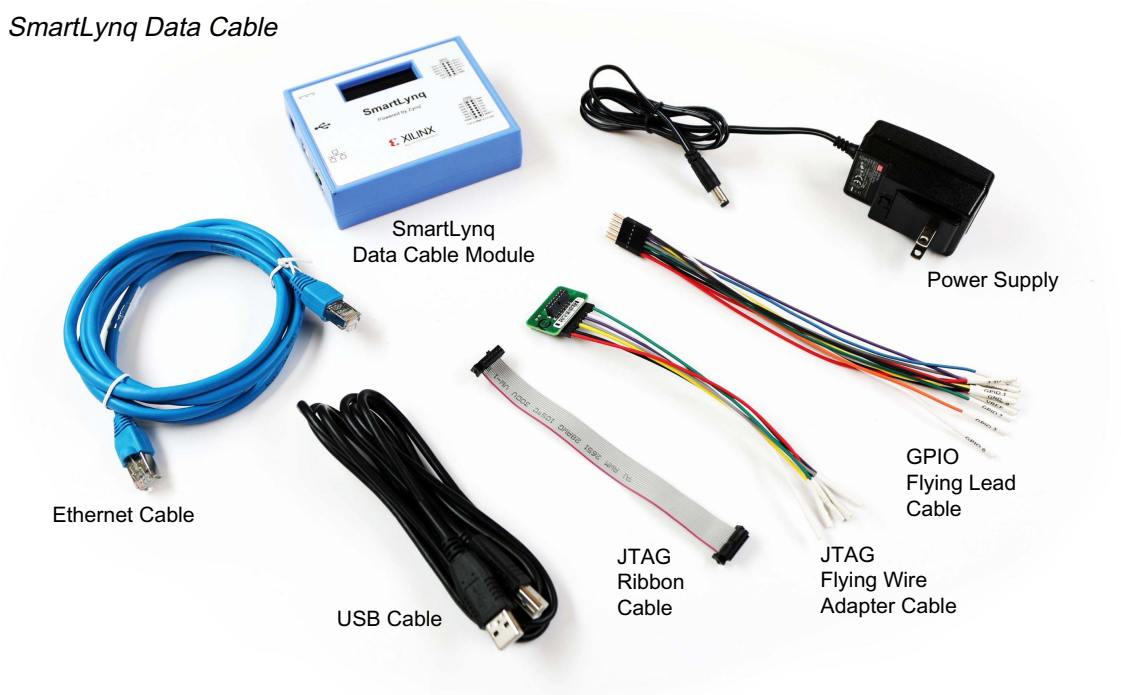
SmartLynq Data Cable

Quick Start Guide

The Xilinx® SmartLynq Data Cable is a high performance JTAG cable for Xilinx programmable devices. This guide provides instructions for setting up and connecting the SmartLynq Data Cable using an Ethernet connection or a USB cable.



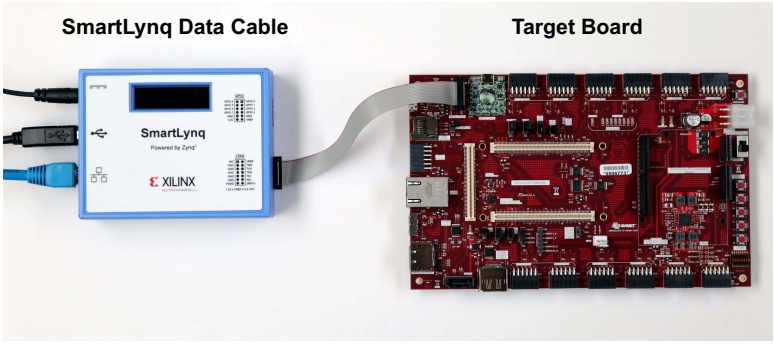
For more information, visit www.xilinx.com/SmartLynq.

Install Vivado Tools

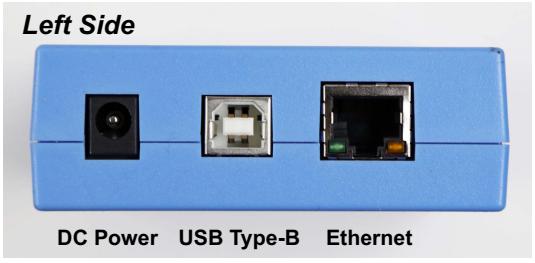
Install Vivado® Lab Edition or the Vivado Design Suite:

a. Go to www.xilinx.com/SmartLynq for installation instructions.
   Note: Vivado Lab Edition does not require a license. Also, the Vivado Design Suite WebPACK™ tools installation is free and does not require a license.
b. When running the installer, ensure the **Install Cable Drivers** option is enabled. If you need assistance, review the Vivado installation guide at www.xilinx.com/kits/vivadoinstall.
c. Launch the Vivado tool and open the **Hardware Manager.** Refer to *Vivado Design Suite User Guide: Programming and Debugging* (UG908) for more information.

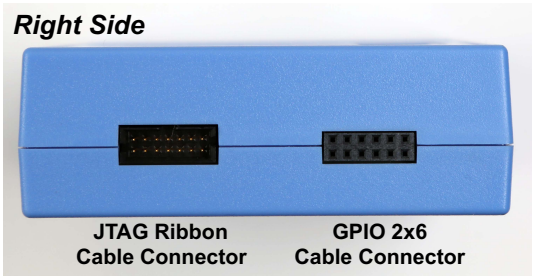
SmartLynq Data Cable Connectors



SmartLynq Data Cable network connection with a target board



DC power, USB Type-B, and Ethernet jacks are on the left side of the SmartLynq Data Cable.

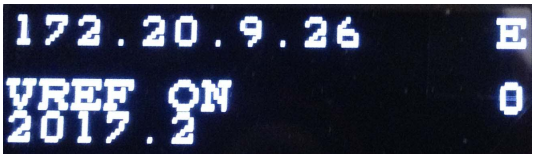


The JTAG ribbon cable and GPIO 2x6 cable connectors are on the right side of the SmartLynq Data Cable.

Setup—Connect through Ethernet

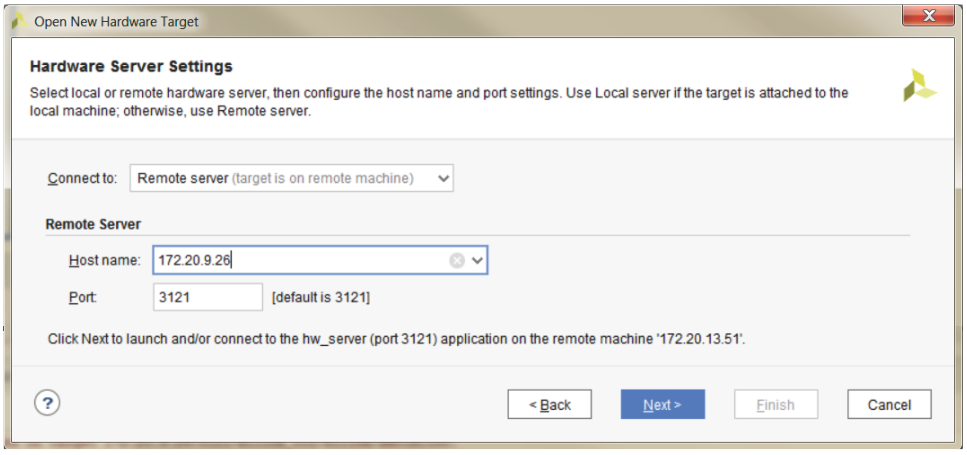
STEP 1: Connect the power and Ethernet cable to the SmartLynq Data Cable module.

a. Plug the power adapter barrel plug into the DC power jack on the SmartLynq module.
b. Plug the Ethernet cable into the SmartLynq module and attach it to your network.
c. Attach the appropriate country plug to the power adapter and plug into an open AC outlet.
d. The SmartLynq Data Cable powers up and the display shows self-check information.
e. The SmartLynq Data Cable acquires and displays an IP address, for example:



STEP 2: Connect the SmartLynq Data Cable to the target board.

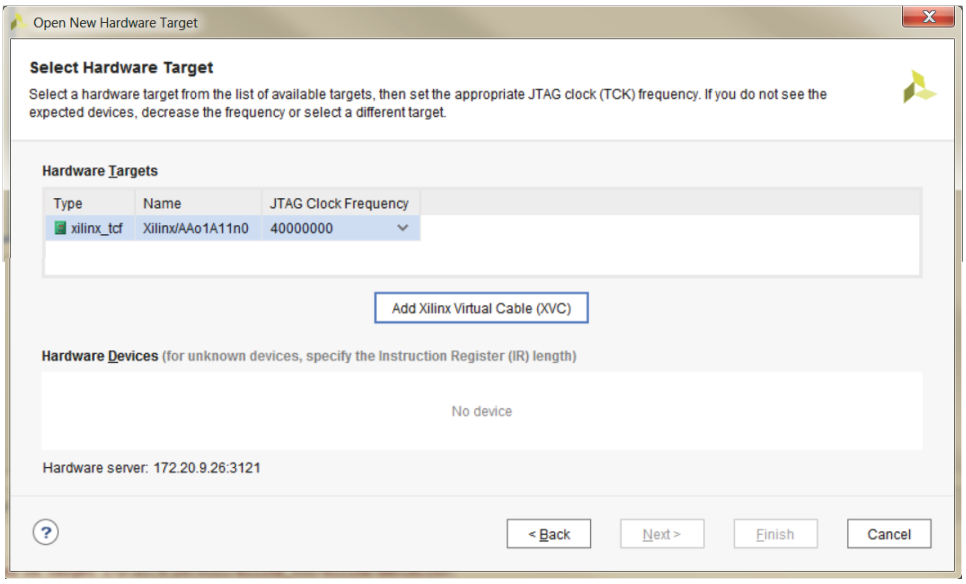
a. Connect the SmartLynq Data Cable module to the JTAG interface on the target board.
b. Open the **Hardware Manager** in the Vivado tool.
c. To create a new hardware target, click **Open Target** and choose **Open New Target**.
d. The Open New Hardware Target wizard appears. Click **Next**.
e. In the **Connect to** list box, pull-down **Remote server**.
f. In the **Host name** field, specify the IP address shown on the SmartLynq module display. Click **Next**.



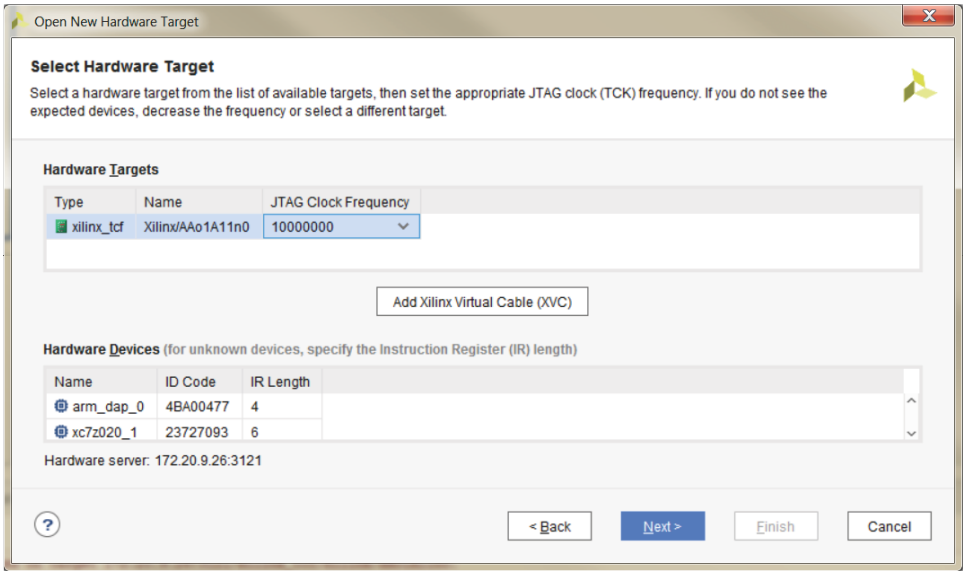
On the SmartLynq Data Cable module display, VREF ON appears if the target board is powered up and VREF OFF appears if the target board does not have power.

Note: The target board must be powered on in order to connect with the Vivado Hardware Manager. With the board powered on, you can connect using the Open New Hardware Target wizard.

The SmartLynq Data Cable module defaults to a JTAG clock (TCK) frequency of 40 MHz:



If no devices on the target board are listed under **Hardware Devices**, lower the JTAG clock frequency to 10 MHz (for example) to detect devices:



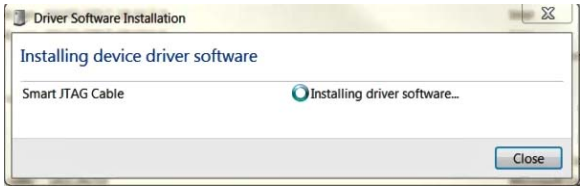
Setup—Connect through USB (Windows Systems)

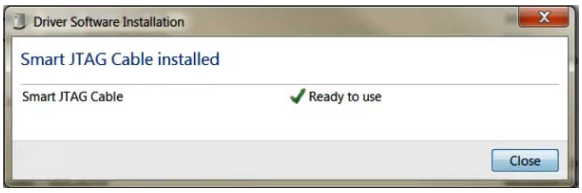
STEP 1: Connect the USB cable to the SmartLynq Data Cable module.

a. Plug a USB cable with a Type-B connector into the SmartLynq module USB port and the other end into the Windows host system.

   Note: The USB port supplies power to the SmartLynq Data Cable module so the power adapter is not required.

b. The Windows driver update launches and installs the driver. If you monitor the installation process, dialog boxes similar to these appear:





c. After the driver is installed, unplug and plug back in the SmartLynq module to reinitialize.

d. After initialization, an IP address appears on the display.

e. Connect the SmartLynq Data Cable to the target board using the Hardware Manager as described in Step 2 on page 3.

Setup—Connect through USB (Linux Systems)

STEP 1: Connect the USB cable to the SmartLynq Data Cable module.

a. Plug a USB cable with a Type-B connector into the SmartLynq module USB port and the other end into the Linux host system.

   Note: The USB port supplies power to the SmartLynq Data Cable module so the power adapter is not required.

b. The SmartLynq Data Cable module powers up. Self-check information appears on its display.

c. An IP address appears on the display.

STEP 2: Optional: Connect the SmartLynq Data Cable module to the target board.

This optional step shows how to set up the network interface for the SmartLynq Data Cable, if required.

a. Connect the SmartLynq Data Cable module to the JTAG interface on the target board.

b. Open the **Hardware Manager** in the Vivado tool.

c. In the **Connect to** list box, pull-down **Remote server.**

d. In the **Host name** field**,** specify the IP address shown on the SmartLynq module display. Click **Next.**

   Note: If the Hardware Manager cannot connect to the SmartLynq Data Cable, run the `ifconfig` command to set up the network interface (Step 3).

STEP 3: Set up the network interface for the SmartLynq Data Cable (if required).

Run the `ifconfig` command to configure the network interface depending on the IP address Linux assigned to the SmartLynq Data Cable.

For example, Linux assigns the IP address 10.0.0.2 to the SmartLynq Data Cable. Run `ifconfig` to view the currently active network interfaces on this system. Here is an example:

```
eth0      Link encap:Ethernet HWaddr D7:45:89:22:88:97
          inet addr:172.19.3.148 Bcast:172.19.3.255 Mask:255.255.252.0
          UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
          RX packets:2278375690 errors:0 dropped:307 overruns:0 frame:0
          TX packets:2305014867 errors:0 dropped:22 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:1026403610964 (955.9 GiB) TX bytes:1048839754879 (976.8 GiB)
          Interrupt:17

lo        Link encap:Local Loopback
          inet addr:127.0.0.1 Mask:255.0.0.0
          UP LOOPBACK RUNNING MTU:16436 Metric:1
          RX packets:41586323 errors:0 dropped:0 overruns:0 frame:0
          TX packets:41586323 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:107897957583 (100.4 GiB) TX bytes:107897957583 (100.4 GiB)
```

If none of the interface names have an Internet address that is part of the protocol address family that covers the assigned SmartLynq Data Cable address, use `ifconfig` to configure a new interface.

In the preceding example, the Linux system has two interfaces defined—`eth0` and `lo`. Neither interface has an Internet address like 10.0.x.x that includes the address 10.0.0.2 assigned to the SmartLynq Data Cable. Set up the interface by running `ifconfig` with the following arguments:

```
sudo ifconfig eth1 10.0.0.1 netmask 255.255.0.0
```

Run `ifconfig` again to show the new interface:

```
eth0      Link encap:Ethernet HWaddr D7:45:89:22:88:97
          inet addr:172.19.3.148 Bcast:172.19.3.255 Mask:255.255.252.0
          UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
          RX packets:2278375690 errors:0 dropped:307 overruns:0 frame:0
          TX packets:2305014867 errors:0 dropped:22 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:1026403610964 (955.9 GiB) TX bytes:1048839754879 (976.8 GiB)
          Interrupt:17

eth1      Link encap:Ethernet HWaddr 00:5D:03:00:00:01
          inet addr:10.0.0.1 Bcast:10.0.255.255 Mask:255.255.0.0
          UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
          RX packets:10 errors:0 dropped:0 overruns:0 frame:0
          TX packets:2 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:2396 (2.3 KiB) TX bytes:345 (345.0 b)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1 Mask:255.0.0.0
          UP LOOPBACK RUNNING MTU:16436 Metric:1
          RX packets:41586323 errors:0 dropped:0 overruns:0 frame:0
          TX packets:41586323 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:107897957583 (100.4 GiB) TX bytes:107897957583 (100.4 GiB)
```

Next Steps

Learn More
To learn more, please go to the product page www.xilinx.com/SmartLynq for additional resources.

Support
For support options related to this product, see the Xilinx support website at www.xilinx.com/support.

Warranty
For the product warranty, go to www.xilinx.com/kits/warranty.