

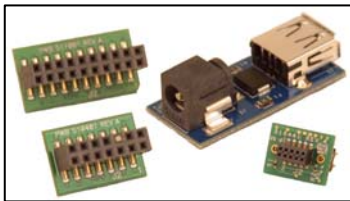
# XDS220 ISO USB/Ethernet CJTAG/JTAG Emulator

## Quick Start Installation Guide

### Items required for installation



XDS220 ISO Emulator



4 Adapters



2 Cables

## 1.0 SYSTEM REQUIREMENTS

- 2 GB of free hard disk space
- Microsoft Windows™ XP/Vista/Win7/Linux
- Min 1 BG RAM, 2 BG recommended
- Color Display
- Internet access
- USB port
- Ethernet port
- Code Composer Studio Rev 5.2 with TI emulator update 5.0.838, or higher

## Service and Support

Web	<a href="http://support.spectrumdigital.com">http://support.spectrumdigital.com</a>
E-Mail	<a href="mailto:support@spectrumdigital.com">support@spectrumdigital.com</a>

## 2.0 WHAT'S INCLUDED

- XDS220 ISO USB/Ethernet JTAG Emulator with CTI20 header
- Cables: USB cable, Ethernet cable
- 4 adapters: CTI20-TI14, CTI20-ARM20, CTI20-ARM10, Power-USB
- This Quick Start Guide (QSG)

**Note:** This kit does **NOT** include Code Composer Studio or drivers. This software can be obtained from Texas Instruments ([www.ti.com](http://www.ti.com)). See installation instructions below.

### 3.0 XDS220 ISO USB DEVICE and CODE COMPOSER STUDIO INSTALLATION

**Note:** Install ALL software prior to connecting the XDS220 ISO to the computer !

This setup guide assumes the user has already acquired and installed Code Composer Studio (CCS). If CCS has not been installed, then do so now. CCS is **not** included in the Spectrum Digital XDS220 ISO USB/Ethernet JTAG Emulator kit. The Spectrum Digital XDS220 ISO supports CCS 5.x, which can be downloaded from the TI web site.

The user must be logged onto Windows with "Administrative Rights" and any anti-virus software must be disabled during installations. Please contact your system administrator if help is needed in this area.

### 3.1 HOST CONNECTION, TARGET CONNECTION and CCS v5 CONFIGURATION INSTRUCTIONS

The XDS220 ISO can be attached to the host PC in several ways; USB only, USB+Ethernet, and Ethernet only. Section 3.1.1 describes the USB only installation, and section 3.1.2 describes the two Ethernet installations

#### 3.1.1 INSTALLATION with USB Only

1. All XDS220 ISO USB drivers and CCS v5 drivers are included with the CCS v5 software installation, or as an update.
2. Connect the included USB cable to a USB port on the host computer, then connect the USB cable to the XDS220 ISO. Windows will recognize the new hardware connection and complete the XDS220 ISO installation automatically on Windows 7 and higher. On Windows XP follow the hardware installer instructions and answer "Yes" or "default" if prompted.
3. Continue with "Target Connection and CCS v5 Configuration Instructions in section 3.1.3

#### 3.1.2 INSTALLATION with Ethernet

1. All XDS220 ISO Ethernet drivers and CCS v5 drivers are included with the CCS v5 software installation, or as an update.
2. Connect you XDS220 ISO to your network via the Ethernet cable provided.
3. Connect your XDS220 ISO to your PC via the USB cable provided, or alternatively you can connect the USB cable to the XDS220 via an external power supply (+5V) using the +5V to USB power adapter. Using the adapter will use the Ethernet only interface to the host.

When power is applied to the XDS220 ISO via the USB port the XDS220 ISO will begin it's network connection process. If a network IP address is assigned within about 15 seconds the ST1 LED will turn off and then the USB connection process will begin. If the USB port is not connected to a host then no USB connection will be established.

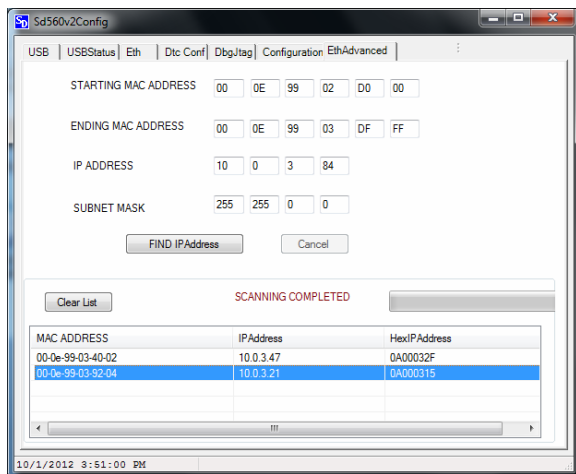
4. If you connected the USB cable to a host then you can get your ENET IP address via USB. From a command prompt go to:

```
<ccs_install_dir>\ccsv5\ccs_base\emulation\specdig\  
xds2xx.
```

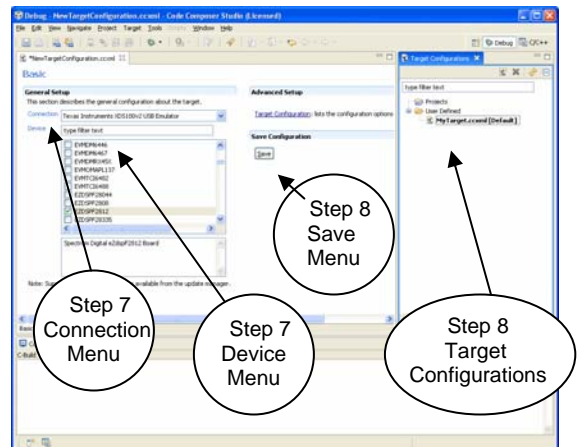
From the command line prompt execute "xds2xx\_conf get xds2xxu 0 ipAddress"  
Return value: ipAddress=10.0.3.21 for example

- Alternatively if you only used the USB for power (with adapter) run Sd560v2Config from the desktop icon
  - Select the EthAdvanced tab
  - Set the ENDING MAC ADDRESS to "00 0E 99 03 DF FF"
  - Select FIND IPAddress button. After a few minutes you should see a screen similar to the figure below. Now match the MAC address to the one on the bottom of the XDS220 to get your IP address

The EthAdvanced feature in Sd560v2Config is a generic IP address search and will look for devices on the network between the start and end MAC address. No other features in Sd560v2Config are applicable to the XDS220.



- The Code Composer Studio v5 window will appear. Click the "File" menu, then select : "New-->Target Configuration File"
- The "New Target Configuration" window will appear. Enter a file name that describes the emulator connection and/or Texas Instruments processor being used and then click "Finish".
- The "Basic" configuration setup window will appear. Select "Texas Instruments XDS2xx USB Emulator" or "Texas Instruments XDS2xx LAN Emulator" from the "Connection" menu and select the target processor being used from the "Device" menu. (See the screen shot below.)
- From the "Advanced" configuration setup window set your IP address if you are using the Ethernet/LAN connection.



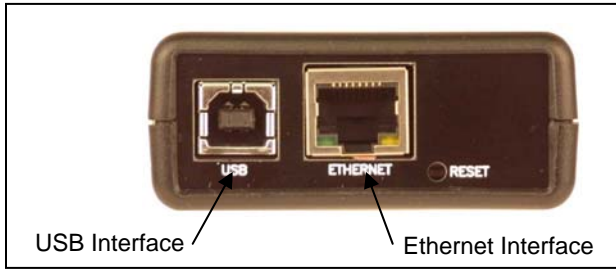
- Record the IP address for use later
- From this point do the normal CCS setup using the IP address to configure the XDS220 connection. See section 3.1.3.

### 3.1.3 Target Connection and CCS v5 Configuration Instructions

- The target processor board should be unpowered at this time. Connect the XDS220 ISO female CT120 pin JTAG connector to the CT120 pin male JTAG connector on the target board. If your target board does not use the CT120 pin connector attach one of the 3 adapters that came with the XDS220 ISO emulator to meet your requirements.
- Launch Code Composer Studio v5 from the shortcut on the desktop. (This was created when CCS v5 was installed.)
- Click the "Save" button to save the configuration.
- Apply power to the target processor board.
- Click the "View" menu and select "Target Configurations" to expose the configuration(s) that have been built or imported. A new tab labeled "Target configurations" will become available in the CCS window.
- Expand the "User Defined" folder. Right-click on the configuration that has been created and click "Launch Selected Configuration".
- CCS will now attempt to connect to the target processor through the XDS220 ISO.
- Code Composer Studio may now be used to download code and debug code on the target board.

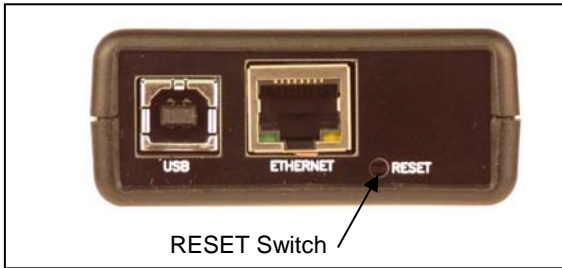
#### 4.0 XDS220 ISO Host Interfaces

The XDS220 ISO has two interfaces to the host PC; USB, and Ethernet. The position of the USB and Ethernet connectors are shown below.



#### 5.0 XDS220 ISO Switches

The XDS220 ISO has one switch; RESET. The RESET switch is used to reset the processor in the XDS220 ISO. The RESET switch is used during the manufacturing process at the factory and should NOT be used by the user. The position of the RESET switch is shown below.



#### 6.0 XDS220 ISO LEDs

The XDS220 ISO has three LEDs which provide status information about the operation of the XDS220 ISO. The position of the LEDs and their functions are shown below.

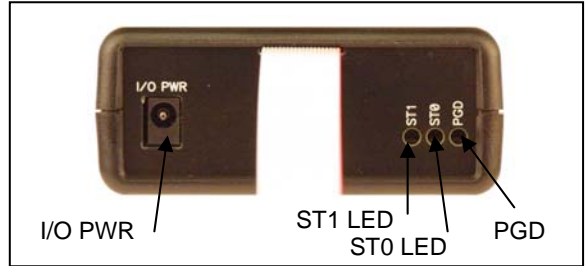


Table 1: XDS220 ISO LEDs

LED	Color	Function
PGD	Green	Emulator Power Good
ST0	Green	On=XDS220 ISO has booted & ready for emulation download Off=XDS220 ISO emulation driver has been downloaded This occurs during CCS target launch
ST1	Green	Flashes on when there is emulation driver activity

## 7.0 XDS220 ISO Isolation Specification

The XDS220 ISO uses the ISO7240M for isolation which has the following specifications:

- a. 150-Mbps Signal Rate Options
  - Low Channel-to-Channel Output Skew: 1 ns Max
  - Low Pulse-Width distortion (PWD); 2 ns Max
  - Low Jitter content; 1 ns. Typ at 150 Mbps
- b. Typical 25 Year Life at Rated Working Voltage (see application note SLLA197)
- c. 4000-VpeakVIOTM, 560-VpeakVIORM per IEC 60647-5-2 (VDE 0884, Rev 2)
- d. UL 1577, IEC 61010-1, IEC 60950-1 and CSA approved
- e. 4 kV ESD protection
- f. Operates with 3.3-V supply
- g. High Electromagnetic Immunity
- h. -40c to +125C operating range

**Note 1:** Additional +/- 15Kv ESD protection provided by TPDE002

**Note 2:** Optimal isolation is provided by using the Ethernet port since it is a magnetically coupled interface to the host. The Ethernet port allows for a significantly greater distance between the emulator/target and the PC/user. Performance of Ethernet and USB port are generally the same in most local network environments.

**Note 3:** The ISO7240M device outputs drive logic 1 on the target side when power is not applied from the emulator side. The side affect is that T\_SRST\_N, T\_EMU0 and T\_EMU1 will be pulled low by mosfets. If T\_SRST\_N is incorporated into the reset logic the target will be held in reset until power is applied to the emulator side.

## 8.0 CTI20 header and Adapter Pin Outs

The table below shows the pin outs for the CTI20 header and adapters.

**Table 3: XDS220 CTI20 Header and Adapter Pin Outs**

Pin#	CTI20 Adapter	TI14 Adapter	ARM20 Adapter	ARM10 Adapter
1	TMS	TMS	VTRef	VTRef
2	nTRST	TRST	Vsupply	TMS
3	TDI	TDI	nTRST	GND
4	TDIS (GND)	TDIS (GND)	GND	TCK
5	TVRef	TVRef	TDI	GND
6	KEY	KEY	GND	TDO
7	TDO	TDO	TMS	GND
8	GND	GND	GND	TDI
9	RTCK	RTCK	TCK	TDIS (GND)
10	GND	GND	GND	nRESET
11	TCK	TCK	RTCK	
12	GND	GND	GND	
13	EMU0	EMU0	TDO	
14	EMU1	EMU1	GND	
15	nRESET		nRESET	
16	GND		GND	
17	EMU2		DBGRQ	
18	EMU3		GND	
19	EMU4		DBACK	
20	GND		GND	

## 9.0 SUPPORT RESOURCES

1. If you have problems or need additional information regarding the embedded emulation please refer to the XDS220 USB wiki on the TI web site. The URL for this site is:

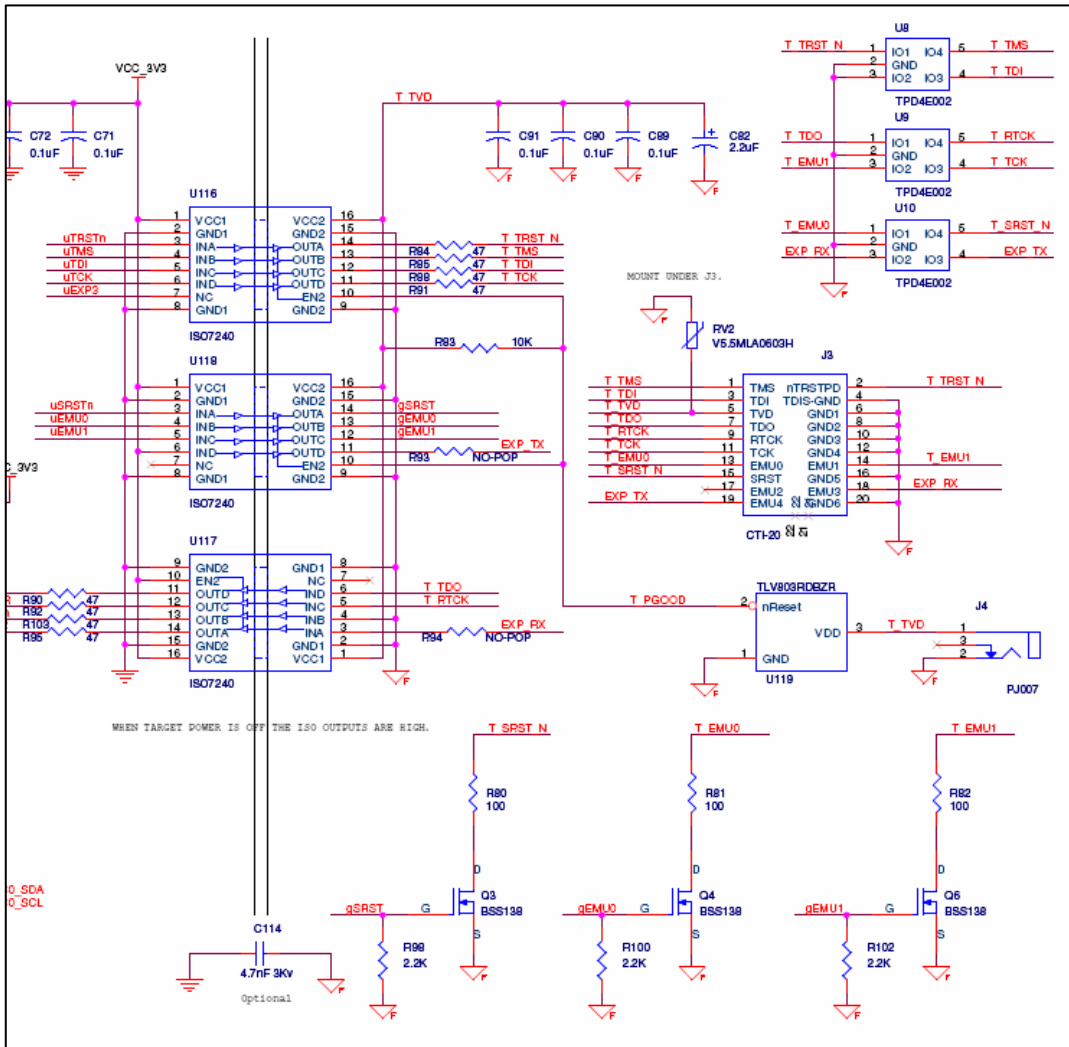
<http://processors.wiki.ti.com/index.php/XDS200>

2. Code Composer Studio support is available via a forum at: <http://community.ti.com/forums/138.aspx>
3. More information about other Spectrum Digital emulators can be found at:

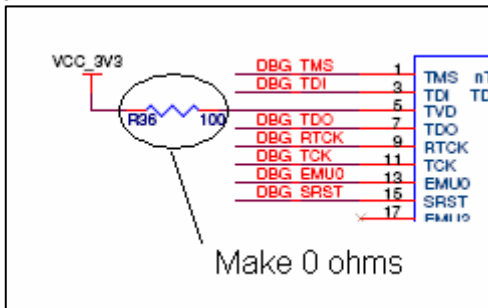
[www.spectrumdigital.com](http://www.spectrumdigital.com)

# 10.0 XDS220 ISO Isolation Logic

The figure below shows the emulation isolation logic on the XDS220 ISO emulator.



The figure below shows the modification required on the TVD signal on the target board.



**Note:** The ISO backend is powered by the target and requires 3.3V at ~35mA which is supplied by the TVD pin of the target connector. The figure on the left shows a typical JTAG header with 100 ohms on TVD. The 100 ohm result will limit the current and result in about 2V level on TVD. The 100 ohm should be replaced with 0 ohm. If it is not possible then the customer can supply TVD into the alternate I/O PWR jack J4 (I/O PWR on the input panel.)

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## NOTES