

# SEED-XDS560v2 JTAG Emulator User's Guide

DSP Development Systems

# SEED-XDS560v2 JTAG Emulator Installation User's Guide

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http://www.seeddsp.com

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## Preface

## **Read This First**

#### About This Manual

This document describes the installation and operations of the SEED-XDS560v2 Emulator.

The SEED-XDS560v2 Emulator is used for the development platform of Texas Instruments DSP processor. The SEED-XDS560v2 Emulator is a high speed emulator and adapts to all series of Texas Instruments DSP processor.

#### Warranty

The warranty period for all hardware and software products manufactured by SEED International is one year after shipment. SEED International guarantees free of charge repair or replacement for the manufacturer caused damaged products during warranty period. Software updates will be sent free of charge to the customer during warranty period.

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#### • Minimizing Personal Injury:

To minimize the risk of personal injury, always turn off the power to your PC and unplug the power cord before connect the SEED-XDS560v2 JTAG Emulator

#### • Minimizing Electrical Shock and Fire Hazard:

To minimize the risk of electric shock and fire hazard, be sure that all major components that you interface with SEED devices are limited in energy and certified by one or more of the following agencies: UL, CSA, VDE, or TUV.

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## **Chapter 1**

## SEED-XDS560v2 Instruction

### **1.1 Product Outline**

SEED-XDS560v2 fully supports XDS560v2 from Texas Instruments, support real-time emulation, debugging and system trace function. SEED-XDS560v2 have two kinds of communication interface: USB2.0 High speed (480MB/S) and Ethernet RJ45 (10/100M). It supports CCS4.1.3 and versions above, suitable for all the platform classes of TI including DM816x and C66xx.

#### 1.1.1 SEED-XDS560v2 Hardware Features

- Support traditional JTAG protocol IEEE 1149.1 and IEEE 1149.7
- Support high speed USB2.0 and 10/100Mbit Ethernet host interface
- Support System Trace
- Support TI C2000/C5000/C6000/ARM/ARM Cortex/Sitara/OMAP/DaVinci classes
- Support multi-CPU debugging
- Unique MAC address
- Configurable IP addresses
- ▶ Programmable TCLK: up to 64MHZ
- ➢ MIPI standard 60-pin HSPT
- Support JTAG from +1.2 to +4.1 V
- High-speed anti-interference emulation cables

#### 1.1.2 SEED-XDS560v2 Software Features

- Support CCS4.1.3 and versions above
- Support Windows XP/Vista/Win7

#### 1.1.3 SEED-XDS560v2 Accessories introduces

□ XDS560v2 Emulator



Figure1 XDS560v2 Emulator

□ Ethernet port, USB interface and power interface on one side of the Emulator



 Six LED indicators on SEED-XDS560v2 : COM-LED1, COM-LED2, COM-LED3, EMU-LED1, EMU-LED2, EMU-LED3 (from left to right)



#### Table1 LED Information

LED	Color	Description
COM-LED1	Red	XDS560v2 Ready
COM-LED2	Red	Shows XDS560v2 FPGA programmed state
COM-LED3	Green	Shows XDS560v2 system Boot Activity
EMU-LED1	<mark>Green</mark>	Shows target to XDS560v2 Trace Activity
EMU-LED2	Red	Shows XDS560v2 to host Activity
EMU-LED3	<mark>Green</mark>	Show connectivity via CCS when at on a state

#### JTAG Adaptor (Do not plug or unplug the adaptor then it is at work)

SEED-XDS560v2\_6014\_v0.3

This adaptor is provided for customers' 14pin JTAG target board:



When customer's JTAG is 14pin, please use the front of the Adaptor to plug in the following JTAG at the end of emulator cable, then plug the back of the Adaptor into your target board.



SEED-XDS560v2\_6020\_v0.3

This kind of Adaptor is designed for 20pin JTAG target boards:



Front

Back

When your target board is 20-pin JTAG, after plugging the front of the Adaptor into the JTAG at the end of the emulator cable, then plug the back of the Adaptor into your target board.

□ USB A/B Cable

There exists an USB interface on SEED-XDS560v2, when you are debugging by USB or you are configuring emulator IP, please connect the A-end of the USB Cable with the USB port on the PC, B-end is used to connect USB port on the emulator





#### Ethernet Cable

There exists an Ethernet port on SEED-XDS560v2, when you are debugging by network, please connect the net port on 560v2 and PC (or Router) with this Ethernet cable.





#### □ 5V Power

When powering the emulator, please connect the power port on the emulator with the right side 5V Power



#### □ CD ROM

This CD ROM includes: SEED-XDS560v2 Driver.exe SEED-XDS560v2 JTAG Emulator Installation User's Guide SEED-XDS560v2 Configuration Tools Users' Guide



Note: SEED is updating the software time to time, please pay attention to the news on <u>www.seeddsp.com/eng</u> to upgrade your driver.

## **1.2 Product Support**

- > Please contact your local distributor to get directly product support
- You can also send email to SEED International directly: <u>tech-support@seeddsp.com</u>

## Chapter 2

## SEED-XDS560v2 Driver Installation

The minimum system requirement for installing XDS560v2:

- Windows XP Professional edition
- Code Composer Studio<sup>™</sup>V4.1.3.00038

#### Note

SEED-XDS560v2 only supports Code Composer Studio with CCS 4.1.3.00038 and version above

Before installing driver, please make sure you have installed CCS already. The manual take CCS4.2.3.00004 as an example.

#### Caution

To minimize the risk of personal injury, always turn off the power to your PC and unplug the power cord before connecting the SEED-XDS560v2 JTAG Emulator

To minimize the risk of electric shock and fire hazard, be sure that all major components that you interface with SEED devices are limited in energy and certified by one or more of the following agencies: UL, CSA, VDE, or TUV.

### 2.1 CCS4 Installation

### 2.2 XDS560v2 Driver Installation

Please install the driver in strict accordance with the following step.

#### 2.2.1 SEED-XDS560v2 Driver Installation

1. Click "SEED-XDS560v2 Driver.exe", start installation.



#### 2. Click "Next ".

SEED-XDS560V2 Driver	- InstallShield Vizard	×
	Welcome to the InstallShield Wizard for SEED-XDS560V2 Driver The InstallShield Wizard will install SEED-XDS560V2 Driver on your computer. To continue, click Next.	
InstallShield	< Back [Next>] Cancel	

3. Choose "I access the terms of the license agreement ", click "Next ".

SEED-XDS560V2 Driver	- InstallShield Wizard	×
License Agreement Please read the following licen	se agreement carefully.	
	END-USER LICENSE AGREEMENT FOR THE SEED XDS560V2 Emulator         IMPORTANT-READ CAREFULLY: This SEED End-User License Agreement ("EULA") is a legal agreement between you (either an individual or a single entity) and SEED Corporation for the SEED-XDS560V2 Emulator software product identified above, which includes computer software and may include associated media, printed materials, additional computer software applications, and "online" or electronic documentation ("SOFTWARE PRODUCT"). By downloading, installing, copying, or otherwise using the SOFTWARE PRODUCT"). By downloading, installing, copying, or otherwise using the SOFTWARE PRODUCT, you agree to be bound by the terms of this EULA. If you do not agree to the terms of this EULA, do not install or use the SOFTWARE PRODUCT; you may however, return it to your place of purchase for a full refund.         This program is protected by copyright law and international treaties.         Unauthorized reproduction or distribution of this program, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under law.         For "SEED-XDS560V2 Emulator" support please check out website http://www.seeddsp.com/         UNDEFED VIDEFED (For the license agreement         Entry	
InstallShield	< <u>B</u> ack <u>N</u> ext > Cano	:el

4. Choose CCS Installation Path, choose "Next " (the default install path is recommended)

SEED-XDS560V2 Driver - Instal	lShield Vizard	×
Choose Destination Location Select folder where setup will install files.		
	Install the driver in the directory where the selected CCS is installed: C:\Program Files\T exas Instruments\ccsv4	Change
InstallShield	< Back	Cancel

#### 5. Click "Install ".

SEED-XDS560V2 Driver -	· InstallShield Vizard	K
Ready to Install the Program The wizard is ready to begin inst	allation.	
	Click Install to begin the installation. If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.	
InstallShield	< Back Install Cancel	

#### 6. Install driver



7. Click "Finish ", finish the installation of driver.

SEED-XDS560V2 Driver - I	installShield Vizard
	InstallShield Wizard Complete
	The InstallShield Wizard has successfully installed SEED-XDS560V2 Driver. Click Finish to exit the wizard.
InstallShield	< Back Finish Cancel

#### 2.2.2 Install emulator hardware devices

- 1. Use the USB Cable to connect the emulator with the computer;
- 2. Power the emulator with the 5V power, COM-LED3 light turns green, XDS560v2 starts loader.



3. Please wait until the COM-LED3 green light is off and the lights "COM-LED1" & "COM-LED2" turn red, that means loader finish, PC will display "found new hardware ".



4. Choose "No, not this time ", choose "next".

Found	New I	Hardware	Wizard
-------	-------	----------	--------

Welcome to the Found New Hardware Wizard Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission). Read our privacy policy
Can Windows connect to Windows Update to search for software? Yes, this time only Yes, now and every time I connect a device No, not this time
Click Next to continue.
< <u>B</u> ack <u>N</u> ext > Cancel

5. Choose "Install the software automatically (Recommended)", click "Next "



6. PC is installing emulator driver.

Found New Hardware Wizard			
Please wa	ait while the wizard installs	the software	
Ŷ	SEED XDS560v2 USB		
	6		
		< Back Next > Ca	incel

7. Click "Finish ", the emulator finish driver intallation.



8. Open "Device Manager". Windows will confirm that the SEED-XDS560v2 has been installed successfully shown in following figure:



9. Unplug the emulator power.

# Chapter 3

### SEED-XDS560v2 Usage

SEED-XDS560v2 Emulator could connect the target board via network or USB. Details of the two ways introduction are as following.

This article take CCS V4.2.3.00004 as an example, the target board is SEED-DEC28335 (a kind of EVM board produced by SEED International which has the similar function as TI's EVM board), target chip is TMS320F28335.

### 3.1 XDS560v2 USB debug

#### 3.1.1 Hardware connection

- 1. Use USB Cable to connect SEED-XDS560v2 with computer host
- 2. Plug the JTAG of the emulator into the JTAG interface of the target board
- 3. Power emulator with 5V power, COM-LED3 light turns green, the emulator starts program loading
- 4. Wait until COM-LED3 light is off, and lights COM-LED1 and COM-LED2 turn red.
- 5. Power the target board.

#### 3.1.2 Software Debugging

1. Launch "CCS4.2.3 ", choose "Target \New Target Configuration".

🎲C/C++ - Code Composer Studio		
<u>F</u> ile <u>E</u> dit <u>V</u> iew <u>N</u> avigate <u>P</u> roject	Target Tools Scripts Window Help	
🖪 📥   🗟 🍪 ତ +   🏇 •   9	😭 New Target Configuration	$\tau \rightarrow \tau$
C/C++ Pro 🕄 Target Co 🔀	🛸 Debug Active Project	
	🌾 Launch TI Debugger	
	Debug <u>H</u> istory	
type filter text	De <u>b</u> ug	

2. You can use the default file name or also rename it, then click "Finish".

😵 New Target Configuration	×
Target Configuration	
Create a new Target Configuration file.	
	-
Tile Name: SEED-DEC20335_AD5500V2-05B; CCXMI	
✓ Use shared location	
Location: C:\Documents and Settings\luckwu\user\CCSTargetConfigurations	
⑦     Einish   Cancel	

 Connection: choose "SEED XDS560V2 USB Emulator" Device: write "28335"

And choose the option "TMS320F28335"

Then click "Target Configuration"

🖹 *SEED-DEC2	3335_XDS560V2-USB.ccxml 🗙	
Basic		
General Se	tup	Advanced Setup
This section	n describes the general configuration about the target.	
Connection	SEED XDS560V2 USB Emulator	<u>Target Configuration</u> : list: target.
Device	28335	
	EZDSPF28335 Experimenter's Kit - Delfino F28335 TMS320F28335	Save Configuration
	~	
Note: Supp manager.	ort for more devices may be available from the update	

4. Click C28XX, choose the "gel" file though "Browse"

🖹 *SEED-DEC28335_XDS560V2-USB. ccxml 🗙		
Target Configuration		
All Connections	•ties	
□ ¶ SEED XDS560V2 USB Emulator_0 □ ♠ TMS320F28335_0 □ ↓ €28xx	nport perties of the selected cpu. <u>N</u> ew	
	Add tion script D:\CCS4.xProgramTest\SEED-DEC2	rowse
	Delete	
	<u>Up</u>	
	Down	
	Save	

 Click "SEED XDS560V2 USB Emulator\_0", you can find some configurations, you need to revise the parameter according to different chips. For chip TMS320F28335, please choose default parameter, then click "Save"

🔮 *SEED-DEC28335_XDS560V2-USB.ccxml 🗙			□ [
Target Configuration			
All Connections		ction Properties	
- P SEED XDS560V2 USB Emulator 0	Tenevt	we properties of the selected connecti	on.
☐ ♠ TMS320F28335_0		l Data File	auto generate
	<u>N</u> ew	itor I/O Port Number	I/O Port = 0
	<u>A</u> dd	TCLK Frequency (MHz)	Automatic with faste
	Delete	'DO Output Timing	Rising edge allows #
	Up	TAG nTRST Boot-Mode	Disabled - Both EMU
	Down	'ower-On-Reset Boot-Mode	Disabled - Both EMU
	<u>S</u> ave	Goot-Mode Pin Map	EMU1 = Pin TRD0.2 ar
		TAG Signals Isolation Upon Disconnect	Do not isolate JTAG

6. Choose "Target\Launch TI Debugger";



7. After uploading, it is showed as the following figure:



8. Choose "Target\Connect Target", connect the board.

💱 Debug - SEED-DEC28335_XDS	560V2-USB.ccxml = Code	Composer Studi	o (Licensed)
<u>F</u> ile <u>E</u> dit <u>V</u> iew <u>N</u> avigate <u>P</u> roject	Target <u>T</u> ools Scripts <u>W</u> indow	<u>H</u> elp	
: E 🕒 🖻 🍪 : 🗣 🏷 🖉	🕰 Load Program	Ctrl+Alt+L	I - 🍫 🔶 -
* D.L	🚱 Reload Program	Ctrl+Shift+L	-11 (1) S2
₩ Debug 23	📥 Load Symbols		- Local (I) 23
E W SEED XDS560V2 USB Emulator_0,	🛠 Add Symbols		lame
Disconnected Device			
🖃 🔎 Thread [main] (Disconn	<u>昇 C</u> onnect Target	Alt+C	
🚽 🕞 🖉 🖓 🕞 🕞	Disconnect Target	Alt+D	
SEED XDS560V2 USB Emulato	🎭 Restore Debug State		
SEED XDS560V2 USB Emulato	Restart	Alt+F8	

 At this time, the board has been connected with the emulator; you can debug the chip now. Meanwhile, EMU-LED3 turns green.



### 3.2 Network Debug

Before debugging by network, you must configure network IP for the emulator, the configuration tool locates at: ..\ccsv4\common\uscif\SEEDXDS560V2\_Config.exe Set static IP Address, for detailed step please refer to the document on CD ROM "SEED-XDS560v2 Configuration Tools Users' Guide"

#### 3.3.1 Hardware connection

- 1.Connect SEED-XDS560v2 to PC with the USB cable (If the IP has been configured already, you can also don't use the USB cable)
- 2.Connect SEED-XDS560v2 to PC with the Ethernet cable.
- 3. Plug the end of emulator's JTAG into the board's JTAG.
- 4. Power the emulator with 5V-POWER, the COM-LED3 turns green, then the emulator is uploading programme.
- 5. Please wait until COM-LED3 off and COM-LED1 & COM-LED2 turn red
- 6.Power the board.

#### 3.3.2 Software debugging

1 Launch CCS4.2.3, choose"Target\New Target Configuration";



2 You can use the default file name, or rename it by yourself. Click "Finish";

🕸 Wew Target Configuration	X
Target Configuration Create a new Target Configuration file.	
File name: SEED-DEC28335_XDS560V2-LAN ccxml	
Location: C:\Documents and Settings\luckwu\user\CCSTargetConfigurations	Workspace
⑦ <u>Finish</u>	Cancel

Connection: choose "SEED XDS560V2 LAN Emulator"
 Device: write "28335"

Choose the option "TMS320F28335", and then click "Target Configuration"

🖹 *SEED-DEC28335_XDS560-LAN. ccxml 🗙	
Basic	
<b>General Setup</b> This section describes the general configuration about the target	Advanced Setup
Connection SEED XDS560V2 LAN Emulator Device 28335	<ul> <li><u>Target Configuration</u>: li: target.</li> </ul>
EZDSPF28335 Experimenter's Kit - Delfino F28335 ✓ TMS320F28335	Save Configuration

4 Click "SEED XDS560V2 LAN Emulator\_0", input the IP address on the option of "The Emulator IP Address". This article set the IP as "192.168.253.183";

🖹 *SEED-DEC28335_XDS560-LAN. ccxml 🗙			- 8
Target Configuration			
All Connections		erties	
- R SEED XDS560V2 LAN Emulator 0	Import	: of the selected connection	on.
TMS320F28335_0	I market and the second		auto generate
	<u>n</u> ew	.ddress	192. 168. 253. 183
	<u>A</u> dd	.cy (MHz)	Automatic with faster 35.0MHz limi
	Delete	ming	Rising edge allows faster TCLK
	Up	ot-Mode	Disabled - Both EMU pins remain hi
	Down	t Boot-Mode	Disabled - Both EMU pins remain hi
	Save	. Map	EMU1 = Pin TRDO.2 and EMUO = Pin 1
		Isolation Upon Disconnect	Do not isolate JTAG signals when 1

5 Click "C28XX", choose the "gel" file through "Browse";

🖹 *SEED-DEC28335_XDS560-LAN.cexml 🗙		
Target Configuration		
All Connections		erties
□ 〒 SEED XDS560V2 LAN Emulator_0 □ ♠ TMS320F28335_0 □ ↓ ↓ C28xx	Import New	coperties of the selected cpu.
	<u>A</u> dd	:ation script D:\CCS4.xProgramTest\SEED-DEC2
	Delete	Processor
	Up	
	Down	
	Save	

6 Choose "Target\Launch TI Debugger";



7 After uploading, it shows as the following figure:



8 Choose "Target\Connect Target";



9 At this time, the board and the emulator have been connected, you can start the debugging. Meanwhile, EMU-LED3 turns green.



## **Chapter 4**

## Cautions when using SEED-XDS560v2

- 1. Do not plug or unplug emulator JTAG cable when it is working
- When using the configuration tools, it is necessary to use USB cable to connect XDS560v2 with the computer;
- When configuring network IP of the emulator, ensure that the emulator's IP and the computer's IP are in the same network segment;
- 4. If you have modified IP, you must restart the emulator to make it work normal.
- 5. When removing the emulator, to protect the cable working normally, please note that do not strain the JTAG cable or pull it hard.
- Please connect JTAG cable in a right way, otherwise it will lead the emulator or target system broken. In order to prevent you from plugging wrong port, the six pin in JTAG has been blocked.

# Appendix A

## JTAG Adaptor Introduction

## A.1 SEED-XDS560v2\_6014\_v0.3

Signal	Pin#	Pin#	Signal
TMS	1	2	nTRST <sup>†</sup>
TDI	3	4	TDIS
TVD	5	6	key
TDO	7	8	GND
RTCK	9	10	GND
TCLK	11	12	GND
EMU0	13	14	EMU1

<sup>†</sup>Signal active low

## A.2 SEED-XDS560v2\_6020\_v0.3

Signal	Pin#	Pin#	Signal
TMS	1	2	nTRST <sup>†</sup>
TDI	3	4	TDIS
TVD	5	6	key
TDO	7	8	GND
RTCK	9	10	GND
TCLK	11	12	GND
EMU0	13	14	EMU1
nSRST <sup>↑</sup>	15	16	GND
EMU2	17	18	EMU3
EMU4	19	20	GND

<sup>†</sup>Signal active low

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