

Emlink ICE for Blackfin JTAG Adapter

User's Getting Started

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Emlink ICE for Blackfin connections

Q: How to connect the Emlink to my target board?

A: Emlink has two sides, one is connected to PC through an USB port(Host), another is JTAG port to connect to your target board's JTAG port. Emlink can be power supplied via PC's USB port.

Because of the Emlink JTAG port is 20pins, 2.54mm female interface, it can be easy to plug it into the target's JTAG 20pins directly (notes that the JTAG signal should be designed following Emlink Signal described in the hardware documentation. Meanwhile, Emlink can also connect to JTAG 14pins, 2.54mm interface, which designed following ADI EE-68 used, in this instance, Emlink first to connect with a convert module (a tiny board), Pin1 to Pin1(red triangle):



Figure 3.1 Emlink + JTAG20-14-8 convert module

Q: How to confirm the Emlink connection? Why errors appeared?

A: Emlink does not support ADI VisualDSP++ 'ICE Test' function to test the ICE connection. Emlink will work normally in these circumstance:

* there is seem 'USB Serial Coverter A and B' under the 'General Bus Controller', while running the Device manager, or

* connect to the target through VDSP++ Session and no errors appeared.

Emlink for VisualDSP++ also gives two type of errors to test the connections(same as ICE TEST function):



or something wrong with target board, such as no enough voltage and current.



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Emlink ICE for VDSP++ Getting Started

EMLINK-BH Features:

- Compatible with ADI VisualDSP++ 3.5/4.0/4.5/5.0 IDDE
- Supports Blackfin processors, BF531/2/3/4/6/7 etc.
- · Debugging with Halt, Step, Run, Breakpoint
- Supports Windows98/NT/2000 /XP host
- Support USB 2.0 protocol
- Mini and smart size: 45x32x12mm, weight about 55g
- · Power suply via USB port without power adapter
- + JTAG port (20pins, FH2.54mm) for connecting target board
- Downloading and debugging speed up to 200KBytes/s (1.5Mbps)
- · Support to program on-board Flash.

Emlink ICE for Blackfin (Type: EMLINK-BH)



Figure 2.1 Emlink ICE for Blackfin package box (full-scale picture)

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Emlink for VDSP++ Driver Installation

A webpage will be prompted out after input the Emlink CD to your CDROM (Enable Win-Autorun), then click to 'Install EmlinkforVDSP++' on the right side:

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|---|---|---|--|
| AutoBIN Documents Delvers Products Software Readen. Let | satarun webpage file uret samual and urer ruide Baluad drawer for All VirualDIP+e Babert products celesse wilities this file | Click here to Install | Browne this CDRO Release products |
| USB driver shal port. 1. Legin winds 11. Click to : Halink driver : Halink driver : Halink driver : Halink driver : halink driver : http://www.ft The tested driv | d be installed while first time is connect one is a symptometer. The Baladrin'Differ, the DDB driver will be is published by FDE Dutures Tethenlogy Devi estreed. Here detail about the driver, pils highly, eac/by were/Differ. More were version is under this directory. Driver by Yours/Differ. installation | Emilink to PC UEB - installed to your PC, over International mass wight this callalink-UEB-Oriver). | |

* If disable the Windows Autorun function, please find this file and click to run: 'AutoRUN\index.htm'

- * Any windows system cautions appeared while installing, please click OK.
- Here click EmlinkforVDSP++.exe to run and settings as following:

1. Check which version of VisualDSP++ has installed on your Windows. Emlink driver setup file can detect any one or more version of VisualDSP++, the check box can be selected if any version of 4.5/4.0/5.0 being installed on your PC, otherwise it is a gray check box. (ADI VisualDSP++ should be authorized by ADI.)

| Italiank lisulator for Choose Components Choose which features of the install. | × Viana105P++ v1.3 | . 0. 131b Set up 🔲 🗆 🔯 |
|--|--|---|
| Check the components you wa install. Click Install to start the | nt to install and uncheck the c installation. | emponents you don't want to |
| Select components to install: | VacalDSP+++ 4.0 | Description Position your measure shear a component to see the description |
| Space required: 3.948 | | |
| adoutt Instal System v2.04 | | Instal Cancel |

Figure 4.2 Choose which version of VisualDSP++ (one or more)

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2. If one or more version of VisualDSP++ can be select, click 'Install' to continue, the prompt out window as following

| lease wait while Emirik Emulator for Visua | IDSP++ v1.3.0.131b is being installed | 4 |
|--|---------------------------------------|-----------------------|
| xecute: "DPInat_Monx86.exe" | | |
| | | |
| Extend: downl.aml., 100% Extend: DPInstol6.exe., 100% Extend: DPInstol6.exe., 100% Extend: DPInstol6.exe., 100% Extend: DPInst_Moral6.exe., 100% Extend: fisbour.cat., 100% Extend: fisbour.cat., 100% Extend: fisbour.fi., 100% Extend: fisbour.fi., 100% | | |

After a while, the Emlink USB driver should be installed to your windows, and display message such as: '...Process completed.', then press Enter to finish, show as figure 5.2(a). The setup program will go on to copy and install Emlink driver for VDSP++. If the last message gives out: 'Completed', installation has success and finish, show as figure 5.2(b)

| Colorens (meth) (meth) (methodal (methodal) | Installation Complete | - |
|--|---|---|
| 2-hit OS detected · | hard on the heat recorder. | - |
| C: JOCUME'1 VARINI'1 LOCALS'1 Jenp varq46, tmp \BPInstx86.exe" | Complement | |
| nstalling driver | | |
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| | Completed | |

Figure 5.2 (a) press Enter to exit USB installation (b) install completed and all 100%

3. Create a new Session under VisualDSP++ 4.5/4.0/5 to check if the EmlinkforVDSP++.exe installed success or not. If the installation was correct, the reserved device 'Legacy target' was available (can be selected) as following Otherwise, the 'Legacy target' could not be selected (gray) if the Emlink driver install failed

| Select the type of target that you would like to connect | to. |
|--|---|
| ○ EZ-KIT Lite | |
| C Emulator | |
| Simulator | |
| Legacy target | 🚓 USB Serial Convert de USB Serial Convert |
| | |

Figure 5.3 (a)Emlink target selection for VDSP++ Session (b)Emlink device NOTES: If the Emlink USB driver installed failed, the error '0x80004005' will be appeared while connect Emlink to your target. Please check them like Figure 5.3

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Emlink ICE for Blackfin Hardware description

Features:

- Compatible with ADI VisualDSP++ 4.0/4.5/5.0 IDDE Supports Blackfin BF53x processors, BF531/2/3/4/6/7 etc
- · Debugging with Halt, Step, Run, Breakpoint ◆ Supports Windows98/NT/2000 /XP host

Embest Emlink ICE for Blackfin DSP

Hardware signals and ports

Emlink has two sides, one is connected to PC through an USB port(Host), another is JTAG port to connect to your target board's JTAG port. Emlink can be power supplied via PC's USB port



Figure 7.2 Emlink JTAG signal definition and connection

NOTES for JTAG signal designed:

- It is recommended to design your target board as 20pins, then Emlink can be plugged in directly.

- If designed to other pins (only connect the active signals' pin), then user has to connect correct signal to Emlink JTAG port.

- There is 10Kohm resistor pulled up inside Emlink nTRST pin, please do not pulled down with resistor this signal in board side (open or >10Kohm). - All signal 'GND' should be connect to target board ground. OV.



Emlink for VDSP++ Screen Shots and FAQs

Emlink driver for VisualDSP++ setup process is easy to understand: click EmlinkforVDSP++.exe to run, then the driver could be installed on the Windows system, the 'Legacy target' should be available to select.

| Choose the type of con- Talcone Salect Processor Salect Proceso | rection that you would be to establish for the previously chosen processed below CONCENT Connection Type Salert the type of target that you would like to connect to O II-SpT Lite O Salator O Jaculary O Jaculary O Jaculary |
|--|--|
| ¢ | [nfigurator.] [Licenses] |
| | |

Figure 6.1 Emlink for VDSP++ Connection Type

Emlink ICE for Blackfin can use to debug BF531/2/3/4/6/7 target: debug source code in RAM or trace in Flash

|)ebug jarget | | Pjocessor. | enuation and its not see | exercise and provide the specific periods if of power to the formation is an experior step for the feature of t | |
|--|-----|--|----------------------------------|--|--|
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| Session game: | | ADSP-8F537 | | | |
| ADSP-BF531 Black/in Family Emulator via Em | írk | | | | |
| - | | | | This gli platters aligenter (Linese | |
| <u>Show all targets and platforms</u> | | | Select your platform | | |

Figure 6.2 Session for BF53X + Emlink

* NOTES: ADI VisualDSP++ 4.0/4.5/5.0 are the commercial products provide by ADI, customer should be authorized by ADI before using Emlink to debug your system.

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Signal Тур Description Test Reset (JTAG): Resets the test state machine. The TRST signal must be asserted after power up to ensure proper JTAG operation. The TRST signal has a Input TRST Asynchronous 10 Kohm internal pull-up resistor. Please do not pulled down with resistor on this pin in board side, but let it open or pulled download >10Kohm. TCK Input Test Clock (JTAG): Provides an asynchronous clock for JTAG boundary scan. Test Data Input (JTAG): A serial data input of the boundary scan path. This TDI Input signal has a 10 kW internal pull-up resistor TDO Output Test Data Output (JTAG): A serial data output of the boundary scan path. Test Mode Select (JTAG): Controls the test state machine. This signal has a TMS Input 10 kW internal pull-up resistor. nSRST Input The target system reset signal. ICE can reset target via this signal. No connect on Emlink side. NC Х GND Х Ground. RES X Reserved

Refer to the IEEE 1149.1 JTAG specification for detailed information on the JTAG interface. This document assumes a working knowledge of the JTAG specification

Power supply

Emlink can be power supplied via PC USB, without any power adapter.

Emlink Connect Target

Select the type of target that you would like to connect to ○EZ-<u>K</u>IT Lite O Emulator Sinulato Legacy target 😴 USB Serial Converter A 😋 USB Serial Converter B

Figure 8.1 (a)Emlink target selection for VDSP++ Session (b)Emlink device NOTES: If the Emlink USB driver installed failed, the error '0x80004005' will be

appeared while connect Emlink to your target. Please check and resolve by: * check if there is 'USB Serial Coverter A/B' device under the list. if there is ? or ! on

them, please re-install EmlinkforVDSP++.exe again, and restart your windows once after finished the installation, until there is no '?' or '!' on them. And the correct status of these device show as figure 8.1(b).

 Support USB 2.0 protocol Mini and smart size: 45x32x12mm, weight about 55g · Power suply via USB port without power adapter + JTAG port (20pins, FH2.54mm) for connecting target board Downloading and debugging speed up to 200KBytes/s (1.5Mbps) + Support to program on-board Flash