Pin	Name	Pin	Name	Pin	Name	Pin	Name
A1	GND	B1	ID0	C1	ID2	D1	NC
A2	GND	B2	TMS	C2	EMU18	D2	GND
A3	GND	B3	EMU17	C3	nSRST†	D3	GND
A4	GND	B4	TDI	C4	EMU16	D4	GND
A5	GND	B5	EMU14	C5	EMU15	D5	GND
A6	GND	B6	EMU12	C6	EMU13	D6	GND
A7	GND	B7	TDO	C7	EMU11	D7	GND
A8	TYPE 0	B8	TVD	C8	TCLKRTN	D8	TYPE 1
A9	GND	B9	EMU9	C9	EMU10	D9	GND
A10	GND	B10	EMU7	C10	EMU8	D10	GND
A11	GND	B11	EMU5	C11	EMU6	D11	GND
A12	GND	B12	TCLK	C12	EMU4	D12	GND
A13	GND	B13	EMU2	C13	EMU3	D13	GND
A14	GND	B14	EMU0	C14	EMU1	D14	GND
A15	nTGTRST†	B15	ID1	C15	ID3	D15	GND

† Signals are active low

Table 3
TI 60-pin trace connector signal and pin definitions

For more information on the new 60-pin connector and board layout considerations for these high-speed signals, please refer to the TI document, SPRU655. You can find this online at:
http://www-s.ti.com/sc/techlit/spru655.pdf

4

QUICK START GUIDE

Blackhawk™ JTAG Pin Converters (14e_TI)

This Quick Start Guide describes two (2) different pin converters. Please refer to the parts of this guide that match the type of pin converter that you have purchased and is included.

Installation Requirements

- Emulator with standard 14-pin JTAG socket
- TI development Board with a 20 pin Compact TI (cTI), or 60 pin JTAG header

Pin Converters

This document covers the installation and use of pin converters designed to work with an emulator that has the standard TI 14-pin JTAG connection (signal and pin definitions are shown in the table to the right). The pin converters described in this document are:
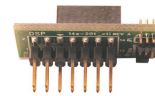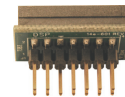
- **14e_TI-20t_cTI Pin Converter**
  For connecting to a target board with 20-pin Compact TI (cTI) connector.

- **14e_TI-60t_TI Pin Converter**
  For connecting to a target board that has the TI 60-pin trace header.

Pin	Name	Pin	Name
1	TMS	2	nTRST†
3	TDI	4	GND
5	TVD	6	KEY
7	TDO	8	GND
9	RTCK	10	GND
11	TCLK	12	GND
13	EMU0	14	EMU1

†Signals are active low

Table 1
Standard TI 14-pin JTAG Header

Important Environmental Considerations

Caution is necessary to minimize ESD (Electro-static Discharge) which can damage electronic components. Use in a controlled environment where ESD materials and practices are employed is highly recommended.

1

WARNING

Caution should be exercised in connecting these adapters to the JTAG emulator and the target JTAG header. Pay special attention to the orientation and keying and pin outs. Be careful to connect with the correct orientation. These adapters are not intended to be hot pluggable. Unplug power from all sources prior to connect or disconnect.

The pin converter (P/N: 50-ADP-14e_TI-20t_cTI-0) described here (see figures 2 and 3) allows an emulator with the standard TI 14-pin JTAG connection to connect to the new, 20-pin compact TI (cTI) header (table 2) on a target board. An example of this new, 20-pin cTI header can be found on the TI DaVinci EVM board with DM6446 deivce.
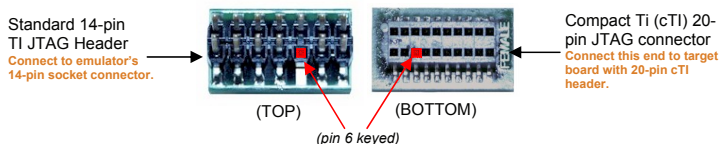
Standard 14-pin TI JTAG Header
Connect to emulator's 14-pin socket connector.

Compact Ti (cTI) 20-pin JTAG connector
Connect this end to target board with 20-pin cTI header.

(TOP)　　(BOTTOM)

(pin 6 keyed)

Figure 2
Top and bottom view of 14e_TI-20t_cTI Pin Converter

Using this adapter provides backwards compatibility to standard debug connections and does not perform any processing or contain any on-board logic. It is strictly a pin converter, routing only pins 1-14, and can be used with XDS510™ and XDS560™-class emulators with a 14-pin socket connector.
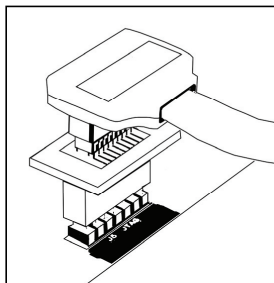
Figure 3
Typical target board cable connection orientation

Pin	Name	Pin	Name
1	TMS	2	nTRST[†]
3	TDI	4	TDIS
5	TVD	6	**KEY**
7	TDO	8	GND
9	RTCK	10	GND
11	TCK	12	GND
13	EMU0	14	EMU1
15	nSRST[†]	16	GND
17	EMU2	18	EMU3
19	EMU4	20	GND

[†] Signals are active low

Table 2
New, 20-pin Compact TI JTAG Header

WARNING

Caution should be exercised in connecting these adapters to the JTAG emulator and the target JTAG header. Pay special attention to the orientation and keying and pin outs. Be careful to connect with the correct orientation. These adapters are not intended to be hot pluggable. Unplug power from all sources prior to connect or disconnect.

The pin converter (P/N: 50-ADP-14e_TI-60t_TI-0) described here (see figure 4) allows an emulator with the standard 14-pin JTAG connection to connect to the new, 60-pin emulation header. An example of this new, 60-pin header can be found on the TI C6416 DSK.

Using this adapter provides compatibility of standard debug connections and does not perform any processing or contain any on-board logic. It is strictly a pin converter, routing only pins 1-14, and can be used with XDS510™ and XDS560™-class emulators with standard 14-pin socket connector. The signal definitions for the 60-pin header are show in table 3 on page 4.
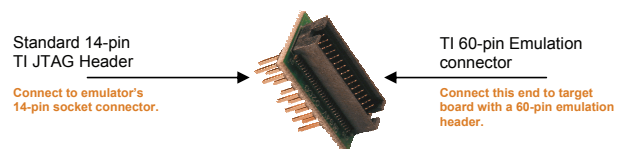
Standard 14-pin TI JTAG Header
Connect to emulator's 14-pin socket connector.

TI 60-pin Emulation connector
Connect this end to target board with a 60-pin emulation header.

Figure 4
Angled view of 14e_TI-60t_TI Pin Converter

The 60-pin emulation connectors on the target board and pin converters should be labeled to identify orientation.

The "DSP" label goes towards the DSP chip. The "Cable Entry" label identifies the side in which the trace cable, or in this case, the emulator, is attached.
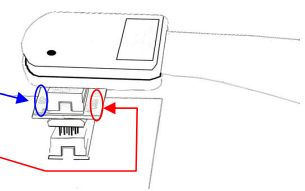
The locations of these labels and orientation are shown in figure 5.

Figure 5
Typical target board and emulator cable connection orientation