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Product Specification

CompactPCI® IC6 Rear Transition Board (RTB) Family

The Adtron cPCI® 6U RTB family extends the functionality of the IC6 Bladepak™ family by providing external connectivity to the ATA/ATAPI compliant devices through one of three industry-standard host devices. The following RTBs are available:

- IC6RTB - external IDE host
- UC6IRTB - bridge between any High Speed USB 2.0 host
- SC6IRTB - bridge between any external SCSI-3 host



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IC6RTB - IDE REAR TRANSITION BOARD

Introduction

- The IC6RTB provides external IDE access to the IC6 family
- This RTB can be used with the following:
 - IC6C Configurations 02, 03 or 04
 - IC6MB Configuration 02 or 03 (Both media are viewed as one IDE drive using RAID 1)
 - IC6HB Configuration 02 or 03 (Both media are viewed as one IDE drive using RAID 0)
- For additional information on a particular IC6 model, refer to the appropriate product summary or product specification.

Applications

- Any 6U cPCI or 2.16 platform with a host single board computer (SBC) with native IDE connectivity

Features

- 40-pin connector
- Compliant with PICMG® 2.0 R3.0 CompactPCI® Specification
- Either internal (midplane side) or external (panel) cabling is available on the IC6RTB, but not both
- Standard Warranty: 3 year

IC6RTB with IC6C Configuration 02

The IC6RTB can be used with the IC6C configuration 02 as shown by the following diagram.

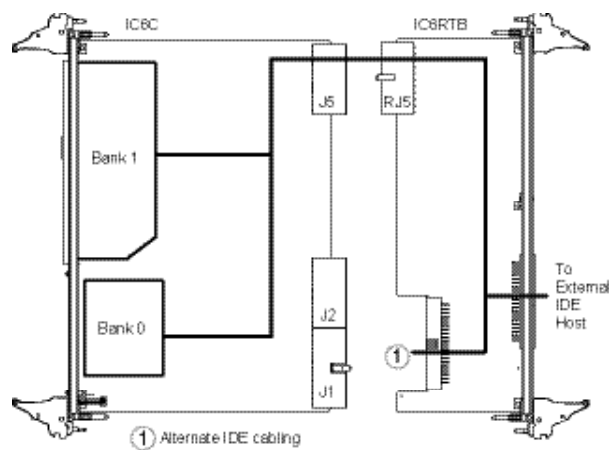


Figure 1: IC6C - IC6RTB Configuration 02

With the IC6C, either Bank 0 or Bank 1 is set as the master device and the other bank is set as the slave device.

IC6RTB with IC6MB/HB Configuration 02

The following diagram shows the IC6RTB used in conjunction with the IC6HB or the IC6MB. The media on the IC6HB (RAID0) and IC6MB (RAID1) are considered one IDE drive that must be set to master.

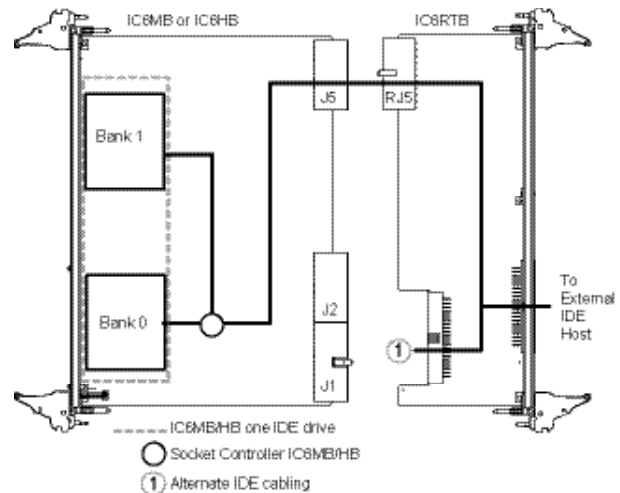


Figure 2: IC6MB/HB - IC6RTB Configuration 02

IC6RTB with IC6C Configuration 03

The IC6RTB can be used with the IC6C configuration 03 as shown by the following diagram. The primary channel on the IC6C controls an external IDE device through the IC6RTB. The secondary channel controls the media in Banks 0 and 1. One bank must be set to master and the other to slave. Master/slave settings may be determined by your operating system BIOS.

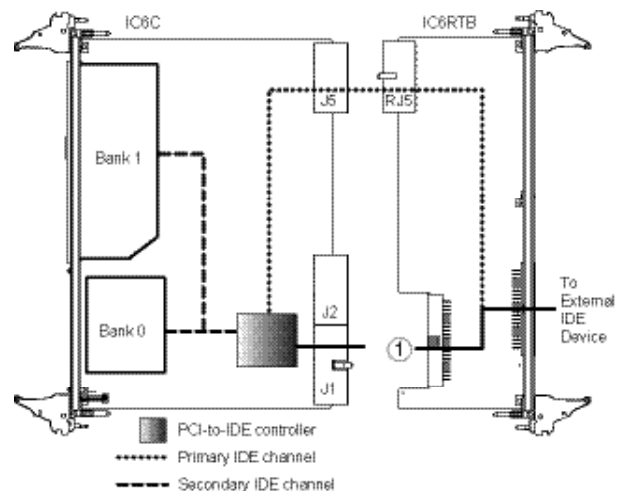


Figure 3: IC6C - IC6RTB Configuration 03

IC6RTB with IC6MB/HB Configuration 03

The IC6HB and IC6MB configuration 03 can also be used with the IC6RTB. The following diagram shows this configuration.

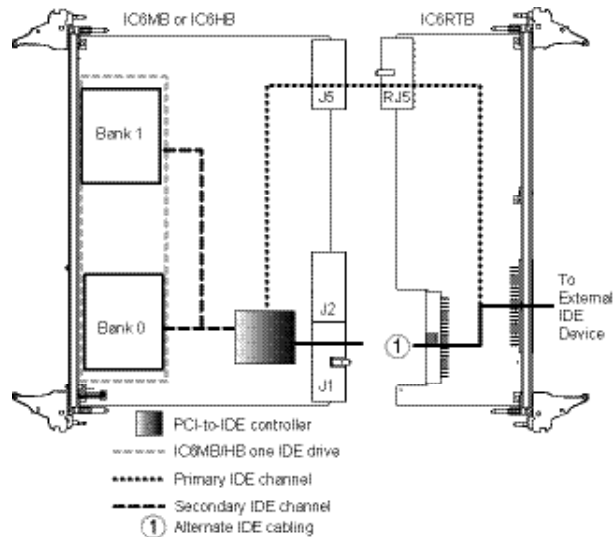


Figure 4: IC6HB/MB - IC6RTB Configuration 03

In this configuration, media in Bank 0 and Bank 1 are viewed as one IDE drive on the primary channel and must be set to master. The PCI-to-IDE controller also controls an external IDE devices through the IC6RTB.

IC6RTB with IC6C Configuration 04

Configuration 04 is unique to the IC6C and is shown in the diagram below.

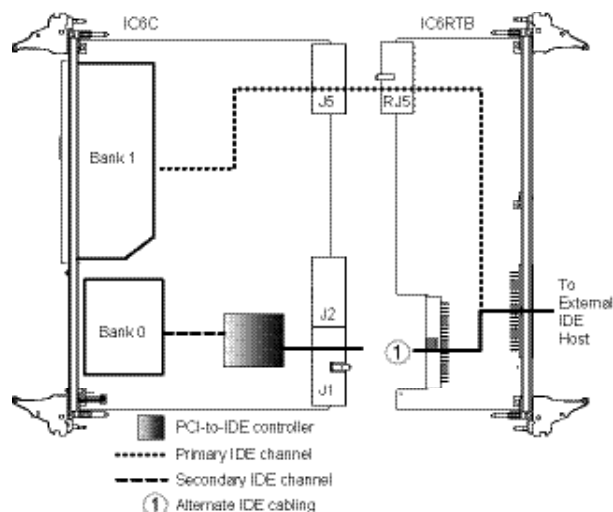


Figure 5: IC6C - IC6RTB Configuration 04

In this configuration, Bank 0 is controlled by the PCI-to-IDE controller. Bank 1 is connected to an external

IDE controller through the IC6RTB.

Rear panel and internal access IDE connector

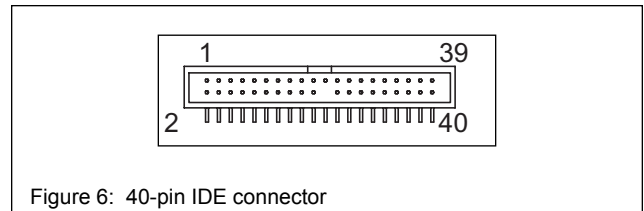


Figure 6: 40-pin IDE connector

Connector Pinouts

Pin	Signal	Pin	Signal
1	-RESET	2	GND
3	DD[7]	4	DD[8]
5	DD[6]	6	DD[9]
7	DD[5]	8	DD[10]
9	DD[4]	10	DD[11]
11	DD[3]	12	DD[12]
13	DD[2]	14	DD[13]
15	DD[1]	16	DD[14]
17	DD[0]	18	DD[15]
19	GND	20	KEY
21	DMARQ	22	GND
23	-DIOW	24	GND
25	-DIOR	26	GND
27	IRDY	28	NC
29	-DMACK	30	GND
31	INTRQ	32	NC
33	DA[1]	34	-PDIAG
35	DA[0]	36	DA[2]
37	-CS[0]	38	-CS[1]
39	-DASP	40	GND

Table 1: 40-pin connector pinouts

IC6RTB Packaging Drawing

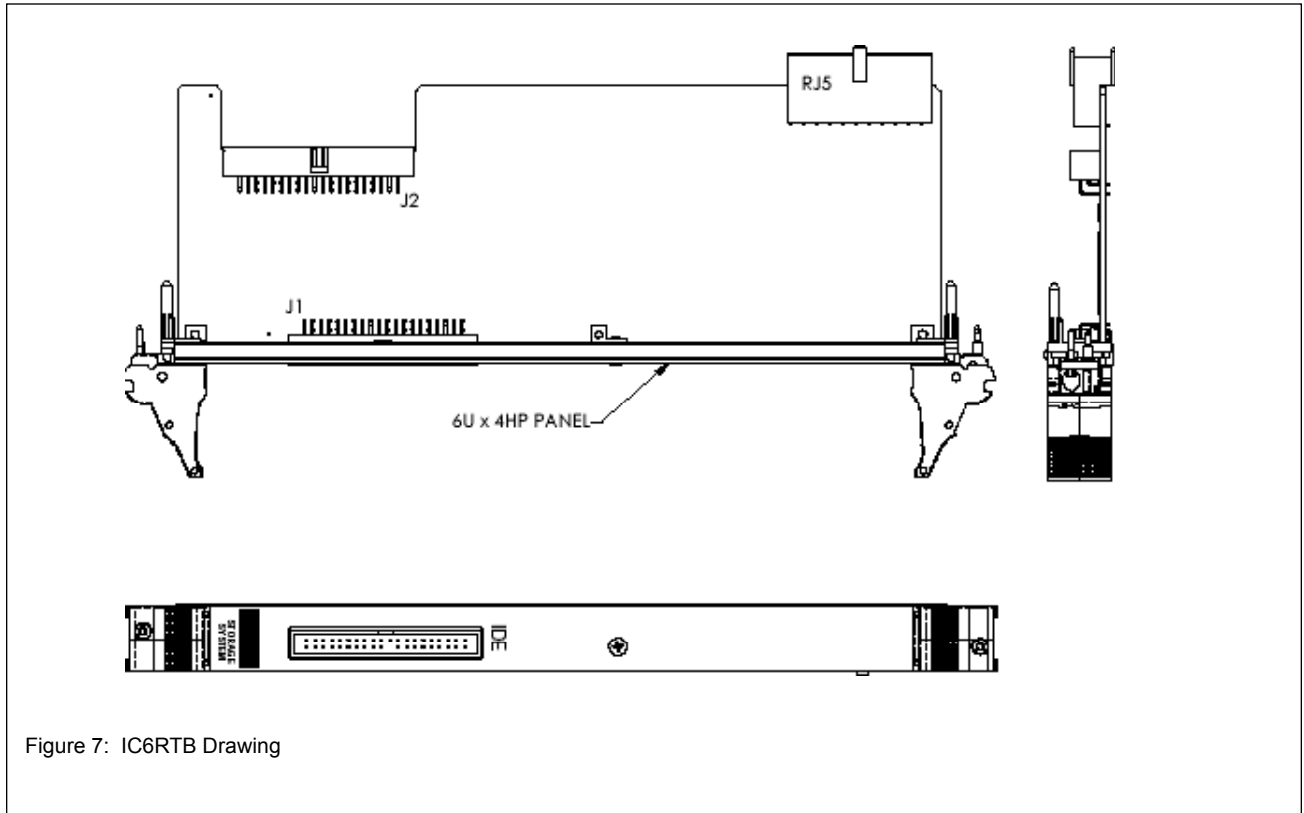


Figure 7: IC6RTB Drawing

UC6IRTB - USB2.0 REAR TRANSITION BOARD

Introduction

- The UC6IRTB extends the functionality of the IC6 family of 6U cPCI BladePaks by providing USB2.0 connectivity to an external USB host.
- This RTB can be used with the following:
 - IC6C Configurations 02 and 05
 - IC6MB Configuration 02 (Both media are viewed as one IDE drive using RAID 1)
 - IC6HB Configuration 02 (Both media are viewed as one IDE drive using RAID 0)
- For additional information on a particular IC6 model, refer to the appropriate product summary or product specification.

Applications

- Any 6U cPCI or 2.16 platform with a host single board computer (SBC) with native USB2.0

Features

- Universal Serial Bus Specification Revision 2.0 compliant
- Compliant with PICMG® 2.0 R3.0 CompactPCI® Specification
- Data Rate 12 - 480 Mbps supported
- One USB2.0 High-/Full-speed transceiver/receiver per USB port
- 3.3V/5V PCI interface
- Standard Warranty: 3 year

UC6IRTB with IC6C Configuration 02

The UC6IRTB can be used with the IC6C configuration 02 as shown by the following diagram.

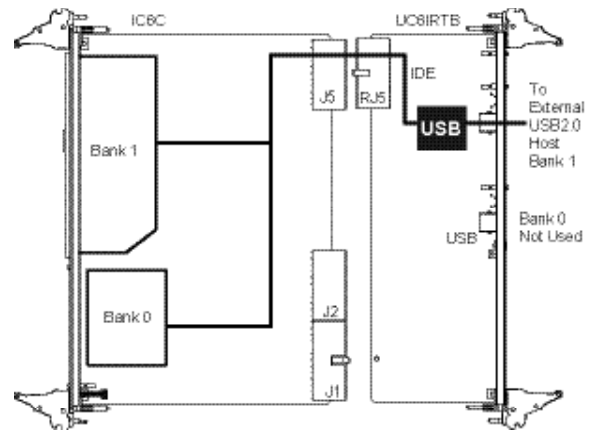


Figure 8: IC6C - UC6IRTB Configuration 02

In the above configuration, only one bank is accessible; either Bank 1 or Bank 0. The bank that is populated must be set as the master device. Only the USB2.0 port labeled Bank 1 is available in this configuration.

UC6IRTB with IC6MB/HB Configuration 02

The following diagram shows the UC6IRTB when configured with either an IC6MB or IC6HB configuration 02.

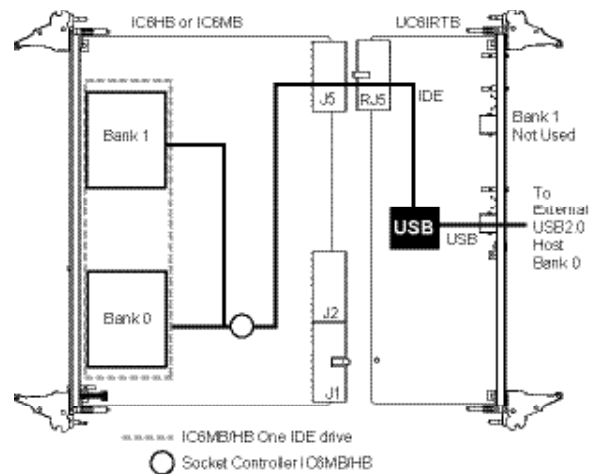


Figure 9: IC6HB/MB - UC6IRTB Configuration 02

In the above diagram, both banks are populated with hard disk drives that are viewed by the host as a single IDE drive. The IC6HB uses RAID 0 technology and the IC6MB uses RAID 1 technology. Bank 1 must be set as the master device. Master/slave settings for Bank 0 are not relevant.

UC6IRTB with IC6C Configuration 05

The IC6C configuration 05 provides two channels for USB access as illustrated by the diagram below.

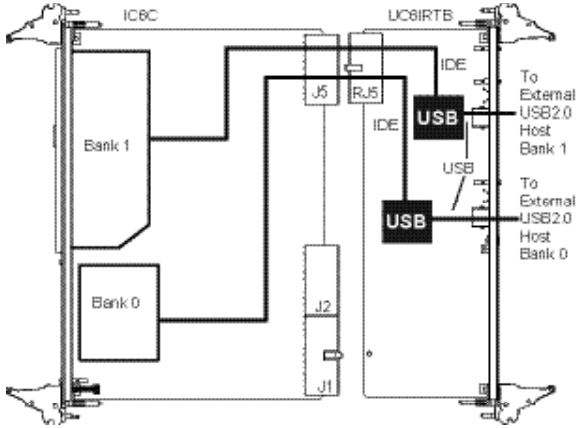


Figure 10: IC6C - UC6IRTB Configuration 05

With this configuration USB Bank 1 controls Bank 1 on the IC6C, which may be populated with either a hard disk drive or a CD/DVD device. USB Bank 0 controls Bank 0 on the IC6C, which always contains a hard disk drive. For more detailed media options, review the IC6C product specification or operations manual.

Rear Panel USB Connector

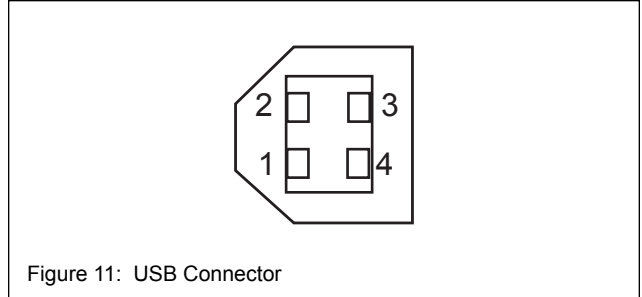


Figure 11: USB Connector

Connector Pinouts

The UC6IRTB houses two USB2.0 male connectors with the following pinout. A - (dash) indicates the signal is active low.

Pin	Signal
1	Vbus
2	USB D-
3	USB D+
4	GND

Table 2: Connector Pinout

UC6IRTB Packaging Drawing

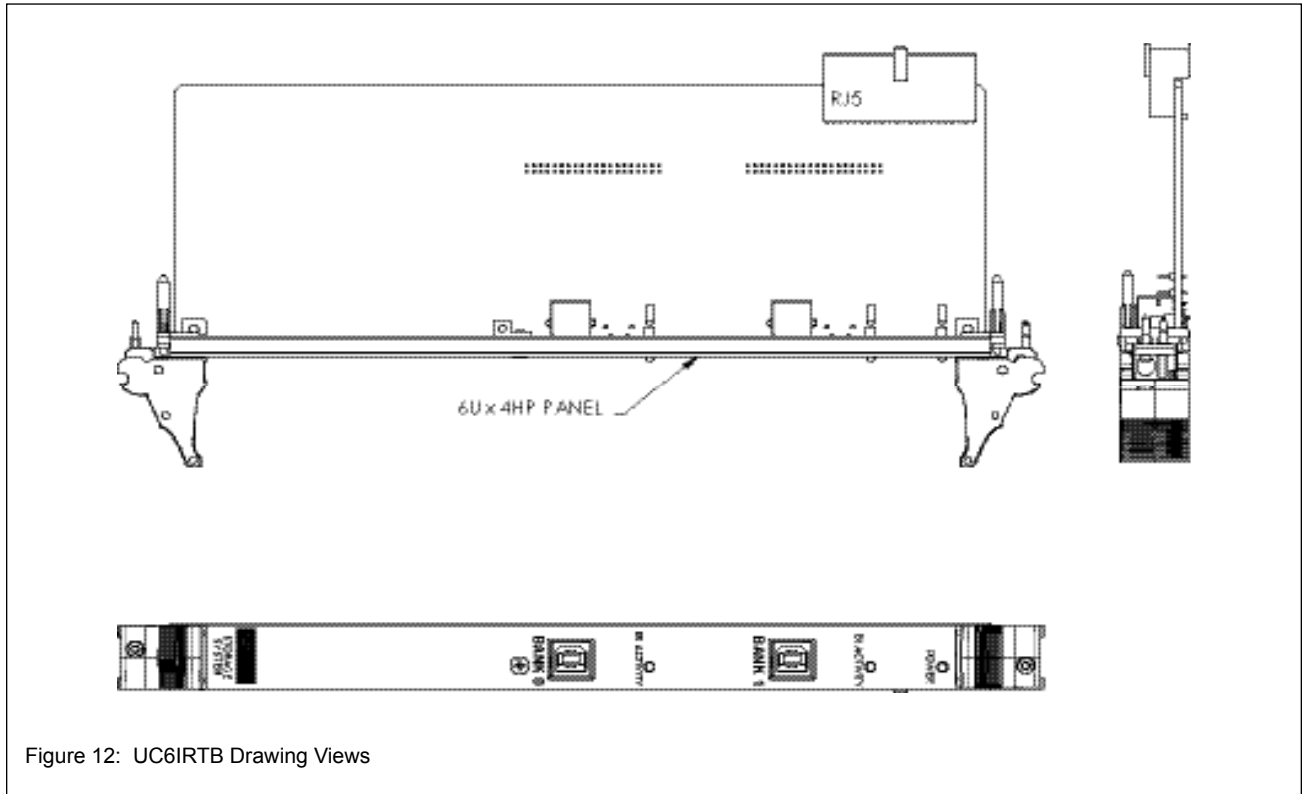


Figure 12: UC6IRTB Drawing Views

SC61RTB - SCSI-3 REAR TRANSITION BOARD

Introduction

- The SC61RTB extends the functionality of the IC6 family of 6U cPCI BladePaks by providing connectivity to an external SCSI-3 controller.
- This RTB can be used with IC6C configuration 02
- For additional information on the IC6C, refer to the IC6C product summary or product specification

Applications

- Any 6U cPCI or 2.16 platform with a host single board computer (SBC) with native SCSI-3 connectivity

Features

- ANSI INCITS 270-1996 (R2001), SCSI-3 compliant
- Compliant with PICMG® 2.0 R3.0 CompactPCI® Specification
- Ultra DMA/66 Mode 0-4 supported for ATA/ATAPI-6 devices
- 3.3V/5V PCI interface
- Standard Warranty: 3 year

SC61RTB with IC6C Configuration 02

The following diagram shows the IC6C configuration 02 with the SC61RTB.

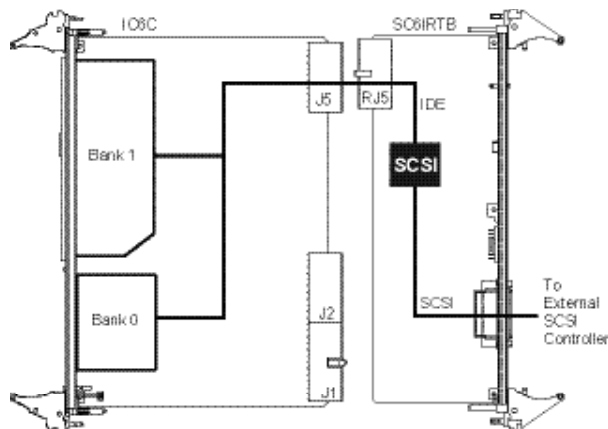


Figure 13: IC6C - SC61RTB Configuration 02

Dip Switch Settings

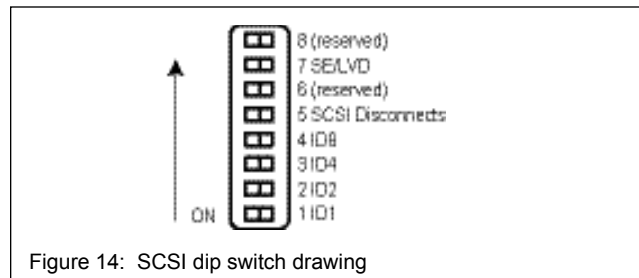


Figure 14: SCSI dip switch drawing

SCSI IDs

SCSI ID	Switch			
	4 - "ID8"	3 - "ID4"	2 - "ID2"	1 - "ID1"
0	Off	Off	Off	Off
1	Off	Off	Off	On
2	Off	Off	On	Off
3	Off	Off	On	On
4	Off	On	Off	Off
5	Off	On	Off	On
6	Off	On	On	Off
7	Off	On	On	On
8	On	Off	Off	Off
9	On	Off	Off	On
10	On	Off	On	Off
11	On	Off	On	On
12	On	On	Off	On
13	On	On	Off	On
14	On	On	On	Off
15	On	On	On	On

Table 3: SCSI IDs

SE/LVD

Low Voltage Differential (LVD) mode is determined by SCSI bus conditions selected by bus settings when switch 7 is in the off position. Single Ended (SE) operations are forced when switch 7 is in the on position.

SCSI Disconnects

SCSI disconnects are controlled by the SCSI host adapter. Disconnects are enabled when switch 5 is in the off position on the SC61RTB. Disconnects are disabled when switch 5 is in the on position, indicating that the host cannot force disconnects. Disconnects are enabled when switch 5 is in the off position, indicating that the host has control over disconnects.

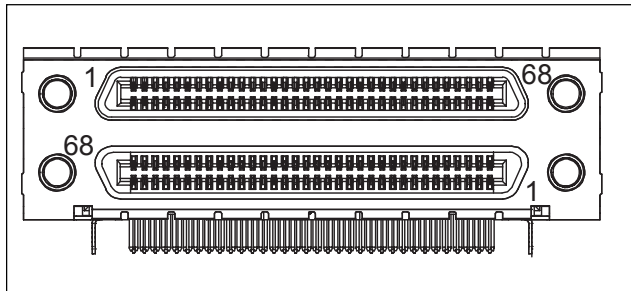
Rear Panel and Internal Access Connector


Figure 15: 68-pin connector

68-Pin SC6IRTB Connector Pinouts

Pin	Signal	Signal	Pin
01	+SD[12]	-SD[12]	35
02	+SD[13]	-SD[13]	36
03	+SD[14]	-SD[14]	37
04	+SD[15]	-SD[15]	38
05	+SDP[1]	-SDP[1]	39
06	+SD[0]	-SD[0]	40
07	+SD[1]	-SD[1]	41
08	+SD[2]	-SD[2]	42
09	+SD[3]	-SD[3]	43
10	+SD[4]	-SD[4]	44
11	+SD[5]	-SD[5]	45
12	+SD[6]	-SD[6]	46
13	+SD[7]	-SD[7]	47
14	+SDP[0] (+PCRCA)	-SDP[0] (-PCRCA)	48
15	GND	GND	49
16	DIFFSENS	GND	50
17	TERMPWR	TERMPWR	51
18	TERMPWR	TERMPWR	52
19	NC	NC	53
20	GND	GND	54
21	+ATN	-ATN	55
22	GND	GND	56
23	+BSY	-BSY	57
24	+ACK	-ACK	58
25	+RST	-RST	59
26	+MSG	-MSG	60
27	+SEL	-SEL	61
28	+C/D	-C/D	62
29	+REQ	-REQ	63
30	+I/O	-I/O	64
31	+SD[8]	-SD[8]	65
32	+SD[9]	-SD[9]	66
33	+SD[10]	-SD[10]	67
34	+SD[11]	-SD[11]	68

Table 4: Connector pinouts

68-PIN SC6IRTB CONNECTOR CONFIGURATION

Signal Name	SCSI RTB Pin Number	Description
-SD[15:0]	38-35, 68-65, 47-40	SCSI Data signals
+SD[15:0]	04-01, 34-31, 13-06	
-SDP[0]	48	SCSI Low Byte Parity Data signal
+SDP[0]	14	
-SDP[1]	39	SCSI High Byte Parity Data signal
+SDP[1]	05	
-BSY (BUSY)	57	An "OR-tied" signal that indicates that the SCSI bus is in use.
+BSY	23	
-SEL (Select)	61	An "OR-tied" signal used by an initiator to select a target or by a target to reselect an initiator.
+SEL	27	
-C/D (Control/DATA)	62	A signal sourced by a target that indicates whether control or DATA phase information is on the DATA BUS. Asserted indicates CONTROL (i.e., COMMAND, STATUS, and MESSAGE phases).
+C/D	28	
-I/O (Input/Output)	64	A signal sourced by a target that controls the direction of data movement on the DATA BUS with respect to an initiator. Asserted indicates INPUT. This signal is also used to distinguish between SELECTION and RESELECTION phases.
+I/O	30	
-MSG (Message)	60	A signal sourced by a target to indicate the MESSAGE phase or a DATA phase depending on whether C/D is true or false. Asserted indicates MESSAGE or DT DATA.
+MSG	26	
-REQ (Request)	63	A signal sourced by a target to indicate a request for an information transfer on the SCSI bus.
+REQ	29	
-ACK (Acknowledge)	58	A signal sourced by an initiator to respond with an acknowledgment of an information transfer on the SCSI bus.
+ACK	24	
-ATN (Attention)	55	A signal sourced by an initiator to indicate the ATTENTION condition.
+ATN	21	
-RST (Reset)	59	An "OR-tied" signal that indicates the RESET condition.
+RST	25	
TRMPWR	52-51, 18-17	Normally sourced by the SCSI host adapter and used to supply termination power to SCSI devices on the bus. Jumper placed on JP11 enables signal.

Table 5: Connector configuration

68-PIN SC6IRTB CONNECTOR CONFIGURATION

DIFFSENS	16	A signal that is used to define the signalling mode for the SCSI bus. It is low for single ended SCSI, approximately 1.3V for LVD, and greater than 2 volts for HVD. HVD (high voltage differential) mode is not compatible with this product.
GND	15, 20, 22, 49, 50, 54, 56	Ground
NC	19, 53	No Connect

Table 5 continued: Connector configuration

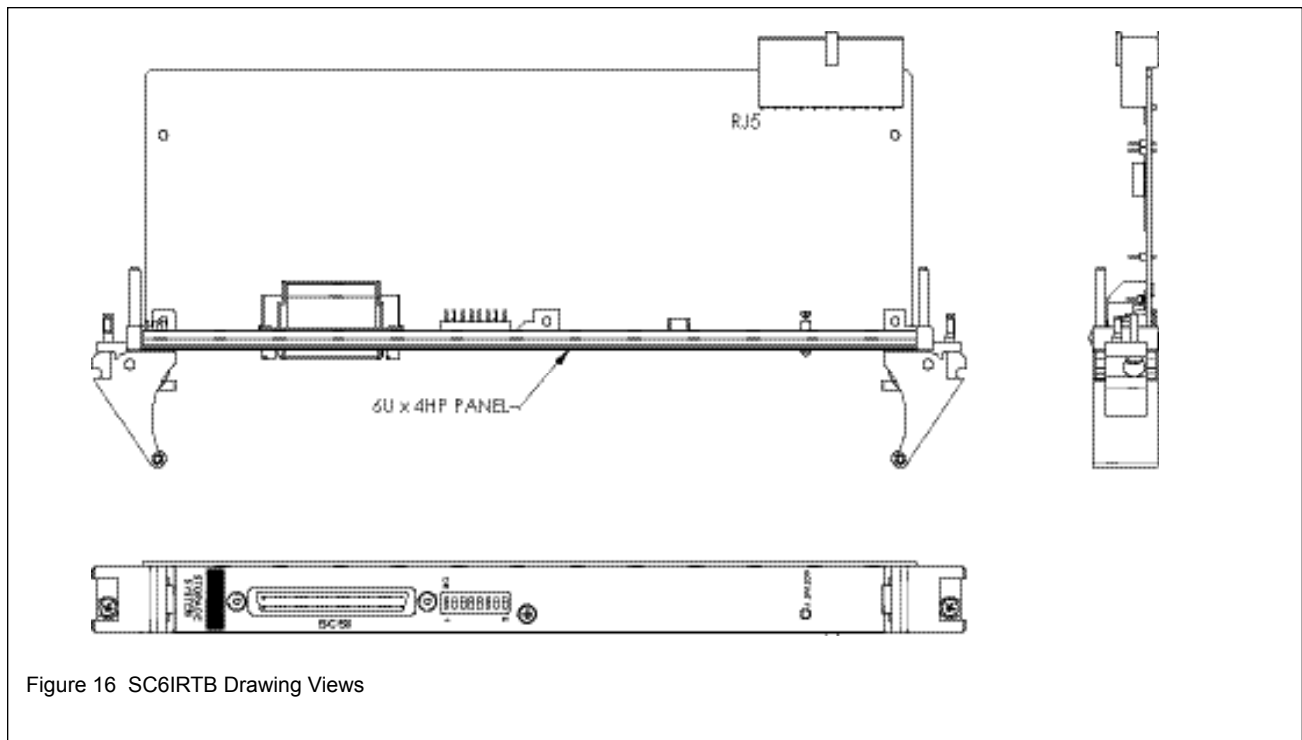
SC6IRTB Packaging Drawing


Figure 16 SC6IRTB Drawing Views

RJ5/J5 REAR I/O CONNECTOR CONFIGURATION

In the table below, B0 indicates the signal (to the right) controls Bank 0 on the IC6. B1 indicates the signal (to the right) controls Bank 1 on the IC6. Bank 1 applies only to the IC6C configuration 05 with the two-channel USB2.0 connectivity from the UC6IRTB. In the current IC6RTB and SC6IRTB, table entries preceded with B1 are no connect (NC).

Connector Signals

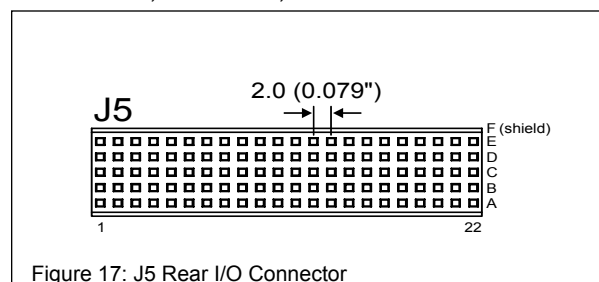
22	NC	NC	B1 DD[6]	B1 DD[8]	B1 DD[7]	GND
21	NC	NC	B1 DD[10]	B1 DD[9]	B1 DD[5]	GND
20	NC	NC	B1 DD[3]	B1 DD[11]	B1 DD[4]	GND
19	RXD	NC	B1 DD[13]	B1 DD[2]	B1 DD[12]	GND
18	TXD	NC	B1 DD[0]	B1 DD[14]	B1 DD[1]	GND
17	NC	NC	B1 DMARQ	B1 -DIOW	B1 DD[15]	GND
16	NC	NC	B1 INTRQ	B1 -DIOR	B1 IORDY	GND
15	NC	NC	B1 DA[2]	B1 DA[1]	B1 -DMACK	GND
14	NC	NC	B1 -CS[0]	B1 -CS[1]	B1 DA[0]	GND
13	NC	NC	B1 -DASP	NC	B1 -PDIAG	GND
12	NC	NC	B1 -RESET	NC	NC	GND
11	NC	NC	NC	NC	NC	GND
10	B0 -IOCS16	NC	VRTB2 ¹	NC	NC	GND
9	B0 -RESET	B0 IORDY	NC	B0 DMARQ	B0 -DMACK	GND
8	B0 DA[2]	B0 -DIOR	B0 -DIOW	B0 -CS[1]	B0 -CS[0]	GND
7	B0 DA[1]	B0 DD[15]	B0 DD[14]	B0 DD[13]	B0 DD[12]	GND
6	B0 DA[0]	B0 DD[11]	B0 DD[10]	B0 DD[9]	B0 DD[8]	GND
5	B0 DD[7]	B0 DD[6]	B0 DD[5]	B0 DD[4]	B0 DD[3]	GND
4	B0 DD[2]	B0 DD[1]	B0 DD[0]	B0 INTRQ	NC	GND
3	B0 -DASP	GND	GND	GND	VRTB3 ¹	GND
2	NC	NC	NC	NC	-RTB_Present	GND
1	NC	VRTB1 ¹	NC	B0 -PDIAG	NC	GND
Pin	A	B	C	D	E	F

Table 6: J5 Connector Pinout

Note 1: These pins are used to power the RTB from the main IC6 board. VRTB1 is the default pin.

J5 Physical Connector

This connector applies to the IC6RTB, UC6IRTB, and the SC6IRTB.



Signal Descriptions

In the table below, Bank 0 signals are used with the IC6RTB, SC6IRTB, and UC6IRTB (Configuration 02). Both banks apply when using the UC6IRTB with the IC6C configuration 05.

Signal Name	Bank 0	Bank 1	Description
-CS [1:0]	D8, E8	D14, C14	(Chip select) These are the chip select signals from the host used to select the Command Block registers. When -DMACK is asserted, -CS0 and -CS1 shall be negated and transfers shall be 16-bits wide.
DA [2:0]	A8, A7, A6	C15, D15, E14	(Device Address) This is the 3-bit binary coded address asserted by the host to access a register or data port in the device.
-DASP	A3	C13	(Device active, device 1 present) This is a time multiplexed signal that indicates that a device is active, or that Device 1 is present. Note: The indication that the device is active may be unsynchronized with the execution of the command.
DD[15:0]	B7, C7, D7, E7, B6, C6, D6, E6, A5, B5, C5, D5, E5, A4, B4, C4	E17, D18, C19, E19, D20, C21, D21, D22, E22, C22, E21, E20, D19, E18	(Device data) This is an 8-bit or 16-bit bi-directional data interface between the host and the device. The lower 8 bits are used for 8-bit register transfers. Data transfers are 16-bits wide.
-DIOR: HDMARDY/ HSTROBE	B8	D16	(Device I/O read) This is an I/O Read strobe generated by the host. This signal gates I/O data onto the bus from the Drive. Ultra DMA control signal used to extend host transfer cycles.
-DIIOW:STOP	C8	D17	(Device I/O write) The I/O Write strobe pulse is used to clock I/O data on the Card Data bus into the Drive controller registers when the Drive is configured to use the I/O interface. The clocking will occur on the negative to positive edge of the signal (trailing edge). During Ultra DMA, this is the stop signal.
-DMACK	E9	E15	(DMA acknowledge) This signal shall be used by the host in response to DMARQ to initiate DMA transfers.
DMARQ	D9	C17	(DMA request) This signal, used for DMA data transfers between host and device, shall be asserted by the device when it is ready to transfer data to or from the host.
INTRQ	D4	C16	(Device Interrupt) This signal is used by the selected device to interrupt the host system.
-IOCS16	D4		This output signal is asserted low when this device is expecting a word data transfer cycle.
IORDY: DDMARDY/ DSTROBE	B9	E16	(I/O channel ready) This signal is negated to extend the host transfer cycle of any host register access (Read or Write) when the device is not ready to respond to a data transfer request. Ultra DMA control signal used to extend host transfer cycles.

Table 7: Signal descriptions

-PDIAG	D1	E13	(passed diagnostics) A signal sent to the Master from the Slave to indicate the slave passed diagnostics on power up
GND	B3, C3, D3		Ground
GND	F1-F22	F1-22	Shield Ground
NC	A1, A2, A10, A11, B2, B10, B11, C1, C2, C11, D2, D10, D11, E1, E10, E11	A12-22, B12-22, D12, D13, E12	No Connect
-RESET	A9	C12	(hardware reset) This signal, referred to as hardware re- sent shall be used by the host to reset the device.
-RTB_Present	E2	E2	This signal is low when the rear transition board is present.
RXD	A19	A19	IPMI to arm. Serial connection if JP4 installed.
TXD	A18	A18	Arm to IPMI. Serial connection if JP3 installed.
VRTB1 VRTB2 VRTB3	B1 C10 E3	B1 C10 E3	Provides power from the main board to the RTB. VRTB1 is the default.

Table 7 continued: Signal descriptions

OPERATING SYSTEM COMPATIBILITY

Use the following information to determine the compatibility of your configuration with various industry-standard operating systems. This is not an exhaustive operating system support list. Other operating systems and various versions of the operating systems listed may support one or more IC6 configurations. Please contact Adtron Technical support if you have any questions regarding specific operating systems.

Operating System	Configuration - Rear Transition Board Model	IC6C					IC6MB - IC6HB		
		02 - IC6RTB	03, 04 - IC6RTB	02 - UC6IRTB	02 - SC6IRTB	05 - UC6IRTB	02 - IC6RTB	03 - IC6RTB	02, 03 - UC6IRTB
Windows® NT		■	■	■	■	■	■	■	■
Windows 2000		■	■	■	■	■	■	■	■
Windows XP		■	■	■	■	■	■	■	■
Linux v2.4.18 or later		■	■	■	■	■	■	■	■
Red Hat Linux 7.3 or later		■	■	■	■	■	■	■	■
UNIX™		■		■	■	■	■		■
Sun™ Solaris™		■		■	■	■	■		■
Linux v 2.4.17 or earlier		■		■	■	■	■		■

Table 8 Operating Systems

RTB CHARACTERISTICS

Absolute Max Ratings

Parameter	Symbol	IC6RTB	UC6IRTB	SC6IRTB	Units
5V supply voltage	VCC	N/A	-0.3 to 6.0	-0.3 to 6.0	V
All input/output voltages	Vin, Vout	N/A	-0.5 to VCC+0.5	-0.5 to VCC +0.5	V

Table 9

Recommended Operating Conditions

Parameter	Symbol	IC6RTB			UC6IRTB			SC6IRTB			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
5V supply	VCC	N/A	N/A	N/A	4.75	5	5.25	4.75	5	5.25	V

Table 10

Environmental

Parameter	Any RTB with the IC6HB, IC6MB, or IC6C with 2 HDDs	Any RTB with the IC6C with one CD/DVD device and one HDD
Operating Temperature	5 to 55°C	5 - 55°C - CD-ROM (R01) 5 - 45°C - CD-RW/DVD-ROM (R03) 5 - 35°C - CD-RW/DVD-R/RW (R04) 5 - 50°C - CD-RW/DVD±R/RW (R05)
Relative Humidity	5 to 90% noncondensing	8 - 80% non condensing
Storage Temperature	-40 to 65°C	-20 to 65°C

Table 11

Power Requirements

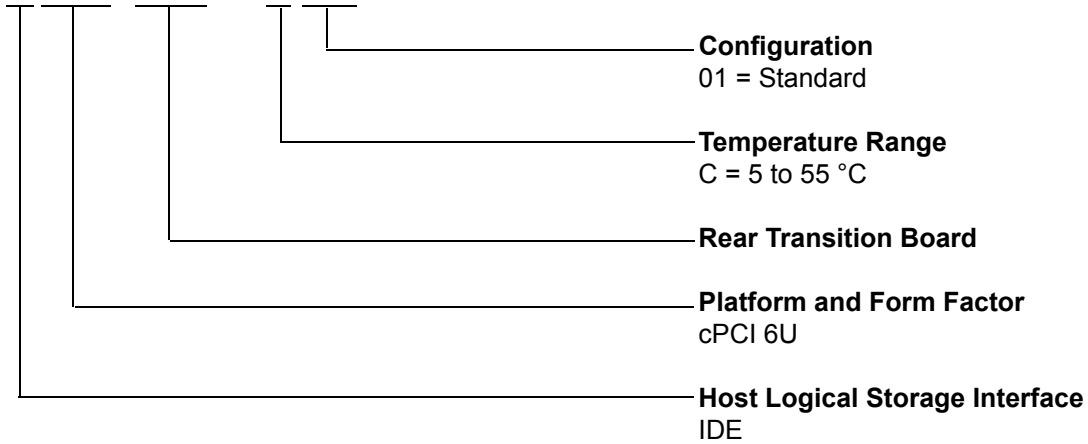
	IC6RTB	UC6IRTB *	SC6IRTB *
Parameter	5V Value	5V Value	5V Value
Start-up current	N/A	0.750A (max)	2.0A (max)
Active current	N/A	0.450A (max)	1.25A (max)
Standby	N/A	0.250A (max)	1.0A (max)

Table 12

* Preliminary

ORDERING INFORMATION

I C 6 RTB - T Z Z



■ C 6 I RTB - T Z Z

