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CCII Systems (Pty) Ltd
Communications • Computer Intelligence • Integration

User Manual

for the

C²I² Systems

FDDI and CDDI Adapters

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Document prepared by C²I² Systems, Cape Town

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Abbreviations and Acronyms

CDDI	Copper Distributed Data Interface
DAC	Dual Attachment Concentrator
DAS	Dual Attachment Station
FDDI	Fibre Distributed Data Interface
HCC	Host Carrier Card
Mbit/s	Megabits per second
OBS	Optical Bypass Switch
PCI	Peripheral Component Interconnect
PMC	Peripheral Component Interconnect Mezzanine Card
SAC	Single Attachment Concentrator
SAS	Single Attachment Station

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1. Scope

1.1 Introduction

This document is the User Manual for the C²I² Systems Fibre Distributed Data Interface (FDDI) and Copper Distributed Data Interface (CDDI) Adapters.

1.2 System Overview

The Peripheral Component Interconnect (PCI) Mezzanine Card (PMC) FDDI adapters attach Host Carrier Cards (HCC) to 100 Mbit/s Fibre Distributed Data Interface (FDDI) networks using fibre optic cable.

The PMC CDDI adapters attach HCCs to 100 Mbit/s Copper Distributed Data Interface (CDDI) networks using copper twisted pair cable.

At present, the range of C²I² Systems FDDI and CDDI adapters covers the PMC (PCI Mezzanine Connector) and the PCI-104 bus architecture.

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2. Applicable and Reference Documents

2.1 Applicable Documents

2.1.1 CCII/FDDI/6-MAN/002, *User Manual for the FDDI Adapter 4.3 BSD VxWorks Software Driver.*

2.1.2 CCII/FDDI/6-MAN/003, *Generic User Manual for the FDDI Adapter VxWorks BIT Application*.

2.2 Reference Documents

2.2.1 CCII/FDDI/6-MAN/001, *User Manual for the FDDI Adapter VxWorks Enhanced Network Software Driver.*

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3. General Information

3.1 The Adapter Kit

The adapter kit consists of the following items :

- Cardboard Package
- Electrostatic Discharge (ESD) Protective Bag
- the Adapter
- screws as required
- CD containing User Manuals, Installation Guides and Drivers

If any item is missing or damaged, contact C²I² Systems.

Please refer to the Release Notes on the diskette for the latest information regarding this product.

3.2 Handling Instructions

Follow strict ESD handling procedures. Failure to do so may result in damage to the adapter.
Do not open the ESD protective package containing the adapter until you are prompted to do so.

3.3 Items Required to Install the Adapter

3.3.1 Cables

Fibre	FDDI Single Attachment Station (SAS) adapter	One duplex optic fibre patch lead or two optic fibre cables with the appropriate FDDI ST or SC connectors.
	FDDI Dual Attachment Station (DAS) adapter	Two duplex optic fibre patch leads or four optic fibre cables with the appropriate FDDI ST or SC connectors.
Copper	CDDI SAS adapter	One twisted pair patch lead with HR10A connectors. Testing of transceivers will also require one HR10A wrap plug (see Figure 3)
	CDDI DAS adapter	Two twisted pair patch leads with HR10A connectors. Testing of transceivers will also require two HR10A wrap plugs (see Figure 3).

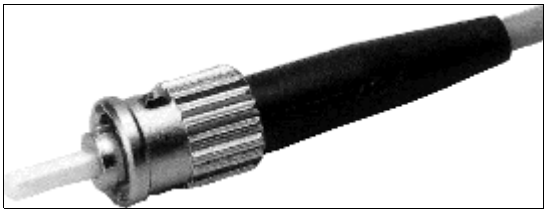


Figure 1 : ST Connector

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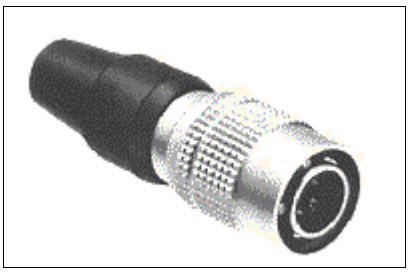


Figure 2 : HR10A Connector

HR10A Connector as seen from front (socket) side

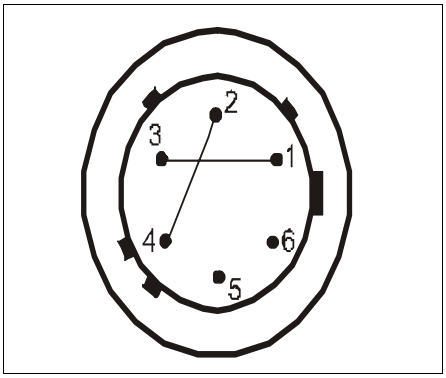


Figure 3 : HR10A Wrap Plug

Note : These cables are not provided with the adapter.

3.3.2 HCC Requirements

Note : The HCC should be correctly configured before you proceed with the adapter installation. Refer to the documentation for the specific HCC.

3.3.2.1 PMC Adapter

An HCC equipped with at least one empty PMC expansion slot is required to host a PMC FDDI or CDDI Adapter.

3.3.2.2 PCI-104

A stable PCI-104 system is required to host a PCI-104 FDDI or CDDI Adapter.

3.3.3 Documentation

- this Installation Guide
- the Documentation provided for the HCC

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3.3.4 Software

- the Software Driver for the FDDI Adapter - in some instances this is included with the Operating System (Linux, Windows)
- at least one of the operating systems supported by the HCC and the FDDI Adapter drivers
- for a full listing of Operating Systems and Drivers supported please refer to the installation disks and/or the web site located at (http://www.ccii.co.za/).

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4. Installation of the Adapter

4.1 Installation Overview

If you are testing a previously installed adapter, skip to Step 5. The installation of the adapter requires the completion of the following steps:

- prepare the HCC for installation of a PMC or PC-104 adapter
- install the adapter
- reinstall the HCC and reconnect the cables if required
- restart and configure the HCC
- connect loop-back cables / wrap plugs for transceiver tests
- test the adapter
- attach the adapter to your network

Refer to the documentation for the HCC.

There are two ways to test the adapter :

- a test with loop-back covering all devices including the transceiver
- a test without loop-back covering all devices except the transceiver

4.2 Testing with Loop-Back Cables / Wrap Plugs for Transceiver Tests

4.2.1 Fibre SAS

Connect a fibre cable as shown in Figure 4. You may have to remove process plugs from the transceiver if the adapter is being used for the first time.

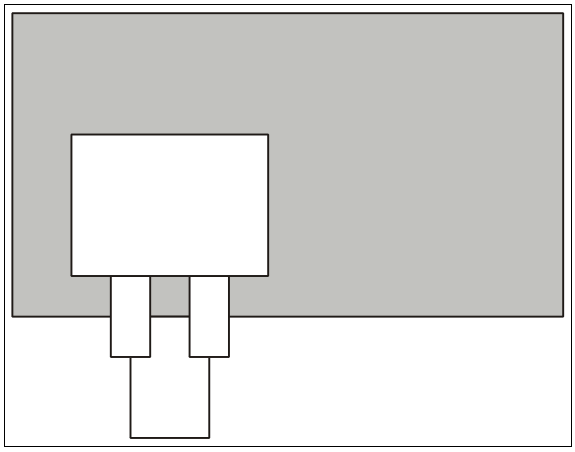


Figure 4 : FDDI SAS Loop-Back

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4.2.2 Fibre DAS

Connect two fibre cables as shown in Figure 5. You may have to remove process plugs from the transceivers if the adapter is being used for the first time.

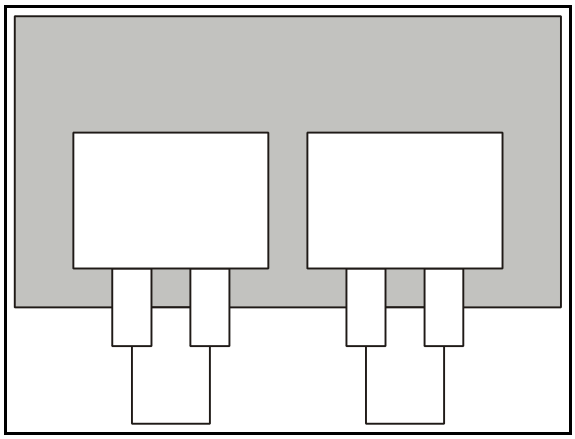


Figure 5 : FDDI DAS Loop-Back

4.2.3 Copper SAS

Connect a single HR10A wrap plug (shown in Figure 3).

4.2.4 Copper DAS

Connect two HR10A wrap plugs (shown in Figure 3).

4.3 Testing with or without Loop-Back Cables / Wrap Plugs for Transceiver Tests

The test executable is available for DOS (SKFPDIAG.EXE) and VxWorks (ccFdBit.a).

To run the VxWorks test software, follow the instructions in Generic User Manual for the FDDI VxWorks BIT Application [2.1.2].

To test the adapter using DOS, follow these steps :

1. Boot with DOS and wait until the operating system is loaded and the DOS prompt is displayed on the screen. If you are not able to initiate DOS or if the DOS prompt does not appear, check your configuration.

2. Insert the Driver Installation Diskette (that has been delivered with the adapter) in diskette drive A.

3. For PMC adapters, type in :

```
cd a:  [Press  Enter ]
SKFPDIAG [Press  Enter ]
```

4. When the Main Menu of the diagnostic program is displayed, select by using the arrow keys to highlight the option and pressing the <Enter> key.

- “Diagnostics” if you want to perform the test without Loop-Back-back or
- “Diagnostics with Loop-back" if you want to perform the test with loop-back

Several tests are performed. This will take 1 to 4 minutes. After all the tests are run, a message is displayed.

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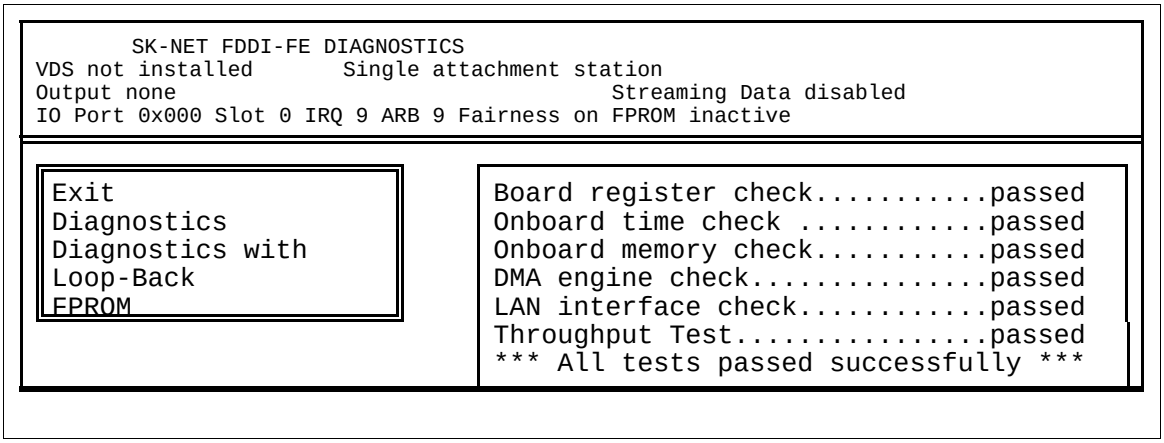


Figure 6 : Typical Message Screen of the Diagnostic Program

If an error occurs, follow the instructions given in the message displayed on the screen. Please check configuration and run the test again.

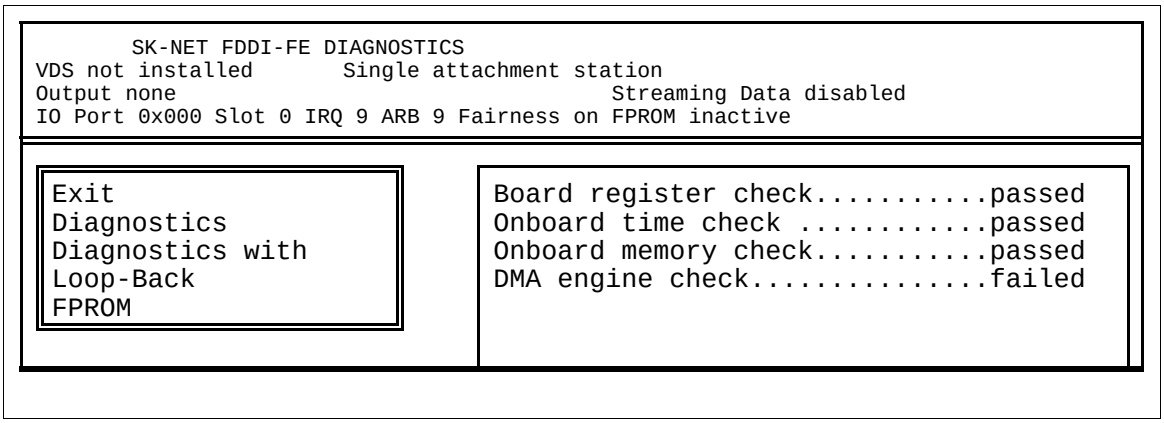


Figure 7 : Typical Error Message Screen of the Diagnostic Program

Press any key to continue.

If all tests pass, continue with Step 7.

4.3.1 Test Failure

If an error message instructs you to reset the adapter, follow the procedure listed below :

1. Turn off the computer.

2. Make sure that the adapter is completely seated. You do not have to remove the adapter. Just lift the adapter so that the adapter connector and the connector on the PMC HCC are clear of each other. Press firmly on the adapter until it is seated correctly.

3. Repeat the test. If the problem persists, contact C²I² Systems.

4. To quit the Diagnostics Program, select the Exit bar in the Main Menu and press the <Enter> key.

5. If applicable, remove the wrap plug. Reconnect the cable to the network.

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6. If you do not intend to connect the system to the FDDI network right now, reinsert the process plug into the optic transceiver. The process plug will protect the optic transceiver from dust accumulation.

4.4 Attach the Adapter to Your Network

The SAS adapter supports single attachment to a concentrator.

The DAS adapter supports either dual attachment to the main ring path or dual homing to one or two concentrators.

4.5 Connector Identification

4.5.1 PMC FDDI Adapter, DAS, ST Connectors

Figure 8 shows the location of network connectors on the PMC FDDI Adapter with ST Connectors, as seen from the component side of the adapter. Figure 9 shows the frontpanel layout.

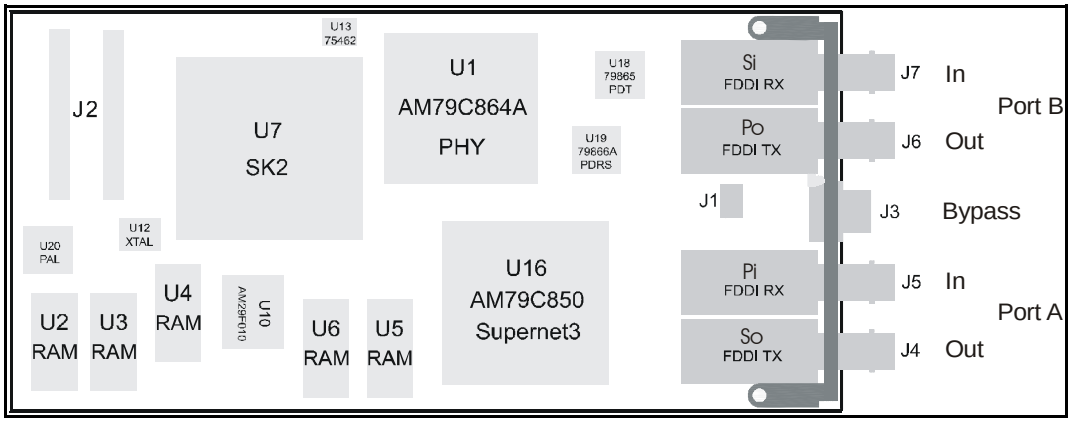


Figure 8 : PMC FDDI DAS ST Connector Identification

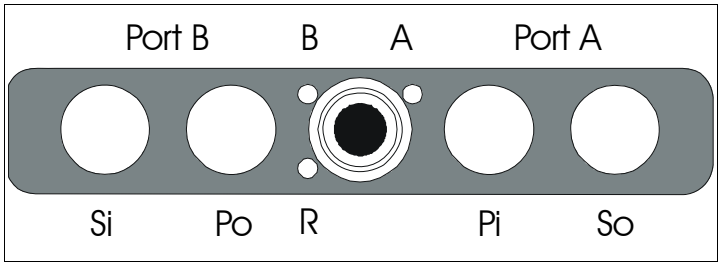


Figure 9 : PMC FDDI DAS ST Frontpanel Layout

Note : Pi = Primary In
Si = Secondary In
Po = Primary Out
So = Secondary Out

Refer to Annexure B for Optical Bypass Pin-outs.

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4.5.2 PMC FDDI Adapter, DAS, Reversed ST Connectors

Figure 10 shows the location of network connectors on the PMC FDDI Adapter with reversed ST Connectors, as seen from the track side of the adapter.

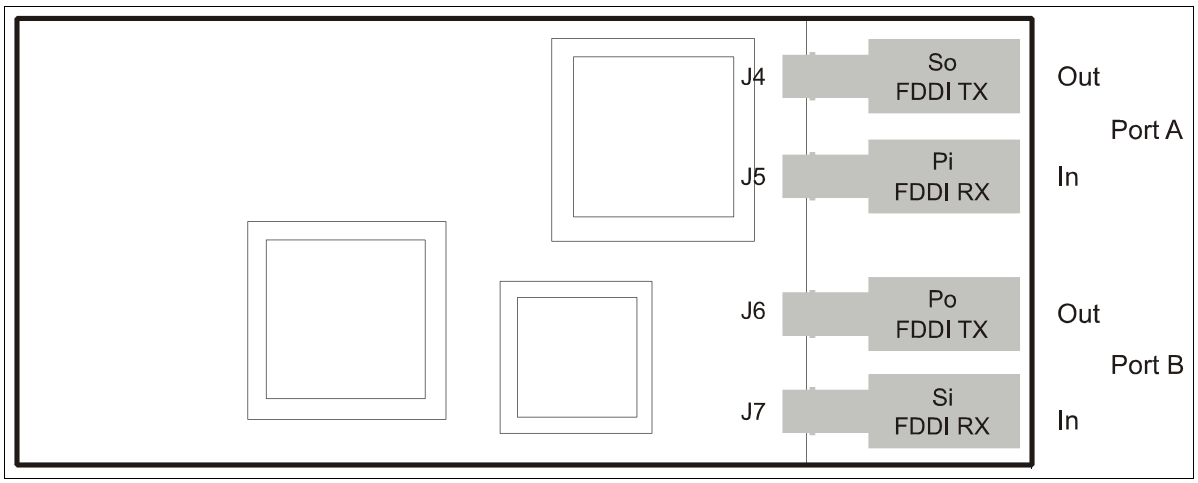


Figure 10 : PMC FDDI DAS ST-1 Connector Identification

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4.5.3 PMC FDDI Adapter, DAS, SC Connectors

Figure 11 shows the location of network connectors on the PMC FDDI Adapter with SC Connectors, as seen from the component side of the adapter. Figure 12 shows the frontpanel layout.

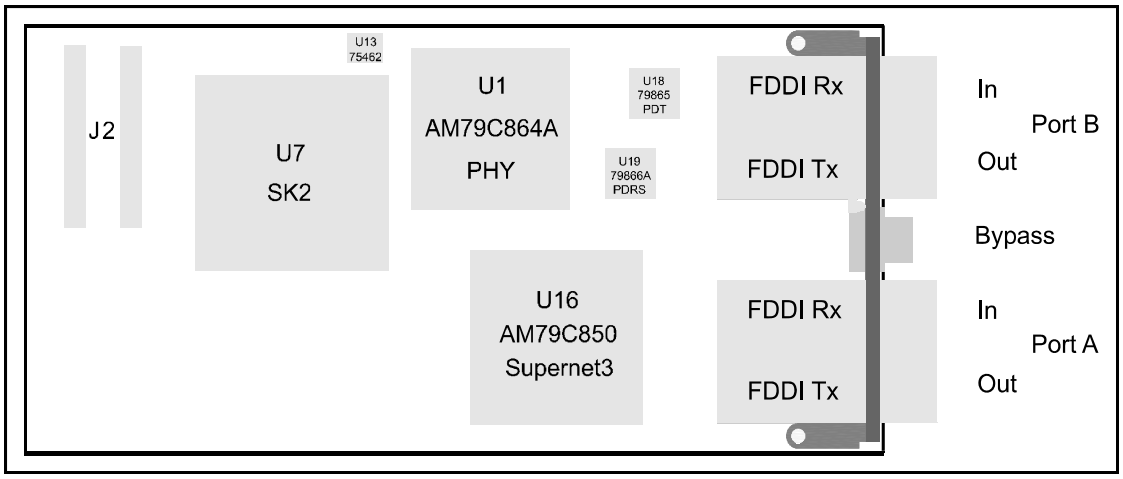


Figure 11 : PMC CDDI DAS SC Connector Identification

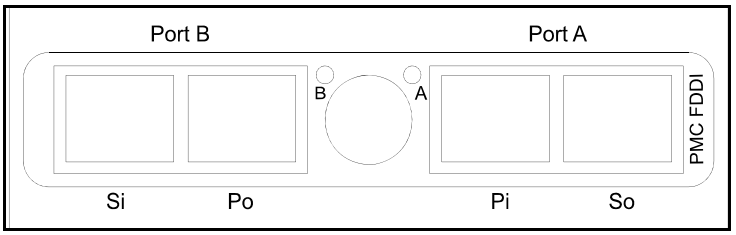


Figure 12 : PMC FDDI DAS SC Frontpanel Layout

Note : Pi = Primary In
Si = Secondary In
Po = Primary Out
So = Secondary Out

Refer to Annexure B for Optical Bypass Pin-outs.

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4.5.4 PMC CDDI Adapter, DAS, HR-10 Connectors

Figure 13 shows the location of network connectors on the PMC CDDI Adapter with HR-10 Connectors, as seen from the component side of the adapter. Figure 14 shows the frontpanel layout.

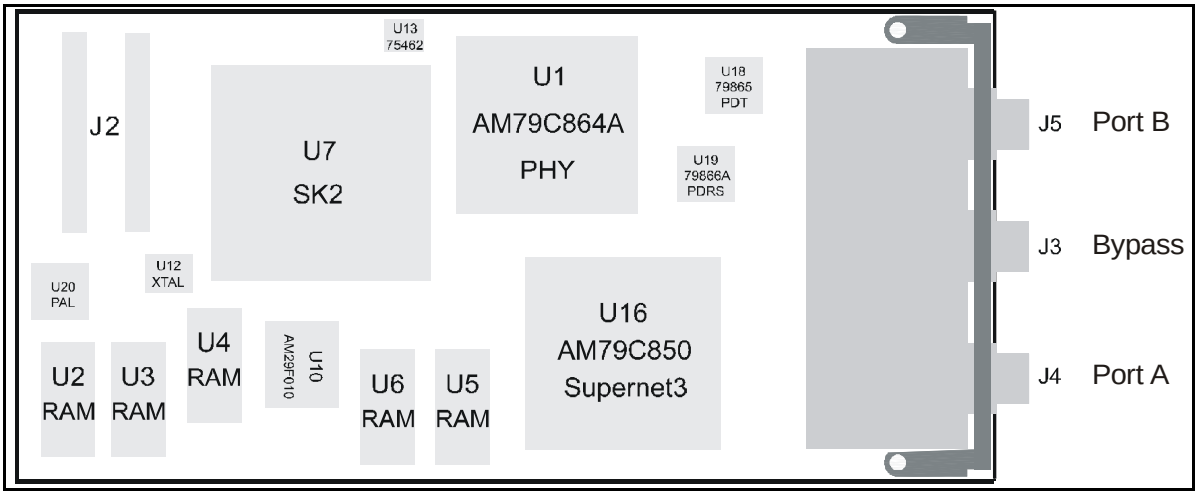


Figure 13 : PMC CDDI DAS HR10 Connector Identification

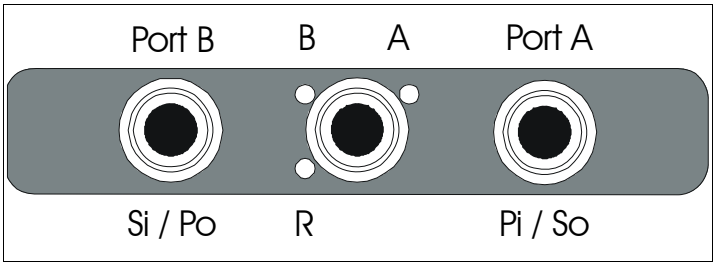


Figure 14 : PMC CDDI DAS HR10 Frontpanel Layout

Note : Pi = Primary In
Si = Secondary In
Po = Primary Out
So = Secondary Out

Refer to Annexure B for Channel and Optical Bypass Pin-outs.

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4.5.5 PC-104

Figure 15 shows the location of network connectors on the PC-104 FDDI Adapter with ST Connectors.

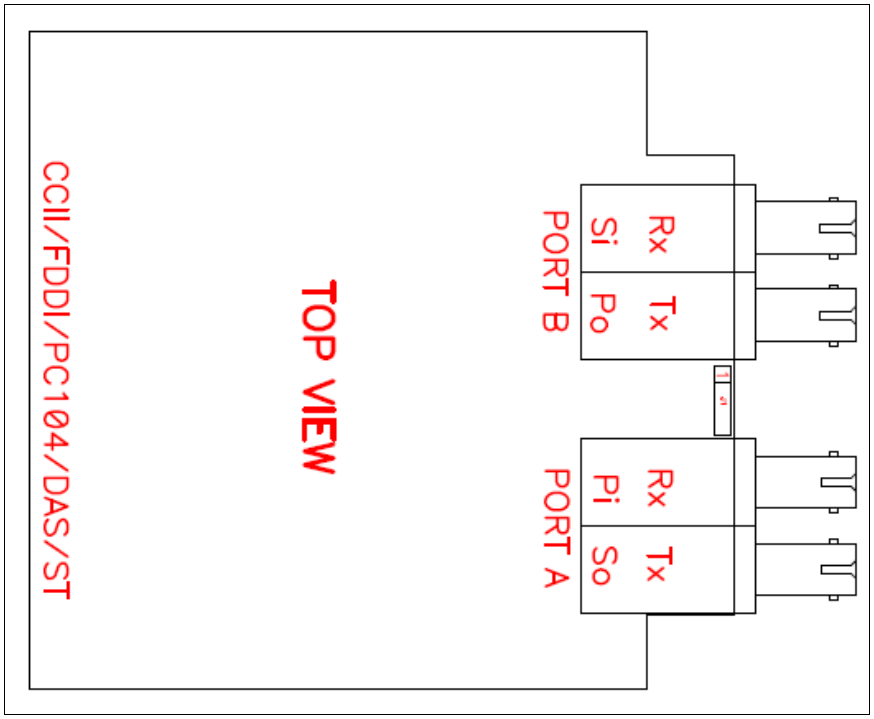


Figure 15 : PC-104 Connector Identification

Optical Bypass Switch (OBS)

Connector Pin Assignments :

1 - OBS Switch
2 - OBS Vcc
3 - OBS Available
4 - GND

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5. Installation of the Protocol Drivers

For the DOS protocol drivers, complete installation instructions are given in readme files on the Installation Diskettes. Look for the .TXT files stored in the sub-directory of the corresponding driver on the Installation Diskettes.

Installation instructions for the VxWorks protocol drivers are in the Generic User Manual for the FDDI 4.3 BSD VxWorks Software Driver [2.1.1].

Once the driver is installed and loaded, the adapter is ready for use.

Use one of the following tables to determine the status of your network connection :

Note : With a SAS adapter, the DAS LED does not apply in the following tables.

SAS		DAS	Adapters with Three LEDs
Green (B)	Yellow (R)	Green (A)	
Off	Off	Off	Driver not loaded, adapter not operational.
Off	On	Off	Station management code is running, adapter is not connected to the network (for example, cable is disconnected).
On	Off	On	SAS: adapter is ready for use (connected to network and operational). PMC DAS: adapter active at Channel B.
Off	Off	On	SAS: driver not loaded, adapter not operational. PMC DAS: adapter active at Channel A.
On	Off	On	Adapter is ready for use (connected to network and operational).

SAS	DAS	Adapters with Two LEDs
B	A	
Off	Off	Driver not loaded, adapter not operational.
Yellow	Yellow	Station management code is running, adapter is not connected to the network (for example, cable is disconnected).
Green	Off	SAS: adapter is ready for use (connected to network and operational). PMC DAS: adapter active at Channel B.
Off	Green	SAS: driver not loaded, adapter not operational. PMC DAS: adapter active at Channel A.
Green	Green	Adapter is ready for use (connected to network and operational).

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6. Contact Details

6.1 Contact Person

Direct all correspondence and / or support queries to the Project Manager at C²I² Systems.

6.2 Physical Address

C²I² Systems
Real-Time House, Block T
Greenford Office Estate
Punters Way
7708 Kenilworth
Cape Town
South Africa

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7701 Rondebosch
South Africa

6.4 Voice and Electronic Contacts

Tel	:	(+27) (0)21 683 5490
Fax	:	(+27) (0)21 683 5435
Email	:	info@ccii.co.za
Email	:	support@ccii.co.za
URL	:	http://www.ccii.co.za/

6.5 Product Support

Support on C²I² Systems products is available telephonically between Monday and Friday from 09:00 to 17:00 CAT. Central African Time (CAT = GMT + 2).

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Annexure A

Data Sheet

Part Numbers	CCII/FDDI/PMC/DAS/SC/(COM/IND/RGD) CCII/FDDI/PMC/DAS/ST/(COM/IND/RGD) CCII/FDDI/PMC/DAS/ST-1/MIL CCII/CDDI/PMC/DAS/HR10/(COM/IND/RGD) CCII/FDDI/PC104/DAS/ST/(COM/IND/RGD)
Bus Interface	32-bit PCI-Bus electrical, complies to PCI Rev 2.1 PMC formfactor, complies to CMC IEEE P1386.1
Network Interface (Fibre)	ANSI X3T9.5 and X3T12 compatible
LAN Controller	AMD SUPERNET 3
RAM	128 kBytes CMOS static
Flash EPROM	128 kBytes
I/O Addresses	Automatic by PCI V2.1 Plug and Play assigned to the slot
Interrupts	PCI INT A (depending on HCC PMC slot)
DMA	Automatic depending on PCI slot
Arbitration Level	---
Timer	3 channels at 6,25 MHz max.
Dimensions	149 mm x 74 mm x 13,5 mm
Power Requirements	< 1,45 A at 5 V
Environmental Specifications	-15 C to +75 C (operating) -40 C to +75 C (storage) 95% non-condensing relative humidity Shock 6 g peak amplitude, 11 ms duration, half sine wave pulse
Drivers	Refer to http://www.ccii.co.za/ for driver support.
Supporting Tools	Refer to http://www.ccii.co.za/ for support tools.

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Annexure B

Pin Assignments

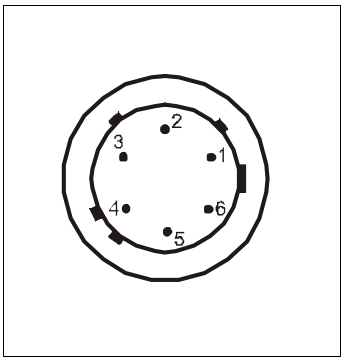


Figure 16 : Pin Locations

B.1 Optical Bypass Switch Receptacle

Pin 1 : VCC
Pin 2 : VCC
Pin 3 : Switch secondary ring
Pin 4 : Switch primary ring
Pin 5 : Ground
Pin 6 : Switch Present

B.2 Frontpanel CDDI Adapter Receptacle

Pin 1 : TxD+
Pin 2 : TxD-
Pin 3 : RxD+
Pin 4 : RxD-
Pin 5 : Not connected
Pin 6 : Not connected

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