cPCI-3534 cPCI-3538
4/8 Ports Serial
Communication Modules

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Questions			
Product Model			
Environment to Use	OS _____ Computer Brand _____ M/B : CPU : Chipset : Bios : Video Card : Network Interface Card : Other :		
Challenge Description			
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ADLink cPCI Multiport Card Comparison Chart

	3534	**3538**
Serial port	4~8	8~16
CPU	-	-
Serial communication controller	16C554	16C554
MAX System throughput	115.2K*4	115.2K*8
Hardware compatibility	cPCI bus	cPCI bus
Software compatibility	DOS Windows (3.1/95/98/NT) LINUX SCO Open Server	DOS Windows (3.1/95/98/NT) LINUX SCO Open Server
External connector	Four DB25 male cable connector	Eight DB25 male cable connector
Rear IO Connector	R3534	R3538
Surge protection	Y	Y
Isolation protection (500VDC) (RS232,RS422, RS485)	Port D: Isolated RS422 or RS 485	Y (C888XB) option
Dimension	160mm (length) 100mm (width)	160mm (length) 100mm (width)

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1

Introduction

1.1 About the Serial Communication Modules

The serial communication modules are intelligent serial input/output multi-port controller cards, which go with the new generation of PC platform CompactPCI. The modules can reduce the frequency for serial communication controller to interrupt main CPU on the mainboard to improve the whole system performance.

Traditionally, the serial communication controller will interrupt the MPU character by character. This action will waste MPU processing time and drop the system computing power. If the MPU is processing some non-interrupted task, then the serial controller will overrun and data lost.

The serial communication interface series can support buffer capability or local processor and dual port RAM in each port' s transmit and receive channel simultaneously. This capability will reduce the frequency of interrupt and increase the non-interrupt task' s interval.

The serial communication interface series use ASIC PCI controller to interface the module to cPCI bus. The ASIC fully implement the PCI local bus specification Rev. 2.1. All related bus configurations, such as base memory address and interrupt assignment, are automatically controlled by BIOS software. It does not need any user interaction and pre-study for the configurations. This removes the burden of searching for a conflict-free configuration.

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1.2 Overview of cPCI-3534

1.2.1 What is cPCI-3534?

The cPCI-3534 is an enhanced four ports serial communication module used for cPCI platform. It includes a PGA to support the serial communication controller and a 37-pin connector to connect external I/O port from the front panel or using the rear IO.
The expansion cable has four standard DB25 connectors and one DB37 connector to connect with cPCI-3534 interface card.
The R -3534 transition board can support rear IO connection by using one DB37 connector.

1.2.2 Feature of cPCI-3534

- 32-bit CompactPCI form factor
- PCI Rev.2.1 Plug and Play
- IRQ and IO address automatically assigned by PCI plug-n-play
- 4 communication ports intelligent buffer
- One isolated industry communication port
- High Speed Communication (max. 115200 bps)
- Suitable for modems, data display, data collection, telecommunication
- Supports up to 2 cards/8 ports per system
- Supports DOS, Windows 3.1, Windows 95/98, and Windows NT operation system

1.2.3 Specification of cPCI-3534

- Compliant with PCI Spec.2.1
- Serial communication controller:
  - 16C550A compatible
  - 1.8432 ~ 7.3728 MHz
- System IO mapping:
  - Assigned by PCI BIOS
  - Shared IRQ
- Flow control
  - Xon/Xoff control
  - RTS/CTS control

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- Port Capability:
  - 3 independent RS-232C compatible ports
  - 1 isolated RS-422/485 port (DIP switch select)
  - Max. port per system: 8 (2 card)
- Isolation voltage: 2500VDC
- Baud rate: Each port can be configured to 50~115,200 bps
- Operation System Compatibility: DOS, Windows 3.1, and Windows 95/98/NT
- Connector: DB37 female connector
- Cable: External cable with 4 standard DB25 male connector
- Operating temperature: 0 ~ 55 °C
- Storage temperature: -20 ~ 65 °C
- Humidity: 10% ~ 95%, non-condensing
- Dimension: 160 x 100 mm^2 (6.3 x 3.9 $in.^2$) 3U
- Power consumption: +5V @ 1400mA typical

1.2.4 Connector Pin Assignment of cPCI-3534

DB37 female connector pin assignment for cPCI-3534.

DB37 Pin No.	Signal Name	DB37 Pin No.	Signal Name
1	RXD1(IN)	20	TXD1(OUT)
2	CTS1(IN)	21	RTS1(OUT)
3	DSR1(IN)	22	DTR1(OUT)
4	DCD1(IN)	23	RI1(IN)
5	GND	24	RXD2(IN)
6	TXD2(OUT)	25	CTS2(IN)
7	RTS2(OUT)	26	DSR2(IN)
8	DTR2(OUT)	27	DCD2(IN)
9	GND	28	RI2(IN)
10	GND	29	RI3(IN)
11	GND	30	DCD3(IN)
12	DTR3(OUT)	31	DSR3(IN)
13	RTS3(OUT)	32	CTS3(IN)
14	TXD3(OUT)	33	RXD3(IN)
15	GND4	34	--
16	--	35	422TXD4-(I/O)
17	422RXD4-(IN)	36	485TRXD4+(I/O)
18	485TRXD4-(I/O)	37	422TXD4+(OUT)
19	422RXD4+(IN)	--	--

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DB25 male connector pin assignment in cPCI-3534 module for RS-232 interface (port A, B and C).

DB25 Pin No.	Signal Name
2	TXD(OUT)
3	RXD(IN)
4	RTS(OUT)
5	CTS(IN)
6	DSR(IN)
7	GND
8	DCD(IN)
20	DTR(OUT)

DB25 male connector pin assignment in cPCI-3534 module for RS-422/485 interface (port D).

DB25 Pin No.	Signal Name
2	422TXD+(OUT)
3	422RXD+(IN)
4	485TRXD+(I/O)
5	485TRXD-(I/O)
6	422RXD-(IN)
7	GND
20	422TXD-(OUT)

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J2 connector pin assignment in cPCI-3534 module for RS-232/422/485 interface.

22	GND	GA4	GA3	GA2	GA1	GA0	GND	P2 / J2 CONNECTOR
21	GND						GND	
20	GND						GND	
19	GND	FG	N+	N-	SG		GND	
18	GND						GND	
17	GND						GND	
16	GND			TXD+	TXD-	SG	GND	
15	GND	FG	RXD+	RXD-			GND	
14	GND						GND	
13	GND						GND	
12	GND	DSR❸	SG❸	DCD❸	DTR❸		GND	
11	GND	FG❸	TX❸	RX❸	RTS❸	CTS❸	GND	
10	GND						GND	
9	GND						GND	
8	GND	DSR❷	SG❷	DCD❷	DTR❷		GND	
7	GND	FG❷	TX❷	RX❷	RTS❷	CTS❷	GND	
6	GND						GND	
5	GND						GND	
4	GND	DSR❶	SG❶	DCD❶	DTR❶		GND	
3	GND	FG❶	TX❶	RX❶	RTS❶	CTS❶	GND	
2	GND						GND	
1	GND						GND	
Pin	Z	A	B	C	D	E	F	

❶Port A ❷Port B ❸Port C

RS-232

FG: Frame Ground
TX: Transmit Data
RX: Receive Data
RTS: Request to Send
CTS: Clear to Send
DSR: Data Set Ready
SG: Signal Ground
DCD: Data Carrier Detect
DTR: Data Terminal Ready

RS-422

TXD+: Transmit Data Positive
TXD-: Transmit Data Negative
RXD+: Receive Data Positive
RXD-: Receive Data Negative

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RS-485

N+: Data Signal Positive

N-: Data Signal Negative

R-3534 Rear IO Daughter Board

The R-3534 rear I/O daughter board provides a rear I/O connection transition, the connector and cable used in the rear is the same as the front.

DIP Switch and Jumper Setting

SW1	ON	OFF
SW1-1	Card1	Card2
SW1-4	RS-422	RS-485

The JP1 is for the RS422 terminator and the JP2 is for the RS-485 terminator. The terminator is ON while the jumper is ON

1.3 Overview of cPCI-3538

1.3.1 What is cPCI-3538?

The cPCI-3538 is an enhanced eight ports serial communication card used for cPCI platform. It includes a PGA, which supports the serial communication controller, and a 62-pin connector which connects external I/O port on the front panel or the rear IO.

The expansion cable has eight standard DB25 connectors and one DB62 connector to connect to cPCI-3538 interface card. User may also use one DB62 to DB62 cable to connect between one cPCI-3538 and C588XB for providing 8 channel isolated RS-232/422/485 interface.

The R-3538 transition board can support rear IO connection by using one DB62 connector.

1.3.2 Feature of cPCI-3538

- 32-bit CompactPCI form factor
- PCI Rev.2.1 Plug and Play
- IRQ and IO address automatically assigned by PCI plug-and-play
- 8 communication ports intelligent buffer
- High Speed Communication (max. 115200 bps)
- Suitable for modems, data display, data collection,

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telecommunication

- Supports up to 2 cards/8 ports per system
- Supports DOS, Windows 3.1, Windows 95/98, and Window NT operation system
- Optional isolated RS-232/422/485 interface for each port independently by C888XB

1.3.3 Specification of cPCI-3538

- Compliant with PCI Spec.2.1
- Serial communication controller:
- 16C550A compatible
- 1.8432 ~ 7.3728 MHz
- System IO mapping:
- Assigned by PCI BIOS
- Shared IRQ
- Flow control
- Xon/Xoff control
- RTS/CTS control
- Port Capability:
- 8 independent RS-232C compatible ports
- Optional external C588XB box for extending to 8 isolated RS-232/422/485 port
- Max. port per system: 16 (2 card)
- Baud rate: Each port can be configured to 50~115,200 bps
- Operation System Compatibility: DOS, Windows 3.1, and Windows 95/98/NT
- Connector: DB62 female connector
- Cable: External cable with 8 standard DB25 male connector
- Operating temperature: 0 ~ 55 °C
- Storage temperature: -20 ~ 65 °C
- Humidity: 10% ~ 95%, non-condensing
- Dimension: 160 x 100 mm^2 (6.3 x 3.9 $in.^2$) 3U
- Power consumption: +5V @ 1400mA typical

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1.3.4 Connector Pin Assignment of cPCI-3538

DB62 female connector pin assignment for cPCI-3538.

DB62 Pin No.	Signal Name	DB62 Pin No.	Signal Name	DB62 Pin No.	Signal Name
1	TXD1(OUT)	22	TXD2(OUT)	43	GND
2	RXD1(IN)	23	RXD2(IN)	44	GND
3	RTS1(OUT)	24	RTS2(OUT)	45	GND
4	CTS1(IN)	25	CTS2(IN)	46	TXD4(OUT)
5	DSR1(IN)	26	DSR2(IN)	47	RXD4(IN)
6	DTR1(OUT)	27	DTR2(OUT)	48	RTS4(OUT)
7	DCD1(IN)	28	DCD2(IN)	49	CTS4(IN)
8	TXD3(OUT)	29	TXD7(OUT)	50	DSR4(IN)
9	RXD3(IN)	30	RXD7(IN)	51	DTR4(OUT)
10	RTS3(OUT)	31	RTS7(OUT)	52	DCD4(IN)
11	CTS3(IN)	32	CTS7(IN)	53	TXD8(OUT)
12	DSR3(IN)	33	DSR7(IN)	54	RXD8(IN)
13	DTR3(OUT)	34	DTR7(OUT)	55	RTS8(OUT)
14	DCD3(IN)	35	DCD7(IN)	56	CTS8(IN)
15	TXD5(OUT)	36	TXD6(OUT)	57	DSR8(IN)
16	RXD5(IN)	37	RXD6(IN)	58	DTR8(OUT)
17	RTS5(OUT)	38	RTS6(OUT)	59	DCD8(IN)
18	CTS(IN)	39	CTS6(IN)	60	GND
19	DSR5(IN)	40	DSR6(IN)	61	GND
20	DTR5(OUT)	41	DTR6(OUT)	62	GND
21	DCD5(IN)	42	DCD6(IN)	--	--

DB25 male connector pin assignment in cPCI-3538 module for RS-232 interface (port A~H).

DB25 Pin No.	Signal Name
2	TXD(OUT)
3	RXD(IN)
4	RTS(OUT)
5	CTS(IN)
6	DSR(IN)
7	GND
8	DCD(IN)
20	DTR(OUT)

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J2 connector pin assignment in cPCI-3538 module for RS-232/422/485 interface.

22	GND	GA4	GA3	GA2	GA1	GA0	GND	P2 / J2 CONNECTOR
21	GND						GND	
20	GND	DSR❽	DCD❽	DTR❽	RTS❽	CTS❽	GND	
19	GND	FG❽	TX❽	RX❽	SG❽		GND	
18	GND	FG❼	TX❼	RX❼	SG❼		GND	
17	GND	DSR❼	DCD❼	DTR❼	RTS❼	CTS❼	GND	
16	GND						GND	
15	GND	DSR❻	DCD❻	DTR❻	RTS❻	CTS❻	GND	
14	GND	FG❻	TX❻	RX❻	SG❻		GND	
13	GND	FG❺	TX❺	RX❺	SG❺		GND	
12	GND	DSR❺	DCD❺	DTR❺	RTS❺	CTS❺	GND	
11	GND						GND	
10	GND	DSR❹	DCD❹	DTR❹	RTS❹	CTS❹	GND	
9	GND	FG❹	TX❹	RX❹	SG❹		GND	
8	GND	FG❸	TX❸	RX❸	SG❸		GND	
7	GND	DSR❸	DCD❸	DTR❸	RTS❸	CTS❸	GND	
6	GND						GND	
5	GND	DSR❷	DCD❷	DTR❷	RTS❷	CTS❷	GND	
4	GND	FG❷	TX❷	RX❷	SG❷		GND	
3	GND	FG❶	TX❶	RX❶	SG❶		GND	
2	GND	DSR❶	DCD❶	DTR❶	RTS❶	CTS❶	GND	
1	GND						GND	
Pin	Z	A	B	C	D	E	F	

RS-232

FG: Frame Ground
TX: Transmit Data
RX: Receive Data
RTS: Request to Send
CTS: Clear to Send
DSR: Data Set Ready
SG: Signal Ground
DCD: Data Carrier Detect
DTR: Data Terminal Ready

R-3538 Rear IO Daughter Board

The R-3538 rear I/O daughter board provides a rear I/O connection transition, the connector and cable used in the rear are the same as the front.

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2

Installation

This chapter describes the configurations of the serial communication module. At first, the contents in the package and unpacking information that you should care about are described. The serial communication modules are plug-and-play and very easy to install into cPCI system.

2.1 What You Have

In addition to this *User's Manual*, the package includes the following items:

- cPCI-3534/3538 Serial Communication Interface Module
- Expansion Cable
- R-3534/3538 Rear IO Daughter Board (For the rear I/O version)
- "ADLink All-in-One Compact Disc" or Disks

If any of these items is missing or damaged, contact the dealer from whom you purchased the product. Save the shipping materials and carton in case you want to ship or store the product in the future.

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2.2 Unpacking

Your serial communication module contains sensitive electronic components that can be easily damaged by static electricity.

The module should be done on a grounded anti-static mat. The operator should be wearing an anti-static wristband, grounded at the same point as the anti-static mat.

Inspect the module carton for obvious damage. Shipping and handling may cause damage to your module. Be sure there are no shipping and handing damages on the module before processing.

After opening the module carton, extract the system module and place it only on a grounded anti-static surface component side up.

Again inspect the module for damage. Press down on all the socket IC's to make sure that they are properly seated. Do this only with the module place on a firm flat surface.

Note: DO NOT APPLY POWER TO THE MODULE IF IT HAS BEEN DAMAGED.

You are now ready to install your cPCI Module.

2.3 Installation Procedure

1. Turn off your computer
2. Turn off all accessories (printer, modem, monitor, etc.) connected to computer.
3. Select a cPCI slot.
4. Before handling the serial communication module, discharge any static buildup on your body by touching the metal case of the computer. Hold the edge and do not touch the components.
5. Position the module into the cPCI slot you selected.
6. Secure the module in place of the system.

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2.4 Hardware Configuration

The serial communication module has plug and play component, the card can requests memory usage (I/O port locations) of the card which is assigned by system BIOS. The address assignment is done on a board-by-board basis for all serial communication cards in the system. The jumper SW1-1 for cPCI-3534 and the JP1 for cPCI-3538 is used for the system to recognize the first or second card of the same model in the system if there are two cards of the same on board.

2.5 Software Installation

2.5.1 Windows NT Installation

Once Windows NT system has been started, login using an account with administrative right.

1. Start the [Control Panel] applet by double clicking the icon in the [Program Managers] main group
2. In the [Control Panel] applet, double click [Network] icon to bring up the Network Control Panel Applet (NCPA).
3. Within the NCPA, select the [Add Adaptor] button, a list of possible adaptors should be displayed. Go to the end of this list and select <Other> requires disk from manufacturer.
4. When prompted for the path, specify the drive and directory where the NCPA can find the new driver for the card you install.

   For cPCI-3534, we may specify as follow:
   X:\NuCOM\CPCI3534\NT4

   For C588, we may specify as follow:
   X:\NuCOM\CPCI3538\NT4
   (Where X indicates CD-ROM drive)

5. Now, you can follow the configuration dialog boxes to install the driver.
6. In the default condition, the TTY port is given name from "COM3". User can specify the start "COM" port number in installation procedure.

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7. We can install up to two same type serial communication cards in one NT system.
8. When you need to install two same type serial communication cards in one NT system, you must confirm to let one card' s SW1-1 is ON while the other card' s SW1-1 is OFF for cPCI-3534 and JP1 is ON while the other card' s JP1 is OFF for cPCI-3538.
9. The card with switch ON will have low COM port number. The card with switch OFF will have higher COM port number follow the card with switch ON.
10. If you install two the same type serial communication modules with switch ON or OFF simultaneously, we can not confirm that both cards will active properly.
11. If you install multiple cards in one NT system simultaneously, please confirm that the COM port number assigned do not overlap for different card. Or you may have improperly operation in your system.
12. For easy to maintain NT system' s COM port number, we suggest that you must set the switch ON for the first card to be installed in NT system.
13. After you install the driver, you need to reboot your PC, then you can have more COM port available.
14. If you had installed our NT driver in your system before, you might remove this driver firstly, then you can install our new version driver. Or you might have some problem in your system.

2.5.2 Windows 95/98 Installation

Once Windows 95/98 system has been started, the plug & play function in 95/98 system will find the new serial communication card. If this is the first time to install serial communication card in your Windows 95/98 system, you will be informed to install the driver. Please follow the instruction message to input the COM port number starting value for the first and second cards.

Because the resource will be a ssigned by PCI BIOS, it is not easy to check which card is first or second from resource. So the switch will play the role for system to fix the COM port number for each card.

After you had installed the driver, you might be informed to have new hardware found. You do not have to install the driver again, Windows 95/98 will add the COM port automatically.

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1. You can install up to two cPCI-3534/3538 cards in one 95/98 system.
2. When you need to install two same type cards in one 95/98 system, you must confirm to let one card' s switch is ON, and the other card' s switch is OFF.
3. The card with switch ON will have COM port number assigned for first card. The card with switch OFF will have COM port number assigned for second card.
4. If you install two the same type serial communication cards with switch ON or OFF simultaneously, we can not confirm that both cards will active properly.
5. If you install multiple cards in one 95/98 system simultaneously, please confirm that the COM port number assigned does not overlap for different card. Or you may have improperly operation in your system.
6. For easy to maintain 95/98 system' s COM port number, we suggest that you must set the switch ON for the first card to be installed in 95/98 system.
7. The serial communication card can be usedin interrupt shared mode. PCI BIOS will assign IRQ for each serial communication card. For multi-card application, we can just share one IRQ in each card, but you must confirm that one system may have minimum one IRQ left for P&P function. If there are no IRQ left to be assigned to serial communication card, you might have wrong operation.

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Product Warranty/Service

Seller warrants that equipment furnished will be free form defects in material and workmanship for a period of one year from the confirmed date of purchase of the original buyer and that upon written notice of any such defect, Seller will, at its option, repair or replace the defective item under the terms of this warranty, subject to the provisions and specific exclusions listed herein.

This warranty shall not apply to equipment that has been previously repaired or altered outside our plant in any way as to, in the judgment of the manufacturer, affect its reliability. Nor will it apply if the equipment has been used in a manner exceeding its specifications or if the serial number has been removed.

Seller does not assume any liability for consequential damages as a result from our product uses, and in any event our liability shall not exceed the original selling price of the equipment.

The equipm ent warranty shall constitute the sole and exclusive remedy of any Buyer of Seller equipment and the sole and exclusive liability of the Seller, its successors or assigns, in connection with equipment purchased and in lieu of all other warranties expressed implied or statutory, including, but not limited to, any implied warranty of merchant ability or fitness and all other obligations or liabilities of seller, its successors or assigns.

The equipment must be returned postage-prepaid. Package it securely and insure it. You will be charged for parts and labor if you lack proof of date of purchase, or if the warranty period is expired.

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