PCI-Based Serial Communication Cards

User's Guide



Recycled Paper

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Suggestions for ADLINK			

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ADLINK PCI Multi-Port Card Comparison Chart

	C485	C514	C518	C584	C588	C422
Serial ports	4-8	4-32	8-64	4-8	8-16	2-4
Serial Controller	16C550			16C554		
MAX Throughput	115.2k*4	115.2k*4	115.2k*8	115.2k*4	115.2k*8	115.2k*2
Form Factor	PCI					
OS	DOS, Windows (98/NT/2000/XP), LINUX, SCO Open Server					
Connector	Four DB9/25 male cable connector					
RS232 DB9/25 Support	-	Ports A-C	Ports A-G	ALL	ALL	-
RS422/485 DB9/25 Male Support	ALL	Port D	Port H	Optional (RS4232-4)	Optional (RS4232-8)	ALL
Surge Protection	Included					
Isolation Protection (500VDC)	Ports A-D (RS422, RS485)	Port D (RS422, RS485)	Port H (RS422, RS485)	Optional RS4232-4 BOX	Optional RS4232-8 BOX	Ports A-B (RS422, RS485)
Dimensions (length X width)	5.9in X 4.0in	5.57in X 4.2in	5.5in X 4.2in	4.7in X 3.9in	5.5in X 4.2in	4.85in X 3.95in
Other Specifications	F641N, F642N Box Dimensions: 9.1in (length) X 3.5in (width)					

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1

Introduction

The ADLINK series of PCI-based serial communication cards are intelligent serial input/output multi-port controller cards that improve system performance by reducing the interrupt interval from the serial communication controller to the system's CPU. Traditionally, serial communication controllers interrupt the MPU one character at a time. This wastes MPU processing time and lowers system computing power, which can lead to serial controller overflow and lost data. This serial communication interface series supports local processor buffering and dual port RAM in each port's transmit and receive channel simultaneously to reduce the number of interrupts and increase the non-interrupt task's interval. This serial communication interface series also uses an ASIC PCI controller to interface with the PCI bus. This ASIC fully implements PCI local bus specification Rev. 2.1. All bus configurations, such as base memory address and interrupt assignment, are automatically controlled by the BIOS and do NOT require any user interaction.

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1.1 C584 Features

The C584 is an enhanced four-port serial communication PCI card that includes an advanced PGA to support the serial communication controller and a 37-pin connector to connect external I/O port. The expansion cable has four standard DB9/25 and one DB37 connector. User may also use one DB37 to DB37 cable to connect between one C584 and the C584XB to provide a 4-channel isolated RS-232/422/485 interface.

- PCI Rev.2.1 Plug and Play
- Automatic IRQ and I/O address assignments
- 4 communication port intelligent buffers
- Suitable for modems, data display, data collection, telecommunication
- Supports up to 2 cards/8 ports per system
- Supports Windows 98/2000/XP/NT and Linux operation systems
- Optional external C584XB box for extending to 4 isolated RS-232/422/485 ports
- Single jumper board and COM number assignment design
- Supports surge protector in TXD/RXD signal lines

1.2 C584 Specifications

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

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- 4 independent RS-232C compatible ports
- Optional external C584XB box for extending to 4 isolated RS-232/422/485 ports
- Max. port per system: 8 Ports (2 cards)

♦ Baud rate: Each port can be configured to 50 - 115,200bps

♦ Operation System Compatibility: Windows 98/2000/XP/NT, Linux

♦ Connector: DB37 female connector

♦ Cable: External cable with 4 standard DB9/25 male connector

♦ Operating temperature: 0 to 55 °C

♦ Storage temperature: -20 to 65 °C

♦ Humidity : 10% to 95%, non-condensing

♦ Power consumption: +5V @ 1400mA typical

1.3 C588 Features

The C588 is an enhanced eight-port serial communication PCI card includes an advanced PGA to support the serial communication controller and a 62-pin connector. The expansion cable has eight standard DB9/25 connectors and one DB62 connector to connect to the C588 interface card. User may also use one DB62 to DB62 cable to connect between one C588 and the C588XB to provide an 8-channel isolated RS-422/485 interface.

- PCI Rev.2.1 Plug and Play
- Automatic IRQ and I/O address assignments
- 8 communication port intelligent buffers
- Suitable for modems, data display, data collection, telecommunication
- Supports up to 2 cards/16 ports per system
- Supports Windows 98/2000/XP/NT and Linux operation systems
- Optional isolated RS422/485 interface for each port independently
- Single jumper board and COM number assignment design
- Supports surge protector in TXD/RXD signal lines

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1.4 C588 Specifications

- PCI Spec.2.1compliant
- Serial communication controller:
  - 16C550A compatible
  - 1.8432 - 7.3728MHz
- 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 C584XB box for extending to 8 isolated RS-232/422/485 ports
  - Max. port per system: 16 Ports (2 cards)
- Baud rate: Each port can be configured to 50 - 115,200bps
- Operation System Compatibility: Windows 98/2000/XP/NT, Linux
- Connector: DB62 female connector
- Cable: External cable with 8 standard DB9/25 male connector
- Operating temperature: 0 to 55 °C
- Storage temperature: -10 to 70 °C
- Humidity : 10% to 95%, non-condensing
- Power consumption: +5V @ 1400mA typical

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1.5 C514 Features

The C514 is an enhanced four-port serial communication PCI card that includes an advanced PGA to support the serial communication controller and a 37-pin connector. The expansion cable has four standard DB9/25 connectors and one DB37 connector to connect to the C514 interface card.

- PCI Rev.2.1 Plug and Play
- Automatic IRQ and I/O address assignments
- 4 communication port intelligent buffers
- 3 RS-232C compatible ports plus 1 isolated RS-422/485 interface
- Suitable for modems, data display, data collection, telecommunication
- Supports up to 8 cards/32 ports per system
- Supports Windows 98/2000/XP/NT and Linux operation systems

1.6 C514 Specifications

- PCI Spec.2.1compliant
- Serial communication controller:
  - 16C550A compatible
  - 1.8432 - 7.3728MHz
  - Baud programmable (112kbps – 448kbps)
- System IO mapping:
  - Assigned by PCI BIOS
  - Shared IRQ
- Flow control:
  - Xon/Xoff control
  - RTS/CTS control
- Port Capability:
  - 3 independent RS-232C compatible ports
  - 1 isolated RS-422/485 port with 500Vdc isolation voltage
  - Max. port per system: 32 Ports (8 cards)
- Operation System Compatibility: Windows 98/2000/XP/NT

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- Connector: DB37 female connector
- Cable: External cable with 4 standard DB9/25 male connector
- Operating temperature: 0 to 55 °C
- Storage temperature: -20 to 65 °C
- Humidity : 10% to 95%, non-condensing
- Power consumption: +5V @ 1400mA typical

1.7 C518 Features

The C518 is an enhanced eight-port serial communication PCI card that includes an advanced PGA to support the serial communication controller and a 62-pin connector. The expansion cable has eight standard DB9/25 connectors and one DB62 connector to connect to the C518 interface card.

- PCI Rev.2.1 Plug and Play
- Automatic IRQ and I/O address assignments
- 8 communication port intelligent buffers
- 7 RS-232C compatible ports plus 1 isolated RS-422/485 interface
- Suitable for modems, data display, data collection, telecommunication
- Supports up to 8 cards/64 ports per system
- Supports Windows 98/2000/XP/NT and Linux operation systems
- Single jumper board and COM number assignment design

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1.8 C518 Specifications

- PCI Spec.2.1compliant
- Serial communication controller:
  - 16C550A compatible
  - 1.8432 - 7.3728MHz
  - Baud programmable (112kbps – 448kbps)
- System IO mapping:
  - Assigned by PCI BIOS
  - Shared IRQ
- Flow control:
  - Xon/Xoff control
  - RTS/CTS control
- Port Capability:
  - 7 independent RS-232C compatible ports
  - 1 isolated RS-422/485 port with 500Vdc isolation voltage
  - Max. port per system: 64 Ports (8 cards)
- Operation System Compatibility: Windows 98/2000/XP/NT
- Connector: DB62 female connector
- Cable: External cable with 8 standard DB9/25 male connector
- Operating temperature: 0 to 55 °C
- Storage temperature: -20 to 65 °C
- Humidity : 10% to 95%, non-condensing
- Power consumption: +5V @ 1400mA typical

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1.9 C485 Features

The C485 is an enhanced four-port serial communication PCI card that includes an advanced PGA to support the serial communication controller and a 37-pin connector to connect external I/O port. The expansion cable has four standard DB9/25 connectors and one DB37 connector to connect to the C485 interface card.

- PCI Rev.2.1 Plug and Play
- Automatic IRQ and I/O address assignments
- 4 communication port intelligent buffers
- Suitable for modems, data display, data collection, telecommunication
- Supports up to 2 cards/8 ports per system
- Supports Windows 98/2000/XP/NT and Linux operation systems
- Isolated RS-422/485 interface for each port independently

1.A C485 Specifications

- PCI Spec.2.1compliant
- Serial communication controller:
  - 16C550A compatible
  - 1.8432 - 7.3728MHz
- System IO mapping:
  - Assigned by PCI BIOS
  - Shared IRQ
- Flow control:
  - Xon/Xoff control
  - RTS/CTS control
- Port Capability:
  - 4 isolated RS-422/485 port with 500Vdc isolation voltage
  - Max. port per system: 8 Ports (2 cards)
- Operation System Compatibility: Windows 98/2000/XP/NT
- Connector: DB37 female connector
- Cable: External cable with 4 standard DB9/25 male connector

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- Operating temperature: 0 to 55 °C
- Storage temperature: -10 to 70 °C
- Humidity : 10% to 95%, non-condensing
- Power consumption: +5V @ 1400mA typical

1.B C422 Features

The C422 is an enhanced two-port serial communication PCI card that includes an advanced PGA to support the serial communication controller. The expansion port has two standard DB9 connectors.

- PCI Rev.2.1 Plug and Play
- Automatic IRQ and I/O address assignments
- 2 communication port intelligent buffers
- Suitable for modems, data display, data collection, telecommunication
- Supports up to 2 cards/4 ports per system
- Supports Windows 98/2000/XP/NT and Linux operation systems
- Isolated RS-422/485 interface for each port independently

1.C C422 Specifications

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

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- Port Capability:
  - 2 isolated RS-422/485 port with 500Vdc isolation voltage
  - Max. port per system: 4 Ports (2 cards)
- Operation System Compatibility: Windows 98/2000/XP/NT
- Connector: DB9 male connector
- Operating temperature: 0 to 55 °C
- Storage temperature: -10 to 70 °C
- Humidity : 10% to 95%, non-condensing
- Power consumption: +5V @ 1400mA typical

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2

Hardware Installation

This chapter describes the configuration and installation of the serial communication cards. Please closely review the package and unpacking information. The Plug and Play serial communication cards are very easy to install into any PC system with PCI slots.

2.1 What's Included

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

For C584/C588/C514/C518/C485/C422:

- C584/C588/C514/C518/C485/C422 Serial Communication Interface Card
- Expansion Cable
- Software Utility CD or Disks

For C584XB/C588XB:

- C584XB/C588XB Isolated Extension Box
- Expansion Cable

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

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2.2 Unpacking

The serial communication card contains electro-static sensitive components that can be easily be damaged by static electricity.

Therefore, the card should be handled 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 card module carton for obvious damage. Shipping and handling may cause damage to the module. Be sure there is no shipping and handling damage on the carton before continuing.

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

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

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

You are now ready to install your serial communication card.

2.3 Installation Procedure

1. Turn off the computer
2. Turn off all accessories (printer, modem, monitor, etc.) connected to computer.
3. Remove the cover from your computer.
4. Select a 32-bit PCI expansion slot.

Caution! Don't put PCI card into an ISA or EISA slot.

5. Before handling the serial communication card, discharge any static buildup on your body by touching the metal case of the computer. Hold the edge and do not touch the components.
6. Position the board into the PCI slot you selected.
7. Secure the card in place at the rear panel of the system unit using screw removed from the slot.

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2.4 Hardware Configuration

The serial communication card is Plug and Play compliant; the card requests memory usage (I/O port locations) from the system BIOS. The address assignment is done on a board-by-board basis for all serial communication cards in the system.

The jumper JP1 for the serial communication card 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.

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3

Software Installation

3.1 Windows NT Installation

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

1. Start the [Control Panel] applet by double clicking its icon in the [Program Managers] main group.

2. In the [Control Panel] applet, double click the [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 installed.

   `A:\P584\NT4` ===> specify for C584/C485
   `A:\P588\NT4` ===> specify for C588
   `A:\P220\NT4` ===> specify for C422/C232
   `A:\P514\NT4` ===> specify for C514
   `A:\P518\NT4` ===> specify for C518

NOTE: It is very important for user to assign correct directory for each type of cards.

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5. Follow the configuration dialog boxes to finish the PCIPORT card's driver. Ensure that the COM port number does not confliction with another card.

6. After completing the above procedures, select a "Binding" function to open up more serial ports. If you do not do the "Binding" function, you may not have the extra COM ports available after reboot.

For multi-PCIPORT card installation, note the following:

1. To install two of the same PCIPORT cards in one NT system, set one card's jumper to “ON” and the other to “OFF”.

2. The card with the “ON” jumper will have lower COM port number. The card with the “OFF” jumper will have its COM port number subsequently following the “ON” card.

3. We suggest users set the jumper “ON” for the first card to be installed in one NT system.

4. Please confirm that there are not any IRQ conflicts with other card. Please disable USB controller in the BIOS (if applicable). We do not support USB drivers in Windows NT.

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3.2 Windows 2000/XP Installation

Once Windows 2000 system has started, the Plug and Play function will find the new PCIPORT card. Please follow the instruction message to specify the driver location:

```
A:\WIN2000
```

Because resources will be assigned by PCI BIOS, it is not easy to check which card is first or second from the resource. There is one jumper on each card to set the first or second PCIPORT card. Then, users can fix the COM port number for each card. Jumper assignment is very important.

Because the COM port start number will be assigned by WIN2000/XP during driver installation, users may need to specify another COM port starting number for PCIPORT cards, using our driver. After the driver is installed, enter "Control Panel-->System-->Hardware-->Device Manager-->Multi-port serial adapter-->Setup" to specify your target value.

For multi-PCIPORT card installation, note the following:

1. To install two of the same PCIPORT cards in one Windows 2000/XP system, set one card's jumper to “ON” and the other to “OFF”.

2. The card with the “ON” jumper will have lower COM port number. The card with the “OFF” jumper will have its COM port number subsequently following the “ON” card.

3. We suggest users set the jumper “ON” for the first card to be installed in one system.

4. PCIPORT card can be used in interrupt shared modes. The PCI BIOS will assign IRQs for each PCIPORT card. For multi-PCIPORT applications, users can just share one IRQ for each card. Users must confirm that the system has at least one free IRQ Plug and Play.

5. In Windows 2000, the port driver is installed automatically. In Windows XP system a port driver is installed and confirmed for each port.

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3.3 Windows 95/98/ME Installation

Once Windows 95/98/ME has started, the Plug and Play function will find the new PCIPORT card. Please follow the instructions to input the COM port number start value for first and second card. The driver is located at:

```
A:\WIN95
```

Because resources will be assigned by PCI BIOS, it is not easy to check which card is first or second from the resource. There is one jumper on each card to set the first or second PCIPORT card. Then, users can fix the COM port number for each card. Jumper assignment is very important.

After the PCIPORT driver installs, you might be informed to have new hardware found, but you do not need to install the driver again. Windows 95/98/Me will add the COM port automatically.

For multi-PCIPORT card installation, note the following:

1. To install two of the same PCIPORT cards in one Windows 95/98/ME system, set one card's jumper to “ON” and the other to “OFF”.

2. The card with the “ON” jumper will have lower COM port number. The card with the “OFF” jumper will have its COM port number subsequently following the “ON” card.

3. We suggest users set the jumper “ON” for the first card to be installed in one system.

4. PCIPORT card can be used in interrupt shared modes. The PCI BIOS will assign IRQs for each PCIPORT card. For multi-PCIPORT applications, users can just share one IRQ for each card. Users must confirm that the system has at least one free IRQ Plug and Play.

5. It is best to use COM5 and higher for Windows 95/98/Me. COM3/4 have been reserved for legacy COM port support. Using COM1-4 may result in unpredictability.

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3.4 DOS Installation

1. Please confirm that the jumper on the first C584/C588 card is set to “ON”
2. Change your active directory to target directory.

   ex. `C:\RAYON`

3. Insert the driver diskette and copy all files in driver diskette.

   ex. `XCOPY /S/E/V A:\DOS\*.*`

NOTE: This action will copy all the necessary files and DEMO programs from driver diskette to current directory.

4. Run the driver installation command

   For C584/C588/C485/C514/C518:

   `A:\DOS\PCIPORT.COM`

   For C422I/C232:

   `A:\DOS\P220\P984.COM`

5. Each card will show the card number in the system (this card number will be used in application program to specify the target card and target port), the card model, the card jumper setting for first and second card, the IRQ assigned, and COM port number.

   For example,

```
card[1]   PCIPORT   P588   1'st card
IRQ  number:  11
COM  port:  8
card[2]   PCIPORT   P588   2'nd card
IRQ  number:  12
COM  port:  8
```


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NOTE: Error messages:

"PCIPORT & INDPORT Already Install."
====>The driver had been installed.

"Please check 'JP1' in the C588 or C584."
====>Cards have same jumper JP1 setting.

"PCIPORT not in system."
====> PCIPORT card is not inserted in the PCI slot.

For multi-PCIPORT card installation, note the following:

1. Up to eight cards can be installed in one DOS system. Each type of cards must have a different jumper setting (and card number).
2. The PCIPORT driver function call description can be found in the DOS driver diskette. DEMO programs are also included and may be modified to meet application requirements.
3. Please note the card number for each card.

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3.5 Linux Installation

1. Login as superuser or root.
2. Change directory to root and copy our driver diskette to system.

```
#cd /
#tar xvf /dev/fd0
```

3. Change directory to /etc/rayon and run Install command.

```
#cd /etc/rayon
#./Install
```

4. Use the following procedure to configure your module:
   a. Choose the card type (PCIPORT card)
   b. Choose your Linux kernel version
   c. Rebuild your system
   d. Exit & reboot

5. The extra serial port can be used.
   a. The device name will be: `/dev/tty8[1--2][a--h]`
   b. The first card number (Jumper ON) will be: `/dev/tty81[a--h]`
   c. The second card number (Jumper OFF) will be: `/dev/tty82[a--h]`

NOTE: The above driver installation procedure will install a module type driver. Due to the system configurations, from kernel 2.4.x, we can not offer object type drivers to install. The source file drivers are provided. Users must have the kernel source file in the `/usr/src/linux` directory to link with our driver's source file. However, some Linux distributions (ex. Redhat) may use a different directory name for the kernel source. User also need to use this kernel source file to generate run time image file in boot.

For multi-PCIPORT card installation, note the following:

1. To install two of the same PCIPORT cards in one Windows 95/98/ME system, set one card's jumper to “ON” and the other to “OFF”.

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2. The card with the “ON” jumper will have lower COM port number. The card with the “OFF” jumper will have its COM port number subsequently following the “ON” card.

3. We suggest users set the jumper “ON” for the first card to be installed in one system.

4. PCIPORT card can be used in interrupt shared modes. The PCI BIOS will assign IRQs for each PCIPORT card. For multi-PCIPORT applications, users can just share one IRQ for each card. Users must confirm that the system has at least one free IRQ Plug and Play.

For multi-PCIPORT card installation, note the following:

1. To install two of the same PCIPORT cards in one Linux system, set one card's jumper to “ON” and the other to “OFF”.

2. PCIPORT card can be used in interrupt shared modes. The PCI BIOS will assign IRQs for each PCIPORT card. For multi-PCIPORT applications, users can just share one IRQ for each card. Users must confirm that the system has at least one free IRQ Plug and Play.

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3.5 SCO OpenServer Installation

Users can use the `/etc/custom` command to install our driver or use following procedure:

NOTE: Using the "custom" install method for initial installation is highly recommended.

1. Login with superuser or root.
2. Change your directory to root and copy our driver diskette to system.

```
#cd /
#tar xvf /dev/fd0135ds18
```

3. Change directory to /etc/pciport and run "build".

```
#cd /etc/pciport
#./build
```

4. Reboot your system.
5. The extra serial port can be used.
   d. The device name will be: `/dev/tty8[1--2][a--h]`
   e. The first card number (Jumper ON) will be: `/dev/tty81[a--h]`
   f. The second card number (Jumper OFF) will be: `/dev/tty82[a--h]`

NOTE: Due to the PCIPORT card's resource is assigned by PCI BIOS, different resources are assigned for different environments. Users may need to run "build" command again to remove old driver and install updated drivers.

For multi-PCIPORT card installation, note the following:

1. To install two of the same PCIPORT cards in one SCO OpenServer system, set one card's jumper to “ON” and the other to “OFF”.
2. In SCO OpenServer, PCIPORT cards cannot be used in interrupt shared mode. The PCI BIOS will assign an IRQ for each

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PCIPORT card. For multi-PCIPORT applications, each card needs a separate IRQ. Users must confirm that one system may have enough IRQs left for Plug and Play functionality.

3. Insert the PCIPORT card in a PCI slot before installing the SCO OpenServer driver.
4. If the PCIPORT card is not operating properly, try uninstalling and reinstalling the driver.

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4

Connector Pin Assignments

4.1 Pin assignments and Cable Wiring for C588/C584/C485/C422I

4.1.1 DB62 Female Connector Pin assignment - C588

DB62 Pin	Signal Name RS232	Signal Name RS422/485	DB62 Pin	Signal Name RS232	Signal Name RS422/485	DB62 Pin	Signal Name RS232	Signal Name RS422/485
1	TXD1	TXD1+ (O)	22	TXD2	TXD2+ (O)	43	GND	
2	RXD1	RXD1+ (I)	23	RXD2	RXD2+ (I)	44	GND	
3	RTS1	(O)	24	RTS2	(O)	45	GND	
4	CTS1	(I)	25	CTS2	(I)	46	TXD4	TXD4+ (O)
5	DSR1	RXD1- (I)	26	DSR2	RXD2- (I)	47	RXD4	RXD4+ (I)
6	DTR1	TXD1- (O)	27	DTR2	TXD2- (O)	48	RTS4	(O)
7	DCD1	(I)	28	DCD2	(I)	49	CTS4	(I)
8	TXD3	TXD3+ (O)	29	TXD7	TXD7+ (O)	50	DSR4	RXD4- (I)
9	RXD3	RXD3+ (I)	30	RXD7	RXD7+ (I)	51	DTR4	TXD4- (O)
10	RTS3	(O)	31	RTS7	(O)	52	DCD4	(I)
11	CTS3	(I)	32	CTS7	(I)	53	TXD8	TXD8+ (O)
12	DSR3	RXD3- (I)	33	DSR7	RXD7- (I)	54	RXD8	RXD8+ (I)
13	DTR3	TXD3- (O)	34	DTR7	TXD7- (O)	55	RTS8	(O)
14	DCD3	(I)	35	DCD7	(I)	56	CTS8	(I)
15	TXD5	TXD5+ (O)	36	TXD6	TXD6+ (O)	57	DSR8	RXD8- (I)
16	RXD5	RXD5+ (I)	37	RXD6	RXD6+ (I)	58	DTR8	TXD8- (O)
17	RTS5	(O)	38	RTS6	(O)	59	DCD8	(I)
18	CTS5	(I)	39	CTS6	(I)	60	GND	
19	DSR5	RXD5- (I)	40	DSR6	RXD6- (I)	61	GND	
20	DTR5	TXD5- (O)	41	DTR6	TXD6- (O)	62	GND	
21	DCD5	(I)	42	DCD6	(I)	xxx	xxx	

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NOTE: 1. The C825M cable supports a DB62 connector to eight DB25 male connectors.
2. The R802 cable supports a DB62 connector to eight DB25 female connectors.
3. The C809M cable supports a DB62 connector to eight DB9 male connectors.
4. Use the R803 cable (DB62 male to DB62 male connector) to connect with a RS4232-8 box
5. (O) is signal output from card and (I) is signal input to card.

4.1.2 DB37 Female Connector Pin assignment - C584/C485

DB37 Pin Number	RS232 Signal Name	RS422/485 Signal Name	DB37 Pin Number	RS232 Signal Nmae	RS422/485 Signal Name
1	RXDA (In)	RXDA+(In)	20	TXDA (Out)	TXDA+(Out)
2	CTSA (In)	---	21	RTSA (Out)	---
3	DSRA (In)	RXDA-(In)	22	DTRA (Out)	TXDA-(Out)
4	DCDA (In)	---	23	RIA (In)	---
5	GND	port A GND	24	RXDB (In)	RXDB+(In)
6	TXDB (Out)	TXDB+(Out)	25	CTSB (In)	---
7	RTSB (Out)	---	26	DSRB (In)	RXDB-(In)
8	DTRB (Out)	TXDB-(Out)	27	DCDB (In)	---
9	GND	port B GND	28	RIB (In)	---
10	GND	---	29	RIC (In)	---
11	GND	port C GND	30	DCDC (In)	---
12	DTRC (Out)	TXDC-(Out)	31	DSRC (In)	RXDC-(In)
13	RTSC (Out)	---	32	CTSC (In)	---
14	TXDC (Out)	TXDC+(Out)	33	RXDC (In)	RXDC+(In)
15	GND	port D GND	34	RID (In)	---
16	DCDD (In)	---	35	DTRD (Out)	TXDD-(Out)
17	DSRD (In)	RXDD-(In)	36	RTSD (Out)	---
18	CTSD (In)	---	37	TXDD (Out)	TXDD+(Out)
19	RXDD (In)	RXDD+(In)	----	----	----

NOTE: 1. The C425M cable supports a DB37 connector to four DB25 male connectors.
2. The C409M cable supports a DB37 connector to four DB9 male connectors.
3. Use the A640 cable (DB37 male to DB37 female connector) to connect a C584 card and RS4232-4 box.
4. C584 supports 4 RS232 interfaces.
5. C485 supports 4 Isolated RS422/RS485 interfaces.
6. C514 supports 3 RS232 interfaces via ports A/B/C and 1 Isolated RS422/485 interface via port D.

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4.1.3 DB25 Connector Pin assignment - C825M/C425M

DB25 Pin Number	RS232 Signal	RS422/485 Signal
2	TXD (Out)	TXD+ (Out)
3	RXD (In)	RXD+ (In)
4	RTS (Out)	---
5	CTS (In)	---
6	DSR (In)	RXD- (In)
7	GND	isolated GND
8	DCD (In)	---
20	DTR (Out)	TXD- (Out)

4.1.4 DB9 Connector Pin assignment - C809M/C409M

DB9 Pin Number	RS232 interface Signal	RS422/485 interface Signal
1	DCD (In)	---
2	RXD (In)	RXD+ (In)
3	TXD (Out)	TXD+ (Out)
4	DTR (Out)	TXD- (Out)
5	GND	isolated GND or GND
6	DSR (In)	RXD- (In)
7	RTS (Out)	---
8	CTS (In)	---
9	RI (In)	---

NOTE:
1. The C485 card will support 4 isolated RS422/485 interface ports. Each port has an isolated GND.
2. The C588 card does not support RI signals.
3. The C232 card supports two RS232 interfaces.
4. The C422 card support two isolated GND RS422/485 interfaces.
5. TB485 converters can convert DB9 connector to 3 pin terminal blocks for RS485 applications.

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4.1.5 DB62 Female Connector Pin assignment - C518

DB62 Pin Number	Signal Name	DB62 Pin Number	Signal Name	DB62 Pin Number	Signal Name
1	TXD1 (Out)	22	TXD2 (Out)	43	TXD3 (Out)
2	RXD1 (In)	23	RXD2 (In)	44	RXD3 (In)
3	RTS1 (Out)	24	RTS2 (Out)	45	RTS3 (Out)
4	CTS1 (In)	25	CTS2 (In)	46	CTS3 (In)
5	DSR1 (In)	26	DSR2 (In)	47	DSR3 (In)
6	DTR1 (Out)	27	DTR2 (Out)	48	DTR3 (Out)
7	DCD1 (In)	28	DCD2 (In)	49	DCD3 (In)
8	GND 1 & 4	29	GND 2 & 5	50	GND 3 & 6
9	DCD4 (In)	30	DCD5 (In)	51	DCD6 (In)
10	DTR4 (Out)	31	DTR5 (Out)	52	DTR6 (Out)
11	DSR4 (In)	32	DSR5 (In)	53	DSR6 (In)
12	CTS4 (In)	33	CTS5 (In)	54	CTS6 (In)
13	RTS4 (Out)	34	RTS5 (Out)	55	RTS6 (Out)
14	RXD4 (In)	35	RXD5 (In)	56	RXD6 (In)
15	TXD4 (Out)	36	TXD5 (Out)	57	TXD6 (Out)
16	TXD7 (Out)	37	RTS7 (Out)	58	DTR7 (Out)
17	RXD7 (In)	38	CTS7 (In)	59	DCD7 (In)
18	GND7	39	DSR7 (In)	60	GND8 (isolated)
19	422RXD8+	40	422RXD8-	61	422CTS8-
20	422RTS8+	41	422RTS8-	62	422CTS8+
21	422TXD8+	42	422TXD8-	xxxx	xxxx

NOTE: The P518 cable will support a DB62 connector to eight DB25 male connectors. A P519 cable will support a DB62 connector to eight DB9 male connectors.

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4.1.6 DB37 Female Connector Pin assignment - C514

DB37 Pin Number	C514 card Signal Name	DB37 Pin Number	C514 card Signal Nmae
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 (isolated)	34	422RTS4- (Out)
16	422CTS4- (In)	35	422TXD4- (Out)
17	422RXD4- (In)	36	422RTS4+ (Out)
18	422CTS4+ (In)	37	422TXD4+ (Out)
19	422RXD4+ (In)	----	----

NOTE: The P514 cable will support a DB37 connector to four DB25 male connectors.

4.1.7 RS232 DB25/DB9 Male Connector Pin assignment - C518/C514

DB25 Pin Number	DB9 Pin Number	Signal Name
2	3	TXD (Out)
3	2	RXD (In)
4	7	RTS (Out)
5	8	CTS (In)
6	6	DSR (In)
7	5	GND
8	1	DCD (In)
20	4	DTR (Out)

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4.1.8 RS422/485 DB25/DB9 Male Connector Pin assignment - C518/C514

DB25 Pin Number	DB9 Pin Number	Signal Name
2	3	422TXD+ (Out)
3	2	422RXD+ (In)
4	7	422RTS+ (Out)
5	8	422CTS+ (In)
7	5	GND
13	9	422RTS- (Out)
14	6	422TXD- (Out)
16	4	422RXD- (In)
19	1	422CTS- (In)

NOTE: RS422/485 ports have fully isolated ground references with other RS232 ports.

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5

C584XB/C588XB Converter Box

The C584XB/C588XB box is used to convert RS232 input signal to isolated RS232, RS422, or RS485 interface, supporting signal ground isolation systems between the PC and external applications. Two models exist, supporting four ports (C584XB) or eight ports (C584XB).

Each port of the C584XB has a two-bit DIP switch to set for RS232, RS422, or RS485. In the C588XB, each port has a one-bit DIP switch to set for RS422 or RS485. The RS485 mode uses auto data direction functions to maintain no local echo condition. Users may still need to maintain only one port to output data. RS485 must be used in half-duplex transmission environment. For full-duplex transmission environment use RS422.

The C584XB/C588XB boxes have one built-in switching power supply. This power supply can accept 100-265VAC input or 48--60VDC input (optional).

The C588XB box uses one DB62 to DB62 cable to connect with the C588 card. The C584XB box uses one DB37 to DB37 cable to connect with the C584 card.

DB25 Male Connector Pin assignment - C584XB/C588XB

Pin Number	RS232 mode Signal Name	RS422/485 mode Signal Name	Pin Number	RS232 mode Signal Name	RS422/485 mode Signal Name
2	TXD (Out)	---	8	DCD (In)	---
3	RXD (In)	---	9	---	RXD+ (In)
4	RTS (Out)	---	10	---	RXD- (In)
5	CTS (In)	---	11	---	TXD+ (Out)
6	DSR (In)	---	12	---	TXD- (Out)
7	GND	isolated GND	20	DTR (Out)	---

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NOTE: C588XB only supports RS422/RS485. C584XB only supports RS232/RS422/RS485. Each connector port has an isolated ground. RS485 mode may let pin9 & pin11 short together as DATA+ and pin10 & pin12 short together as DATA- connects with another device. In RS422 mode, pins 2/3/4/5/6/8/20 may be floating can be pulled down to GND with 5k ohm resistor. In RS232 mode, pins 9/10/11/12 may be floating. Don't connect any RS232 signal to these pins. 120 ohm terminator resistors are built in each input signal pair. In RS485 mode users may need to have this terminator resistor in both ends of the device. In other location users may need to remove such terminator. Users can set the jumper On/Off to use/remove this terminator resistor.

C584XB Mode DIP switch settings

DIP Switch bit 1,3,5,7	DIP Switch bit 2,4,6,8	Interface mode
ON	ON	RS232
ON	OFF	RS232
OFF	ON	RS422
OFF	OFF	RS485

NOTE: Bits 1 and 2 are used for PORT A, bits 3 and 4 are used for PORT B, bits 5 and 6 are used for PORT C, and bits 7 and 8 are used for PORT D.

C584XB Mode DIP switch settings

DIP Switch	Interface mode
ON	RS422
OFF	RS485

NOTE: bit1=Port A
bit2=Port B
bit3=Port C
bit4=Port D
bit5=Port E
bit6=Port F
bit7=Port G
bit8=Port H

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5.1 RS422 Interface Application Notes

The RS422 interface is used for point to point connections or multi-drop applications. Users may need to keep in mind that only one driver output signal can be active in one time, or you could damage the driver IC.

Even though there is one 120 ohm terminator resistor in each input signal pair, Users may need to remove this terminator resistor for proper operation.

For proper operation, don't leave cables unconnected. Crosstalk can occur, leading to transition data coupled to receiving data input.

5.2: RS485 Interface Application Notes

The RS485 interface is used for multi-drop half-duplex applications. Users may not use RTS signals to control data direction because of its Auto-Data-Direction-Control capability. There is one 120ohmn terminator resistor in each RXD input signal pair. Users may or may not need to remove this terminator resistor for proper operation.

For proper operation, don't leave cables unconnected. Crosstalk can occur, leading to transition data coupled to receiving data input.

The relationship between DATA+/DATA- and signals on the UART may be different from other manufacture's definition. In our RS4232, DATA+ is in phase as signal in UART (not inverted).

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Catalogue

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6

C422 Card Usage

1. DIP SWITCH SW1:

This is a 4-bit DIP switch. Bits 1 and 2 are used to set card number. Default is set ON to set in first card. Bits 3 and 4 are used to set port interface type. Bit 3 is used for port A and bit 4 is used for port B. Default is ON for a RS422 interface. Set to OFF for RS485.

2. Jumpers JP3 and JP6:

This is jumper to insert (remove) the 120ohm terminator resistor in the RS422/485 interface. JP3 is used for port A and JP6 is used for port B. When the jumper is shorted, the terminator resistor inserted. When the jumper is open, the terminator resistor is removed from interface. Default is no terminator resistor (jumper open).

3. Usage in RS485 interface mode:

When using the RS485 interface, set the DIP switch in SW1 to OFF. Short pin 2 and pin 3 on the DB9 connector for the DATA+ signal. Short pin 4 and pin 6 for the DATA- signal. Users can also use our TB485 converter for a DB9 connector to 3 terminal blocks for DATA+, DATA- , and GND connections.

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7

C485 Card Usage

1. DIP SWITCH SW1:

This is a 4-bit DIP switch. Each bit will set the corresponding port. Bits 1, 2, 3, and 4 are for ports A, B, C, and D, respectively. Default is ON for a RS422 interface. Set to OFF for RS485.

2. Jumper JP1:

This is jumper to set card number. Default is shorted to set it as the first card. Open it to set it as the second card.

3. Jumpers JP2,JP3,JP4, and JP5:

These jumpers insert (remove) the 120ohm terminator resistor in the RS422/485 interface. JP5 is used for port A. JP4 is used for port B. JP3 is used for port C. JP4 is used for port D. When the jumper is open, the terminator resistor is removed from interface. Default is no terminator resistor (jumper open).

4. Usage in RS485 interface mode:

When using the RS485 interface, set the DIP switch in SW1 to OFF. Short pin 2 and pin 3 on the DB9 connector for the DATA+ signal. Short pin 4 and pin 6 for the DATA- signal. Users can also use our TB485 converter for a DB9 connector to 3 terminal blocks for DATA+, DATA- , and GND connections.

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8

Troubleshooting

Firstly, confirm your card type and OS. Ensure that you have installed the correct drivers for the correct device and OS.

Verify the boot sequence. After the powering up the PC, the PCI BIOS will scan the cards on the PCI bus. The PCI BIOS will assign the memory map, I/O map, and IRQ number to each card. Our PCIPORT cards will have vendor ID "10B5" or "144A". The device ID will be "9050". If you can not see such card, it means that the PCI BIOS can not find the card. Try changing slots or cleaning the connectors.

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Warranty Policy

Thank you for choosing ADLINK. To understand your rights and enjoy all the after-sales services we offer, please read the following carefully:

1. Before using ADLINK's products please read the user manual and follow the instructions exactly.
2. When sending in damaged products for repair, please attach an RMA application form.
3. All ADLINK products come with a two-year guarantee, repaired free of charge.
   - The warranty period starts from the product's shipment date from ADLINK's factory.
   - Peripherals and third-party products not manufactured by ADLINK will be covered by the original manufacturers' warranty.
   - End users requiring maintenance services should contact their local dealers. Local warranty conditions will depend on local dealers.
4. This warranty will not cover repair costs due to:
   a. Damage caused by not following instructions.
   b. Damage caused by carelessness on the users' part during product transportation.
   c. Damage caused by fire, earthquakes, floods, lightening, pollution, other acts of God, and/or incorrect usage of voltage transformers.
   d. Damage caused by unsuitable storage environments (i.e. high temperatures, high humidity, or volatile chemicals.
   e. Damage caused by leakage of battery fluid.
   f. Damage from improper repair by unauthorized technicians.
   g. Products with altered and/or damaged serial numbers.
   h. Other categories not protected under our guarantees.
5. Customers are responsible for shipping costs to transport damaged products to our company or sales office.
6. To ensure the speed and quality of product repair, please download a RMA application form from our company website: www.adlinktech.com. Damaged products with attached RMA forms receive priority.

For further questions, please contact our FAE staff.

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