

APCLe Card

Owner's Manual

Support : Windows 2000/XP
Windows 2003/Vista
Windows 7
Linux

RO-APCLe-036

APORT080

IP to Serial Port Converter

- ◆ **10/100Mbps LAN Connection**
- ◆ **8 Ground isolated RS232 Port**
- ◆ **Linux based system board**



- ★ **32bit 100MHz RISC CPU** higher performance than 16bit CPU.
- ★ **Auto-detecting** 10/100Mbps Ethernet interface.
- ★ Support WIN NT/2000/XP **virtual COM driver**.
- ★ Support UNIX & Linux **real TTY driver**.
- ★ Support **TCP server/Client** mode.
- ★ Support **UDP send/receive** mode.
- ★ Support **WEB, TELNET and terminal setup**.
- ★ Support eight Ground isolated RS232 serial port.

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-----Chapter 1-----
Introduction

1-1. An introduction to the APChE card

A168/A138/A118 card is enhanced eight ports card. A104/A134/A114/A134I/A124I card is enhanced four ports card. A102/A132/A112/A102I/A132I/A112I card is enhanced two ports card. APChE series cards are suitable for PC AT with PCIE bus machine. APChE series cards can reduce the interval for serial communication controller to interrupt main CPU (MPU) on the mainboard to improve the whole system performance.

The eight ports card is made up of two parts:

1) A168/A138/A118 interface card:

A168/A138/A118 interface card includes MOSCHIP chip to support the serial communication controller and a 62 pin connector to connect external I/O port.

2) Expansion cable:

This expansion cable have eight standard DB25/DB9 connectors and one DB62 connector to connect A168/A138/A118 interface card. User may use one DB62 to DB62 cable to connect between one A168 card and RS4232-8 box.

The four ports card is made up of two parts:

1) A104/A134/A114/A134I/A124I interface card:

A104/A134/A114/A134I/A124I interface card includes MOSCHIP chip to support the serial communication controller and a DB37 connector to connect external I/O port.

2) Expansion cable:

This expansion cable have four standard DB25/DB9 connectors and one DB37 connector to connect A104/A134/A114/A134I/A124I interface card.

Traditionally, serial communication controller will interrupt MPU character by character. This action will waste MPU processing time and drop the system computation power. If the MPU is processing some non-interrupted task, then serial controller may be overrun and data lost. APChE series card can support 128 bytes buffer capability in each port's transmit and receive channel simultaneously. This capability will reduce the number of interrupt to MPU and increase the non-interrupted task's interval.

1-2. Hardware specification

*serial communication controller:
MOSCHIP MCS9900 compatible.

*I/O Port: ---- RS232C or RS422 or RS485 compatible.

*Interrupt Control: ----- Plug & Play to be assigned by PCI BIOS.

*I/O map: ----- Plug & Play to be assigned by PCI BIOS.

*memory map: ----- Plug & Play to be assigned by PCI BIOS.

*Flow control --- Xon/Xoff control or RTS/CTS control.

*Baud Rate:

can be software programmable upto 115.2KBps. (or 921.6KBps)

*Connector ----- Expansion cable can support DB25/DB9 male connectors.

8 port card: DB62 female connector.

4 port card: DB37 female connector.

2 port card: two DB9 male connector.

*Environment ----- PC/AT with PCIe bus machine.

1-3 Software specification:

*Operating system -----can support

Windows 2000/XP/2003/Vista

Windows 7

LINUX

other operating system.

Chapter 2. Configuring the Hardware

2-1 System components

An 8 port card system includes following components:

- *One 8 port PCIe interface card.
- *One 62pin Expansion Cable to support eight DB25/DB9 male connector.
 - R801 cable is used for DB62 male to eight DB25 male connector.
 - R804 cable is used for DB62 male to eight DB9 male connector.
 - R802 cable is used for DB62 male to eight DB25 female connector.
- *One R803 (DB62 male to DB62 male) cable with RS4232-8 box.
 - (option for A168 card).
- *User manual.

An 4 port card system includes following components:

- *One 4 port PCIe interface card.
- *One 37pin Expansion Cable to support four DB25/DB9 male connector.
 - A400 cable is used for DB37 male to four DB25 male connector.
 - P485 cable is used for DB37 male to four DB9 male connector.
- *User manual.

2-2 Installation Procedures

One APCIE series card needs a PCIe system expansion slot.

The installation procedures are as follows:

- (1) Turn off the power switch of your system.
- (2) Plug the APCIE series card to system expansion slot.
- (3) Connect the 62pin(37pin) cable to APCIE series interface card.
- (4) Turn on the system power.
- (5) Start up the operating system.
- (6) execute the APCIE series card software installation procedure.

WARNING: You should not insert or remove the APCIE series card from the system while power is on.

2-3 Serial I/O port connection:

- (1) A102 card:
 - Support two RS232 interface port.
 - Pin definition for DB9 male connector is in Appendix A-4.
- (2) A132 card:
 - Support two RS422/RS485 interface port.
 - Each serial port can use DIP Switch to set in RS422 or RS485.
 - Pin definition for DB9 male connector is in Appendix A-4.
- (3) A112 card:
 - Support two RS232/RS422/RS485 interface port.
 - Each serial port can use DIP Switch to set in RS232, RS422 or RS485.
 - Pin definition for DB9 male connector is in Appendix A-4.

- (4) A102I card:
 - Support two Ground isolated RS232 interface port.
 - Pin definition for DB9 male connector is in Appendix A-4.
- (5) A132I card:
 - Support two Ground isolated RS422/RS485 interface port.
 - Each serial port can use DIP Switch to set in RS422 or RS485.
 - Pin definition for DB9 male connector is in Appendix A-4.
- (6) A112I card:
 - Support two Ground isolated RS232/RS422/RS485 interface port.
 - Each serial port can use DIP Switch to set in RS232, RS422 or RS485.
 - Pin definition for DB9 male connector is in Appendix A-4.
- (7) A104 card:
 - Support four RS232 interface port.
 - Pin definition for DB37 female connector is in Appendix A-2.
 - Pin definition for DB25 male connector is in Appendix A-3.
 - Pin definition for DB9 male connector is in Appendix A-4.
- (8) A134 card:
 - Support four RS422/RS485 interface port.
 - Each serial port can use DIP Switch to set in RS422 or RS485.
 - Pin definition for DB37 female connector is in Appendix A-2.
 - Pin definition for DB25 male connector is in Appendix A-3.
 - Pin definition for DB9 male connector is in Appendix A-4.
- (9) A114 card:
 - Support four RS232/RS422/RS485 interface port.
 - Each serial port can use DIP Switch to set in RS232, RS422 or RS485.
 - Pin definition for DB37 female connector is in Appendix A-2.
 - Pin definition for DB25 male connector is in Appendix A-3.
 - Pin definition for DB9 male connector is in Appendix A-4.
- (10) A134I card:
 - Support four Ground isolated RS422/RS485 interface port.
 - Each serial port can use DIP Switch to set in RS422 or RS485.
 - Pin definition for DB37 female connector is in Appendix A-2.
 - Pin definition for DB25 male connector is in Appendix A-3.
 - Pin definition for DB9 male connector is in Appendix A-4.
- (11) A124I card:
 - Support two RS232 and two Ground isolated RS422/RS485 interface port.
 - Port C & D can use DIP Switch to set in RS422 or RS485.
 - Pin definition for DB37 female connector is in Appendix A-2.
 - Pin definition for DB25 male connector is in Appendix A-3.
 - Pin definition for DB9 male connector is in Appendix A-4.
- (12) A168 card:
 - Support eight RS232 interface port.
 - Pin definition for DB62 female connector is in Appendix A-1.
 - Pin definition for DB25 male connector is in Appendix A-3.
 - Pin definition for DB9 male connector is in Appendix A-4.

(13) A138 card:

Support eight RS422/RS485 interface port.

Each serial port can use DIP Switch to set in RS422 or RS485.

Pin definition for DB62 female connector is in Appendix A-1.

Pin definition for DB25 male connector is in Appendix A-3.

Pin definition for DB9 male connector is in Appendix A-4.

(14) A118 card:

Support eight RS232/RS422/RS485 interface port.

Each serial port can use DIP Switch to set in RS232, RS422 or RS485.

Pin definition for DB62 female connector is in Appendix A-1.

Pin definition for DB25 male connector is in Appendix A-3.

Pin definition for DB9 male connector is in Appendix A-4.

Chapter 3
Windows 2000/XP/2003/Vista Installation

3-1 Driver Installation

Once Windows 2000 system has been started, the Plug & Play function in 2000/XP/2003/Vista system will find the new APcIe card. If this is the first time to install APcIe card in your 2000/XP/2003/Vista system, you will be informed to install the driver. Please follow the instruction message to specify the driver location.

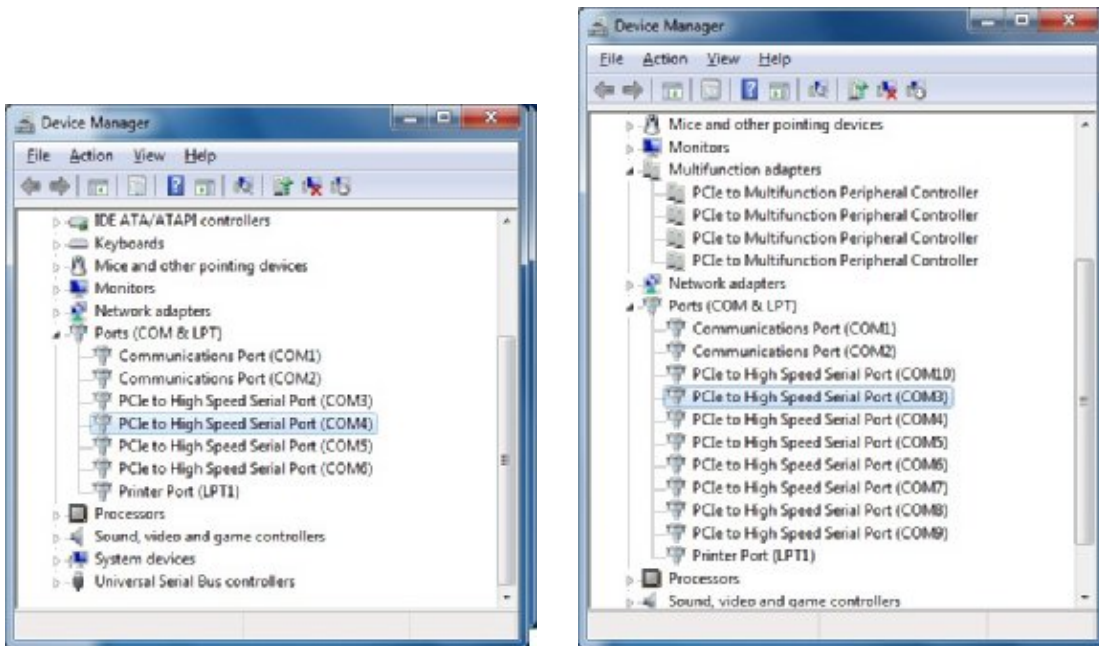
A:\Win32

If we got CD for driver installation, we need to specify the path for each card type and OS type. For example,

G:\PCIE_Card\APcIe\Win32.

APcIe card is based on chip from MOSCHIP semiconductor. So we will use Windows driver from MOSCHIP. The software driver installation will install multi-function card firstly. Then we will install serial port driver later.

If driver were installed correctly, we can see our device in control panel. "PCIE to Multifunction Peripheral Controller" is the card driver. "PCIE to High Speed Serial Port" is the port driver for each COM port.

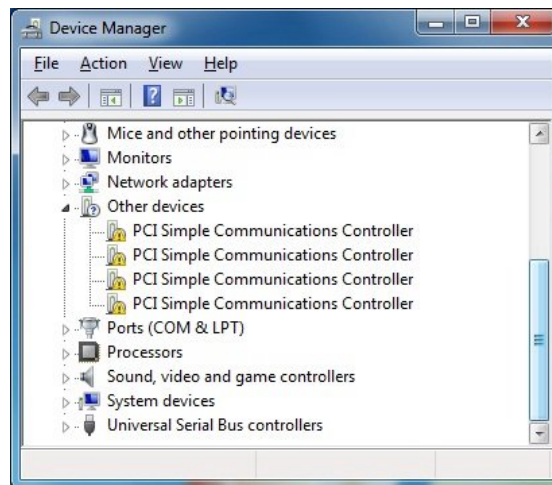


NOTE: In 8 port card we can have card driver installed. In other 2/4 port card we just have serial port driver installed.

Chapter 4 Windows 7 System Installation

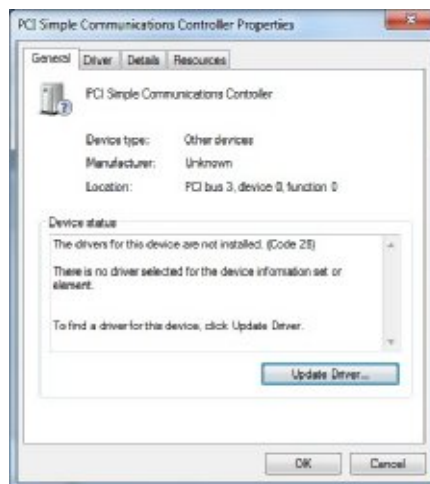
4-1 Driver Installation

Once Windows 7 system has been started, the Plug & Play function in WIN7 system will find the new APICe card. If this is the first time to install APICe card in your WIN7 system, you will NOT be informed to install the driver. Because our driver is not embedded in WIN7 system. When WIN7 find our card in hardware and could not find corresponding driver in system, WIN7 system do not install and ask us to install driver. WIN7 just specify our card as "Other devices" in "Control Panel".

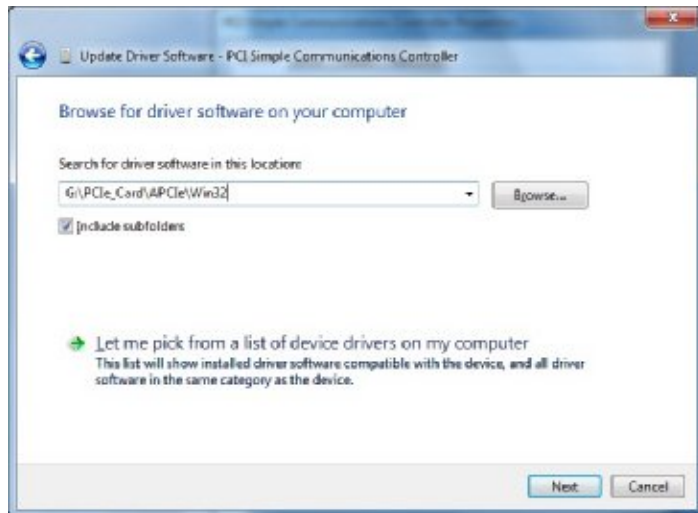


Now, we need to enter "Control Panel" "System and Security" "System" "Device Manager" "Other Devices" to find "!PCI Simple Communications Controller". Please select this device and update new version driver.

- A) Double strike in this device to enter "properties" screen.
- B) Select "Update Driver"
- C) Browse my computer for driver software
- D) Specify the path for our driver
- E) next
- F) Install this driver software anyway



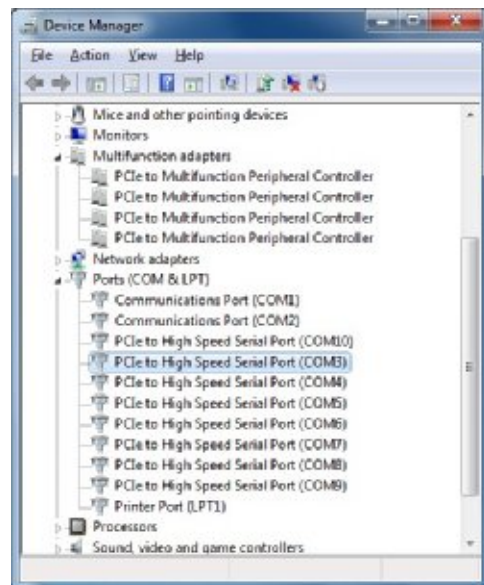
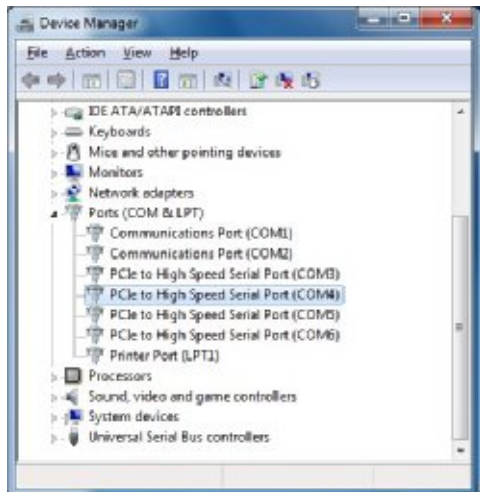
Please follow the instruction message to specify the driver location. WIN7 system will use same driver as WIN Vista system.



D:\PCIe_Card\APCIe\WIN32\StnMf.inf

APCIe card is based on chip from MOSCHIP semiconductor. So we will use Windows driver from MOSCHIP. The software driver installation will install multi-function card firstly. Then we will install serial port driver later.

If driver were installed correctly, we can see our device in control panel. "PCIe to Multifunction Peripheral Controller" is the card driver. "PCIe to High Speed Serial Port" is the port driver for each COM port.



After driver installed, we may find extra COM ports generated.

NOTE: In 8 port card we will have card driver. In 2/4 port card we will have COM port driver only.

Chapter 5
Linux driver Installation

5-1 Driver Installation

1. Login with superuser or root.
2. Change your directory to root and copy our driver diskette to system.
#cd /
#tar xvf /dev/fd0 (For CD you need to uncompress first)
3. change directory to /etc/rayone and run Install command.
#cd /etc/rayone
#./Install.redhat
4. You will have following procedure to configure your module.
 1. choose your card type. (APCIE/MPe9900 card)
 2. choose your linux kernel version.
 3. rebuild your system.
 4. exit & reboot with new setting.
5. Then, you can have extra serial port to be used.
 1. the device name will be /dev/tty2[1-4][a--h]
 2. For 2 port card we have /dev/tty21a for port A (connector in bottom side) and /dev/tty21b for port B (connector in upper side)
 3. For 4 port card we have /dev/tty2[1--4][a--d] for port A -- D.
 4. For 8 port card we have /dev/tty2[1--4][a--h] for port A -- H.
(Note: we may have label P1--P8 in cable for Port A--H)

NOTE: After ver9.1.5 we will install driver in/etc/rayone directory.
We can support upto four cards with device name tty2[1--4][a--h]. Our
PCIe card and PCI card can install in same system.

NOTE: Right now we have ver9.xx driver to support kernel version 2.6.
We have dedicated install file for REDHAT Fedora core 4 system,
Suse Linux 9.3 and Slackware 10.2 system (kernel version 2.6.x).

NOTE: APCIE/MPe9900 card's driver can not work with PCIe & PPe795x card's
driver.

5-2 APCIE/MPe9900 card may have following name for different card.

1. MPe9922 is for 2 serial port card type. We have A102, A132, A112,
A102I, A132I, A112I cards.
2. MPe9904 is for 4 serial port card type. We have A104, A134, A114,
A124I, A134I cards.
3. MPe9908 is for 8 serial port card type. We have A168, A138, A118 cards.

5-3 Anytime you can send me E_mail in "rayon@msl.hinet.net" for Linux
driver support.

Appendix A
Pin assignments and Cable Wiring

A-1: DB62 Female Connector Pin assignment in 8 port card.

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

****Note: R801 cable support DB62 connector to eight DB25 male connector.
R802 cable support DB62 connector to eight DB25 female connector.
R804 cable support DB62 connector to eight DB9 male connector.
User can use R803 cable (DB62 male to DB62 male connector) to connect with RS4232-8 box.

****Note: (O) is signal output from card. (I) is signal input to card.

A-2: DB37 Female Connector Pin assignment in 4 port card.

DB37 Pin Number	RS232 Signal Name	RS422/485 Signal Name	DB37 Pin Number	RS232 Signal Name	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: A400/P584 cable support DB37 connector to four DB25 male connector.
P485 cable will support DB37 connector to four DB9 male connector.

A-3: DB25 Male Connector Pin assignment in R801 (DB62 to 8 DB25) cable and A400 (DB37 to 4 DB25) cable for RS232 signal and RS422/485 signal.

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)

A-4: DB9 Male Connector Pin assignment in R804 (DB62 to 8 DB9) cable and P485 (DB37 to 4 DB9) cable for RS232 signal and RS422/485 signal.
DB9 Male Connector Pin definition in 2 port card.

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: 8 port card and isolated card do not support RI signal.

B-1 Introduction.

RS4232 box is used to convert RS232 input signal to isolated RS232, RS422 or RS485 interface. So we can support signal ground isolation system between PC system and external application system. We have two models to support four ports(RS4232-4 model) or eight ports(RS4232-8 model).

In RS4232-4 box each port have two bit DIP switch to set for RS232, RS422 or RS485 interface. In RS4232-8 box each port have one bit DIP switch to set for RS422 or RS485 interface. In RS485 mode we had auto data direction function to maintain no local echo condition. But user may still need to maintain just only one port to output data. So RS485 mode must be used in half-duplex transmission environment. For full-duplex transmission environment user may need to use RS422 mode.

In RS4232 box we have one built-in switching power supply. This power supply can accept 100-265VAC input or 48--60VDC input(option).

In RS4232-8 box we can use one DB62 to DB62 cable to connect with P588 card. In RS4232-4 box we can use one DB37 to DB37 cable to connect with P584 card. All the cable is connected in pin to pin direct connection type.

B-2 Pin definition in DB25 Male connector.

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)	---

Note: In RS4232-8 box we just support RS422/RS485 interface. In RS4232-4 box we can support RS232/RS422/RS485 interface.

Note: Each connector port have isolated ground.

Note: RS485 mode may let pin9 & pin11 short together as DATA+ and pin10 & pin12 short together as DATA- to connect with other device.

Note: In RS422 mode the pin 2/3/4/5/6/8/20 may be in floating condition and with 5K ohm pull down resistor to GND.

Note: In RS232 mode the pin 9/10/11/12 may be in floating state. Don't connect any RS232 signal to these pins.

Note: We have 120 ohm terminator resistor built in each input signal pair. In RS485 mode you may need to have this terminator resistor in both end device. In other location we may need to remove such terminator. User can set jumper On/Off to use/remove this terminator resistor.

Note: The pin definition for DB62 female connector of RS4232-8 box is same as table A-1 in Appendix A. But it is DCE type connector.

B-3: RS4232-4 box Mode setting in DIP switch.

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: bit 1 & 2 is used for PORT A setting.
 bit 3 & 4 is used for PORT B setting.
 bit 5 & 6 is used for PORT C setting.
 bit 7 & 8 is used for PORT D setting.

B-4: RS4232-8 box Mode setting in DIP switch.

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

B-5: RS422 interface application note

RS422 interface is used for point to point connection or multi-drop application. But user may need to keep in mind that we can only let one driver output signal to be actived in one time. Or you may let the driver IC to be burnt.

Even though we had put one 120ohm terminator resistor in each input signal pair. User may need to remove this terminator resistor for proper operation.

Due to proper operation user may not let one cable left in un-connected condition. Because the crosstalk problem may let one transmit data signal to be coupled to receive data input. This may lead wrong process in some application environment.

B-6: RS485 interface application note

RS485 interface is used for multi-drop half-duplex application. Because we had put Auto-Data-Direction-Control capability in RS4232 box, user may not use RTS signal to control the data direction. So it is no use for RTS /CTS signal in RS485 interface. Because we had put one 120ohm terminator resistor in RXD input signal pair. User may or may not need to remove this terminator resistor for proper operation.

Due to proper operation user may not let one cable left in un-connected condition. Because the crosstalk problem may let one transmit data signal to be coupled to receive data input. This may lead wrong process in some application environment.

Due to the relationship between DATA+/DATA- and signal in UART may be different from other manufacture's definition. In our RS4232 box we have DATA+ with same phase as signal in UART (somebody may invert it).

Appendix C
Troubleshooting procedure for APICe card

1. Please confirm your card type firstly:

- a) RS232 only card:
A102, A102I, A104, A108
- b) RS422/RS485 selectable card:
A132, A132I, A134, A134I, A138
- c) RS232/RS422/RS485 selectable card:
A112, A112I, A114, A118
- d) other type card:
A124I

2. Please specify your target O.S. type:

- a) WUN 7 b) Linux. c) WIN2000 d) WIN XP.
- e) Vista f) XP embedded.

3. Please confirm following boot procedure in which step to be wrong:

- a) In power on boot procedure we can not see the PCI BIOS screen to show our APICe card.

NOTE: After the power of PC is turned on, the PCI BIOS will scan the card to be inserted in PCIe slot. If one PCIe card were inserted in PCIe slot, the PCI BIOS will assign the memory map, I/O map and IRQ number to every cards. Generally PCI BIOS will show the vendor ID and device ID of each card in screen. You can also see the bus number, function number and IRQ number for this card. Our APICe card will have vendor ID "9710". The device ID will be "9922" for 2 port card, "9904" for 4 port, "9900" for 8 port card. So we must see such information in PCI BIOS boot procedure display screen. If we can not see such card, it means that PCI BIOS can not find our card. Then we may change the PCIe slot for our card (we suggest that PCIe slot may be damaged) or clean the golden finger of our APICe card (we suggest that our PCB is dirty in golden finger and the touch is not good) to try again.

- b) When we can find APICe card in PCI BIOS boot procedure, we can install our driver from diskette. But there are some problem to install the driver.

NOTE: Every O.S. must have corresponding driver to be installed. We have many OS's driver in different directory. If user did not specify the correct path for corresponding driver in driver installation procedure, you may have problem to install our driver.

- c) When we install driver successfully. But we can not find the extra target COM port in next boot procedure.

NOTE: In power on boot procedure our driver will start to work. Generally our driver will check the contents of driver and the hardware information in PCIe card. If the driver assigned for one card were not the card installed, our driver will say "card not found". And there are no extra COM port available. Generally you can check same hardware configuration in different OS type. If there were no problem in new OS system, then you may have some driver installation problem. You may need to check with

us to solve your problem (E-Mail to rayon@msl.hinet.net). If there were problem in other OS system, you may have hardware problem in such card. Please check with supplier.

- d) When we have extra target COM port in next boot procedure. But there are no data transmission or receiving in such COM port.

NOTE: Generally one need to send/receive data from COM port may have two steps. The first step is to open such COM port. The second step is to send/receive data in IRQ mode or polling mode. In our driver diskette we prepare "RAYMON.EXE" utility file. This file is terminal emulation program. You can run this file to use one COM port for data communication. When you run "raymon.exe" you can assign the target COM port and set the target parameter. Then you can ask to "connect". If you set the COM port that you can see in "control panel" and "raymon.exe" say "OPEN FAIL", then you may not have such COM port (even though we can see in "control panel"). This condition is due to some problem in driver installation. Please contact with us to fix your problem. If we could open such COM port without any error message, then we need to check hardware operation. If we had one loopback connector to insert in such COM port. In normal condition we can strike any key in keyboard and see the console out in screen. If we strike any key in keyboard and there are no console out in screen (the system is hung), then you may have IRQ assigned with confliction to other device. Please change APcIe card to other PCIe slot and you may be assigned other IRQ without confliction. Or you may enter BIOS setup to let some IRQ value to be used by ISA card in "legacy" mode. Even though our APcIe card is IRQ shareable. But ISA card is not IRQ shareable. When one IRQ is set to be "P&P mode" in BIOS setup. And one ISA card need such IRQ (by jumper or manual set). Then PCI BIOS may assign such IRQ to APcIe card. So we may have big problem in APcIe card's IRQ service routine.

- e) We can install Linux driver without any error message. But there are correct action or system hung in next boot procedure.

NOTE: We offer source file type driver to install in Linux system. So our driver will be compiled and linked with kernel source file in current system configuration. But user may use the booting image file for different system configuration. User must use current kernel source file and configuration to generate one image file to boot.

Appendix D
A112I and A112 card usage

D-1: A112I card usage

A112I card can support two Ground isolated RS232/RS422/RS485 serial ports.
Each serial port can set to RS232/RS422/RS485 interface independently.



1. DIP SWITCH in SW1:
this is 4 bit DIP switch. bit1 & 2 is used to set for RS232 interface or RS422/RS485 interface. Bit 1 is set for port A and Bit 2 is set for Port B. When we set in OFF position(default condition), port interface is RS232. When we set in ON position, port interface is set by bit3 & 4 for RS422 or RS485. Bit 3 is used for port A and bit 4 is used for port B. When we set in OFF position(default condition), port interface is RS485. When we set in ON position, port interface is RS422 mode.
2. usage in RS485 interface mode:
When user need to use port type RS485 interface, we need to set DIP switch in SW1 to correct position(bit 1 & 2 in ON position and bit 3 & 4 in OFF position). Then we need to short pin2 & pin3 in DB9 connector as DATA+ signal and short pin4 & pin6 as DATA- signal for RS485 connection.
User can also use our TB485 convertor for DB9 connector to 3 terminal block for DATA+ , DATA- , GND connection.
3. Pin definition for DB9 connector:
Please check Appendix A-4 table for more information.

D-2: A112 card usage

A112 card can support two RS232/RS422/RS485 serial ports.

Each serial port can set to RS232/RS422/RS485 interface independently.



1. DIP SWITCH in SW1:

this is 4 bit DIP switch. bit1 & 2 is used to set card number. default condition is in ON position to set in 1'st card mode. bit3 & 4 is used to set port interface type. bit3 is used for port A. bit4 is used for port B. default condition is in ON position for RS422 interface. When we set in OFF position (the other side of ON) , port interface is RS485 mode.

2. usage in RS485 interface mode:

When user need to use port type RS485 interface, we need to set DIP switch in SW1 to OFF position. Then we need to short pin2 & pin3 in DB9 connector as DATA+ signal and short pin4 & pin6 as DATA- signal for RS485 connection.

User can also use our TB485 convertor for DB9 connector to 3 terminal block for DATA+ , DATA- , GND connection.

3. Pin definition for DB9 connector:

Please check Appendix A-4 table for more information.

Appendix E
A132I and A132 card usage

E-1: A132I card usage

A132I card can support two Ground isolated RS422/RS485 serial ports.
Each serial port can set to RS422/RS485 interface independently.



1. DIP SWITCH in SW1:
this is 4 bit DIP switch. bit1 & 2 is no use. Port interface is set by bit3 & 4 for RS422 or RS485. Bit 3 is used for port A and bit 4 is used for port B. When we set in OFF position(default condition), port interface is RS485. When we set in ON position, port interface is RS422 mode.
2. usage in RS485 interface mode:
When user need to use port type RS485 interface, we need to set DIP switch in SW1 to correct position(bit 3 & 4 in OFF position). Then we need to short pin2 & pin3 in DB9 connector as DATA+ signal and short pin4 & pin6 as DATA- signal for RS485 connection.
User can also use our TB485 convertor for DB9 connector to 3 terminal block for DATA+ , DATA- , GND connection.
3. Pin definition for DB9 connector:
Please check Appendix A-4 table for more information.

E-2: A132 card usage

A132 card can support two RS422/RS485 serial ports.

Each serial port can set to RS422/RS485 interface independently.



1. DIP SWITCH in SW1:

this is 4 bit DIP switch. bit1 & 2 is no use. Port interface is set by bit3 & 4 for RS422 or RS485. Bit 3 is used for port A and bit 4 is used for port B. When we set in OFF position(default condition), port interface is RS485. When we set in ON position, port interface is RS422 mode.

2. usage in RS485 interface mode:

When user need to use port type RS485 interface, we need to set DIP switch in SW1 to correct position(bit 3 & 4 in OFF position). Then we need to short pin2 & pin3 in DB9 connector as DATA+ signal and short pin4 & pin6 as DATA- signal for RS485 connection. User can also use our TB485 convertor for DB9 connector to 3 terminal block for DATA+ , DATA- , GND connection.

3. Pin definition for DB9 connector:

Please check Appendix A-4 table for more information.

Appendix F
A134I and A134 card usage

F-1: A134I card usage

A134I card can support four Ground isolated RS422/RS485 serial ports.
Each serial port can set to RS422/RS485 interface independently.



1. DIP SWITCH in SW1:

this is 4 bit DIP switch to set interface type. Bit1 is used for port A. Bit2 is used for port B. Bit 3 is used for port C and bit 4 is used for port D. When we set in OFF position(default condition), port interface is RS485. When we set in ON position, port interface is RS422 mode.

2. usage in RS485 interface mode:

When user need to use port type RS485 interface, we need to set DIP switch in SW1 to OFF position. Then we need to short pin2 & pin3 in DB9 connector as DATA+ signal and short pin4 & pin6 as DATA- signal for RS485 connection.

User can also use our TB485 convertor for DB9 connector to 3 terminal block for DATA+ , DATA- , GND connection.

3. Pin definition for DB9 connector:

Please check Appendix A-4 table for more information.

F-2: A134 card usage

A134 card can support four RS422/RS485 serial ports.

Each serial port can set to RS422/RS485 interface independently.



1. DIP SWITCH in SW2:

this is 4 bit DIP switch to set interface type. Bit1 is used for port A. Bit2 is used for port B. Bit 3 is used for port C and bit 4 is used for port D. When we set in OFF position(default condition), port interface is RS485. When we set in ON position, port interface is RS422 mode.

2. usage in RS485 interface mode:

When user need to use port type RS485 interface, we need to set DIP switch in SW2 to OFF position. Then we need to short pin2 & pin3 in DB9 connector as DATA+ signal and short pin4 & pin6 as DATA- signal for RS485 connection.

User can also use our TB485 convertor for DB9 connector to 3 terminal block for DATA+ , DATA- , GND connection.

3. Pin definition for DB9 connector:

Please check Appendix A-4 table for more information.

Appendix G
A124I and A114 card usage

G-1: A124I card usage

A124I card can support two RS232 serial ports and two Ground isolated RS422/RS485 serial ports. Port A and B are RS232 serial ports. Port C and D serial port can set to RS422/RS485 interface independently.



1. DIP SWITCH in SW1:
this is 4 bit DIP switch. bit1 & 2 is no use.
bit3 & 4 is used to set port interface type. bit3 is used for port C.
bit4 is used for port D. When we set in OFF position(default condition), port interface is RS485. When we set in ON position, port interface is RS422 mode.

2. usage in RS485 interface mode:
When user need to use port type RS485 interface, we need to set DIP switch in SW1 to OFF position. Then we need to short pin2 & pin3 in DB9 connector as DATA+ signal and short pin4 & pin6 as DATA- signal for RS485 connection.
User can also use our TB485 convertor for DB9 connector to 3 terminal block for DATA+ , DATA- , GND connection.

3. Pin definition for DB9 connector:
Please check Appendix A-4 table for more information.

G-2: A114 card usage

A114 card can support four RS232/RS422/RS485 serial ports.

Each serial port can set to RS232/RS422/RS485 interface independently.

DIP switch in SW1 is used to set for RS232 or RS422/RS485 interface.

DIP switch in SW2 is used to set for RS422 or RS485 interface.



1. DIP SWITCH in SW1:

this is 4 bit DIP switch to set interface type. Bit1 is used for port A. Bit2 is used for port B. Bit 3 is used for port C and bit 4 is used for port D. When we set in OFF position(default condition), port interface is RS232. When we set in ON position, port interface is RS422 or RS485 mode set by DIP Switch in SW2.

2. DIP SWITCH in SW2:

this is 4 bit DIP switch to set interface type. Bit1 is used for port A. Bit2 is used for port B. Bit 3 is used for port C and bit 4 is used for port D. When we set in OFF position(default condition), port interface is RS485. When we set in ON position, port interface is RS422 mode. DIP Switch in SW1 must be set in ON location.

3. usage in RS485 interface mode:

When user need to use port type RS485 interface, we need to set DIP switch in SW1 to ON position and SW2 to OFF position. Then we need to short pin2 & pin3 in DB9 connector as DATA+ signal and short pin4 & pin6 as DATA- signal for RS485 connection. User can also use our TB485 convertor for DB9 connector to 3 terminal block for DATA+ , DATA- , GND connection.

4. Pin definition for DB9 connector:

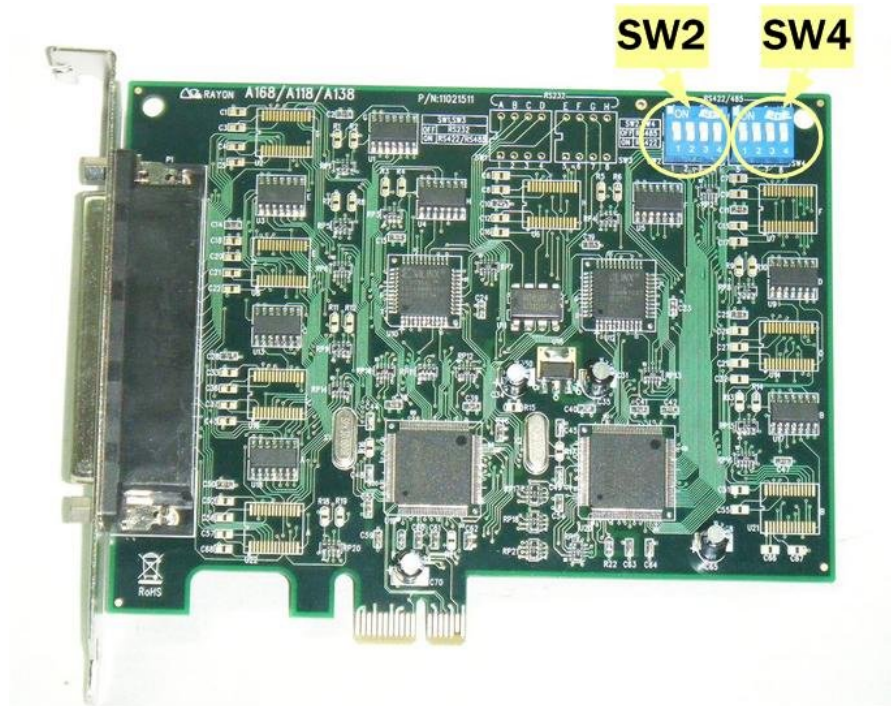
Please check Appendix A-4 table for more information.

Appendix H
A138 and A118 card usage

H-1: A138 card usage

A138 card can support eight RS422/RS485 serial ports.

Each serial port can set to RS422/RS485 interface independently.



1. DIP SWITCH in SW2 & SW4:

SW2 is used to set for port A--D. SW4 is used to set for port E--H. this is 4 bit DIP switch to set interface type. Bit1 is used for port A and E. Bit2 is used for port B and F. Bit 3 is used for port C and G. Bit 4 is used for port D and H. When we set in OFF position(default condition), port interface is RS485. When we set in ON position, port interface is RS422 mode.

2. usage in RS485 interface mode:

When user need to use port type RS485 interface, we need to set DIP switch in SW2 or SW4 to OFF position. Then we need to short pin2 & pin3 in DB9 connector as DATA+ signal and short pin4 & pin6 as DATA- signal for RS485 connection.

User can also use our TB485 convertor for DB9 connector to 3 terminal block for DATA+ , DATA- , GND connection.

3. Pin definition for DB9 connector:

Please check Appendix A-4 table for more information.

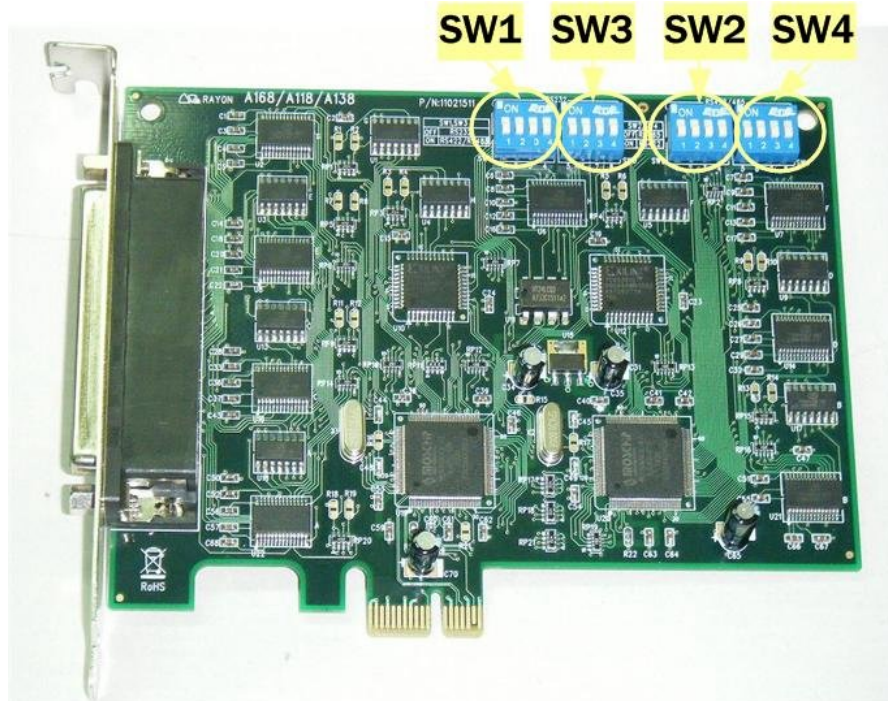
H-2: A118 card usage

A118 card can support eight RS232/RS422/RS485 serial ports.

Each serial port can set to RS232/RS422/RS485 interface independently.

DIP switch in SW1 and SW3 is used to set for RS232 or RS422/RS485 interface.

DIP switch in SW2 and SW4 is used to set for RS422 or RS485 interface.



1. DIP SWITCH in SW1 and SW3:

SW1 is used to set for port A--D. SW3 is used to set for port E--H. this is 4 bit DIP switch to set interface type. Bit1 is used for port A and E. Bit2 is used for port B and F. Bit 3 is used for port C and G. Bit 4 is used for port D and H. When we set in OFF position(default condition), port interface is RS232. When we set in ON position, port interface is RS422 or RS485 mode and set by SW2 & SW4.

2. DIP SWITCH in SW2 & SW4:

SW2 is used to set for port A--D. SW4 is used to set for port E--H. this is 4 bit DIP switch to set interface type. Bit1 is used for port A and E. Bit2 is used for port B and F. Bit 3 is used for port C and G. Bit 4 is used for port D and H. When we set in OFF position(default condition), port interface is RS485. When we set in ON position, port interface is RS422 mode.

3. usage in RS485 interface mode:

When user need to use port type RS485 interface, we need to set DIP switch in SW1 & SW3 to ON position and SW2 & SW4 to OFF position. Then we need to short pin2 & pin3 in DB9 connector as DATA+ signal and short pin4 & pin6 as DATA- signal for RS485 connection. User can also use our TB485 convertor for DB9 connector to 3 terminal block for DATA+ , DATA- , GND connection.

4. Pin definition for DB9 connector:

Please check Appendix A-4 table for more information.

Appendix I
RAYON REPAIR PROCEDURE

1. RETURN MATERIAL AUTHORIZATION (RMA or RA)

RAYON requires that you provide the following information :

- * Model number
- * RAYON serial number
- * The reason for returning the products

```
#####
# We strongly suggest that you can check with RAYON by E_mail before#
#you can confirm the reason for returning the products. Because some #
#problem may be due to wrong software usage or setup only.          #
#           rayon@msl.hinet.net           #
#####
```

- * Your purchase-order number

You will be given the following information from your RAYON Service Representative:

- * Your Return Material Authorization Number (RMA or RA Number)
- * Information regarding applicable charges
- * The address to which you will return the products

2. REPAIR CHARGES

All RAYON products have a one year warranty. Products that are damaged or modified are not covered.

This limited warranty covers defects in materials and workmanship in your RAYON-branded hardware products. This limited warranty does not cover problems that result from:

- *external causes such as accident,abuse,misuse,or problems with electrical power.
- *Servicing not authorized by us.
- *Usage that is not in accordance with product instructions.
- *Failure to follow the product instructions or failure to perform preventive maintenance.

Products that are covered under the original warranty and that are found defective by RAYON will be repaired at no cost. A standard handling and testing charge will be assessed for products returned for warranty repair that are found to be operating properly.

Products that are no longer covered under warranty will be repaired, if deemed repairable, for a flat rate charge regardless of the repair work required.

Please contact the nearest RAYON Service Center for current pricing information.

TWIN232

**Industrial Ground Isolated
RS232 to
RS232,RS422,RS485 Suite**

One Box to meet both requirement

Safety for local and remote connection

Powerful and Flexible for serial device



- ★ One set RS232 to RS232 isolator
- ★ One set RS232 to RS422 converter
- ★ One set RS232 to RS485 converter
- ★ Fully Ground Isolated Function
- ★ Auto Data Direction Control on RS485
- ★ Support RTS/CTS handshake on RS422
- ★ Support screw terminal and DC power adapter
- ★ Wide VDC range suitable for 12V and 24V environment
- ★ All function and Feature set by DIP switch
- ★ RS232 data transmission LED indicator

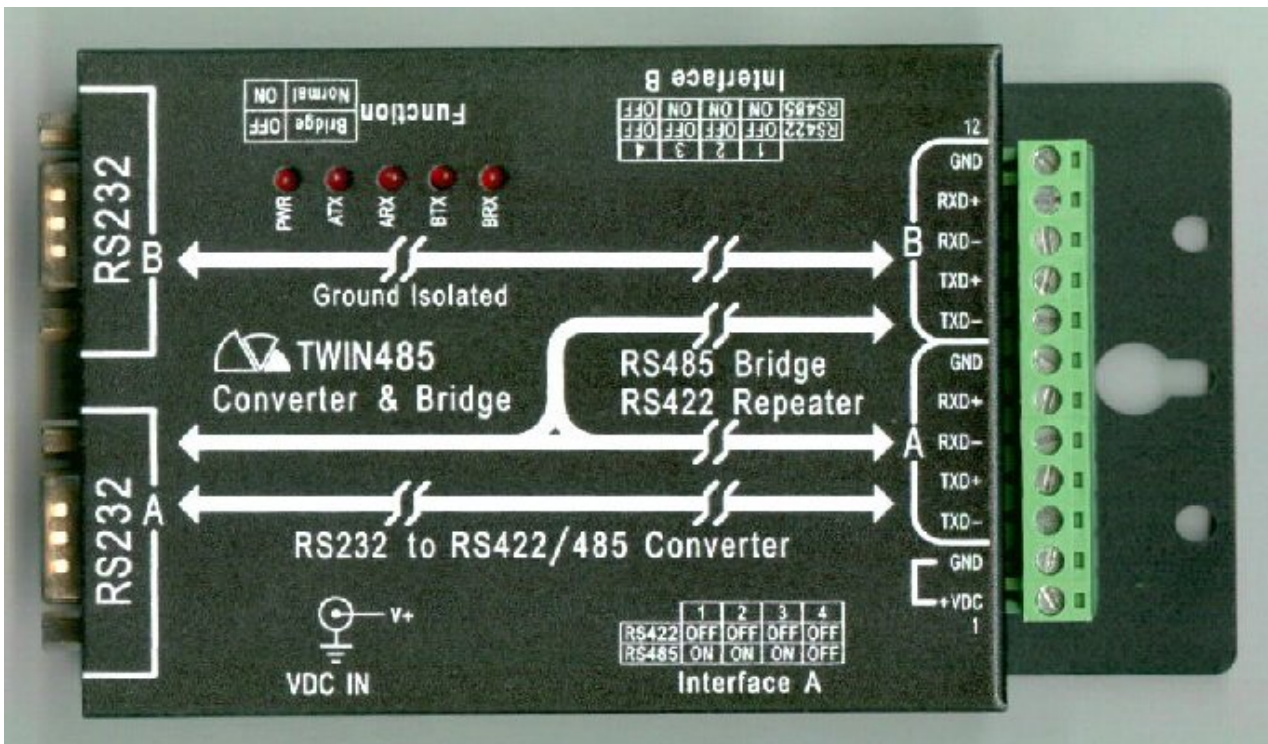
TWIN485

Industrial Ground Isolated
RS232 to RS422,RS485
Converter & Bridge .

One device to meet both requirement

No more separate converter and repeater

Powerful and Flexible for redundancy usage



- ★ Double RS232 to RS485 converter
- ★ Double RS232 to RS422 converter
- ★ One set RS422 to RS485 converter
- ★ One set RS422 to RS422 repeater
- ★ One set RS485 to RS485 bridge
- ★ One RS232 to double segment RS485 network
- ★ Fully Ground Isolated Function
- ★ Auto Data Direction Control on RS485
- ★ Support screw terminal and DC power adaptor
- ★ All function and Feature set by DIP switch
- ★ RS232 data transmission LED indicator

UTS004 USB to Serial Port Converter

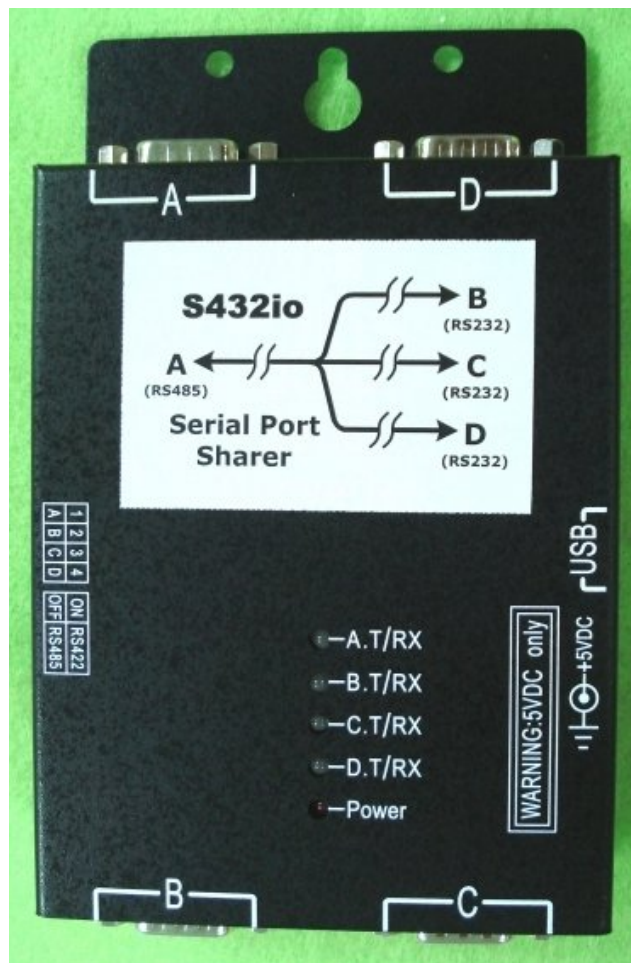
- ◆ **Support four ports in one box**
 - ◆ **Support four ground isolated RS422/485 port**
- ◆ **Powerful and Flexible for redundancy usage**



- ★ Support **USB2.0** device controller
- ★ **512 Bytes FIFO** for data transfer
- ★ Support **LED display** for each port
- ★ **four ground Isolated RS422 and RS485** selectable port for remote connection.
- ★ **Auto Data Direction Control** on RS485 mode
- ★ Support **bus powered** mode
- ★ Use MOSCHIP MCS7840 chip

S432io Serial Port Sharer

- ◆ **One Master to Three Slave port**
- ◆ **Support Ground isolated RS422/485 master port.**
- ◆ **Support Ground isolated RS232 slave port.**
- ◆ **Powerful and Flexible.**



- ★ Any data from master port A will be sent to slave port B,C,D simultaneously.
- ★ Any data from slave port B,C,D will be sent to master port A only.
- ★ Support ground isolated feature between external device and S432io box.
- ★ Support double ground isolated feature between any external devices.
- ★ Support Auto-Data-Direction-Control feature in RS485 port.

UTS485

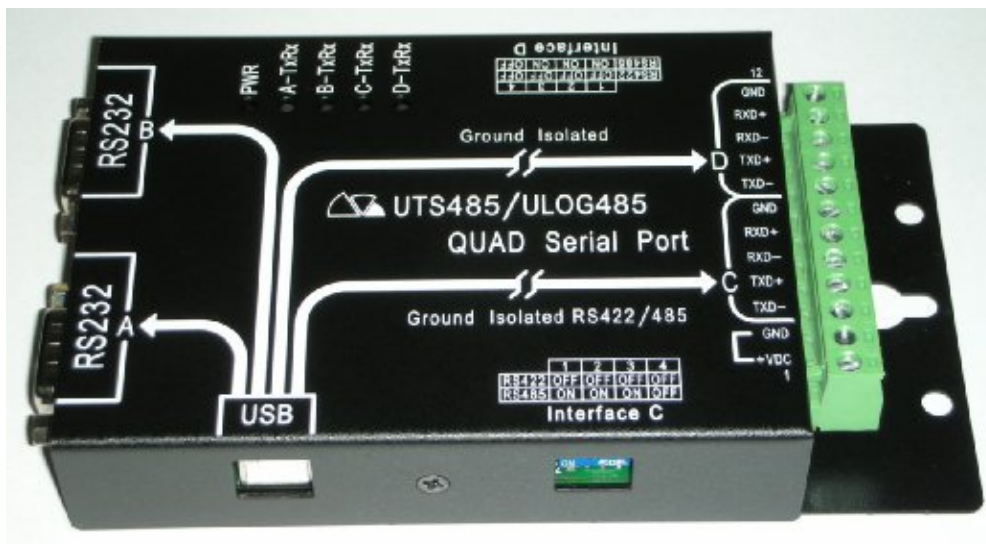
Support four ports in one box

Support two RS232 ports &

two Ground isolated RS422/485 port

Support Windows & Linux Driver

Powerful and Flexible for redundancy usage



- ★ Support USB2.0 device controller
- ★ 512 Bytes FIFO for data transfer
- ★ Support LED display for each port
- ★ two RS232 for local connection
- ★ two Ground Isolated RS422 and RS485 selectable port for remote connection.
- ★ Auto Data Direction Control on RS485 mode
- ★ Support screw terminal in RS422/485 port
- ★ Support bus powered mode
- ★ Use MOSCHIP MCS7840 chip

Advanced PCIe Card

Model	RS232	RS422	RS485	Isolated RS232	Isolated RS422	Isolated RS485	Total Port#
A102	2	x	x	x	x	x	2
A132	x	2	2	x	x	x	2
A112	2	2	2	x	x	x	2
A102I	x	x	x	2	x	x	2
A132I	x	x	x	x	2	2	2
A112I	x	x	x	2	2	2	2
A104	4	x	x	x	x	x	4
A134	x	4	4	x	x	x	4
A114	4	4	4	x	x	x	4
A134I	x	x	x	x	4	4	4
A124I	2	x	x	x	2	2	4
A168	8	x	x	x	x	x	8
A138	x	8	8	x	x	x	8
A118	8	8	8	x	x	x	8

USB To Serial Box

Model	RS232	RS422	RS485	Isolated RS232	Isolated RS422	Isolated RS485	Total Port#
UTS400	4	x	x	x	x	x	4
UTS040	x	x	x	4	x	x	4
UTS004	x	x	x	x	4	4	4
UTS485	2	x	x	x	2	2	4