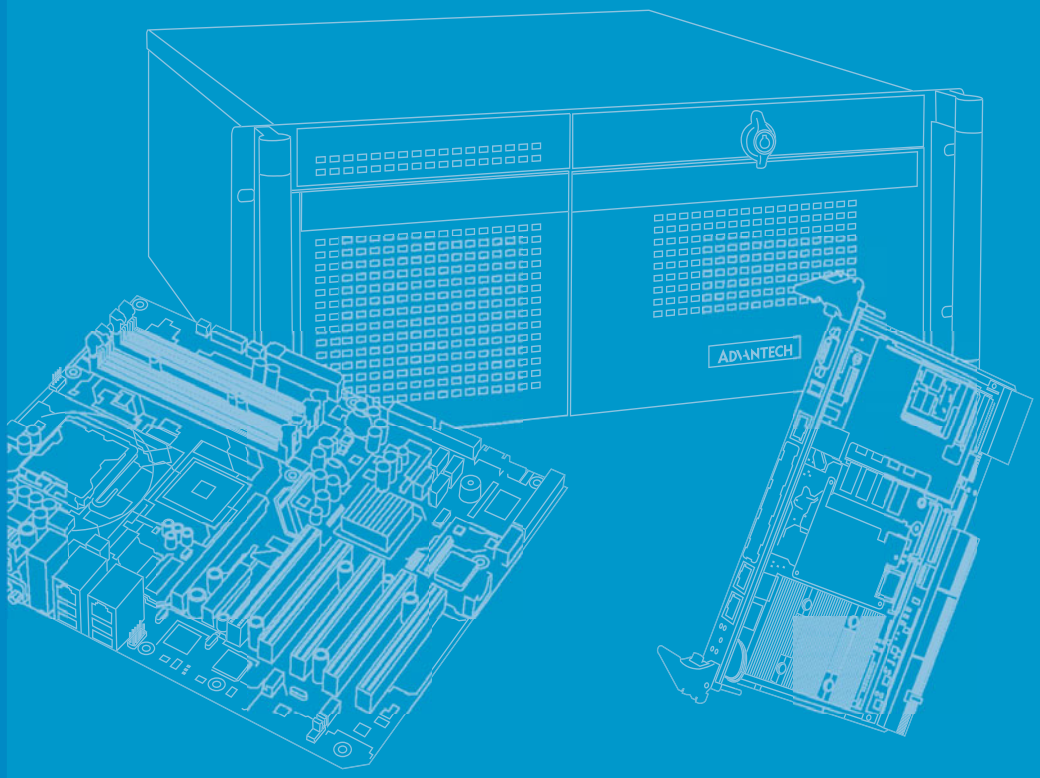

User Manual

MIC-3955/3527 Series

3U CPCI 4/8 Port RS-232/422/485 Communication Card

ADVANTECH

Enabling an Intelligent Planet

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Product Warranty (2 years)

Advantech warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by Advantech, or which have been subject to misuse, abuse, accident or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

Because of Advantech's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain an RMA (return merchandize authorization) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Part No. XXXXXXXXXX Edition 1

Printed in China April 2016

Declaration of Conformity

CE

This product has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. This kind of cable is available from Advantech. Please contact your local supplier for ordering information.

Technical Support and Assistance

1. Visit the Advantech website at http://support.advantech.com where you can find the latest information about the product.
2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:
   - Product name and serial number
   - Description of your peripheral attachments
   - Description of your software (operating system, version, application software, etc.)
   - A complete description of the problem
   - The exact wording of any error messages

Safety Precaution - Static Electricity

Follow these simple precautions to protect yourself from harm and the products from damage.

- To avoid electrical shock, always disconnect the power from your PC chassis before you work on it. Don't touch any components on the CPU card or other cards while the PC is on.
- Disconnect power before making any configuration changes. The sudden rush of power as you connect a jumper or install a card may damage sensitive electronic components.

Safety Instructions

1. Read these safety instructions carefully.
2. Keep this User Manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. DO NOT COVER THE OPENINGS.
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
12. Never pour any liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
14. If one of the following situations arises, get the equipment checked by service personnel:
    - The power cord or plug is damaged.
    - Liquid has penetrated into the equipment.
    - The equipment has been exposed to moisture.
    - The equipment does not work well, or you cannot get it to work according to the user's manual.
    - The equipment has been dropped and damaged.
    - The equipment has obvious signs of breakage.
15. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE MAY GO BELOW -20° C (-4° F) OR ABOVE 60° C (140° F). THIS COULD DAMAGE THE EQUIPMENT. THE EQUIPMENT SHOULD BE IN A CONTROLLED ENVIRONMENT.
16. CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER, DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.

The sound pressure level at the operator's position according to IEC 704-1:1982 is no more than 70 dB (A).

DISCLAIMER: This set of instructions is given according to IEC 704-1. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

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Chapter 1

General Information

1.1 Introduction

The MIC-3955 is a 3U CompactPCI 4/8-port RS-232/422/485 communication card, compliant with PICMG 2.0 R2.1 CompactPCI specification. Four or eight serial ports communicate via 32-bit PCI bus and share one interrupt source register and PCI interrupt number. Each serial port of MIC-3955 has 16C550 compatible Gen.5 register set, transmitting/receiving 64-bit FIFOs. MIC-3955 supports RTS/CTS or DTR/DSR auto hardware flow control and automatic software flow control over RS-485.

MIC-3955 supports 4-port DB44 female connector via the front panel, 4-port DB44 female connector via the backplane, and 8-port DB37 male connector via the backplane, The backplane versions support RIO MIC-3527. The MIC-3955 with 4-port DB44 female connector via the backplane supports RTM MIC-3527A1, while the 8-port version supports RIO MIC-3527A2.

1.2 Hardware Specifications

- **PICMG compliance:** CompactPCI V2.0, R3.0
- **Bus interface:** PCI V2.3, 32-bit / 33MHz
- **I/O operating voltage:** 5 V
- **COM1, COM2, COM3, COM4, COM5, COM6, COM7, COM8:** RS-232/422/485 (isolated)
- **Communication controller:** XR17D154/XR17D158
- **IRQ:** All the ports use the same IRQ assigned by PCI plug & play function
- **Data bit:** 5, 6, 7, 8
- **Stop bit:** 1, 1.5, 2
- **Parity bit:** None, odd, even
- **Data rate:** 1Mbps (max)
- **Data signal:**
  - MIC-3955 4-port DB44 pin FIO
    DCD, RxD, TxD, DTR, GND, DSR, RTS, CTS, RI (RS-232)
    TxD-, TxD+, RxD+, RxD- (RS-422)
    DATA-, DATA+ (RS-485)
  - MIC-3955 4-port DB44 pin RIO
    No data signal output. Four groups of Tx and Rx LED indicators
  - MIC-3955 8-port DB37 pin RIO
    No data signal output. Eight groups of Tx and Rx LED indicators
  - Rear IO MIC-3527A1 for MIC-3955 4-port DB44 female connector via backplane
    DCD, RxD, TxD, DTR, GND, DSR, RTS, CTS, RI (RS-232)
    TxD-, TxD+, RxD+, RxD- (RS-422)
    DATA-, DATA+ (RS-485)
  - Rear IO MIC-3527A2 for MIC-3955 8 port DB37 male connector via backplane
    RxD, TxD, RTS, CTS, GND (RS-232)
    TxD-, TxD+, RxD+, RxD-(RS-422)
    DATA-, DATA+ (RS-485)
- **Isolated voltage:** 2500 VDC
- **Surge protection:** 2KV
- **Connector:** DB44PIN/DB37PIN for the plate, converted to DB9PIN via cable
- **Power Consumption:** <4W @ 5V (typical)
- **Operating temperature:** -40 ~ 85° C
- **Operating humidity:** relative humidity 0%~95%, non-condensing

- **Storage temperature:** -40 ~ 85° C

1.3 Front Panel

- **Dimension (W x H):** 160 x 100 mm
- **Pin out:**
  - MIC-3955 4 port DB44 pin FIO, DB44 pin female connector
  - MIC-3955 4 port DB44 pin RIO, without IO
  - MIC-3955 8 port DB37 pin RIO, without IO
- **Display:** Each port has independent RX, TX LED indicators
- **LED color:** yellow for transmitting/green for receiving
- **CPCI connector:** J1, J2

1.4 Rear Panel

- RIO MIC-3527 provides 4/8 RS-232/422/485 ports with surge protection. The data transmission rate can be up to 1Mbps. Each UART of MIC-3955 can be independently controlled; each UART has 16C550 compliant 5G registers and 64 byte FIFO. Therefore, MIC-3955 is suitable for multi-task processing environment. MIC-3527 is fully compatible with PIMG2.0 specification.
- **Dimension (W x H):** 80 x 100 mm
- **Pin out:**
  - RIO MIC-3527A1 for MIC-3955 4-port DB44 female connector via backplane, with 4 communication ports and independent RX, TX LED indicators for each port
  - RIO MIC-3527A2 for MIC-3955 8 port DB37 male connector via backplane, with 8 communication ports and no LED indicators.
- **CPCI connector:** J2, with dowel pin

1.5 System Diagram

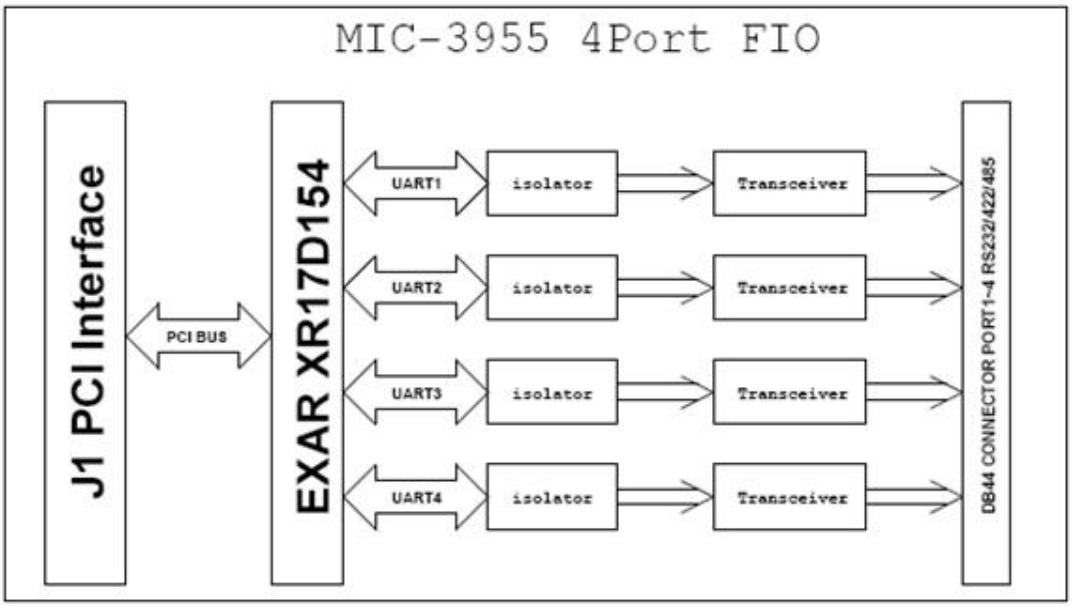


Figure 1.1 MIC-3955 4 port FIO

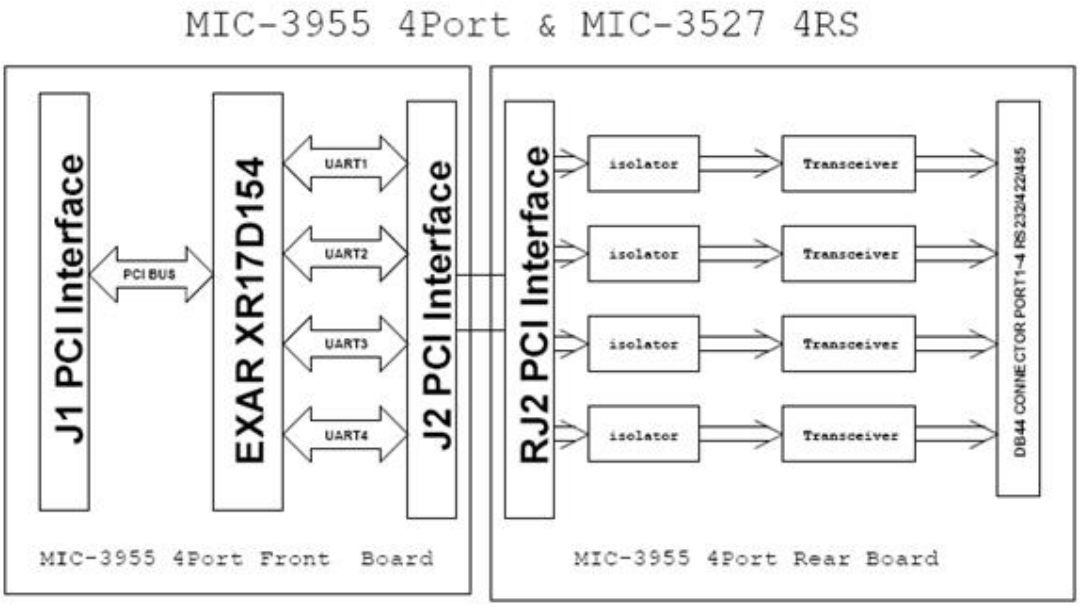


Figure 1.2 MIC-3955 4 Port RIO & MIC-3527A1 System Diagram

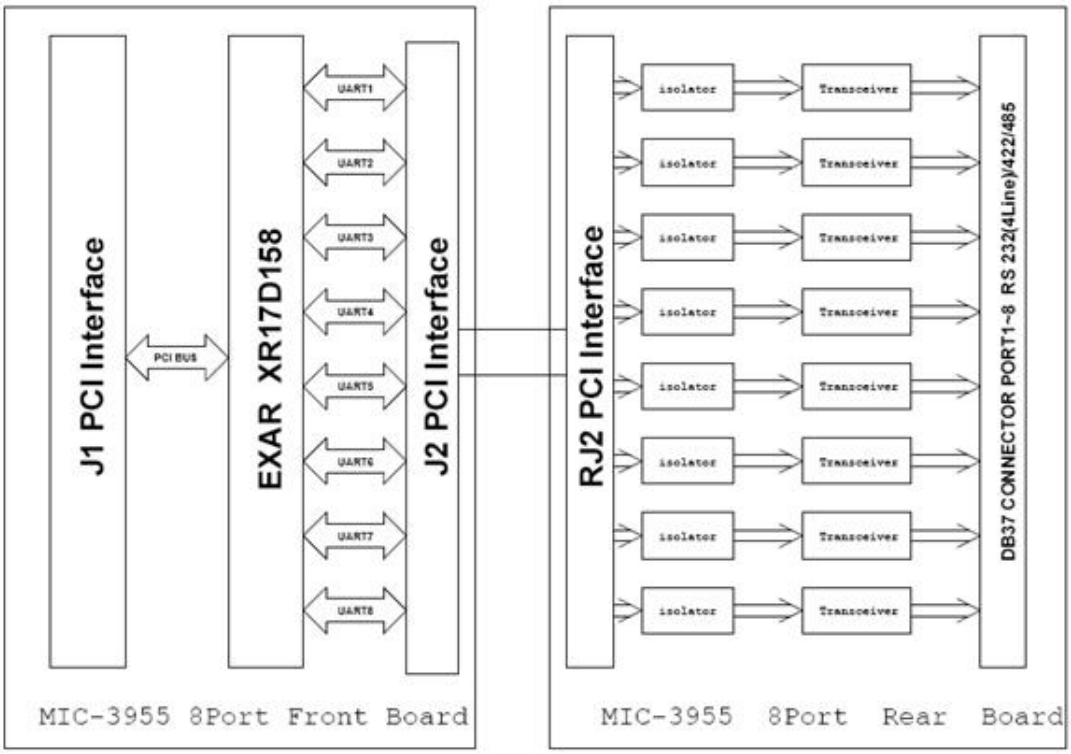


Figure 1.3 MIC-3955 8 Port RIO & MIC-3527A2 System Diagram

1.6 Board Dimensions

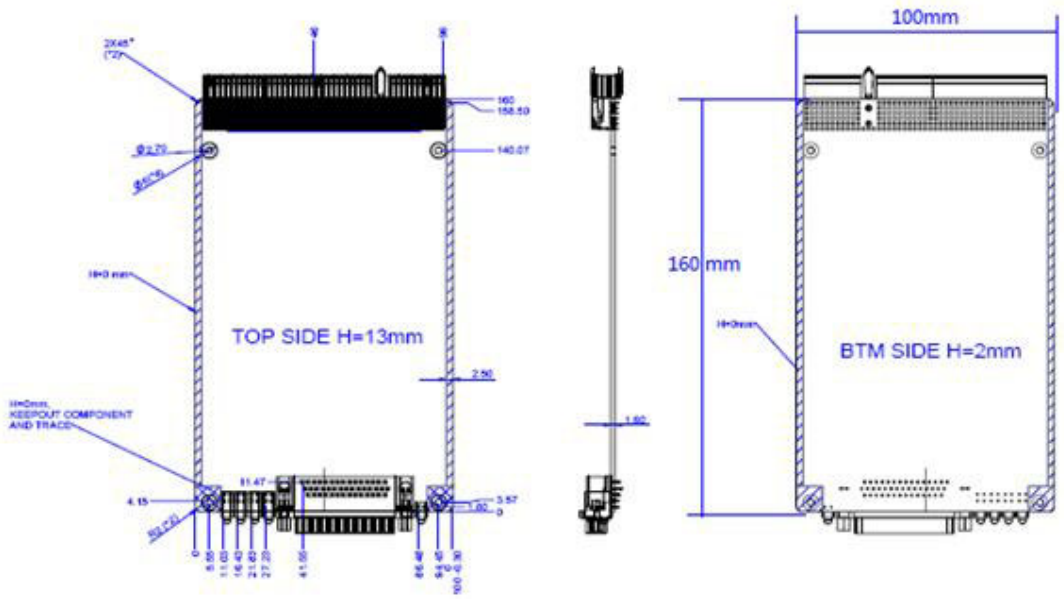


Figure 1.4 FIO Board Dimensions

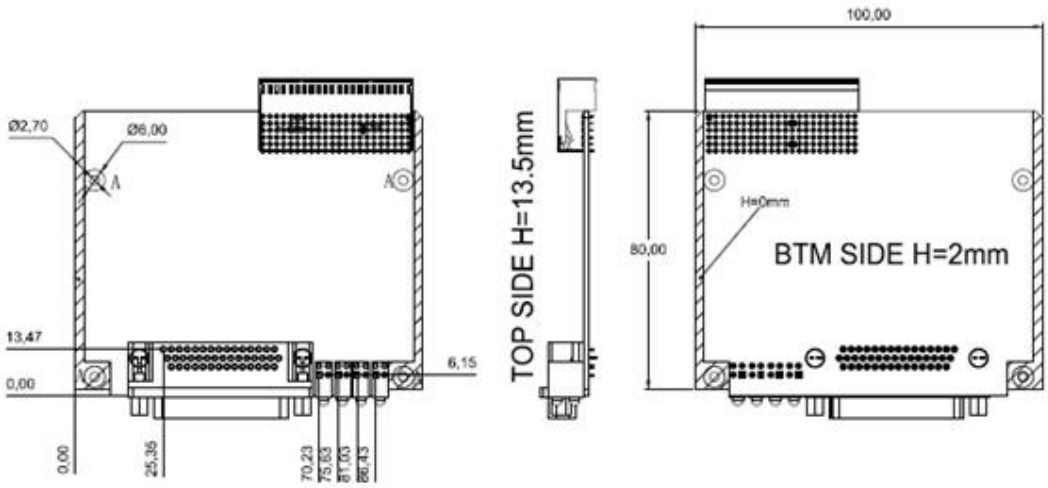


Figure 1.5 4-port RIO Dimensions

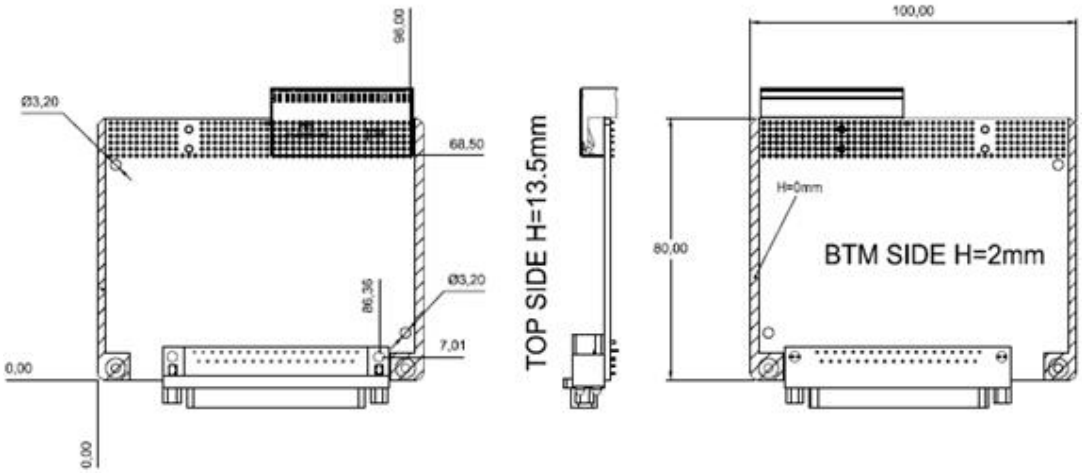


Figure 1.6 8-port RIO Dimensions

Chapter 2

Hardware Configuration

2.1 Board Assembly

Please refer to the figures below to assemble MIC-3955 front and rear board.

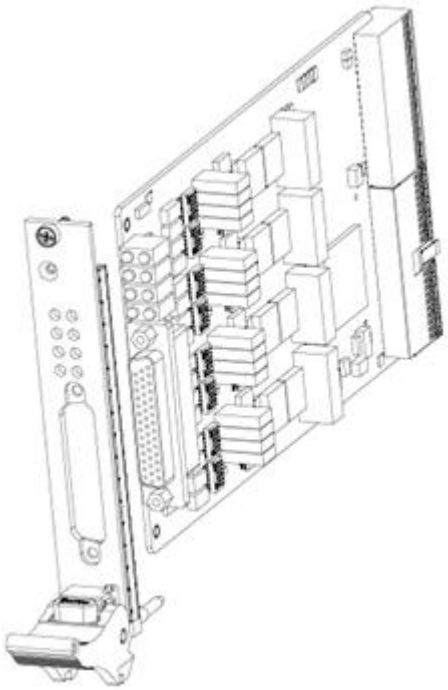


Figure 2.1 MIC-3955 4 port FIO, with DB44 pin female connector

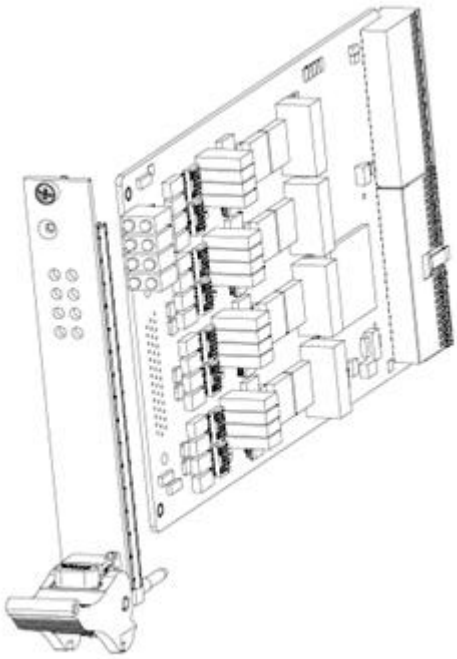


Figure 2.2 MIC-3955 FIO, for 4 port DB44 pin RIO, without IO

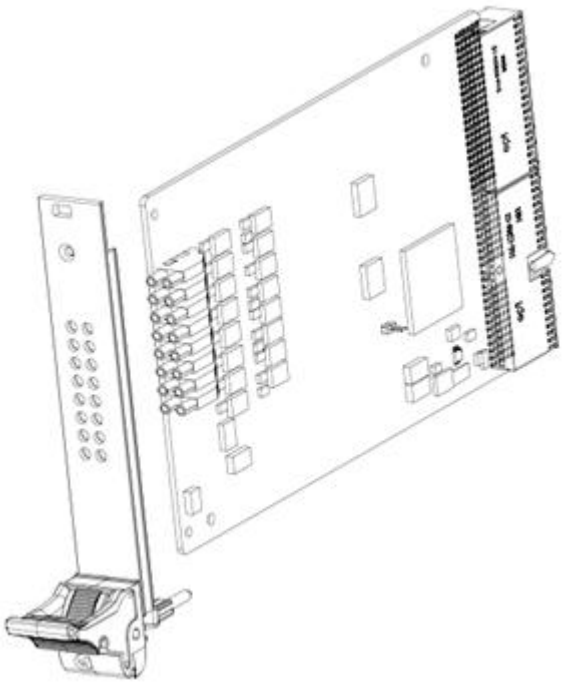


Figure 2.3 MIC-3955 FIO for 8 port DB37 pin RIO, without IO

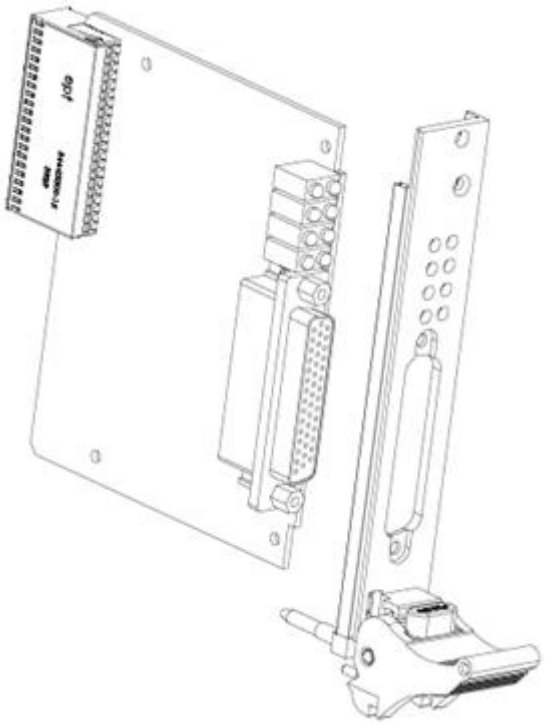


Figure 2.4 Rear IO MIC-3527A1 for MIC-3955 4-port DB44 female connector via backplane

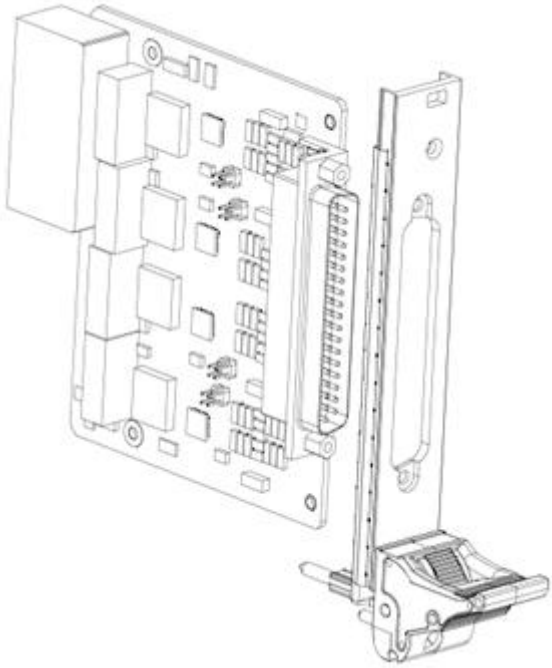


Figure 2.5 Rear IO MIC-3527A2 for MIC-3955 8 port DB37 male connector via backplane

2.2 Board Layout and LED Indicators

MIC-3955 FIO and MIC-3527 RIO are as below:

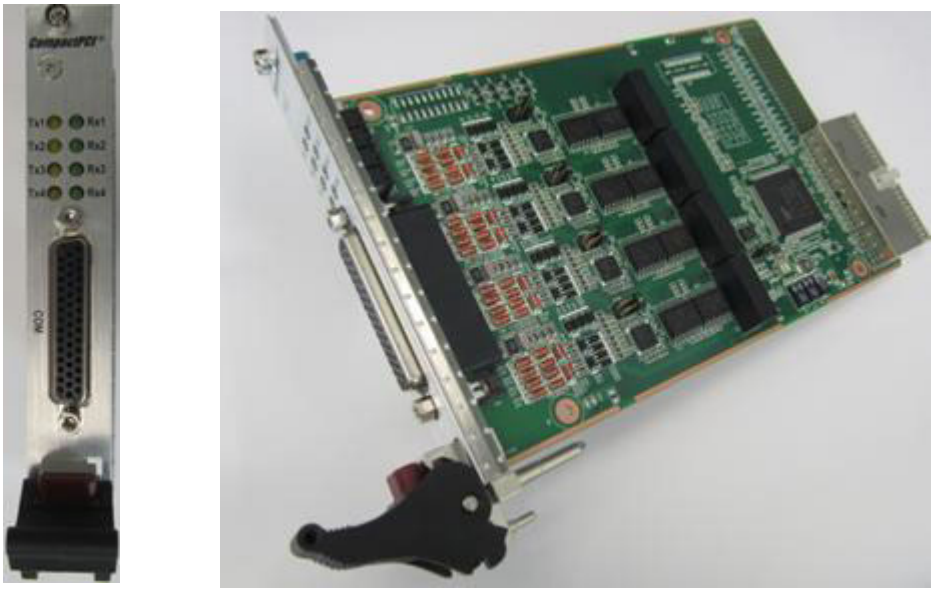


Figure 2.6 MIC-3955 4 port FIO, DB44 female connector

Figure 2.7 MIC-3955 FIO, for 4 port DB44 pin RIO

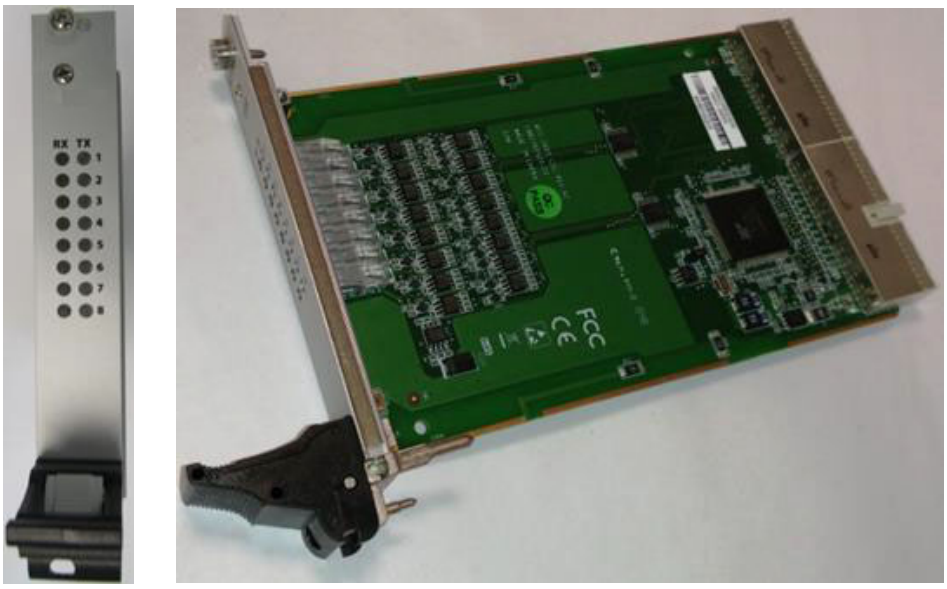


Figure 2.8 MIC-3955 FIO, for 8 port DB37 pin RIO

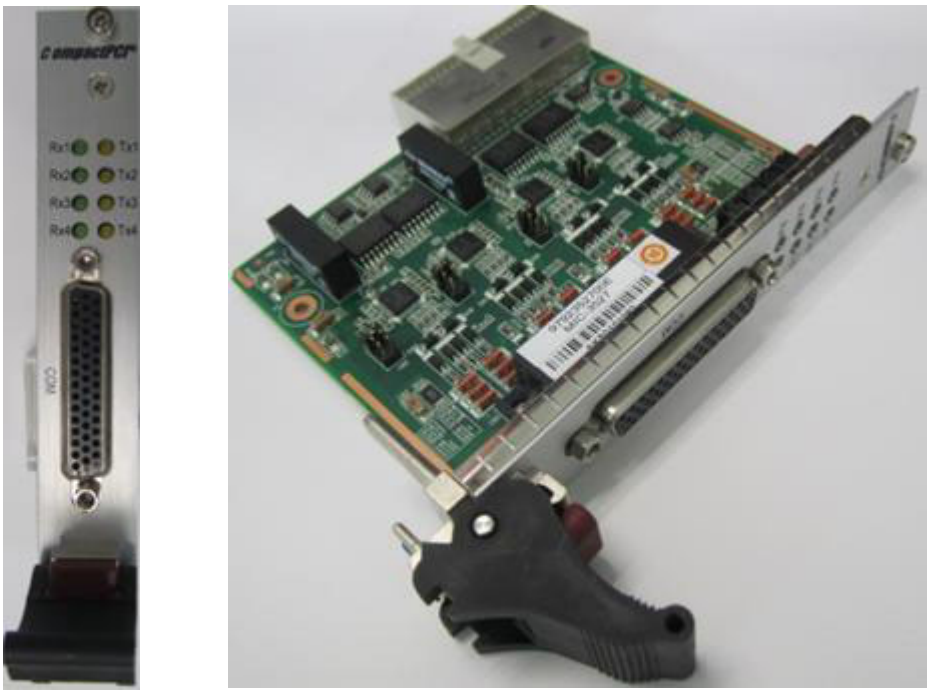


Figure 2.9 Rear IO MIC-3527A1 for MIC-3955 4-port DB44 female connector via backplane

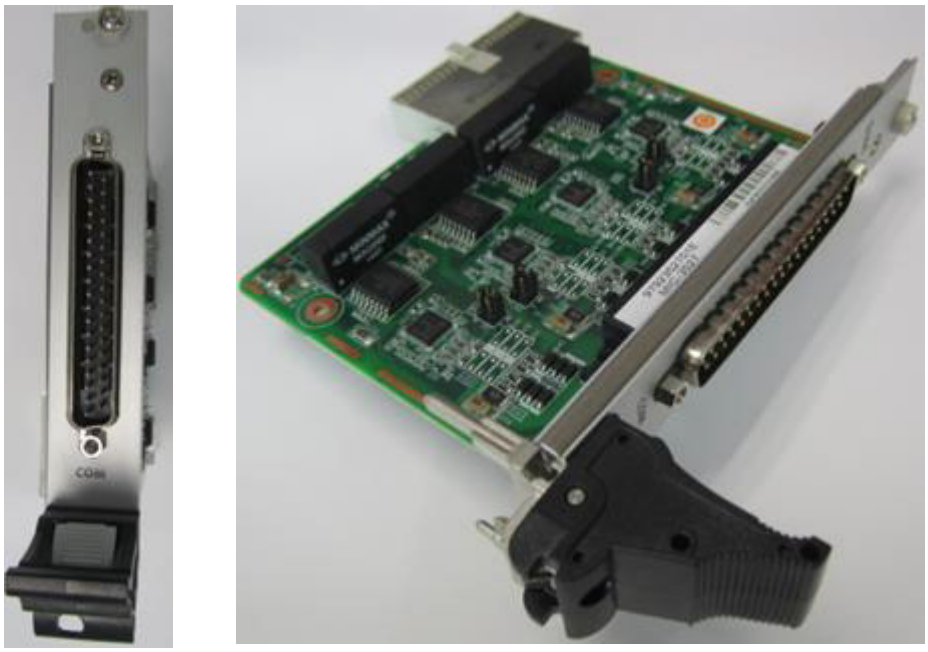


Figure 2.10 Rear IO MIC-3527A2 for MIC-3955 8 port DB37 male connector via backplane

Table 2.1: Front Panel LED Indicators Definition

No.	LED	Status (Green for RX receiving, yellow for TX transmitting)	Description
1	RX1	Blinking	COM1 is receiving data
2	TX1	Blinking	COM1 is transmitting data
3	RX2	Blinking	COM2 is receiving data
4	TX2	Blinking	COM2 is transmitting data
5	RX3	Blinking	COM3 is receiving data
6	TX3	Blinking	COM3 is transmitting data
7	RX4	Blinking	COM4 is receiving data
8	TX4	Blinking	COM4 is transmitting data
9	RX5	Blinking	COM5 is receiving data
10	TX5	Blinking	COM5 is transmitting data
11	RX6	Blinking	COM6 is receiving data
12	TX6	Blinking	COM6 is transmitting data
13	RX7	Blinking	COM7 is receiving data
14	TX7	Blinking	COM7 is transmitting data
15	RX8	Blinking	COM8 is receiving data
16	TX8	Blinking	COM8 is transmitting data

2.3 Installation

Be cautious when plugging the card because CompactPCI connector has rigid pins. The chassis's backplane may be damaged easily if the card is improperly installed. Plugging the card will be easier with handles. Please follow the procedures below to install the card to the chassis:

Insert the card:

1. Hold the card vertically to make sure the direction is correct: component of the front panel points to the right hand side, component of the rear card points to the left hand side and the handles point to the lower part of chassis.
2. Hold the handles and press the button in the middle to unlock them.

Caution! *Keep your finger away from bottom of the chassis to avoid getting hurt.*

3. Align upper and lower edges of the card to rails of the chassis and insert it.
4. Slide the card along the rail until dowel pin of the handle touches the circle hole on the top of rail.

Note! *If the card is correctly inserted and totally slides into the chassis, the dowel pin should align with the circle hole on the rail. Or else, remove the card and repeat step 3. Avoid inserting the card into the chassis by force.*

5. Uplift the handle to insert the card to the proper place.

Pull out the card:

1. Remove the four screws from the card.
2. Press the button to unlock the handle to ensure the card can be pulled out.
3. Pull out the card.

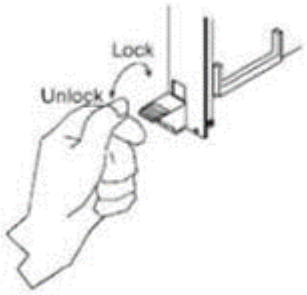


Figure 2.11 Handle status

Chapter 3

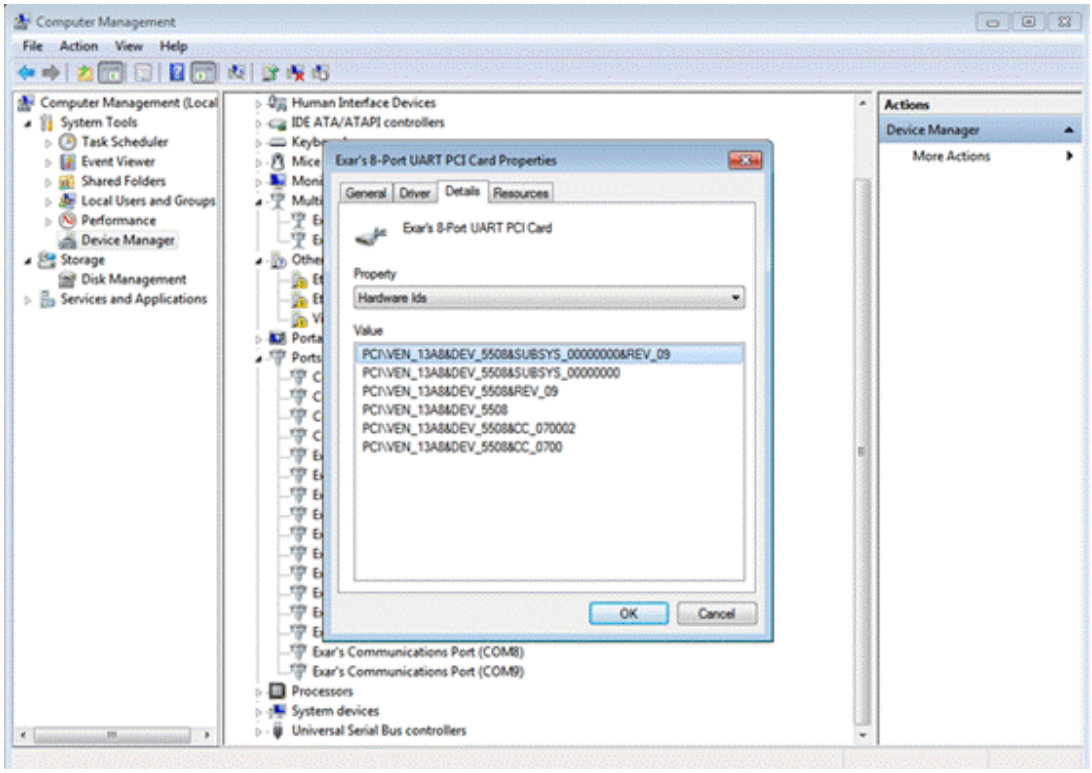
Driver Installation

3.1 Introduction

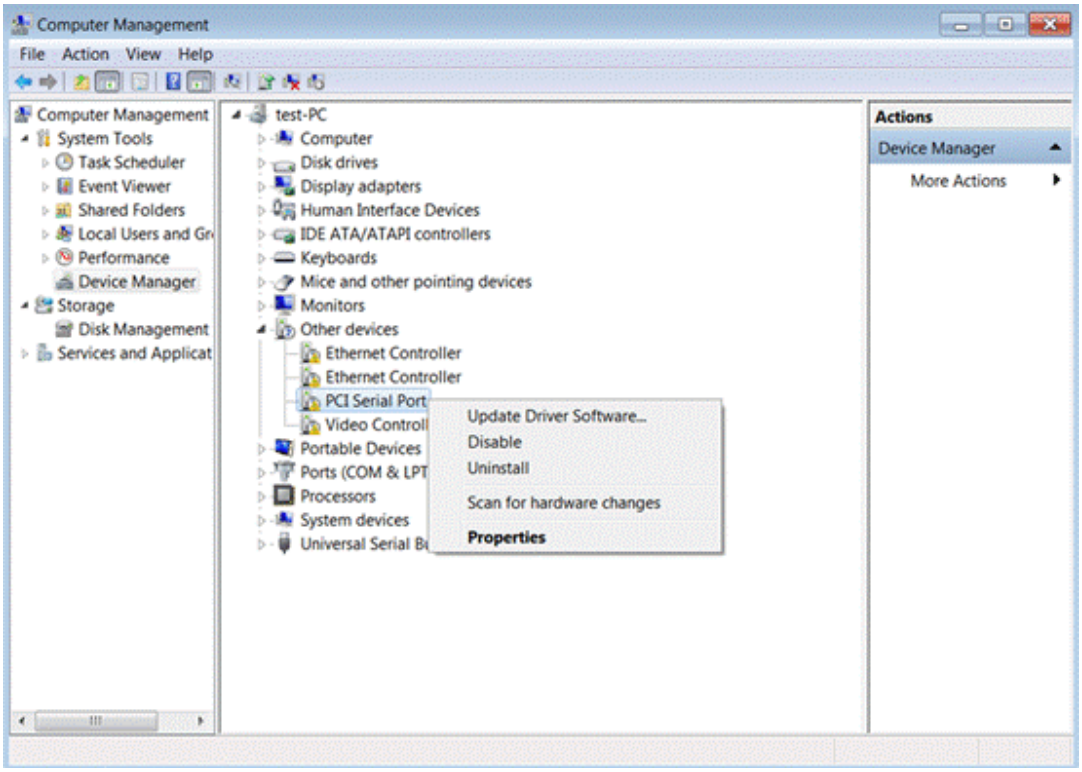
MIC-3955 supports Microsoft Windows OS and open source Linux OS. Microsoft Windows supports Windows XP 32 bit, Windows7 32 bit/64 bit. Linux supports CentOS 6.6 32 bit and Fedora14 64 bit. Corresponding drivers will be uploaded to Advantech official website for the user to download.

3.1.1 Microsoft Windows Driver Setup

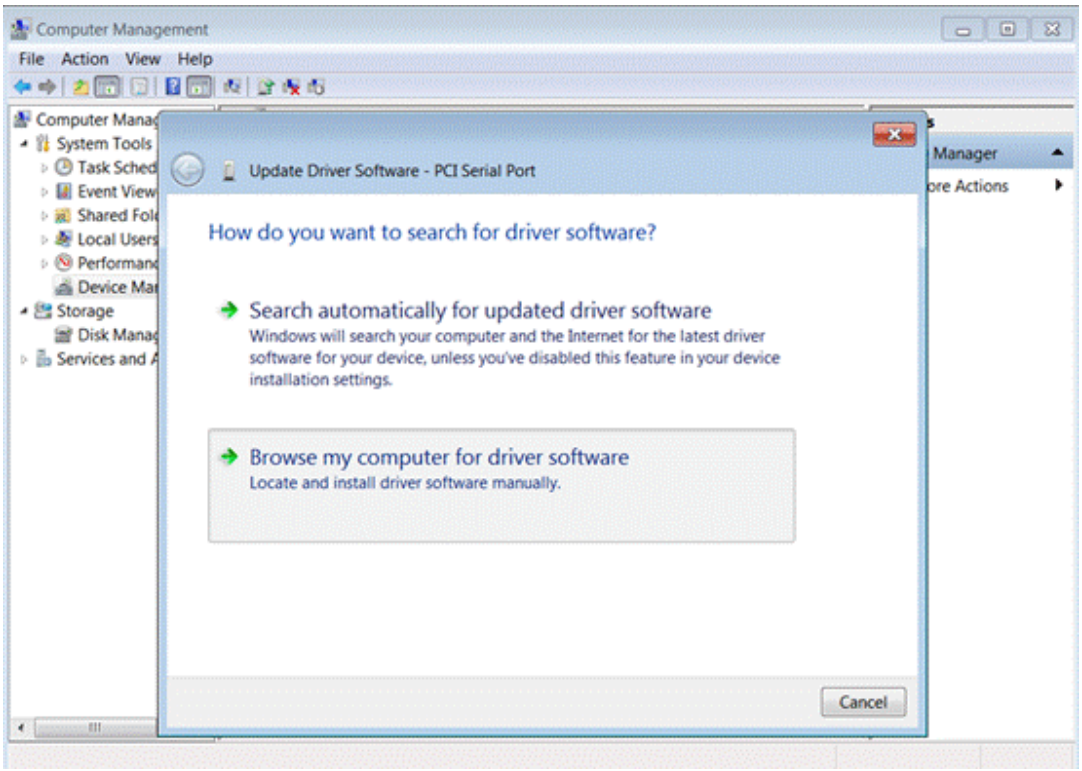
1. Open Device Manager after turing on the computer. If serial port card driver is not installed, please find the card named “PCI Serial Port” in “Other devices”. Check whether the “Vendor ID” and “Device ID” in “Properties - Detail” are consistent with the preset (Vendor ID: 13FE, Device ID: 4port:3955h/8Port:5508h).



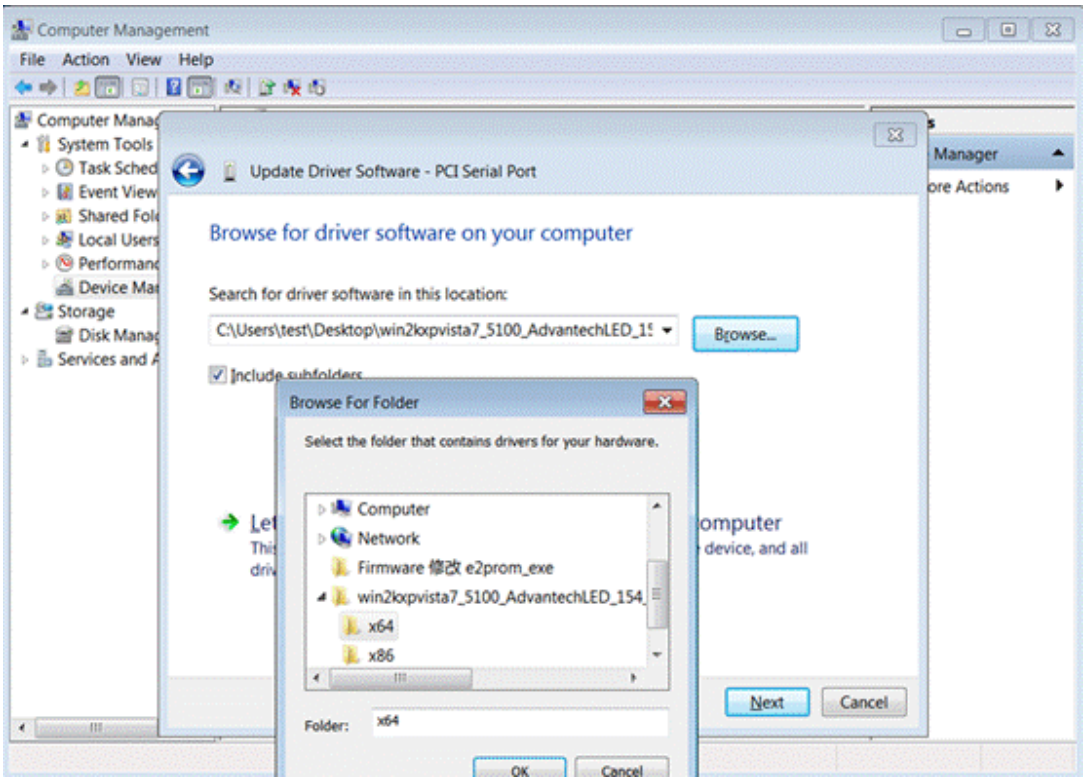
2. When confirmed OK, right click “PCI Serial Port” and select “Update Driver Software” to install driver for serial port card.



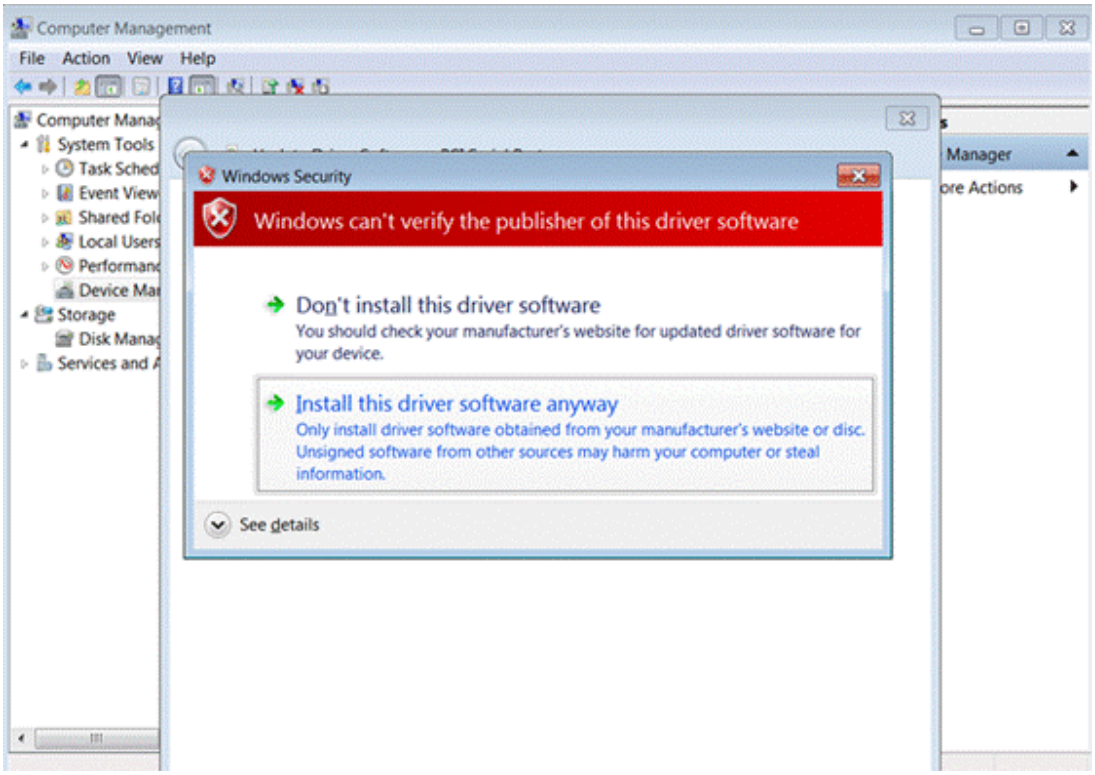
3. Select “Browse my computer for driver software”.



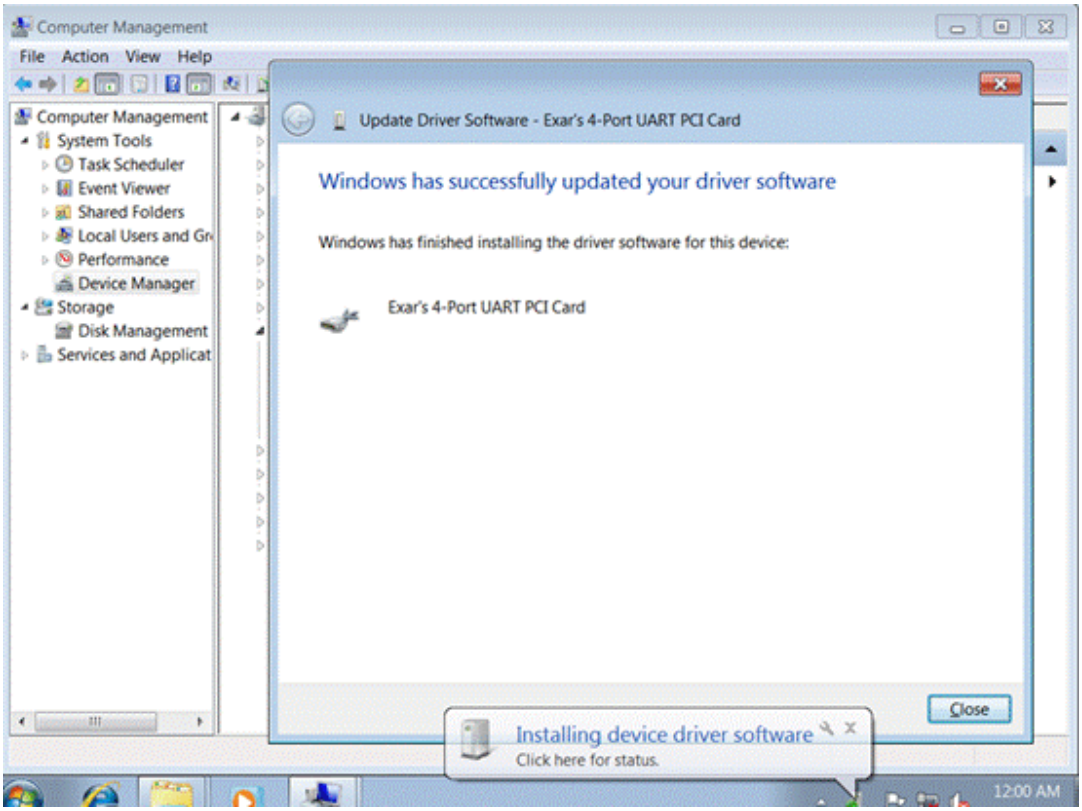
4. Select the folder where driver files are located.



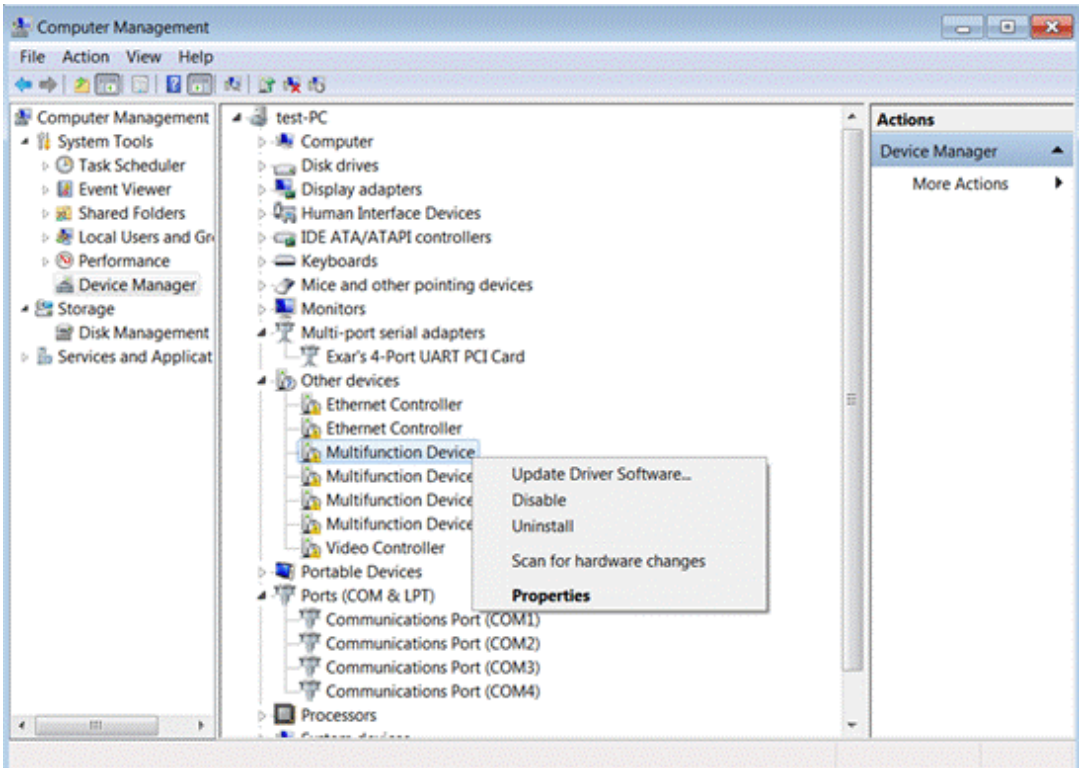
5. This window pops up when the device has no Internet access or OS cannot identify driver source. Click “Next” to proceed.



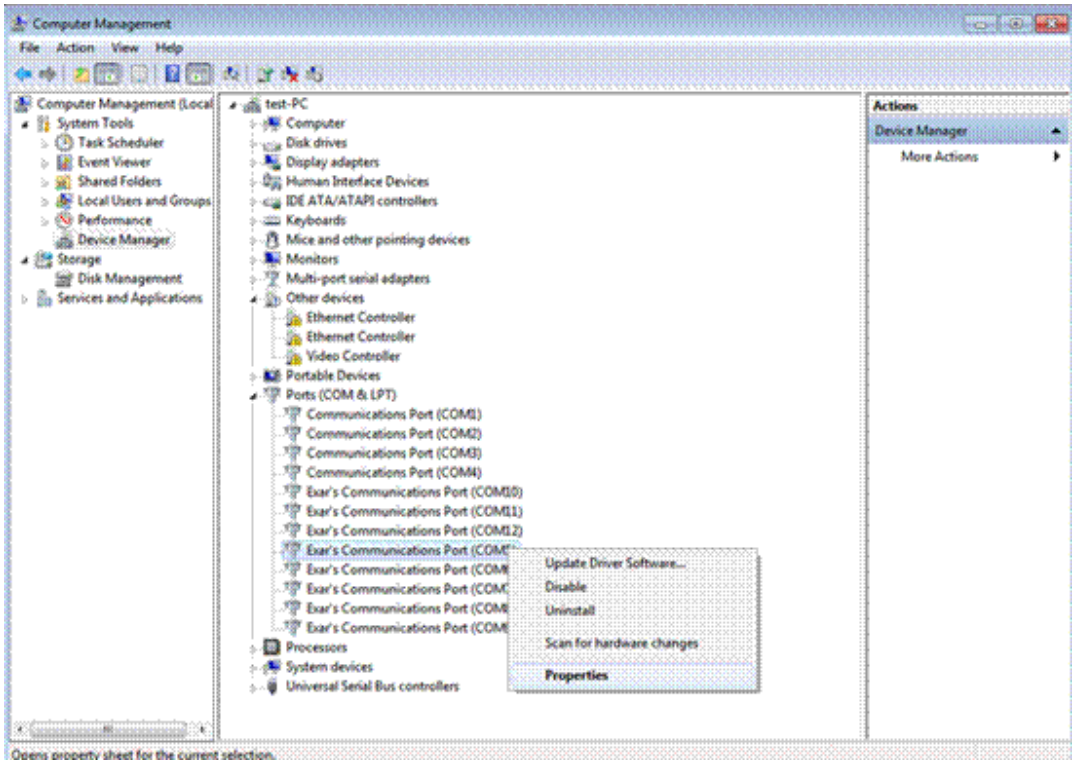
6. The below window appears when installation is finished.



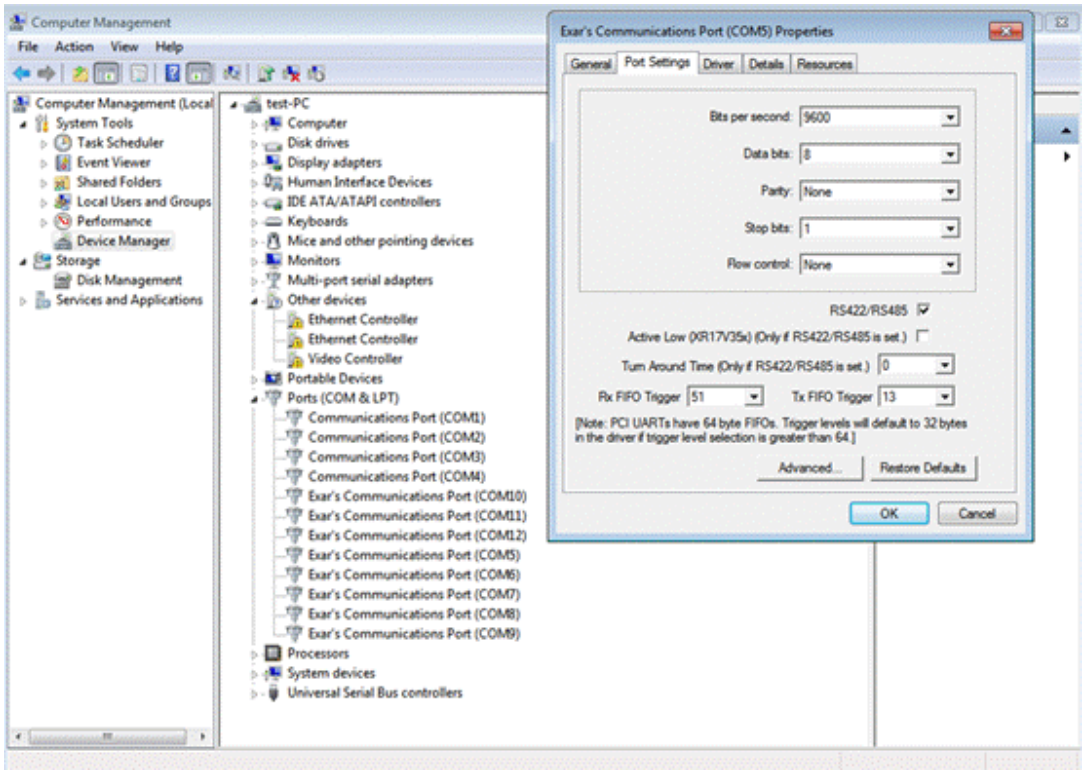
7. If installation is successful, ”exar’s 4/8 Port UART PCI Card” will appear under “Multi-port serial adapters”, 154 chip shows 4 port and 158 chip shows 8 port. Several ”Multifunction Device” with exclamation marks appear under “Other devices”. Install the same driver for them.



8. Each time when a “Multifunction Device” is successfully installed, ”Exar’s Communication Port (COMxx)” will appear under “Ports (COM&LPT)”.



9. When you need to test RS422/RS485, please first adjust to the right serial port mode, and then check “RS422/RS485” under “Port Setting” of “COM Port” and enable RS422 primary/secondary selection and RS485 automatic data flow control function.



3.1.2 Linux Driver Setup

1. Decompress the driver installation package (suppose the package name is: xr17v35x_v1.9.6.tgz)

```
# tar xvf xr17v35x_v1.9.6.tgz
```

2. Enter the driver folder

```
# cd xr17v35x
```

3. Compile the driver

```
# make
```

4. Install the driver

```
# make install
```

Restart the Linux system when installation is complete and the driver will be automatically loaded.

3.1.3 RS232/RS422/RS485 Selection under Linux

RS232/RS422/RS485 selection under Linux is as below:

Currently, driver v1.9.6 adopts RS485 mode by default and supports auto low control function.

Before testing RS232, please adjust to the proper serial port mode and make relative settings under OS. Procedures are:

MIC-3955 provides a source code tool named mic3955_rs485_v0.1.zip, which can be downloaded from Advantech website.

File List

- main.c - The source file
- Makefile - Makefile
- README.md - This file

3.1.3.1 Install

Use make command build the utility.

3.1.3.2 Usage

This utility supports two parameters:

1. The first parameter indicate the device node, like /dev/ttyXR0, ttyXR1 ...
2. The second parameter indicate the different mode, 0: disable, 1: enable.

```
[root@localhost mic3955_rs485]# ./mic3955_rs485
------------------------------------------------------------
  Utlity to enable/disable RS-485 autoflow mode for MIC-3955
------------------------------------------------------------
Usage:
```

- /mic3955_rs485 <port> <mode>
  port - The device of serial port: /dev/ttyXR0, /dev/ttyXR1 ...
  mode - Enable/disable RS-485 autoflow mode: 1(enable), 0(disable)

```
Example:
```

- /mic3955_rs485 /dev/ttyXR0 1

3.1.4 Precautions for CentOS 6 Series

For customers who use CentOS 6.x or Fedora 14, some services must be disabled to avoid the conflict with MIC-3955 Linux driver. In the latest release of Linux (CentOS7), these services are removed by default, so this procedure is no need anymore.

Please use the following commands to disable the services.

```
chkconfig spice-vdagentd off
chkconfig modem-manager off
chkconfig haldaemon off
mv /usr/sbin/modem-manager /usr/sbin/modem-manager.bak
```

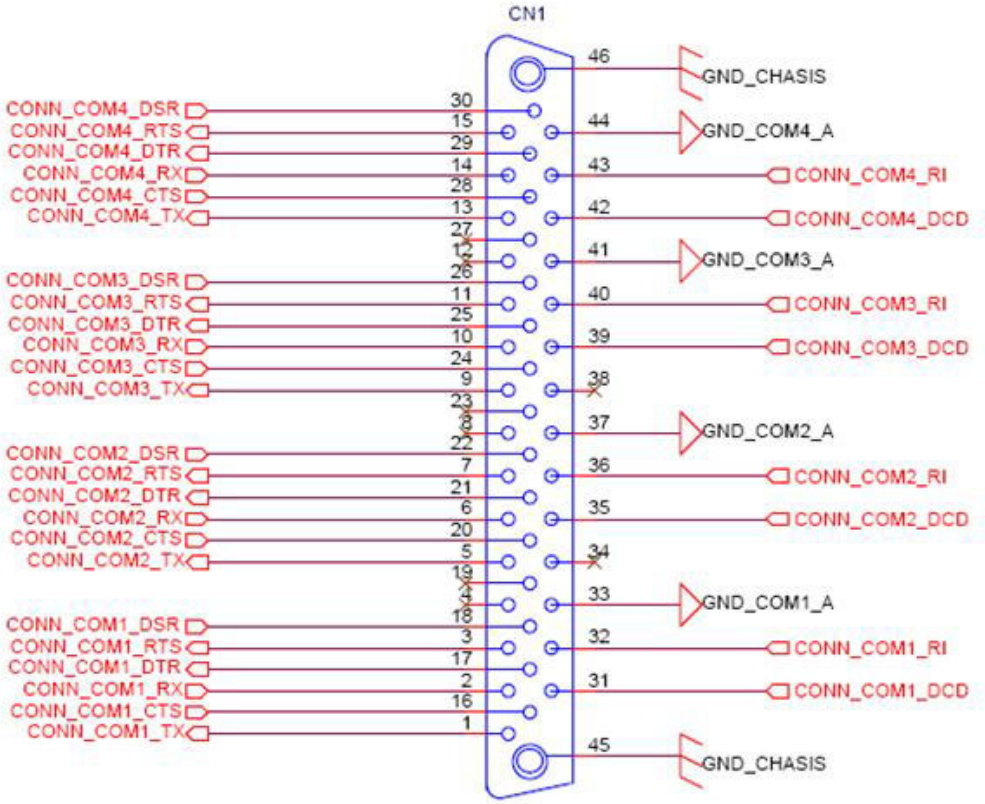
Please reboot your system, then MIC-3955 will work well.

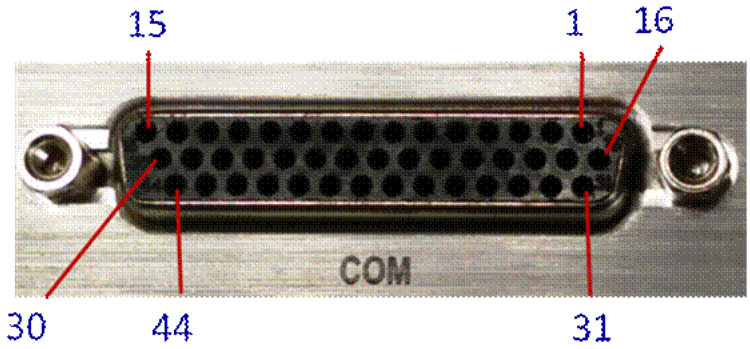
Appendix A

Pin Assignments and Jumper Settings

A.1 Pin Assignments

A.1.1 MIC-3955/MIC-3527A1 DB44 Connector Pin Assignments

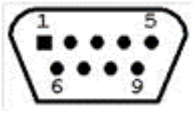




Pin	Definition	Pin	Definition	Pin	Definition
1	COM1_TX	16	COM1_CTS	31	COM1_DCD
2	COM1_RX	17	COM1_DTR	32	COM1_RI
3	COM1_RTS	18	COM1_DSR	33	GND_COM1
4	NC	19	NC	34	NC
5	COM2_TX	20	COM2_CTS	35	COM2_DCD
6	COM2_RX	21	COM2_DTR	36	COM2_RI
7	COM2_RTS	22	COM2_DSR	37	GND_COM2
8	NC	23	NC	38	NC
9	COM3_TX	24	COM3_CTS	39	COM3_DCD
10	COM3_RX	25	COM3_DTR	40	COM3_RI

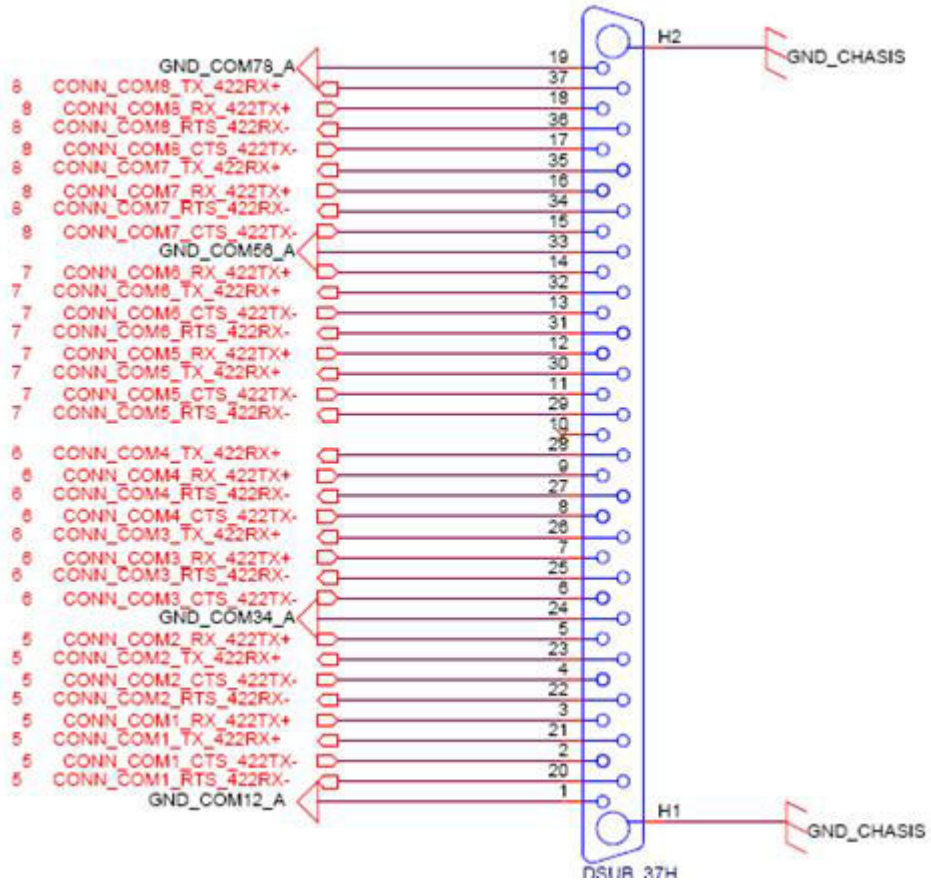
11	COM3_RTS	26	COM3_DSR	41	GND_COM3
12	NC	27	NC	42	COM4_DCD
13	COM4_TX	28	COM4_CTS	43	COM4_RI
14	COM4_RX	29	COM4_DTR	44	GND_COM4
15	COM4_RTS	30	COM4_DSR		

A.1.2 MIC-3955/MIC-3527A1's DB44 to 4-port DB9 Serial Cable COM1 ~ COM4 Pin Assignments



Pin	Pin assignments		
	RS232	**RS422**	**RS485**
1	DCD	TX-	DATA-
2	RX	TX+	DATA+
3	TX	RX+	NC
4	DTR	RX-	NC
5	GND	GND	GND
6	DSR	NC	NC
7	RTS	NC	NC
8	CTS	NC	NC
9	RI	NC	NC

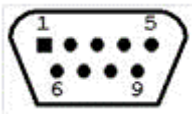
A.1.3 MIC-3527 RTM DB37 Connector Pin Assignments



Pin	Definition	Pin	Definition
1	GND_COM12	20	COM1_RTS_422RX-
2	COM1_CTS_422TX-	21	COM1_TX_422RX+
3	COM1_RX_422TX+	22	COM2_RTS_422RX-
4	COM2_CTS_422TX-	23	COM2_TX_422RX+
5	COM2_RX_422TX+	24	GND_COM34
6	COM3_CTS_422TX-	25	COM3_RTS_422RX-
7	COM3_RX_422TX+	26	COM3_TX_422RX+
8	COM4_CTS_422TX-	27	COM4_RTS_422RX-
9	COM4_RX_422TX+	28	COM4_TX_422RX+
10	NC	29	COM5_RTS_422RX-
11	COM5_CTS_422TX-	30	COM5_TX_422RX+
12	COM5_RX_422TX+	31	COM6_RTS_422RX-
13	COM6_CTS_422TX-	32	COM6_TX_422RX+

14	COM6_RX_422TX+	33	GND_COM56
15	COM7_CTS_422TX-	34	COM7_RTS_422RX-
16	COM7_RX_422TX+	35	COM7_TX_422RX+
17	COM8_CTS_422TX-	36	COM8_RTS_422RX-
18	COM8_RX_422TX+	37	COM8_TX_422RX+
19	GND_COM78	?	?

A.1.4 MIC-3527's DB37 to 8-port DB9 Serial Cable COM1 ~ COM4 Pin Assignments



Pin	Pin assignment		
	RS232	**RS422**	**RS485**
1	CTS#	TX-	DATA-
2	RX	TX+	DATA+
3	TX	RX+	NC
4	RTS#	RX-	NC
5	GND	GND	GND
6	NC	NC	NC
7	NC	NC	NC
8	NC	NC	NC
9	NC	NC	NC

A.2 Jumper Settings

A.2.1 RS-232/RS-422/RS-485 Selection

MIC-3955 supports RS-232/422/485 communication modes, which can be selected via the jumpers on the card.

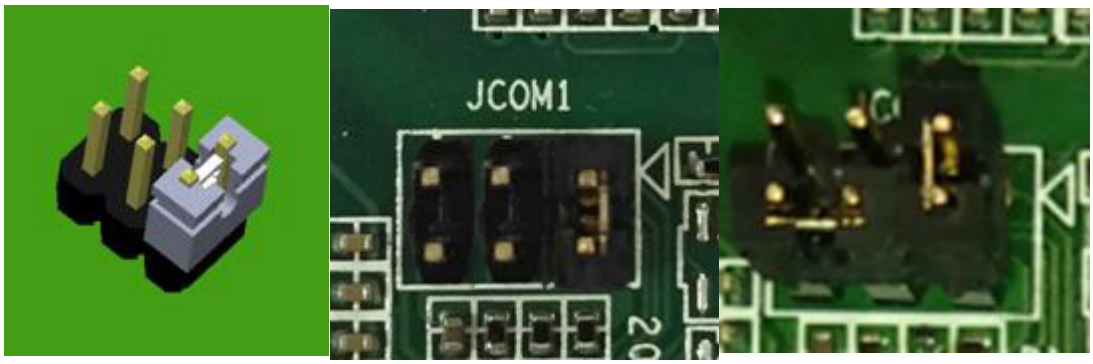
A.2.1.1 MIC-3955 4-port DB44 FIO

Corresponding chip on the card controls operation mode of the serial port. Currently, the chip is SP339 and operation mode of each port can be controlled individually. The four jumpers are JCOM1, JCOM2, JCOM3 and JCOM4. Operation modes of the 4 ports can be selected through closing different jumpers.

	SP338	SP339
RS232	1-2	1-2
RS485	3-4	3-4
RS422	5-6	1-2?3-4

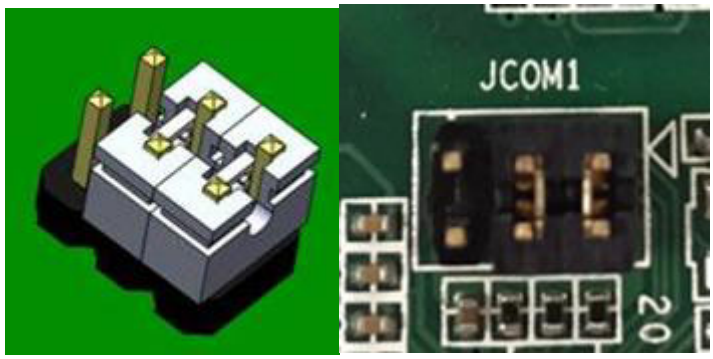
RS-232 mode jumper setting (This is the factory setting. An additional jumper closes pin 4 and pin6, which doesn't affect the function of RS232):

Close Pin1 and Pin2 of JCOM1, JCOM2, JCOM3 and JCOM4. The pin indicated by the triangle on PCB is Pin1.



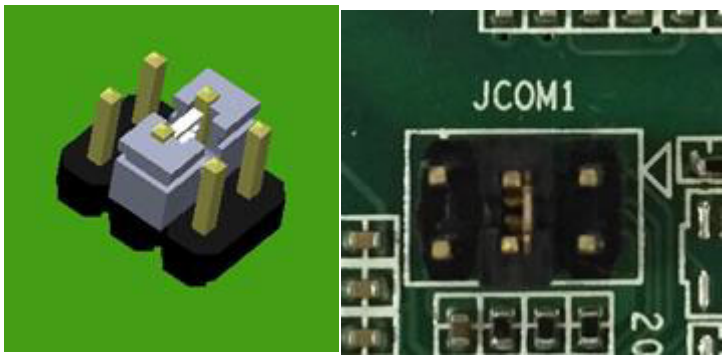
RS-422 mode jumper selection:

Close Pin1 & Pin2, Pin3 & Pin4 of JCOM1, JCOM2, JCOM3 and JCOM4. The pin indicated by the triangle on PCB is Pin1.



RS-485 mode jumper selection:

Close Pin3 & Pin4 of JCOM1, JCOM2, JCOM3 and JCOM4.



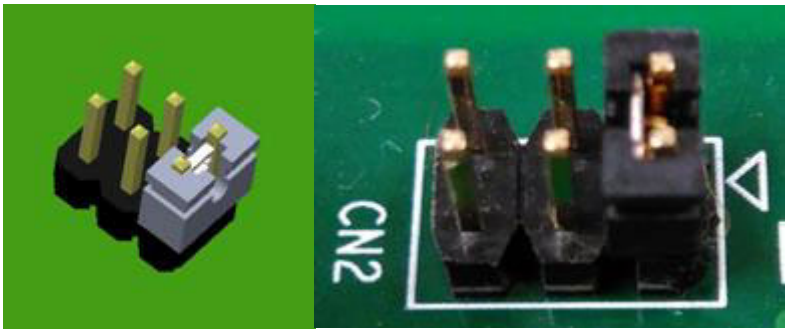
A.2.1.2 RIO MIC-3527A1 4-port DB44 Pin

Corresponding chip on the card controls operation mode of the serial port. Currently, the chip is SP338 and operation mode of each port can be controlled individually. The four jumpers are CN1,CN2, CN3 and CN4. Operation modes of the 4 ports can be selected via closing different jumpers.

	SP338	SP339
RS232	1-2	1-2
RS485	3-4	3-4
RS422	5-6	1-2, 3-4

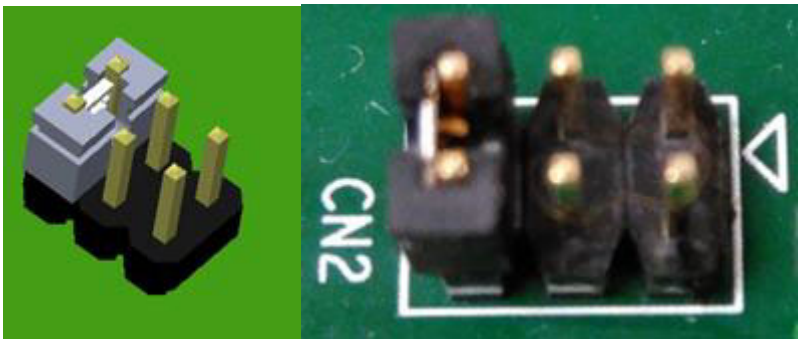
RS-232 mode jumper selection (Default setting):

Close Pin1 and Pin2 of CN1,CN2, CN3 and CN4. The pin indicated by the triangle on PCB is Pin1.



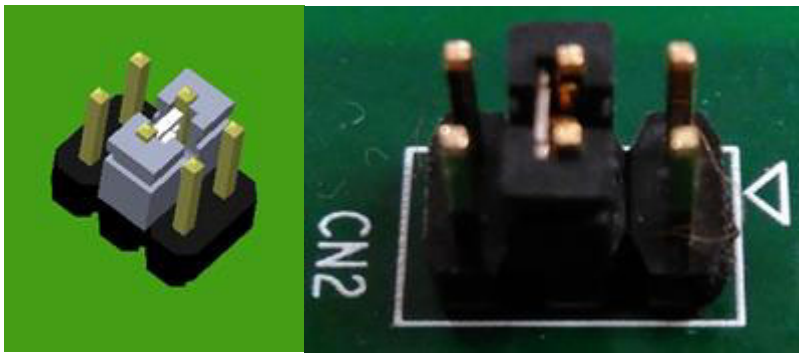
RS-422 mode jumper selection:

Close Pin5 and Pin6 of CN1,CN2, CN3 and CN4. The pin indicated by the triangle on PCB is Pin1.



RS-485 mode jumper selection:

Close Pin3 and Pin4 of CN1,CN2, CN3 and CN4.



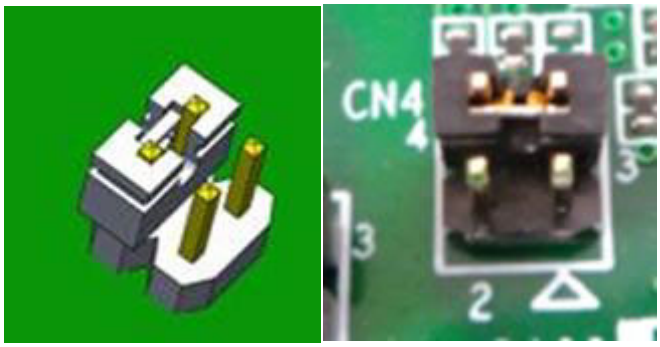
A.2.1.3 RIO MIC-3527A2 8-port DB37 Pin

Corresponding chip on the card controls operation mode of the serial port. Currently, the chip is SP339 and operation mode of each port can be controlled individually. The four jumpers are CN1,CN2, CN3 and CN4. Operation modes of the 4 ports can be selected via closing different jumpers.

	SP339
RS232	3-4
RS485	1-2
RS422	1-3

RS-232 mode jumper selection:

Close Pin3 and Pin4 of CN1,CN2, CN3 and CN4. The pin indicated by the triangle on PCB is Pin1.



RS-422 mode jumper selection (Default setting):

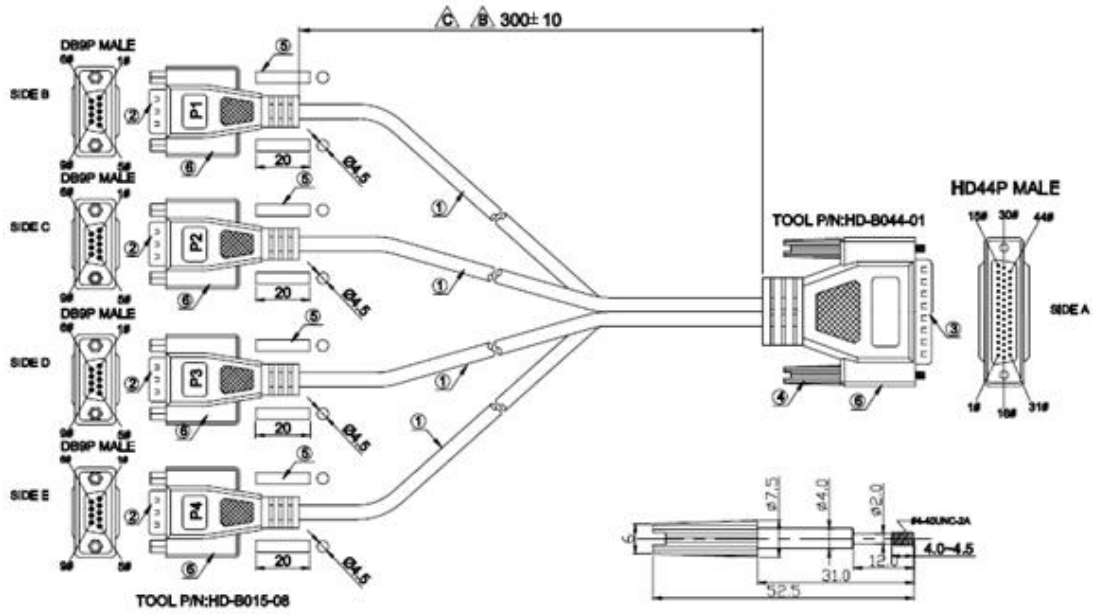
Close Pin1 and Pin3 of CN1,CN2, CN3 and CN4. The pin indicated by the triangle on PCB is Pin1.

RS-485 mode jumper selection:

Close Pin1 and Pin2 of CN1,CN2, CN3 and CN4. The pin indicated by the triangle on PCB is Pin1.

A.2.2 Accessory Cables

A.2.2.1 1 to 4 port cable for 4-port FIO and RIO



PIN ASSIGNMENT

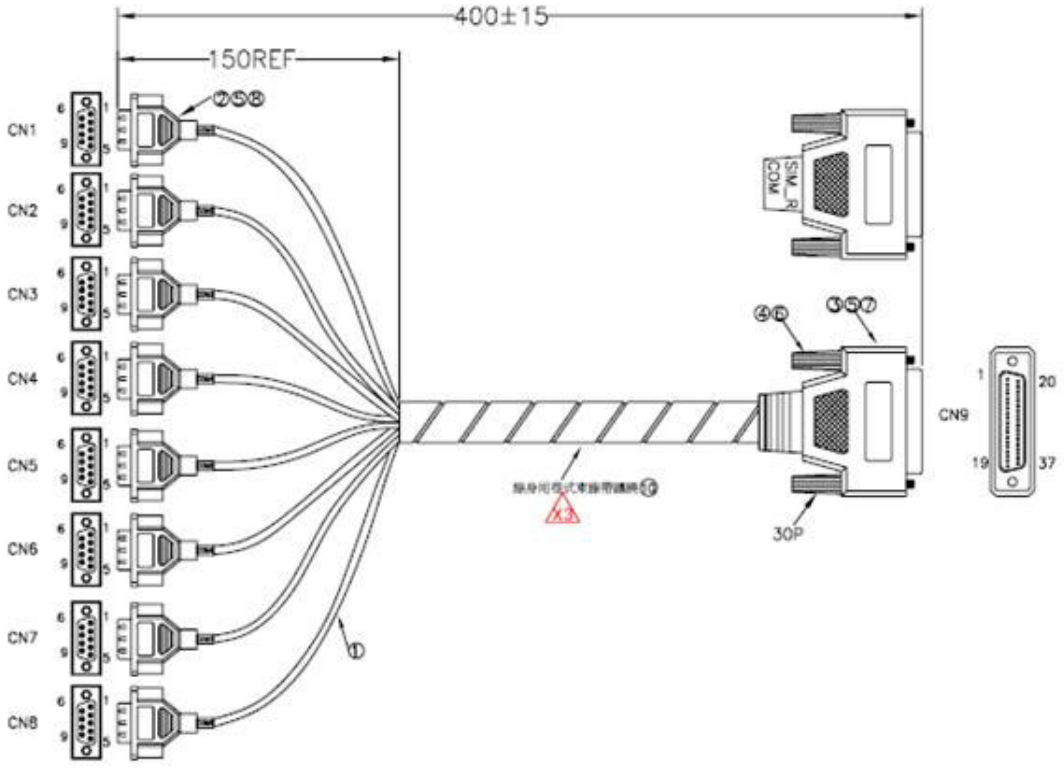
HD44P MALE SIDE A	DB9P MALE SIDE B
1	3
16	8
2	2
17	4
3	7
18	6
31	1
32	9
33	5
4	SHELL

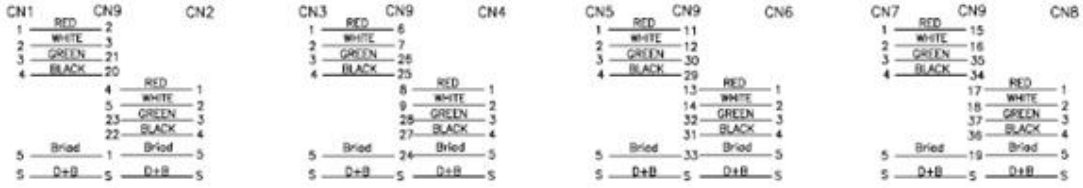
HD44P MALE SIDE A	DB9P MALE SIDE C
5	3
20	8
6	2
21	4
7	7
22	6
35	1
36	9
37	5
8	SHELL

HD44P MALE SIDE A	DB9P MALE SIDE D
9	3
24	8
10	2
25	4
11	7
26	6
39	1
40	9
41	5
12	SHELL

HD44P MALE SIDE A	DB9P MALE SIDE E
13	3
28	8
14	2
29	4
15	7
30	6
42	1
43	9
44	5
19	SHELL

A.2.2.2 1 to 8 port cable for 8-port RIO





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