ADVANTECH

MOS-1120Y-0201E Isolated RS-232 iDoor Module, MOS-1120Y-1401E Non-Isolated RS-232 iDoor Module, MOS-1121Y-0201E Isolated RS-422/485 iDoor Module, MOS-1121Y-1401E Non-Isolated RS-422/485 iDoor Module

User Manual

MOS-1120Y/MOS-1121Y is serie of industrial Serial Communication Module.

P/N	Description
MOS-1120Y-0201E	Isolated RS-232, 2-Ch, DB9, PCIe I/F
MOS-1121Y-0201E	Isolated RS-422/485, 2-Ch, DB9, PCIe I/F
MOS-1120Y-1401E	Non-Isolated RS-232, DB37, 4-Ch, PCIe I/F
MOS-1121Y-1401E	Non-Isolated RS-422/485, DB37, 4-Ch, PCIe I/F

This manual gives you inspection and installation of hardware and drivers.

1. Packing List

MOS-1120/MOS-1121

- miniPCIe Card x 1
- DB37 I/O Plate x 1 with iDoor bracket x 1
- Wire cable x 1
- Startup Manual x 1
- DB37 to DB9(4 ports) cable (MOS-1121Y-1401E only)

Note: If any of these items are missing or damaged, please contact your distributor or sales representative immediately.

2. Initial Inspection

■   MOS-1120/MOS-1121 was carefully inspected mechanically and electrically before it was shipped. It should be free of marks and scratches and in perfect working order when received.

As you unpack the MOS Module, check for signs of shipping damage (damaged box, scratches, dents, etc.). If it is damaged or it fails to meet specifications, notify our service department or your local sales representative immediately. Also notify the carrier. Retain the shipping carton and packing material for inspection by the carrier.

After inspection we will make arrangements to repair or replace the unit. When you handle the MOS Module, remove it from its protective packaging by grasping the rear metal panel. Keep the anti-vibration packing. Whenever you remove the card from the PC, store it in this package for protection.

Warning!

Discharge your body's static electric charge by touching the back of the grounded chassis of the system unit (metal) before handling the board. You should avoid contact with materials that hold a static charge such as plastic, vinyl and Styrofoam. Handle the board only by its edges to avoid static damage to its integrated circuits. Avoid touching the exposed circuit connectors. We also recommend that you use a grounded wrist strap and place the card on a static dissipative mat whenever you work with it.

3. Driver Setup & Installation

Please follow the steps below to install Advantech CAN WDM Driver.

For MOS-1120/MOS-1121 series driver download, please visit Advantech website:

http://support.advantech.com/Support/SearchResult.aspx?keyword=MOS-1120Y-1401E&searchtabs=BIOS,Certificate,Datasheet,Driver,Firmware,Manual,Online%20Training,Software%20Utility,Utility,FAQ,Installation,Software%20API,Software%20API%20Manual,3D%20Model&select_tab=Driver

1. Download and double click the .exe file from the website, then the driver will begin to setup.
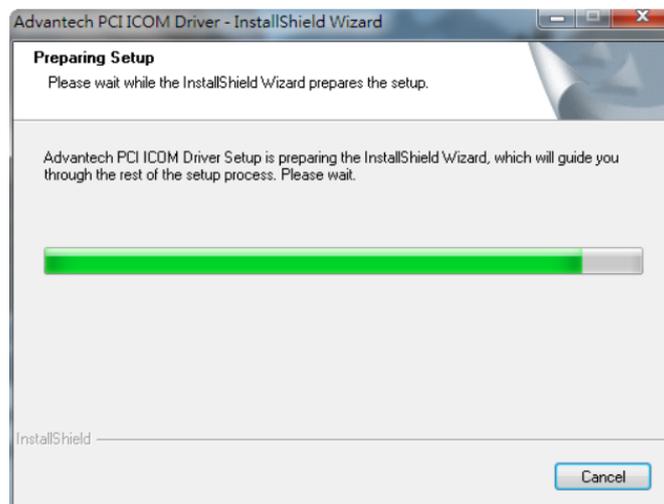
2. In the Control Panel, click **Advantech PCI ICOM Driver** then uninstall.
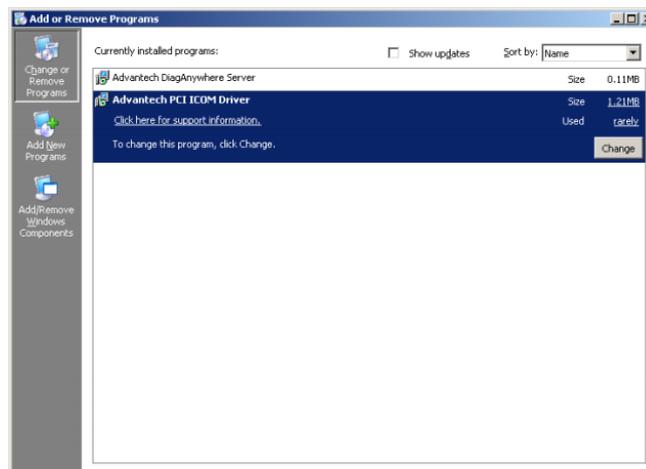
3. Choose "Remove" then click "**Next**" then start to remove all installed components.
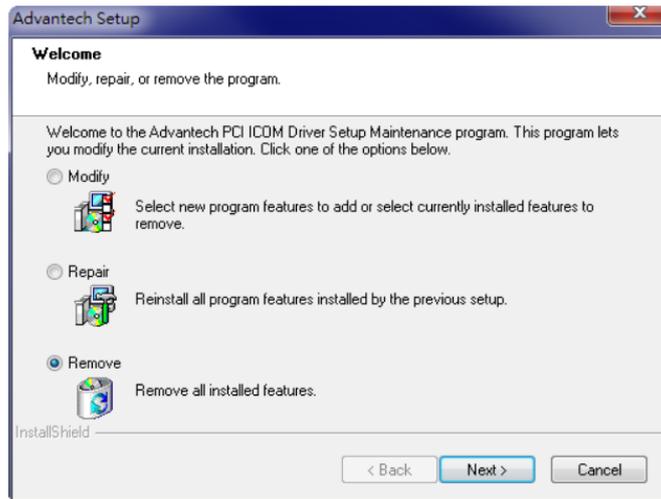
4. Pin Assignments

4.1 MOS-1120Y-0201E

The following table and figure shows the pin assignments of two male DB9 connectors on the iDoor bracket for MOS-1120Y-0201E card in RS-232 Mode.

Table 4.1: MOS-1120Y-0201E Male DB9 on iDoor bracket

Pin	RS-232
1	DCD
2	RxD
3	TxD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI
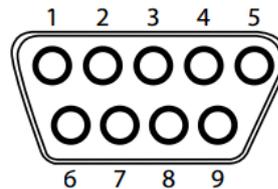
4.2 MOS-1121Y-0201E

The following table and figure shows the pin assignments of two male DB9 connectors on the iDoor bracket for MOS-1121Y-0201E card in RS-422 and RS-485 Modes.

Table 4.2: MOS-1121Y-0201E Male DB9 on iDoor Bracket

Pin	RS-422	RS-485
1	Tx-	Data-
2	Tx+	Data+
3	Rx+	-
4	Rx-	-
5	GND	GND
6	RTS-	-
7	RTS+	-
8	CTS+	-
9	CTS-	-
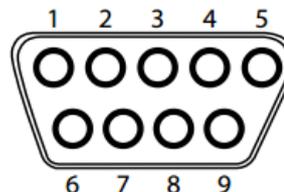
4.3 MOS-1120Y-1401E

The following tables and figures show the pin assignments of 1 female DB37 connector one the iDoor bracket to male DB9 for MOS-1120Y-1401E card in RS-232 mode.

Table 4.3: MOS-1120Y-1401E Male DB9 on Cable

Pin	RS-232
1	DCD
2	RxD
3	TxD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI
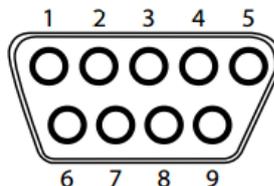
Table 4.4: MOS-1120Y-1401E Female DB37 on iDoor bracket

Pin	RS-232	Pin	RS-232
1	-	20	3_RI
2	3_DCD	21	3_DTR
3	3_GND	22	3_DSR
4	3_CTS	23	3_RTS
5	3_RxD	24	3_TxD
6	4_RI	25	4_DCD
7	4_DTR	26	4_GND
8	4_DSR	27	4_CTS
9	4_RTS	28	4_RxD
10	4_TxD		
		29	2_RI
11	2_DCD	30	2_DTR
12	2_GND	31	2_DSR
13	2_CTS	32	2_RTS
14	2_RxD	33	2_TxD
15	1_RI	34	1_DCD
16	1_DTR	35	1_GND
17	1_DTS	36	1_CTS
18	1_RTS	37	1_RxD
19	1_TxD		
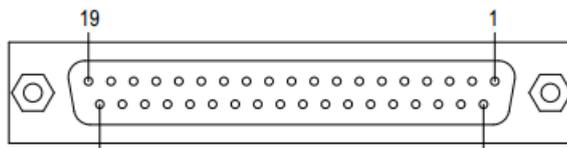
4.4 MOS-1121Y-1401E

The following tables and figures show the pin assignments of 1 female DB37 connector one the iDoor bracket to male DB9 for MOS-1121Y-1401E card in RS‑422 and RS‑485 modes.

Table 4.5: MOS-1121Y-1401E Male DB9 on Cable

Pin	RS-422	RS-485
1	Tx-	Data-
2	Tx+	Data+
3	Rx+	-
4	Rx-	-
5	GND	GND
6		-
7		-
8		-
9		-
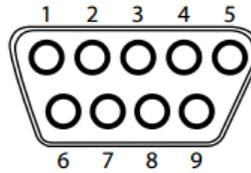
Table 4.6: MOS-1121Y-1401E Female DB37 on iDoor bracket

Pin	RS-422	RS-485	Pin	RS-422	RS-485
1	-	-	20	-	-
2	3_TxD-	3_Data-	21	3_RxD-	-
3	3_GND	3_GND	22	-	-
4	-	-	23	-	-
5	3_TxD+	3_Data+	24	3_RxD+	-
6	-	-	25	4_TxD-	4_Data-
7	4_RxD-	-	26	4_GND	4_GND
8	-	-	27	-	-
9	-	-	28	4_TxD+	4_Data+
10	4_RxD+	-			
			29	-	-
11	2_TxD-	2_Data-	30	2_RxD-	-
12	2_GND	2_GND	31	-	-
13	-	-	32	-	-
14	2_TxD+	2_Data+	33	2_RxD+	-
15	-	-	34	1_TxD-	1_Data-
16	1_RxD-	-	35	1_GND	1_GND
17	-	-	36	-	-
18	-	-	37	1_TxD+	1_Data+
19	1_RxD+	-			
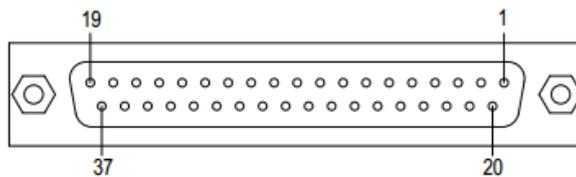
5. Jumper and Switch Settings

5.1 MOS-1121Y-0201E Settings
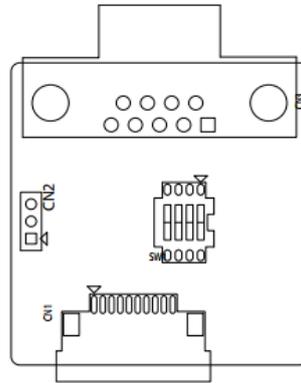
Table 5.1: MOS-1121Y-0201E Master/Slave Settings

Jumper	Pin	Description
CN2	1-2	RS-422 Master
	2-3	RS-485/RS-422 Slave (Default)

Table 5.2: MOS-1121Y-0201E Terminal Resistor Settings

Switch	Terminal Resistor	Switch Setting
SW1		1(D+/-) on
	120 ohm	2(RX+/-) on
		3,4 off
		3(D+/-) on
	300 ohm	4(RX+/-) on
		1,2 off

5.2 MOS-1121Y-1401E Settings
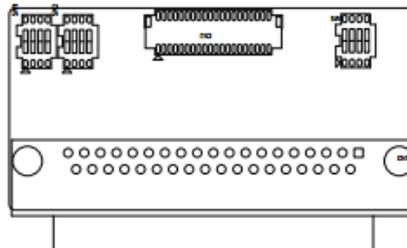
Table 5.3: MOS-1121Y-1401E Master/Slave Settings

COM Port	Switch	Pin	Setting	Description
COM 1		1	ON	RS-422 Master
			OFF	RS-485/RS-422 Slave (Default)
COM 2		2	ON	RS-422 Master
			OFF	RS-485/RS-422 Slave (Default)
COM 3	SW1	3	ON	RS-422 Master
			OFF	RS-485/RS-422 Slave (Default)
COM 4		4	ON	RS-422 Master
			OFF	RS-485/RS-422 Slave (Default)

Table 5.4: MOS-1121Y-1401E Terminal Resistor Settings

COM Port	Switch	Pin	Setting	RS-422 Description	RS-485 Description
COM 1		1	ON	120 Ohm between Tx+/Tx-	120 Ohm between Data+/Data-
			OFF	Open (Default)	
		2	ON	120 Ohm between Rx+/Rx-	Invalid
			OFF	Open (Default)	
	SW2				
COM 2		3	ON	120 Ohm between Tx+/Tx-	120 Ohm between Data+/Data-
			OFF	Open (Default)	
		4	ON	120 Ohm between Rx+/Rx-	Invalid
			OFF	Open (Default)	
COM 3		1	ON	120 Ohm between Tx+/Tx-	120 Ohm between Data+/Data-
			OFF	Open (Default)	
		2	ON	120 Ohm between Rx+/Rx-	Invalid
			OFF	Open (Default)	
	SW3				
COM 4		3	ON	120 Ohm between Tx+/Tx-	120 Ohm between Data+/Data-
			OFF	Open (Default)	
		4	ON	120 Ohm between Rx+/Rx-	Invalid
			OFF	Open (Default)	

6. Wiring

6.1 RS-232 Signal Wiring

Since the RS-232 interface is not strictly defined, many devices have their own connection methods which may ignore some signal lines or define reserved lines for other functions. It is best to refer to the user's manual for your device for installation instructions. You may find the following helpful.

In general, DTE (Data Terminal Equipment) refers to the device that is leading the communication. Examples include PC's, terminals and some printers. DCE refers to the device being communicated with or controlled. Examples include modems, DSU's (digital service units), printers and lab/factory equipment.

In some situations you may be able to get by with just three lines: data on TXD, a signal ground and a handshaking line. Examples are printer or plotter connections, troubleshooting and situations where you require only one-wire communication.

Table 6.1 Terminal or PC (DTE) Connections

DB-25 Male		DB-25 Male or Female: Terminal	
Pin	Signal	Pin	Signal
2	TxD	3	RxD
3	RxD	2	TxD
4	RTS	5	CTS
5	CTS	4	RTS
6	DSR	20	DTR
7	GND	7	GND
20	DTR	6	DSR
8	DCD	8	DCD

Table 6.2: Modem Connections

DB-25 Male		Modem (DCE)	
Pin	Signal	Pin	Signal
2	TxD	3	RxD
3	RxD	2	TxD
4	RTS	5	CTS
5	CTS	4	RTS
6	DSR	20	DTR
7	GND	7	GND
20	DTR	6	DSR
8	DCD	8	DCD

For DTE to DCE connections, use a straight through cable (i.e., you don't have to reverse lines 2 and 3, lines 4 and 5, and lines 6 and 20 since, in general, the DCE RS-232 interfaces are reversed themselves).

Table 6.3: Terminal without Handshake

DB-25 Male		Terminal, PC (DTE)	
Pin	Signal	Pin	Signal
2	TxD	3	RxD
3	RxD	2	TxD
4	RTS		
5	CTS		
7	GND	7	GND
6	DSR		
20	DTR		
8	DCD		

Therefore, if you are not using CTS, RTS, DSR,DTR and DCD signals, short pins 4 and 5 together, and please short pins 6, 8,and 20 together.

6.2 RS-422 Signal Wiring

The RS-422 interface wiring is based on one-to-one principles. The transmit lines on one side connect to the receive lines on the other side, and vice versa. With RS-422, you can transmit and receive data simultaneously (full duplex). The connections are as follows:

Table 6.4:RS-422 DB9 Pin Assignment

DTE (Male DB-9)		Terminal DTE	
Pin	Signal	Pin	Signal
1	TxD-	1	RxD-
2	TxD+	2	RxD+
3	RxD+	3	TxD+
4	RxD-	4	TxD-
5	GND	5	GND
6	RTS-	6	CTS-
7	RTS+	7	CTS+
8	CTS+	8	RTS+
9	CTS-	9	RTS-

Terminator Resistors Setup

The signals DSR, DTR and DCD are shorted internally on the PCM-24D2R4/24D4R4 cards when operating in RS-422 mode. A user can solder in termination resistors if necessary for impedance matching. The card has two mounting spaces for termination resistors, but no resistors are installed at the factory. Each pair of signal lines has a separate resistor (RxD+/-, TxD+/-).

6.3 RS-485 Signal Wiring

The RS-485 standard supports half-duplex communication. This means that just two wires are needed to both transmit and receive data. Handshaking signals (such as RTS, Request To Send) are normally used to control the direction of the data flow and to switch the transmission accordingly. In RS-485 mode, the PCM-24D2R4/24D4R4 cards automatically sense the direction of the data flow and switch the transmission direction — no handshaking is necessary. This means a user can build an RS-485 network with just two wires. This RS-485 control is completely transparent to the user. The software written for half duplex RS-232 works without any modification.
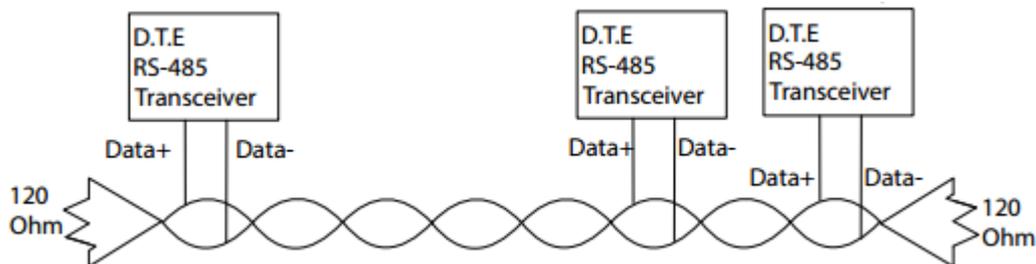
Termination Resistor Setup

You can install termination resistors if necessary for impedance matching. The card has mounting spaces for termination resistors, but no resistors are installed at the factory. Depending on your application you may need to solder in a single resistor to handle the DATA+/DATA- pair (and a corresponding resistor on the other end of the connection). The value of the resistor should equal the characteristic impedance of the signal wires (approximately 120 Ohms or 300 Ohms).