

SUNIX | Powered RS-232 PCIe Card

Quick Installation Guide (SER6456ST)

Ver.1

Please visit <https://www.sunix.com> with product model for detail and latest manual/driver update

Introduction

SUNIX SER6456ST, PCI Express serial communication board, allows users to add or expand four RS-232 COM ports on PC-based system to use serial devices further. This board supports +5 or +12VDC of power from each serial port via COM 1st and 9th pin output. It's convenient for users connecting serial devices without addition external power supply.

SUNIX SER6456ST meets the PCI Express Base Specification Revision 2.0. It is compatible with PCI Express x1, x2, x4, x8 and x16 lane Bus allowing it to be installed in any PC-based system. This serial board has 128-bytes onboard FIFO buffer and compatible with 16C950 UART specification. It is designed with SUNIX native PCI Express UART controller, SUN2410 and as well built with many of SUNIX advanced features and technologies, making it the best solution for commercial and industrial automation applications.

Package Checklist

Please Check if the following items are present and in good condition upon opening your package. Contact your vendor if any item is damaged or missing.

1. SER6456ST – 4-port RS-232 PCI Express Serial Board with TTL and Power Output
2. DB44 to 4-port DB9 Male Connection Cable, 40cm
3. Quick Installation Guide (This document)

Please go to SUNIX website <http://www.sunix.com> to get latest driver, firmware, user's manual, and product information update.

Features

- Expands four RS-232 serial ports with communication speeds up to 115.2Kbps.
- High reliable SUN2410 16C950 compatible native PCI Express UART controller on-board.
- Designed to meet PCI Express Base Specification Revision 2.0.
- Supports x1, x2, x4, x8, x16 (lane) PCI Express Bus connector keys.
- Provides RS-232 serial ports with +5 or +12 VDC power output via COM 1st or 9th pin.
- Provides RS-232 serial signals of Rx/D and Tx/D with TTL 3.3V output on COM2. (Details refer to the pin assignment and jumper setting table)
- Build-in Serial-ATA power socket to source efficient DC power from system.
- On-chip hardware auto flow control to guarantee no data loss.
- Built-in ± 15 KV ESD protection for all serial signals meets IEC1000-4-2 standard.
- Plug-n-Play, I/O address and IRQ assigned by BIOS.
- Certified by CE, FCC, RoHS, and Microsoft WHQL approval.
- Support Microsoft Windows, Linux and DOS operation system.

Hardware Installation

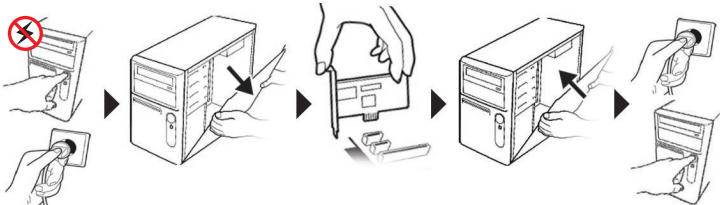


SAFETY FIRST

To avoid damages, please make sure to remove any power connection before card installation, and follow the detailed steps given below before inserting the card into your computer.

PCI Express Card

- Step 1:** Turn your PC's power off, and shut off the power to any peripheral.
- Step 2:** Remove the power plug from the plug socket.
- Step 3:** Remove the cover from the computer case.
- Step 4:** If fitted, Remove the metal cover plate on the rear of a free PCIe slot.
- Step 5:** Insert PCI Express Industrial I/O Control Board into the free PCIe slot and screw it firmly on the bracket side.
- Step 6:** Place the cover back onto the computer.
- Step 7:** Insert the plug into the plug socket.



Specification

Serial Communication

Interface	RS-232	Stop bit	1, 1.5, 2
Controller	SUNIX SUN2410 (16C950 UART Compatible)	Baud Rate	50bps ~115.2Kbps
PCB Connector	DBM44 Female	No. of Port	4-port
Parity	even, odd, none, mark, space	Flow Control	None, Xon/Xoff, RTS/CTS
IRQ & IO	Assigned by System	FIFO	128byte Hardware
BUS	PCI Express Spec 2.0, Single-Lane (x1)		
Signal	Tx/D, Rx/D, RTS, CTS, DTR, DSR, DCD, GND, RI		
Protection	± 15 KV IEC1000-4-2 Air Gap Discharge ± 8 KV IEC1000-4-2 Contact Discharge		

Driver Support

Windows Client	XP / Vista / 7 / 8.x / 10 (X86/X64) / 11 (X64)
Windows Server	2022 (X64)
Microsoft Embedded	Windows CE5.0/6.0/XP Embedded/ POSReady 2009/POSReady 7/Embedded System
Linux	Linux Kernel 2.4.x / 2.6.x / 3.x / 4.x / 5.x
DOS	DOS

Environment

Operation Temperature	0 to 60°C (32 to 140°F)	PCB Dimension	101 x 68.5 mm
Operation Humidity	5 to 95% RH	Bracket	Standard 121 mm
Storage Temperature	-20 to 85°C (-4 to 185°F)	Bracket Space	1

Dimension

Regulatory Approvals

Hardware	CE/FCC
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Pin Assignment

DB9M	DB9M	COM1/COM3/COM4	DB9M	COM2
1	1	DCD/12V/5V	1	DCD/12V/5V
2	2	RxD	2	RxD / Tx/D / Rx/D(TTL) / Tx/D(TTL)
3	3	TxD	3	TxD / Rx/D / Tx/D(TTL) / Rx/D(TTL)
4	4	DTR	4	DTR
5	5	GND	5	GND
6	6	DSR	6	DSR
7	7	RTS	7	RTS
8	8	CTS	8	CTS / same as PIN2
9	9	RI / 12 / 5V	9	RI / 12V / 5V / same as PIN3

Jumper Settings

This Powered RS-232 Board supports DC power output to device feature. User can select +5V or +12VDC power output to serial device over DB9 1st and 9th pin. Please follow the jumper setting before using for each COM port.

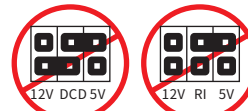


CAUTION

1. Be sure to confirm your serial device power voltage sourcing and pin number to prevent any further problem.
2. Before plugging this board into your system, please carefully check the power output jumper setting and hardware installation steps to prevent any damages.
3. Wrong operation damages connected serial device.
4. Do NOT cross the jumper settings over different pin define.

Below setting is WRONG ▶

SUNIX is NOT responsible for user's wrong operation, including power voltage selected mistake, wrong jumper settings, or carelessness cable wiring.



COM2 Jumper Settings

▶ = Factory default

JP3 Close	DB9 Pin1	JP4 Close	JP5 Close	DB9 Pin2	DB9 Pin3
▶ 2	DCD	2 & 3	1 & 4	RxD	TxD
1	12V	1 & 4	1 & 4	TxD	RxD
3	5V	2 & 3	2 & 3	RxD(TTL)	TxD(TTL)
		1 & 4	2 & 3	TxD(TTL)	RxD(TTL)

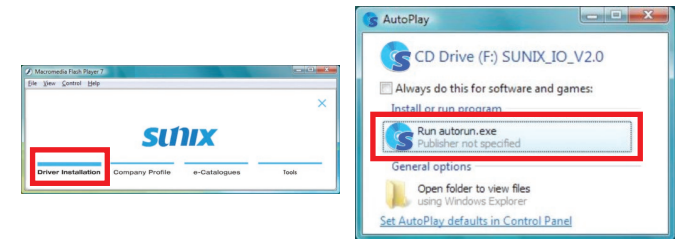
JP3 (DCD)	JP4 (Rx/Tx Swap)	JP5 (Tx/Rx/TTL)
12V DCD 5V	TXD RXD TXD RXD	TXD TXD RXD RXD

JP6 Close	DB9 Pin8	DB9 Pin9
▶ 6 & 2	CTS	RI
6 & 3	CTS	5V
6 & 1	CTS	12V
5 & 4	DB9 Pin2	DB9 Pin3

JP6 (5V/RI/12V/Tx/Rx/CTS)
12V RI 5V TX RX CTS

Driver Installation

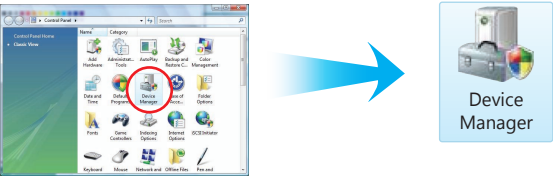
In order to ensure proper operation of your RS-232 PCI Express serial board, the driver will be in the CD bound with your product. You can specify the location(folder):



* You can find the detail of the installation steps in the user manual.

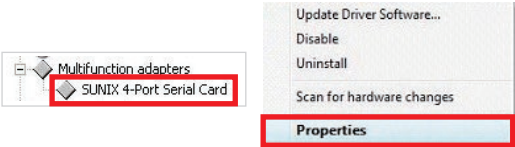
Hardware Verify

Please launch the "Device Manager" to verify hardware installation correctly.
Start > Control Panel > Device Manager
* The number of COM ports will depend on what products you bought.

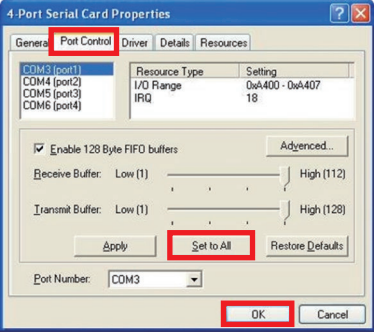


Configure Serial Port Settings

After the board and serial port drivers are installed, please refer to following instructions to configure Serial COM settings.
1. Please launch the "Device Manager".
2. Right click the "Ports(COM & LPT)" item from the "Serial Port" sub-tree and click "Properties".

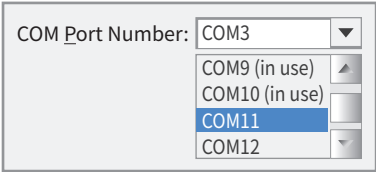


3. On the "Port Control" tab, select a port to configure.
* Click "OK" to approve the settings for the selected port.
* Click "Set to All" to approve the settings for all COM ports.



COM Port Number Settings

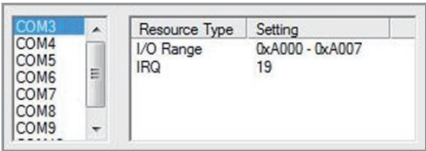
Under Port Number, select a COM number to assign to the serial port. Click "OK" to approve the settings for the selected port.



NOTE: In order to prevent system resource conflict, do not select "in use" port.

COM I/O Resource

User can read the COM "IO Range" and "IRQ" located in system by selecting COM port.
IRQ and I/O address is automatically assigned by the mainboard PCI BIOS automatically (before COM card driver installing). User can NOT assign legacy ISA address (3F8, 3E8, 2F8, 2E8) for the specific COM port. But for IRQ setting, user can set specific IRQ value for this PCIe bus slot via mainboard's BIOS settings (not via driver). But all COM ports will share one IRQ value.

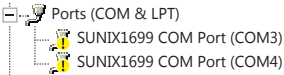


Troubleshooting

Q 1. System fails to find the PCI Express serial board or COM port.
Ans: It may cause by following issue:
a. The board is not properly plugged into the PCI Express slot.
b. Please clean the golden finger.
c. The PCI Express slot is defective. Please try other slots until you find one that works.
d. The mainboard does not have an available IRQ for the PCI Express serial board. Enter the PC's BIOS and make sure an IRQ setting is available in the PCI/PnP settings.
e. The board itself might be defective.
You can try another mainboard testing this board working or not.

Q 2. There is a blue screen when I entry operation system.
Ans: It may cause by following issue:
a. The possible reason is an IRQ or I/O address conflict with other PCIe bus adapters, such as LAN or serial boards, or with the system BIOS. Refer to the corresponding problem in the previous FAQ for solutions.
b. Please check driver update from your vendor.

Q 3. There are some exclamation marks in device manager and serial ports can not work properly.
Ans: It may cause by following issue:



a. It caused by the wrong driver installing or hardware settings.
Please turn off your computer firstly and re-install hardware and software, especially re-install the correct driver.
b. Please update driver manually by specifying driver INF file folder.

Q 4. Should I enable auto flow control features?
Ans: Enable Auto CTS/RTS Flow Control means the CTS/RTS flow control is controlled by hardware automatically. System will be more stable if the function is enabled.
Please make sure your serial device and cable wiring before enabling the hardware flow control function.

Q 5. How large FIFO length I should set?
Ans: FIFO (First-in-First-out) buffers are used to reduce the frequency of interrupt processes for UART chips. The size of the buffer will determine the number of times the cards need to interrupt the computer's CPU in order to process a string of data. With larger FIFO buffer size; there is more data flow and less interruption to the CPU, therefore allowing the CPU to be free to handle other more crucial tasks.

Set the Receive/Transmit Buffer to higher value will get faster performance because the interrupts will be reduced, but the time for interrupt service routine will become shorter.

The receive buffer overflow will be easily happened if the CPU speed is not enough to handle. If the system is not stable, select the lower value to correct problems.

