IPC-E2108SI

Industrial 8-port RS-422/485 with Surge & Isolation PCI-Express Serial Card

Introduction

SUNIX IPC-E2108SI, Industrial 8-port RS-422/485 with Surge & Isolation PCI-Express Serial Card, allows users to expand eight RS-422/485 ports on Industrial PC-based system. Each serial port achieves data rates up to 921.6 Kbps and utilizes 16C950 UART with an on-chip 128-bytes hardware FIFO buffer for reliable, high-speed serial I/O. With SUNIX patented Auto-Switching RS-422/485 and RS-485 AHDC™ technology, user can easily manage different serial interfaces selection and RS-485 signal direction control. Under RS-485 mode, the board can connect up to 31 daisy-chained RS-485 devices within a range of 1.2 km. SUNIX serial board supports a wide variety of operating systems, including Windows, Linux, DOS, and UNIX. It is the best serial communicating solution for industrial and harsh environment applications.

Features

■ Expands 8 independent RS-422/485 serial ports with communication speeds up to 921.6Kbps

■ High reliability SUN1999 16C950 compatible UART controller on-board.

■ Compliance with PCI Express 1.0a BUS specifications

■ RS-422/485 auto detect and switching technology – jumper and software free

■ AHDC/CS™ technology for collision free communication

■ Ultra low power consumption design for Green Environment.

■ Built-in 15KV ESD protection for all serial signals meets IEC1000-4-2 standard.

■ 2KV surge protection for all serial signals meets IEC-61000-4-5 Level 3 standard.

■ 1.5KV isolated protection for all signal and power meets IEC-60747-5-5 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

Specifications

Serial Communication

Interface	RS-422/485	Baud rate	50bps ~921.6Kbps
Controller	SUNIX SUN1999 (16C950 UART Compatible)	Stop bit	1, 1.5, 2
BUS	PCI Express 1.0a	Parity	even, odd, none, mark, space
No. of Port	8-port	Flow Control	Xon/Xoff (software)
IRQ & IO	Assigned by System	FIFO	128byte Hardware
Signal	RS-422: TxD+, TxD-, RxD+, RxD-, GND 4-wire RS-485: TxD+, TxD-, RxD+, RxD-, GND 2-wire RS-485: Data+, Data-, GND		
Protection	±15KV ESD protection for each signal Human Body Model (HBM) ±15KV IEC1000-4-2 Air Gap Discharge ±8KV IEC1000-4-2 Contact Discharge 2KV Surge IEC61000-4-5 Level 3 Surge Immunity Test 1.5 KV Isolation IEC60747-5-5 Hi-Pot		
PCB Connector	DB44 Female		

Driver Support

Windows Client	Windows XP/Vista/7/8/8.1 (X86/X64)
Windows Server	Windows 2000 / 2003 / 2008 / 2008 R2 / 2012 / 2012 R2 (X86/X64)
Windows Embedded	Windows CE 4.2/5.0/6.0/XP Embedded/POSReady 2009/POSReady 7/ Embedded System 2009/Embedded Standard 7
Linux	Linux 2.4.x/2.6.x/3.x
DOS	DOS

Regulatory Approvals

| Hardware	EN55022 Class B, EN55024, EN61000-3-2, EN61000-3-3, FCC Part 15 Class B, BSMI: CNS13438, C-Tick: CISPR22 AS/NZS, RoHS
Software	Microsoft WHQL Windows • **Windows Client:** XP/Vista/7/8/8.1 (X86/X64) • **Windows Server:** 2000 / 2003 / 2008 / 2008 R2 / 2012 / 2012 R2 (X86/X64)

Environment

Operation Temperature	0 to 70°C (32 to 158°F)
Operation Humidity	5 to 95% RH
Storage Temperature	-20 to 85°C (-4 to 185°F)

Dimension

PCB Dimension	120 x 111 mm
Bracket	Standard 121 mm
Bracket Space	1

Mechanical Drawings (Unit = mm)
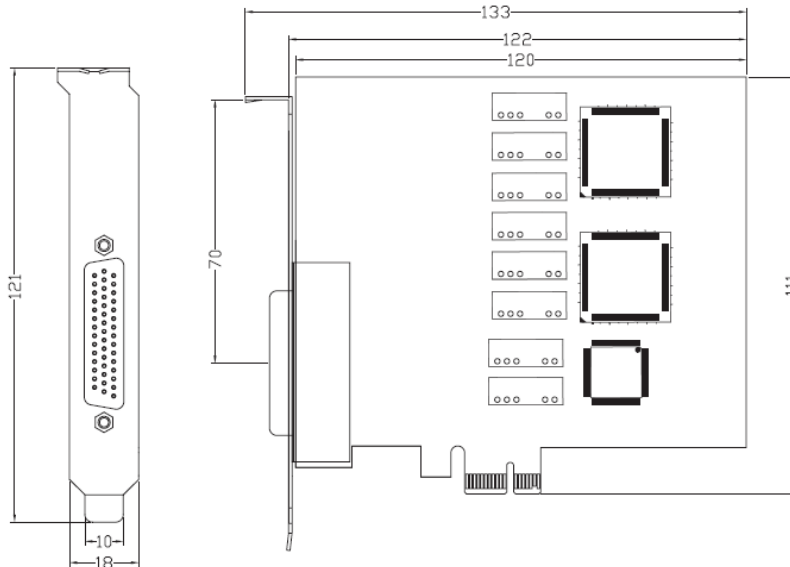
Pin Assignment

■ RS-422
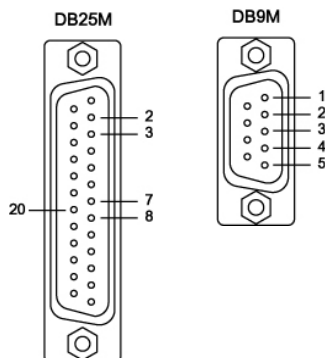
PIN	DB25M	DB9M
TxD-	8	1
TxD+	3	2
RxD+	2	3
RxD-	20	4
GND	7	5

■ RS-485
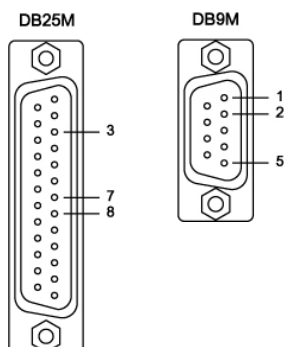
PIN	DB25M	DB9M
Data--	8	1
Data+	3	2
GND	7	5

Package

- IPC-E2108SI - Industrial 8-port RS-422/485 with Surge & Isolation PCI-Express Serial Card
- Quick Installation Guide
- Software CD Driver
- DB44 to 8-port DB9 Male Connection Cable, 40 cm

Ordering Information

| Bus | Port | Connector | ESD | | | Surge | Isolation | Model No. |
| | | | IEC-6100-4-2 | | | IEC-6100-4-5 | IEC60747-5-5 | |
			Air Discharge	Contact Discharge	Line-to-Line Level 2	Surge Immunity Level 3	Hi-Pot	
PCI Express	8	DB44 Female	±15KV	±8KV	±4KV	2KV	-	IPC-E2108
							1.5KV	IPC-E2108SI
	4	DB44 Female					-	IPC-E2204S
							1.5KV	IPC-E2204SI
							-	IPC-E2204SL
							1.5KV	IPC-E2204LI
	2	DB9 Male					-	IPC-E2202S
							1.5KV	IPC-E2202SI
		DB44 Female					-	IPC-E2202SL
							1.5KV	IPC-E2202LI

Tech Forum

RS-422/485 Auto Detect & Switching Design

SUNIX developed a unique technology "Auto Detect & Switching RS-422/485, which can automatically detect the state of RS-422 full duplex or RS-485 half duplex and control the data transmitting and receiving wires at the same port without any jumper settings. This design gives users the convenience to change the communication mode setting without any system shut downs.
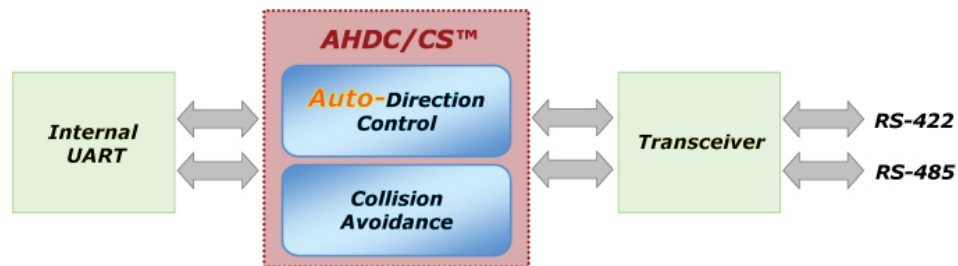

RS-485 ACS™ Technology

Auto Carrier Sense (ACS™) technology is the data flow control under RS-485 half duplex (one-way traffic) communicating. It manages data flow between computers or devices or between nodes in a RS-485 network, so that the data can be handled at an efficient pace
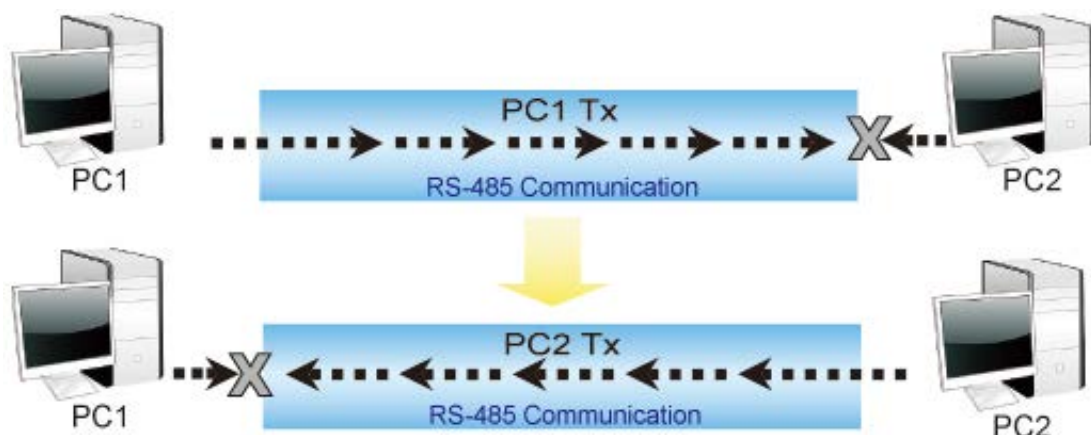
Auto Carrier Sense (ACS™) technology will check the status of RS-485 communication bus. If the bus is idle, it starts transmission. If the bus is not idle (some data flows in the bus), then it will postpone the transmission of UART until the bus is idle. Due to the reduction of TX/RX packet conflicting on RS-485 one-way traffic bus, it will enhance better system performance and RS-485 communication ability. SUNIX recommend enabling this feature.

AHDC/CS™Technology

Since RS-485 is bidirectional which means the driver is turned on only when it needs to transmit some data, otherwise it is floating. SUNIX developed a new design to control the direction of driver (On or off) automatically which is called Auto Hardware Direction Control/Carrier Sense. AHDC/CS™ works on the same principle and only turns on the driver when UART needs to transmits some data; but the advantage is that AHDC/CS™.

Auto Hardware Direction Control (AHDC™) technology makes it easier to manage 2-wire RS-485 half-duplex communications, eliminating the need for software interference. User does not necessary to write extra code for Windows applications to control the half-duplex protocol. Auto Hardware Direction Control (AHDC™) technology is the key feature of SUNIX UART, and this function is default enabling.

Ultra Low Power Consumption

Low power consumption is always a large part of the needs expressed by customers. Recently, low power consumption has become essential not only for system development but also for environmental reasons, and in fact low power consumption has become an ever larger part of the needs expressed by customers. SUNIX has pursued this issue via various approaches, as it seeks to provide special cell-bases ASICs that meet today's challenging needs for lower power consumption during active and standby modes. According to our typical test result, SUNIX UART controller, SUN1999 costs 0.033W ($3.3V@0.01A$) power consumption under full-loading working condition.