



Industrial Communication & Networking Products Catalog

2011 Product Catalog Vol.ICNP1101



Multi-port Serial Cards

Programmable Device Servers

Converters, Repeater and Hubs

Fieldbus Solutions

Ethernet Switches

0

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Introduction

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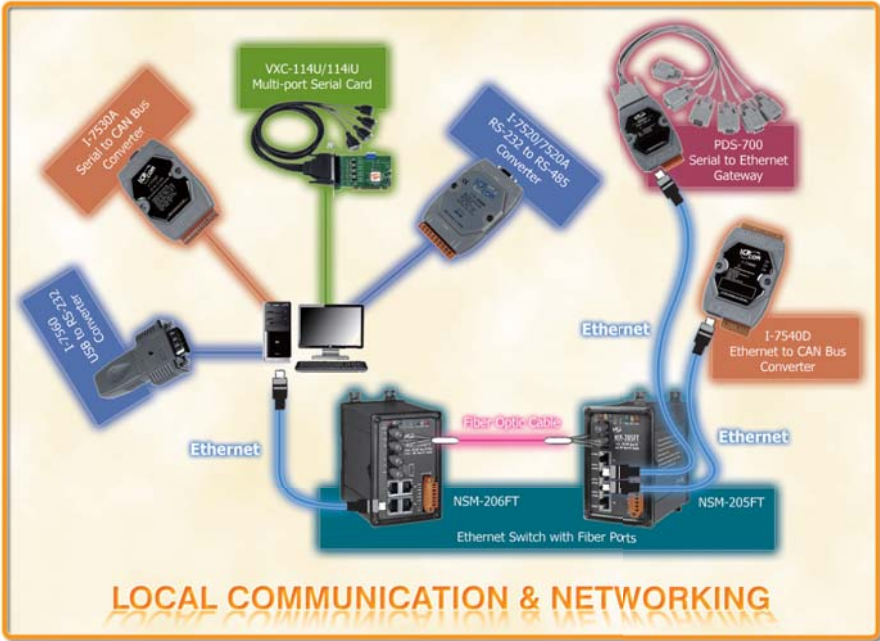
1.1 Industrial Communication & Networking Products

P1-1-1

- RS-485 Bus Repeater, Converter and Hub P1-1-1
- USB to RS-232/422/485/CAN bus Converters P1-1-2
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1.1. Industrial Communication & Networking Products



● RS-485 Bus Repeater, Converter and Hub

Chapter 4

RS-485 is an electrical specification of a two-wire, half-duplex, multipoint serial communications channel. Since it uses a differential balanced line over twisted pair (like RS-422), it can span relatively long distances (up to 4,000 feet (1,200 m)). RS-485 is widely used in the computer automation systems, such as building automation, machine automation and factory automations etc. Used for low cost low-speed data communications, it requires minimal wiring, and shares the wiring among several nodes.

ICP DAS provides total solutions on RS-485 bus, such as addressable RS-485 to RS-232/422 converter, RS-485 repeater, RS-232 to RS-485 converter, USB to RS-485 converter, RS-232/422/485 to fiber optic converter and RS-485 Hub... etc.



● USB to RS-232/422/485/CAN bus Converters

Chapter 4

Universal Serial Bus (USB) is designed to allow many peripherals to be connected by using a single standard interface socket, and to improve the plug-and-play capabilities by hot swapping. In brief, devices can be connected and/or disconnected without rebooting the computer or turning off the device.

Currently USB ports are standard interface to external devices on many computers. By using ICP DAS USB converters, users can access industrial RS-232/422/485 serial devices and CAN bus devices through the existing USB ports easily.



● Multi-port RS-232/422/485 Communication Cards

Chapter 2

The VXC series card features Universal PCI (3.3 V and 5 V) or PCI Express interface, provides multiple RS-232 or RS-422/485 communication ports and offers 128-byte hardware FIFO for each port. The VXC series card enables user to install additional communication ports on PCs, and supports 32- and 64-bit Windows 7/Vista/2003/XP. Users can select a specified COM port number manually by setting COM-Selector (DIP switch), or let the driver to choose an available number automatically.

It's the best choice for time-critical and reliable communications and controls in industrial environments, like communication with PLC, FAB machine, meter, console management of devices, laboratory instruments and Modem link, etc.



● Programmable Serial to Ethernet Device Server

Chapter 3

Programmable Device Server (PDS) is Serial-Device to Ethernet gateway. It connects RS-232/422/485 serial devices, such as PLC, bar code reader, RFID reader, meters and motion controllers... etc., to Ethernet that usually is the existing network in office and factory.

VxComm Driver creates virtual COM ports on 32- and 64-bit Windows 7/Vista/2003/XP and maps them to physical serial ports on PDS remotely. User's serial programs need only to change to the virtual COM port to get the access of serial devices that are allocated in the Internet or Ethernet network via the PDS.



● Ethernet Switch

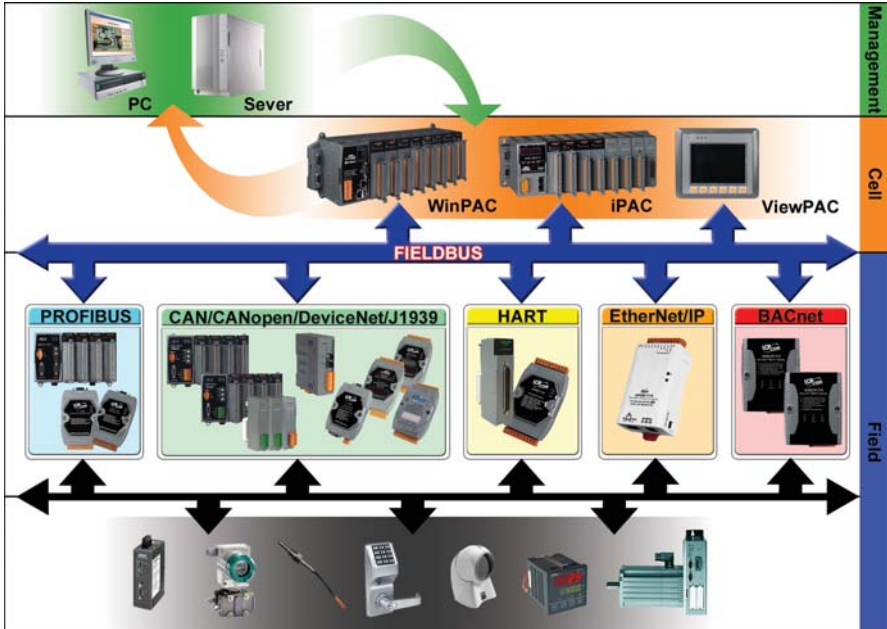
Chapter 6

Ethernet is an ideal medium to transport large volumes of data, at fast speed, across great distances. Previously, multiple networks carrying specific protocols were installed side by side to carry out unique tasks. This inevitably led to project costs increasing as additional fiber optic or copper cables were installed to deal with the increasing volume of data. Using Ethernet, a single fiber optic cable can carry multiple protocols.

A switch, like a hub, has to forward and receive packets from one network or device to another. The switch forwards all packets, but if this is the case it shall have similar behavior to a hub. It becomes more intelligent if the switch only forwards packets which needs to travel from one network or device to another.



Fieldbus is an industrial network system for real-time distributed control. It is a way to connect instruments in a manufacturing plant. Fieldbus works on a network structure which typically allows daisy-chain, star, ring, branch, and tree network topologies. Fieldbus reduces both the length and the number of cables required. Fieldbus has many major advantages to all applications of automation. The technology of fieldbus is mature and well accepted in various fields in markets. ICP DAS has focused on these fieldbus products for several years and offers various fieldbus solutions in different industrial applications, covering the entire scope of process and manufacturing automation: CAN bus, CANopen, DeviceNet, J1939, PROFIBUS, HART, EtherNet/IP and BACnet applications



ICP DAS's Fieldbus Development Services group has been involved in the design and development of industrial Fieldbus and industrial Ethernet products for our customers for several years. We have the expertise to bring these bring these fieldbus products to your system. As the members of the CIA, ODVA and PI, we have the various latest Fieldbus and industrial Ethernet development tool and understand the details of all the steps required to bring the products to your need.

Solutions for Fieldbus and industrial Ethernet

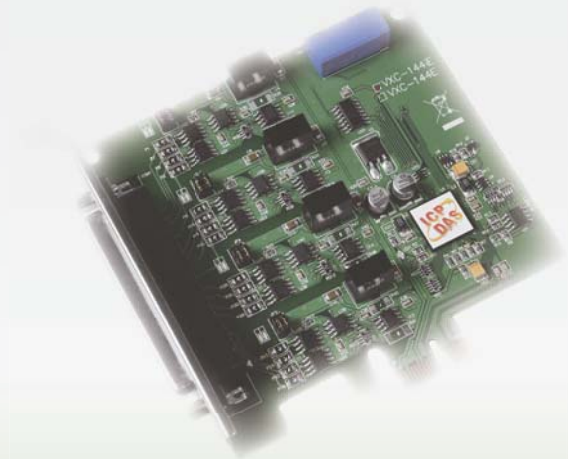
In order to solve various communication problems in different Fieldbus and industrial Ethernet applications, ICP DAS provides converters, gateways, PC based, and PAC based solutions of Fieldbus and industrial Ethernet for users. Users can choose corresponding solutions depending on various field applications.



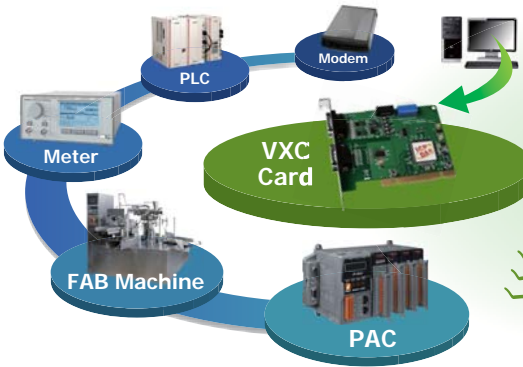
Multi-port Serial Cards

2

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2.2	Serial Communication Cards	P2-2-1
2.3	Applications	P2-3-1



2.1. Overview



- The VXC Family--Multi-port Serial Card*
- ✓ Built-in COM-Selector
 - ✓ Universal PCI (3.3 V and 5 V)
 - ✓ PCI Express
 - ✓ COM port buffer up to 128 KB
 - ✓ Hardware FIFO up to 128 bytes
 - ✓ Self-Tuner Inside
 - ✓ ESD Protection & Isolation
 - ✓ Short Card Design
 - ✓ Various Accessories

● Overview

The VXC multi-port serial card enables user to increase additional communication ports on PCs. It's the on-top-of-the-list choice while you are managing to connect lots of outer devices through your PC; every VXC card ensures you smooth communication in both time-critical applications and industrial fields. With simply a VXC card, it has never been that easy to integrate a PC with lots of devices, such as PLCs, FAB machines, meters, controller devices, laboratory instruments, modems, card readers, serial printers, RFID readers, bar code readers, sensors, etc.

● Features

COM-Selector

Each VXC/VEX card is equipped with a COM-Selector (DIP switch) for the COM port number selection. It supports two selection modes: Auto- and Manual-mode. The **Auto-mode** is the default setting (DIP switch is set as 0), and the uncertain COM port number will be assigned automatically by OS. The COM port number can be different after the PC reboot, and then may cause failures of an automation system. The **Manual-mode** of the COM-selector (DIP switch is set as 1 – 255) can force the card to use user-defined COM port number and eliminates the Auto-mode issues above. It's an important and innovative feature of the VXC family.

The **Manual-mode** of the COM-Selector provides the following advantages:

- ◆ Simplifies the COM port number selection without configuration utility.
- ◆ Specifies the COM port number directly, regardless of which PCI slot is plugged in.
- ◆ Avoids the confusion of uncertain COM port number that other PnP COM port devices use.
- ◆ Easy to replace a broken card just with the same DIP switch setting.

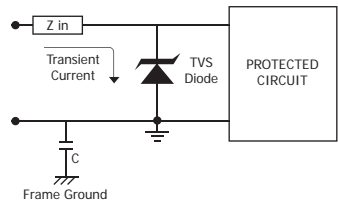


Easy COM Port Selection by DIP switch

ESD Protection

The VXC cards offer TVS diode ESD protection technology, protecting your system from being damaged by the high potential voltages.

Under normal operating conditions, the TVS diode presents high impedance (appears as an open circuit) to the protected component. When the voltage is beyond the limits, the TVS diode avalanches providing a low impedance path for the transient current. As a result, the transient current is diverted away from the protected components and shunted through the TVS diode. The device returns to a high impedance state after the transient threat passed.



Self-Tuner

The VXC card is equipped with a "Self-Tuner" chip to control the sending/receiving direction of RS-485 ports automatically.

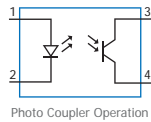
Without the help of Self-Tuner, users need to enable RS-485 transmitter before sending, and disable the transmitter after finishing sending. The timing to enable and disable transmitter (direction control) is the major issue on many communication problems, and it is very difficult to debug.

The built-in Self-Tuner on VXC cards effectively gets rid of this direction control issue and also simplifies software programming for communication applications.

Isolation

Some VXC cards offer photo isolation to protect your computer and equipment against damages in harsh environment.

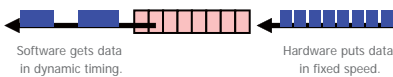
Photo coupler is a device that uses a short optical transmission path to transfer a signal between elements of a circuit, typically a transmitter and a receiver. This keeps them electrically isolated — since the signal goes from an electrical signal to an optical signal, the electrical contact along the path is broken.



It can help cutting down on ground loops, common mode voltages and block voltage spikes, provide electrical isolation, and offer significant protection from serious over-voltage conditions in one circuit affecting the other.

Hardware FIFO up to 128 bytes

FIFO stands for "First In, First Out", an abstraction in ways of organizing and manipulating data relative to time and prioritization. FIFO is used for buffering and flow control while data come from hardware to software. When using hardware FIFO (buffer), a little delay on software or operating system will not lost data at all.



VXC Cards are equipped with 16- or 128-byte hardware FIFO for each port. Large hardware FIFO is useful to prevent data lost when your system works on heavy loading, and even helpful while you are running on a multi-task operating system, such as Windows, Linux... etc.

COM port buffer up to 128 KB

The VXC card driver for Windows features an up to 128 KB buffer for each port (default is 4 KB). It's practical for large file transmission.

Short Card Design

The "Short Card" design is suitable for compact-sized computer, especially for IPC (Industrial Personal Computer) and servers.

Universal PCI (3.3 V and 5 V)

The Universal PCI card works with both new 3.3 V PCI bus that has been widely-used in servers, and traditional 5 V PCI bus. The universal PCI interface will be the standard for every card from ICP DAS in the near future.

PCI Express

PCI Express (PCIe) is a computer expansion bus standard. A key difference between PCIe and earlier PC buses is a topology based on point-to-point serial links, rather than a shared parallel bus architecture. Conceptually, the PCIe bus can be thought of as a 'high-speed serial replacement' of the older PCI/PCI-X bus.

Various Accessories

There are a lot of optional accessories for the VXC cards, such as RS-232 cables and daughter boards. These tools make wiring much easier than ever.



DB-9 Cable



DB-9 Daughter Board



DB-9 Cable



DB-37 to 4-port DB-9 Cable



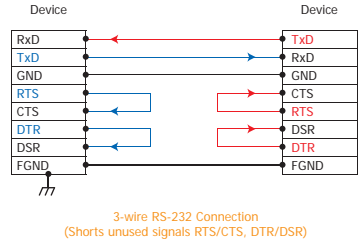
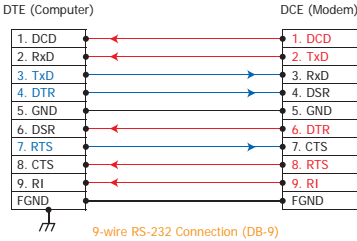
DB-37 Connector



DB-9 Connector

• Wiring Note for RS-232 and RS-422/485 Devices

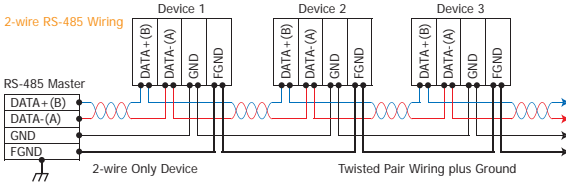
RS-232 Wiring



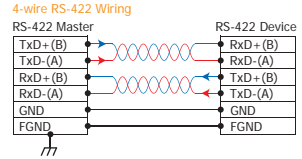
Note:

- For 3-wire RS-232 connections, it is recommended to short unused signals such as RTS/CTS and DTR/DSR, since some system may still check the CTS and DSR status.
- FGND is the frame ground that soldered to DB-9 metal shield.

RS-485 Wiring



RS-422 Wiring



Note:

For RS-422/485 ports, you should connect all signal grounds of RS-422/485 devices together. This reduces common-mode voltage between devices.

● Selection Guide



Universal PCI

Model Name	COM-Selector	RS-232	RS-422/485	Self-Tuner	Isolation	ESD Protection	Max. Speed (bps)	FIFO Size (bytes)	Connector	Page
VXC-112AU	Yes	2	-	-	-	-	115.2 K	128	Male DB-9	2-2-1
VXC-112IAU	Yes	2	-	-	2.5 kV	+/-4 kV	115.2 K	128	Male DB-9	2-2-1
VXC-142AU	Yes	-	2	Yes	-	-	115.2 K	128	Male DB-9	2-2-5
VXC-142IAU	Yes	-	2	Yes	2.5 kV	+/-4 kV	115.2 K	128	Male DB-9	2-2-5
VXC-182IU	Yes	1	1	Yes	2.5 kV	+/-4 kV	115.2 K	128	Male DB-9	2-2-9
VXC-114U	Yes	4	-	-	-	-	115.2 K	128	Female DB-37	2-2-3
VXC-114IAU	Yes	4	-	-	2.5 kV	+/-4 kV	115.2 K	128	Female DB-37	2-2-3
VXC-144U	Yes	-	4	Yes	-	-	115.2 K	128	Female DB-37	2-2-7
VXC-144IU	Yes	-	4	Yes	2.5 kV	+/-4 kV	115.2 K	128	Female DB-37	2-2-7
VXC-118U-5w	Yes	8	-	-	-	-	115.2 K	256	Female DB-62	Call
VXC-118IU-5w	Yes	8	-	-	2.5 kV	+/-4 kV	115.2 K	256	Female DB-62	Call
VXC-148U-5w	Yes	-	8	Yes	-	-	115.2 K	256	Female DB-62	Call
VXC-148IU-5w	Yes	-	8	Yes	2.5 kV	+/-4 kV	115.2 K	256	Female DB-62	Call



PCI Express

Model Name	COM-Selector	RS-232	RS-422/485	Self-Tuner	Isolation	ESD Protection	Max. Speed (bps)	FIFO Size (bytes)	Connector	Page
VEV-112	Yes	2	-	-	-	-	115.2 K	128	Male DB-9	2-2-1
VEV-112i	Yes	2	-	-	2.5 kV	+/-4 kV	115.2 K	128	Male DB-9	2-2-1
VEV-142	Yes	-	2	Yes	-	-	115.2 K	128	Male DB-9	2-2-5
VEV-142i	Yes	-	2	Yes	2.5 kV	+/-4 kV	115.2 K	128	Male DB-9	2-2-5
VEV-114	Yes	4	-	-	-	-	115.2 K	128	Female DB-37	2-2-3
VEV-114i	Yes	4	-	-	2.5 kV	+/-4 kV	115.2 K	128	Female DB-37	2-2-3
VEV-144	Yes	-	4	Yes	-	-	115.2 K	128	Female DB-37	2-2-7
VEV-144i	Yes	-	4	Yes	2.5 kV	+/-4 kV	115.2 K	128	Female DB-37	2-2-7
VEV-118-5w	Yes	8	-	-	-	-	115.2 K	256	Female DB-62	Call
VEV-118i-5w	Yes	8	-	-	2.5 kV	+/-4 kV	115.2 K	256	Female DB-62	Call
VEV-148-5w	Yes	-	8	Yes	-	-	115.2 K	256	Female DB-62	Call
VEV-148i-5w	Yes	-	8	Yes	2.5 kV	+/-4 kV	115.2 K	256	Female DB-62	Call

2 2.2. Serial Communication Cards

Multi-port Serial Cards



NEW VXC-112AU/VXC-112iAU
Available soon VEX-112/VEX-112i
Serial Communication Card with 2 RS-232 ports

Features

- Built-in COM-Selector
- Short Card Design
- Provides 2 RS-232 ports
- 2500 V_{rms} Isolation for i versions
- +/-4 kV ESD Protection for i versions
- Supports 3.3 V/5 V PCI bus for VXC series
- Supports PCI Express bus for VEX series
- 128-byte Hardware FIFO for Each Port
- 128 KB Software Buffer (max.) for Each Port Under Windows
- RoHS compliant with no Halogen

Introduction

The VXC-112/VEX-112 series communication card provides 2 RS-232 serial ports. Each port equips a 128-byte hardware FIFO, offers speed up to 115200 bps and can work for half-duplex or full-duplex communication.

Users can select a specified COM port number manually by setting COM-Selector (DIP switch), or let the driver choose an available number automatically. The driver provides a maximum of 128 KB software buffer for each COM port under Windows. It's practical for large file transmission.

In harsh industrial environments, the onboard ESD protection component diverts the potentially damaging charge away from sensitive circuit and protects the computer and equipment from being damaged by high potential voltage.

The serial communication card are designed for use with intelligent devices like bar code reader, serial printers, intelligent sensors, instrumentation equipment, computers and almost any device with an RS-232 port.

Applications

- Industrial Machinery
- Building Automation
- Restaurant Appliances
- Laboratory Equipment & Research
- Industrial Communication

Software

- Driver for 32-bit and 64-bit Windows XP/2003/Vista/7
- Driver for Linux

Hardware Specifications

Models	VXC-112AU	VXC-112iAU	VEX-112	VEX-112i
Communication Port				
COM1, COM2	RS-232 (TxD, RxD, RTS, CTS, DTR, DSR, DCD, RI, GND)			
UART	16C950 compatible			
Baud Rate	50 - 115200 bps			
Data Bit	5, 6, 7, 8			
Stop Bit	1, 1.5, 2			
Parity	None, Even, Odd, Mark, Space			
FIFO	Internal 128 bytes			
Isolated	-	2500 V _{rms}	-	2500 V _{rms}
General				
Bus Type	Universal PCI, 3.3 V/5 V, 33 MHz, 32-bit, Plug and Play		PCI Express x1, Plug and Play	
COM-Selector	Yes (8-bit DIP switch)			
Connector	2 x DB-9 (Male)			
Power Consumption	100 mA @ 5 V	480 mA @ 5 V	120 mA @ 5 V	440 mA @ 5 V
Operating Temperature	0 °C - +50 °C			
Storage Temperature	-20 °C - +70 °C			
Humidity	0 - 90% RH, non-condensing			
Dimensions (L x W x D)	134 mm x 90 mm x 22 mm		109 mm x 94 mm x 22 mm	

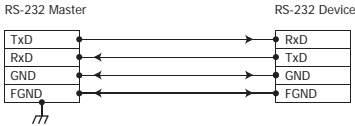
Serial Communication Cards

VXC-112/VEX-112 Series

Wiring

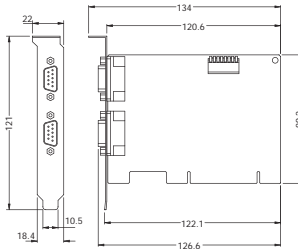
DTE Device (Computer)		DB9	DTE to DCE Connections		DCE Device (Modem)		DB9
Pin#	DB9	RS-232 Signal Names	Signal Direction		Pin#	DB9	RS-232 Signal Names
#1	Carrier Detector	DCD	←	→	#1	Carrier Detector	DCD
#2	Receive Data	RxD	←	→	#2	Transmit Data	TxD
#3	Transmit Data	TxD	→	←	#3	Receive Data	RxD
#4	Data Terminal Ready	DTR	←	→	#4	Data Set Ready	DSR
#5	Signal Ground/Common (SG)	GND	←	→	#5	Signal Ground/Common (SG)	GND
#6	Data Set Ready	DSR	←	→	#6	Data Terminal Ready	DTR
#7	Request to Send	RTS	←	→	#7	Clear to Send	CTS
#8	Clear to Send	CTS	←	→	#8	Request to Send	RTS
#9	Ring Indicator	RI	←	→	#9	Ring Indicator	RI
Soldered to DB9 Metal-Shield		FGND	←	→	Soldered to DB9 Metal-Shield		FGND

3-wire RS-232 Wiring

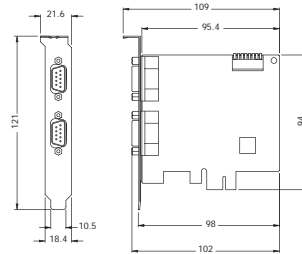


Dimensions (Unit: mm)

VXC-112AU/VXC-112IAU



VEX-112/VEX-112i



Pin Assignments

Pin Assignment	Terminal	No.	Pin Assignment
GND	05	09	RI
DTR	04	08	CTS
TxD	03	07	RTS
RxD	02	06	DSR
DCD	01		

Male DB-9 Connector

Ordering Information

VXC-112AU CR	Universal PCI , Serial Communication Card with 2 RS-232 ports (RoHS)
VXC-112IAU CR	Universal PCI , Serial Communication Card with 2 Isolated RS-232 ports (RoHS)
VEX-112 CR	PCI Express, Serial Communication Card with 2 RS-232 ports (RoHS)
VEX-112i CR	PCI Express, Serial Communication Card with 2 Isolated RS-232 ports (RoHS)

Accessories

CA-0910F	9-Pin Female-Female D-Sub Cable 1 m
CA-0915	9-Pin Male-Female D-Sub Cable, 1.5 m
CA-PC09F	9-Pin Female D-Sub Connector with Plastic Cover
DN-09-2F	I/O Connector Block with DIN-Rail Mounting and Two 9-Pin Male Header. Includes CA-0910F x 2 (9-Pin Female-Female D-Sub Cable 1 m)



Features

- Built-in COM-Selector
- Short Card Design
- Provides 4 RS-232 ports
- 2500 V_{ms} Isolation for i version
- +/-4 kV ESD Protection for i versions
- 128-byte Hardware FIFO for Each Port
- 128 KB Software Buffer (max.) for Each COM Port Under Windows
- Supports 3.3 V/5 V PCI bus for U versions
- Supports PCI Express x 1 for VEX series
- RoHS compliant with no Halogen

Introduction

The VXC-114/VEX-114 series card provides 4 RS-232 serial ports. It equips a 128-byte hardware FIFO for each port, offers speed up to 115200 bps and supports full-duplex communication.

Users can select a specified COM port number manually by setting DIP switch, or let the driver choose an available number automatically. The driver provides a maximum of 128 KB software FIFO for each COM port under Windows. It's practical for large file transmission.

In harsh industrial environments, the onboard ESD protection component diverts the potentially damaging charge away from sensitive circuit and protects the computer and equipment from being damaged by high potential voltage.

The serial communication card are designed for use with intelligent devices like bar code reader, serial printers, intelligent sensors, instrumentation equipment, computers and almost any device with an RS-232 port.

Applications

- Industrial Machinery
- Building Automation
- Restaurant Appliances
- Laboratory Equipment & Research
- Industrial Communication

Software

- Driver for 32-bit and 64-bit Windows XP/2003/Vista/7
- Driver for Linux

Hardware Specifications

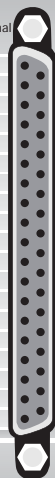
Models	VXC-114U	VXC-114IAU	VEX-114	VEX-114i
Communication Port				
COM1 – COM4	RS-232 (TxD, RxD, RTS, CTS, DTR, DSR, DCD, RI, GND)			
UART	16C950 compatible			
Baud Rate	50 – 115200 bps			
Data Bit	5, 6, 7, 8			
Stop Bit	1, 1.5, 2			
Parity	None, Even, Odd, Mark, Space			
FIFO	Internal 128 bytes			
Isolated	-	2500 V _{ms}	-	2500 V _{ms}
General				
Bus Type	Universal PCI, 3.3 V and 5 V, 33 MHz, 32-bit, Plug and Play		PCI Express x1, Plug and Play	
COM-Selector	Yes (8-bit DIP switch)			
Connector	DB-37 (Female)			
Power Consumption	120 mA @ 5 V	880 mA @ 5 V	120 mA @ 5 V	880 mA @ 5 V
Operating Temperature	0 °C – +50 °C			
Storage Temperature	-20 °C – +70 °C			
Humidity	0 – 90% RH, non-condensing			
Dimensions (L x W x D)	142 mm x 84 mm x 22 mm	133 mm x 93 mm x 22 mm	110 mm x 110 mm x 22 mm	

Wiring

DTE Device (Computer)		DB-9	DTE to DCE Connections		DCE Device (Modem)		DB-9
Pin#	DB-9	RS-232 Signal Names	Signal Direction		Pin#	DB-9	RS-232 Signal Names
#1	Carrier Detector	DCD	←	→	#1	Carrier Detector	DCD
#2	Receive Data	RxD	←	→	#2	Transmit Data	TxD
#3	Transmit Data	TxD	←	→	#3	Receive Data	RxD
#4	Data Terminal Ready	DTR	←	→	#4	Data Set Ready	DSR
#5	Signal Ground/Common (SG)	GND	←	→	#5	Signal Ground/Common (SG)	GND
#6	Data Set Ready	DSR	←	→	#6	Data Terminal Ready	DTR
#7	Request to Send	RTS	←	→	#7	Clear to Send	CTS
#8	Clear to Send	CTS	←	→	#8	Request to Send	RTS
#9	Ring Indicator	RI	←	→	#9	Ring Indicator	RI
Soldered to DB-9 Metal Shield		FGND	←	→	Soldered to DB-9 Metal Shield		FGND


Pin Assignments

Pin Assignment	Terminal	No.	Pin Assignment
N.C.	01	20	RI3
DCD3	02	21	DTR3
GND	03	22	DSR3
CTS3	04	23	RTS3
RxD3	05	24	TxD3
RI4	06	25	DCD4
DTR4	07	26	GND
DSR4	08	27	CTS4
RTS4	09	28	RxD4
TxD4	10	29	RI2
DCD2	11	30	DTR2
GND	12	31	DSR2
CTS2	13	32	RTS2
RxD2	14	33	TxD2
RI1	15	34	DCD1
DTR1	16	35	GND
DSR1	17	36	CTS1
RTS1	18	37	RxD1
TxD1	19		



RS-232 Female DB-37 Connector

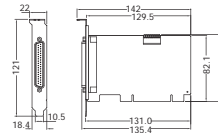
Pin Assignment	Terminal	No.	Pin Assignment
GND	05	09	RI
DTR	04	08	CTS
TxD	03	07	RTS
RxD	02	06	DSR
DCD	01		



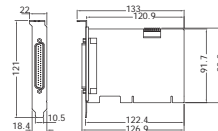
RS-232 Female DB-37 to Male DB-9 Connector

Dimensions (Unit: mm)

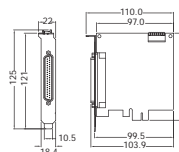
VXC-114U



VXC-114IAU



VEX-114/VEX-114I



Ordering Information

VXC-114U CR	Universal PCI, Serial Communication Card with 4 RS-232 ports (RoHS). Includes One CA-4002 Connector
VXC-114U/D2 CR	Universal PCI, Serial Communication Card with 4 RS-232 ports (RoHS). Includes One CA-9-3715D Cable
VEX-114 CR	PCI Express, Serial Communication Card with 4 RS-232 ports (RoHS). Includes One CA-4002 Connector
VEX-114/D2 CR	PCI Express, Serial Communication Card with 4 RS-232 ports (RoHS). Includes One CA-9-3715D Cable
VXC-114IAU CR	Universal PCI, Serial Communication Card with 4 Isolated RS-232 ports (RoHS). Includes One CA-4002 Connector
VXC-114IAU/D2 CR	Universal PCI, Serial Communication Card with 4 Isolated RS-232 ports (RoHS). Includes One CA-9-3715D Cable
VEX-114I CR	PCI Express, Serial Communication Card with 4 Isolated RS-232 ports (RoHS). Includes One CA-4002 Connector
VEX-114I/D2 CR	PCI Express, Serial Communication Card with 4 Isolated RS-232 ports (RoHS). Includes One CA-9-3715D Cable

Accessories

CA-4002	37-Pin Male D-Sub Connector with Plastic Cover
CA-9-3715D	Male DB-37 to 4 Male DB-9 Cable, 1.5 m For VXC Series (180°)



NEW VXC-142AU/VXC-142iAU
Available soon VEX-142/VEX-142i
 Serial Communication Card with 2 RS-422/485 ports

Features

- Built-in COM-Selector
- Short Card Design
- Provides 2 RS-422/485 ports
- 2500 V_{rms} isolation for i version
- +/-4 kV ESD Protection for i version
- 128-byte Hardware FIFO for Each Port
- Supports 3.3 V/5 V PCI bus for U versions
- Supports PCI Express bus for VEX series
- RoHS compliant with no Halogen
- Automatic RS-485 Direction Control



Introduction

The VXC-142/VEX-142 series card provides two RS-422/RS-485 serial ports and supports 3.3 V/5 V PCI bus. The VXC-142iAU/VEX-142i card also supports isolation voltage up to 2.5 kV. Each port can be configured as either RS-485 for half-duplex or RS-422 for full-duplex communication. It equips a 128-byte hardware FIFO for each port, offers speed up to 115200 bps and supports full-duplex communication.

Users can select a specified COM port number manually by setting dip switch, or let the driver choose an available number automatically. The driver provides a maximum of 128 KB software FIFO for each COM port under Windows. It's practical for large file transmission.

In harsh industrial environments, the onboard ESD protection component diverts the potentially damaging charge away from sensitive circuit and protects the computer and equipment from being damaged by high potential voltage.

The serial communication card are designed for use with intelligent devices like bar code reader, serial printers, intelligent sensors, instrumentation equipment, computers and almost any device with an RS-232 port.

Applications

- Industrial Machinery
- Building Automation
- Restaurant Appliances
- Laboratory Equipment & Research
- Industrial Communication

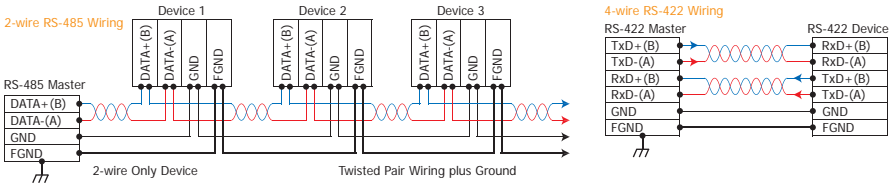
Software

- Driver for 32-bit and 64-bit Windows XP/2003/Vista/7
- Driver for Linux

Hardware Specifications

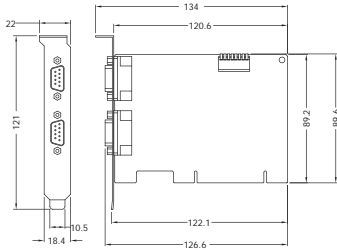
Models	VXC-142AU	VXC-142iAU	VEX-142	VEX-142i
Communication Port				
COM1, COM2	RS-422/485	The RS-422 and RS-485 cannot be used simultaneously		
	RS-422	TxD+, TxD-, RxD+, RxD-, RTS+, RTS-, CTS+, CTS-, GND		
	RS-485	Data+, Data-, GND (Automatic RS-485 Direction Control)		
UART	16C950 compatible			
Baud Rate	50 ~ 115200 bps			
Data Bit	5, 6, 7, 8			
Stop Bit	1, 1.5, 2			
Parity	None, Even, Odd, Mark, Space			
FIFO	Internal 128 bytes			
Isolated	-	2500 V _{rms}	-	2500 V _{rms}
General				
Bus Type	Universal PCI, 3.3 V and 5 V, 33 MHz, 32-bit, Plug and Play		PCI Express x1, Plug and Play	
COM-Selector	Yes (8-bit DIP switch)			
Connector	2 x Male DB-9			
Power Consumption	100 mA @ 5 V	480 mA @ 5 V	120 mA @ 5 V	440 mA @ 5 V
Operating Temperature	0 °C ~ +50 °C			
Storage Temperature	-20 °C ~ +70 °C			
Humidity	0 ~ 90% RH, non-condensing			
Dimensions (L x W x D)	134 mm x 90 mm x 22 mm		110 mm x 94 mm x 22 mm	

Wiring

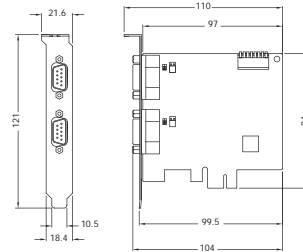


Dimensions (Unit: mm)

VXC-142AU/VXC-142IAU



VEX-142/VEX-142i



Pin Assignments

Pin Assignment	Terminal	No.	Pin Assignment
GND/VEE	05	09	CTS- (A)
RxD- (A)	04	08	CTS+ (B)
RxD+ (B)	03	07	RTS+ (B)
TxD+ (B)/Data+ (B)	02	06	RTS- (A)
TxD- (A)/Data- (A)	01		

RS-422/485 Male DB-9 Connector

Ordering Information

VXC-142AU CR	Universal PCI , Serial Communication Card with 2 RS-422/485 ports (RoHS)
VXC-142IAU CR	Universal PCI , Serial Communication Card with 2 Isolated RS-422/485 ports (RoHS)
VEX-142 CR	PCI Express, Serial Communication Card with 2 RS-422/485 ports (RoHS)
VEX-142i CR	PCI Express, Serial Communication Card with 2 Isolated RS-422/485 ports (RoHS)

Accessories

CA-0910F	9-Pin Female-Female D-Sub Cable 1 m
CA-0915	9-Pin Male-Female D-Sub Cable, 1.5 m
CA-PC09F	9-Pin Female D-Sub Connector with Plastic Cover
DN-09-2F	I/O Connector Block with DIN-Rail Mounting and Two 9-Pin Male Header. Includes CA-0910F x 2 (9-Pin Female-Female D-Sub Cable 1 m)



Features

- Provides 4 RS-422/485 ports
- 128-byte Hardware FIFO for Each Port
- Built-in COM-Selector
- 2500 V_{rms} isolation for i version
- +/-4 kV ESD Protection for i version
- Short Card Design
- Up to 128 KB Software FIFO for Each COM Port Under Windows
- Supports 3.3 V/5 V PCI Bus for U versions
- Supports PCI Express x 1 for VEX series
- RoHS compliant with no Halogen
- Automatic RS-485 Direction Control



Introduction

The VXC-144U/VEX-144 card provides 4 non-isolated RS-422/RS-485 serial ports and the VXC-144IU/VEX-144i card provides 4 isolated RS-422/RS-485 serial ports which withstand isolation voltage up to 3 kV. Each port can be configured as either RS-485 for half-duplex or RS-422 for full-duplex communication. It equips a 128-byte hardware FIFO for each port, offers speed up to 115200 bps and long distance communication link.

Applications

- Industrial Machinery
- Building Automation
- Restaurant Appliances
- Laboratory Equipment & Research
- Industrial Communication

Users can select a specified COM port number manually by setting DIP switch, or let the driver choose an available number automatically. The driver provides a maximum of 128 KB software FIFO for each COM port under Windows. It's practical for large file transmission.

Software

- Driver for 32-bit and 64-bit Windows XP/2003/Vista/7
- Driver for Linux

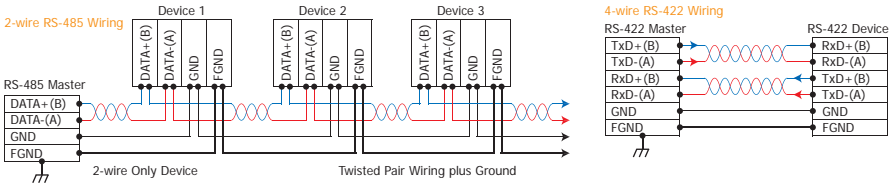
In harsh industrial environments, the onboard ESD protection component diverts the potentially damaging charge away from sensitive circuit and protects the computer and equipment from being damaged by high potential voltage.

The serial communication card are designed for use with intelligent devices like bar code reader, serial printers, intelligent sensors, instrumentation equipment, computers and almost any device with an RS-232 port.

Hardware Specifications

Models	VXC-144U	VXC-144IU	VEX-144	VEX-144i
Communication Port				
COM1 – COM4	RS-422/485	The RS-422 and RS-485 cannot be used simultaneously		
	RS-422	TxD+, TxD-, RxD+, RxD-, RTS+, RTS-, CTS+, CTS-, GND		
	RS-485	Data+, Data-, GND (Automatic RS-485 Direction Control)		
UART	16C950 compatible			
Baud Rate	50 – 115200 bps			
Data Bit	5, 6, 7, 8			
Stop Bit	1, 1.5, 2			
Parity	None, Even, Odd, Mark, Space			
FIFO	Internal 128 bytes			
Isolated	-	2500 V _{rms}	-	2500 V _{rms}
General				
Bus Type	Universal PCI, 3.3 V and 5 V, 33 MHz, 32-bit, Plug and Play mechanism		PCI Express x1, Plug and Play	
COM-Selector	Yes (8-bit DIP switch)			
Connector	Female DB-37			
Power Consumption	120 mA @ 5 V	880 mA @ 5 V	120 mA @ 5 V	880 mA @ 5 V
Operating Temperature	0 °C – +50 °C			
Storage Temperature	-20 °C – +70 °C			
Humidity	0 – 90% RH, non-condensing			
Dimensions (L x W x D)	142 mm x 84 mm x 22 mm	142 mm x 95 mm x 22 mm	114 mm x 101 mm x 22 mm	

Wiring



Pin Assignments

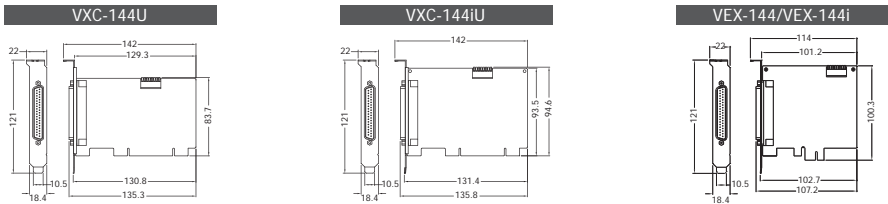
Pin Assignment	Terminal	No.	Pin Assignment
N.C.	01	20	CTS3- (A)
TxD3- (A)/Data3- (A)	02	21	RxD3- (A)
GND/VEE3	03	22	RTS3- (A)
CTS3+ (B)	04	23	RTS3+ (B)
TxD3+ (B)/Data3+ (B)	05	24	RxD3+ (B)
CTS4- (A)	06	25	TxD4- (A)/Data4- (A)
RxD4- (A)	07	26	GND/VEE4
RTS4- (A)	08	27	CTS4+ (B)
RTS4+ (B)	09	28	TxD4+ (B)/Data+ (B)
RxD4+ (B)	10	29	CTS2- (A)
TxD2- (A)/Data2- (A)	11	30	RxD2- (A)
GND/VEE2	12	31	RTS2- (A)
CTS2+ (B)	13	32	RTS2+ (B)
TxD2+ (B)/Data2+ (B)	14	33	RxD2+ (B)
CTS1- (A)	15	34	TxD1- (A)/Data1- (A)
RxD1- (A)	16	35	GND/VEE1
RTS1- (A)	17	36	CTS1+ (B)
RTS1+ (B)	18	37	TxD1+ (B)/Data1+ (B)
RxD1+ (B)	19		

RS-422/485 Female DB-37 Connector

Pin Assignment	Terminal	No.	Pin Assignment
GND/VEE	05	09	CTS- (A)
RxD- (A)	04	08	CTS+ (B)
RxD+ (B)	03	07	RTS+ (B)
TxD+ (B)/Data+ (B)	02	06	RTS- (A)
TxD- (A)/Data- (A)	01		

RS-422/485 Female DB-37 to Male DB-9 Connector

Dimensions (Unit: mm)



Ordering Information

VXC-144U CR	Universal PCI, Serial Communication Card with 4 RS-422/485 ports (RoHS). Includes One CA-4002 Connector
VXC-144IU CR	Universal PCI, Serial Communication Card with 4 Isolated RS-422/485 ports (RoHS) Includes One CA-4002 Connector
VEX-144 CR	PCI Express, Serial Communication Card with 4 RS-422/485 ports (RoHS). Includes One CA-4002 Connector
VEX-144I CR	PCI Express, Serial Communication Card with 4 Isolated RS-422/485 ports (RoHS) Includes One CA-4002 Connector

Accessories

CA-4002	37-Pin Male D-Sub Connector with Plastic Cover
CA-9-3715D	Male DB-37 to 4 Male DB-9 Cable, 1.5 m For VXC Series (180°)

NEW



VXC-182iU

Serial Communication Card with
1 Isolated RS-422/485 port and 1 RS-232 port

Introduction

The VXC-182iU serial card provides two communication ports, one is RS-422/485 and the other is RS-232 port. RS-422/RS-485 serial ports can withstand isolation voltage up to 2.5 kV. It can be configured as either RS-485 for half-duplex or RS-422 for full-duplex communication, offers speed up to 115200 bps and long distance communication link.

Users can select a specified COM port number manually by setting DIP switch, or let the driver choose an available number automatically. The driver provides a maximum of 128 KB software FIFO for each COM port under Windows. It's practical for large file transmission.

In harsh industrial environments, the onboard ESD protection component diverts the potentially damaging charge away from sensitive circuit and protects the computer and equipment from being damaged by high potential voltage.

The serial communication card are designed for use with intelligent devices like bar code reader, serial printers, intelligent sensors, instrumentation equipment, computers and almost any device with an RS-232 port.

Hardware Specifications

Communication Port		
COM1	RS-422/485	The RS-422 and RS-485 cannot be used simultaneously
	RS-422	TxD+, TxD-, RxD+, RxD-, RTS+, RTS-, CTS+, GND (with 2.5 kV Isolation)
	RS-485	Data+, Data-, GND (with 2.5 kV Isolation)
COM2		RS-232 (TxD, RxD, RTS, CTS, DTR, DSR, DCD, RI, GND)
UART		16C950 compatible
Baud Rate		50 – 115200 bps
Data Bit		5, 6, 7, 8
Stop Bit		1, 1.5, 2
Parity		None, Even, Odd, Mark, Space
FIFO		Internal 128 bytes
General		
Bus Type		Universal PCI, 3.3 V and 5 V, 33 MHz, 32-bit, Plug and Play mechanism
COM-Selector		Yes (8-bit DIP switch)
Connector		2 x DB-9 (Male)
Power Consumption		200 mA @ 5 V
Operating Temperature		0 °C ~ +50 °C
Storage Temperature		-20 °C ~ +70 °C
Humidity		0 ~ 90% RH, non-condensing
Dimensions (L x W x D)		134 mm x 90 mm x 22 mm

Features

- Built-in COM-Selector
- Short Card Design
- Provides 1 Isolated RS-422/485 port and 1 RS-232 Port
- +/-4 kV ESD Protection
- 2500 V_{max} Isolated RS-422/485 Port
- Up to 128 KB Software FIFO for Each COM Port Under Windows
- Supports 3.3 V/5 V PCI bus, Plug and Play
- 128-byte Hardware FIFO for Each Port
- RoHS compliant with no Halogen
- Automatic RS-485 Direction Control



Applications

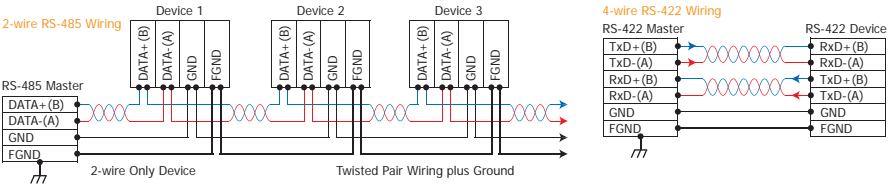
- Industrial Machinery
- Building Automation
- Restaurant Appliances
- Laboratory Equipment & Research
- Industrial Communication

Software

- Driver for 32-bit and 64-bit Windows XP/2003/Vista/7
- Driver for Linux

Wiring

DTE Device (Computer)		DTE to DCE Connections		DCE Device (Modem)	
Pin# DB9	RS-232 Signal Names	Signal Direction		Pin# DB9	RS-232 Signal Names
#1	Carrier Detector	DCD	←	#1	Carrier Detector
#2	Receive Data	RxD	←	#2	Transmit Data
#3	Transmit Data	TxD	→	#3	Receive Data
#4	Data Terminal Ready	DTR	←	#4	Data Set Ready
#5	Signal Ground/Common (SG)	GND	←	#5	Signal Ground/Common (SG)
#6	Data Set Ready	DSR	←	#6	Data Terminal Ready
#7	Request to Send	RTS	→	#7	Clear to Send
#8	Clear to Send	CTS	←	#8	Request to Send
#9	Ring Indicator	RI	←	#9	Ring Indicator
Soldered to DB9 Metal-Shield		FGND	←	Soldered to DB9 Metal-Shield	



Pin Assignments

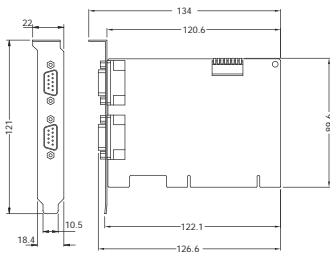
Pin Assignment	Terminal	No.	Pin Assignment
GND/VEE	05	09	CTS- (A)
RxD- (A)	04	08	CTS+ (B)
RxD+ (B)	03	07	RTS+ (B)
TxD+ (B)/Data+ (B)	02	06	RTS- (A)
TxD- (A)/Data- (A)	01		

COM1: RS-422/485 Male DB-9 Connector

Pin Assignment	Terminal	No.	Pin Assignment
GND	05	09	RI
DTR	04	08	CTS
TxD	03	07	RTS
RxD	02	06	DSR
DCD	01		

COM2: RS-232 Male DB-9 Connector

Dimensions (Unit: mm)



Ordering Information

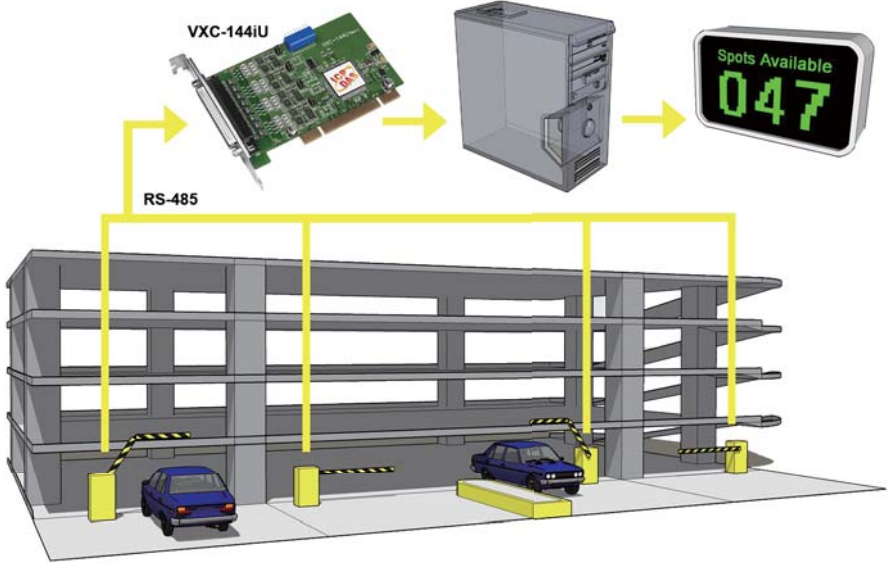
VXC-182IU CR	Universal PCI Bus, Serial Communication Card with 1 Isolated RS-422/485 port and 1 RS-232 port (RoHS)
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Accessories

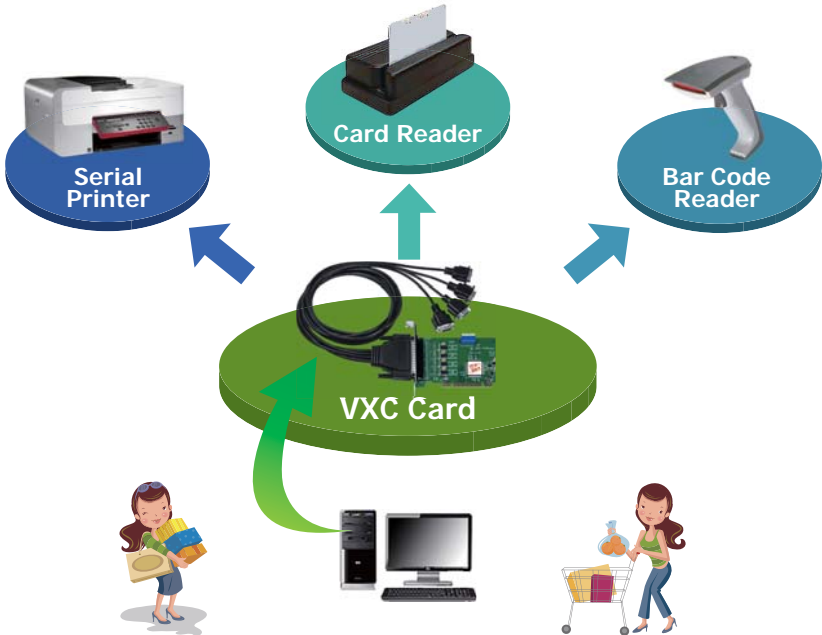
CA-0910F	9-Pin Female-Female D-Sub Cable 1 m
CA-0915	9-Pin Male-Female D-Sub Cable, 1.5 m
CA-090910	9-Pin Female D-Sub Cable for RS-422 Connector, 1 m
CA-PC09F	9-Pin Female D-Sub Connector with Plastic Cover
DN-09-2F	I/O Connector Block with DIN-Rail Mounting and Two 9-Pin Male Header. Includes CA-0910F x 2 (9-Pin Female-Female D-Sub Cable 1 m)

2.3. Applications

The Administration System of Parking Structure



The POS (Point of Sale) System



Programmable Device Server

3

3.1	Overview	P3-1-1
3.2	PDS(M)-700(D) & PPDS(M)-700(D)-MTCP Programmable Device Servers	P3-2-1
3.3	DS-700 Serial-to Ethernet Device Servers	P3-3-1
3.4	PPDS-700-IP67 Programmable Device Servers	P3-4-1
3.5	PDS-800 Programmable Device Servers	P3-5-1
3.6	Programmable Serial-to-Fiber Device Server	P3-6-1
3.7	Tiny Serial-to-Ethernet Device Server and Modbus Gateway	P3-7-1
3.8	μPAC-7186EX(D)-MTCP Modbus to Ethernet Gateway	P3-8-1

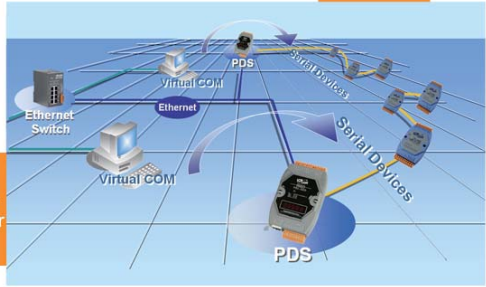


3.1. Overview

Serial Devices to Ethernet Gateway

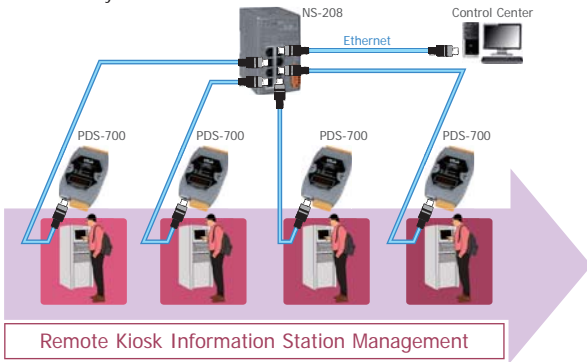


Take your serial devices to the modern world.
Programmable Device Server



The ICP DAS Programmable Device Server is designed to bring network connectivity to your serial devices. The programmable features allow developers to quickly build custom applications that turn “dull” serial devices into “intelligent” devices right away without modifying their hardware or software configuration.

With extensive experience accumulated over many years, a great number of serial devices such as PLCs, bar code readers, RFID readers, meters and motion controllers, etc., have been widely used in various applications. As the advances in communication technologies in recent years, continue to drive optimization of data accessibility and remote operation ability, a wide variety of industries have begun to feel the urge to upgrade their latency serial communications to Ethernet network connections. The ICP DAS PDS series of products are your best choice for implementing this scenario in a robust, reliable and cost-effective way.



The VxComm Driver creates virtual COM port(s) on Windows NT 4.0/2000/XP/2003/Vista32 systems and maps them to the remote serial port(s) of the PDS/DS series. The user's serial client programs need to only be changed to the virtual COM port access the serial devices that are allocated on the Internet or Ethernet network via the PDS/DS series.

Easy Serial Device Networking with "transparency"

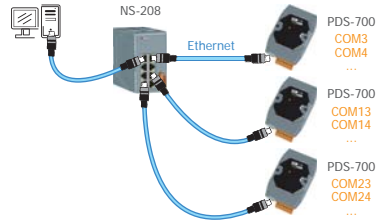
The most intuitive and easiest way to remotely control serial devices is to access those devices transparently via a network with no software modification required. The ICP DAS PDS product line offers two transparent applications:

◆ **Socket Connections:**

Using a TCP/IP socket connection, client programs can exchange information with specific PDS/DS serial ports and talk to serial devices directly. For example, simply create a socket connection to the TCP/IP port 10001 (default) of the PDS/DS device and you can then access Port1 of the PDS/DS remotely. This is an OS-independent method and works well on most OS (operating systems) that provide socket functions.

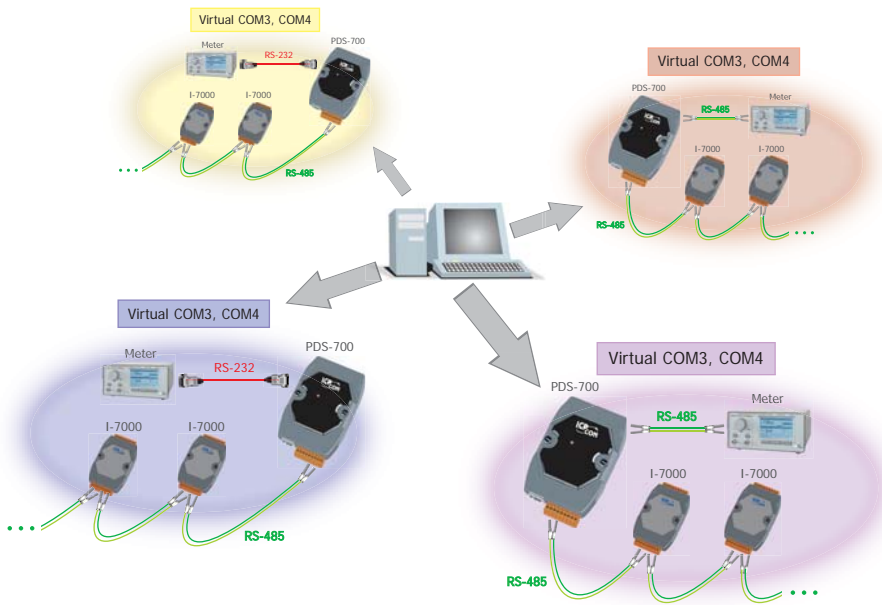
◆ **Virtual COM Ports:**

ICP DAS developed a specific function called "Virtual COM" that simulates PDS serial ports as fixed PC COM ports. Virtual COM ports appear to the system and applications as real ports. Once established, users can immediately enjoy the convenience that networking provides.



DynaCOM Technology

ICP DAS Virtual COM also supports an exclusive function - Dynamic Virtual COM Mapping (DynaCOM); if the system can only access limited or fixed numbers of COM Ports, specific PDS serial ports can be dynamically assigned to the corresponding COM port numbers.



DynaCOM use same virtual COM ports mapping to several PDS dynamically

1

Programmable Enhanced "Device Servers"

The programmable features of the PDS series of products makes it possible to effectively implement exclusive protocols and exclusive communication mechanisms for complex PDS-based applications. This provides the following advantages:

◆ Effective network transmission:

Place your customized software on the PDS to directly perform processes locally. The effective data and information can be periodically sent back to the PC based on a schedule that can be planned in advance and the devices will work independently on-site, even when not connected to a network. Therefore, the design of system can be much more flexible. This also reduces the need to rely on the network, which is an inevitable factor for conventional DS (Device Server) as it has to keep on "talking" to the PC via the network to ensure the status maintains transparency.

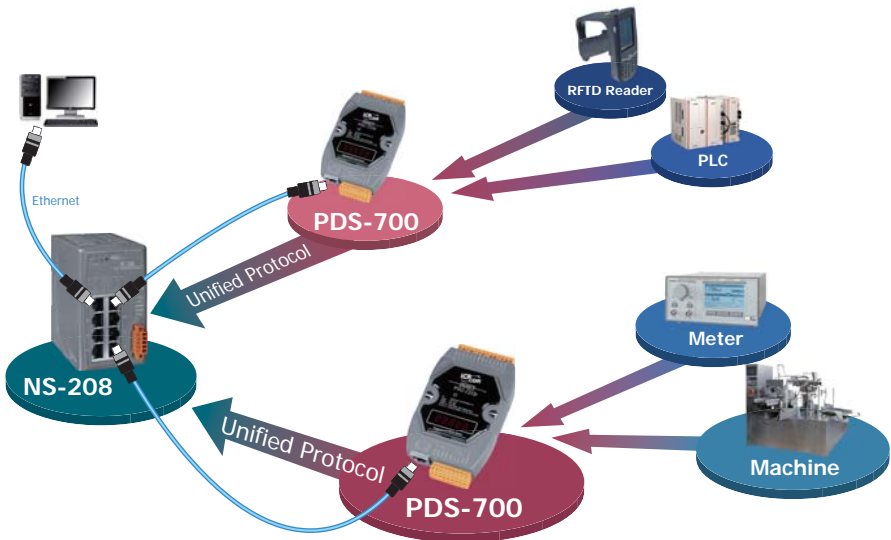
◆ Previous development efforts can be duplicated:

Along with serial devices, you can place your customized or value-added software on the PDS to implement an intelligent Ethernet controller. This controller can then be used in applications for future projects, dramatically reducing programming requirements. In addition, your value-added software is embedded in the PDS, so if a computer system undergoes hardware replacement or upgrade, incompatibility issues don't need to be considered, which therefore reduces system maintenance work.




Programmable Protocol Converter

1

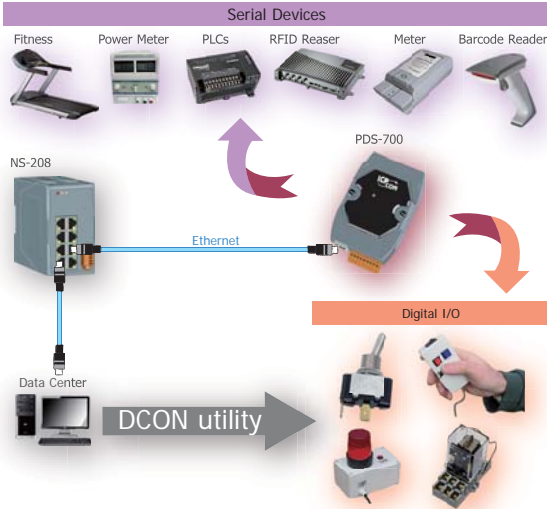


Virtual I/O Highly Integrates On-Site Messages

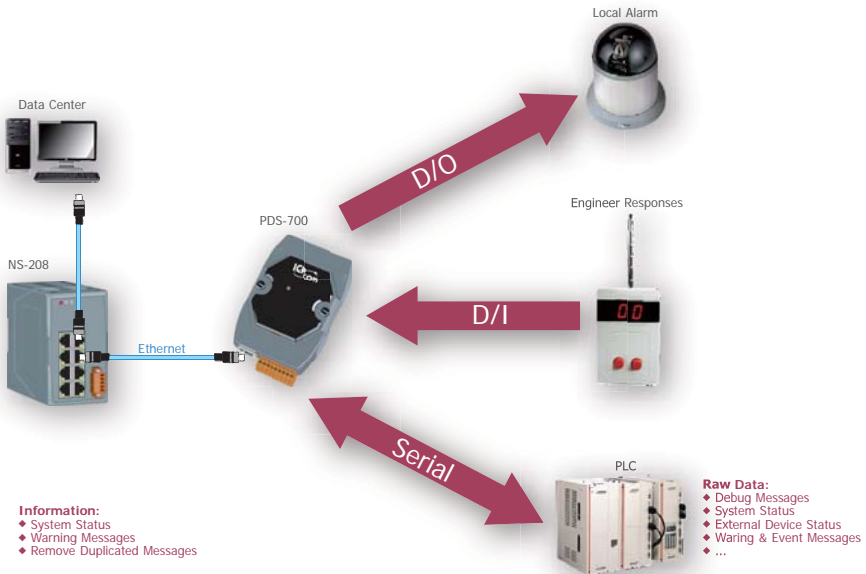
I/O acquisition is very important when performing on-site integration, so, along with DCON utility provided by ICP DAS, the RS-485 of PDS is able to be connected to I-7000 series products to offer abundant I/O modules for various purposes. For easier on-site integration operations, some PDS models also provide Digital I/O, which is also supported by the DCON utility, the EZ Data Logger or other DCON client programs.



"Virtual I/O" is an extension of "Virtual COM" technology that simulates the PDS's digital I/Os control as a virtual COM port (Port I/O) application on the PC. You are now able to access the PDS's digital I/Os using the DCON protocol through the virtual COM port. In addition, the DCON utility and EZ Data Logger also support control of the PDS's digital I/Os through the use of "Virtual I/O" technology, so you can monitor PDS's digital I/Os and complete the I/Os application in a convenient way.

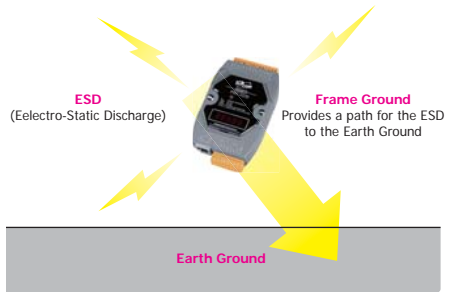
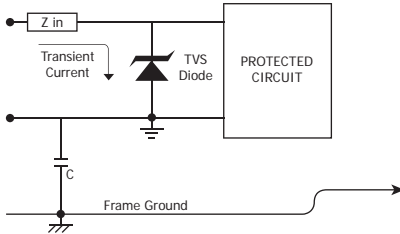


Programmable Data Monitor, Filter and I/O Controls



ESD Protection and Frame Ground

The PDS series offers TVS diode ESD protection technology with a frame ground design that protects your system from being damaged by high potential voltages.



Under normal operating conditions, the TVS diode presents high impedance (appears as an open circuit) to the protected component. If the voltage exceeds the limitation, the TVS diode avalanches, providing a low impedance path for the transient current. As a result, the transient current is diverted away from the protected components and shunted through the TVS diode. The device returns to a high impedance state after the transient threat has passed.

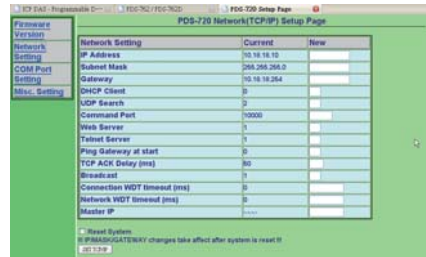
Self-Tuner Inside

The PDS series is equipped with a "Self-Tuner" chip that automatically controls the sending/receiving direction of the RS-485 ports.

Without the presence of Self-Tuner, users need to enable the RS-485 transmitter before transmitting, and disable the transmitter after the transmission is complete. The time required to enable and disable the transmitter (direction control) is the major source of many communication issues, and it is very difficult to debug. The built-in Self-Tuner in the PDS effectively removes this direction control issue and also simplifies the software/firmware programming required for communication applications.

Easy Web Configuration

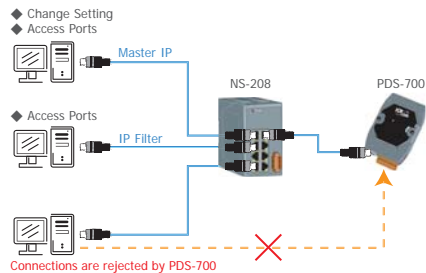
The PDS also contains a built-in web server that enables users to conveniently configure the PDS. A web browser, like IE or Firefox, can be used to connect to the PDS to modify the configuration, such as: IP address, subnet mask, gateway, DHCP client, UDP search, Web Server, Telnet Server, TCP ACK delay, Watchdog timeout, Master IP, Filter IP, COM port baud rate, data format and transfer mode, etc.



Master IP and Filter IP

The PDS can use a master IP setting that allows a client to configure the PDS and COM ports. This prevents the configuration of the PDS and COM ports from being changed by other clients.

The IP filter setting limits which client PCs are able to access the PDS module via specific IP addresses. Connections from other clients will be rejected by the PDS.






● Selection Guide






Comparison Table of Device Server and Modbus Gateway

Features/Series	PPDS	PDS	DS	tDS	tGW
Virtual COM	Yes	Yes	Yes	Yes	-
Programmable	Yes	Yes	-	-	-
PoE	Yes	-	-	Yes	Yes
Modbus Gateway	Yes	-	-	-	Yes
Multi-client	Yes	Yes	Yes	-	-
Remarks	Professional	Powerful	Isolation for DS-715	Cost-effective, Entry-level	Cost-effective, Entry-level


**PPDS Series – Programmable Device Server and Modbus Gateway with PoE**

Series	Ethernet	Virtual COM	Virtual I/O	Programmable	Modbus	Casing
 PPDS-700-MTCP	10/100 M, PoE	Yes	Yes	Yes	Yes	Fire Retardant Plastic
 PPDSM-700-MTCP						Metal
 PPDS-700-IP67			-		-	IP67 Waterproof Plastic

**PDS Series – Programmable Device Server**

Series	Ethernet	Virtual COM	Virtual I/O	Programmable	Modbus	Casing
 PDS-700	10/100 M	Yes	Yes	Yes	-	Fire Retardant Plastic
 PDSM-700						Metal
 PDS-8x1	10/100 M Ethernet Switch		-			-
 PDS-8x2	Dual 10/100 M Ethernet					
 PDS-220Fx	100 Base-FX, Fiber					

**DS, tDS & tGW Series – Non-Programmable Device Server and Modbus Gateway**

Series	Ethernet	Virtual COM	Virtual I/O	Multi-client	Modbus	Casing	Remarks
 DS-700	10/100 M	Yes	-	Yes	-	Fire Retardant Plastic	Isolation for DS-715
 tDS-700	10/100 M, PoE			-			-
 tGW-700		-	-	Yes			Cost-effective

3.2. PDS(M)-700(D) & PPDS(M)-700(D)-MTCP Programmable Device Servers



PDS-720(D)
PPDS-720(D)-MTCP

Programmable Device Server with 1 RS-232 port and 1 RS-485 port



PDS-782-25/D6
PPDS-782D-25/D6

Programmable Device Server with 7 RS-232 ports and 1 RS-485 port



PDS(M)-700(D) Series
PPDS(M)-700(D)-MTCP Series

Programmable Device Server with 1 RS-232 port and 1 RS-485 port

RS-232/RS-485

Features

- Incorporates serial devices in an Ethernet network
- Provides Virtual COM for 32- and 64-bit Windows XP/2003/Vista/7
- Supports Modbus TCP to RTU/ASCII Gateway (for MTCP versions)
- Powerful programmable device server with lib and sample programs
- Built-in high performance MiniOS7 from ICP DAS
- Built-in watchdog timer suitable for use in harsh environments
- Built-in Self-Tuner on RS-485 Ports (automatic direction control)
- Supports +/- 4 kV ESD protection on serial ports
- Power reverse polarity protection and low power consumption
- 10/100 Base-TX Ethernet, RJ-45 Port (Auto-negotiating, auto MDI/MDI-X, LED indicator)
- Supports PoE (Power over Ethernet, for PPDS versions)
- Built-in 7-Segment 5-digit LED display (for D versions)
- Supports D/I, latched D/I and counter functions (for models with DIO)
- Supports Virtual I/O technology (for models with DIO)
- Supports IP filter for security control
- Supports multi-client and data sharing function
- Palm-size form factor with multiple serial ports and DIN-Rail mounting
- Made from fire retardant materials (UL94-V0 Level)
- RoHS compliant with no Halogen
- OEM/ODM service is available



Introduction

The PDS-700/PPDS-700-MTCP series is a family of Programmable Device Servers, also known as "Serial-to-Ethernet gateway", that are designed for linking RS-232/422/485 devices to an Ethernet network. The user-friendly VxComm Driver/Utility allows users to easily turn the built-in COM ports of the PDS-700/PPDS-700-MTCP series into standard COM ports on a PC. By virtue of its protocol independence, a small-core OS and high flexibility, the PDS-700/PPDS-700-MTCP series is able to meet the demands of every network-enabled application.

The PDS-700/PPDS-700-MTCP series includes a powerful and reliable Xserver programming structure that allows you to quickly and easily build your robust Ethernet applications. The built-in, high-performance MiniOS7 boots the PDS-700/PPDS-700-MTCP up in just one second and gives you fastest responses.

These modules also provide advanced features like data sharing and UDP flood attack protection as follows:

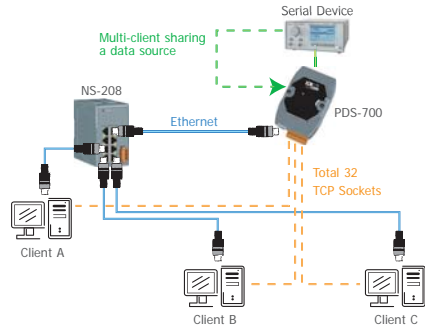
Data Sharing with Multiple Clients

M0: Transparent Mode (Multi-echo)

In transparent mode, the PDS sends data from a serial device to each client that is connected to the same serial port of the PDS. Thus, each connected client has a copy of the same data from the serial device.

M1: Slave Mode (Single-echo)

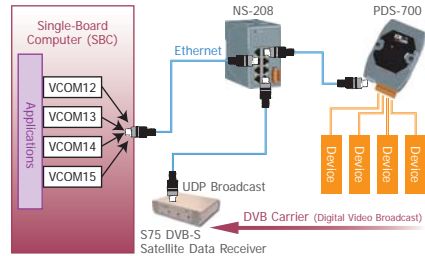
In slave mode, the PDS only sends data from a serial device to the client that requires the service. If there are no requirements from the client, then data will not be sent to the client. The PDS services each client individually when sharing data from the serial device, but the clients do not have a copy of the same data.



UDP Flood Attack Protection

A UDP flood attack is a denial-of-service (DoS) attack that sends a large number of UDP packets to a remote host. As a result, the affected system will be forced into replying to many packets, eventually causing the host to be unreachable by other clients.

The UDP function can be disabled on the PDS if the network suffers a flood attack or receives a large numbers of UDP packets from the network devices. This protects the PDS from UDP flood attacks.

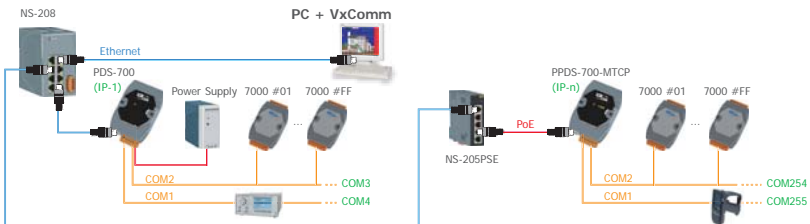


The PPDS-700-MTCP series features true IEEE 802.3af-compliant (classification, Class 1) Power over Ethernet (PoE) using a standard category 5 Ethernet cable to receive power from a PoE switch like the NS-205PSE. The PPDS-700-MTCP also works as a Modbus/TCP to RTU/ASCII gateway that supports most SCADA/HMI communications based on the Modbus/TCP protocol.

The removable onboard terminal block connector is designed for easy and robust wiring in industrial situations.

Applications

Factory, Building and Home Automation



■ PDS(M)-700(D) & PPDS(M)-700(D)-MTCP Selection Guide

Model Name	RS-232	RS-485	RS-422/485	DI/DO	Ethernet	COM1	COM2	COM3	COM4	COM5	COM6	COM7	COM8
PDS-720(D) PPDS-720(D)-MTCP	1	1	-	-	10/100 M	5-wire RS-232	2-wire RS-485	-	-	-	-	-	-
PDS(M)-721(D) PPDS(M)-721(D)-MTCP	1	1	-	6/7	10/100 M	5-wire RS-232	2-wire RS-485	-	-	-	-	-	-
PDS(M)-732(D) PPDS(M)-732(D)-MTCP	2	1	-	4/4	10/100 M	5-wire RS-232	2-wire RS-485	5-wire RS-232	-	-	-	-	-
PDS(M)-734(D) PPDS(M)-734(D)-MTCP	1	1	1	4/4	10/100 M	5-wire RS-232	2-wire RS-485	RS-422/ RS-485	-	-	-	-	-
PDS(M)-742(D) PPDS(M)-742(D)-MTCP	3	1	-	-	10/100 M	5-wire RS-232	2-wire RS-485	5-wire RS-232	9-wire RS-232	-	-	-	-
PDS(M)-743(D) PPDS(M)-743(D)-MTCP	3	1	-	4/4	10/100 M	5-wire RS-232	2-wire RS-485	3-wire RS-232	3-wire RS-232	-	-	-	-
PDS(M)-752(D) PPDS(M)-752(D)-MTCP	4	1	-	-	10/100 M	5-wire RS-232	2-wire RS-485	5-wire RS-232	5-wire RS-232	5-wire RS-232	-	-	-
PDS(M)-755(D) PPDS(M)-755(D)-MTCP	1	4	-	-	10/100 M	5-wire RS-232	2-wire RS-485	2-wire RS-485	2-wire RS-485	2-wire RS-485	-	-	-
PDS(M)-762(D) PPDS(M)-762(D)-MTCP	5	1	-	1/2	10/100 M	5-wire RS-232	2-wire RS-485	3-wire RS-232	3-wire RS-232	3-wire RS-232	3-wire RS-232	-	-
PDS(M)-782(D) PPDS(M)-782(D)-MTCP	7	1	-	-	10/100 M	5-wire RS-232	2-wire RS-485	3-wire RS-232	3-wire RS-232	3-wire RS-232	3-wire RS-232	3-wire RS-232	3-wire RS-232
PDS-782(D)-25/D6	7	1	-	-	10/100 M	5-wire RS-232	2-wire RS-485	3-wire RS-232	3-wire RS-232	3-wire RS-232	3-wire RS-232	3-wire RS-232	3-wire RS-232

Note:

1. The D version modules have a built-in 7-Seg. LED Display.
2. The M version modules use metal case.
3. The PPDS-700-MTCP series modules support PoE (Power over Ethernet) and Modbus Gateway.

System Specifications

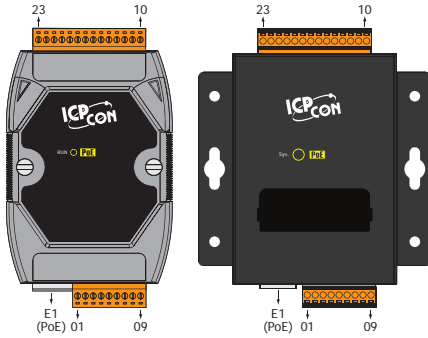
Models		PDS(M)-700(D) & PPDS(M)-700(D)-MTCP Series
CPU		
CPU		80186, 80 MHz or compatible
SRAM		512 KB
Flash Memory		Flash ROM: 512 KB; Erase unit is one sector (64 KB); 100,000 erase/write cycles
EEPROM		16 KB; Data retention: 40 years; 1,000,000 erase/write cycles
Built-in Watchdog Timer		Yes
Communication Interface		
Ethernet		10/100 Base-TX, RJ-45 port (Auto-negotiating, auto MDI/MDI-X, LED indicator)
PoE		IEEE 802.3af (PPDS(M)-700(D)-MTCP series only)
COM Port Formats		
Data Bit	COM1 and COM2	7, 8
	COM3 – COM8	5, 6, 7, 8
Parity		None, Even, Odd, Mark, Space
Stop Bit	COM1 – COM8	1, 2
Baud Rate		115200 bps max.
LED Indicators		
5-digit 7 Segment		Yes (D versions only)
System		Red
PoE		Green (PPDS(M)-700(D)-MTCP series only)
Power		
Protection		Power Reverse Polarity Protection
Required Supply Voltage	PDS(M)-700(D) Series	+10 V _{DC} – +30 V _{DC} (non-regulated)
	PPDS(M)-700(D)-MTCP Series	PoE or +12 V _{DC} – +48 V _{DC} (non-regulated)
Power Consumption	D versions (LED display)	2.9 W
	Others	2.2 W
Mechanical		
Flammability	M versions (Metal case)	Metal Fire Retardant Materials (UL94-V0 Level)
	Others	Plastic Fire Retardant Materials (UL94-V0 Level)
Dimensions (W x H x D)	M versions (Metal case)	88 mm x 123 mm x 28 mm
	Others	72 mm x 123 mm x 35 mm
Installation		DIN-Rail or Wall mounting
Environment		
Operating Temperature		-25 °C – +75 °C
Storage Temperature		-40 °C – +80 °C
Humidity		5 – 90% RH, non-condensing

I/O Specifications

Models		PDS(M)-700(D) & PPDS(M)-700(D)-MTCP Series
Digital Output		
Output Type		Open Collector (Sink/NPN)
Load Voltage		30 V _{DC} , max.
Load Current		100 mA, max.
Isolated Voltage		Non-isolated
Digital Input		
Input Type		Source (Dry Type), Common Ground
Off Voltage Level		+1 V max.
On Voltage Level		+3.5 – +30 V
Isolated Voltage		Non-isolated
Counters	Max. Count	16-bit (65535)
	Max. Input Frequency	100 Hz
	Min. Pulse Width	5 ms

Pin Assignments

PDS(M)-700(D) & PPDS(M)-700(D)-MTCP Series



Terminal No.	Pin Assignment
E1	Link/Act
	10/100M
COM1	01 CTS1
	02 RTS1
	03 RxD1
COM2	04 TxD1
	05 INIT*
COM2	06 D2+
	07 D2-
	08 (R)+Vs
09	(B)GND

PDS(M)-721(D) & PPDS(M)-721(D)-MTCP

Terminal No.	Pin Assignment
DI	23 DI0
	22 DI1
	21 DI2
	20 DI3
	19 DI4
DO	18 DI5
	17 DO.PWR
	16 DO0
	15 DO1
	14 DO2
	13 DO3
	12 DO4
11 DO5	
10	DO6

PDS(M)-732(D) & PPDS(M)-732(D)-MTCP

Terminal No.	Pin Assignment
DO	23 DO3
	22 DO2
	21 DO1
	20 DO0
	19 DO.PWR
18	GND
DI	17 DI3
	16 DI2
	15 DI1
	14 DI0
COM3	13 RxD3
	12 TxD3
	11 RTS3
	10 CTS3

PDS(M)-734(D) & PPDS(M)-734(D)-MTCP

Terminal No.	Pin Assignment
DO	23 DO3
	22 DO2
	21 DO1
	20 DO0
	19 DO.PWR
18	GND
DI	17 DI3
	16 DI2
	15 DI1
	14 DI0
COM3	13 RxD3-
	12 RxD3+
	11 TxD3-/D3-
	10 TxD3+/D3+

PDS(M)-742(D) & PPDS(M)-742(D)-MTCP

Terminal No.	Pin Assignment
COM4	23 DI4
	22 DCD4
	21 DTR4
	20 DSR4
	19 CTS4
	18 RTS4
	17 TxD4
COM3	16 RxD4
	15 GND4
	14 GND3
	13 RxD3
COM4	12 TxD3
	11 RTS3
10	CTS3

PDS(M)-743(D) & PPDS(M)-743(D)-MTCP

Terminal No.	Pin Assignment
DO	23 DO3
	22 DO2
	21 DO1
	20 DO0
	19 DO.PWR
18	GND
DI	17 DI3
	16 DI2
	15 DI1
	14 DI0
COM3	13 TxD3
	12 RxD3
COM4	11 TxD4
	10 RxD4

PDS(M)-752(D) & PPDS(M)-752(D)-MTCP

Terminal No.	Pin Assignment
COM5	23 RxD5
	22 TxD5
	21 RTS5
	20 CTS5
	19 GND
COM4	18 RxD4
	17 TxD4
	16 RTS4
	15 CTS4
	14 GND
COM3	13 RxD3
	12 TxD3
	11 RTS3
	10 CTS3

PDS(M)-755(D) & PPDS(M)-755(D)-MTCP

Terminal No.	Pin Assignment
COM5	23 DATA+
	22 DATA-
	21 --
	20 --
	19 --
COM4	18 --
	17 DATA+
	16 DATA-
	15 --
	14 --
COM3	13 --
	12 --
	11 DATA+
	10 DATA-

PDS(M)-762(D) & PPDS(M)-762(D)-MTCP

Terminal No.	Pin Assignment
DO	23 DO0
	22 DO1
	21 DO.PWR
DI	20 DI0
	19 GND
COM6	18 TxD6
	17 RxD6
COM5	16 TxD5
	15 RxD5
	14 GND
COM4	13 TxD4
	12 RxD4
COM3	11 TxD3
	10 RxD3

PDS(M)-782(D) & PPDS(M)-782(D)-MTCP

Terminal No.	Pin Assignment
COM8	23 TxD8
	22 RxD8
COM7	21 TxD7
	20 RxD7
COM6	19 GND
	18 TxD6
COM5	17 RxD6
	16 TxD5
COM4	15 RxD5
	14 GND
COM3	13 TxD4
	12 RxD4
COM3	11 TxD3
	10 RxD3

PDS-782(D)-25/D6

Pin Assignment	Terminal	No.	Pin Assignment
N/A	01	14	COM8_RxD
N/A	02	15	COM8_TxD
COM8_GND	03	16	COM7_RxD
N/A	04	17	COM7_TxD
COM7_GND	05	18	COM6_RxD
N/A	06	19	COM6_TxD
COM6_GND	07	20	COM5_RxD
N/A	08	21	COM5_TxD
COM5_GND	09	22	COM4_RxD
N/A	10	23	COM4_TxD
COM4_GND	11	24	COM3_RxD
N/A	12	25	COM3_TxD
COM3_GND	13	Shield	F.G.

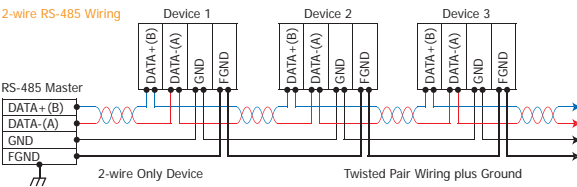
25-Pin Male D-Sub Connector

Pin Assignment	Terminal	No.	Pin Assignment
GND	05	09	--
--	04	08	--
TxD	03	07	--
RxD	02	06	--
--	01		

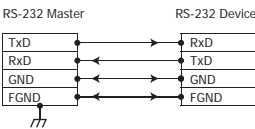
RS-232 Female DB-25 to Male DB-9 Connector

Wiring

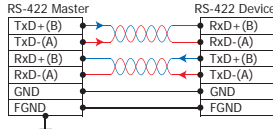
2-wire RS-485 Wiring



3-wire RS-232 Wiring



4-wire RS-422 Wiring



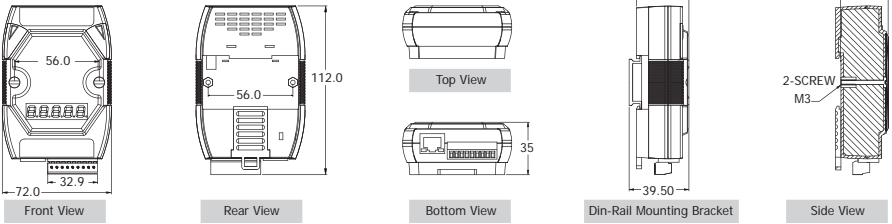
Output Type	DO Command as 1	DO Command as 0
Drive Relay	Relay ON 	Relay Off
	Resistance Load 	Resistance Load

Input Type	DI Value as 0	DI Value as 1
Relay Contact	Relay ON 	Relay Off
	Voltage < 1V Logic Level Low Logic GND	Voltage > 3.5V Logic Level High Logic GND
Open Collector	Open Collector On 	Open Collector Off

3

Dimensions (Unit: mm)

PDS-720(D) & PPDS-720(D)-MTCP

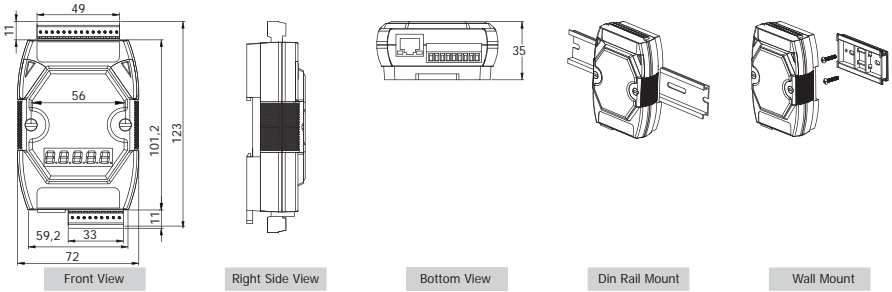


PDS-721(D) & PPDS-721(D)-MTCP
 PDS-732(D) & PPDS-732(D)-MTCP
 PDS-734(D) & PPDS-734(D)-MTCP
 PDS-742(D) & PPDS-742(D)-MTCP
 PDS-743(D) & PPDS-743(D)-MTCP

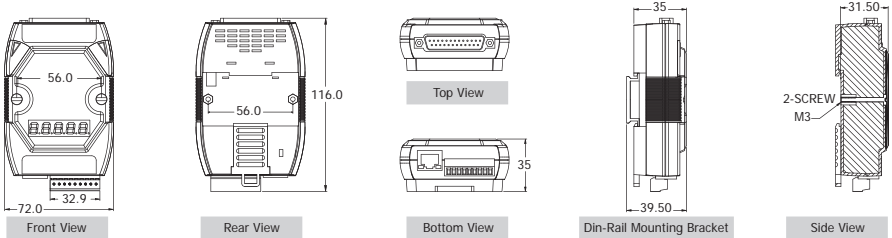
PDS-752(D) & PPDS-752(D)-MTCP
 PDS-755(D) & PPDS-755(D)-MTCP
 PDS-762(D) & PPDS-762(D)-MTCP
 PDS-782(D) & PPDS-782(D)-MTCP

Programmable Device Servers (Serial-to-Ethernet)

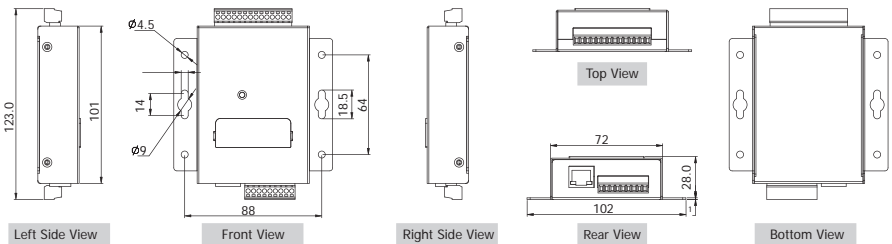
2



PDS-782(D)-25/D6



PDSM-700(D) & PPDSM-700(D)-MTCP Series



PDS(M)-700(D) & PPDS(M)-700(D)-MTCP Series

Ordering Information

Models							RS-232 RS-485 RS-422/485	DI/DO	Includes Cable
PDS	M	- 7		D	CR				
P	PDS	M	- 7		D	- MTCP			
PoE	Programmable Device Server	Metal		LED Display	Modbus/TCP	RoHS			
	PDS	M	- 7 2 0	D		CR	1 RS-232 1 RS-485	-	1 CA-0910
	PPDS	M	- 7 2 0	D	-MTCP	CR			
	PDS	M	-721	D		CR	1 RS-232 1 RS-485	6/7	1 CA-0910
	PPDS	M	-721	D	-MTCP	CR			
	PDS	M	-732	D		CR	2 RS-232 1 RS-485	4/4	1 CA-0910
	PPDS	M	-732	D	-MTCP	CR			
	PDS	M	-734	D		CR	1 RS-232 1 RS-485 1 RS-422/485	4/4	1 CA-0910
	PPDS	M	-734	D	-MTCP	CR			
	PDS	M	-742	D		CR	3 RS-232 1 RS-485	-	1 CA-0910
	PPDS	M	-742	D	-MTCP	CR			
	PDS	M	-743	D		CR	3 RS-232 1 RS-485	4/4	1 CA-0910
	PPDS	M	-743	D	-MTCP	CR			
	PDS	M	-752	D		CR	4 RS-232 1 RS-485	-	1 CA-0910
	PPDS	M	-752	D	-MTCP	CR			
	PDS	M	-755	D		CR	1 RS-232 4 RS-485	-	1 CA-0910
	PPDS	M	-755	D	-MTCP	CR			
	PDS	M	-762	D		CR	5 RS-232 1 RS-485	1/2	1 CA-0910
	PPDS	M	-762	D	-MTCP	CR			
	PDS	M	-782	D		CR	7 RS-232 1 RS-485	-	1 CA-0910
	PPDS	M	-782	D	-MTCP	CR			
	PDS	M	-7 8 2	D	-25/D6	CR	7 RS-232 1 RS-485	-	1 CA-0910 1 CA-9-2505D

Note:
 1. PPDS(M)-700(D)-MTCP supports PoE and Modbus Gateway.
 2. D versions support 7-segment 5-digit LED display.
 3. M versions is equipped with metal case.

Accessories

GPSU06U-6	24 V _{DC} /0.25 A, 6 W Power Supply
MDR-20-24	24 V _{DC} /1 A, 24 W Power Supply with DIN-Rail Mounting
DIN-KA52F-48	48 V _{DC} /0.52 A, 25 W Power Supply with Din-Rail Mounting
CA-0903	9-Pin Female D-Sub and RS-232 Connector Cable, 30 cm Cable
CA-0910	9-Pin Female D-Sub and 3-wire RS-232 Cable, 1 m Cable
CA-9-2505D	DB-25 Male (D-Sub) to 6-port DB-9 Male (D-Sub) Cable
NS-205 CR	Unmanaged 5-port Industrial Ethernet Switch (RoHS)
NS-205PSE CR	Unmanaged Ethernet Switch with 4 PoE Ports and 1 RJ-45 Uplink (RoHS)
DN-09-2	I/O Connector Block with DIN-Rail Mounting and Two 9-Pin Male Header. Includes CA-0915 x 2 (9-Pin Male-Female D-Sub Cable 1.5 m)
DN-09-2F	I/O Connector Block with DIN-Rail Mounting and Two 9-Pin Male Header. Includes CA-0910F x 2 (9-Pin Female-Female D-Sub Cable 1.0 m)

3.3. DS-700 Serial-to Ethernet Device Servers



RS-232

Features

- Incorporate Serial Devices in an Ethernet network
- "Virtual COM" extends PC COM ports
- Virtual COM for 32-bit and 64-bit Windows XP/2003/Vista/7
- High Performance Device Server
- Watchdog Timer suitable for use in harsh environments
- Power Reverse Polarity Protection
- Serial Port +/-4 kV ESD Protection Circuit
- RoHS Compliant with no Halogen
- Built-in High Performance MiniOS7 from ICP DAS
- 10/100 Base-TX, RJ-45 Port (Auto-negotiating, auto MDI/MDI-X, LED Indicator)
- PPDS-712-MTCP supports Modbus/TCP and Modbus/RTU
- PPDS-712-MTCP supports PoE (IEEE 802.3af, Class 1)
- Low power consumption
- Palm-Size with DIN-Rail Mounting
- Made from fire retardant materials (UL94-V0 Level)
- Male DB-9 Connector



Introduction

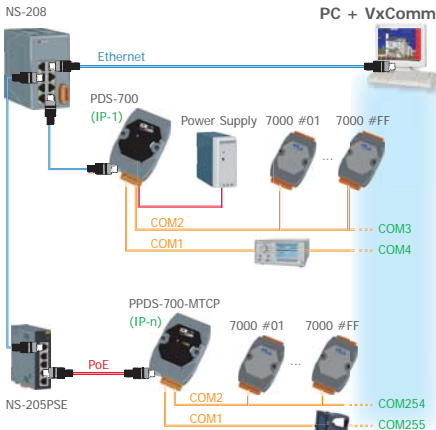
The DS-700 is a series of Serial-to-Ethernet Device Servers that are designed for linking RS-232/422/485 devices to an Ethernet network. By using the VxComm Driver/Utility, the built-in COM port of the DS-700 series can be virtualized to a standard PC COM port in Windows. By virtue of its protocol independence, a small size and flexibility, the DS-700 series meets the demands of virtually any network-enabled application.

The DS-712 is equipped with a male DB-9 connector and supports a 5-wire RS-232 port, while the DS-715 is equipped with a removable terminal block connector and supports a 4-wire RS-422 port or a 2-wire RS-485 port with 2000 V_{rms} isolation.

The DS-700 is a non-programmable device server, while the PPDS-700-MTCP is a programmable product. The PPDS-700-MTCP series features true IEEE 802.3af-compliant (classification, Class 1) Power over Ethernet (PoE) using a standard category 5 Ethernet cable to receive power from a PoE switch like the NS-205PSE. The PPDS-700-MTCP also works as a Modbus/TCP to Modbus/RTU gateway that supports most SCADA/HMI communications based on the Modbus/TCP protocol.

System Specifications


Models	DS-712	PPDS-712-MTCP
CPU		
CPU	80186, 80 MHz or compatible	
SRAM	512 KB	
Flash Memory	Flash ROM: 512 KB	
EEPROM	16 KB; Data retention: 40 years	
Built-in Watchdog Timer	Yes	
Communication Interface		
Non-isolated	COM1	RS-232 (Tx/D, Rx/D, RTS, CTS, GND)
Ethernet	10/100 Base-TX, RJ-45 port (Auto-negotiating, auto MDI/MDI-X, LED Indicator)	
PoE	-	IEEE 802.3af
COM Port Formats		
Data Bit	7, 8	
Parity	None, Even, Odd, Mark, Space	
Stop Bit	1, 2	
Baud Rate	115200 bps max.	
LED Indicators		
L1	Run (Red)	
L2	Link/Act (Red)	
L3	10/100M (Orange)	
PoE	-	Green
Power		
Protection	Power Reverse Polarity Protection	
Required Supply Voltage	+12 Vdc ~ +48 Vdc (non-regulated)	PoE or +12 Vdc ~ +48 Vdc (non-regulated)
Power Consumption	2.0 W	2.2 W
Mechanical		
Flammability	Fire Retardant Materials (UL94-V0 Level)	
Dimensions	72 mm x 118 mm x 35 mm (W x H x D)	
Installation	DIN-Rail or Wall mounting	
Environment		
Operating Temperature	-25 °C ~ +75 °C	
Storage Temperature	-40 °C ~ +80 °C	
Humidity	5 ~ 90% RH, non-condensing	

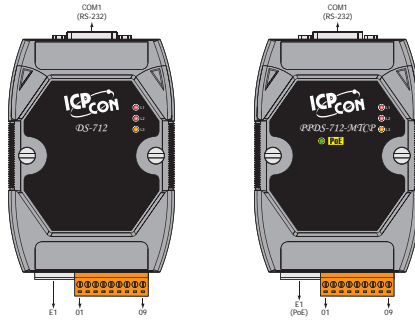


Applications

Factory, Building and Home Automation

Pin Assignments

Terminal No.	Pin Assignment
E1	
01	N/A
02	N/A
03	N/A
04	N/A
05	INIT*
06	N/A
07	N/A
08	(R)+Vs
09	(B)GND

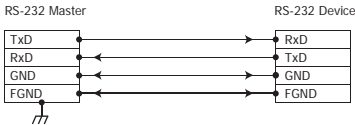


Pin Assignment	Terminal No.	Pin Assignment
GND	05	09 --
--	04	08 CTS
TxD	03	07 RTS
RxD	02	06 --
--	01	

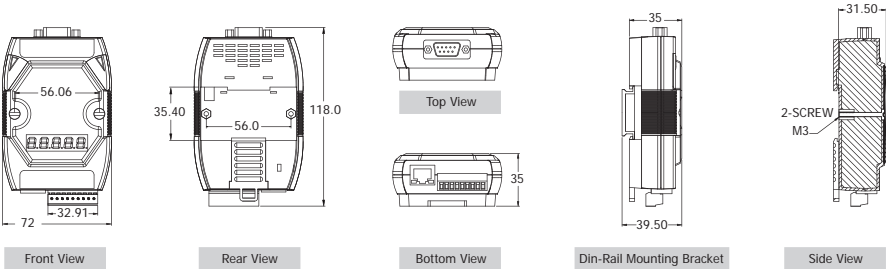
COM1: Male DB-9 Connector

Wiring

3-wire RS-232 Wiring



Dimensions (Unit: mm)



Ordering Information

DS-712 CR	Device Server with 1 RS-232 port (RoHS)
PPDS-712-MTCP CR	Programmable Device Server with PoE, Modbus/TCP and 1 RS-232 port (RoHS)

Accessories

GPSU06U-6	24 V _{DC} /0.25 A, 6 W Power Supply
MDR-20-24	24 V _{DC} /1 A, 24 W Power Supply with DIN-Rail Mounting
DIN-KA52F-48	48 V _{DC} /0.52 A, 25 W Power Supply with DIN-Rail Mounting
CA-0915	9-Pin Male-Female D-Sub Cable, 1.5 m Cable
NS-205 CR	Unmanaged 5-port Industrial Ethernet Switch (RoHS)
NS-205PSE CR	Unmanaged Ethernet Switch with 4 PoE Ports and 1 RJ-45 Uplink (RoHS)
DN-09-2F	I/O Connector Block with DIN-Rail Mounting and Two 9-Pin Male Header Includes CA-0910F x 2 (9-Pin Female-Female D-Sub Cable 1.0 m)

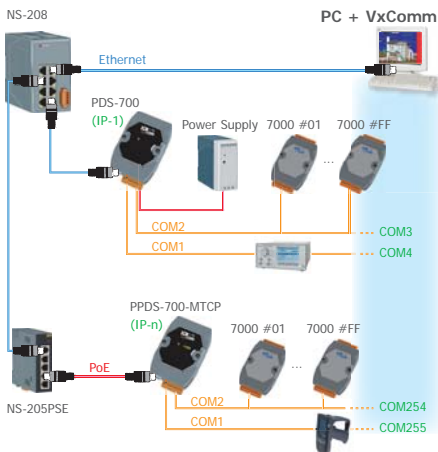


Introduction

The DS-700 is a series of Serial-to-Ethernet Device Servers that are designed for linking RS-232/422/485 devices to an Ethernet network. By using the VxComm Driver/Utility, the built-in COM port of the DS-700 series can be virtualized to a standard PC COM port in Windows. By virtue of its protocol independence, a small size and flexibility, the DS-700 series meets the demands of virtually any network-enabled application.

The DS-712 is equipped with a male DB-9 connector and supports a 5-wire RS-232 port, while the DS-715 is equipped with a removable terminal block connector and supports a 4-wire RS-422 port or a 2-wire RS-485 port with 2000 V_{rms} isolation.

The DS-700 is a non-programmable device server, while the PPDS-700-MTCP is a programmable product. The PPDS-700-MTCP series features true IEEE 802.3af-compliant (classification, Class 1) Power over Ethernet (PoE) using a standard category 5 Ethernet cable to receive power from a PoE switch like the NS-205PSE. The PPDS-700-MTCP also works as a Modbus/TCP to Modbus/RTU gateway that supports most SCADA/HMI communications based on the Modbus/TCP protocol.



Applications

Factory, Building and Home Automation

RS-422/485

Features

- Incorporate Serial Devices in an Ethernet network
- "Virtual COM" extends PC COM ports
- Virtual COM for 32-bit and 64-bit Windows XP/2003/Vista/7
- High Performance Device Server
- Watchdog Timer suitable for use in harsh environments
- Power Reverse Polarity Protection
- Serial Port +/- 4 kV ESD Protection Circuit
- Self-Tuner ASIC Controller on the RS-485 Port
- RoHS Compliant with no Halogen
- Built-in High Performance MinIOS7 from ICP DAS
- 10/100 Base-TX, RJ-45 Port (Auto-negotiating, auto MDI/MDI-X, LED indicator)
- PPDS-715-MTCP supports Modbus/TCP and Modbus/RTU
- PPDS-715-MTCP supports PoE (IEEE 802.3af, Class 1)
- Low power consumption
- Palm-Size with DIN-Rail Mounting
- Made from fire retardant materials (UL94-V0 Level)

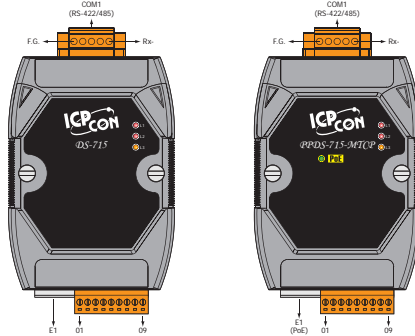


System Specifications

Models	DS-715	PPDS-715-MTCP
CPU		
CPU	80186, 80 MHz or compatible	
SRAM	512 KB	
Flash Memory	Flash ROM: 512 KB	
EEPROM	16 KB; Data retention: 40 years	
Built-in Watchdog Timer	Yes	
Communication Interface		
Isolated (2000 V_{rms})	COM1	RS-422 (TxD+, TxD-, RxD+, RxD-) RS-485 (D2+, D2-)
Ethernet	10/100 Base-TX, RJ-45 port (Auto-negotiating, auto MDI/MDI-X, LED indicator)	
PoE	-	IEEE 802.3af
COM Port Formats		
Data Bit	7, 8	
Parity	None, Even, Odd, Mark, Space	
Stop Bit	1, 2	
Baud Rate	115200 bps max.	
LED Indicators		
L1	Run (Red)	
L2	Link/Act (Red)	
L3	10/100M (Orange)	
PoE	-	Green
Power		
Protection	Power Reverse Polarity Protection	
Required Supply Voltage	+12 Vdc ~ +48 Vdc (non-regulated)	PoE or +12 Vdc ~ +48 Vdc (non-regulated)
Power Consumption	2.0 W	
Mechanical		
Flammability	Fire Retardant Materials (UL94-V0 Level)	
Dimensions	72 mm x 124 mm x 35 mm (W x H x D)	
Installation	DIN-Rail or Wall mounting	
Environment		
Operating Temperature	-25 °C ~ +75 °C	
Storage Temperature	-40 °C ~ +80 °C	
Humidity	5 ~ 90% RH, non-condensing	

Pin Assignments

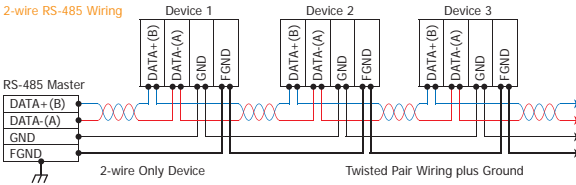
Terminal No.	Pin Assignment
E1	
01	N/A
02	N/A
03	N/A
04	N/A
05	INIT*
06	N/A
07	N/A
08	(R)+Vs
09	(B)GND



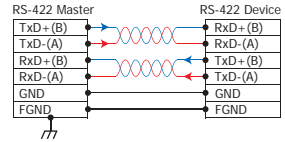
COM1 (RS-422/485)
F.G.
Tx+/D+
Tx-/D-
Rx+
Rx-

Wiring

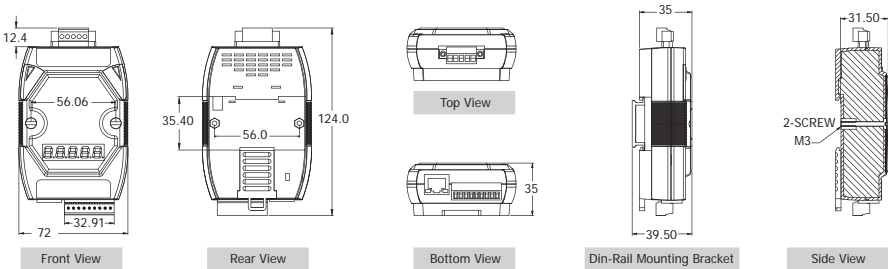
2-wire RS-485 Wiring



4-wire RS-422 Wiring



Dimensions (Unit: mm)



Ordering Information

DS-715 CR	Device Server with 1 Isolated RS-422/RS-485 port (RoHS)
PPSDS-715-MTCP CR	Programmable Device Server with PoE, Modbus/TCP and 1 Isolated RS-422/485 port (RoHS)

Accessories

GPSU06U-6	24 V _{DC} /0.25 A, 6 W Power Supply
MDR-20-24	24 V _{DC} /1 A, 24 W Power Supply with DIN-Rail Mounting
DIN-KA52F-48	48 V _{DC} /0.52 A, 25 W Power Supply with Din-Rail Mounting
NS-205 CR	Unmanaged 5-port Industrial Ethernet Switch (RoHS)
NS-205PSE CR	Unmanaged Ethernet Switch with 4 PoE Ports and 1 RJ-45 Uplink (RoHS)

3.4. PPDS-700-IP67 Programmable Device Servers



RS-232/RS-485

Features

- Incorporate Serial Devices in an Ethernet network
- "Virtual COM" extends PC COM ports
- Virtual COM for 32-bit and 64-bit Windows XP/2003/Vista/7
- Powerful Programmable Device Server
- Watchdog Timer suitable for use in harsh environments
- Power Reverse Polarity Protection
- Serial Port +/-4 kV ESD Protection Circuit
- Self-Tuner ASIC Controller on the RS-485 Port
- Low power consumption
- RoHS Compliant with no Halogen
- Built-in High Performance MiniOS7 from ICP DAS
- 10/100 Base-TX Ethernet, RJ-45 Port (Auto-negotiating, auto MDI/MDI-X, LED indicator)
- Plastic Casing with IP67 Waterproof
- Supports PoE (IEEE 802.3af, Class 1)
- ODM Service is available



Introduction

The PPDS-700-IP67 series is a family of Programmable Device Servers, also known as "Serial-to-Ethernet gateway", that are designed for linking RS-232/422/485 devices to an Ethernet network. The user-friendly VxComm Driver/Utility allows users to easily turn the built-in COM ports of the PPDS-700-IP67 series into standard COM ports on a PC. By virtue of its protocol independence, a small-core OS and high flexibility, the PPDS-700-IP67 series is able to meet the demands of every network-enabled application.

The PPDS-700-IP67 series includes a powerful and reliable Xserver programming structure that allows you to design your robust Ethernet applications in one day. The built-in, high-performance MiniOS7 boots the PPDS-700-IP67 up in just one second and gives you fastest responses.

The PPDS-700-IP67 is a special design for the toughest applications. It can be directly mounted to any machine or convenient flat surface. The rugged packaging and IP67 connectors are rated to protect against water, oil, dust, vibration, and much more.

The PPDS-700-IP67 supports PoE (Power over Ethernet) function that allows power and data to be carried over a single Ethernet cable, so a device can operate solely from the power it receives through the data cable. This innovation allows greater flexibility in office design, higher efficiency in systems design, and faster turnaround time in set-up and implementation. When there is no PoE switch on site, the PPDS-700-IP67 accepts power input from a +12 V_{DC} ~ +48 V_{DC} adapter.

When using PoE devices such as the PPDS-700-MTCC, PPDS-700-IP67 and PET-7000 (Ethernet I/O module with PoE), you can select the ICP DAS "PoE" switch — "NS-205PSE" — as the power source. The NS-205PSE automatically detects whether the connected devices are PoE devices or not. This mechanism ensures that the NS-205PSE will work with both PoE and non-PoE devices simultaneously.

As a power source for PoE devices, the NS-205PSE requires a power input ranging from +46 V_{DC} ~ +55 V_{DC}.

Applications

Factory, Building and Home Automation

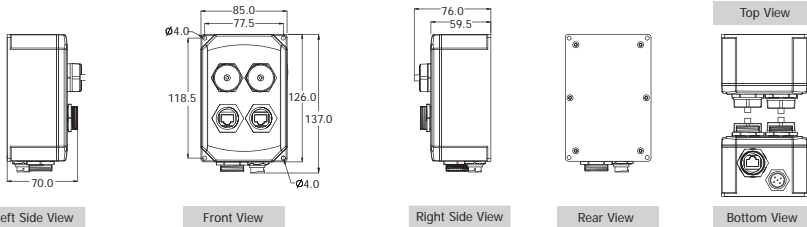


Specifications

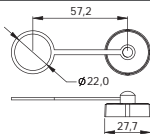
Models	PPDS-741-IP67(DIN)	PPDS-742-IP67(DIN)	PPDS-743-IP67(DIN)
CPU			
CPU	80186, 80MHz or compatible		
SRAM	512 KB		
Flash Memory	Flash ROM: 512 KB; Erase unit is one sector (64 KB); 100,000 erase/write cycles		
EEPROM	16 KB; Data retention: 40 years; 1,000,000 erase/write cycles		
Watchdog Timer	Yes		
Communication Interface			
COM1	5-wire RS-232		
COM2	Isolated 2-wire RS-485		
COM3	Isolated 2-wire RS-485	5-wire RS-232	5-wire RS-232
COM4	Isolated 2-wire RS-485	Isolated 2-wire RS-485	5-wire RS-232
Ethernet	10/100 Base-TX, RJ-45 port (Auto-negotiating, Auto MDI/MDI-X, LED indicators), PoE (IEEE 802.3af, Class 1)		
COM Port Formats			
Data Bit	5, 6, 7, 8		
Parity	None, Even, Odd, Mark, Space		
Stop Bit	1, 2		
Baud Rate	115200 bps max.		
LED Indicators			
System	Red: Sys		
Ethernet	Green: Link/Act (E1) Orange: 10/100M (E1)		
COM1 - COM4	Green: Rx/D Orange: Tx/D		
Power			
Protection	Power input reverse polarity protection		
Required Supply Voltage	+12 V _{DC} - +48 V _{DC} (non-regulated) or PoE (IEEE 802.3af, Class 1)		
Power Consumption	2.2 W		
Mechanical			
Flammability	Fire Retardant Materials (UL94-V0 Level)		
Dimensions (W x H x D)	85 mm x 76 mm x 137 mm (89 mm x 90 mm x 138 mm for /DIN versions)		
Installation	Wall mounting (DIN-Rail mounting for /DIN versions)		
Environment			
Operating Temperature	-10 °C - +60 °C		
Storage Temperature	-10 °C - +60 °C		
Humidity	100% RH for operating temperature -10 °C - +60 °C		
Note: 5-wire RS-232: Tx/D, Rx/D, CTS, RTS, GND Isolated 2-wire RS-485: DATA+, DATA-, GND; Self-tuner Inside; 2500 V _{ins} Isolation			

Dimensions (Unit: mm)

PPDS-741-IP67/PPDS-742-IP67/PPDS-743-IP67

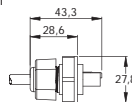


IP67 Ethernet Cap with Tether



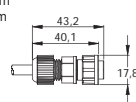
IP67 Ethernet Plug

Cable Dia:
Max. 7.0 mm
Min. 5.5 mm

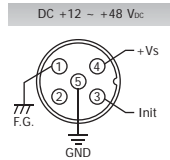
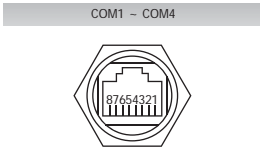
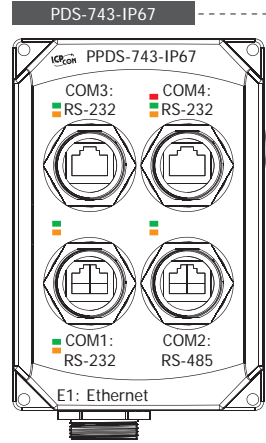
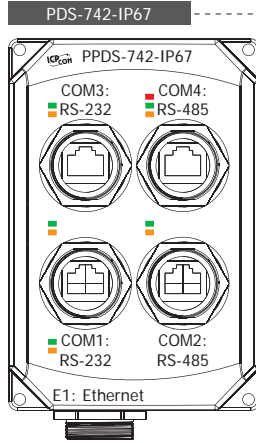
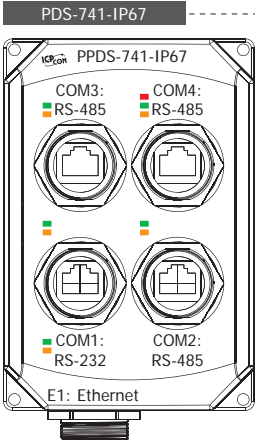


IP67 PWR Plug

Cable Dia:
Max. 6.5 mm
Min. 5.0 mm



Pin Assignments



LED Indicators		
System	Red	Sys.
Ethernet	Green	Link/Act (E1)
	Orange	10/100M (E1)
COM1 - COM4	Green	RxD
	Orange	TxD

Pin	5-wire RS-232	2-wire RS-485
1	--	--
2	RTS	--
3	GND	GND
4	TxD	--
5	RxD	DATA+
6	--	DATA-
7	CTS	--
8	--	--

Pin	Name
1	F.G.
2	--
3	Init
4	+Vs
5	GND

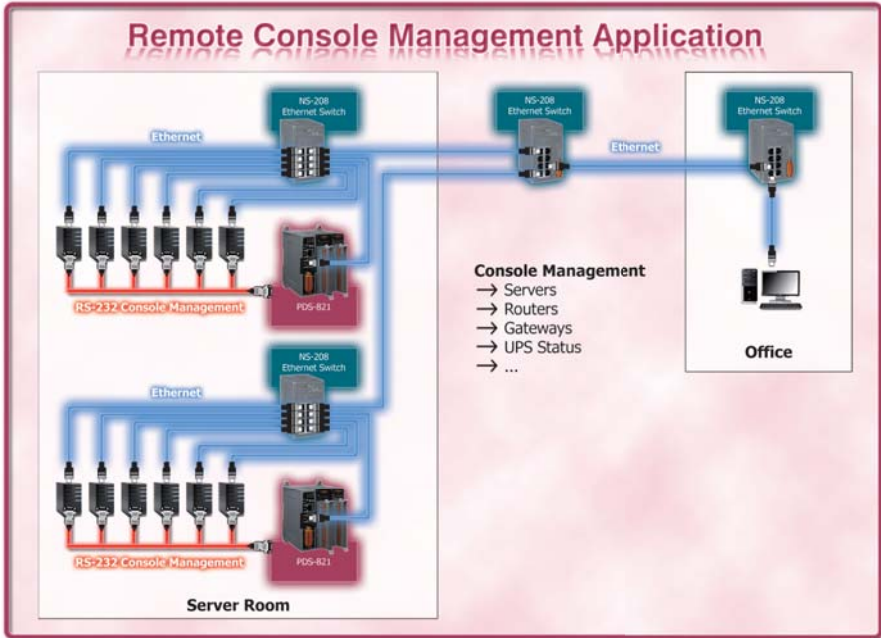
Ordering Information

PPDS-741-IP67 CR	Programmable Device Server with 1 RS-232 port, 3 RS-485 ports, PoE and IP67 Casing (RoHS)
PPDS-741-IP67/DIN CR	Programmable Device Server with 1 RS-232 port, 3 RS-485 ports, PoE, IP67 Casing and DIN-Rail Mounting (RoHS)
PPDS-742-IP67 CR	Programmable Device Server with 2 RS-232 ports, 2 RS-485 ports, PoE and IP67 Casing (RoHS)
PPDS-742-IP67/DIN CR	Programmable Device Server with 2 RS-232 ports, 2 RS-485 ports, PoE, IP67 Casing and DIN-Rail Mounting (RoHS)
PPDS-743-IP67 CR	Programmable Device Server with 3 RS-232 ports, 1 RS-485 port, PoE and IP67 Casing (RoHS)
PPDS-743-IP67/DIN CR	Programmable Device Server with 3 RS-232 ports, 1 RS-485 port, PoE, IP67 Casing and DIN-Rail Mounting (RoHS)

Accessories

GPSU06U-6	24 V _{DC} /0.25 A, 6 W Power Supply
MDR-20-24	24 V _{DC} /1 A, 24 W Power Supply with DIN-Rail Mounting
DIN-KA52F-48	48 V _{DC} /0.52 A, 25 W Power Supply with Din-Rail Mounting
NS-205 CR	Unmanaged 5-port Industrial Ethernet Switch (RoHS)
NS-205PSE CR	Unmanaged Ethernet Switch with 4 PoE Ports and 1 RJ-45 Uplink (RoHS)

3.5 PDS-800 Programmable Device Server with I/O Expansion Slot(s)



● Selection Guide

Model Name	Slots	CPU	RAM/ Flash Disk	Ethernet	Operating System	Console Port	(Optional) Max. Serial Ports	Page
PDS-811	1	80186, 80 MHz	512 KB/ 512 KB	2-port Ethernet Switch	MiniOS7	3-wire RS-232	4	3-5-2
PDS-821	2	80186, 80 MHz	512 KB/ 512 KB	2-port Ethernet Switch	MiniOS7	3-wire RS-232	8	3-5-2
PDS-842	4	PXA270, 520 MHz	64 MB/ 64 MB	Dual 10/100 M Ethernet	Linux	DB-9 RS-232	16	3-5-4
PDS-882	8	PXA270, 520 MHz	64 MB/ 64 MB	Dual 10/100 M Ethernet	Linux	DB-9 RS-232	32	3-5-4

Optional Serial Modules

Model Name	Interface	Ports	FIFO	Isolation	Self-Tuner	Connector	Page
I-8112W	9-wire RS-232	2	128 Bytes	2500 V _{rms}	-	DB-9	3-5-6
I-8114W	9-wire RS-232	4	128 Bytes	-	-	DB-37	3-5-8
I-8114IW	5-wire RS-232	4	128 Bytes	2500 V _{rms}	-	DB-37	3-5-8
I-8142W	4-wire RS-422 2-wire RS-485	2	128 Bytes	2500 V _{rms}	Yes	Terminal Block	3-5-10
I-8144IW	4-wire RS-422 2-wire RS-485	4	128 Bytes	2500 V _{rms}	Yes	Terminal Block	3-5-10

NEW


PDS-811/PDS-821

Programmable Device Server with I/O Expansion Slot(s)

Introduction

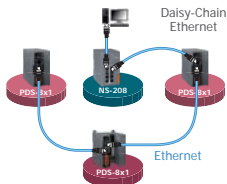
The PDS-811 and PDS-821 programmable device servers (PDS) are compact, modular, intelligent, rugged, and are designed for networking RS-232 and RS-422/485 serial devices to an Ethernet network. The PDS-811 has one I/O expansion slot, while PDS-821 has two I/O expansion slots that can be used to attach various 2- or 4-port serial communication modules. Therefore, a maximum of 4 serial ports can be installed on the PDS-811 or a maximum of 8 serial ports can be installed on the PDS-821.

Note: There is no serial module built-in to the PDS-811 or PDS-821 by default.



The PDS-811 and PDS-821 controllers are equipped with a 2-port 10/100 Base-TX Ethernet Switch that can be used to connect two network segments. The Ethernet Switch processes and routes data on the data-link layer (layer 2) of the OSI model to create a different collision domain per switch port. Using a switch allows you to attain dedicated bandwidth on point-to-point connections with every computer, and therefore run in full duplex mode with no collisions. Furthermore, the built-in 2-port Ethernet Switch on the PDS-811/821 enables network wiring to be simplified by cascading your Ethernet devices.

The PDS-8x1 series contains a built-in operating system, the MiniOS7, which offers a stable and high performance environment that is similar to DOS. The MiniOS7 can boot up the PDS-8x1 series within just one second, with the added benefit of no virus problems and a small footprint. Furthermore, the PDS-8x1 series is designed for low power consumption, maintenance elimination (no hard disk and no fan), and is constructed from fire retardant materials (UL94-V0 level) with a robust case.



Applications

- Factory Automation
- Building Automation
- Home Automation

Features

- Incorporate Serial Devices in an Ethernet network
- "Virtual COM" extends PC COM ports
- Virtual COM for 32-bit and 64-bit Windows XP/2003/Vista/7
- Programmable Internet/Ethernet Controller
- Watchdog Timer suitable for use in harsh environments
- 2-port 10/100 Base-TX Ethernet Switch (Auto-negotiating, auto MDI/MDI-X, LED indicator)
- Power Reverse Polarity Protection
- 3-wire RS-232 Console Port
- RS-232 Tx/D/RxD LED Indicators
- System Status LED Indicator
- ESD Protection and Frame Ground Design
- RoHS Compliant with no Halogen
- Built-in High Performance MiniOS7 from ICP DAS
- Low power consumption
- Made from fire retardant materials (UL94-V0 Level)

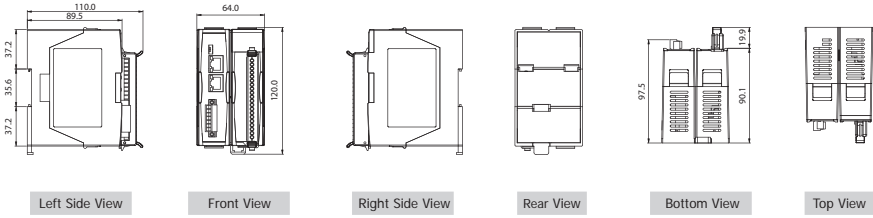


System Specifications

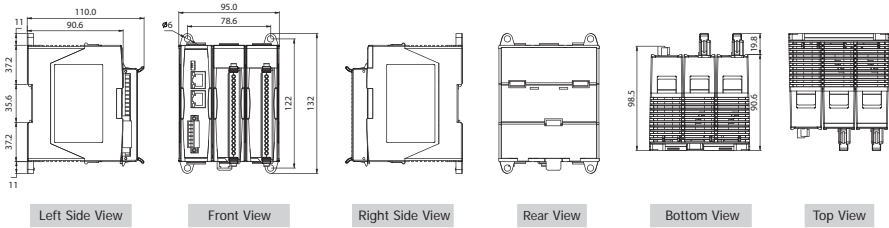
Models	PDS-811	PDS-821
CPU		
CPU	80186, 80 MHz or compatible	
SRAM	512 KB	
Flash Memory	512 KB	
EEPROM	16 KB	
NVRAM	-	
RTC (Real Time Clock)	-	
64-bit Hardware Serial Number	-	
Built-in Watchdog Timer	Yes	
I/O Expansion Slots	1 Slot	2 Slots
Communication Interface		
COM1 (Console)	RS-232 (Tx/D, Rx/D, GND)	
Ethernet	2-port 10/100 Base-TX Ethernet Switch (Auto-negotiating, auto MDI/MDI-X, LED indicator)	
COM Port Formats		
Speed	115200 bps max.	
Data Bit	7, 8	
Parity	None, Even, Odd	
Stop Bit	1	
LED Indicators		
TxD/RxD	Yes (for COM1 console port)	
System	Yes	
Power		
ESD Protection	Yes (with Frame Ground)	
Protection	Power Reverse Polarity Protection	
Required Supply Voltage	+10 V _{cc} ~ +30 V _{cc} (non-regulated)	
Power Consumption	0.6 A @ 5 V for CPU and Backplane, 1.0 A @ 5 V for Plug-in Modules, Total: 8 W	
Mechanical		
Flammability	Fire Retardant Materials (UL94-V0 Level)	
Dimensions (W x L x H, Unit: mm)	64 x 110 x 120	95 x 110 x 132
Installation	DIN-Rail	DIN-Rail or Wall mounting
Environment		
Operating Temperature	-25 °C ~ +75 °C	
Storage Temperature	-40 °C ~ +80 °C	
Humidity	5 ~ 95% RH, non-condensing	

Dimensions (Unit: mm)

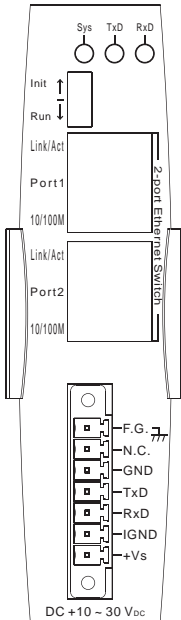
PDS-811



PDS-821



Pin Assignments



Ordering Information

PDS-811 CR	Programmable Device Server with 1 Expansion Slot (RoHS). Includes One CA-0910 Cable.
PDS-821 CR	Programmable Device Server with 2 Expansion Slots (RoHS). Includes One CA-0910 Cable.

Accessories

CA-0910	9-Pin Female D-Sub & 3-wire RS-232 Cable, 1 m Cable
MDR-20-24	24 Vdc/1 A, 24 W Power Supply with DIN-Rail Mounting
NS-205 CR	Unmanaged 5-port Industrial Ethernet Switch (RoHS)

NEW


PDS-842/PDS-882

Programmable Device Server with I/O Expansion Slot(s)

Introduction

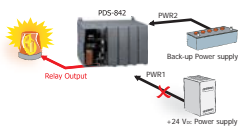
The PDS-842 and PDS-882 programmable device servers (PDS) are compact, modular, intelligent, rugged, and are designed for networking RS-232/422/485 serial devices to an Ethernet network. The PDS-842 has 4 I/O expansion slots, while the PDS-882 has 8 I/O expansion slots that can be used to attach various 2- or 4-port serial communication modules. Therefore, a maximum of 16 serial ports can be installed on the PDS-842 or a maximum of 32 serial ports can be installed on the PDS-882.



By using the PDS-842 or PDS-882, users can transparently access serial devices over the Internet.

This PDS, coupled with a large built-in RAM buffer, allows for fast transmission and prevents congestion of serial data on the network. A built-in powerful 32-bit RISC processor offers exceptional performance at low power consumption.

The PDS-842 and PDS-882 provides two Ethernet ports, which can be used to implement redundant Ethernet communication and separate Ethernet communication (one for global Internet, one for private Ethernet). To prevent the PDS-842 and PDS-882 from failing due to power loss, the power module is designed with two inputs, so that the module can continue working even if one power input fails, and, meanwhile, there is a relay output available for informing users about the power failure.



Applications

- Factory Automation
- Building Automation
- Home Automation

Features

- Linux kernel 2.6.19 Inside
- Standard PDS-8x2 SDK for Windows and Linux operating systems
- Incorporate Serial Devices in an Ethernet network
- "Virtual COM" extends PC COM ports
- Virtual COM for 32-bit and 64-bit Windows XP/2003/Vista/7
- Programmable Internet/Ethernet Controller
- Watchdog Timer suitable for use in harsh environments
- Dual-LAN, 10/100 Base-TX Ethernet (Auto-negotiating, auto MDI/MDI-X, LED Indicator)
- Power Reverse Polarity Protection
- DB-9 RS-232 console port
- ESD Protection and Frame Ground Design
- Low power consumption
- Made from fire retardant materials (UL94-V0 Level)

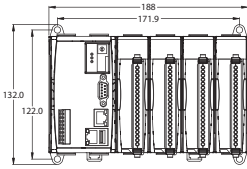


System Specifications

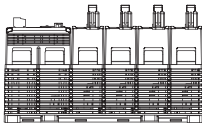
Models	PDS-842	PDS-882
CPU	PXA270 or compatible (32-bit and 520 MHz)	
SDRAM	64 MB	
Flash Memory	64 MB	
EEPROM	16 KB	
NVRAM	-	
RTC (Real Time Clock)	No	
64-bit Hardware Serial Number	Yes	
Built-in Watchdog Timer	Yes	
I/O Expansion Slots	4 Slots	8 Slots
Programmable LED Indicator	1	
Communication Interface		
COM1 (Console)	RS-232	
COM2	RS-485 (D+, D-); 3000 V _{DC} Isolated	
Ethernet	RJ-45 x 2, Dual 10/100 Base-TX Ethernet Controller (Auto-negotiating, auto MDI/MDI-X, LED indicator)	
COM Port Formats		
Speed	115200 bps max.	
Data Bit	7, 8	
Parity	None, Even, Odd	
Stop Bit	1	
Power		
ESD Protection	Yes (with Frame Ground)	
Protection	Power Reverse Polarity Protection	
Redundant Power Inputs	Yes, with one relay for warning alarm	
Required Supply Voltage	+18 V _{DC} ~ +48 V _{DC}	
Power Consumption	8.4 W (0.35 A @ 24 V _{DC})	9.1 W (0.38 A @ 24 V _{DC})
Mechanical		
Flammability	Fire Retardant Materials (UL94-V0 Level)	
Dimensions (W x L x H, Unit: mm)	188 x 132 x 111	312 x 132 x 111
Installation	DIN-Rail or Wall mounting	
Environment		
Operating Temperature	-25 °C ~ +75 °C	
Storage Temperature	-30 °C ~ +85 °C	
Humidity	5 ~ 90% RH, non-condensing	

Dimensions (Unit: mm)

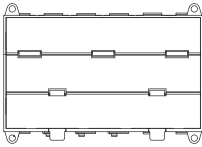
PDS-842



Front View

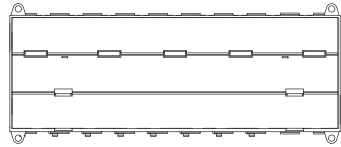
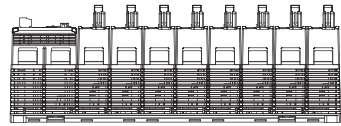
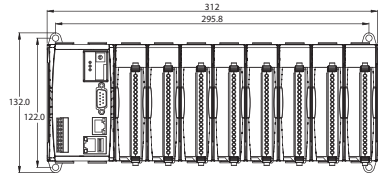


Bottom View



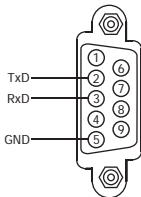
Rear View

PDS-882

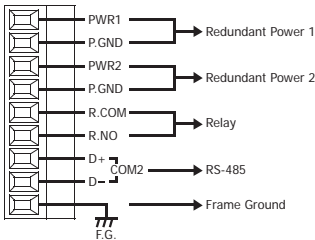


Pin Assignments

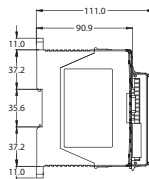
COM1: RS-232



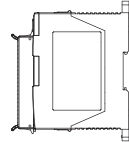
Terminal Block



PDS-842/882



Left Side View



Right Side View

Ordering Information

PDS-842	Programmable Device Server with 4 Expansion Slots
PDS-882	Programmable Device Server with 8 Expansion Slots

Accessories

KA-52F	24 V _{DC} /1.04 A, 25 W Power Supply
DIN-KA52F	24 V _{DC} /1.04 A, 25 W Power Supply with Din-Rail Mounting
MDR-60-24	24 V _{DC} /2.5 A, 60 W Power Supply with DIN-Rail Mounting
CA-0915	9-Pin Male-Female D-Sub Cable, 1.5 m Cable
NS-205 CR	Unmanaged 5-port Industrial Ethernet Switch (RoHS)



Introduction

The I-8112iW-G provides 2 isolated RS-232 serial ports. It is equipped with a 128-byte hardware FIFO for each port and offers speeds up to 115.2 kbps with support for full-duplex communication.

In the harsh industrial environment, the onboard ESD protection devices can divert this potentially damaging charge away from sensitive circuitry and protect the I-8112iW from permanent damage.

The serial communication modules are designed for use with intelligent devices like bar code readers, serial printers, intelligent sensors, instrumentation equipment, computers, and almost any device with an RS-232 or RS-422/485 port.

I/O Specifications

RS-232 Interface	
Number of Ports	2
Interface	TxD, RxD, RTS, CTS, DSR, DTR, DCD, RI, GND
Controller	16C950 Compatible
	Speed: 115200 bps max.
	Data Bit: 5, 6, 7, 8
	Stop Bit: 1, 1.5, 2
	Parity: None, Even, Odd, Mark, Space
Interrupt	Shared Interrupt
Bus	Parallel I/O Module
Connector	DB-9 (Male)
Intra-module Isolated, Field to Logic	2500 V _{ms}
ESD Protection	+/-4 kV (Contact for each channel)

Software

Software
Supports interrupt driven software library
Supports VxCOM library

RS-232 Interface

Features

- High-profile Module
- 2500 V_{ms} Isolation
- Serial Port with +/-4 kV ESD Protection
- Internal 128-byte Hardware FIFO for each Port
- Baud Rate of up to 115200 bps
- LED Indicators for Tx/D and Power Status
- RoHS Compliant with no Halogen
- Low power consumption
- Made from fire retardant materials (UL94-V0 Level)



Applications

- Factory Automation
- Building Automation
- Home Automation

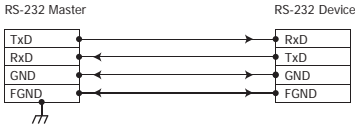
System Specifications

LED Indicators	
Power	1 LED
TxD	2 LEDs
RxD	2 LEDs
Power	
Power Consumption	1.5 W
Mechanical	
Dimensions (W x L x H)	31 mm x 86 mm x 114 mm
Environment	
Operating Temperature	-25 °C ~ +75 °C
Storage Temperature	-30 °C ~ +80 °C
Humidity	10 ~ 95% RH, non-condensing

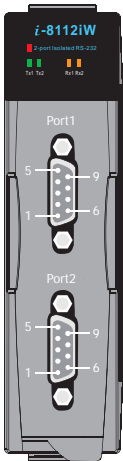
Wiring

DTE Device (Computer)			DTE to DCE Connections		DCE Device (Modem)		
Pin#	DB9	RS-232 Signal Names	Signal Direction		Pin#	DB9	RS-232 Signal Names
#1	Carrier Detector	DCD	←	→	#1	Carrier Detector	DCD
#2	Receive Data	RxD	←	→	#2	Transmit Data	TxD
#3	Transmit Data	TxD	→	←	#3	Receive Data	RxD
#4	Data Terminal Ready	DTR	←	→	#4	Data Set Ready	DSR
#5	Signal Ground/Common (SG)	GND	←	→	#5	Signal Ground/Common (SG)	GND
#6	Data Set Ready	DSR	←	→	#6	Data Terminal Ready	DTR
#7	Request to Send	RTS	←	→	#7	Clear to Send	CTS
#8	Clear to Send	CTS	←	→	#8	Request to Send	RTS
#9	Ring Indicator	RI	←	→	#9	Ring Indicator	RI
Soldered to DB9 Metal-Shield			←	→	Soldered to DB9 Metal-Shield		
		FGND					FGND

3-wire RS-232 Wiring



Pin Assignments



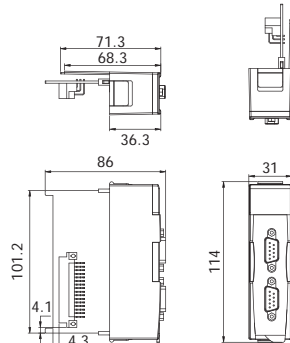
Pin Assignment	Terminal	No.	Pin Assignment
GND1	05	09	RI1
DTR1	04	08	CTS1
TxD1	03	07	RTS1
RxD1	02	06	DSR1
DCD1	01		

Port1 9-Pin Male D-Sub Connector

Pin Assignment	Terminal	No.	Pin Assignment
GND2	05	09	RI1
DTR2	04	08	CTS2
TxD2	03	07	RTS2
RxD2	02	06	DSR2
DCD2	01		

Port2 9-Pin Male D-Sub Connector

Dimensions (Unit: mm)



Ordering Information

I-8112IW-G CR	2-port Isolated RS-232 Module (RoHS)
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Accessories

CA-0915	9-Pin Male-Female D-Sub Cable, 1.5 m
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Introduction

The I-8114W-G provides 4 non-isolated RS-232 serial ports, while the I-8114iW-G provides 4 isolated RS-232 serial ports. It is equipped with a 128-byte hardware FIFO for each port and offers speeds up to 115.2 kbps with support for full-duplex communication.

In the harsh industrial environment, the onboard ESD protection devices can divert this potentially damaging charge away from sensitive circuitry and protect the I-8114W/I-8114iW from permanent damage.

The serial communication modules are designed for use with intelligent devices like bar code readers, serial printers, intelligent sensors, instrumentation equipment, computers, and almost any device with an RS-232 or RS-422/485 port.

I/O Specifications

Models	I-8114W	I-8114iW
RS-232 Interface		
Number of Ports	4	
Interface	TxD, RxD, RTS, CTS, DSR, DTR, DCD, RI, GND	TxD, RxD, RTS, CTS, GND
Controller	16C950 Compatible Speed: 115200 bps max. Data Bit: 5, 6, 7, 8 Stop Bit: 1, 1.5, 2 Parity: None, Even, Odd, Mark, Space FIFO: Internal 128 bytes for each port	
Interrupt	Shared Interrupt	
Bus	Parallel I/O Module	
Connector	DB-37 (Female)	
Intra-module Isolated, Field to Logic	-	2500 V _{ms}
ESD Protection	+/-4 kV (Contact for each channel)	

Software

Software
Supports interrupt driven software library
Supports VxCOM library

RS-232 Interface

Features

- High-profile Module
- 2500 V_{ms} Isolation for I-8114iW
- Serial Port with +/-4 kV ESD Protection
- Internal 128-byte Hardware FIFO for each Port
- Baud Rate of up to 115200 bps
- LED Indicators for TxD, RxD and Power Status
- RoHS Compliant with no Halogen
- Low power consumption
- Made from fire retardant materials (UL94-V0 Level)



Applications

- Factory Automation
- Building Automation
- Home Automation

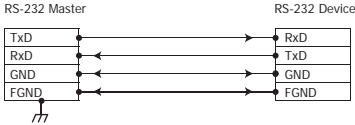
System Specifications

Models	I-8114W	I-8114iW
LED Indicators		
Power	1 LED	
TxD	4 LEDs	
RxD	4 LEDs	
Power		
Power Consumption	1.25 W	1.75 W
Mechanical		
Dimensions (W x L x H)	31 mm x 85 mm x 114 mm	
Environment		
Operating Temperature	-25 °C ~ +75 °C	
Storage Temperature	-30 °C ~ +80 °C	
Humidity	10 ~ 95% RH, non-condensing	

Wiring

DTE Device (Computer)		DB9	DTE to DCE Connections		DCE Device (Modem)		DB9
Pin#	DB9	RS-232 Signal Names	Signal Direction		Pin#	DB9	RS-232 Signal Names
#1	Carrier Detector	DCD	←	→	#1	Carrier Detector	DCD
#2	Receive Data	RxD	←	→	#2	Transmit Data	TxD
#3	Transmit Data	TxD	→	←	#3	Receive Data	RxD
#4	Data Terminal Ready	DTR	←	→	#4	Data Set Ready	DSR
#5	Signal Ground/Common (SG)	GND	←	→	#5	Signal Ground/Common (SG)	GND
#6	Data Set Ready	DSR	←	→	#6	Data Terminal Ready	DTR
#7	Request to Send	RTS	←	→	#7	Clear to Send	CTS
#8	Clear to Send	CTS	←	→	#8	Request to Send	RTS
#9	Ring Indicator	RI	←	→	#9	Ring Indicator	RI
Soldered to DB9 Metal-Shield		FGND	←	→	Soldered to DB9 Metal-Shield		FGND

3-wire RS-232 Wiring



Pin Assignments

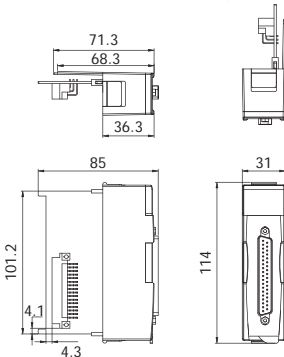
Pin Assignment	Terminal No.	Pin Assignment	
N.C.	01	20	RI3
DCD3	02	21	DTR3
GND	03	22	DSR3
CTS3	04	23	RTS3
RxD3	05	24	TxD3
RI4	06	25	DCD4
DTR4	07	26	GND
DSR4	08	27	CTS4
RTS4	09	28	RxD4
TxD4	10	29	RI2
DCD2	11	30	DTR2
GND	12	31	DSR2
CTS2	13	32	RTS2
RxD2	14	33	TxD2
RI1	15	34	DCD1
DTR1	16	35	GND
DSR1	17	36	CTS1
RTS1	18	37	RxD1
TxD1	19		

37-Pin Female D-Sub Connector

Pin Assignment	Terminal No.	Pin Assignment	
N.C.	01	20	N.C.
N.C.	02	21	N.C.
GND3	03	22	N.C.
CTS3	04	23	RTS3
RxD3	05	24	TxD3
N.C.	06	25	N.C.
N.C.	07	26	GND4
N.C.	08	27	CTS4
RTS4	09	28	RxD4
TxD4	10	29	N.C.
N.C.	11	30	N.C.
GND2	12	31	N.C.
CTS2	13	32	RTS2
RxD2	14	33	TxD2
N.C.	15	34	N.C.
N.C.	16	35	GND1
N.C.	17	36	CTS1
RTS1	18	37	RxD1
TxD1	19		

37-Pin Female D-Sub Connector

Dimensions (Unit: mm)



Ordering Information

I-8114W-G CR	4-port RS-232 Module (RoHS)
I-8114W-G/D2 CR	4-port RS-232 Module (RoHS) Includes One CA-9-3705 Cable
I-8114IW-G CR	4-port Isolated RS-232 Module (RoHS)
I-8114IW-G/D2 CR	4-port Isolated RS-232 Module (RoHS) Includes One CA-9-3705 Cable

Accessories

CA-4002	37-Pin Male D-Sub Connector with Plastic Cover.
CA-9-3705	DB-37 Male (D-Sub) to 4-port DB-9 Male (D-Sub) Cable 0.3 m Cable for I-8114W-G/I-8114IW-G (90°)



I-8142iW-G/I-8144iW-G

I-8142iW-G: 2-port Isolated RS-422/485 Module
 I-8144iW-G: 4-port Isolated RS-422/485 Module

Introduction

The I-8142iW-G provides 2 isolated RS-422/485 serial ports, while the I-8144iW-G provides 4 isolated RS-422/485 serial ports. It is equipped with a 128-byte hardware FIFO for each port and offers speeds up to 115.2 kbps with support for RS-422 full-duplex communication.

In the harsh industrial environment, the onboard ESD protection devices can divert this potentially damaging charge away from sensitive circuitry and protect the I-8142iW/I-8144iW from permanent damage.

The serial communication modules are designed for use with intelligent devices like bar code readers, serial printers, intelligent sensors, instrumentation equipment, computers, and almost any device with an RS-232 or RS-422/485 port.

I/O Specifications

Models	I-8142iW	I-8144iW
RS-422/485 Interface		
Number of Ports	2	4
Interface	Isolated RS-422/485 (The RS-422 and RS-485 can not be used simultaneously) RS-422: TxD+, TxD-, RxD+, RxD-, GND RS-485: D+, D-, GND	
2-wire Cabling/ 4-wire Cabling	Belden 8941 (2P twisted-pair cable)/ Belden 8942 (4P twisted-pair cable), If different cables are used, the transmission distance may change	
Transfer Distance	Max. of 1,200 m at 9.6 kbps; Max. of 400 m at 115.2 kbps	
4-wire Cabling	Max. of 256 devices. in a single RS-485 network without using a repeater	
Controller	16C950 Compatible Speed: 115200 bps max. Data Bit: 5, 6, 7, 8 Stop Bit: 1, 1.5, 2 Parity: None, Even, Odd, Mark, Space FIFO: Internal 128 bytes for each port	
Self-Tuner Asic inside	Yes	
Interrupt	Shared Interrupt	
Bus	Parallel I/O Module	
Connector	Removable 20-Pin Terminal Block	
Intra-module Isolated, Field to Logic	2500 V _{ms}	
ESD Protection	+/-4 kV (Contact for each channel)	

RS-422/485 Interface

Features

- High-profile Module
- 2500 V_{ms} Isolation
- Serial Port with +/-4 kV ESD Protection
- Internal 128-byte Hardware FIFO for each Port
- Baud Rate of up to 115200 bps
- LED Indicators for Tx/D and Power Status
- Built-in Self-Tuner or Auto-Direction Control
- RoHS Compliant with no Halogen
- Low power consumption
- Made from fire retardant materials (UL94-V0 Level)



Applications

- Factory Automation
- Building Automation
- Home Automation

System Specifications

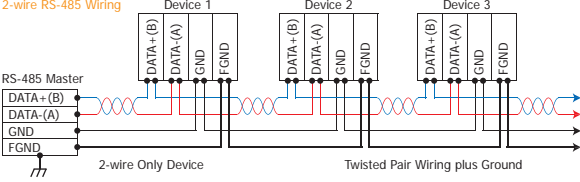
Models	I-8142iW	I-8144iW
LED Indicators		
Power	1 LED	
TxD	2 LEDs	4 LEDs
RxD	2 LEDs	4 LEDs
Power		
Power Consumption	1.5 W (Without Resistor)	1.75 W (Without Resistor)
	2 W (With 2 Resistors, 1/4 Watt, 120 Ω 5%)	3 W (With 4 Resistors, 1/4 Watt, 120 Ω 5%)
Mechanical		
Dimensions (W x L x H)	30 mm x 102 mm x 115 mm	
Environment		
Operating Temperature	-25 °C ~ +75 °C	
Storage Temperature	-30 °C ~ +80 °C	
Humidity	10 ~ 95% RH, non-condensing	

Software

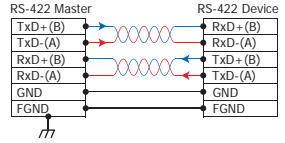
Software
Supports interrupt driven software library
Supports VxCOM library

Wiring

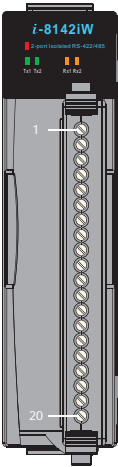
2-wire RS-485 Wiring



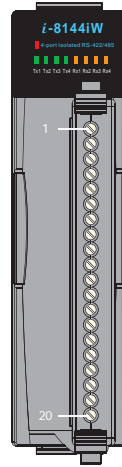
4-wire RS-422 Wiring



Pin Assignments

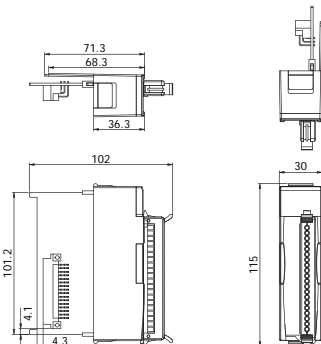


Terminal No.	Pin Assignment
01	D1+/TxD1+
02	D1-/TxD1-
03	RxD1+
04	RxD1-
05	GND1
06	D2+/TxD2+
07	D2-/TxD2-
08	RxD2+
09	RxD2-
10	GND2
11	N.C.
12	N.C.
13	N.C.
14	N.C.
15	N.C.
16	N.C.
17	N.C.
18	N.C.
19	N.C.
20	N.C.



Terminal No.	Pin Assignment
01	D1+/TxD1+
02	D1-/TxD1-
03	RxD1+
04	RxD1-
05	GND1
06	D2+/TxD2+
07	D2-/TxD2-
08	RxD2+
09	RxD2-
10	GND2
11	D3+/TxD3+
12	D3-/TxD3-
13	RxD3+
14	RxD3-
15	GND3
16	D4+/TxD4+
17	D4-/TxD4-
18	RxD4+
19	RxD4-
20	GND4

Dimensions (Unit: mm)



Ordering Information

I-8142IW-G CR	2-port Isolated RS-422/485 Module (RoHS)
I-8144IW-G CR	4-port Isolated RS-422/485 Module (RoHS)

3.6. Programmable Serial-to-Fiber Device Server



NEW

PDS-220Fx

Programmable Device Server with
1 RS-232, 1 RS-422/485 and 1 Fiber ports

Features

- Adds optical fiber connectivity to serial devices
- "Virtual COM" extends PC COM ports
- Virtual COM for 32-bit and 64-bit Windows XP/2003/Vista/7
- Powerful programmable device server
- Watchdog timer suitable for use in harsh environments
- Power reverse polarity protection
- Serial port +/-4 kV ESD protection circuit
- Self-tuner ASIC controller on the RS-485 port
- RoHS compliant with no halogen
- Built-in high performance MiniOS7 from ICP DAS
- 100 Base-FX (SC/ST connectors)
- ODM service is available
- Low power consumption
- Made from fire retardant materials (UL94-V0 level)



Introduction

The PDS-220Fx series is a family of Programmable Device Servers, also known as "Serial-to-Fiber gateway", that are designed for adding optical fiber connectivity to RS-232/422/485 devices.

The fiber-optic communications permits transmission over longer distances than other forms of communications because of the signals travel along them with less loss and no crosstalk. It has following important features:

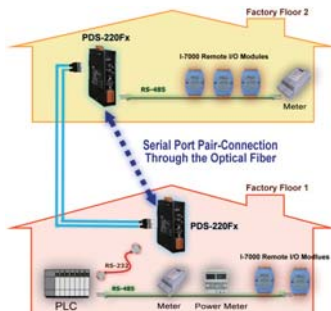
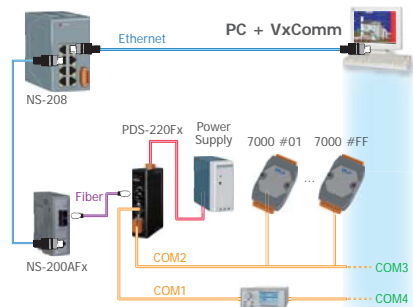
- Immunity to electromagnetic interference (EMI) — Motors, relays, welders and other industrial equipment generate a tremendous amount of electrical noise that can cause major problems with copper cabling.
- High electrical resistance, making it safe to use near high-voltage equipment or between areas with different earth potentials.
- No sparks — important in flammable or explosive gas environments.
- Not electromagnetically radiating, and difficult to tap without disrupting the signal — important in high-security environments.

Because of these reasons, optical fibers have largely replaced copper wire communications in core networks in the developed world.

The user-friendly VxComm Driver/Utility allows users to easily turn the built-in COM ports of the PDS-220Fx series into standard COM ports on a PC. By virtue of its protocol independence, a small-core OS and high flexibility, the PDS-220Fx series is able to meet the demands of every network-enabled application.

The PDS-220Fx series includes a powerful and reliable Xserver programming structure that allows you to design your robust Ethernet applications in one day. The built-in, high-performance MiniOS7 boots the PDS-220Fx up in just one second and gives you fastest responses.

The PDS-220Fx is equipped with 1 RS-232 port and 1 RS-422/485 port. The removable onboard terminal block connector is designed for easy and robust wiring in industrial situations.



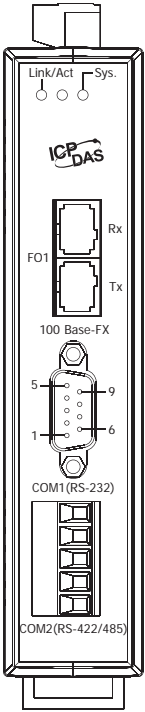
Applications

Factory, Building and Home Automation

System Specifications

Models	PDS-220FT	PDS-220FC	PDS-220FCS	PDS-220FCS-60	
CPU					
CPU	80186, 80 MHz or compatible				
SRAM	512 KB				
Flash	512 KB; Erase unit is one sector (64 KB); 100,000 erase/write cycles				
EEPROM	16 KB; Data retention: 40 years; 1,000,000 erase/write cycles				
Built-in Watchdog Timer	Yes				
Init Pin	Yes				
Communication Interface					
COM1	Male DB-9, 5-wire RS-232 (Rx, Tx, CTS, RTS, GND); Note: +/- 4 kV ESD Protection				
COM2	Removable Terminal Block 2-wire RS-485 (D+, D-, GND) with Self-tuner ASIC or 4-wire RS-422 (Tx+, Tx-, Rx+, Rx-, GND) Note: +/- 4 kV ESD Protection				
Fiber Port	100 Base-FX, ST connector	100 Base-FX, SC connector			
					
Mode	Fiber Cables	Multi-mode: 50/125, 62.5/125 or 100/140 μm		Single mode: 8.3/125, 8.7/125, 9/125 or 10/125 μm	
	Wavelength	1300 or 1310nm			
	Min. TX Output	- 20 dBm		- 15 dBm	- 5 dBm
	Max. TX Output	-14 dBm		- 8 dBm	0 dBm
	Max. RX Sensitivity	-32 dBm		- 34 dBm	- 35 dBm
	Max. RX Overload	-8 dBm		- 5 dBm	
Budget	12 dBm		19 dBm	30 dBm	
Distance	2 km, (62.5/125 μm recommended) for full duplex		30 km, (9/125 μm recommended) for full duplex	60 km, (9/125 μm recommended) for full duplex	
COM Port Formats					
UART	16c550 or compatible				
Data Bit	7, 8				
Parity	None, Even, Odd, Mark, Space				
Stop Bit	1, 2				
Baud Rate	115200 bps max.				
LED Indicators					
Link/Act	Green				
System	Red				
Power					
Power Input	+12 V _{DC} ~ +48 V _{DC} (non-regulated)				
Power Consumption	0.14 A @ 24 V _{DC}				
Protection	Power Reverse Polarity Protection				
Frame GND	Yes, for EMS Protection				
Mechanical					
Flammability	Fire Retardant Materials (UL94-V0 Level)				
Dimensions (W x L x H)	31 mm x 121 mm x 157 mm		31 mm x 123 mm x 157 mm		
Installation	DIN-Rail				
Environment					
Operating Temperature	-25 °C ~ +75 °C				
Storage Temperature	-30 °C ~ +85 °C				
Humidity	10 ~ 90% RH, non-condensing				

Pin Assignments

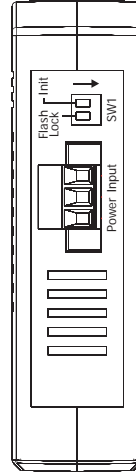


Pin Assignment	Terminal No.	Terminal No.	Pin Assignment
GND	05	09	--
--	04	08	CTS
TxD	03	07	RTS
RxD	02	06	--
--	01		

COM1: Male DB-9 Connector

Terminal No.	Pin Assignment
01	TxD+/D+
02	TxD-/D-
03	RxD+
04	RxD-
05	GND

COM2: Removable Terminal Block

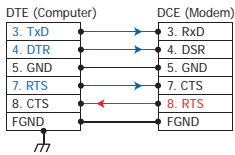


Terminal No.	Pin Assignment
03	PWR
02	P.GND
01	F.G.

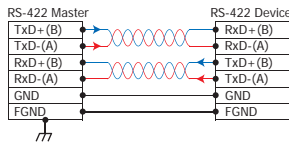
Power Input: Removable Terminal Block

Wiring

5-wire RS-232 Connection (DB-9)



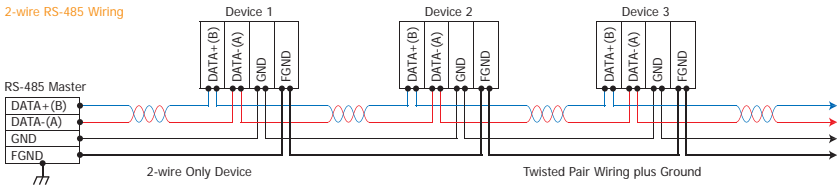
4-wire RS-422 Wiring



Fiber Optic Wiring

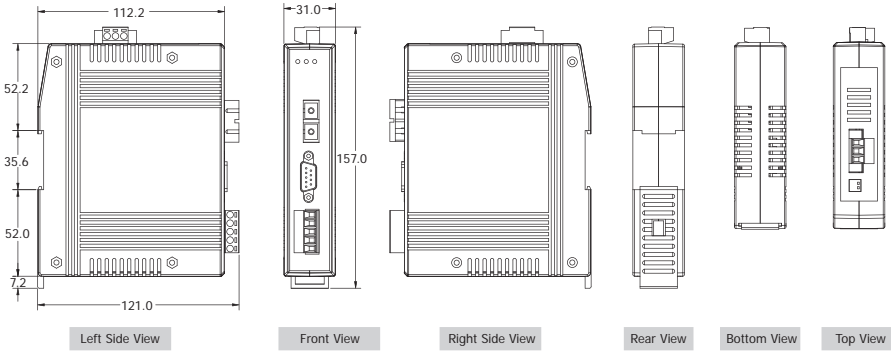


2-wire RS-485 Wiring

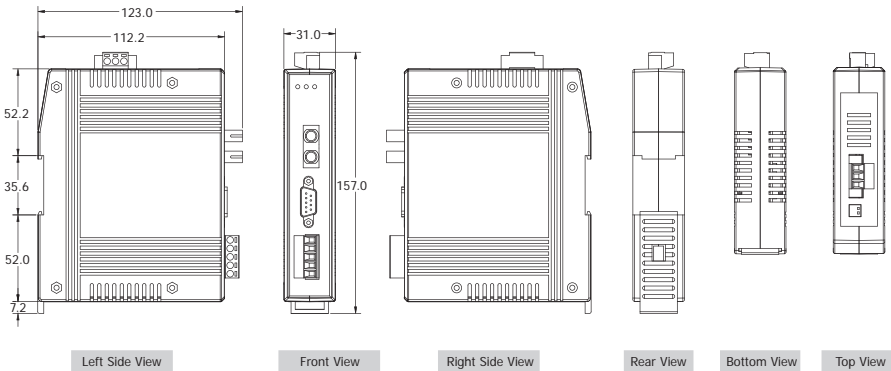


Dimensions (Unit: mm)

PDS-220FT



PDS-220FC/FCS/FCS-60



Ordering Information

PDS-220FT CR	Programmable Device Server with 1 RS-232, 1 RS-422/485 and 1 Multi-mode ST Fiber Ports (RoHS)
PDS-220FC CR	Programmable Device Server with 1 RS-232, 1 RS-422/485 and 1 Multi-mode SC Fiber Ports (RoHS)
PDS-220FCS CR	Programmable Device Server with 1 RS-232, 1 RS-422/485 and 1 Single-mode SC Fiber Ports (RoHS)
PDS-220FCS-60 CR	Programmable Device Server with 1 RS-232, 1 RS-422/485 and 1 Single-mode SC Fiber Ports (RoHS)

Accessories

GPSU06U-6 CR	24 V _{DC} /0.25 A, 6 W Power Supply
MDR-20-24 CR	24 V _{DC} /1 A, 24 W Power Supply with DIN-Rail
CA-0903	9-Pin Female D-Sub and RS-232 Connector Cable, 30 cm Cable
CA-0910	9-Pin Female D-Sub and 3-wire RS-232 Cable, 1 m Cable
NS-200AFT CR	Industrial 10/100 Base-T to 100 Base-FX Media Converter; 1 multi-mode ST connector (RoHS)
NS-200AFC CR	Industrial 10/100 Base-T to 100 Base-FX Media Converter; 1 multi-mode SC connector (RoHS)
NS-200AFCS CR	Industrial 10/100 Base-T to 100 Base-FX Media Converter; 1 single mode SC connector (RoHS)
NS-200AFCS-40T CR	Industrial 10/100 Base-T to 100 Base-FX Media Converter; 1 (40km)single mode SC connector (RoHS)
NS-205 CR	Unmanaged 5-Port Industrial Ethernet Switch (RoHS)
DIN-KA52F-48 CR	48V/0.52A, 25 W Power Supply with Din-Rail Mounting (RoHS, for NS-205PSE)

3.7. Tiny Serial-to-Ethernet Device Server and Modbus Gateway



tDS-700 Series

Tiny Serial-to-Ethernet Device Server

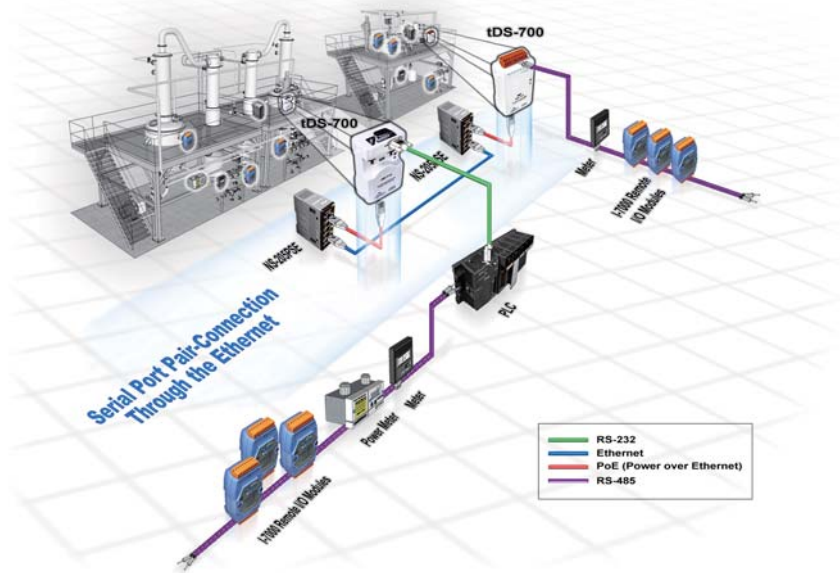
Features

- Incorporates any RS-232/422/485 serial device in Ethernet
- Includes a VxComm Driver for 32/64-bit Windows XP/2003/Vista/7
- Supports pair-connection (serial-bridge, serial-tunnel) applications
- Contains a 32-bit MCU that efficiently handles network traffic
- 10/100 Base-TX Ethernet, RJ-45 x1 (Auto-negotiating, auto MDI/MDIX, LED Indicators)
- Includes redundant power inputs: PoE and DC jack
- Allows automatic RS-485 direction control
- Supports TCP, UDP, HTTP, DHCP, BOOTP and TFTP protocols
- Supports UDP responder for device discovery
- Allows easy firmware updates via the Ethernet
- Contains a tiny Web server for configuration
- Male DB-9 or terminal block connector for easy wiring
- Tiny form-factor and low power consumption
- RoHS compliant with no Halogen
- Made from fire retardant materials (UL94-V0 Level)
- Cost-effective Device Servers

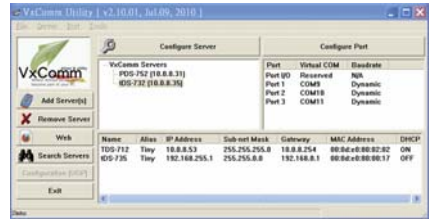


Introduction

The tDS-700 is a series of Serial-to-Ethernet device servers designed to add Ethernet and Internet connectivity to any RS-232 and RS-422/485 device, and to eliminate the cable length limitation of legacy serial communication. By using the VxComm Driver/Utility, the built-in COM port of the tDS-700 series can be virtualized to a standard PC COM port in Windows. Therefore, users can transparently access or monitor serial devices over the Internet/Ethernet without software modification.



The VxComm Driver/Utility supports the most popular operating system in the world, including 32-bit and 64-bit Windows 7/Vista/2008/2003/XP. The virtual COM works transparently and is protocol independent, enabling perfect integration with your current central computer. The utility provides an easy configuration interface that can be used to quickly create and map virtual COM ports to one or several tDS-700 modules. In addition, the utility contains a built-in terminal program, so users can send/receive command/data via the terminal program for easy testing.



The tDS-700 device servers can be used to create a pair-connection application (as well as serial-bridge or serial-tunnel), and can then route data over TCP/IP between two serial devices, which is useful when connecting mainframe computers, servers or other serial devices that do not themselves have Ethernet capability. By virtue of its protocol independence and flexibility, the tDS-700 meets the demands of virtually any network-enabled application.



DHCP minimizes configuration errors caused by manual IP address configuration, such as address conflicts caused by the assignment of an IP address to more than one computer or device at the same time. The tDS-700 supports the DHCP client function, which allows the tDS-700 to easily obtain the necessary TCP/IP configuration information from a DHCP server. The tDS-700 also contains a UDP responder that transmits its IP address information in response to a UDP search from the VxComm Utility, making local management more efficient.

The tDS-700 features a powerful 32-bit MCU to enable efficient handling of network traffic. It also has a built-in web server that provides an intuitive web management interface to allow users to modify the settings of the module, including DHCP/Static IP, gateway/mask and serial ports.

Based on an amazing tiny form-factor, the tDS-700 achieves the maximum space savings that allows it to be easily installed anywhere, even directly attached to a serial device or embedded into a machine.

The tDS-700 series also contains a built-in CPU watchdog, which automatically resets the CPU if the built-in firmware is operating abnormally, or if there is no communication between the tDS-700 and the host for a predefined period of time (system timeout). This is an important feature that ensures the tDS-700 operates continuously, even in harsh environments.

The tDS-700 offers true IEEE 802.3af-compliant (classification, Class 1) Power over Ethernet (PoE) functionality using a standard category 5 Ethernet cable to receive power from a PoE switch such as the NS-205PSE.

If there is no PoE switch on site, the tDS-700 will also accept power input from a DC adapter. The tDS-700 is designed for ultra-low power consumption, reducing hidden costs from increasing fuel and electricity prices, especially when you have a huge amount of device servers installed. Reducing the amount of electricity consumed by choosing energy-efficient equipment can have a positive impact on maintaining a green environment.

The tDS-712 is equipped with a male DB-9 connector, while other models are equipped with a removable terminal block connector to allow easy wiring, and also supports automatic RS-485 direction control when sending and receiving data.

The tDS-700 has the same basic Serial-to-Ethernet gateway and virtual COM functions as the PPDS-700-MTCP series, as shown in the right-hand-side comparison table.

	tDS-700 Series	PPDS-700-MTCP Series
Ethernet	10/100 M, PoE	10/100 M, PoE
Programmable	-	Yes
Virtual COM	Yes	Yes
Virtual I/O	-	Yes
DHCP	Yes	Yes
Web Configuration	Yes	Yes
UDP Search	Yes	Yes
Modbus Gateway	-	Yes
Multi-client	-	Yes
Remarks	Cost-effective	-



Applications

- Factory Automation
- Building Automation
- Home Automation
- Remote Diagnosis and Management





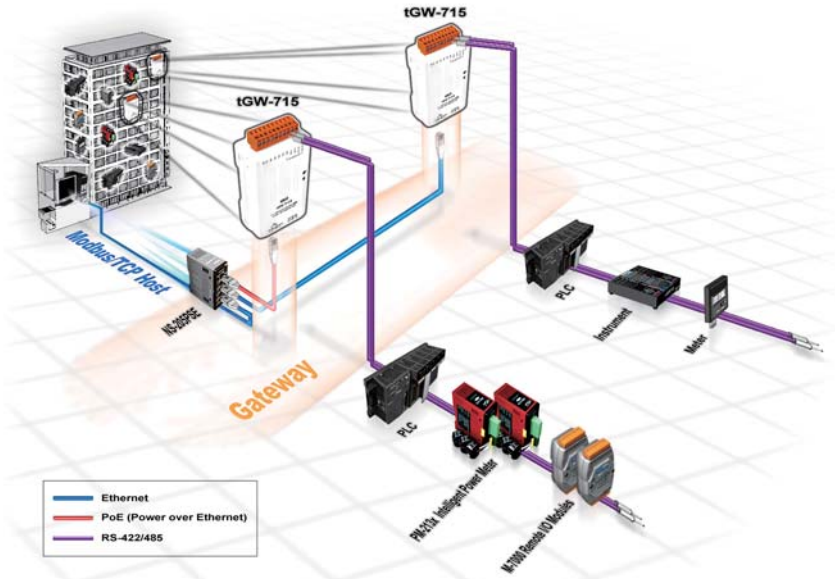
Features

- Cost-effective Modbus/TCP to RTU/ASCII Gateway
- Supports Modbus/TCP master and slave
- Supports Modbus RTU/ASCII master and slave
- Contains a 32-bit MCU that efficiently handles network traffic
- 10/100 Base-TX Ethernet, RJ-45 x1 (Auto-negotiating, auto MDI/MDIX, LED Indicators)
- Includes redundant power inputs: PoE and DC jack
- Allows automatically RS-485 direction control
- Supports TCP, UDP, HTTP, DHCP, BOOTP and TFTP protocols
- Supports UDP responder for device discovery
- Allows easy firmware updates via the Ethernet
- Contains a tiny Web server for configuration
- Male DB-9 or terminal block connector for easy wiring
- Tiny form-factor and low power consumption
- RoHS compliant with no Halogen
- Made from fire retardant materials (UL94-V0 Level)

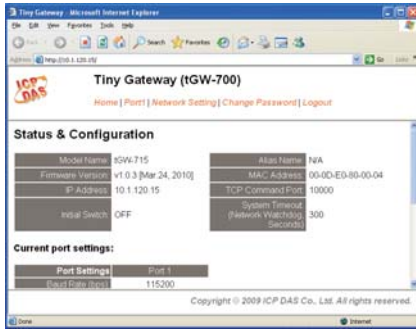


Introduction

Modbus has become a de facto standard industrial communication protocol, and is now the most commonly available means of connecting industrial electronic devices. Modbus allows for communication between many devices connected to the same RS-485 network, for example, a system that measures temperature and humidity and communicates the results to a computer. Modbus is often used to connect a supervisory computer with a remote terminal unit (RTU) in supervisory control and data acquisition (SCADA) systems.



The tGW-700 module is a Modbus TCP to RTU/ASCII gateway that enables a Modbus/TCP host to communicate with serial Modbus RTU/ASCII devices through an Ethernet network, and eliminates the cable length limitation of legacy serial communication devices. The module can be used to create a pair-connection application (as well as serial-bridge or serial-tunnel application), and can then route data over TCP/IP between two serial Modbus RTU/ASCII devices, which is useful when connecting mainframe computers, servers or other serial devices that use Modbus RTU/ASCII protocols and do not themselves have Ethernet capability.



DHCP minimizes configuration errors caused by manual IP address configuration, such as address conflicts caused by the assignment of an IP address to more than one computer or device at the same time. The tGW-700 module supports the DHCP client function, which allows it to easily obtain the necessary TCP/IP configuration information from a DHCP server. The module also contains a UDP responder that transmits its IP address information in response to a UDP search from the eSearch utility, making local management more efficient.

The tGW-700 module features a powerful 32-bit MCU to enable efficient handling of network traffic, and also has a built-in web server that provides an intuitive web management interface that allows users to modify the configuration of the module, including the DHCP/Static IP, the gateway/mask settings and the serial port settings.

The module contains a dual watchdog, including a CPU watchdog (for hardware functions) and a host watchdog (for software functions). The CPU watchdog automatically resets the CPU if the built-in firmware is operating abnormally, while the host watchdog automatically resets the CPU if there is no communication between the module and the host (PC or PLC) for a predefined period of time (system timeout). The dual watchdog is an important feature that ensures the module operates continuously, even in harsh environments.



The tGW-700 module offers true IEEE 802.3af-compliant (classification, Class 1) Power over Ethernet (PoE) functionality using a standard category 5 Ethernet cable to receive power from a PoE switch such as the NS-205PSE. If there is no PoE switch on site, the module will also accept power input from a DC adapter. The tGW-700 module is designed for ultra-low power consumption, reducing hidden costs from increasing fuel and electricity prices, especially when you have a large number of modules installed. Reducing the amount of electricity consumed by choosing energy-efficient equipment can have a positive impact on maintaining a green environment.

The module is equipped with a male DB-9 or a removable terminal block connector to allow easy wiring. Based on an amazing tiny form-factor, the tGW-700 achieves maximum space savings that allows it to be easily installed anywhere, even directly embedded into a machine. It also supports automatic RS-485 direction control when sending and receiving data, thereby improving the stability of the RS-485 communication.

	tGW-700 Series	PPDS-700-MTCP Series
Ethernet	10/100 M, PoE	10/100 M, PoE
Programmable	-	Yes
Virtual COM	-	Yes
Virtual I/O	-	Yes
DHCP	Yes	Yes
Web Configuration	Yes	Yes
UDP Search	Yes	Yes
Modbus Gateway	Yes	Yes
Multi-client	-	Yes
Remarks	Cost-effective	-

Applications

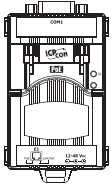
- Factory Automation
- Building Automation
- Home Automation
- Remote Diagnosis and Management



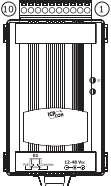
Specifications

Models	tDS-712 tGW-712	tDS-722 tGW-722	tDS-732 tGW-732	tDS-715 tGW-715	tDS-725 tGW-725	tDS-735 tGW-735	tDS-718 tGW-718	tDS-724 tGW-724	tDS-734 tGW-734
System									
CPU	32-bit MCU								
Communication Interface									
Ethernet	10/100 Base-TX, 8-pin RJ-45 x 1, (Auto-negotiating, Auto-MDI/MDIX, LED indicator) PoE (IEEE 802.3af, Class 1)								
COM1	5-wire RS-232	5-wire RS-232	3-wire RS-232	2-wire RS-485	2-wire RS-485	2-wire RS-485	3-wire RS-232	2-wire RS-485	2-wire RS-485
				4-wire RS-422			4-wire RS-485		
COM2	-	5-wire RS-232	3-wire RS-232	-	2-wire RS-485	2-wire RS-485	-	5-wire RS-232	3-wire RS-232
COM3	-	-	3-wire RS-232	-	-	2-wire RS-485	-	-	3-wire RS-232
Self-Tuner	-			Yes, automatic RS-485 direction control					
UART	16c550 or compatible								
COM Port Format									
Baud Rate	115200 bps Max.								
Data Bit	5, 6, 7, 8								
Parity	None, Odd, Even, Mark, Space								
Stop Bit	1, 2								
Power									
Power Input	PoE	IEEE 802.3af, Class 1							
	DC jack	+12 – 48 V _{DC}							
Power Consumption	0.05 A @ 24 V _{DC}								
Connector	Male DB-9 x 1	10-Pin Removable Terminal Block x 1							
Mechanical									
Flammability	Fire Retardant Materials (UL94-V0 Level)								
Dimensions (W x H x D) (mm)	52 x 90 x 27	52 x 95 x 27							
Installation	DIN-Rail mounting								
Environment									
Operating Temperature	-25 °C – +75 °C								
Storage Temperature	-30 °C – +80 °C								
Humidity	10 – 90% RH, non-condensing								
3-wire RS-232: RxD, TxD, GND (Non-Isolated) 5-wire RS-232: RxD, TxD, CTS, RTS, GND (Non-Isolated) 2-wire RS-485: DATA+, DATA-, GND (Non-Isolated) 4-wire RS-422: TxD+, TxD-, RxD+, RxD-, GND (Non-Isolated)									

Pin Assignments



IDS-712/iGW-712	
09	N/A
08	CTS1
07	RTS1
06	N/A
05	GND
04	N/A
03	TxD1
02	RxD1
01	N/A



IDS-722/iGW-722	
10	F.G.
09	CTS2
08	RTS2
07	RxD2
06	TxD2
05	GND
04	CTS1
03	RTS1
02	RxD1
01	TxD1

IDS-732/iGW-732	
10	F.G.
09	GND
08	RxD3
07	TxD3
06	GND
05	RxD2
04	TxD2
03	GND
02	RxD1
01	TxD1

IDS-715/iGW-715	
10	F.G.
09	N/A
08	N/A
07	N/A
06	N/A
05	GND
04	RxD1-
03	RxD1+
02	TxD1-/D1+
01	TxD1+/D1+

IDS-725/iGW-725	
10	F.G.
09	N/A
08	N/A
07	N/A
06	GND
05	D2-
04	D2+
03	GND
02	D1-
01	D1+

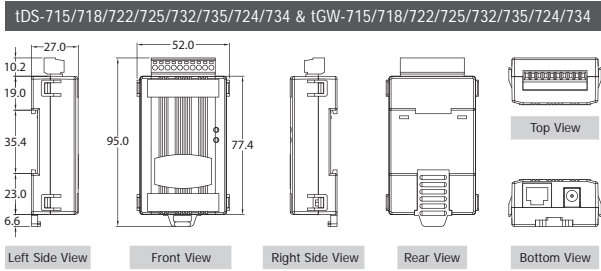
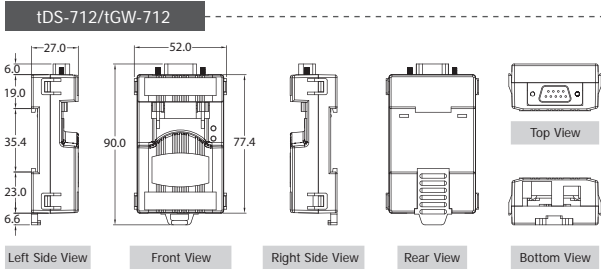
IDS-735/iGW-735	
10	F.G.
09	GND
08	D3-
07	D3+
06	GND
05	D2-
04	D2+
03	GND
02	D1-
01	D1+

IDS-718/iGW-718	
10	F.G.
09	N/A
08	GND
07	RxD1
06	TxD1
05	GND
04	RxD1-
03	RxD1+
02	TxD1-/D1+
01	TxD1+/D1+

IDS-724/iGW-724	
10	F.G.
09	GND
08	CTS2
07	RTS2
06	GND
05	RxD2
04	TxD2
03	GND
02	D1-
01	D1+

IDS-734/iGW-734	
10	F.G.
09	GND
08	RxD3
07	TxD3
06	GND
05	RxD2
04	TxD2
03	GND
02	D1-
01	D1+

Dimensions (Unit: mm)



Ordering Information

IDS-700 Series	
NEW	IDS-712 CR Tiny Device Server with PoE and 1 RS-232 Port (RoHS)
NEW	IDS-722 CR Tiny Device Server with PoE and 2 RS-232 Ports (RoHS)
NEW	IDS-732 CR Tiny Device Server with PoE and 3 RS-232 Ports (RoHS)
NEW	IDS-715 CR Tiny Device Server with PoE and 1 RS-422/485 Port (RoHS)
NEW	IDS-725 CR Tiny Device Server with PoE and 2 RS-485 Ports (RoHS)
NEW	IDS-735 CR Tiny Device Server with PoE and 3 RS-485 Ports (RoHS)
NEW	IDS-718 CR Tiny Device Server with PoE and 1 RS-232/422/485 Port (RoHS)
NEW	IDS-724 CR Tiny Device Server with PoE, 1 RS-485 and 1 RS-232 Ports (RoHS)
Available Soon	IDS-734 CR Tiny Device Server with PoE, 1 RS-485 and 2 RS-232 Ports (RoHS)
iGW-700 Series	
NEW	iGW-712 CR Tiny Modbus/TCP to RTU/ASCII Gateway with PoE and 1 RS-232 Port (RoHS)
NEW	iGW-722 CR Tiny Modbus/TCP to RTU/ASCII Gateway with PoE and 2 RS-232 Ports (RoHS)
NEW	iGW-732 CR Tiny Modbus/TCP to RTU/ASCII Gateway with PoE and 3 RS-232 Ports (RoHS)
NEW	iGW-715 CR Tiny Modbus/TCP to RTU/ASCII Gateway with PoE and 1 RS-422/485 (RoHS)
NEW	iGW-725 CR Tiny Modbus/TCP to RTU/ASCII Gateway with PoE and 2 RS-485 Ports (RoHS)
NEW	iGW-735 CR Tiny Modbus/TCP to RTU/ASCII Gateway with PoE and 3 RS-485 Ports (RoHS)
NEW	iGW-718 CR Tiny Modbus/TCP to RTU/ASCII Gateway with PoE and 1 RS-232/422/485 Port (RoHS)
Available Soon	iGW-724 CR Tiny Modbus/TCP to RTU/ASCII Gateway with PoE, 1 RS-485 and 1 RS-232 Ports (RoHS)
Available Soon	iGW-734 CR Tiny Modbus/TCP to RTU/ASCII Gateway with PoE, 1 RS-485 and 2 RS-232 Ports (RoHS)

Accessories

CA-0915	Male DB-9 to Female DB-9 Cable, 1.5 m
CA-0910F	Female DB-9 to Female DB-9 Cable, 1.0 m
CA-0910N	DB-9 Female-Female 3-wire Null Modem Cable, 1M
CA-PC09F	DB-9 Female Connector with Plastic Cover
FRA05-S12-SU CR	12V/0.58A (max.) Power Supply (RoHS, for IDS/iGW-700)
DIN-KA52F CR	24V/1.04A, 25 W Power Supply with Din-Rail Mounting (RoHS, for NS-205 and NS-205PSE-24V)
DIN-KA52F-48 CR	48V/0.52A, 25 W Power Supply with Din-Rail Mounting (RoHS, for NS-205PSE)
NS-205 CR	Unmanaged 5-Port Industrial Ethernet Switch (RoHS)
NS-205PSE CR	Unmanaged Ethernet Switch with 4 PoE Ports and 1 RJ-45 Uplink (RoHS)
NS-205PSE-24V CR	Unmanaged 5-Port 10/100 Mbps PoE (PSE) Ethernet Switch; 24 Vdc Input (RoHS)

3.8. μ PAC-7186EX(D)-MTCP Modbus to Ethernet Gateway



Features

- Incorporate Serial Devices in an Ethernet network
- Supports Modbus/TCP and Modbus/RTU
- "Virtual COM" extends PC COM ports
- Virtual COM for 32-bit and 64-bit Windows XP/2003/Vista/7
- Programmable Internet/Ethernet Controller
- Watchdog Timer suitable for use in harsh environments
- 10/100 Base-TX (Auto-negotiating, auto MDI/MDI-X, LED indicator)
- Power Reverse Polarity Protection Circuit
- RS-485 Port ESD Protection Circuit
- Self-Tuner ASIC Controller on the RS-485 Port
- 5-digit LED Display (for versions with a display)
- RoHS Compliant with no Halogen
- Built-in High Performance MiniOS7 from ICP DAS
- Low power consumption
- Made from fire retardant materials (UL94-V0 Level)

Introduction

The Modbus communications protocol has become the de facto industry standard, and is now the most commonly available means of connecting industrial electronic devices.

Modbus allows for communication between many devices connected to the same network, for example a system that measures temperature and humidity and communicates the results to a computer. Modbus is often used to connect a supervisory computer with a remote terminal unit (RTU) in supervisory control and data acquisition (SCADA) systems.

The μ PAC-7186EX(D)-MTCP uses a default firmware to become a single Modbus/RTU to multiple Modbus/RTU converter. You can simply use the Modbus Utility to configure the device and then set the connection between the SCADA or HMI software and the μ PAC-7186EX(D)-MTCP.

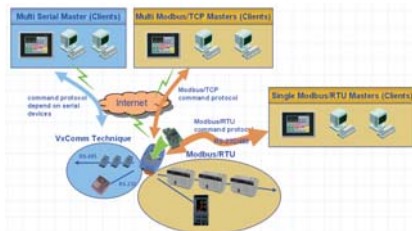
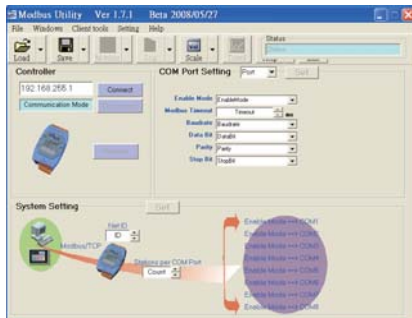
The μ PAC-7186EX(D)-MTCP can also link to legacy serial devices that don't support Modbus/RTU. To use this function, you need to install the VxComm driver on the host PCs and create virtual COM ports for the remote serial ports on the μ PAC-7186EX(D)-MTCP. You can then directly access the remote serial devices via the virtual COM ports.

Using the Modbus SDK, users can develop their own custom Modbus firmware, allowing extra functions and integration of serial devices. In this way, the μ PAC-7186EX(D)-MTCP becomes a powerful controller.

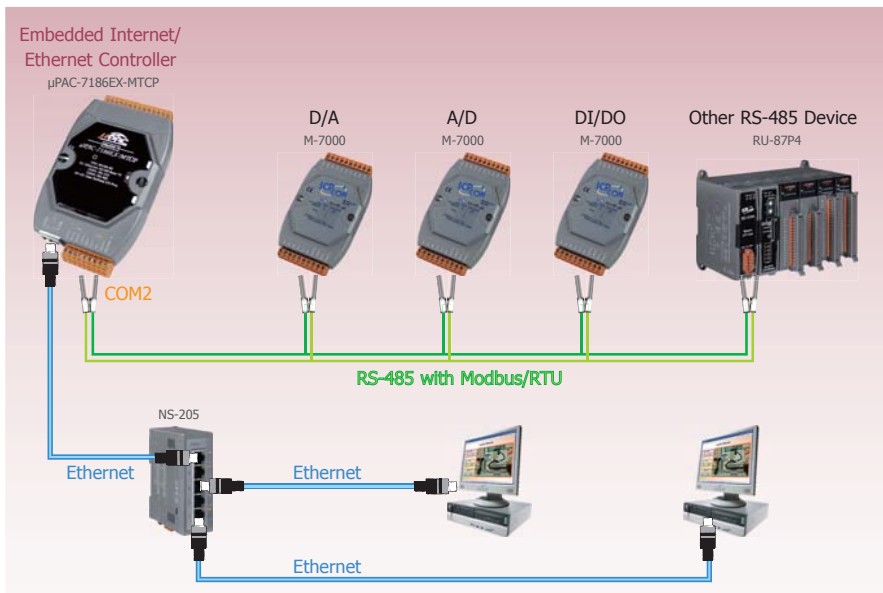
The μ PAC-7186EX(D)-MTCP contains a built-in operating system, the MiniOS7, which offers a stable and high performance environment that is similar to DOS. The MiniOS7 can boot up the μ PAC-7186EX(D)-MTCP within just one second, with the added benefit of no virus problems and a small footprint. Furthermore, the μ PAC-7186EX(D)-MTCP is designed for low power consumption, maintenance elimination (no hard disk and no fan), and is constructed from fire retardant materials (UL94-V0 level) with a robust case.

I/O Expansion Bus and Expansion Board

The μ PAC-7186EX(D)-MTCP supports a single I/O expansion bus for plugging with a X-board. ICP DAS provides many optional X-boards for the μ PAC-7186EX(D)-MTCP, which offers various I/O functions, such as D/I, D/O, A/D, D/A, Timer/Counter, UART, flash memory, battery backup SRAM and AsicKey... etc.



Applications



Specifications

Models	µPAC-7186EX-MTCP	µPAC-7186EXD-MTCP
CPU		
CPU	80186, 80 MHz or compatible	
SRAM	512 KB	
Flash Memory	512 KB	
EEPROM	16 KB	
NVRAM	31 Bytes (battery backup, data valid for up to 10 years)	
RTC (Real Time Clock)	Yes	
Hardware Serial Number	Yes (64-bit)	
Built-in Watchdog Timer	Yes	
Communication Interface		
COM1	RS-232 (TxD, RxD, RTS, CTS, GND)	
COM2	RS-485 (D2+, D2-, GND)	
Ethernet	10/100 Base-TX, RJ-45 port (Auto-negotiating, auto MDI/MDI-X, LED indicator)	
COM Port Formats		
Speed	115200 bps max.	
Data Bit	7, 8	
Parity	None, Even, Odd	
Stop Bit	1	
LED Indicators		
5-Digit 7 Segment	-	Yes
System	Yes	
Power		
ESD Protection	Yes (with Frame Ground)	
Protection	Power Reverse Polarity Protection	
Required Supply Voltage	+10 V _{DC} ~ +30 V _{DC} (non-regulated)	
Power Consumption	1.5 W	2.5 W
Mechanical		
Flammability	Fire Retardant Materials (UL94-V0 Level)	
Dimension (W x H x D)	72 mm x 123 mm x 35 mm	
Installation	DIN-Rail or Wall mounting	
Environment		
Operating Temperature	-25 °C ~ +75 °C	
Storage Temperature	-40 °C ~ +80 °C	
Humidity	5 ~ 95% RH, non-condensing	

Pin Assignments

μPAC-7186EX(D)-MTCP

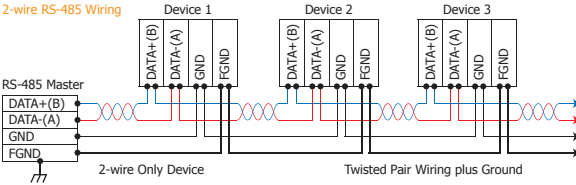
Terminal No.	Pin Assignment
E1	Link/Act 10/100M
COM1	01 CTS1
	02 RTS1
	03 RxD1
	04 TxD1
05	INIT*
COM2	06 D2+
	07 D2-
	08 (R)+Vs
	09 (B)GND

I/O Expansion Bus

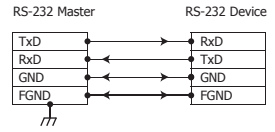
J1				J2			
GND	01	02	GND	MA0	01	02	AD0
CLKOUTA	03	04	ARDY	MA1	03	04	AD1
INT0	05	06	INT1	MA2	05	06	AD2
VCC	07	08	RESET	MA3	07	08	AD3
GND	09	10	RESET\	MA4	09	10	AD4
TO0	11	12	TO1	MA5	11	12	AD5
TI0	13	14	TI1	MA6	13	14	AD6
SCLK	15	16	DIO9	MA7	15	16	AD7
DIO4	17	18	DIO14	INT4	17	18	WRITE\
VCC	19	20	VCC	CS\	19	20	READ\
CON20A JDIP20P				CON20A JDIP20P			

Wiring

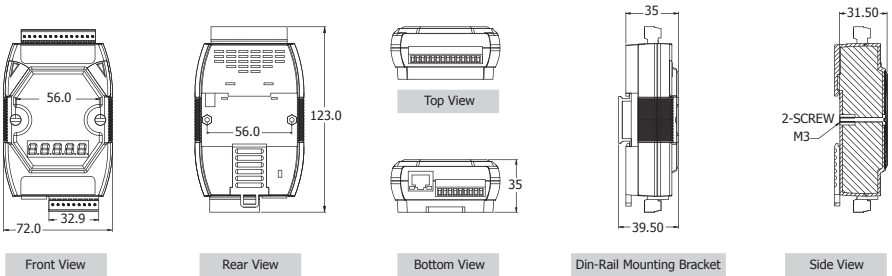
2-wire RS-485 Wiring



3-wire RS-232 Wiring



Dimensions (Unit: mm)



Ordering Information

μPAC-7186EX-MTCP CR	μPAC-7186EX with Default Modbus/TCP Firmware (RoHS)
μPAC-7186EXD-MTCP CR	μPAC-7186EXD with Default Modbus/TCP Firmware (RoHS)

Accessories

GPSU06U-6	24 Vdc/0.25 A, 6 W Power Supply
MDR-20-24	24 Vdc/1 A, 24 W Power Supply with DIN-Rail Mounting
CA-0903	9-Pin Female D-Sub and RS-232 Connector Cable, 30 cm Cable
CA-0910	9-Pin Female D-Sub and 3-wire RS-232 Cable, 1 m Cable
NS-205 CR	Unmanaged 5-port Industrial Ethernet Switch (RoHS)

Converters, Repeaters and Hubs

4

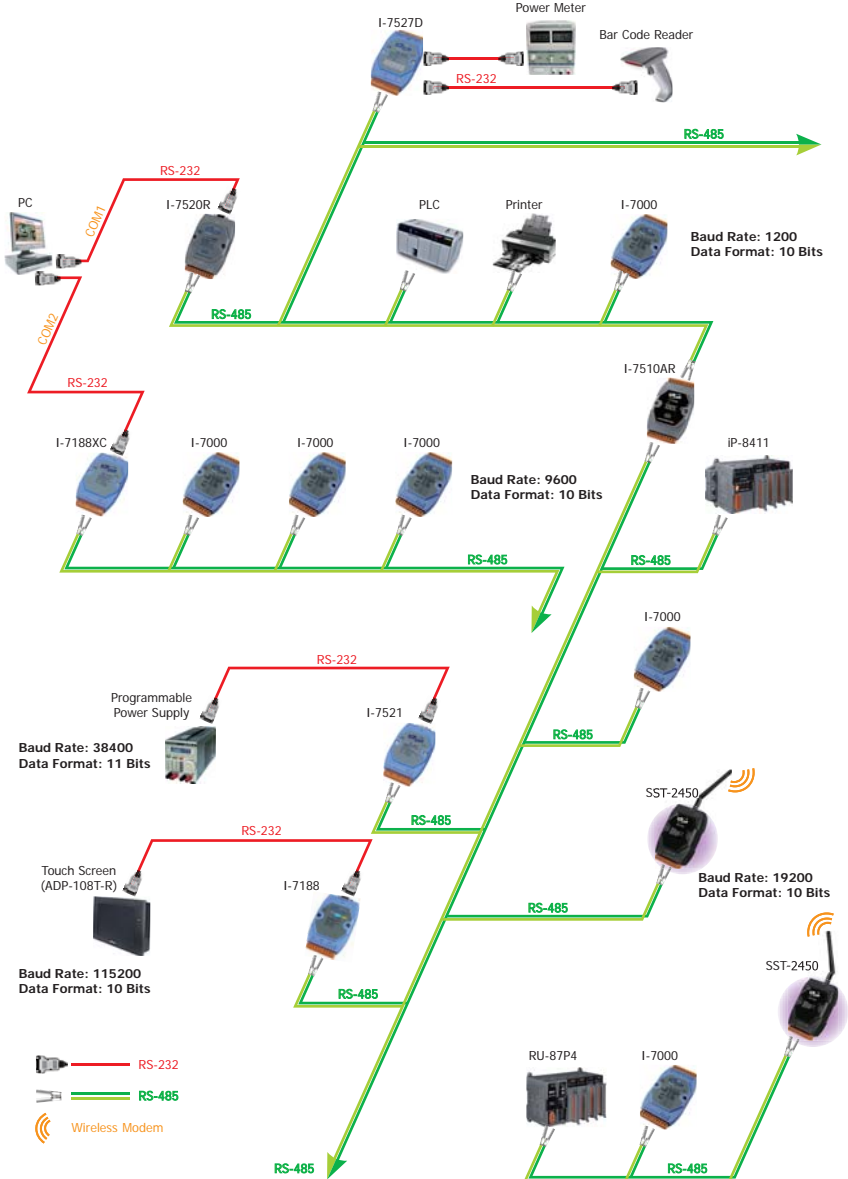
4.1	RS-485 Network Configuration	P4-1-1
4.2	RS-422/485 Repeaters	P4-2-1
4.3	RS-485 Star Wiring Hub	P4-3-1
4.4	RS-232/RS-422/485 Converters	P4-4-1
4.5	Intelligent Communication Controllers	P4-5-1
4.6	USB to RS-232/422/485 Converters	P4-6-1
4.7	RS-232/422/485 to Fiber Optic Converter	P4-7-1



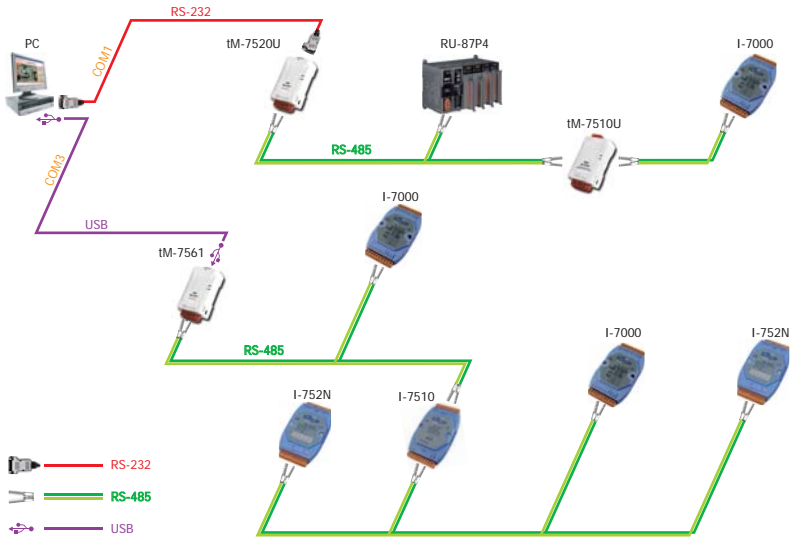
4.1. RS-485 Network Configuration

ICP DAS Self-tuner ASIC Features:

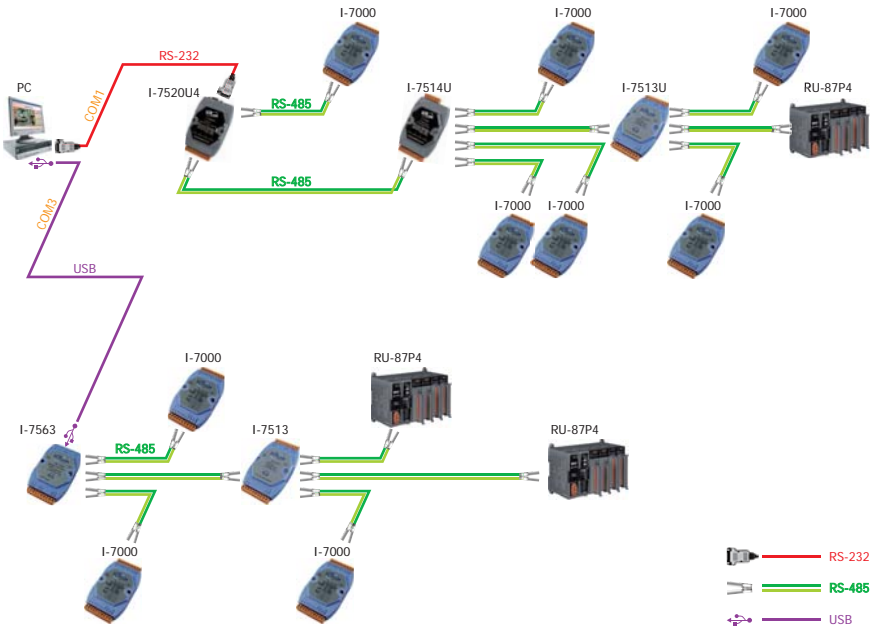
- ◆ Supports Multiple Baud Rate
- ◆ Supports Multiple Data Format
- ◆ Automatic RS-485 Direction Control



Bus Type



Star Type



4.2. RS-422/485 Repeaters



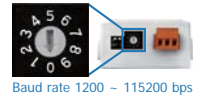
Features

- 2-way 2500 V_{DC} Isolation Protection
- Power and data flow indicator for troubleshooting
- ESD Protection for RS-485 Data Line
- Easy-to-use rotary switch for baud rate setting, 1200 – 115200 bps
- Power Input, +10 – +30 V_{DC}
- Operating Temperatures, -25 °C – +75 °C
- Low power consumption
- Tiny packaging fits on your DIN-Rail
- Cost-effective Repeater

Introduction

The tM-7510U repeater simply amplifies, or boosts, existing RS-485 signals to enable them to cover longer distances. It extends the communication distance by 4000 ft. (1200 m) or increases the maximum number of bus nodes. The module provides 2500 V_{DC} of isolation allowing you to separate and protect critical segments of the system from the rest of the RS-485 network.

The tM-7510U provides a rotary switch that allows easy and quick configuration of baud rate from 1,200 to 115,200 bps without the need to open the case. The fixed baud rate design offers a better quality for data transmission over long or lossy lines or electrically noisy environments.



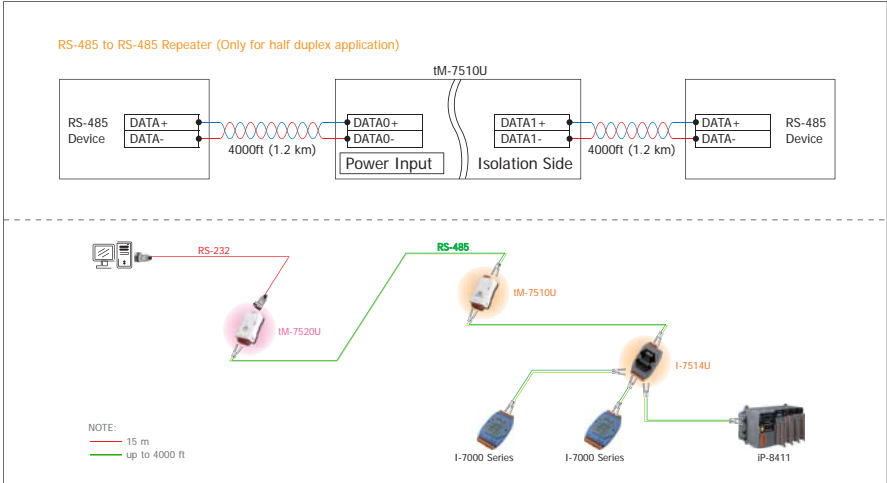
Comparison Table of Repeater

Mode name	tM-7510U	I-7510
RS-485 Direction Control	Fixed baud rate setting	Automatic RS-485 Direction Control (Self-Tuner)
Baud rate	1200 – 115200 bps	300 – 115200 bps
Dimensions (W x H x D)	52 mm x 95 mm x 27 mm	72 mm x 122 mm x 35 mm
Remarks	Cost-effective	Entry-level

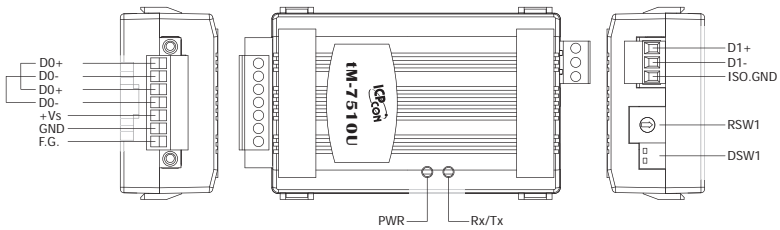
Specifications

Interface		
Serial Interface	RS-485	Data+, Data-
2-wire Cabling	Belden 8941 (2P twisted-pair cable), if different cables are used, the transmission distance may change	
Transfer Distance	Max. 1,200 m at 9.6 kbps; Max. 400 m at 115.2 kbps	
Max. Devices Supported	256	
2500 V _{DC} Isolated Voltage	2-way Isolated	
Connection	Removable 7-Pin Terminal Block x 1; Removable 3-Pin Terminal Block x 1	
LED Indicators		
Power/Communication	Yes	
Power		
Input Voltage Range	+10 V _{DC} – +30 V _{DC} (Non-isolated)	
Power Consumption	0.6 W	
Environment		
Operating Temperature	-25 °C – +75 °C	
Storage Temperature	-30 °C – +75 °C	
Humidity	10 – 90% RH, non-condensing	

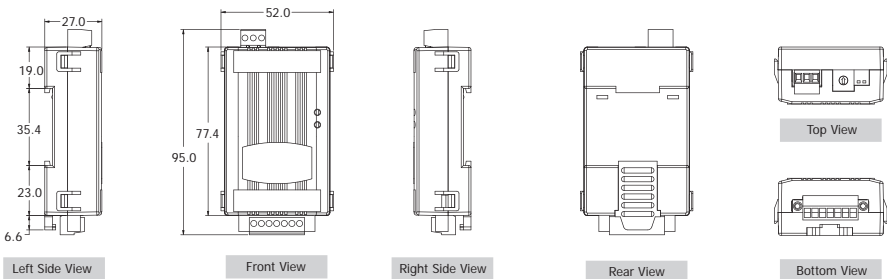
Applications



Pin Assignments



Dimensions (Unit: mm)



Ordering Information

TM-7510U CR	Isolated RS-485 Repeater (RoHS)
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Accessories

GPSU06U-6	24 V _{DC} /0.25 A, 6 W Power Supply
DIN-KA52F	24 V _{DC} /1.04 A, 25 W Power Supply with Din-Rail Mounting



Features

- Automatic RS-485 Direction Control
- 2-way 3000 V_{DC} Isolation Protection for I-7510/I-7510A
- 3-way 3000 V_{DC} Isolation Protection for I-7510AR
- ESD Protection for RS-485 Data Line
- Transmission Speed of up to 115200 bps
- Power Input, +10 ~ +30 V_{DC}
- Operating Temperatures, -25 °C ~ +75 °C
- DIN-Rail



Introduction

The I-7510/I-7510A provides 2-way optical isolation between one piece of RS-422/RS-485 equipment and the rest of the system. It can also be used as a repeater to extend the transmission of an existing network. Additionally, an RS-485 system can be expanded beyond the 256 node limitation imposed by the standard. It can also be used to convert a four-wire RS-422 signal into a 2-wire RS-485 signal, and vice versa.

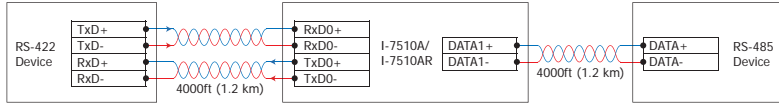
The I-7510AR is exactly the same as the I-7510A, except for the isolation site. The isolation site of the I-7510A is located in the input interface circuit, but the isolation site of the I-7510AR is located in the input and output interface circuit. In other words the I-7510AR is 3-way isolation repeater module.

Specifications

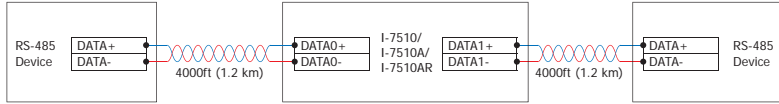
Models	I-7510	I-7510A	I-7510AR
Interface			
Serial Interface	RS-422	-	TxD+, TxD-, RxD+, RxD- The RS-422 and RS-485 cannot be used simultaneously
	RS-485	Data+, Data-	
2-wire Cabling/4-wire Cabling	Belden 8941 (2P twisted-pair cable)/Belden 8942 (4P twisted-pair cable), if different cables are used, the transmission distance may change		
Transfer Distance	Max. 1,200 m at 9.6 kbps; Max. 400 m at 115.2 kbps		
Max. Devices Supported	256		
Self-Tuner ASIC Inside	Yes		
Speed	300 ~ 115200 bps		
ESD Protection	Yes		
3000 V _{DC} Isolated Voltage	2-way Isolated		3-way Isolated
Connection	Removable 10-Pin Terminal Block x 2		
LED Indicators			
Power/Communication	Yes		
Power			
Input Voltage Range	+10 V _{DC} ~ +30 V _{DC} (Non-isolated)		
Power Consumption	2.16 W		
Mechanical			
Casing	Plastic		
Flammability	Fire Retardant Materials (UL94-V0 Level)		
Dimensions (W x H x D)	72 mm x 122 mm x 35 mm		
Installation	DIN-Rail		
Environment			
Operating Temperature	-25 °C ~ +75 °C		
Storage Temperature	-30 °C ~ +75 °C		
Humidity	10 ~ 90% RH, non-condensing		

Applications

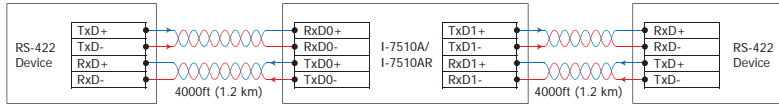
RS-422 to RS-485 Converter (Only for half duplex application)




RS-485 to RS-485 Repeater (Only for half duplex application)



RS-422 to RS-422 Repeater

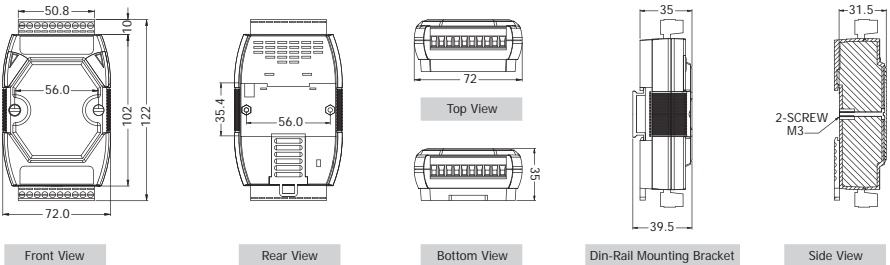


Pin Assignments



I-7510				I-7510A			I-7510AR			
Terminal No.	Pin Assignment	Terminal No.	Pin Assignment	Terminal No.	Pin Assignment	Pin Assignment	Terminal No.	Pin Assignment		
01	DATA+	20	DATA1+	RS-485	01	DATA0+	DATA0+	RS-485	20	DATA1+
02	DATA-	19	DATA1-		02	DATA0-	DATA0-		19	DATA1-
03	--	18	--		03	--	--		18	--
04	--	17	--	RS-422	04	RxD0+	TxD0+	RS-422	17	TxD1+
05	--	16	--		05	RxD0-	TxD0-		16	TxD1-
06	--	15	--		06	TxD0+	RxD0+		15	RxD1+
07	--	14	--		07	TxD0-	RxD0-		14	RxD1-
08	--	13	--	08	--	--	13	--		
09	(R)+Vs	12	--	09	(R)+Vs	(R)+Vs	12	--		
10	(B)GND	11	--	10	(B)GND	(B)GND	11	--		

Dimensions (Unit: mm)



Ordering Information

I-7510 CR	Isolated RS-485 Repeater (RoHS)
I-7510A CR	Isolated RS-422/485 Repeater/Converter (RoHS)
I-7510AR CR	Three Way Isolated RS-422/485 Repeater/Converter (RoHS)

Accessories

GPSU06U-6	24 V _{DC} /0.25 A, 6 W Power Supply
DIN-KA52F	24 V _{DC} /1.04 A, 25 W Power Supply with Din-Rail Mounting

4.3 RS-485 Star Wiring Hub



I-7514U

Isolated 4 Channels RS-485 Active Hub

Features

- True RS-485 Star Wiring Hub
- Independent RS-485 driver for each channel
- Power and data flow indicator for troubleshooting
- Automatic RS-485 Direction Control
- Easy-to-use rotary switch for fixed baud rate setting, 1200 ~ 115200 bps
- 120 Ω termination resistor for each channel
- Power Input, +10 ~ +30 V_{DC}
- Operating Temperatures, -25 °C ~ +75 °C
- DIN-Rail



Introduction

RS-485 Active Hub

The I-7514U is a 4-ch RS-485 active star wiring hub, it has 4 independent RS-485 output channels and one RS-485 input channel. Each output channel is equipped with an individual driver. The data from a master to the input channel will simultaneously be forwarded to all the four output channels.

Baud Rate Setting

The I-7514U provides 2 modes of baud rate setting, one is Self-Tuner mode and the other is fixed baud rate mode. The Self-Tuner mode can support Multiple Baud Rate and Multiple Data Format. The Self-Tuner design is exactly the same as I-7513 and I-7510 series. The Fixed baud rate mode offers a better quality for data transmission over long or lossy lines or electrically noisy environments.

RS-485 Short-Circuit

The Short-circuit protection can automatically shut off the breakdown channel, this kind of design can suffice to protect the communication system. When a connected RS-485 equipment breaks down, the breakdown channel will be isolated to ensure that other equipments work normally.

Termination resistors

In some critical environments, you may need to add termination resistors to prevent the reflection of serial signals. The I-7514U includes a 120 Ω termination resistor for each channel by jumper selectable (Default disable).

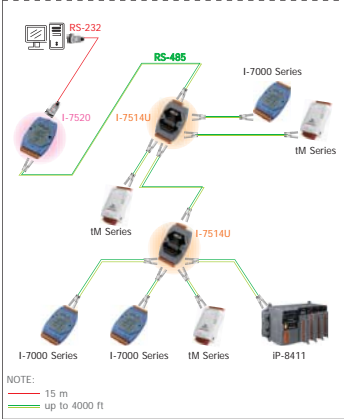
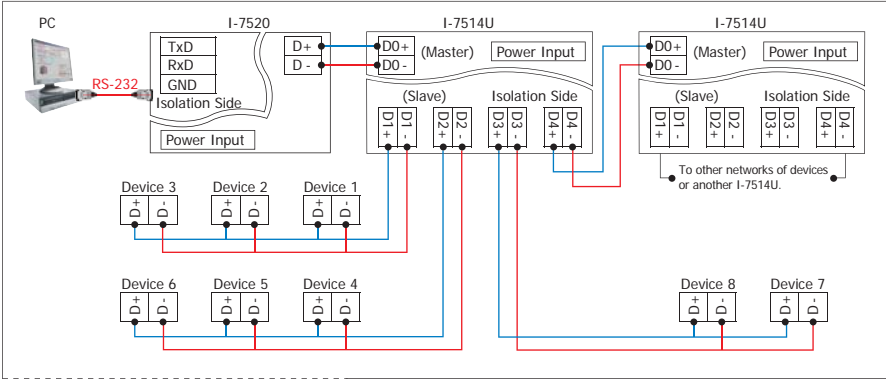
LED Indicators

The I-7514U has 6 LED to indicate the power status and network traffic. The Tx/D/RxD LED will flash when the unit is being sent out or received data.

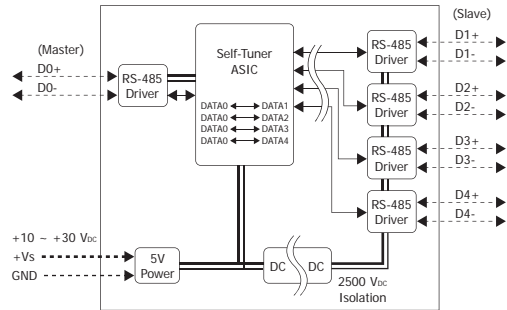
Specifications

Interface	
Input (Master)	1 RS-485 Channel: Data+, Data-
Output (Slave)	4 RS-485 Channels: Data+, Data-
2-wire Cabling	Belden 8941 (2P twisted-pair cable), if different cables are used, the transmission distance may change
Transfer Distance	Max. 1,200 m at 9.6 kbps; Max. 400 m at 115.2 kbps
Max. Devices Supported	256 (Each channel)
Self-Tuner Asic Inside	Yes
Speed	300 ~ 115200 bps via Self-Tuner mode; 1200 ~ 115200 bps via Fixed Baud Rate mode
ESD Protection	Yes
2500 V _{DC} isolation on CH1~CH4	Yes
Connection	Removable 10-Pin Terminal Block x 1; Removable 6-Pin Terminal Block x 1
LED Indicators	
Power/Communication	Yes
Power	
Input Voltage Range	+10 V _{DC} ~ +30 V _{DC} (Non-isolated)
Power Consumption	1.2 W
Mechanical	
Casing	Plastic
Flammability	Fire Retardant Materials (UL94-V0 Level)
Dimensions (W x H x D)	72 mm x 122 mm x 35 mm
Installation	DIN-Rail
Environment	
Operating Temperature	-25 °C ~ +75 °C
Storage Temperature	-30 °C ~ +80 °C
Humidity	10 ~ 90% RH, non-condensing

Applications

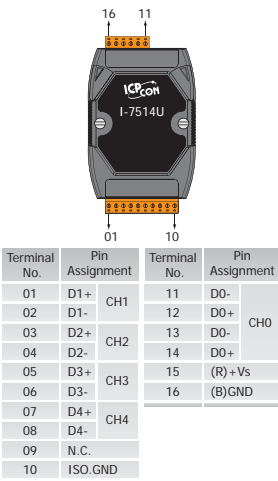


Internal I/O Structure

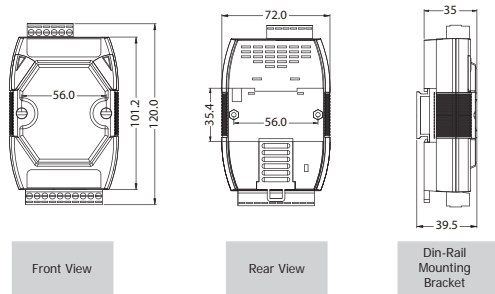


Active transmission control is provided by the hub for outbound messages from the Master input. All channels transmit simultaneously.

Pin Assignments



Dimensions (Unit: mm)



Ordering Information

I-7514U-G CR Isolated 4 Channels RS-485 Active Hub (Gray Cover) (RoHS)

Accessories

GPSU06U-6 Isolated 4 Channels RS-485 Active Hub (Gray Cover) (RoHS)
 DIN-KA52F 24 Vdc/1.04 A, 25 W Power Supply with Din-Rail Mounting



I-7513

Three Way Isolated RS-485 Active Star Wiring Hub

Introduction

The I-7513 is a 3-ch RS-485 Active Star Wiring Hub. The unit has three independent RS-485 output channels, each with their own driver, which can transmit signals across 4,000 ft (1200 m) of cable on each channel.

The I-7513 includes both Hub and Repeater functions, so each output channel can be connected to another hub.

The isolation site of the I-7513 is located in the input and output interface circuit. In other words, the I-7513 is a three-way isolation module.

Specifications

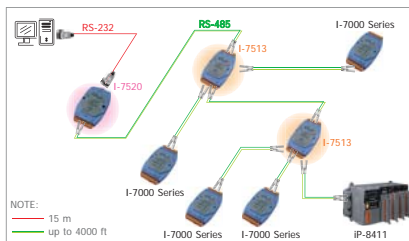
Interface	
Input	1 RS-485 Channel: Data+, Data-
Output	3 RS-485 Channels: Data+, Data-
2-wire Cabling	Belden 8941 (2P twisted-pair cable), if different cables are used, the transmission distance may change
Transfer Distance	Max. 1,200 m at 9.6 kbps; Max. 400 m at 115.2 kbps
Max. Devices Supported	256 (Each channel)
Self-Tuner Asic Inside	Yes
Speed	300 – 115200 bps
ESD Protection	Yes
3000 V _{oc} Three Way Isolated Protection	Yes
Connection	Removable 10-Pin Terminal Block x 2
LED Indicators	
Power/Communication	Yes
Power	
Input Voltage Range	+10 V _{oc} – +30 V _{oc} (Non-isolated)
Power Consumption	2.16 W
Mechanical	
Casing	Plastic
Flammability	Fire Retardant Materials (UL94-V0 Level)
Dimensions (W x H x D)	72 mm x 122 mm x 35 mm
Installation	DIN-Rail
Environment	
Operating Temperature	-25 °C – +75 °C
Storage Temperature	-30 °C – +75 °C
Humidity	10 – 90% RH, non-condensing

Features

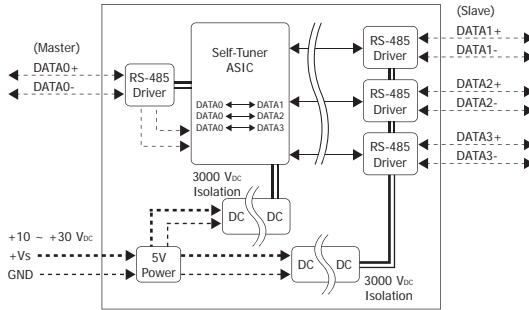
- RS-485 Active Star Wiring Applications
- Automatic RS-485 Direction Control
- 3000 V_{oc} Three Way Isolation Protection
- ESD Protection for the RS-485 Data Line
- Power Input, +10 – +30 V_{oc}
- Operating Temperatures, -25 °C – +75 °C
- DIN-Rail



Applications

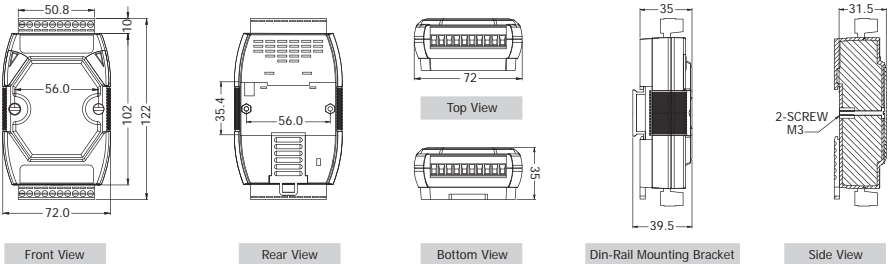


Internal I/O Structure



Active transmission control is provided by the hub for outbound messages from the Master input. All channels transmit simultaneously.

Dimensions (Unit: mm)



Pin Assignments

Terminal No.	Pin Assignment	Terminal No.	Pin Assignment
01	DATA+	20	DATA1+
02	DATA-	19	DATA1-
03	--	18	--
04	--	17	--
05	--	16	--
06	--	15	DATA2+
07	--	14	DATA2-
08	--	13	--
09	(R)+Vs	12	DATA3+
10	(B)GND	11	DATA3-

Ordering Information

I-7513 CR	Three Way Isolated RS-485 Active Star Wiring Hub (RoHS)
I-7513-G CR	Three Way Isolated RS-485 Active Star Wiring Hub (Gray Cover) (RoHS)

Accessories

GPSU06U-6	24 V _{DC} /0.25 A, 6 W Power Supply
DIN-KA52F	24 V _{DC} /1.04 A, 25 W Power Supply with Din-Rail Mounting

4.4. RS-232/RS-422/485 Converters



Features

- 2-way 2500 V_{DC} Isolation Protection
- Power and data flow indicator for troubleshooting
- ESD Protection for RS-485 Data Line
- Easy-to-use rotary switch for baud rate setting, 1200 ~ 115200 bps
- Power Input, +10 ~ +30 V_{DC}
- Operating Temperatures, -25 °C ~ +75 °C
- Low power consumption
- Tiny packaging fits on your DIN-Rail
- Cost-effective Converter



Introduction

Most industrial computer systems provide standard RS-232 serial ports with limited transmission speed, range, and networking capabilities. The RS-485 standards overcome these limitations by using differential voltage lines for data and control signals. The tm-7520U transparently converts RS-232 signals into isolated RS-485 signal with no need to change any hardware or software. This lets you easily build an industrial grade, long-distance communication system using standard PC hardware. The module provides 2500 V_{DC} of optical isolation allowing you to separate and protect critical segments of the system from the rest of the RS-485 network.

The tm-7520U provides a rotary switch that allows easy and quick configuration of baud rate from 1,200 to 115,200 bps without the need to open the case. The fixed baud rate design offers a better quality for data transmission over long or lossy lines or electrically noisy environments.



Baud rate 1200 ~ 115200 bps

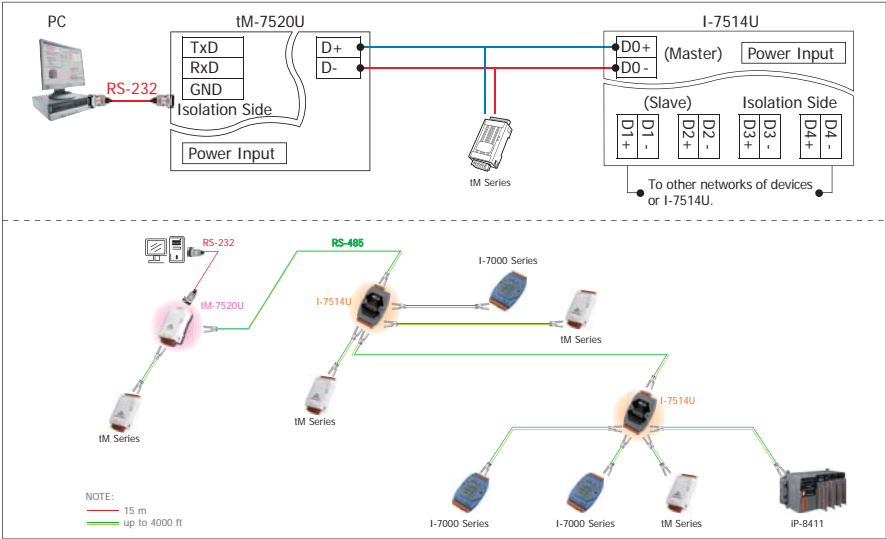
Comparison Table of Converter

Mode name	tm-7520U	l-7520
RS-485 Direction Control	Fixed baud rate setting	Automatic RS-485 Direction Control (Self-Tuner)
Baud rate	1200 ~ 115200 bps	300 ~ 115200 bps
Dimensions (W x H x D)	52 mm x 92 mm x 27 mm	72 mm x 118 mm x 35 mm
Remarks	Cost-effective	Entry-level

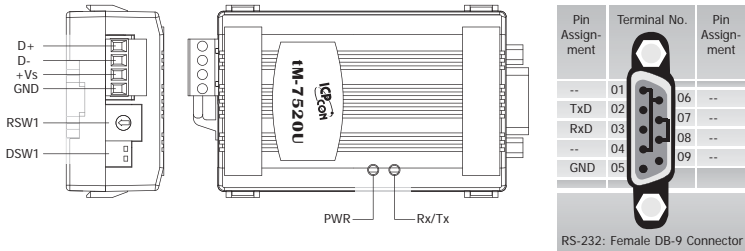
Specifications

Interface	
Input	RS-232: TxD, RxD and GND
Output	RS-485: Data+, Data-
2-wire Cabling	Belden 8941 (2P twisted-pair cable), if different cables are used, the transmission distance may change
Transfer Distance	Max. 1,200 m at 9.6 kbps; Max. 400 m at 115.2 kbps
Max. Devices Supported	256
2500 V _{DC} Isolated Protection	Yes
Connection	Removable 4-Pin Terminal Block x 1; 9-Pin Female D-Sub x 1
LED Indicators	
Power/Communication	Yes
Power	
Input Voltage Range	+10 V _{DC} ~ +30 V _{DC} (Non-isolated)
Power Consumption	0.6 W
Environment	
Operating Temperature	-25 °C ~ +75 °C
Storage Temperature	-30 °C ~ +75 °C
Humidity	10 ~ 90% RH, non-condensing

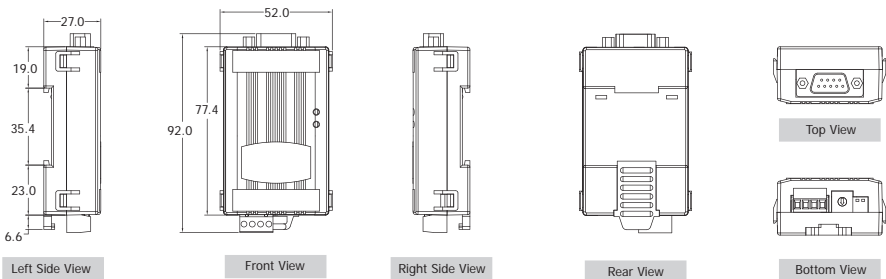
Applications



Pin Assignments



Dimensions (Unit: mm)



Ordering Information

tM-7520U CR	Isolated RS-232 to RS-485 Converter (RoHS)
tM-7520U-CA CR	tM-7520U CR with CA-0915 cable x 1 (RoHS)

Accessories

GPSU06U-6	24 V _{DC} /0.25 A, 6 W Power Supply
DIN-KA52F	24 V _{DC} /1.04 A, 25 W Power Supply with Din-Rail Mounting
tM-7510U CR	Isolated RS-485 Repeater (RoHS)
CA-0915	9-Pin Male-Female D-Sub Cable, 1.5 m



Features

- True RS-485 Star Wiring Hub
- Independent RS-485 driver for each channel
- Power and data flow indicator for troubleshooting
- Automatic RS-485 Direction Control
- Easy-to-use rotary switch for fixed baud rate setting, 1200 ~ 115200 bps
- 120 Ω termination resistor for each channel
- Power Input, +10 ~ +30 V_{DC}
- Operating Temperatures, -25 °C ~ +75 °C
- DIN-Rail



Introduction

RS-485 Active Hub

The I-7520U4 is isolated RS-232 to 4-ch RS-485 active star wiring hub, it has 4 independent RS-485 output channels and one RS-485 input channel. Each output channel is equipped with an individual driver. The data from a master to the input channel will simultaneously be forwarded to all the four output channels.

Baud Rate Setting

The I-7520U4 provides 2 modes of baud rate setting, one is Self-Tuner mode and the other is fixed baud rate mode. The Self-Tuner mode can support Multiple Baud Rate and Multiple Data Format. The Self-Tuner design is exactly the same as I-7520 series.

The Fixed baud rate mode offers a better quality for data transmission over long or lossy lines or electrically noisy environments.

RS-485 Short-Circuit

The Short-circuit protection can automatically shut off the breakdown channel, this kind of design can suffice to protect the communication system. When a connected RS-485 equipment breaks down, the breakdown channel will be isolated to ensure that other equipments work normally.

Termination resistors

In some critical environments, you may need to add termination resistors to prevent the reflection of serial signals. The I-7520U4 includes a 120Ω termination resistor for each channel by jumper selectable (Default disable).

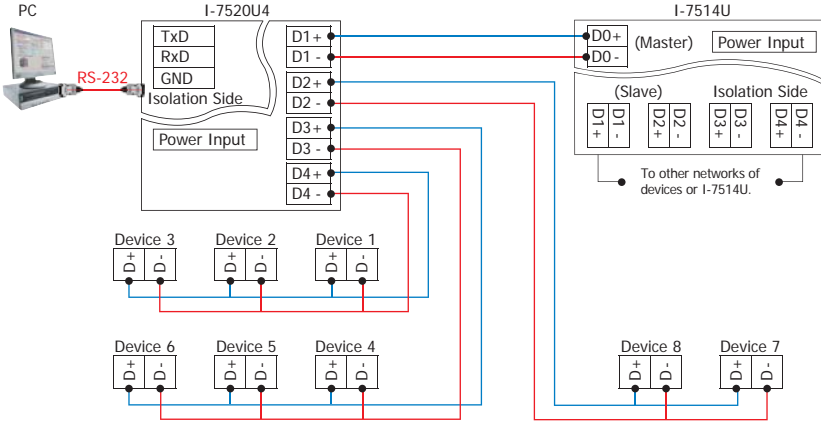
LED Indicators

The I-7520U4 has 6 LED to indicate the power status and network traffic. The Tx/D/RxD LED will flash when the unit is being sent out or received data.

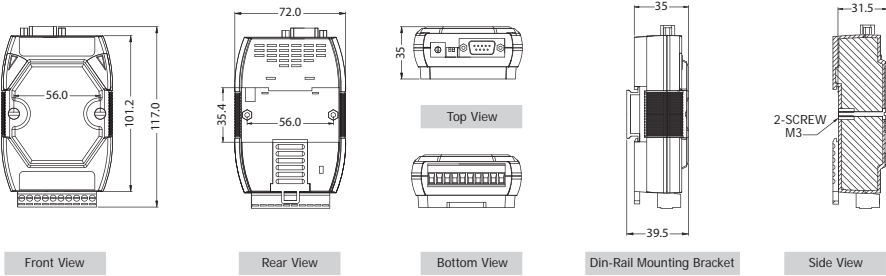
Specifications

Interface	
Input	1 RS-232 Channel: Tx/D, Rx/D and GND
Output	4 RS-485 Channels: Data+, Data-
2-wire Cabling	Belden 8941 (2P twisted-pair cable), if different cables are used, the transmission distance may change
Transfer Distance	Max. 1,200 m at 9.6 kbps; Max. 400 m at 115.2 kbps
Max. Devices Supported	256 (Each channel)
Self-Tuner ASIC Inside	Yes
Speed	300 ~ 115200 bps via Self-Tuner mode; 1200 ~ 115200 bps via Fixed Baud Rate mode
ESD Protection	Yes
2500 V _{DC} Three Way Isolated Protection	Yes
Connection	Removable 10-Pin Terminal Block x 1; 9-Pin Female D-Sub x 1
LED Indicators	
Power/Communication	Yes
Power	
Input Voltage Range	+10 V _{DC} ~ +30 V _{DC} (Non-isolated)
Power Consumption	1.2 W
Mechanical	
Casing	Plastic
Flammability	Fire Retardant Materials (UL94-V0 Level)
Dimensions (W x H x D)	72 mm x 118 mm x 35 mm
Installation	DIN-Rail
Environment	
Operating Temperature	-25 °C ~ +75 °C
Storage Temperature	-30 °C ~ +75 °C
Humidity	10 ~ 90% RH, non-condensing

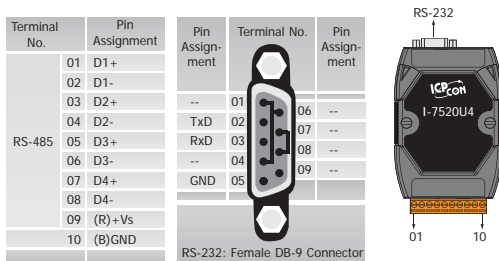
Applications



Dimensions (Unit: mm)



Pin Assignments



Ordering Information

I-7520U4-G CR	Isolated RS-232 to 4 Channels RS-485 Active Hub (Gray Cover) (RoHS)
I-7520U4-CA-G CR	I-7520U4-G CR with CA-0915 cable x 1

Accessories

GPSU06U-6	24 V _{DC} /0.25 A, 6 W Power Supply
DIN-KA52F	24 V _{DC} /1.04 A, 25 W Power Supply with Din-Rail Mounting
I-7510 CR	Isolated RS-485 Repeater (RoHS)
CA-0915	9-Pin Male-Female D-Sub Cable, 1.5 m



PCISA-7520R/PCISA-7520AR

PCISA-7520R: Isolated RS-232 to RS-485 Converter Card
 PCISA-7520AR: Isolated RS-232 to RS-422/485 Converter Card

Features

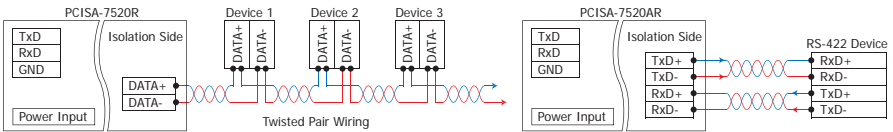
- No External Power Supply required
- No Driver installation required
- Automatic RS-485 Direction Control
- 3000 V_{oc} Isolation Protection
- ESD Protection for the RS-232/422/485 Data Line
- Transmission Speed of up to 115200 bps
- Can be used in an ISA Bus, a PCI Bus or any system with an RS-232 Interface



Introduction

The PCISA-7520A series is exactly the same as I-7520A series except for the PCI and ISA Interface and is designed for easy installation. The PCISA-7520A series is equipped with both an RS-232 serial port and an RS-485 serial port. The RS-232 port is designed to communicate with the local Host PC, the RS-485 is designed to communicate with the remote IO module.

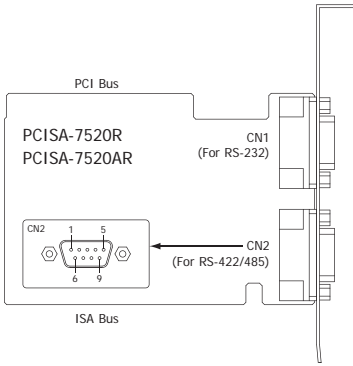
Applications



Specifications

Models	PCISA-7520R	PCISA-7520AR
Interface		
Serial Interface	RS-232	TxD, RxD, GND
	RS-422	-
	RS-485	Data+, Data-
2-wire Cabling/4-wire Cabling	Belden 8941 (2P twisted-pair cable)/Belden 8942 (4P twisted-pair cable), when different cables are used, the transmission distance may change	
Transfer Distance	Max. 1,200 m at 9.6 kbps; Max. 400 m at 115.2 kbps	
Max. Devices Supported	256 (Without repeater)	
Self-Tuner Asic Inside	Yes	
Speed	300 – 115200 bps	
ESD Protection	Yes	
Isolated Voltage	3000 V _{oc} on the RS-422/485 side	
Connection	RS-232	9-Pin Female D-Sub x 1
	RS-422/485	9-Pin Male D-Sub x 1
Power		
Input Voltage Range	+5 V _{oc} from the PC	
Power Consumption	1.0 W	
Mechanical		
Dimensions (L x W x D)	118 mm x 72 mm x 22 mm	
Environment		
Operating Temperature	0 °C – +50 °C	
Storage Temperature	-20 °C – +70 °C	
Humidity	0 – 90% RH, non-condensing	

Pin Assignments



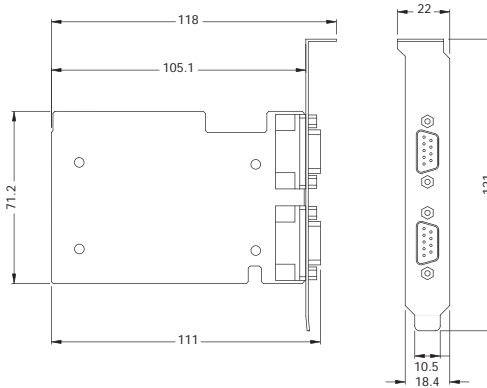
PCISA-7520R

Pin	2-wire for RS-485
01	DATA+
02	
03	
04	NC
05	
06	DATA-
07	
08	NC
09	

PCISA-7520AR

Pin	2-wire for RS-485	4-wire for RS-422
01	DATA+	Tx+
02		
03		
04	NC	Rx+
05		
06	DATA-	Tx-
07		
08	NC	Rx-
09		

Dimensions (Unit: mm)



Ordering Information

PCISA-7520R CR	Isolated RS-232 to RS-485 Converter Card (RoHS)
PCISA-7520AR CR	Isolated RS-232 to RS-422/485 Converter Card (RoHS)

Accessories

I-7510 CR	Isolated RS-485 Repeater (RoHS)
I-7510A CR	Isolated RS-422/485 Repeater (RoHS)
CA-0915	9-Pin Male-Female D-Sub Cable, 1.5 m



I-7520/I-7520A I-7520R/I-7520AR

I-7520: Isolated RS-232 to RS-485 Converter
 I-7520A: Isolated RS-232 to RS-422/485 Converter
 I-7520R: RS-232 to Isolated RS-485 Converter
 I-7520AR: RS-232 to Isolated RS-422/485 Converter

Features

- Automatic RS-485 Direction Control
- 3000 V_{DC} Isolation Protection on the RS-485 side
- ESD Protection for the RS-232/422/485 Data Line
- Transmission Speed of up to 115200 bps
- Power Input, +10 ~ +30 V_{DC}
- Operating Temperatures, -25 °C ~ +75 °C
- DIN-Rail



Introduction

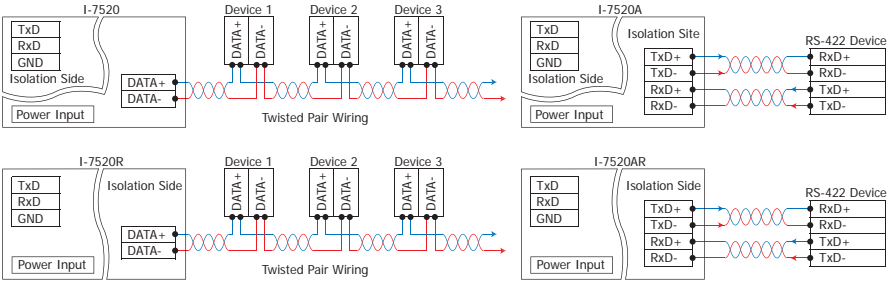
Most industrial computer systems provide standard RS-232 serial ports. Though widely accepted, RS-232 has limited transmission speed, range, and networking capabilities. The RS-422 and RS-485 standards overcome these limitations by using differential voltage lines for data and control signals, which transparently converts RS-232 signals into isolated RS-422 or RS-485 signal with no need to change any hardware or software. The I-7520/I-7520A lets you easily build an industrial grade, long-distance communication system using standard PC hardware.

The design of the isolation between the I-7520 and the I-7520R/AR is different. If the user wants to supply power from the PLC/PC, the I-7520R/AR should be used, otherwise the isolation will be broken. Refer to the I-7000 bus converter manual for detailed information.

Specifications

Models	I-7520	I-7520R	I-7520A	I-7520AR
Interface				
Serial Interface	RS-232	TxD, RxD, GND		
	RS-422	-		TxD+, TxD-, RxD+, RxD- The RS-422 and RS-485 cannot be used simultaneously
	RS-485	Data+, Data-		
2-wire Cabling/4-wire Cabling	Belden 8941 (2P twisted-pair cable)/Belden 8942 (4P twisted-pair cable), if different cables are used, the transmission distance may change			
Transfer Distance	Max. 1,200 m for at speed 9.6 kbps; Max. 400 m at 115.2 kbps			
Max. Devices Supported	256 (Without repeater)			
Self-Tuner Asic Inside	Yes			
Speed	300 ~ 115200 bps			
ESD Protection	Yes			
3000 V _{DC} Isolated Voltage	On RS-232 side	On RS-485 side	On RS-232 side	On RS-485 side
Connection	RS-232	9-Pin Female D-Sub		
	RS-422/485	Removable 10-Pin Terminal Block		
LED Indicators				
Power/Communication	Yes			
Power				
Input Voltage Range	+10 V _{DC} ~ +30 V _{DC} (Non-isolated)			
Power Consumption	1.2 W			
Mechanical				
Casing	Plastic			
Flammability	Fire Retardant Materials (UL94-V0 Level)			
Dimensions (W x H x D)	72 mm x 118 mm x 35 mm			
Installation	DIN-Rail			
Environment				
Operating Temperature	-25 °C ~ +75 °C			
Storage Temperature	-30 °C ~ +75 °C			
Humidity	10 ~ 90% RH, non-condensing			

Applications



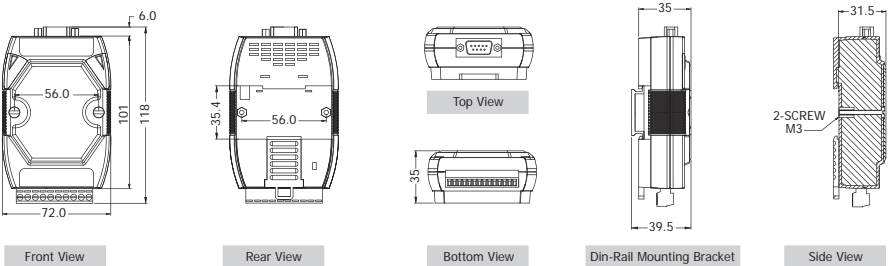
Pin Assignments

I-7520/I-7520R				
Terminal No.	Pin Assignment	Pin Assignment	Terminal No.	Pin Assignment
RS-485 01	DATA+		06	--
02	DATA-		07	--
03	--		08	--
04	--		09	--
05	--		05	GND
06	--			
07	--			
08	--			
09 (R)+Vs				
10 (B)GND				



I-7520A/I-7520AR				
Terminal No.	Pin Assignment	Pin Assignment	Terminal No.	Pin Assignment
RS-485 01	DATA1+		06	--
02	DATA1-		07	--
03	--		08	--
04	TxD+		09	--
RS-422/485 05	TxD-		05	GND
06	RxD+/DATA2+			
07	RxD-/DATA2-			
08	--			
09 (R)+Vs				
10 (B)GND				

Dimensions (Unit: mm)



Ordering Information

I-7520 CR	Isolated RS-232 to RS-485 Converter (RoHS)
I-7520A CR	Isolated RS-232 to RS-422/485 Converter (RoHS)
I-7520-G CR	Isolated RS-232 to RS-485 Converter (Gray Cover) (RoHS)
I-7520A-G CR	Isolated RS-232 to RS-422/485 Converter (Gray Cover) (RoHS)
I-7520R CR	RS-232 to Isolated RS-485 Converter (RoHS)
I-7520AR CR	RS-232 to Isolated RS-422/485 Converter (RoHS)
I-7520R-G CR	RS-232 to Isolated RS-485 Converter (Gray Cover) (RoHS)
I-7520AR-G CR	RS-232 to Isolated RS-422/485 Converter (Gray Cover) (RoHS)

Accessories

GPSU06U-6	24 Vdc/0.25 A, 6 W Power Supply
DIN-KA52F	24 Vdc/1.04 A, 25 W Power Supply with Din-Rail Mounting
I-7510 CR	Isolated RS-485 Repeater (RoHS)
I-7510A CR	Isolated RS-422/485 Repeater (RoHS)
CA-0915	9-Pin Male-Female D-Sub Cable, 1.5 m



I-7551

Isolated RS-232 to RS-232 Converter

Features

- 3000 V_{oc} 3-way Isolation Protection
- ESD Protection
- Transmission Speed of up to 115200 bps
- Power Input, +10 ~ +30 V_{oc}
- Operating Temperatures, -25 °C ~ +75 °C
- DIN-Rail



Introduction

The I-7551 Photo coupler provides a complete full-duplex (including control signal) electrical isolation channel between two RS-232 devices. This isolation is an important consideration if a system uses different power sources, has noisy signals, or must operate at different ground potentials.

The I-7551 provides the option of reconfiguring which control signal is used. CTS can be selected instead of DSR, and RTS instead of DTR.

The I-7551 incorporates two DC-to-DC converters, the isolation site of the I-7551 is located in the input and output interface circuit. In other words, the I-7551 is 3-way isolated RS-232 to RS-232 converter.

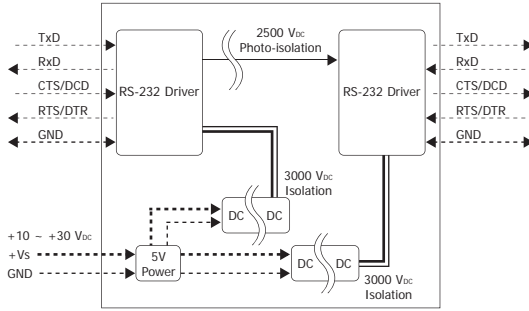
Applications



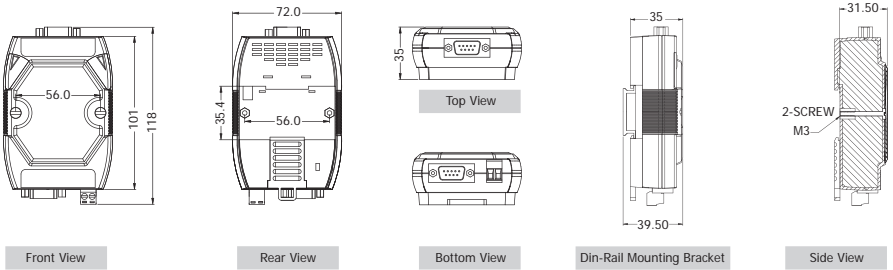
Specifications

Interface		
Input	TxD, RxD, CTS, RTS, GND (Default) or TxD, RxD, DSR, DTR, GND Jumpers JP1 and JP2 are used to select the RS-232 input source type	
Output	TxD, RxD, CTS, RTS, GND (Default) or TxD, RxD, DSR, DTR, GND	
Transfer Distance	Max. 15 M at 115200 bps	
Speed	300 ~ 115200 bps	
ESD Protection	Yes	
3000 V _{oc} Three Way Isolated Protection	Yes	
Connection	RS-232 Input	9-Pin Female D-Sub
	RS-232 Output	9-Pin Male D-Sub
LED Indicators		
Power/Communication	Yes	
Power		
Input Voltage Range	+10 V _{oc} ~ +30 V _{oc} (Non-isolated)	
Power Consumption	1.2 W	
Mechanical		
Casing	Plastic	
Flammability	Fire Retardant Materials (UL94-V0 Level)	
Dimensions (W x H x D)	72 mm x 118 mm x 35 mm	
Installation	DIN-Rail	
Environment		
Operating Temperature	-25 °C ~ +75 °C	
Storage Temperature	-30 °C ~ +75 °C	
Humidity	10 ~ 90% RH, non-condensing	

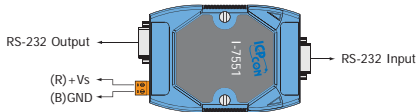
Internal I/O Structure



Dimensions (Unit: mm)



Pin Assignments



Default			OR			OR			OR		
RS-232 Input			RS-232 Output			RS-232 Input			RS-232 Output		
Pin Assignment	Terminal No.	Pin Assignment	Pin Assignment	Terminal No.	Pin Assignment	Pin Assignment	Terminal No.	Pin Assignment	Pin Assignment	Terminal No.	Pin Assignment
GND	01	06	05	09	01	06	05	09	08	08	08
TxD	02	07	04	08	02	07	04	07	04	07	07
RxD	03	08	TxD	03	07	03	03	07	03	07	03
--	04	09	RxD	02	06	04	02	06	02	06	02
--	05	--	--	01	--	05	01	--	--	01	--

Ordering Information

I-7551 CR	Isolated RS-232 to RS-232 Converter (RoHS)
I-7551-G CR	Isolated RS-232 to RS-232 Converter (Gray Cover) (RoHS)

Accessories

GPSU06U-6	24 V _{DC} /0.25 A, 6 W Power Supply
DIN-KA52F	24 V _{DC} /1.04 A, 25 W Power Supply with Din-Rail Mounting

4.5. Intelligent Communication Controllers



I-752N Series

Intelligent Communication Controller

Features

- Built-in "Addressable RS-485 to RS-232 Converter" firmware
- Programmable Intelligent Communication Controller
- Supports about 30 well-defined commands
- Supports Dual-Watchdog commands
- Supports power-up and safe value for DO
- Watchdog timer provides fault tolerance and recovery
- Low power consumption
- R.O.C. Invention Patent No. 086674, No.103060 and No. 132457
- Made from fire retardant materials (UL94-V0 Level)



Introduction

There are many RS-232 devices in industry applications. Nowadays it becomes important to link all those RS-232 devices together for automation and information. Usually those RS-232 devices are far away from the host-PC and widely distributed in the factory. So it is not a good idea to use multi-serial cards to connect all these RS-232 devices together. The I-752N series product can be used to link multiple RS-232 devices by a single RS-485 network. The RS-485 is famous for its easy maintenance, simple cabling, stable, reliable and low cost.

Onboard 1 KB Queue buffer

The I-752N series module is equipped with a 1 KB queue buffer for its local RS-232 device. All input data can be stored in the queue buffer until the Host PC has time to read it. This feature allows the Host PC to link to thousands of RS-232 devices without any loss of data.

3000V isolation on RS-485 side

COM2 of the I-752N modules is an isolated RS-485 port with 3000 VDC isolation, which protects the local RS-232 devices from transient noises coming from the RS-485 network.

Self-Tuner ASIC inside

The built-in Self-Tuner ASIC on an RS-485 port can auto detect and control the send/receive direction of the RS-485 network. Thus, there is no need for application programs to be concerned about direction control of the RS-485 network.

Can be used as Addressable RS-485 to RS-232 Converter

Most RS-232 devices don't support device addressing. The ICP DAS I-752N module assigns a unique address for each RS-232 device installed. When Host PC sends a command with a device address to the RS-485 network, the destination I-752N module will remove the address field, and then pass the other commands to the specified local RS-232 devices. The response from the local RS-232 devices will be returned to the Host PC via the I-752N.

Master-type Addressable RS-485 to RS-232 Converter

The ICP DAS I-752N product is unique. In that they are Master-type converters which use our R.O.C. Patent 086674, while most other converters are Slave-type, which are helpless without a Host PC. In real industrial applications, many users are not satisfied with Slave-type converters as they cannot be adapted to individual requirement.

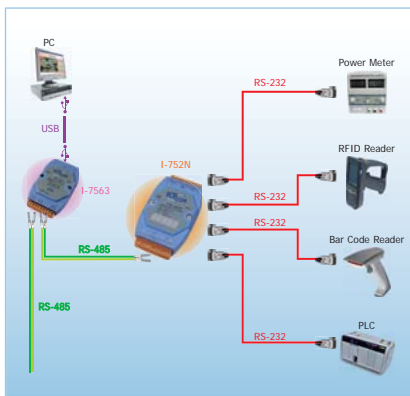
The powerful I-752N series analyzes the local RS-232 devices, DI and DO without the need for a Host PC. Refer to Applications 5 - 9 for more information in the manual.

Can be used as RS-232 to RS-485 Device Server

The Device Server is an appliance that networking any device with a serial communication port. The I-752N series Intelligent Communication Controller allows the RS-232 serial devices to connect to the RS-485 network. Also, there are PDS series products available from ICP DAS, which provide Ethernet connectivity for serial devices.

Applications

Factory, Building and Home Automation



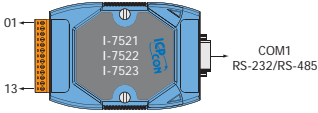
I/O Specifications

Models	I-7521(D)	I-7522(D)	I-7523(D)	I-7522A(D)	I-7524(D)	I-7527(D)
User-Defined I/O						
I/O Channel	3	-	-	-	-	-
Digital Output						
DI Channel	2	2	1	5	1	1
Input Type	Source (Dry Type), Common Ground, non-isolated					
Off Voltage	+1 V max.					
On Voltage	+3.5 V _{OC} – +30 V _{OC}					
Digital Output						
DO Channel	3	1	-	5	1	1
Output Type	Open Collector (Sink/NPN), non-isolated					
Load Voltage	+30 V _{OC} max.					
Load Current	100 mA max.					

System Specifications

Models	I-7521(D)	I-7522(D)	I-7523(D)	I-7522A(D)	I-7524(D)	I-7527(D)
System						
CPU	80188, 20 Mhz			80188, 40 Mhz		
SRAM	128 KB			256 KB		
Flash	512 KB					
EEPROM	2 KB					
Real-Time Clock	-			Yes		
Watchdog Timer	Yes					
Operating System	MiniOS7					
Communication Interface						
COM1	5-wire RS-232 or 2-wire RS-485					
COM2	Isolated 2-wire RS-485					
COM3	-	5-wire RS-232	5-wire RS-232	4-wire RS-422	5-wire RS-232	3-wire RS-232
COM4	-	-	3-wire RS-232	-	5-wire RS-232	3-wire RS-232
COM5	-	-	-	-	5-wire RS-232	3-wire RS-232
COM6	-	-	-	-	-	3-wire RS-232
COM7	-	-	-	-	-	3-wire RS-232
COM8	-	-	-	-	-	3-wire RS-232
Baud Rate	300 – 115200 bps					
Data Bit	COM1 – COM2: 7 or 8 COM3 – COM8: 5, 6, 7 or 8					
Parity	COM1 – COM2: None, Even, Odd COM3 – COM8: None, Even, Odd, Mark, Space					
Stop Bit	COM1 – COM2: 1 or 2 (data bit must be 7) COM3 – COM8: 1 or 2					
Connector	Male DB-9 x 1 13-Pin screw terminal block x 1 (for 16 – 26 AWG wires; 3.81 mm pitch)			14-Pin screw terminal block x 2 (for 16 – 22 AWG wires; 3.5 mm pitch)		
LED Indicators						
LED Display	5-digit 7-segment LED display for D versions					
Power						
Protection	Power input reverse polarity protection					
Power Requirement	Unregulated +10 V _{OC} – 30 V _{OC}					
Power Consumption	2 W (without display), 3 W (with display)					
Mechanical						
Casing	Plastic					
Flammability	Fire Retardant Materials (UL94-V0 Level)					
Dimensions (W x H x D)	72 mm x 118 mm x 35 mm			72 mm x 120 mm x 35 mm		
Installation	DIN-Rail					
Environment						
Operating Temperature	-25 °C – +75 °C					
Storage Temperature	-40 °C – +80 °C					
Humidity	0 – 90% RH, non-condensing					
Note:						
3-wire RS-232: RxD, TxD, GND						
5-wire RS-232: RxD, TxD, CTS, RTS, GND						
2-wire RS-485: DATA+, DATA-, GND: Self-Tuner inside						
Isolated 2-wire RS-485: DATA+, DATA-: Self-Tuner inside; 3000 V _{OC} Isolation						
4-wire RS-422: RxD+, RxD-, TxD+, TxD-, GND						

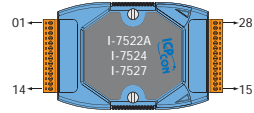
Pin Assignments



I-7521/I-7521D

Terminal No.	Pin Assignment	Pin Assignment	Terminal No.	Pin Assignment
01	X3		05	GND
02	X2		04	N.C.
03	X1		03	RxD
04	DO3		02	TxD
05	DO2		01	Data+
06	DO1		09	Data-
07	D13		08	RTS
08	D12		07	CTS
09	INIT*		06	N.C.
10	(Y)D2+			
11	(G)D2-			
12	(R)+Vs			
13	(B)GND			

COM1: RS-232 Male DB-9 Connector



I-7522A/I-7522AD

Terminal No.	Pin Assignment	X507	
		Terminal No.	Pin Assignment
DO	01 DO	28	DO3
DI	02 DI	27	DO2
COM1	03 D1+	26	DO1
	04 D1-	25	DO0
	05 CTS1	24	DO.PWR
	06 RTS1	23	GND
	07 GND	22	D13
DI	08 TxD1	21	D12
	09 RxD1	20	D11
	10 INIT*	19	D10
	11 (Y)D2+	18	RxD3-
COM2	12 (G)D2-	17	RxD3+
	13 (R)+Vs	16	TxD3-
Power Input	14 (B)GND	15	TxD3+

I-7522/I-7522D

Terminal No.	Pin Assignment	Pin Assignment	Terminal No.	Pin Assignment
01	CTS3		05	GND
02	RTS3		04	N.C.
03	RxD3		03	RxD
04	TxD3		02	TxD
05	GND		01	Data+
06	DO1		09	Data-
07	D13		08	RTS
08	D12		07	CTS
09	INIT*		06	N.C.
10	(Y)D2+			
11	(G)D2-			
12	(R)+Vs			
13	(B)GND			

COM1: RS-232 Male DB-9 Connector

I-7524/I-7524D

Terminal No.	Pin Assignment	X505	
		Terminal No.	Pin Assignment
DO	01 DO	28	RxD5
DI	02 DI	27	TxD5
COM1	03 D1+	26	RTS5
	04 D1-	25	CTS5
	05 CTS1	24	GND
	06 RTS1	23	RxD4
	07 GND	22	TxD4
COM4	08 TxD1	21	RTS4
	09 RxD1	20	CTS4
	10 INIT*	19	GND
COM2	11 (Y)D2+	18	RxD3
	12 (G)D2-	17	TxD3
Power Input	13 (R)+Vs	16	RTS3
	14 (B)GND	15	CTS3

I-7523/I-7523D

Terminal No.	Pin Assignment	Pin Assignment	Terminal No.	Pin Assignment
01	CTS3		05	GND
02	RTS3		04	N.C.
03	RxD3		03	RxD
04	TxD3		02	TxD
05	GND		01	Data+
06	TxD4		09	Data-
07	RxD4		08	RTS
08	D12		07	CTS
09	INIT*		06	N.C.
10	(Y)D2+			
11	(G)D2-			
12	(R)+Vs			
13	(B)GND			

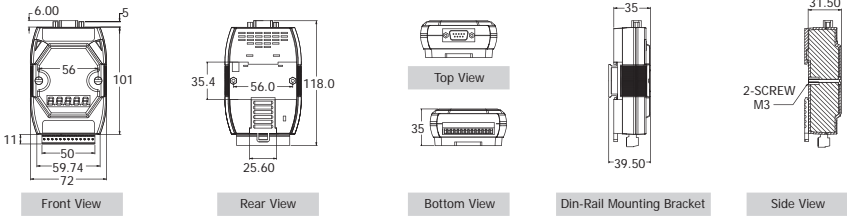
COM1: RS-232 Male DB-9 Connector

I-7527A/I-7527AD

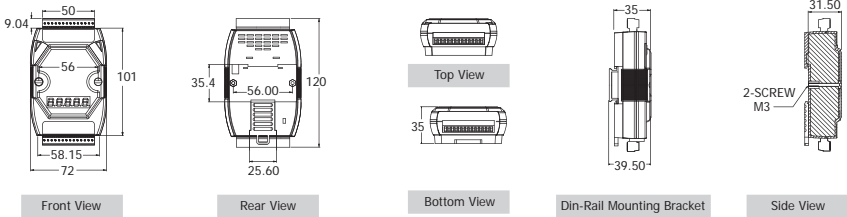
Terminal No.	Pin Assignment	X506	
		Terminal No.	Pin Assignment
DO	01 DO	28	TxD8
DI	02 DI	27	RxD8
COM1	03 D1+	26	TxD7
	04 D1-	25	RxD7
	05 CTS1	24	GND
	06 RTS1	23	TxD6
	07 GND	22	RxD6
COM5/6	08 TxD1	21	TxD5
	09 RxD1	20	RxD5
	10 INIT*	19	GND
COM2	11 (Y)D2+	18	TxD4
	12 (G)D2-	17	RxD4
Power Input	13 (R)+Vs	16	TxD3
	14 (B)GND	15	RxD3

Dimensions (Unit: mm)

I-7521(D)/I-7522(D)/I-7523(D)

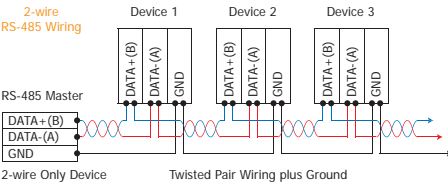


I-7522A(D)/I-7524(D)/I-7527(D)

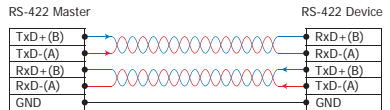


Wiring

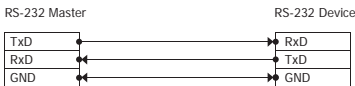
2-wire RS-485 Wiring



4-wire RS-422 Wiring



3-wire RS-232 Wiring



Input Type	DI Value as 0	DI Value as 1
Relay Contact	Relay ON 	Relay Off
	Voltage < 1V 	Voltage > 3.5V
TTL/CMOS Logic	Logic Level Low 	Logic Level High
Open Collector	Open Collector On 	Open Collector Off
	DO Command as 1	DO Command as 0
Drive Relay	Relay ON 	Relay Off
	Resistance Load 	

Ordering Information

I-7521 CR	Intelligent Communication Controller (RoHS)
I-7521D CR	I-7521 with Display
I-7522 CR	Intelligent Communication Controller (RoHS)
I-7522D CR	I-7522 with Display
I-7522A CR	Intelligent Communication Controller (RoHS)
I-7522AD CR	I-7522A with Display
I-7523 CR	Intelligent Communication Controller (RoHS)
I-7523D CR	I-7523 with Display
I-7524 CR	Intelligent Communication Controller (RoHS)
I-7524D CR	I-7524 with Display
I-7527 CR	Intelligent Communication Controller (RoHS)
I-7527D CR	I-7527 with Display

Accessories

GPSU06-6	24 V _{DC} /0.25 A, 6 W Power Supply
MDR-20-24	24 V _{DC} /1 A, 24 W Power Supply with DIN-Rail Mounting
KA-52F	24 V _{DC} /1.04 A, 25 W Power Supply
DIN-KA52F	24 V _{DC} /1.04 A, 25 W Power Supply with Din-Rail Mounting

4.6. USB to RS-232/422/485 Converters



I-7560

USB to RS-232 Converter

Introduction

The I-7560 contains a Windows serial com port via it's USB connection and is compatible with new and legacy RS-232 devices. USB Plug-and-Play allows easy serial port expansion and requires no IRQ, DMA, or I/O port resources.

The I-7560 features a full set of RS-232 modem data and control signals (TxD, RxD, RTS, CTS, DSR, DTR, DCD, RI and GND) on it's PC compatible DB-9 male connector. It also features a high-speed 115200 bps transmission rate.

The I-7560 is powered from the USB bus and no additional power supply is needed.

Software

Driver

Windows 98/ME/2000/XP/Vista (32/64-bit)/7 (32/64-bit)/Linux

Specifications

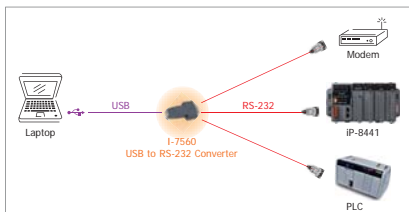
Interface		
USB		Compatibility: USB 1.1/2.0 standards
RS-232		TxD, RxD, RTS, CTS, DSR, DTR, DCD, RI and GND; non-Isolated
Speed		300 – 115200 bps
Connection	RS-232	9-Pin Male D-Sub
	USB	Type B
Cable Included		CA-USB18 (1.8 m Cable) x 1
LED Indicators		
Power		Yes
Power		
Input Voltage Range		+5 Voc from USB
Power Consumption		0.3 W
Mechanical		
Casing		Plastic
Flammability		Fire Retardant Materials (UL94-V0 Level)
Dimensions (W x H x D)		33 mm x 60 mm x 15 mm
Environment		
Operating Temperature		-25 °C – +75 °C
Storage Temperature		-30 °C – +75 °C
Humidity		10 – 90% RH, non-condensing

Features

- Fully Compliant with the USB 1.1/2.0 (High Speed)
- No External Power Supply required
- Automatic RS-485 Direction Control
- Operating Temperatures, -25 °C – +75 °C
- Driver Supports Windows 98/ME/2000/XP/Vista (32/64-bit)/7 (32/64-bit)/Linux



Applications



I-7560 with CA-USB18



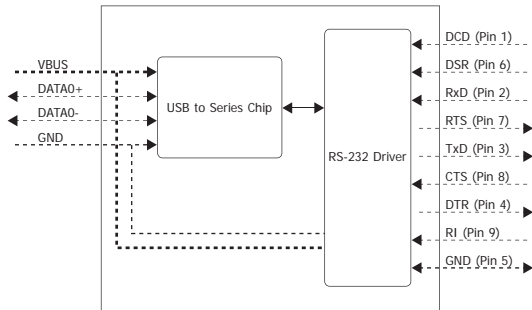
I-7560 with IP-8441



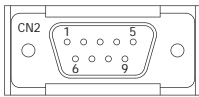
I-7560 with Modem



Internal I/O Structure

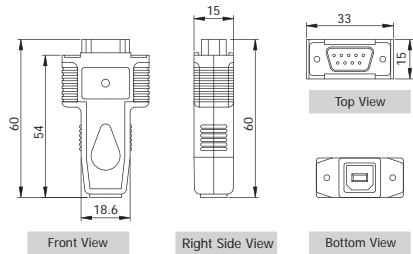


Pin Assignments



Pin	Signal	Mode
01	DCD Data Carrier Detect	Input
02	RxD Receive Data	Input
03	TxD Transmit Data	Output
04	DTR Data Term Ready	Output
05	GND Ground	--
06	DSR Data Set Ready	Input
07	RTS Request To Send	Output
08	CTS Clear To Send	Input
09	RI Ring Indicator	Input

Dimensions (Unit: mm)



Ordering Information

I-7560 CR	USB to RS-232 Converter (RoHS)
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Accessories

USB-2560 CR	Industrial 4-port USB 2.0 Hub
CA-USB18	USB Type A to Type B Cable



tM-7561

USB to Isolated RS-485 Converter

Features

- Fully Compliant with the USB 1.1/2.0 (High Speed)
- No External Power Supply required
- Power and data flow indicator for troubleshooting
- Automatic RS-485 Direction Control
- 2500 V_{oc} Isolation Protection on the RS-485 side
- Operating Temperatures, -25 °C ~ +75 °C
- Driver Supports Windows 98/ME/2000/XP/Vista (32/64-bit)/7 (32/64-bit)/Linux
- Low power consumption
- Tiny packaging fits on your DIN-Rail
- Cost-effective Converter



Introduction

The tM-7561 is a cost-effective USB to RS-485 converter. Connecting the tM-7561 to a PC, you get one RS-485 port that allows you to access RS-485 devices through the USB interface. Like the I-7520, the tM-7561 contains "Self-Tuner" chip auto-tunes the baud rate and data format to the RS-485 network. The tM-7561 module derives its power from the USB port and doesn't need external power adapter.

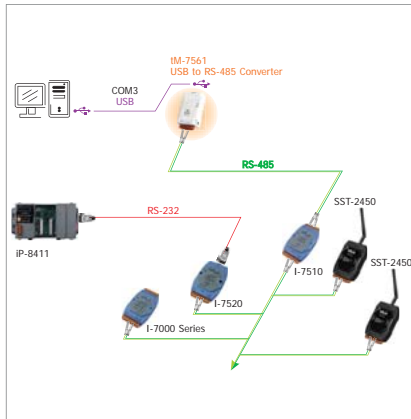
Comparison Table of Converter

Mode name	tM-7561	I-7561
Serial Interface	Only RS-485	RS-232/422/485
Dimensions (W x H x D)	52 mm x 87 mm x 27 mm	72 mm x 115 mm x 35 mm
Remarks	Cost-effective, Entry-level	Entry-level

Specifications

Interface	
USB	Compatibility: USB 1.1 and 2.0 standards
RS-485	Data+, Data-
2-wire cabling	Belden 8941 (2P twisted-pair cable), if different cables are used, the transmission distance may change
RS-485 Transfer Distance	Max. 1,200 m at 9.6 kbps; Max. 400 m at 115.2 kbps
Maximum Supported RS-485 Devices	256 (Without repeater)
Self-Tuner ASIC Inside	Yes
Speed	300 ~ 115200 bps
Connection	RS-485
	Removable 7-Pin Terminal Block
Cable Included	USB
	Type B
CA-USB18 (1.8 m Cable) x 1	
LED Indicators	
Power/Communication	Yes
Power	
Input Voltage Range	+5 V _{oc} from USB
Power Consumption	0.4 W
Mechanical	
Casing	Plastic
Flammability	Fire Retardant Materials (UL94-V0 Level)
Dimensions (W x H x D)	52 mm x 87 mm x 27 mm
Installation	DIN-Rail
Environment	
Operating Temperature	-25 °C ~ +75 °C
Storage Temperature	-30 °C ~ +75 °C
Humidity	10 ~ 90% RH, non-condensing

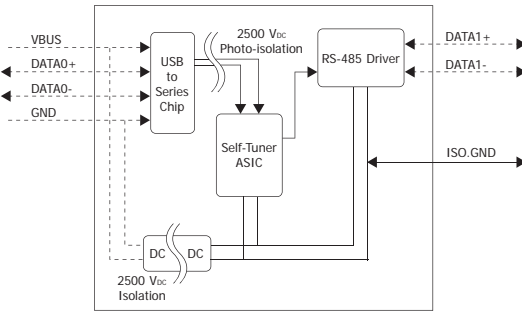
Applications



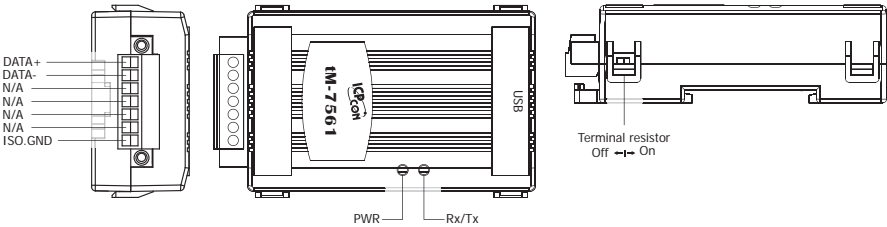
Software

Driver
Windows 98/ME/2000/XP/Vista (32/64-bit)/7 (32/64-bit)/Linux

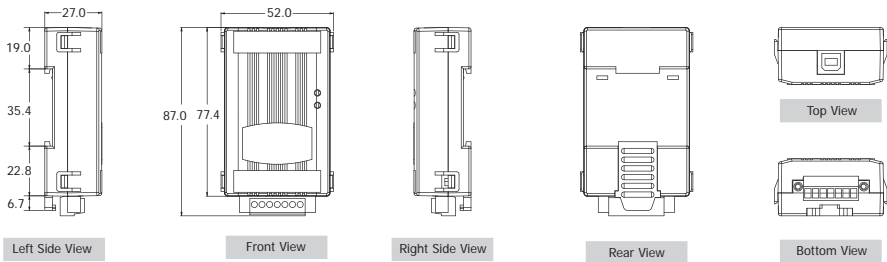
Internal I/O Structure



Pin Assignments



Dimensions (Unit: mm)



Ordering Information

IM-7561 CR	USB to Isolated RS-485 Converter (RoHS)
Include Cable	CA-USB18 (1.8 m Cable) x 1

Accessories

USB-2560 CR	Industrial 4-port USB 2.0 Hub
CA-USB18	USB Type A to Type B Cable



I-7561

USB to Isolated RS-232/422/485 Converter

Features

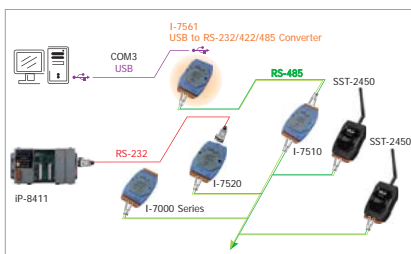
- Fully Compliant with the USB 1.1/2.0 (High Speed)
- No External Power Supply required
- Automatic RS-485 Direction Control
- 3000 V_{oc} Isolation Protection on the RS-232/422/485 side
- ESD Protection for the RS-232/422/485 Data Line
- Operating Temperatures, -25 °C ~ +75 °C
- Driver Supports Windows 98/ME/2000/XP/Vista (32/64-bit)/7 (32/64-bit)/Linux
- DIN-Rail



Introduction

The I-7561 is a cost-effective module for transferring serial data via USB. It allows you to connect your serial devices to systems that use a USB interface. Connecting the I-7561 to a PC, you get one RS-232/422/485 port. Like the I-7520A, the I-7561 contains "Self-Tuner" chip auto-tunes the Baud Rate and data format to the RS-485 network. The I-7561 module derives its power from the USB port and doesn't need any power adapter.

Applications



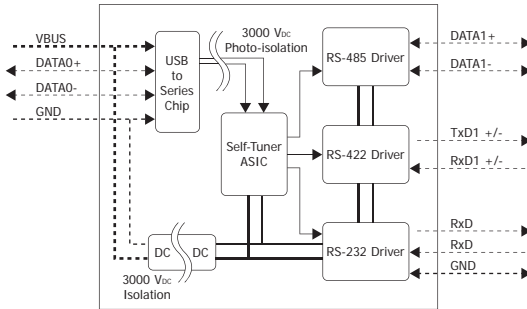
Software

Driver	Windows 98/ME/2000/XP/Vista (32/64-bit)/7 (32/64-bit)/Linux
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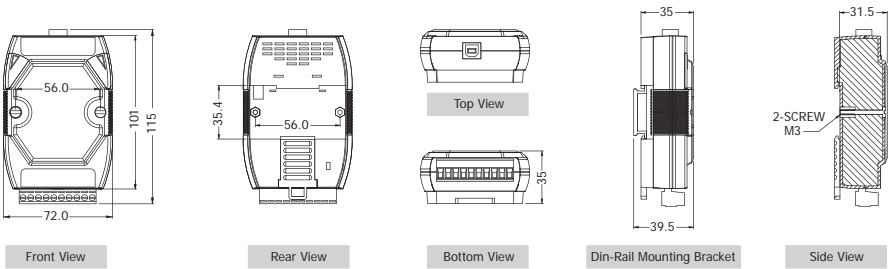
Specifications

Interface		
USB		Compatibility: USB 1.1 and 2.0 standards
Serial Interface	RS-232	TxD, RxD, GND
	RS-422 RS-485	TxD+, TxD-, RxD+, RxD- Data+, Data-
2-wire cabling/4-wire cabling		Belden 8941 (2P twisted-pair cable)/Belden 8942 (4P twisted-pair cable), if different cables are used, the transmission distance may change
RS-422/485 Transfer Distance		Max. 1,200 m at 9.6 kbps; Max. 400 m at 115.2 kbps
Maximum Supported RS-485 Devices		256 (Without repeater)
Self-Tuner Asic Inside (RS-485)		Yes
Speed		300 – 115200 bps
Connection	RS-232/422/485	Removable 10-Pin Terminal Block
	USB	Type B
Cable Included		CA-USB18 (1.8 m Cable) x 1
LED Indicators		
Power		Yes
Power		
Input Voltage Range		+5 V _{oc} from USB
Power Consumption		0.5 W
Mechanical		
Casing		Plastic
Flammability		Fire Retardant Materials (UL94-V0 Level)
Dimensions (W x H x D)		72 mm x 115 mm x 35 mm
Installation		DIN-Rail
Environment		
Operating Temperature		-25 °C ~ +75 °C
Storage Temperature		-30 °C ~ +75 °C
Humidity		10 – 90% RH, non-condensing

Internal I/O Structure



Dimensions (Unit: mm)



Pin Assignments



Terminal No.	Pin Assignment
RS-485	01 DATA+
	02 DATA-
	03 TXD+
	04 TXD-
RS-422/485	05 Rx/D+/DATA2+
	06 Rx/D-/DATA2-
	07 Tx/D
	08 Rx/D
RS-232	09 (B)GND
	10 (B)GND

Ordering Information

I-7561 CR	USB to RS-232/422/485 Converter (RoHS)
I-7561-G CR	USB to RS-232/422/485 Converter (Gray Cover) (RoHS)
Include Cable CA-USB18 (1.8 m Cable) x 1	

Accessories

USB-2560 CR	Industrial 4-port USB 2.0 Hub
CA-USB18	USB Type A to Type B Cable



I-7563

USB to Isolated RS-485 Active Star Wiring Converter

Features

- Fully Compliant with USB 1.1/2.0 (High Speed)
- No External Power Supply required
- RS-485 Active Star Wiring Applications
- Automatic RS-485 Direction Control
- 3000 V_{DC} Isolation Protection on the RS-485 side
- ESD Protection for the RS-485 Data Line
- Operating Temperatures, -25 °C ~ +75 °C
- Driver Supports Windows 98/ME/2000/XP/Vista (32/64-bit)/7 (32/64-bit)/Linux
- DIN-Rail

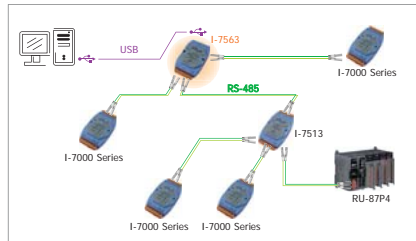


Introduction

The I-7563 is a cost-effective module for transferring serial data via USB. It allows you to connect your serial devices to systems that use a USB interface. Connecting the I-7563 to a PC. The I-7563 contains "Self-Tuner" This chip auto-tunes the Baud Rate and data format to the RS-485 network. The I-7563 module derives its power from the USB port and doesn't need any power adapter.

Do you have any RS-485 wiring problems I-7563 is a USB to 1-channel RS-485 converter with a 3-way RS-485 Hub. Each channel contains its own RS-485 driver IC, so it can support star-shaped wiring.

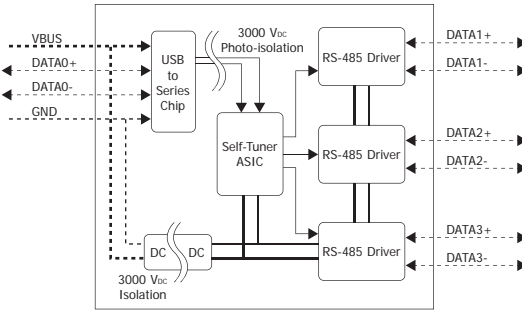
Applications



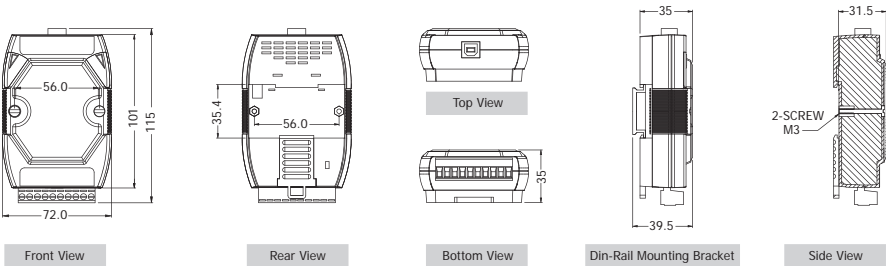
Specifications

Interface	
USB	Compatibility: USB 1.1 and 2.0 standards 3 Channels: For active star wiring applications
RS-485	Data1+, Data1- Data2+, Data2- Data3+, Data3-
2-wire cabling	Belden 8941 (2P twisted-pair cable), if different cables are used, the transmission distance may change
RS-485 Transfer Distance	Max. 1,200 m at 9.6 kbps; Max. 400 m at 115.2 kbps
Maximum Supported RS-485 Devices	Max. of 256 devices
Self-Tuner Asic Inside for RS-485	Yes
Speed	300 – 115200 bps
Connection	RS-485: Removable 10-Pin Terminal Block USB: Type B
Cable Included	CA-USB18 (1.8 m Cable) x 1
LED Indicators	
Power	Yes
Power	
Input Voltage Range	+5 V _{DC} from USB
Power Consumption	0.5 W
Mechanical	
Casing	Plastic
Flammability	Fire Retardant Materials (UL94-V0 Level)
Dimensions (W x H x D)	72 mm x 115 mm x 35 mm
Installation	DIN-Rail
Environment	
Operating Temperature	-25 °C ~ +75 °C
Storage Temperature	-30 °C ~ +75 °C
Humidity	10 – 90% RH, non-condensing

Internal I/O Structure



Dimensions (Unit: mm)



Pin Assignments



Terminal No.	Pin Assignment
RS-485	01 DATA3+
	02 DATA3-
	03 --
	04 --
RS-485	05 DATA2-
	06 DATA2+
	07 --
	08 --
RS-485	09 DATA1-
	10 DATA1+

Ordering Information

I-7563 CR	USB to Isolated RS-485 Active Star Wiring Converter (RoHS)
I-7563-G CR	USB to Isolated RS-485 Active Star Wiring Converter (Gray Cover) (RoHS)
Include Cable	CA-USB18 (1.8 m Cable) x 1

Accessories

USB-2560 CR	Industrial 4-port USB 2.0 Hub
CA-USB18	USB Type A to Type B Cable

4.6. RS-232/422/485 to Fiber Optic Converter



Features

- Automatic RS-485 Direction Control
- Optical fibers enable transmission of 2 km
- Avoids lightning strikes and EMI/RFI interference
- ESD Protection for the RS-232/422/485 Data Line
- Power Input, +10 ~ +30 V_{DC}
- Operating Temperatures, -25 °C ~ +75 °C
- DIN-Rail



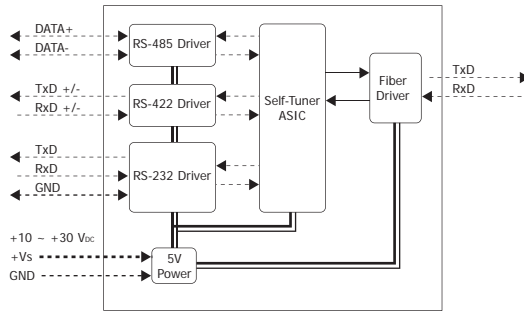
Introduction

The I-2541 is an RS-232/422/485 to fiber optic converter that secures data transmission by using fiber optic transmission to provide immunity from EMI/RFI interference. The I-2541 is used for RS-232/422 point-to-point connections and RS-485 multi-drop applications for transmitting a signal up to 2 km (6,600 ft) and is the perfect solution for applications where transmission must be protected from electrical exposure, surges or chemical corrosion.

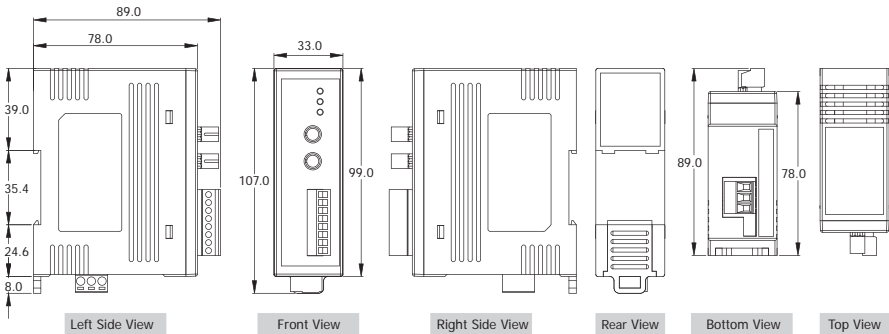
Specifications

Interface		
Fiber Interface	Fiber Port	Multi Mode; ST Connector
	Wavelength	850 nm
	Fiber Cable	50/125, 62.5/125, 100/140 μm
	Distance	2 km, (62.5/125 μm recommended)
Serial Interface	RS-232	TxD, RxD, GND
	RS-422	TxD+, TxD-, RxD+, RxD-
	RS-485	Data+, Data-
The RS-232, RS-422 and RS-485 cannot be used simultaneously		
2-wire Cabling/4-wire Cabling	Belden 8941 (2P twisted-pair cable)/Belden 8942 (4P twisted-pair cable), if different cables are used, the transmission distance may change	
RS-422/485 Transfer Distance	Max. 1,200 m at 9.6 kbps; Max. 400 m at 115.2 kbps	
Maximum Supported RS-485 Devices	256 (Without repeater)	
Self-Tuner Asic Inside	Yes	
Speed	300 ~ 115200 bps	
ESD Protection	Yes	
RS-232/422/485 Connection	Removable 8-Pin Terminal Block	
LED Indicators		
Power/Communication	Yes	
Power		
Input Voltage Range	+10 V _{DC} ~ +30 V _{DC} (Non-isolated)	
Power Consumption	1.9 W	
Mechanical		
Casing	Plastic	
Flammability	Fire Retardant Materials (UL94-V0 Level)	
Dimensions (W x L x H)	33 mm x 89 mm x 107 mm	
Installation	DIN-Rail	
Environment		
Operating Temperature	-25 °C ~ +75 °C	
Storage Temperature	-30 °C ~ +75 °C	
Humidity	10 ~ 90% RH, non-condensing	

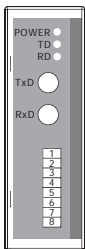
Internal I/O Structure



Dimensions (Unit: mm)



Pin Assignments



Terminal No.	Pin Assignment
TxD	Fiber TxD
RxD	Fiber RxD
01	TxD+/-/DATA+
02	TxD-/DATA-
03	RxD+
04	RxD-
05	NC
06	GND
07	TxD
08	RxD

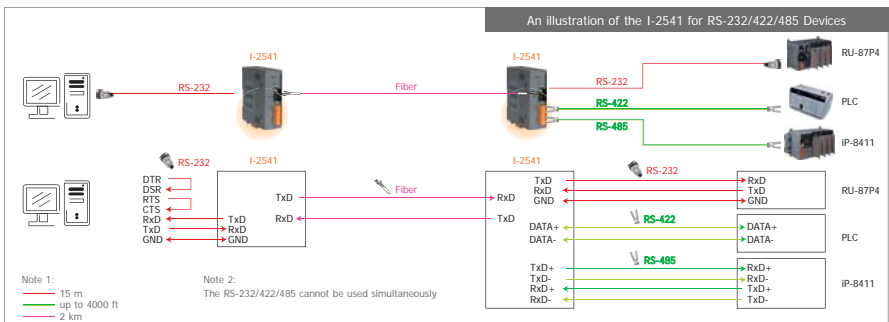
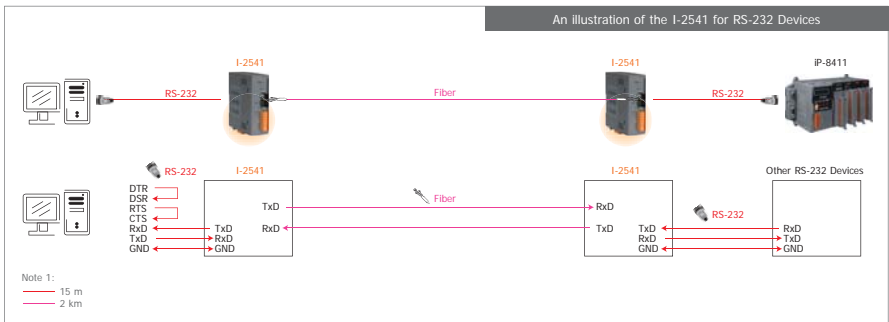
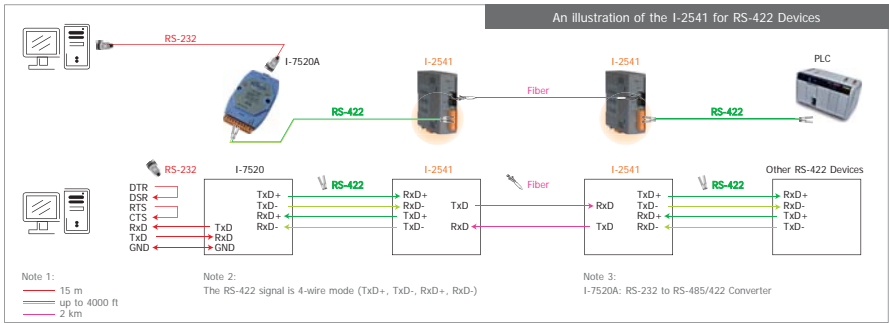
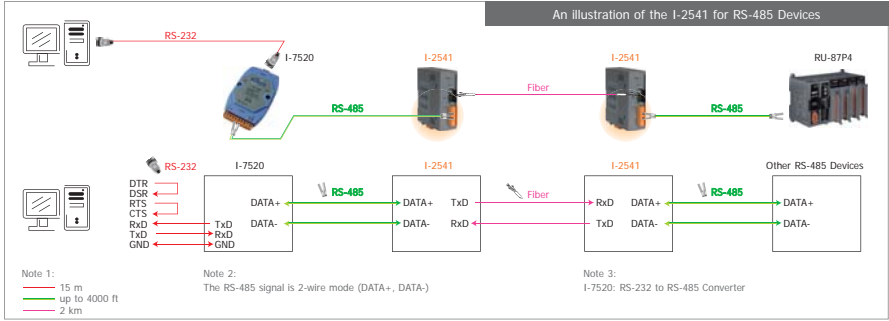
Ordering Information

I-2541 CR	RS-232/422/485 to Fiber Optic Converter
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Accessories

GPSU06U-6	24 Vdc/0.25 A, 6 W Power Supply
DIN-KA52F	24 Vdc/1.04 A, 25 W Power Supply with Din-Rail Mounting

Applications



Fieldbus Solutions

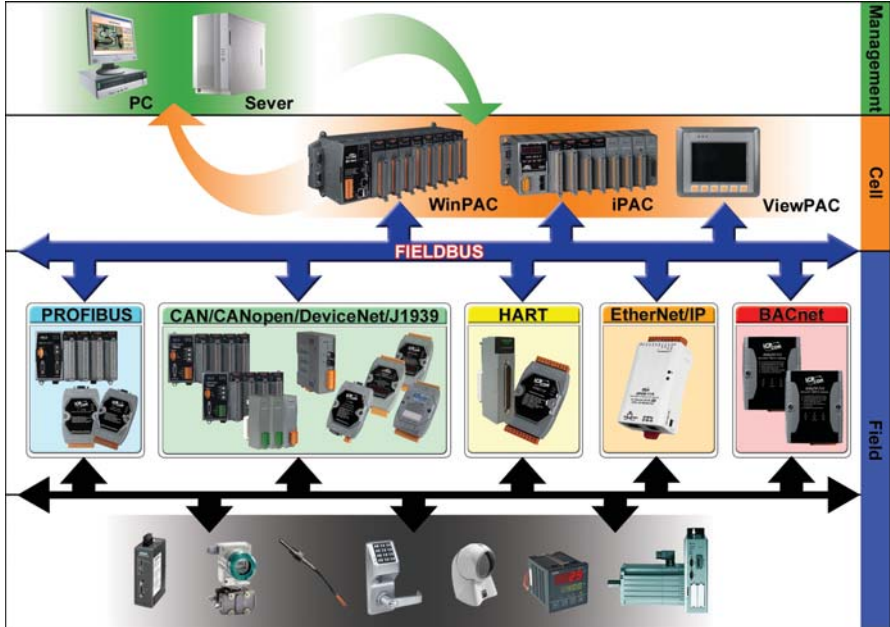
5

5.1	Overview	P5-1-1
5.2	CAN bus Introduction & Products	P5-2-1
5.3	CANopen Introduction & Products	P5-3-1
5.4	DeviceNet Introduction & Products	P5-4-1
5.5	J1939 Introduction & Products	P5-5-1
5.6	PROFIBUS Introduction & Products	P5-6-1
5.7	HART Introduction & Products	P5-7-1
5.8	EtherNet/IP Introduction & Products	P5-8-1
5.9	BACnet Introduction & Products	P5-9-1



5.1. Overview

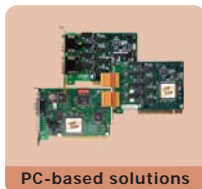
Fieldbus is an industrial network system for real-time distributed control. It is a way to connect instruments in a manufacturing plant. Fieldbus works on a network structure which typically allows daisy-chain, star, ring, branch, and tree network topologies. Fieldbus reduces both the length and the number of cables required. Fieldbus has many major advantages to all applications of automation. The technology of fieldbus is mature and well accepted in various fields in markets. ICP DAS has focused on these fieldbus products for several years and offers various fieldbus solutions in different industrial applications, covering the entire scope of process and manufacturing automation: CAN bus, CANopen, DeviceNet, J1939, PROFIBUS, HART, EtherNet/IP and BACnet applications



ICP DAS's Fieldbus Development Services group has been involved in the design and development of industrial Fieldbus and industrial Ethernet products for our customers for several years. We have the expertise to bring these fieldbus products to your system. As the members of the CIA, ODVA and PI, we have the various latest Fieldbus and industrial Ethernet development tool and understand the details of all the steps required to bring the products to your need.

Solutions for Fieldbus and industrial Ethernet

In order to solve various communication problems in different Fieldbus and industrial Ethernet applications, ICP DAS provides converters, gateways, PC based, and PAC based solutions of Fieldbus and industrial Ethernet for users. Users can choose corresponding solutions depending on various field applications.



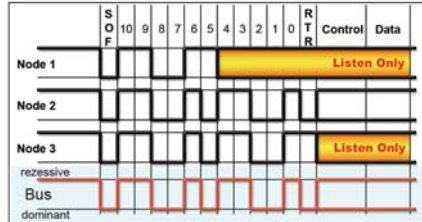
5.2. CAN bus Introduction & Products

The Controller Area Network (CAN) is a serial communication way, which efficiently supports distributed real-time control with a very high level of security. It provides error process mechanisms and message priority concepts. The features can improve the network reliability and transmission efficiency. Furthermore, CAN bus supplies the multi-master capabilities, and is especially suited for networking "intelligent" devices as well as sensors and actuators within a system or sub-system.

Speed & Distance

Baud (bit/sec)	Ideal Bus Length(m)
1M	25
800k	50
500k	100
250k	250
125k	500
50k	1000
20k	2500
10k	5000

Arbitration



Selection Guide

Model Name	Description	Page
CAN bus Converters		
I-2532	CAN bus to Fiber Converter	5-2-2
I-2533	CAN bus to Fiber Bridge	
I-7531	CAN bus Isolated Repeater	
I-7532	CAN bus Bridge	
I-2534	4-port CAN bus Switch	
I-7530	CAN bus to RS-232 Converter	5-2-3
I-7530A-MR	CAN bus to RS-232/RS-485/RS-422 Converter	
I-7530A	CAN bus to RS-232/RS-485/RS-422 Converter	
I-7530-FT	Low Speed Fault Tolerance CAN bus to RS-232 Converter	
I-7540D	Ethernet to CAN/RS-232/RS-485 Converter	
I-7540D-WF	CAN bus to Wi-Fi Converter	
I-7565	USB to CAN bus Converter	
I-7565-H1	High Performance USB to CAN bus Converter	5-2-4
I-7565-H2	High Performance USB to 2-port CAN bus Converter	
CAN bus PAC		
I-7188XBD-CAN	CAN/RS-232/RS-485 Programmable Automation Controller	5-2-4
uPAC-7186EXD-CAN	Ethernet/CAN/RS-232/RS-485 Programmable Automation Controller	
Intelligent CAN bus Modules (For ViewPAC, WinPAC, XPAC,...)		
I-8120W	Intelligent 1-port CAN bus communication Module with Parallel Bus	5-2-4
I-87120	Intelligent 1-port CAN bus communication Module with Serial Bus	
CAN bus Communication Cards		
PISO-CM100U-D	Intelligent 1-port CAN bus Universal PCI Interface Card	5-2-5
PISO-CM100U-T		
PCM-CAN100-D	1-port CAN bus PCI-104 Card	
PCM-CAN200	2-port CAN bus PCI-104 Card	
PCM-CAN200P	2-port CAN bus PC-104+ Card	
PEX-CAN200i-D	2-port CAN bus PCI Express x 1 Interface Card	
PEX-CAN200i-T		
PISO-CAN200U-D	2-port CAN bus Universal PCI Interface Card	
PISO-CAN200U-T		
PISO-CAN400U-D	4-port CAN bus Universal PCI Interface Card	5-2-6
PISO-CAN400U-T		

CAN bus Converters

ICP DAS provides all kinds of communication interfaces for CAN bus. There are RS-232, RS-485, RS-422, Ethernet, USB and fiber interfaces for various CAN applications. Also, the CAN series bridge and repeater are ICP DAS's CAN series products to enhance the CAN applications flexibility.

CAN bus to Fiber Converter

I-2532 is a CAN to fiber optic converter that secures data transmission by using fiber optic transmission to provide immunity from EMS/RFI interference, which is designed to extend high CAN bus signals onto fiber optic cables.

I-2532 CR


- Compatible with CAN specification 2.0 parts A and B
- Fully compatible with the ISO 11898-2 standard
- Support several kinds of baud rate from 10 kbps to 500 kbps
- 2500 V_{rms} photo couple isolation on the CAN side
- DIP switch for 120 Ω terminator resistor of CAN bus
- Watchdog inside
- 3 kV galvanic isolation
- Fiber Port: ST (Multi-mode)
- Wave Length: 850 nm
- Fiber Cable: 62.5/125 μm
- One CAN and one fiber channel
- Configure CAN Baud by rotary switch

CAN bus to Fiber Bridge

I-2533 is a local CAN bridge used to establish a connection between two CAN bus system via fiber optic. By using I-2533, the transmission distance limitation of the CAN bus system will not reduced because of CAN baud rate. It means that the total network distance can be extended. This feature helps users' applications more powerful and flexible.

NEW
I-2533 CR


- Fiber Port: ST (Multi-mode)
- Wave Length: 850 nm
- Fiber Cable: 62.5/125 μm
- Maximum transmission distance up to 2 km at any CAN baud rate
- 82C250 CAN transceiver
- 2500 V_{rms} coupler isolation on the CAN side
- Support both CAN 2.0A and CAN 2.0B
- Fully compatible with the ISO 11898-2 standard
- Build-in switch for 120 Ω terminator resistor
- Up to 100 CAN nodes on each channel
- Rotary switch for CAN baud rate configuration
- Allow user-defined baud rate
- Fiber broken line detection
- Utility tool for message filter configuration

CAN bus Isolated Repeater

I-7531 is a CAN repeater used to establish a physical coupling of two or more segments of a CAN bus system. Users can implement tree or star topologies as well as for long drop lines with I-7531.

I-7531 CR


- Compatible with CAN specification 2.0 parts A and B
- Fully compatible with the ISO 11898-2 standard
- Support several kinds of baud rate from 10 kbps to 800 kbps
- 2500 V_{rms} photo couple isolation on the CAN side
- Jumper for 120 Ω terminator resistor of CAN bus
- Watchdog inside
- 3 kV galvanic isolation among the power supply and two CAN channels
- Two CAN channels
- Auto-baud detection
- Up to 100 nodes on each CAN port
- Removable terminal block
- Mount easily on DIN-Rail

CAN bus Bridge

I-7532 is a CAN bridge to coupling different segments which can be different baud rates. It also can isolate the electronic disturbances between both sides. That can protect the nodes of one side from another.

I-7532 CR


- Compatible with CAN specification 2.0 parts A and B
- Fully compatible with the ISO 11898-2 standard
- Support several kinds of baud rate from 10 kbps to 1 Mbps
- 2500 V_{rms} photo couple isolation on the CAN side
- Jumper for 120 Ω terminator resistor of CAN bus
- Extend the CAN working distance
- 3 kV galvanic isolation between two CAN channels
- Two CAN channels
- Configure CAN Baud of each channel by rotary switch
- Up to 100 nodes on each CAN port
- Removable terminal block
- Mount easily on DIN-Rail

4-port CAN bus Switch

The I-2534 is a local CAN switch used to establish a connection between for CAN bus branches in a CAN network. It solves the problems of the daisy chain topology of the CAN bus. The transmission distance limitation of each CAN port of the I-2534 is independent, which means the total network distance can be extended.

Available soon
I-2534 CR


- 4 CAN communication ports
- Fully compatible with the ISO 11898-2 standard
- Compatible with CAN specification 2.0 parts A and B
- Rotary switch for the baud rate of each CAN port
- Support baud rate: 10 k, 20 k, 50 k, 125 k, 250 k, 500 k, 800 k, 1 M bps
- Supports all CAN application layer protocols based on ISO 11898-2 standard
- Message filter of each CAN port is configurable
- Jumper for 120 Ω terminator resistor of CAN bus
- 3 kV DC-DC isolation
- 2500 V_{rms} isolation
- Power requirement Unregulated +10 V_{DC} ~ +30 V_{DC}
- Operation temperature range -20 °C ~ +80 °C
- Humidity range 0 ~ 95% RH, non-condensing

CAN bus to RS-232 Converter

I-7530 is designed to unleash the power of CAN bus via RS-232 communication method. It converts messages between CAN networks and RS-232 networks.

I-7530 CR


- Compatible with CAN specification 2.0 parts A and B
- Fully compatible with the ISO 11898-2 standard
- Support several kinds of baud rate from 10 kbps to 1 Mbps
- 2500 V_{rms} photo couple isolation on the CAN side
- Jumper for 120 Ω terminator resistor of CAN bus
- Watchdog inside
- 3 kV galvanic isolation
- One CAN port and one RS-232 port
- Configure CAN and RS-232 parameters by utility
- Support transparent communication mode
- Mount easily on DIN-Rail

CAN bus to RS-232/RS-485/RS-422 Converter

The I-7530A-MR is a kind of CAN bus to RS-232/485/422 converter. Similar with I-7530A, it provides a way to connect CAN networks with programmable RS-232/485/422 devices. Specially, the I-7530A-MR provides Modbus protocol. This helps PLCs, HMIs, and SCADAs accessing CAN networks more easily and conveniently.

Available soon
I-7530A-MR CR



- Fully compatible with the ISO 11898-2 standard
- Programmable CAN bus baud rate from 5 kbps to 1 Mbps or user-defined baud rate
- Support CAN bus acceptance filter configuration
- Support firmware update via UART
- Provide utility tool for users module setting and CAN bus communication testing conveniently
- Built-in jumper to select 120 ohm terminal resistor
- Power, data flow and error indicator for CAN and UART
- Hardware Watchdog design
- Convert CAN message to specific ASCII command string
- Convert specific ASCII command string to CAN messages
- Provide pair-connection communication between the RS-232/485/422 devices via CAN bus
- Provide Modbus RTU command for Modbus master device to access CAN messages.

CAN bus to RS-232/485/422 Converter

I-7530A is designed to unleash the power of CAN bus via RS-232/485/422 communication method. It correctly converts messages between CAN and RS-232/485/422 networks.

I-7530A CR



- Compatible with CAN specification 2.0 parts A and B
- Fully compatible with the ISO 11898-2 standard
- Support several kinds of baud rate from 10 kbps to 1 Mbps
- 2500 V_{rms} photo couple isolation on the CAN side
- Jumper for 120 Ω terminator resistor of CAN bus
- Watchdog inside
- 3 kV galvanic isolation
- One CAN, RS-232, RS-422, and RS-485 channels
- Configure CAN and serial COM parameters by utility
- Support transparent communication mode
- Mount easily on DIN-Rail

Low Speed Fault Tolerance CAN bus to RS-232 Converter

I-7530-FT is a CAN/RS-232 low speed fault tolerant converter. It can resist more noise in harsh environment, and even access CAN messages with single line of CAN bus. It can be used in the application of CAN bus monitoring, building automation, remote data acquisition, laboratory equipment & research, factory automation, etc.

I-7530-FT CR



- Microprocessor inside with 20 Mhz
- Built-in CAN/RS-232 converter firmware
- Fully compatible with ISO 11898-3 standard
- Max transmission speed up to 125 kbps for CAN and 115.2 kbps for RS-232
- Support both CAN 2.0A and CAN 2.0B
- Build-in RS-232/CAN FIFO buffers
- Power, data flow and error indicator for CAN and RS-232
- Hardware watchdog design

Ethernet to CAN/RS-232/RS-485 Converter

I-7540D is a solution that enables CAN networks to be coupled together over the Internet/Ethernet, whereby remote monitoring and control is possible. The I-7540D controls networked communication and makes a transparent CAN-based application interface available to the user.

I-7540D CR



- Compatible with CAN specification 2.0 parts A and B
- Fully compatible with the ISO 11898-2 standard
- Support several kinds of baud rate from 10 kbps to 1 Mbps
- 2500 V_{rms} photo couple isolation on the CAN side
- Jumper for 120 Ω terminator resistor of CAN bus
- Watchdog inside
- 10/100 Base-T Ethernet port
- 1 kV galvanic isolation
- One CAN, RS-232, RS-485 and Ethernet channels
- Configure CAN, RS-232 and RS-485 parameters by web page
- Provide max. 25 Ethernet clients connection
- Support for Virtual COM technology

CAN bus to Wi-Fi Converter

The I-7540D-WF supports the wireless transmission of CAN data between two CAN networks or between a CAN network and an 802.11b/g WLAN network. It provides the function of CAN to WLAN converter and the wireless transparent transmission method on the CAN bus network.

Available soon
I-7540D-WF



- IEEE 802.11a/b/g compliant
- Wireless data transmission via WLAN
- Two different operation modes: infrastructure and ad-hoc
- Point to point or point to multi-points connection via wireless LAN
- Supports WEP, WPA and WPA2 encryption for wireless LAN
- Compatible with CAN specification 2.0 parts A and B
- Connect CAN networks via a WLAN bridge
- Communication efficiency: one-way is up to 700 fps (client->server, server->client), two-way 350 fps (client<=>server)
- Wireless communication: 100 m (Without PA)/300 m (With PA)

USB to CAN Converter

I-7565 is a cost-effective device for connecting the CAN bus to PC via the standard USB interface.

I-7565 CR



- Compatible with CAN specification 2.0 parts A and B
- Fully compatible with the ISO 11898-2 standard
- Support several kinds of baud rate from 10 kbps to 1 Mbps
- 2500 V_{rms} photo couple isolation on the CAN side
- Jumper for 120 Ω terminator resistor of CAN bus
- Watchdog inside
- Fully compliant with USB 1.1/2.0 (Full Speed)
- 3 kV galvanic isolation
- Powered by USB port
- One CAN port and one USB channel
- Support Windows 98/ME/2000/XP and Linux drivers
- Mount easily on DIN-Rail

High Performance USB to CAN bus Converter

I-7565-H1 is a cost-efficient device for coupling one CAN channel to USB interface. With its powerful 32-bit microcontroller, transmission and reception processes can be controlled loss-free.

OS Support: Window 98/2K/XP/Vista, Linux



- Fully compatible with the ISO 11898-2 standard
- Compatible with CAN specification 2.0 parts A and B
- No external power supply (powered by USB)
- Integrated with one CAN bus interface
- Programmable CAN bus baud rate from 5 kbps to 1 Mbps
- Built-in jumper for 120 Ω terminal resistor of CAN bus
- 2500 V_{rms} photo-coupler isolation on the CAN side
- 3 kV galvanic isolation among the power supply
- Support CAN bus acceptance filter configuration
- Provide configuration utility to transmit/receive CAN messages
- Max. data flow for a single channel: 3000 fps (standard frame)
- Removable terminal block, Mount easily on DIN-Rail

High Performance USB to 2-port CAN bus Converter

I-7565-H2 is a cost-efficient device for coupling two CAN channels to USB interface. With its powerful 32-bit microcontroller, transmission and reception processes can be controlled loss-free.

OS Support: Window 98/2K/XP/Vista, Linux



- Fully compatible with the ISO 11898-2 standard
- Compatible with CAN specification 2.0 parts A and B
- No external power supply (powered by USB)
- Integrated with two CAN bus interfaces
- Programmable CAN bus baud rate from 5 kbps to 1 Mbps
- Built-in jumper for 120 Ω terminal resistor of CAN bus
- 2500 V_{rms} photo-coupler isolation on the CAN side
- 3 kV galvanic isolation among the power supply
- Support CAN bus acceptance filter configuration
- Provide configuration utility to transmit/receive CAN messages
- Max. data flow for a single channel: 3000 fps (standard frame)
- Removable terminal block, Mount easily on DIN-Rail

CAN bus PAC

CAN/RS-232/RS-485 Programmable Automation Controller

I-7188XBD-CAN PACs (Programmable Automation Controller) are powered by 80186, 40 MHz CPU with 512 KB SRAM and Flash. It can be applied to various applications because of its CAN port, RS-232 port and RS-485 port. Uses can program their application program flexibly with C/C++ language based on the built-in MiniOS7 operation system.



- 2500 V_{rms} photo-isolation protection. on CAN bus
- Compatible with CAN specification 2.0 parts A and B.
- Programmable transfer rate up to 1 Mbps.
- Jumper for 120 Ω terminator resistor for CAN channel
- 64-bit hardware unique serial number inside
- COM driver support interrupt & 1 k QUEUE input buffer
- COM port: COM1, COM2
- Built-in RTC, NVRAM, EEPROM
- One digital Input channel and one open collector output channel
- Built-in self-tuner ASIC controller on RS-485 port
- 7-segment LED display
- Built-in ICP DAS's MiniOS7
- Support the CAN bus instead of the X-bus, so it can not be add-on any X-board

Ethernet/CAN/RS-232/RS-485 Programmable Automation Controller

µPAC-7186EXD-CAN PACs (programmable Automation controller) are powered by 80186, 80 MHz CPU with 512 KB SRAM and Flash. It can adapt to the many applications because of its CAN, RS-232, RS-485 and Ethernet interfaces. Uses can program their application program flexibly with C/C++ language based on the MiniOS7 operation system.



- Embedded MiniOS7, anti-virus
- Supports a variety of TCP/IP features, including TCP, UDP, IP, ICMP, ARP
- 10/100 Base-T Ethernet
- Support for Virtual COM configuration
- 100V V_{cc} voltage protection on CAN side.
- Compatible with CAN specification 2.0 parts A and B
- Programmable transfer rate up to 1 Mbps.
- Jumper for 120 Ω terminator resistor for CAN channel
- 64-bit hardware unique serial number inside
- COM port: COM1, COM2
- Built-in RTC, NVRAM, EEPROM
- Built-in self-tuner ASIC controller on RS-485 port
- 7-segment LED display

Intelligent CAN bus Modules

Standalone CAN Interface Expansion Module

I-8120W has one CAN communication port with 5-Pin screw terminal connector, and is useful for a wide range of CAN applications. Users can design the various applications between different communication protocols. It supports WinPAC-8000, XPAC-8000 and ViewPAC series PACs.



- Compatible with CAN specification 2.0 parts A and B
- Fully compatible with the ISO 11898-2 standard
- Support several kinds of baud rate from 10 kbps to 1 Mbps
- 2500 V_{rms} photo couple isolation on the CAN side
- DIP switch for 120 Ω terminator resistor of CAN bus
- Watchdog inside
- 3 kV galvanic isolation
- One CAN channel expansion for WinPAC-8000, XPAC-8000, and ViewPAC series PACs
- Provide C/C++ function libraries and demos
- 80 MHz 186 CPU inside
- 8 K DPRAM inside
- Parallel bus communication with main unit

Standalone CAN Interface Expansion Module

I-87120 is developed to expand the CAN functions of ICP DAS products. However, the user-defined firmware supported by I-87120 can help users to set up the specific application easily. It supports WinPAC-8000, LinPAC-8000, XPAC-8000 and ViewPAC series PACs.



- Compatible with CAN specification 2.0 parts A and B
- Fully compatible with the ISO 11898-2 standard
- Support several kinds of baud rate from 10 kbps to 1 Mbps
- 2500 V_{rms} photo couple isolation on the CAN side
- DIP switch for 120 Ω terminator resistor of CAN bus
- Watchdog inside
- 3 kV galvanic isolation
- One CAN channel expansion for WinPAC-8000, LinPAC-8000, XPAC-8000, and ViewPAC series PACs
- Provide C/C++ function libraries and demos
- 80 MHz 186 CPU inside
- Serial bus communication with main unit
- Allow user-designed firmware

 CAN bus Communication Cards

Intelligent CAN Communication Card

PISO-CM100U built-in 80186, 80 MHz, CPU represents a very powerful CAN card to process the real-time CAN messages providing the open structure for users to program in it to satisfy the high performance system.

OS Support: Windows 2K/XP/Vista

PISO-CM100U-D CR
PISO-CM100U-T CR



- Universal PCI card, supports both 5 V and 3.3 V PCI bus
- Compatible with CAN specification 2.0 parts A and B
- Fully compatible with the ISO 11898-2 standard
- Support several kinds of baud rate from 10 kbps to 1 Mbps
- 2500 V_{rms} photo-couple isolation on the CAN side
- Built-in jumper for 120 Ω terminator resistor of CAN bus
- Comply with 33 MHz 32-bit 5 V (or universal) PCI bus
- 3 kV galvanic isolation
- 2/4 independent CAN ports
- Direct memory mapping to the CAN controller
- Provide VB, VC++, Delphi, Borland C++ builder demos
- Support LabVIEW and DASyLab drivers

PCI-104 CAN Communication Card

The PCM-CAN200 is a CAN solution with PCI-104 interface. It complies with CAN 2.0A and CAN 2.0B specification, and can cover a wide range of CAN applications. The PCM-CAN200 provides two CAN ports. Both of them use the 9-Pin D-Sub connectors.

OS Support:

Win2K/XP/Vista/7/CE, Linux 2.6.31 ~ 2.6.34

NEW
PCM-CAN200 CR



- PCI-104 compliant
- 9-Pin male D-Sub connector
- Compatible with CAN 2.0 parts A and B
- Fully compatible with ISO 11898-2 standard
- Support CAN bard from 10 kbps ~ 1 Mbps
- 2500 V_{rms} photo couple isolation on the CAN bus
- Built-in jumper to select 120 Ω terminal resistor
- 3 kV galvanic isolation
- 2 independent CAN channels
- Direct memory mapping to the CAN controller
- Provide VB6.0, VC++6.0, Delphi, BCB6.0 demos
- Driver for RTX, Linux, and Windows 2K/XP/WinCE

PCI Express CAN Communication Card

The PEX-CAN200i series has 2 independent CAN ports with 5-Pin screw terminal connector or 9-Pin D-Sub connector with PCI Express x 1 bus. Every CAN channel has isolation protection circuit.

OS Support:

Win2K/XP/Vista/7, Linux 2.6.31 ~ 2.6.34

NEW
PEX-CAN200I-D CR
PEX-CAN200I-T CR



- Compatible with CAN specification 2.0 parts A and B
- Fully compatible with the ISO 11898-2 standard
- Support several kinds of baud rate from 10 kbps to 1 Mbps
- 2500 V_{rms} photo-couple isolation on the CAN side
- Built-in jumper for 120 Ω terminator resistor of CAN bus
- X1 link PCI Express
- 3 kV galvanic isolation
- 2 independent CAN channels
- Direct memory mapping to the CAN controller
- Provide VB, VC++, Delphi, Borland C++ builder demos
- Support LabVIEW and DASyLab drivers

PCI-104 CAN Communication Card

The PCM-CAN100 is a CAN solution with PCI-104 interface. It complies with CAN 2.0A and CAN 2.0B specification, and can cover a wide range of CAN applications. The PCM-CAN100 provides one CAN port and one bypass CAN port. Both of them use the 9-Pin D-Sub connectors.

OS Support:

Win2K/XP/Vista/7/CE, Linux 2.6.31 ~ 2.6.34

NEW
PCM-CAN100-D CR



- PCI-104 compliant
- 9-Pin male D-Sub connector
- Compatible with CAN 2.0 parts A and B
- Fully compatible with ISO 11898-2 standard
- Support CAN bard from 10 kbps ~ 1 Mbps
- 2500 V_{rms} photo couple isolation on the CAN bus
- Built-in jumper to select 120 Ω terminal resistor
- 3 kV galvanic isolation
- 1 independent CAN channel and 1 bypass CAN channel
- Direct memory mapping to the CAN controller
- Provide VB6.0, VC++6.0, Delphi, BCB6.0 demos
- Driver for RTX, Linux, and Windows 2K/XP/WinCE

PC-104+ CAN Communication Card

PCM-CAN200P has 2 independent CAN ports with 9-Pin D-Sub connector compatible PC-104+ specification.

OS Support:

Win2K/XP/Vista/7/CE, Linux 2.6.31 ~ 2.6.34

NEW
PCM-CAN200P CR



- PC-104+ compliant
- 9-Pin D-Sub connector
- Compatible with CAN specification 2.0 parts A and B
- Fully compatible with ISO 11898-2 standard
- Support CAN bard rate from 10 kbps to 1 Mbps
- 2500 V_{rms} photo-couple isolation on the CAN bus
- Built-in jumper for 120 Ω terminator resistor of CAN bus
- 3 kV galvanic isolation
- 2 independent CAN ports
- Direct memory mapping to the CAN controller
- Provide VB, VC++, Delphi, BC++ demos
- Driver support Windows 2K/XP/WinCE and Vista

Universal PCI CAN Communication Card

PISO-CAN200U with universal PCI interface has two independent CAN bus communication ports with 5-Pin screw terminal connector or 9-Pin D-Sub connector.

OS Support:

Win2K/XP/Vista/7, Linux 2.6.31 ~ 2.6.34

PISO-CAN200U-D CR
PISO-CAN200U-T CR



- Universal PCI card, supports both 5 V and 3.3 V PCI bus.
- Compatible with CAN specification 2.0 parts A and B
- Fully compatible with the ISO 11898-2 standard
- Support several kinds of baud rate from 10 kbps to 1 Mbps
- 2500 V_{rms} photo-couple isolation on the CAN side
- Built-in jumper for 120 Ω terminator resistor of CAN bus
- Comply with 33 MHz 32-bit 5 V universal PCI bus
- 3 kV galvanic isolation
- 2 independent CAN channels
- Direct memory mapping to the CAN controller
- Provide VB, VC++, Delphi, Borland C++ builder demos
- Support LabVIEW and DASyLab drivers

Universal PCI CAN Communication Card

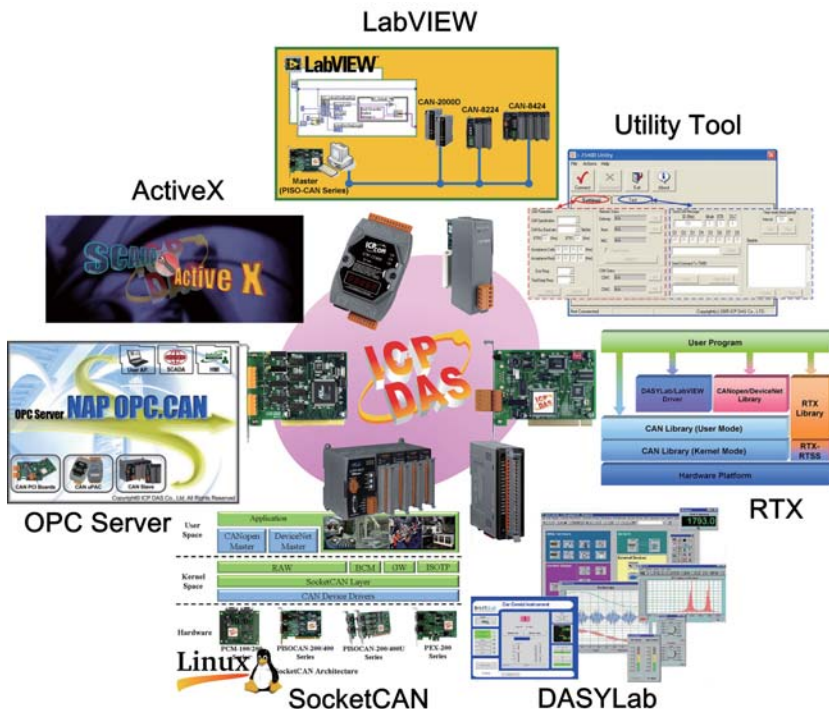
PISO-CAN400U with universal PCI interface has four independent CAN bus communication ports with 5-Pin screw terminal connector or 9-Pin D-Sub connector.
OS Support:
Win2K/XP/Vista/7, Linux 2.6.31 ~ 2.6.34

PISO-CAN400U-D CR
PISO-CAN400U-T CR



- Universal PCI card, supports both 5 V and 3.3 V PCI bus.
- Compatible with CAN specification 2.0 parts A and B
- Fully compatible with the ISO 11898-2 standard
- Support several kinds of baud rate from 10 kbps to 1 Mbps
- 2500 V_{rms} photo-couple isolation on the CAN side
- Built-in jumper for 120 Ω terminator resistor of CAN bus
- Comply with 33 MHz 32-bit 5 V universal PCI bus
- 3 kV galvanic isolation
- 4 independent CAN channels
- Direct memory mapping to the CAN controller
- Provide VB, VC++, Delphi, Borland C++ builder demos
- Support LabVIEW and DASyLab drivers

Software Support

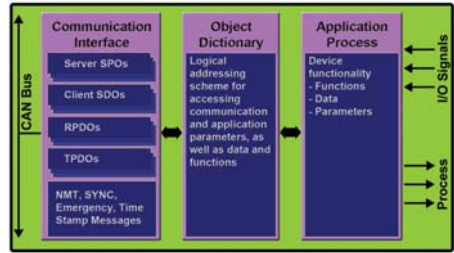


5.3. CANopen Introduction & Products

CANopen is a CAN-based application layer protocol. Originally, CANopen was designed for motion-oriented machine control networks, such as handling systems, then was developed as a standardized embedded network with highly flexible configuration capabilities. By now it is used in many various fields, such as medical equipment, off-road vehicles, maritime electronics, public transportation, building automation, etc.

CANopen Features

- ◆ Allow multi-master architecture on one bus
- ◆ 10 k, 20 k, 125 k, 250 k, 500 k, 800 k, 1 Mbps baud rate
- ◆ The bus length is from 25 m (1 Mbps) to 5 km (10 kbps)
- ◆ Easy access to all device parameters
- ◆ Device synchronization
- ◆ Cyclic and event-driven data transfer
- ◆ Up to 128 nodes can be participated in the same CANopen network
- ◆ Support Guarding and Heartbeat protection mechanism



● Selection Guide

Model Name	Description	Page
CANopen Converter and Gateways		
I-7565-CPM	USB to 1-port CANopen Master Converter	5-3-2
I-7231D	CANopen Slave/DCON Master Gateway	
I-7232D	CANopen Slave/Modbus RTU Master Gateway	
GW-7433D	CANopen Master/Modbus TCP&RTU Slave Gateway	
Intelligent CANopen Communication Modules (For ViewPAC, WinPAC, XPAC,...)		
I-87123	Intelligent 1-port CANopen Master Communication Module with serial bus	5-3-2
I-8123W	High Performance Intelligent 1-port CANopen Master Communication Module with Parallel bus	
Intelligent CANopen Communication Cards		
PISO-CPM100U-D	Intelligent 1-port CANopen Master Universal PCI interface Card	5-3-3
PISO-CPM100U-T		
PISO-CPS100U-D	Intelligent 1-port CANopen Slave Universal PCI interface Card	
PISO-CPS100U-T		
PCM-CAN100-D	1-port CAN bus PCI-104 Card with CANopen Master Library	
PCM-CAN200	2-port CAN bus PCI-104 Card with CANopen Master Library	
PCM-CAN200P	2-port CAN bus PC-104+ Card with CANopen Master Library	
PEX-CAN200i-D	2-port CAN bus PCI Express x 1 Interface Card with CANopen Master Library	
PEX-CAN200i-T		
PISO-CAN200U-D	2-port CAN bus Universal PCI Interface Card with CANopen Master Library	5-3-4
PISO-CAN200U-T		
PISO-CAN400U-D	4-port CAN bus Universal PCI Interface Card with CANopen Master Library	
PISO-CAN400U-T		

Note: The detail about CANopen remote I/O modules, please refer to the website:
http://www.icpdas.com/products/Remote_IO/can_bus/canopen_series.htm

5 CANopen Converter and Gateways

USB/CANopen Master Converter

I-7565-CPM is a USB to CANopen master converter. It can use on USB slot of PC or notebook easily and does not need any extra power. I-7565-CPM can represent an economic solution of CANopen application and be a CANopen master device on the CANopen network.



- Fully compliant with USB 1.1/2.0 (Full Speed)
- No external power supply is required
- CANopen Version: DS301, version 4.02
- Baud Rate: 10 k, 20 k, 50 k, 125 k, 250 k, 500 k, 800 k, 1 Mbps
- NMT error control support Node Guarding protocol
- SYNC producer 1 ms ~ 65535 ms
- Support dynamic PDO/SDO segment protocol/EDS file
- Slave Nodes: 127 nodes max.
- Support Auto-scan slave device function
- Support on-line adding and removing devices
- Support save and load command
- Status LED: RUN, MS, NS
- Free utility to configure I-7565-CPM and update firmware
- Windows 2000/XP drivers supported

CANopen Slave/DCON Master Gateway

By using I-7231D to convert the electric signals and messages from DCON to CANopen protocol, the DCON I/O modules can be upgraded to CANopen system to secure high reliability and stability.



- CANopen Version: DS-301 v4.02
- Device Profile: DSP-401 v2.01
- Error Control: Node Guarding protocol
- Emergency Message: Yes
- 2500 V_{rms} photo couple isolation on the CAN side
- Jumper for 120 Ω terminator resistor of CAN bus
- Watchdog inside
- NMT: Slave
- PDO: Event-triggered, RTR, cyclic, acyclic SYNC and dynamic PDO Mapping
- No of SDOs: 1 server, 0 client
- Product EDS file dynamically by utility
- Support max. 15 I-7000/I-87K I/O series modules
- 1 kV galvanic isolation

CANopen Slave/Modbus RTU Master Gateway

I-7232D is one of ICP DAS CAN bus products. The device allows a CANopen master to access the Modbus slave devices on some Modbus RTU network.



- CANopen Version: DS-301 v4.02
- Device Profile: DSP-401 v2.01
- Error Control: Node Guarding protocol
- Emergency Message: Yes
- 2500 V_{rms} photo couple isolation on the CAN side
- Jumper for 120 Ω terminator resistor of CAN bus
- Watchdog inside
- NMT: Slave
- PDO: Event-triggered, RTR, cyclic, acyclic SYNC and dynamic PDO Mapping
- No of SDOs: 1 server, 0 client
- Product EDS file dynamically by utility
- Support max. 10 Modbus RTU series modules
- 1 kV galvanic isolation

CANopen Master/Modbus Server Gateway

GW-7433D is a CANopen master device. It supports PDO and SDO functions to communicate with slave devices. From the view of Modbus TCP & RTU network, GW-7433D plays a Modbus TCP server or Modbus RTU slave role to receive/respond the commands from Modbus TCP client or Modbus RTU master protocols.



- CANopen Version: DS-301 v4.02
- Device Profile: DSP-401 v2.01
- Error Control: Node Guarding protocol
- Emergency Message: Yes
- 2500 V_{rms} photo couple isolation on the CAN side
- Jumper for 120 Ω terminator resistor of CAN bus
- Watchdog inside
- NMT: Master
- PDO: Event-triggered, RTR
- Support max. 50 TxPDOs, 50 RxPDOs, 15 SDOs to SDO server
- Allow 5 Modbus TCP masters to access GW-7433 simultaneously
- Configuration by utility via Ethernet
- 1 kV galvanic isolation

Intelligent CANopen Communication Modules

Standalone CANopen Master Expansion Module

I-87123 main control unit is specially designed for the master device of CANopen protocol. It supplies many features for users, such as dynamic PDO, EMCY object, error output value, SYNC object, ...and etc. It supports WinPAC-8000, LinPAC-8000, XPAC-8000 and ViewPAC series PACs.



- CANopen Version: DS-301 v4.02
- Error Control: Node Guarding protocol
- Emergency Message: Yes
- 2500 V_{rms} photo couple isolation on the CAN side
- DIP switch for 120 Ω terminator resistor of CAN bus
- Watchdog inside
- NMT: Master
- PDO: Event-triggered, RTR, cyclic, acyclic SYNC and dynamic PDO Mapping
- One CANopen master interface expansion for WinPAC-8000, LinPAC-8000, XPAC-8000, and ViewPAC series PACs
- Provide C/C++ function libraries and demos
- Serial bus communication
- 3 kV galvanic isolation

Standalone CANopen Master Expansion Module

The I-8123W is a high price/performance CANopen master which follows CiA CANopen specification DS-301 V4.02. The inside CPU can process the CANopen protocol. With ICP DAS PACs, it can be generally applied in the industrial automation, building automation, vehicle, and embedded control network.



- NMT Master.
- CANopen Version: DS-301 V4.02
- Support Node Guarding and Heartbeat Consumer error control protocol
- Provide EMCY and NMT Error Control interrupt service function
- Provide "master listen mode"
- Provide Dynamic PDO, acyclic and cyclic transmission
- Support ViewPAC and WinPAC series MCU

 Intelligent CANopen Communication Cards

Intelligent 1-port CANopen Master Card

PISO-CPM100U gives a very powerful and economic CANopen master solution of PC-based application. With the built-in 80186, 80 MHz CPU, this card can be applied in high transmission CANopen applications.

PISO-CPM100U-D CR
PISO-CPM100U-T CR



- Universal PCI card, supports both 5 V and 3.3 V PCI bus
- CANopen Version: DS-301 v4.02
- Error Control: Node Guarding protocol
- Emergency Message: Yes
- 2500 V_{rms} photo-couple isolation on the CAN side
- Built-in jumper for 120 Ω terminator resistor of CAN bus
- Built-in watchdog
- NMT: Master
- PDO: Event-triggered, RTR, cyclic, acyclic SYNC and dynamic PDO
- Mapping
 - Support multi-master architecture
 - 80186, 80 MHz CPU inside
 - 3 kV galvanic isolation

Intelligent 1-port CANopen Slave Card

PISO-CP5100U is an especially programmable CANopen Slave card. It provides a universal PCI interface and one CAN communication port. It follows the CANopen specification DS-301 and DSP-401. With the built-in 80186, 80 MHz CPU, this card can be applied in high transmission applications.

Available soon
PISO-CP5100U-D CR
PISO-CP5100U-T CR



- Universal PCI card, supports both 5 V and 3.3 V PCI bus
- CPU: 80186, 80 MHz
- Built-in Dual-watchdog protection
- CANopen Version: DS301, version 4.02
- CANopen profile: DSP401, version 2.01
- Baud Rate (bps): 10 k, 20 k, 50 k, 125 k, 250 k, 500 k, 800 k, 1 Mbps
- NMT Error Control: Node Guarding protocol & Heartbeat protocol
- SYNC consumer
- Support dynamic PDO.
- Support SDO segment protocol
- Programmable 512 bytes input data and 512 bytes output data
- Support Save and Load command
- Status LED: RUN, ERR
- Free utility to configure PISO-CP5100U and update firmware
- Produce EDS file dynamically
- Windows 2000/XP drivers supported

PCI-104 CAN Communication Card

The PCM-CAN100 is a CAN solution with PCI-104 interface. It complies with CAN 2.0A and CAN 2.0B specification. The PCM-CAN100 provides one CAN port and one bypass CAN port. It provides CANopen lib for users to develop CANopen applications easily.

NEW

PCM-CAN100-D CR



OS Support:
Win2K/XP/Vista/7, Linux 2.6.31 ~ 2.6.34

- PCI-104 compliant
- 9-Pin male D-Sub connector
- Compatible with CAN 2.0 parts A and B
- Fully compatible with ISO 11898-2 standard
- Support CAN baud from 10 kbps ~ 1 Mbps
- 2500 V_{rms} photo couple isolation on the CAN bus
- Built-in jumper to select 120 Ω terminal resistor
- 3 kV galvanic isolation
- 1 independent CAN channel and 1 bypass CAN channel
- Direct memory mapping to the CAN controller
- Provide VB6.0, VC++6.0, Delphi, BCB6.0 demos
- Driver for Win2K/XP/Vista/7, Linux 2.6.31 ~ 2.6.34

PCI-104 CAN Communication Card

The PCM-CAN200 is a CAN solution with PCI-104 interface. It complies with CAN 2.0A and CAN 2.0B specification. The PCM-CAN200 provides two CAN ports. It provides CANopen lib for users to develop CANopen applications easily.

NEW

PCM-CAN200 CR



OS Support:
Win2K/XP/Vista/7, Linux 2.6.31 ~ 2.6.34

- PCI-104 compliant
- 9-Pin male D-Sub connector
- Compatible with CAN 2.0 parts A and B
- Fully compatible with ISO 11898-2 standard
- Support CAN baud from 10 kbps ~ 1 Mbps
- 2500 V_{rms} photo couple isolation on the CAN bus
- Built-in jumper to select 120 Ω terminal resistor
- 3 kV galvanic isolation
- 2 independent CAN channels
- Direct memory mapping to the CAN controller
- Provide VB6.0, VC++6.0, Delphi, BCB6.0 demos
- Driver for Win2K/XP/Vista/7, Linux 2.6.31 ~ 2.6.34

PC-104+ CAN Communication Card

PCM-CAN200P has 2 independent CAN ports with 9-Pin D-Sub connector compatible PC-104+ specification. It provides CANopen master lib for users to develop CANopen applications easily.

NEW

PCM-CAN200P CR



OS Support:
Win2K/XP/Vista/7, Linux 2.6.31 ~ 2.6.34

- PC-104+ compliant
- 9-Pin D-Sub connector
- Compatible with CAN specification 2.0 parts A and B
- Fully compatible with ISO 11898-2 standard
- Support CAN baud rate from 10 kbps to 1 Mbps
- 2500 V_{rms} photo-couple isolation on the CAN bus
- Built-in jumper for 120 Ω terminator resistor of CAN bus
- 3 kV galvanic isolation
- 2 independent CAN ports
- Direct memory mapping to the CAN controller
- Provide VB, VC++, Delphi, BC++ demos
- Driver for Win2K/XP/Vista/7, Linux 2.6.31 ~ 2.6.34

PCI Express CAN Communication Card

The PEX-CAN200i series has 2 independent CAN ports with 5-Pin screw terminal connector or 9-Pin D-Sub connector with PCI Express x 1 bus. Every CAN channel has isolation protection circuit. It provides CANopen master lib for users to develop CANopen applications easily.

NEW

PEX-CAN200i-D CR
PEX-CAN200i-T CR



OS Support:
Win2K/XP/Vista/7, Linux 2.6.31 ~ 2.6.34

- Compatible with CAN specification 2.0 parts A and B
- Fully compatible with the ISO 11898-2 standard
- Support several kinds of baud rate from 10 kbps to 1 Mbps
- 2500 V_{rms} photo-couple isolation on the CAN side
- Built-in jumper for 120 Ω terminator resistor of CAN bus
- X1 link PCI Express
- 3 kV galvanic isolation
- 2 independent CAN channels
- Direct memory mapping to the CAN controller
- Provide VB, VC++, Delphi, Borland C++ builder demos

Universal PCI CAN Communication Card

PISO-CAN200U with universal PCI interface has two independent CAN bus communication ports with 5-Pin screw terminal connector or 9-Pin D-Sub connector. It provides CANopen master lib for users to develop CANopen applications easily.
OS Support:
Win2K/XP/Vista/7, Linux 2.6.31 ~ 2.6.34

PISO-CAN200U-D CR
PISO-CAN200U-T CR



- Universal PCI card, supports both 5 V and 3.3 V PCI bus.
- Compatible with CAN specification 2.0 parts A and B
- Fully compatible with the ISO 11898-2 standard
- Support several kinds of baud rate from 10 kbps to 1 Mbps
- 2500 V_{rms} photo-couple isolation on the CAN side
- Built-in jumper for 120 Ω terminator resistor of CAN bus
- Comply with 33 MHz 32-bit 5 V universal PCI bus
- 3 kV galvanic isolation
- 2 independent CAN channels
- Direct memory mapping to the CAN controller
- Provide VB, VC++, Delphi, Borland C++ builder demos

Universal PCI CAN Communication Card

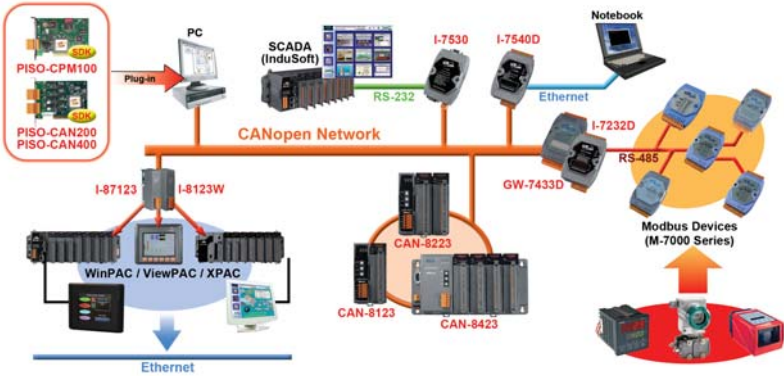
PISO-CAN400U with universal PCI interface has four independent CAN bus communication ports with 5-Pin screw terminal connector or 9-Pin D-Sub connector. It provides CANopen master lib for users to develop CANopen applications easily.
OS Support:
Win2K/XP/Vista/7, Linux 2.6.31 ~ 2.6.34

PISO-CAN400U-D CR
PISO-CAN400U-T CR



- Universal PCI card, supports both 5 V and 3.3 V PCI bus.
- Compatible with CAN specification 2.0 parts A and B
- Fully compatible with the ISO 11898-2 standard
- Support several kinds of baud rate from 10 kbps to 1 Mbps
- 2500 V_{rms} photo-couple isolation on the CAN side
- Built-in jumper for 120 Ω terminator resistor of CAN bus
- Comply with 33 MHz 32-bit 5 V universal PCI bus
- 3 kV galvanic isolation
- 4 independent CAN channels
- Direct memory mapping to the CAN controller
- Provide VB, VC++, Delphi, Borland C++ builder demos

Applications

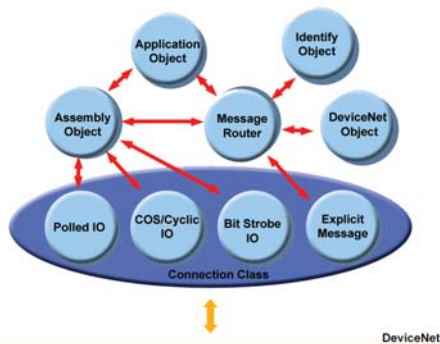


5.4. DeviceNet Introduction & Products

The DeviceNet network based on CAN bus is a flexible open and low-cost option which you can use to connect industrial devices to a network and to eliminate costly and time-consuming hardwiring. Direct connectivity improves communication and provides device-level diagnosis or easy accessibility through hardwired I/O interfaces.

DeviceNet Features

- ◆ Trunk line, drop line configuration
- ◆ Node removal without breaking trunk line
- ◆ Up to 64 addressable nodes
- ◆ Signal and 24 V_{DC} power in the same cable
- ◆ Selectable data rates (125 k, 250 k, 500 kbps)
- ◆ 120 Ω terminal at each trunk line end



● Selection Guide

Model Name	Description	Page
DeviceNet Converter and Gateways		
I-7565-DNM	USB to 1-port DeviceNet Master Converter	5-4-2
I-7241D	DeviceNet Slave/DCON Master Gateway	
I-7242D	DeviceNet Slave/Modbus RTU Master Gateway	
GW-7243D	DeviceNet Slave/Modbus TCP & RTU Master Gateway	
GW-7434D	DeviceNet Master/Modbus TCP & RTU Slave Gateway	
Intelligent DeviceNet Modules (For ViewPAC, WinPAC, XPAC,...)		
I-87124	Intelligent 1-port DeviceNet Master Communication Module with Serial bus	5-4-3
I-8124W	High Performance Intelligent 1-port DeviceNet Master Communication Module with Parallel bus	
Intelligent DeviceNet Communication Cards		
PISO-DNM100U-D	Intelligent 1-port DeviceNet Master Universal PCI interface Card	5-4-3
PISO-DNM100U-T		
PISO-DNS100U-D	Intelligent 1-port DeviceNet Slave Universal PCI interface Card	
PISO-DNS100U-T		
PCM-CAN100-D	1-port CAN bus PCI-104 Card with DeviceNet Master Library	
PCM-CAN200	2-port CAN bus PCI-104 Card with DeviceNet Master Library	
PCM-CAN200P	2-port CAN bus PC-104+ Card with DeviceNet Master Library	
PEX-CAN200i-D	2-port CAN bus PCI Express x 1 Interface Card with DeviceNet Master Library	5-4-4
PEX-CAN200i-T		
PISO-CAN200U-D	2-port CAN bus Universal PCI Interface Card with DeviceNet Master Library	
PISO-CAN200U-T		
PISO-CAN400U-D	4-port CAN bus Universal PCI Interface Card with DeviceNet Master Library	
PISO-CAN400U-T		
Note: The detail about DeviceNet remote I/O modules, please refer to the website: http://www.icpdas.com/products/Remote_IO/can_bus/devicenet_series.htm		

5 DeviceNet Converter and Gateways

USB/DeviceNet Master Converter

I-7565-DNM is a DeviceNet master solution for USB interface built-in 80186, 80 MHz CPU. It can easily control/configure DeviceNet slave nodes via PC.



- Comply with DeviceNet specification volume I, release 2.0 & volume II, release 2.0
- Support Predefined Master/Slave Connection Set (Group2 Only Server)
- I/O Operating Modes: Polling, Bit-Strobe, Change of State/Cyclic
- 2500 V_{rms} photo-couple isolation on the CAN side
- Built-in jumper for 120 Ω terminator resistor of CAN bus
- Built-in watchdog
- Support UCOMM function
- Provide on-line adding device into and removing device from network
- Support auto-scan slave device function
- Auto-reconnect when the connection is broken
- Provide C/C++ function libraries and demos
- 3 kV galvanic isolation

DeviceNet Slave/DCON Master Gateway

I-7241D is one of DeviceNet products in ICP DAS. The device offers the communication gateway between DeviceNet and DCON protocol.



- Comply with DeviceNet specification volume I, release 2.0 & volume II, release 2.0
- Support Predefined Master/Slave Connection Set (Group2 Only Server)
- I/O operating modes: Polling, Bit-Strobe, Change of State/Cyclic
- 2500 V_{rms} photo couple isolation on the CAN side
- Jumper for 120 Ω terminator resistor of CAN bus
- Watchdog inside
- Provide dynamic Assembly Objects mapping
- Support Offline Connection Set, Device Heartbeat message and Device Shutdown message
- Product EDS file dynamically by utility
- Support max. 15 I-7000/I-67K I/O series modules
- MAC ID & Baud: Configuration by utility or DeviceNet messages
- 1 kV galvanic isolation

DeviceNet Slave/Modbus RTU Master Gateway

I-7242D allows a master located on a DeviceNet network to enter into a dialogue with the slaves on a Modbus RTU network. In DeviceNet network, it's a Group 2 Only Slave device, and supports "Predefined Master/Slave Connection Set".



- Comply with DeviceNet specification volume I, release 2.0 & volume II, release 2.0
- Support Predefined Master/Slave Connection Set (Group2 Only Server)
- I/O operating modes: Polling, Bit-Strobe, Change of State/Cyclic
- 2500 V_{rms} photo couple isolation on the CAN side
- Jumper for 120 Ω terminator resistor of CAN bus
- Watchdog insideProvide dynamic Assembly Objects mapping
- Support Offline Connection Set, Device Heartbeat message and Device Shutdown message
- Allow to configure Explicit Message by using Modbus RTU protocol
- Product EDS file dynamically by utility
- Support max 10 Modbus RTU series modules
- 1 kV galvanic isolation

DeviceNet Slave/Modbus TCP & RTU Master Gateway

The GW-7243D is one of DeviceNet products in ICP DAS and it stands as a DeviceNet slave to Modbus TCP/RTU/ASCII master gateway device. In DeviceNet network, it functions as a "Group 2 Only Server" device. In Modbus network, GW-7243D sends request messages to access the Modbus slave as a master by DeviceNet object definition.



- Group 2 Only Server DeviceNet subscriber
- Support Explicit and Poll Connection
- User can select the Modbus RTU/ASCII protocol for each COM port
- Maximum support 10 Modbus RTU/ASCII commands for each COM port
- Maximum support 4 Modbus TCP devices
- Maximum support 5 Modbus TCP commands for each Modbus TCP device
- Support Modbus function codes: 0x01, 0x02, 0x03, 0x04, 0x05, 0x06, 0x0F and 0x10
- Maximum support 2048 channels DI, 2048 channels DO, 1024 channels AI and 1024 channels AO for each Modbus TCP device

DeviceNet Master/Modbus TCP & RTU Slave Gateway

The GW-7434D is a DeviceNet master to Modbus TCP/RTU master gateway device, and is applied for connecting an existing DeviceNet network to Ethernet-base PLCs and PC-based system. The GW-7434D supports "Predefined Master/Slave Connection Set" and "Group 2 Only Server" functions.



- Supports maximum DeviceNet devices up to 63
- Predefined Master/Slave Connection Set
- Supports one Poll, one Bit-Strobe, one COS or one Cyclic IO connection for each DeviceNet device
- Supports on-line adding device into and removing device from network
- Converts single Modbus TCP to multi Modbus RTU devices, setting by Utility
- Supports VxComm technique for every COM ports of controllers, setting by Utility
- Supports Modbus RTU to DeviceNet master, setting by Utility
- Allows multi-client access simultaneously

Intelligent DeviceNet Communication Modules

Standalone DeviceNet Master Expansion Module

I-87124 can represent an economic solution of DeviceNet application and a DeviceNet master device on the DeviceNet network. I-87124 supports Group 2 and UCMM functions to communication with slave devices. It supports WinPAC-8000, LinPAC-8000, XPAC-8000 and IPAC-8000 series.

I-87124 CR



- DeviceNet Version: Volume I & II, Release 2.0
- Programmable Master MAC ID and Baud Rate
- Baud Rate: 125 K, 250 K, 500 K
- Support Group 2 and UCMM connection
- I/O Operating Modes: Poll, Bit-Strobe, Change of State/Cyclic
- I/O Length: 512 bytes max. (Input/Output) per slave
- Slave Node: 63 nodes max.
- Support Auto-Search slave device function
- Support on-line adding and removing devices
- Support Auto-detect Group 2 and UCMM device
- Auto-Reconnect when the connection is broken
- Status LED: RUN, MS, NS

Standalone DeviceNet Master Expansion Module

The I-8124W is a CPU-inside module, and provides an economic DeviceNet master solution of DeviceNet applications. It supports Group 2 and UCMM functions simultaneously. By means of the ICP DAS PACs, it is able to be applied in the industrial automation, building automation, vehicle, and embedded control network.

NEW
I-8124W CR


- DeviceNet Version: Volume I & II, Release 2.0
- Programmable Master MAC ID and Baud Rate.
- Baud Rate: 125 K, 250 K, 500 kbps
- Support Group 2 and UCMM connection
- I/O Operating Modes: Poll, Bit-Strobe, Change of State/Cyclic
- I/O Length: 512 bytes max. (Input/Output) per slave
- Slave Node: 63 nodes max.
- Support Auto-Search slave device function.
- Support on-line adding and removing devices
- Support Auto-detect Group 2 and UCMM device
- Auto-Reconnect when the connection is broken
- Status LED: RUN, MS, NS

Intelligent DeviceNet Communication Cards

Intelligent 1-port DeviceNet Master Card

PISO-DNM100U has completed DeviceNet master function according to DeviceNet Group 2 only server. With the built-in 80186, 80 MHz CPU, this card can be applied in high transmission DeviceNet applications. OS Support: Windows 2K/XP/Vista

NEW
PISO-DNM100U-D CR
PISO-DNM100U-T CR


- Universal PCI card, supports both 5 V and 3.3 V PCI bus
- Comply with DeviceNet specification volume I, release 2.0 & volume II, release 2.0
- Support Predefined Master/Slave Connection Set (Group 2 only server)
- I/O Operating Modes: Polling, Bit-Strobe, Change of State/Cyclic
- 2500 V_{rms} photo-couple isolation on the CAN side
- Built-in jumper for 120 Ω terminator resistor of CAN bus
- Built-in watchdog
- Support UCMM function
- Provide on-line adding device into and removing device from network
- Support auto-scan slave device function
- Auto-reconnect when the connection is broken
- 3 kV galvanic isolation 80186, 80 MHz CPU inside

Intelligent 1-port DeviceNet Slave Card

PISO-DNS100U has completed DeviceNet slave function according to DeviceNet Group 2 only server. With the built-in 80186, 80 MHz CPU, this card can be applied in high transmission applications. The amazing function is that 10 slave nodes are implemented inside the PISO-DNS100U. OS Support: Windows 2K/XP/Vista

NEW
PISO-DNS100U-D CR
PISO-DNS100U-T CR


- Universal PCI card, supports both 5 V and 3.3 V PCI bus
- DeviceNet Version: Volume I & II, Release 2.0
- Programmable Slave MAC ID and baud rate
- Baud Rate: 125 k, 250 k, 500 kbps
- Support Group 2 only Server
- I/O Modes: Poll, Bit-Strobe, Change of State/Cyclic
- I/O Length: 512 bytes max. (Input/Output) per slave
- Slave Node: Max. 10 nodes inside the card
- Not Support UCMM
- LED: Status, ERR

PCI-104 CAN Communication Card

The PCM-CAN100 is a CAN solution with PCI-104 interface. It complies with CAN 2.0A and CAN 2.0B specification. The PCM-CAN100 provides one CAN port and one bypass CAN port. It provides CANopen lib for users to develop CANopen applications easily. OS Support: Win2K/XP/Vista/7, Linux 2.6.31 ~ 2.6.34

NEW
PCM-CAN100-D CR


- PCI-104 compliant
- 9-Pin male D-Sub connector
- Compatible with CAN 2.0 parts A and B
- Fully compatible with ISO 11898-2 standard
- support CAN bard from 10 kbps ~ 1 Mbps
- 2500 V_{rms} photo couple isolation on the CAN bus
- Built-in jumper to select 120 Ω terminal resistor
- 3 kV galvanic isolation
- 1 independent CAN channel and 1 bypass CAN channel
- Direct memory mapping to the CAN controller
- Provide VB6.0, VC+ +6.0, Delphi, BCB6.0 demos
- Driver for Win2K/XP/Vista/7, Linux 2.6.31 ~ 2.6.34

PCI-104 CAN Communication Card

The PCM-CAN200 is a CAN solution with PCI-104 interface. It complies with CAN 2.0A and CAN 2.0B specification. The PCM-CAN200 provides two CAN ports. It provides CANopen lib for users to develop CANopen applications easily. OS Support: Win2K/XP/Vista/7, Linux 2.6.31 ~ 2.6.34

NEW
PCM-CAN200 CR


- PCI-104 compliant
- 9-Pin male D-Sub connector
- Compatible with CAN 2.0 parts A and B
- Fully compatible with ISO 11898-2 standard
- Support CAN bard from 10 kbps ~ 1 Mbps
- 2500 V_{rms} photo couple isolation on the CAN bus
- Built-in jumper to select 120 Ω terminal resistor
- 3 kV galvanic isolation
- 2 independent CAN channels
- Direct memory mapping to the CAN controller
- Provide VB6.0, VC+ +6.0, Delphi, BCB6.0 demos
- Driver for Win2K/XP/Vista/7, Linux 2.6.31 ~ 2.6.34

PC-104+ CAN Communication Card

PCM-CAN200P has 2 independent CAN ports with 9-Pin D-Sub connector compatible PC-104+ specification. It provides DeviceNet master lib for users to develop DeviceNet applications easily.

OS Support:

Win2K/XP/Vista/7, Linux 2.6.31 ~ 2.6.34

NEW
PCM-CAN200P CR



- PC-104+ compliant
- 9-Pin D-Sub connector
- Compatible with CAN specification 2.0 parts A and B
- Fully compatible with ISO 11898-2 standard
- Support CAN baud rate from 10 kbps to 1 Mbps
- 2500 V_{rms} photo-couple isolation on the CAN bus
- Built-in jumper for 120 Ω terminator resistor of CAN bus
- 3 kV galvanic isolation
- 2 independent CAN ports
- Direct memory mapping to the CAN controller
- Provide VB, VC++, Delphi, BC++ demos
- Driver for Win2K/XP/Vista/7, Linux 2.6.31 ~ 2.6.34

PCI Express CAN Communication Card

The PEX-CAN200i series has 2 independent CAN ports with 5-Pin screw terminal connector or 9-Pin D-Sub connector with PCI Express x 1 bus. Every CAN channel has isolation protection circuit. It provides DeviceNet master lib for users to develop DeviceNet applications easily.

OS Support:

Win2K/XP/Vista/7, Linux 2.6.31 ~ 2.6.34

NEW
PEX-CAN200i-D CR
PEX-CAN200i-T CR



- Compatible with CAN specification 2.0 parts A and B
- Fully compatible with the ISO 11898-2 standard
- Support several kinds of baud rate from 10 kbps to 1 Mbps
- 2500 V_{rms} photo-couple isolation on the CAN side
- Built-in jumper for 120 Ω terminator resistor of CAN bus
- X1 link PCI Express
- 3 kV galvanic isolation
- 2 independent CAN channels
- Direct memory mapping to the CAN controller
- Provide VB, VC++, Delphi, Borland C++ builder demos

Universal PCI CAN Communication Card

PISO-CAN200U with universal PCI interface has two independent CAN bus communication ports with 5-Pin screw terminal connector or 9-Pin D-Sub connector. It provides DeviceNet master lib for users to develop DeviceNet applications easily.

OS Support:

Win2K/XP/Vista/7, Linux 2.6.31 ~ 2.6.34

PISO-CAN200U-D CR
PISO-CAN200U-T CR



- Universal PCI card, supports both 5 V and 3.3 V PCI bus.
- Compatible with CAN specification 2.0 parts A and B
- Fully compatible with the ISO 11898-2 standard
- Support several kinds of baud rate from 10 kbps to 1 Mbps
- 2500 V_{rms} photo-couple isolation on the CAN side
- Built-in jumper for 120 Ω terminator resistor of CAN bus
- Comply with 33 MHz 32-bit 5 V universal PCI bus
- 3 kV galvanic isolation
- 2 independent CAN channels
- Direct memory mapping to the CAN controller
- Provide VB, VC++, Delphi, Borland C++ builder demos

Universal PCI CAN Communication Card

PISO-CAN400U with universal PCI interface has four independent CAN bus communication ports with 5-Pin screw terminal connector or 9-Pin D-Sub connector. It provides DeviceNet master lib for users to develop DeviceNet applications easily.

OS Support:

Win2K/XP/Vista/7, Linux 2.6.31 ~ 2.6.34

PISO-CAN400U-D CR
PISO-CAN400U-T CR



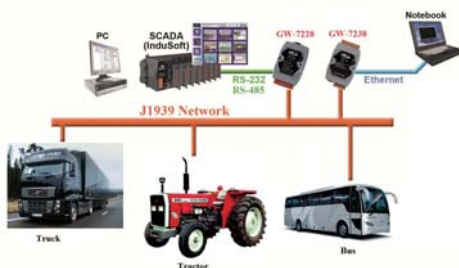
- Universal PCI card, supports both 5 V and 3.3 V PCI bus.
- Compatible with CAN specification 2.0 parts A and B
- Fully compatible with the ISO 11898-2 standard
- Support several kinds of baud rate from 10 kbps to 1 Mbps
- 2500 V_{rms} photo-couple isolation on the CAN side
- Built-in jumper for 120 Ω terminator resistor of CAN bus
- Comply with 33 MHz 32-bit 5 V universal PCI bus
- 3 kV galvanic isolation
- 4 independent CAN channels
- Direct memory mapping to the CAN controller
- Provide VB, VC++, Delphi, Borland C++ builder demos

5.5. J1939 Introduction & Products

J1939 is the vehicle bus standard used for communication and diagnostics among vehicle components, originally by the car and heavy duty truck industry in the United States. Because of the success of applying in vehicles, J1939 has become the accepted industry standard and the vehicle network technology of choice for off-highway machines in applications such as construction, material handling, and forestry machines. It is a higher-layer protocol based on Controller Area Network (CAN), which provides serial data communications between microprocessor systems (ECU) in any kind of heavy duty vehicles. The messages exchanged between these units can be data such as vehicle road speed, torque control message from the transmission to the engine, oil temperature, and many more.

J1939 Features

- ◆ Higher-layer protocol based on CAN bus
- ◆ The speed is nearly always 250 kbit/s
- ◆ 29-bit identifier CAN 2.0B
- ◆ Used in heavy-duty vehicles
- ◆ Peer-to-peer and broadcast communication
- ◆ Transport protocols for up to 1785 data bytes
- ◆ Network management
- ◆ Definition of parameter groups



• Selection Guide

Model Name	Description	Page
J1939 Gateways		
GW-7228	J1939 to Modbus RTU Slave Gateway	5-5-1
GW-7238	J1939 to Modbus TCP Server/RTU Slave Gateway	



J1939 Gateways

J1939 to Modbus RTU Slave Gateway

The GW-7228 is a solution that provides a protocol conversion between J1939 and Modbus RTU. For J1939 network, the GW-7228 supports PDU1, PDU2, broadcast and destination specific type of J1939 messages. From the view of Modbus RTU network, the GW-7228 is a Modbus RTU slave to reply the request from Modbus RTU master.

NEW
GW-7228 CR



- Provide PWR/J1939/MODBUS indication LED
- Built-in jumper to select 120 Ω terminal resistor
- Watchdog inside
- Transmission and reception of all types of J1939 messages, including PDU1, PDU2, broadcast and destination specific.
- J1939 Transport Protocol for transmission and reception of large messages (9 - 1785 bytes).
- Support BAM of Connection Management Message.
- Network addresses management.
- Support RS-232, RS-485 and RS-422 interfaces.
- Support Modbus RTU slave protocol.
- Configurable for Modbus Network ID (1 ~ 250).

J1939 to Modbus TCP Server/RTU Slave Gateway

The GW-7238 is a gateway that provides conversion between J1939 and Modbus TCP/RTU protocol. For J1939 network, the GW-7238 supports PDU1, PDU2, broadcast and destination specific type of J1939 messages. For Modbus TCP/RTU network, the GW-7238 is a Modbus TCP server/RTU slave to reply the request from Modbus TCP client/RTU master.

Available soon
GW-7238 CR

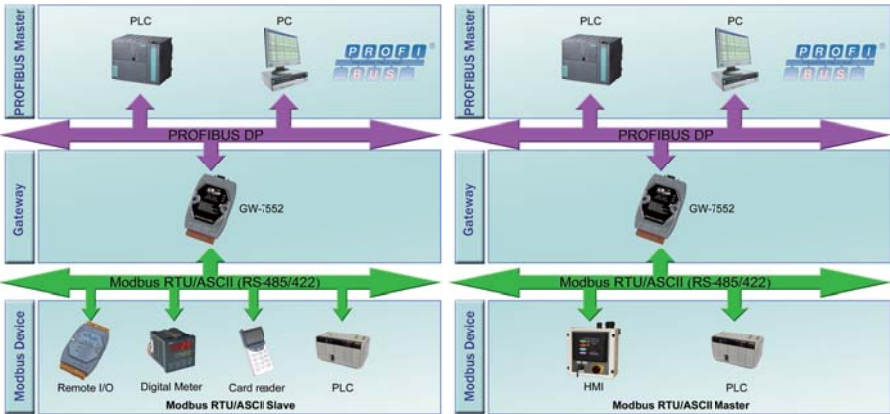


- Provides PWR/J1939/MODBUS indication LEDs
- Built-in jumper to select 120 Ω terminal resistor
- Watchdog inside
- Transmission and reception of all types of J1939 messages, including PDU1, PDU2, broadcast and destination specific.
- J1939 Transport Protocol for transmission and reception of large messages (9 - 1785 bytes).
- Supports BAM of Connection Management Message.
- Network addresses management.
- Supports RS-232, RS-485 and Ethernet interfaces.
- Supports Modbus TCP server/RTU slave protocol.
- Configurable for Modbus Network ID (1 ~ 250).
- Allows 5 Modbus/TCP clients' simultaneous accesses.

5.6. PROFIBUS Introduction & Products

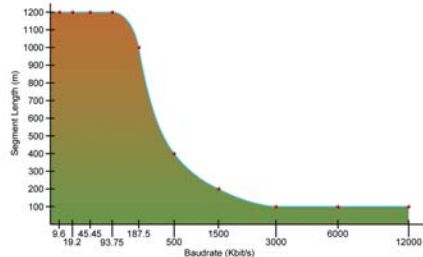
PROFIBUS (PROCESS FIELD BUS) which is anchored in the international standards IEC 61158 and IEC 61784, is an open, digital communication system with a wide range of applications, particularly in the fields of factory and process automation. It is suitable for both fast, time-critical applications and complex communication tasks. ICP DAS provides a lot PROFIBUS DP products and help the user develop PROFIBUS application system easily. We have been developing and studying PROFIBUS DP for years. ICP DAS will always secure user's industrial safety and stable automation system as our mission. These fieldbus solutions also support multi-drop networking of devices on a single twisted-pair cable providing substantial cost savings in:

- Reduced wiring
- Commissioning and installation
- Plant operations and improved quality
- Maintenance



PROFIBUS Features

- ◆ Baud rate up to 12 Mbit/s
- ◆ Maximum 244 bytes input and 244 bytes output per slave
- ◆ Slave configuration and parameters are set from the master side by GSD file
- ◆ Allow multi-master system
- ◆ Fast cyclic data communication between master and slave
- ◆ 124 slaves can be put in data exchange
- ◆ 32 stations on one segment



● Selection Guide

Model Name	Description	Page
PROFIBUS Converters		
I-7550	PROFIBUS to RS-232/485/422 Converter	5-6-2
PROFIBUS Gateways		
GW-7552	PROFIBUS/Modbus RTU Gateway	5-6-2
GW-7553	PROFIBUS/Modbus TCP Gateway	

Note: The detail about PROFIBUS remote I/O modules, please refer to the website: http://www.icpdas.com/products/Industrial/profibus/profi_intro.htm

PROFIBUS Converters

PROFIBUS to RS-232/485/422 Converter

I-7550 converter is specially designed for the slave device of PROFIBUS DP protocol. It offers RS-232, RS-422 and RS-485 three kinds of communication way. With the Hybrid COM 1 design, users can readily choose one type of com port to use.

I-7550 CR



- Protocol & Hierarchy: DP-V0 Slave
- Detect transmission rate (9.6 to 12000 kbps) on PROFIBUS automatically
- 128 bytes max. input data length
- 128 bytes max. output data length
- PROFIBUS address 0 ~ 126 set by DIP switch
- Support several kinds of baud for COM1 from 1.2 to 115.2 kbps
- Network Isolation Protection: High Speed iCoupler
- 3000 V_{DC} isolation protection on PROFIBUS side

PROFIBUS Gateways

PROFIBUS/Modbus RTU Gateway

GW-7552 Gateway is specially designed for the slave device of PROFIBUS DP protocol. It allows the PROFIBUS master to access the Modbus devices.

GW-7552 CR



- Protocol & Hierarchy: DP-V0 Slave
- Detect transmission rate (9.6 to 12000 kbps) on PROFIBUS automatically
- 128 bytes max. input data length
- 130 bytes max. output data length
- Support Modbus Master and Modbus Slave both mode
- Support RTU and ASCII Modbus format
- PROFIBUS address 0 ~ 126 set by DIP switch
- Support several kinds of baud for COM1 from 2.4 to 115.2 kbps
- Network Isolation Protection: High Speed iCoupler
- 3000 V_{DC} isolation protection on PROFIBUS side

PROFIBUS/Modbus TCP Gateway

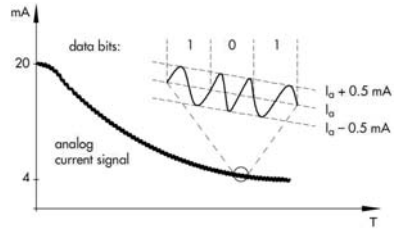
GW-7553 Gateway is specially designed for the slave device of PROFIBUS DP protocol allows the PROFIBUS master to access the Modbus TCP devices.

NEW
GW-7553 CR


- Protocol & Hierarchy: DP-V0 Slave
- Detect transmission rate (9.6 to 12000 kbps) on PROFIBUS automatically
- Support one 10/100 Base-TX Ethernet port
- Support one RS-232 port (3-wire or 5-wire)
- 128 bytes max. input data length
- 131 bytes max. output data length
- Support Modbus TCP/RTU/ASCII master/slave protocol
- PROFIBUS address 0 ~ 126 set by DIP switch
- Network Isolation Protection: 2500 V_{DC} High Speed iCoupler
- 3000 V_{DC} isolation protection on PROFIBUS side

5.7. HART Introduction & Products

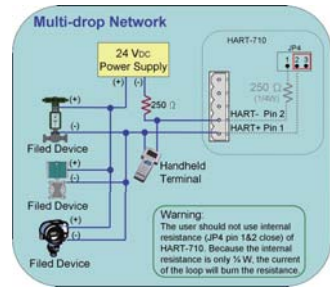
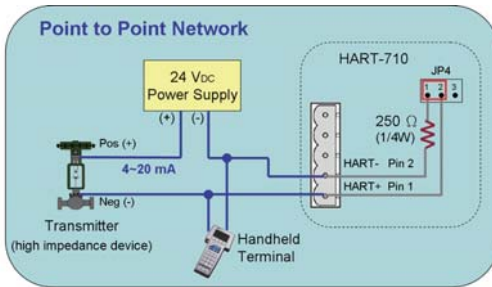
HART Field Communications Protocol extends this 4 ~ 20 mA standard to enhance communication with smart field instruments. The protocol preserves the 4 ~ 20 mA signal and enables two-way digital communications to occur without disturbing the integrity of the 4 ~ 20 mA signal. Unlike other communication technologies, the HART protocol can maintain compatibility with existing 4 ~ 20 mA systems with a uniquely backward compatible solution.



Here are two main operational modes of HART instruments: analog/digital mode, and multi-drop mode.

Peer-to-Peer mode

The analog and digital signals can be communicated in this mode. Here the digital signals are overlaid on the 4 ~ 20 mA loop current. Both the 4 ~ 20 mA current and the digital signal are valid output values from the instrument. The polling address of the instrument is set to "0". Only one instrument can be put on each instrument cable signal pair.



Multi-drop mode (digital)

In this mode, only the digital signals are used. The analog loop current is fixed at 4 mA. In multi-drop mode it is possible to have up to 15 instruments on one signal cable. The polling addresses of the instruments will be in the range 1 ~ 15. Each meter needs to have a unique address.

HART Features

- ◆ Relatively easy to understand and use, the HART protocol provides access to the wealth of additional information (variables, diagnostics, calibration, etc.)
- ◆ HART is a no risk solution for enhanced field communication.
- ◆ Compatibility with standard 4 ~ 20 mA wiring
- ◆ Simultaneous transmission of digital data
- ◆ Risk reduction through a highly accurate and robust protocol
- ◆ Increase Plant Availability
- ◆ Reduce Maintenance Costs
- ◆ Improve regulatory compliance

• Selection Guide

Model Name	Description	Page
HART Gateway		
HART-710	Modbus to HART Gateway	5-7-2
HART Module		
I-87H17W	HART module for PAC	5-7-2
HART Converter		
I-75H0	USB to HART Converter	5-7-2

HART Gateways

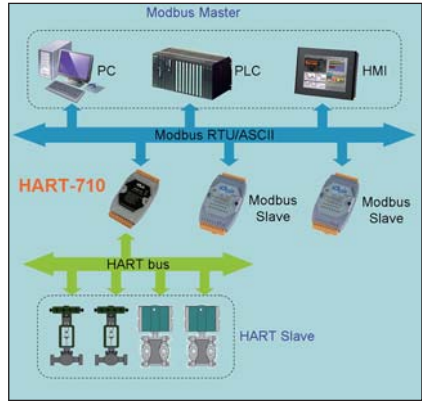
Modbus to HART Gateway

The HART-710 Gateway is specially designed for the master device of HART protocol. It allows the Modbus master device to access the HART slave devices. These HART devices may be a transmitter, an actuator, a current output device and so forth. In addition, we also provide the utility software for users to configure the HART-710.

NEW
HART-710 CR



- Support HART Short/Long frame
- Support HART Burst mode
- Allow two HART Masters
- Working in point-to-point or multi-drop HART mode
- Connecting up to 16 HART modules
- Support Modbus RTU and ASCII format
- Support Modbus Slave mode
- Isolated COM 1: RS-232/422/485
- Provide LED indicators
- Built-in Watchdog
- 4 kV ESD Protection



HART Module

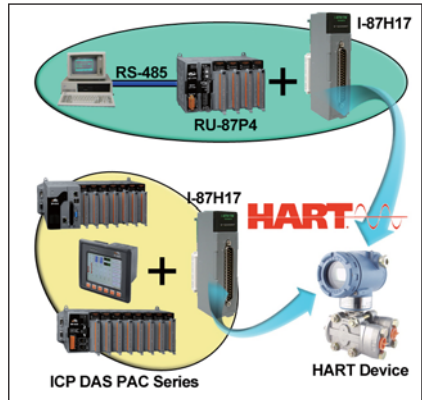
HART module for PAC

The I-87H17W is a HART analog input module. It is a data acquisition and control modules, providing analog-to-digital, and Highway Addressable Remote Transducer. It can be remotely controlled via DCON protocol announced by ICP DAS. The I-87H17W also provides APIs for users' programs on PCs or PACs of ICP DAS.

Available soon
I-87H17W CR



- Support 4 ~ 20 mA current input
- Support HART protocol
- 2- or 4-wire transmitters
- With a built-in resistor,
- Changeable sampling rate
- Open wire detection
- 4 kV ESD protection
- 2500 V_{DC} intra-module isolation
- RoHS compliance



HART Converter

USB to HART Converter

The I-75H0 is a USB to HART converter specially designed for the master device of HART protocol. It allows users to access the HART slave by using virtual COM-port. These HART slave devices may be a transmitter, an actuator, a current output device and so forth. In addition, we also provide the utility tool for users to configure the I-75H0.

Available soon
I-75H0 CR



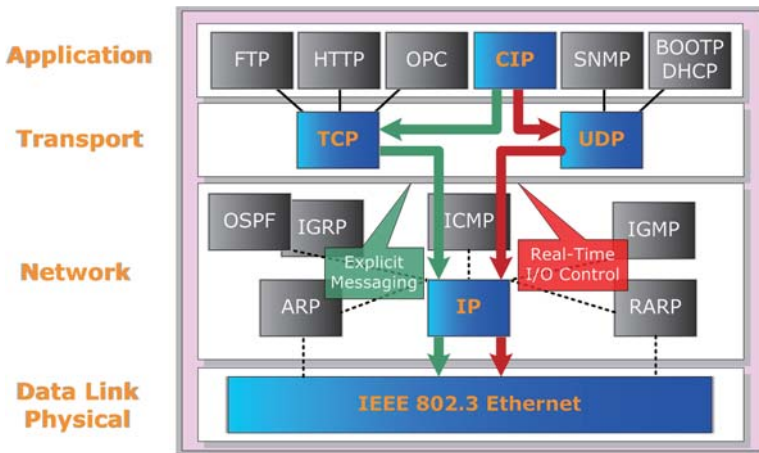
- Support HART Short/Long frame
- Support HART Burst mode
- Allow two HART masters
- Working in point-to-point or multi-drop HART mode
- Connecting up to 16 HART modules
- Provide utility tool for module configuration
- No external power supply (powered by USB)
- Support firmware update via USB
- Provide PWR/RUN/ERR indication LED
- 4 kV ESD Protection



5.8. EtherNet/IP Introduction & Products

EtherNet/IP is one of the open network standards, like DeviceNet and ControlNet. It is an industrial application layer protocol for industrial automation applications. EtherNet/IP uses all of the protocols of traditional Ethernet including the Transport Control Protocol (TCP), the Internet Protocol (IP) and the media access and signaling technologies. Building on standard Ethernet technologies means that EtherNet/IP will work transparently with all the standard Ethernet devices found today. EtherNet/IP application layer is based on the “Common Industrial Protocol” (CIP) which is used in both DeviceNet and ControlNet. This standard organizes networked devices as a collection of objects. It defines the access, behavior and extensions, which allow vastly different devices to be accessed using a common protocol. Building on these protocols, EtherNet/IP provides a seam-less integrated system from the Industrial floor to the enterprise network.

EtherNet/IP uses all the transport and control protocols of standard Ethernet including the Transport Control Protocol (TCP), the User Datagram Protocol (UDP), the Internet Protocol (IP) and the media access and signaling technologies found in off-the-shelf Ethernet technology. Building on these standard communication technologies means that EtherNet/IP works transparently with all the standard Ethernet devices found in today’s market-place.



EtherNet/IP Features

- ◆ Offer Producer-Consumer service that enable users to control, configure and collect data.
- ◆ Uses existing IEEE standards for Ethernet physical layer and data link layer
- ◆ Provide flexible installation options leveraging commercially available industrial infrastructure products, including copper, fiber, fiber ring and wireless solutions.
- ◆ Provide robust physical layer options for industrial environments and includes the use of sealed RJ-45 and M12-4 D-coding connector.
- ◆ Compatible with general communication standards, including OPC, TCP/IP, HTTP, FTP, SNMP, DHCP.
- ◆ Use TCP port number 44818 for explicit messaging and UDP port number 2222 for implicit messaging
- ◆ Transfer of basic I/O data via UDP-based implicit messaging
- ◆ Uploading and downloading of parameters, programs and recipes via TCP
- ◆ Polled, cyclic and change-of-state monitoring via UDP
- ◆ One-to-one (unicast), one-to-many (multicast), and one-to-all (broadcast) communication via TCP


EtherNet/IP Gateways
EtherNet/IP server to Modbus RTU master Gateway

The IPGW-710 (EtherNet/IP server to Modbus RTU master Gateway) converts a network of Modbus RTU Slave devices to a single node of I/O on an EtherNet/IP network. For EtherNet/IP Systems Register data read from Modbus RTU slave nodes is presented to an EtherNet/IP Client device as Input data. Output data transmitted by an EtherNet/IP Client is used to update the register data of Modbus RTU Slave devices. The entire network of Modbus RTU Slave devices appears to the EtherNet/IP Client as a single node of EtherNet/IP slave.

Available soon
IPGW-710 CR



General Features

- Powerful 32-bit MCU handles efficient network trafficking
- 10/100 Base-TX Ethernet, RJ-45 x1 (Auto-negotiating, auto MDI/MDIX, LED Indicators)
- Redundant power inputs: PoE (IEEE 802.3af, Class 1) and DC Jack
- Automatically RS-485 direction control
- Supports ARP, TCP, UDP, ICMP, DHCP, BOOTP and TFTP protocols
- Easy firmware update via Ethernet
- Terminal block connector for easy wiring
- Tiny form-factor and low power consumption
- RoHS compliant with no Halogen
- Made from fire retardant materials (UL94-V0 Level)

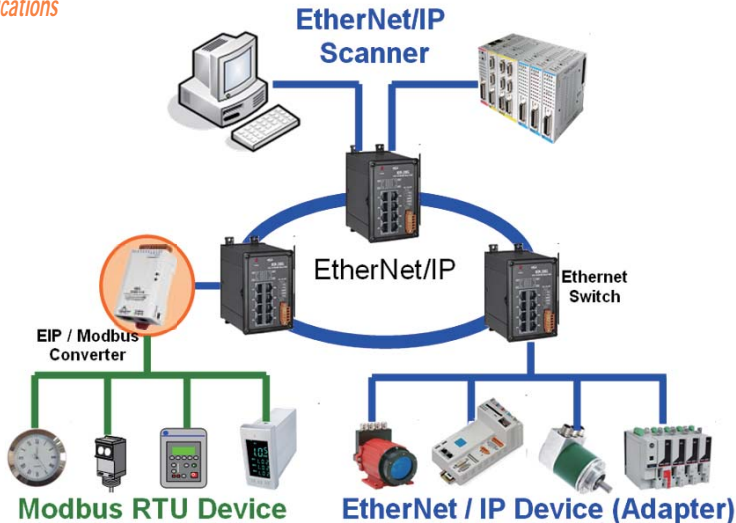
EtherNet/IP Features

- Ethernet Protocol: EtherNet/IP Server
- Maximum number of Explicit Messaging connections: 6
- Supported I/O connection methods:
 - Transport and trigger: Exclusive-Owner, Cyclic
 - Original to Target Type: POINT2POINT
 - Target to Original Type: POINT2POINT, MULTICAST
- Device Configuration Option: Custom Software
- Address Configuration: DHCP, Custom Software
- Maximum EtherNet/IP Input/Output data size: 500 bytes
- Maximum Modbus RTU slave data mapped to EtherNet/IP input data: 500 bytes
- Maximum EtherNet/IP output data mapped to Modbus RTU slave devices: 500 bytes

Modbus Features

- Modbus Protocol: Modbus RTU Master
- Maximum support 30 Modbus RTU slave devices
- Supported Modbus RTU Function Codes:
 - 01_{hex}: Read Output Status
 - 02_{hex}: Read Input Status
 - 03_{hex}: Read Multiple Data Registers
 - 04_{hex}: Read Input Registers
 - 0F_{hex}: Write Multiple Bits
 - 10_{hex}: Write Multiple Data Register
- Maximum data size per Modbus slave device: 240 bytes

Applications



5.9. BACnet Introduction & Products

BACnet is a communications protocol for building automation and control networks. It is an ASHRAE, ANSI, and ISO standard protocol.



BACnet was designed to allow communication of building automation and control systems for applications such as heating, ventilating, and air-conditioning control, lighting control, access control, and fire detection systems and their associated equipment. The BACnet protocol provides mechanisms for computerized building automation devices to exchange information, regardless of the particular building service they perform.

BACnet Features

- ◆ Designed specifically for building automation control
- ◆ Conformance to ANSI/ASHRAE Standard 135-2008 or ISO 16484-5
- ◆ A completely non-proprietary open communication software standard
- ◆ Support several different physical and link layers (BACnet/IP, Ethernet, ARCNET, MS/TP, PTP and LonTalk)
- ◆ All data in a BACnet system is represented in terms of "objects", "properties" and "services"
- ◆ Scalability and choice of compatibility with other systems and vendors

Selection Guide

Model Name	Description	Page
BACnet Gateways		
BMGW-510	BACnet/IP Server to Modbus RTU Master Gateway	5-9-1
BMGW-511	BACnet/IP Server to Modbus TCP Client Gateway	



BACnet Gateways

BACnet/IP Server to Modbus RTU Master Gateway

BMGW-510 is a fully configurable universal Modbus RTU to BACnet/IP gateway. The BMGW-510 includes BACnet/IP Server and Modbus RTU Master which is used to make Modbus RTU devices accessible on a BACnet network.

Available soon
BMGW-510 CR



- Quickly and Cost Effectively integrate networks
- Provide PWR/Communication Status Indication LED
- Read/Write any standard Modbus registers via BACnet
- Fully Compliant with BACnet/IP Server and Modbus RTU Master
- BIBB (BACnet Interoperability Building Blocks) supported: DS-RP-B, DS-RPM-B, DS-WP-B, DS-WPM-B, DS-COV-B, DM-DDB-B, DM-DOB-B, DM-DCC-B, DM-TS-B, DM-UTC-B, DM-RD-B
- BACnet object supported: AI, AO, AV, BI, BO, BV, MSI, MSO, MSV
- Supports Modbus coils, input register, holding registers
- Baud rates supported: 2400, 4800, 9600, 19200, 38400, 57600, and 115200 bps
- No Programming Required
- Modbus register mapping table configured via web interface

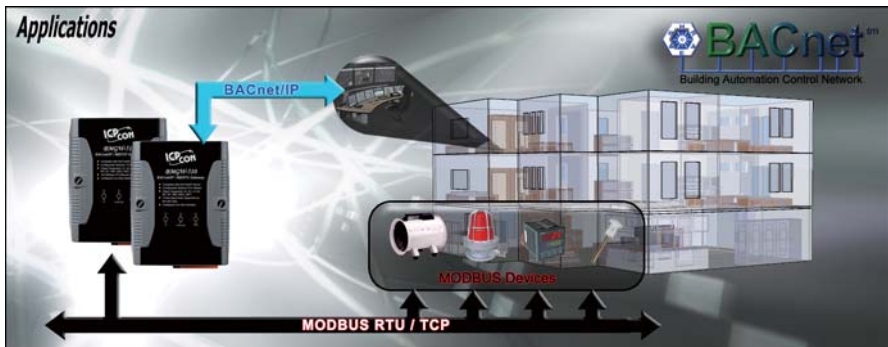
BACnet/IP Server to Modbus TCP Client Gateway

BMGW-511 is a fully configurable universal Modbus TCP to BACnet/IP gateway. The BMGW-511 includes BACnet/IP Server and Modbus TCP client which is used to make Modbus TCP devices accessible on a BACnet network.

Available soon
BMGW-511 CR



- Quickly and Cost Effectively integrate networks
- Provide PWR/Communication Status Indication LED
- Read/Write any standard Modbus registers via BACnet
- Fully Compliant with BACnet/IP Server and Modbus TCP Client
- BIBB (BACnet Interoperability Building Blocks) supported: DS-RP-B, DS-RPM-B, DS-WP-B, DS-WPM-B, DS-COV-B, DM-DDB-B, DM-DOB-B, DM-DCC-B, DM-TS-B, DM-UTC-B, DM-RD-B
- BACnet object supported: AI, AO, AV, BI, BO, BV, MSI, MSO, MSV
- Supports Modbus coils, input register, holding registers
- 10/100 Base-TX Ethernet Controller
- No Programming Required
- Modbus register mapping table configured via web interface



Ethernet Switches

6

6.1 Overview

P6-1-1

6.2 Product Showcase

P6-2-1

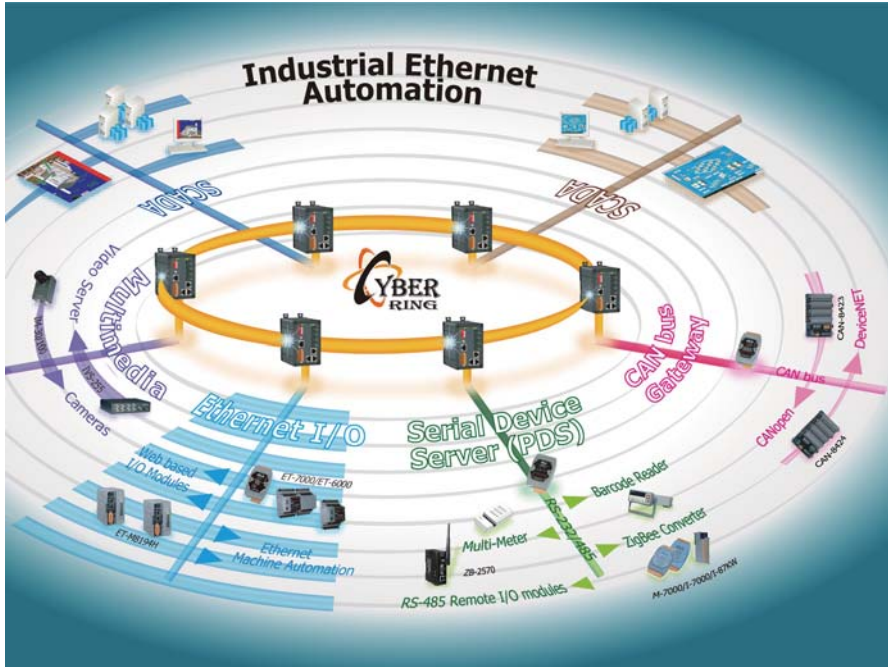


6.1. Overview

Ethernet is an ideal medium to transport large volumes of data, at speed, across great distances. Previously, multiple networks carrying specific protocols were installed side by side to carry out unique tasks. This inevitably led to project costs increasing as additional fiber optic or copper cables were installed to deal with the increasing volume of data. Using Ethernet, a single fiber optic cable can carry multiple protocols. Furthermore, manufacturers are exporting their legacy protocols onto Ethernet, designing new IP based communication protocols and providing embedded Web-Pages within devices that offer real-time information using simple tools like Internet Explorer and Netscape Navigator.

Early Ethernet were based on a hub or repeater. These units have no intelligence and therefore are unable to identify any information contained within the Header frame of an Ethernet packet. This means that it is not capable of determining which port to send the frame to. Therefore, every frame is sent to every port.

A switch, like a hub, has to forward and receive packets from one network or device to another. The switch could forward all packets, but if this was the case it would have similar behaviour to a hub. It would be more intelligent if the switch only forwarded packets which needed to travel from one network or device to another.

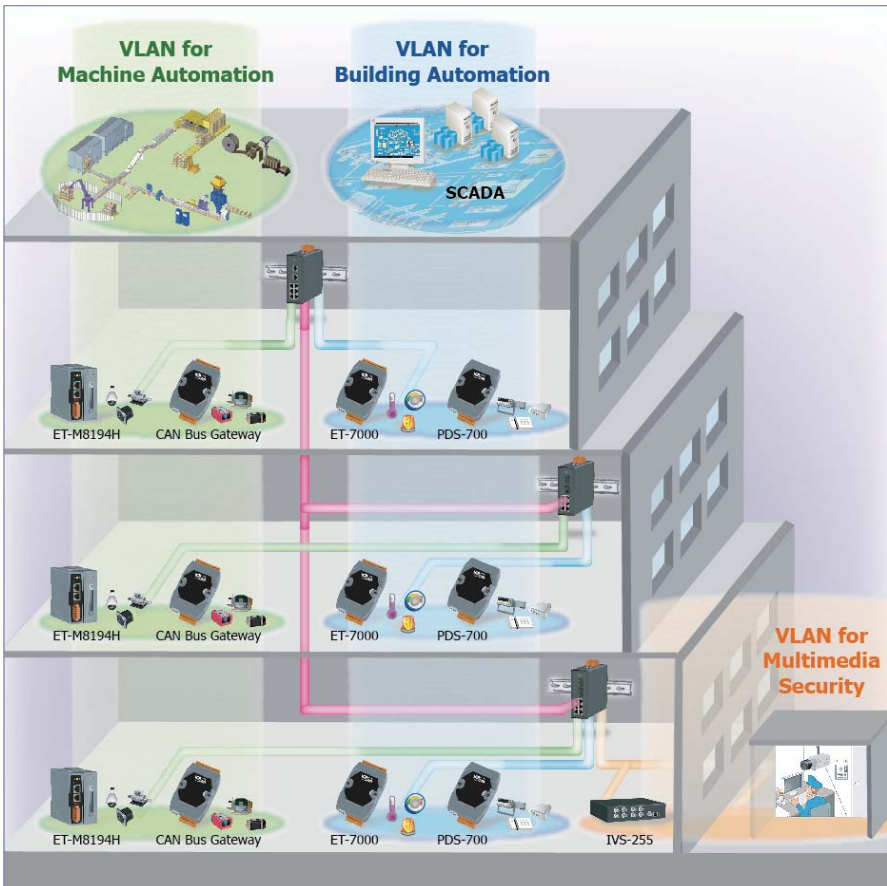


There are many poorly designed switches existing in the market, and most of them are fragile, easy to collapse, and always suffer from transmission delay and unreliable communication conditions due to packet collisions or other issues. Users who have had experiences with those poor switches should try our high quality ones. ICP DAS's switches only choose "REAL INDUSTRIAL" grade switch chips that are temperature tolerant and highly reliable. They are all well-designed by skilled engineers and passed very strict communication and environment tests. All our switches can serve for a long life and guarantee to function perfectly under harsh environments.

Managed Switch for Industrial Ethernet Application

The managed switch can be configured through RS-232 port via serial console or Ethernet port using telnet or Web browser. In addition, the switch supports a lot of powerful managed functions, such as 802.1Q Tag-based VLAN, Port-based VLAN, 802.1p QoS (Quality of Service), Port Trunking, Spanning Tree, Cable Testing and Port Mirroring.

Built-in ICP DAS Cyber-Ring technique enables multiple switches to be placed into a redundant ring. The switch detects and recovers from a fiber or copper link failure within approximately 50 ms – for the majority of applications a seamless process. Modbus/TCP, Modbus/RTU and OPC supported, SCADA application can monitor status of Ethernet and fiber port with Modbus or OPC protocol.



Unmanaged Ethernet Switch

Industrial rated switches are intended to be installed in both harsh climatic environments and noisy electrical installations. Such switches are an excellent example of true industrial design principles

- Very high operating temperatures (down to -40 °C and up to 75 °C)
- DIN-Rail
- Wide DC operating voltages



IP67 Waterproof Switch

IP67 Ethernet Switches are designed for use in industrial waterproof/harsh environments. The rugged packaging and IP67 connectors guarantee a total protection that can withstand a variety of extreme conditions such as high temperatures, extreme shocks & vibrations, dust particles or even liquid immersion. They can be directly mounted to any machine or convenient flat surface.

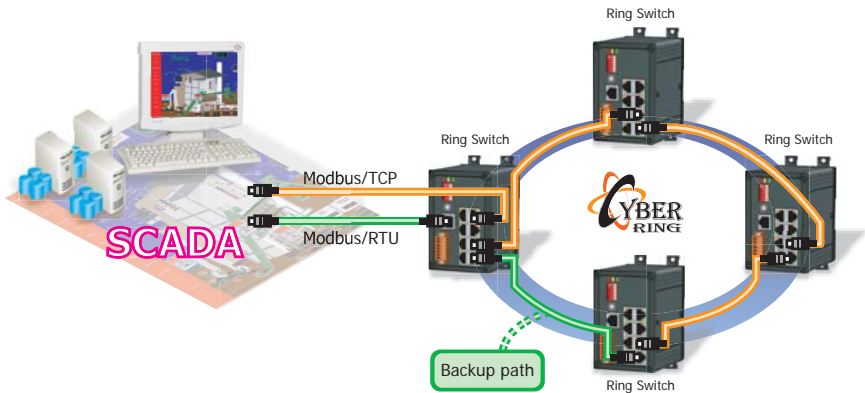
Media Converter

The utilization of fiber optic data transmission for industrial automation and process control has become increasingly popular over the past decade. A basic fiber optic system, using an optical transceiver circuit and fiber optic media, offers a wide array of benefits that are not available with traditional copper conductors.



Real-time Redundant Ring Switch

The Real-time Redundant Ring Switch offers fault-tolerant industrial Ethernet with ring network topology. The built-in ICP DAS proprietary Cyber-Ring technology detects and recovers from a fiber or copper link failure within approximately 50 ms – for the majority of applications a seamless process. Modbus/TCP, Modbus/RTU and OPC supported, SCADA application can monitor status of Ethernet and fiber port with Modbus or OPC protocol. And, the relay output facility can deliver warning signal while dual power or network link fails.



Managed Ethernet Switch

The ICP DAS Managed Switch provides a cost-effective managed Ethernet solution for industrial control and automation. It provides lots of powerful managed functions, such as 802.1Q Tag-based VLAN, Port-based VLAN, 802.1p QoS (Quality of Service), Port Trunking, Spanning Tree, Cable Testing and Port Mirroring. These managed functions can be configured through RS-232 port via serial console or Ethernet port using telnet or Web browser. In addition, the built-in Cyber-Ring technology offers real-time fault-tolerant ring topology to increase the reliability and performance of network. It is an ideal Managed Switch for industrial environments.



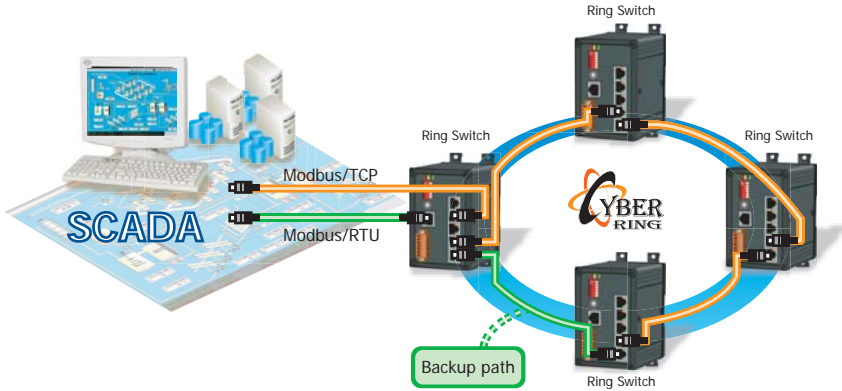
6 Cyber-Ring Ethernet Self-healing Technology

It is undoubted that the power of an Ethernet LAN (Local Area Network) is tremendous when applied to factory floor or industrial automation applications. However, you cannot just use commercial Ethernet switch there. Harsh environment will become a challenge to your switch, and, in many case, fault-tolerant network is also a must. To satisfy these, ICP DAS's Cyber-Ring technology provides you a rugged fault-tolerant, plug and play Ethernet solution.

The ICP DAS's proprietary Cyber-Ring self-healing Ethernet technology can establish industrial Ethernet with high reliability and fault-tolerant capability. It can employ a ring topology network over either copper or fiber optic cable. While standard STP typically requires 20s to 30s for network structure reconfiguration following a link failure, Cyber-Ring technology reduces this downtime to within half a second. Average experience indicates a typical fault recovery time is 300 ms for Cyber-Ring fault-tolerant network.

Features

- High reliability and fault-tolerant
- Real-time deterministic performance
- Scalable and flexible ring topology
- Cost-effective industrial redundant Ethernet solution
- Plug and play



Recovery Time

The recovery time of Cyber-Ring network consists of two parts, fault detected time and reconfiguration time. Recovery time of Cyber-Ring network is associated with the number of switches of the network and Cyber-Ring technology offers a variable preconfigured recovery time to support a wide range of number of switches. Typically, the recovery time of Cyber-Ring network with ten switches is less than 300 ms.

Fault Detected Time

Fault detected time is defined as the time from the occurrence of the fault until fault detected. There is a master switch of Cyber-Ring network checks the health condition of Cyber-Ring network periodically. If active path is not response after a preconfigured period of time, the master assumes that active path is failed and invokes reconfiguration mechanism to redirect traffics to the backup path.

Reconfiguration Time

The reconfiguration time of Cyber-Ring network is less than 5 ms per switch. For example, a Cyber-Ring fault-tolerant network that is comprised of ten switches, the expected worst case reconfiguration time will be 50 ms. When a fault is detected, the Cyber-Ring network will reconfigure to provide alternative traffic path of the ring within 50 ms.

6.2. Product Showcase

Unmanaged Ethernet Switches

5-port 10/100 Base-TX

The NS-205 series has 5 Ethernet Switching ports that support 10/100 Base-TX, with a 10/100M auto negotiation feature and auto MDI/MDI-X function.

**NS-205 CR
NS-205A CR
Series**



- Automatic MDI/MDI-X crossover for plug-and-play
- Each port supports both 10/100 Mbps speed auto negotiation
- Store-and-forward architecture
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- Integrated look-up engine with dedicated 1024 unicast MAC addresses
- Store-and-forward architecture
- Supports +10 V_{oc} ~ +30 V_{oc} for NS-205
Supports +12 V_{oc} ~ +48 V_{oc} for NS-205A
Reverse Polarity Protection
- Operating temperature range: -40 °C ~ +75 °C
- DIN-Rail

8-port 10/100 Base-TX

The NS-208/NSM-108 series has 8 Ethernet Switching ports that support 10/100 Base-TX, with a 10/100M auto negotiation feature and auto MDI/MDI-X function.

**NS-208 CR
NSM-108 CR
Series**



- Automatic MDI/MDI-X crossover for plug-and-play
- Each port supports both 10/100 Mbps speed auto negotiation
- Store-and-forward architecture
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- 2 Gbps high performance memory bandwidth
- Power Inputs +10 V_{oc} ~ +30 V_{oc}
- Operating temperature range: -40 °C ~ +75 °C
- DIN-Rail

5-port 10/100/1000 Base-T

The NS-205G is 5-port unmanaged gigabit switch that support 10/100/1000 Base-T, with a 10/100/1000M auto negotiation feature and auto MDI/MDI-X function. It can connect 5 workstations and automatically switch the transmission speed (10 Mbps or 100 Mbps or 1000 Mbps) for corresponding connections.

**NEW
NS-205G CR**



- Power saving Technology
- Automatic MDI/MDI-X crossover for plug-and-play
- Each port supports 10/100 and 1000 Mbps speed auto negotiation
- Store-and-forward architecture
- 10 Gbps high performance memory bandwidth
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- Power Inputs +10 V_{oc} ~ +30 V_{oc}
- Operating temperature range: -40 °C ~ +75 °C
- DIN-Rail

8-port 10/100/1000 Base-T

The NS-208G/NSM-208G series has 8 Ethernet Switching ports that support 10/100/1000 Base-T, with a 10/100/1000M auto negotiation feature and auto MDI/MDI-X function. It can connect 8 workstations and automatically switches the transmission speed (10 Mbps or 100 Mbps or 1000 Mbps) for corresponding connections.

**NEW
NS(M)-208G CR
NS(M)-208AG CR
Series**



- Automatic MDI/MDI-X crossover for plug-and-play
- Each port supports 10/100 and 1000 Mbps speed auto negotiation
- Store-and-forward architecture
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- 16 Gbps high performance memory bandwidth
- Supports +10 V_{oc} ~ +30 V_{oc} for NS-208G and NSM-208G
- Supports +12 V_{oc} ~ +48 V_{oc} for NS-208AG and NSM-208AG
- Operating temperature range: -40 °C ~ +75 °C
- DIN-Rail

4-port 10/100 Base-TX and 100 Base-FX Fiber

The NS-205F/NSM-205F series is a Unmanaged 4-port Industrial Ethernet (10/100 Base-TX) to Fiber Port (100 Base-FX) switch that secures data transmission by using fiber optic transmission to provide immunity from EMI/RFI interference.

**NS(M)-205F CR
Series**



- Automatic MDI/MDI-X crossover for plug-and-play
- Each port supports both 10/100 Mbps speed auto negotiation
- Store-and-forward architecture
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- 3.2 Gbps high performance memory bandwidth
- Frame buffer memory: 512 Kbit
- Integrated look-up engine with dedicated 1024 unicast MAC addresses
- Supports +10 V_{oc} ~ +30 V_{oc}
- Operating temperature range: 0 °C ~ +70 °C

4-port 10/100 Base-TX and Dual 100 Base-FX Fiber

The NS-206F/NSM-206F series is a Unmanaged 4-port Industrial 10/100 Base-TX and Dual 100 Base-FX Switch that secures data transmission by using fiber optic transmission to provide immunity from EMI/RFI interference.

**NS(M)-206F CR
Series**



- Automatic MDI/MDI-X crossover for plug-and-play
- Each port supports both 10/100 Mbps speed auto negotiation
- Store-and-forward architecture
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- 1.6 Gbps high performance memory bandwidth
- Frame buffer memory: 256 Kbit
- Integrated look-up engine with dedicated 1024 unicast MAC addresses
- Supports +10 V_{oc} ~ +30 V_{oc}
- Operating temperature range: 0 °C ~ +70 °C
- Din-Rail

8-port 10/100 Base-TX and 100 Base-FX Fiber

The NS-209F/NSM-209F series is a Unmanaged 8-port Industrial 10/100 Base-TX and one 100 Base-FX Switch that secures data transmission by using fiber optic transmission to provide immunity from EMI/RFI interference.

NEW
NS-209F CR Series
Available soon
NSM-209F CR Series



- Automatic MDI/MDI-X crossover for plug-and-play
- Each port supports both 10/100 Mbps speed auto negotiation
- Store-and-forward architecture
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- 2 Gbps high performance memory bandwidth
- Integrated look-up engine with dedicated 2048 unicast MAC addresses
- Supports +12 V_{DC} ~ +48 V_{DC}
- Operating temperature range: 0 °C ~ +70 °C
- DIN-Rail

5-port 10/100 Base-TX with IP67 Casing

NS-205-IP67 Ethernet switch are designed for use in industrial waterproof/harsh environments.

NEW
NS-205-IP67 CR Series



- Automatic MDI/MDI-X crossover for plug-and-play
- Each port supports both 10/100 Mbps speed auto negotiation
- Store-and-forward architecture
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- 1.4 Gbps high performance memory bandwidth
- Integrated look-up engine with dedicated 1024 unicast MAC addresses
- Supports +10 VDC ~ +30 VDC with 1 kV Isolation Reverse Polarity Protection
- Plastic casing with IP67
- Operating temperature range: -10 °C ~ +60 °C
- Din-Rail

4-port PoE and 1 RJ-45 Uplink

The NS-205PSE is a 5-port unmanaged PoE (Power over Ethernet) Industrial Ethernet Switch, it supports 4-PoE Port which are classified as power source equipments (PSE).

NEW
NS-205PSE CR
NS-205PSE-24V CR Series



- Automatic MDI/MDI-X crossover for plug-and-play
- Each port supports both 10/100 Mbps speed auto negotiation
- Store-and-forward architecture
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- 3.2 Gbps high performance memory bandwidth
- Supports +46 V_{DC} ~ +55 V_{DC} for NS-205PSE
- Supports +18 V_{DC} ~ +32 V_{DC} for NS/NSM-205PSE-24V
- Operating temperature range: -40 °C ~ +75 °C
- DIN-Rail
- IEEE 802.3af compliant PoE ports
- 4-PoE Port with power sourcing equipment (PSE) operation
- Auto-detection of PD (powered devices) and automatic power management over-temperature, over-current and over/under-voltage detection

4-port PoE and 100 Base-FX Fiber

The NS-205PF is a 5-port unmanaged PoE (Power over Ethernet) Industrial Ethernet Switch, it supports 4-PoE Port which are classified as power source equipments (PSE).

NS-205PF CR Series



- Automatic MDI/MDI-X crossover for plug-and-play
- Each port supports both 10/100 Mbps speed auto negotiation
- Store-and-forward architecture
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- 3.2 Gbps high performance memory bandwidth
- Power Inputs +46 V_{DC} ~ +55 V_{DC}
- Operating temperature range: -30 °C ~ +75 °C
- DIN-Rail
- IEEE 802.3af compliant PoE ports
- 4-PoE Port with power sourcing equipment (PSE) operation
- Auto-detection of PD (powered devices) and automatic power management over-temperature, over-current and over/under-voltage detection

4-port PoE and 4 RJ-45 Uplink

The NS(M)-208PSE-4 is a 8-port unmanaged PoE (Power over Ethernet) Industrial Ethernet Switch, it supports 4-PoE Port which are classified as power source equipments (PSE).

**NS-208PSE-4 CR
NSM-208PSE-4 CR**



- Automatic MDI/MDI-X crossover for plug-and-play
- Each port supports both 10/100 Mbps speed auto negotiation
- Store-and-forward architecture
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- 3.2 Gbps high performance memory bandwidth
- Power Inputs +46 V_{DC} ~ +55 V_{DC}
- Operating temperature range: -40 °C ~ +75 °C
- DIN-Rail
- IEEE 802.3af compliant PoE ports
- 4-PoE Port with power sourcing equipment (PSE) operation
- Auto-detection of PD (powered devices) and automatic power management over-temperature, over-current and over/under-voltage detection

8-port PoE

The NS(M)-208PSE is a 8-port unmanaged PoE (Power over Ethernet) Industrial Ethernet Switch, it supports 8-PoE Port which are classified as power source equipments (PSE).

**NS-208PSE CR
NSM-208PSE CR**



- Automatic MDI/MDI-X crossover for plug-and-play
- Each port supports both 10/100 Mbps speed auto negotiation
- Store-and-forward architecture
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- 3.2 Gbps high performance memory bandwidth
- Power Inputs +46 V_{DC} ~ +55 V_{DC}
- Operating temperature range: -40 °C ~ +75 °C
- DIN-Rail
- IEEE 802.3af compliant PoE ports
- 4-PoE Port with power sourcing equipment (PSE) operation
- Auto-detection of PD (powered devices) and automatic power management over-temperature, over-current and over/under-voltage detection

 Managed Ethernet Switches

5-port Real-time Redundant Ring Switch

The RS-405/RSM-405 series is a 5-port Industrial Ethernet (10/100 Base-TX) Real-Time Redundant Ring Switch.

NEW
RS(M)-405 CR Series



- Automatic MDI/MDI-X crossover for plug-and-play
- Each port supports both 10/100 Mbps speed auto negotiation
- Store-and-forward architecture
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- 3.2 Gbps high performance memory bandwidth
- Frame buffer memory: 1 Mbit
- Integrated look-up engine with dedicated 2048 unicast MAC addresses
- Redundant Power Inputs +10 V_{DC} ~ +30 V_{DC}
Power failure alarm by relay output
- Operating temperature range: -40 °C ~ +75 °C
- DIN-Rail

5-port Real-time Redundant Ring Switch with 2-Fiber Port

The RS-405F/RSM-405F series is a 5-port Industrial Ethernet Real-Time Redundant Ring Switch with 2-Fiber Port that secures data transmission by using fiber optic transmission to provide immunity from EMI/RFI interference.

NEW
RS(M)-405F CR Series



- Automatic MDI/MDI-X crossover for plug-and-play
- Each port supports both 10/100 Mbps speed auto negotiation
- Store-and-forward architecture
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- 3.2 Gbps high performance memory bandwidth
- Frame buffer memory: 512 Kbit
- Integrated look-up engine with dedicated 1024 unicast MAC addresses
- Redundant Power Inputs +10 V_{DC} ~ +30 V_{DC}
Power failure alarm by relay output
- Operating temperature range: 0 °C ~ +70 °C

8-port Real-time Redundant Ring Switch

The RS-408/RSM-408 series is an 8-port Industrial Ethernet (10/100 Base-TX) Real-Time Redundant Ring Switch.

NEW
RS(M)-408 CR Series



- Automatic MDI/MDI-X crossover for plug-and-play
- Each port supports both 10/100 Mbps speed auto negotiation
- Store-and-forward architecture
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- 3.2 Gbps high performance memory bandwidth
- Frame buffer memory: 1 Mbit
- Integrated look-up engine with dedicated 2048 unicast MAC addresses
- Redundant Power Inputs +10 V_{DC} ~ +30 V_{DC}
Power failure alarm by relay output
- Operating temperature range: -40 °C ~ +75 °C
- DIN-Rail

8-port Industrial Ethernet Layer 2 Managed Switch

The MSM-508 is an 8-port Industrial Ethernet (10/100 Base-TX) Layer 2 Managed Switch. MSM-508 supports 10/100M auto negotiation feature and auto MDI/MDI-X function.

NEW
MSM-508 CR



- Automatic MDI/MDI-X crossover for plug-and-play
- Each port supports both 10/100 Mbps speed auto negotiation
- Store-and-forward architecture
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- 3.2 Gbps high performance memory bandwidth
- Frame buffer memory: 1 Mbit
- Integrated look-up engine with dedicated 2048 unicast MAC addresses
- Supports +12 V_{DC} ~ +48 V_{DC}
Power failure alarm by relay output
- Operating temperature range: -40 °C ~ +75 °C
- DIN-Rail mount and Screw hole for wall mounting kit

8-port Industrial Ethernet Layer 2 Managed Switch with 2-Fiber Port

The MSM-508F series is an 8-port Industrial Ethernet Layer 2 Managed Switch with 2-Fiber Port that secures data transmission by using fiber optic transmission to provide immunity from EMI/RFI interference.

NEW
MSM-508F CR Series



- Automatic MDI/MDI-X crossover for plug-and-play
- Each port supports 10/100 and 1000 Mbps speed auto negotiation
- Store-and-forward architecture
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- 3.2 Gbps high performance memory bandwidth
- Frame buffer memory: 1 Mbit
- Integrated look-up engine with dedicated 2048 unicast MAC addresses
- Supports +12 V_{DC} ~ +48 V_{DC}
Power failure alarm by relay output
- Operating temperature range: 0 °C ~ +70 °C
- DIN-Rail mount and Screw hole for wall mounting kit



Media Converters

10/100 Base-TX to 100 Base-FX

The NS-200F series is a Ethernet (10/100 Base-TX) to Media (100 Base-FX) converter. The Ethernet supports 10/100M auto negotiation feature and auto MDI/MDI-X function.

NS-200F CR Series


- Automatic MDI/MDI-X crossover for plug-and-play
- Supports both 10/100 Mbps speed auto negotiation
- Store-and-forward architecture
- Full duplex IEEE 802.3x flow control
- 1.4 Gbps high performance memory bandwidth
- Frame buffer memory: 256 Kbit
- Integrated look-up engine with dedicated 1024 unicast MAC addresses
- Supports +10 V_{DC} ~ +30 V_{DC} Reverse Polarity Protection
- Operating temperature range: 0 °C ~ +70 °C
- DIN-Rail

1000 Base-T to 1000 Base-SX/LX

The NS-200G series provides one RJ-45 auto sensing 10/100/1000 Base-T port and one 1000 Base-SX/LX SFP port. The RJ-45 port is full/half duplex capable.

Available soon
NS-200G CR Series


- Automatic MDI/MDI-X crossover for plug-and-play
- Store-and-forward architecture
- Full duplex IEEE 802.3x
- Supports +12 V_{DC} ~ +48 V_{DC} Reverse Polarity Protection
- Operating temperature range: 0 °C ~ +70 °C
- DIN-Rail

Single-Strand 10/100 Base-TX to 100 Base-FX

Using the fiber optic medium for Ethernet applications has become more popular due to fiber optic's excellent physical features, especially for long distance networks.

NS-200WDM CR Series


- Automatic MDI/MDI-X crossover for plug-and-play
- Supports both 10/100 Mbps speed auto negotiation
- Store-and-forward architecture
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- 1.4 Gbps high performance memory bandwidth
- Integrated look-up engine with dedicated 1024 unicast MAC addresses
- Supports +12 V_{DC} ~ +48 V_{DC} Reverse Polarity Protection
- Operating temperature range: 0 °C ~ +70 °C
- DIN-Rail

Accessories

7

7.1	Cables	P7-1-1
7.2	Power Supplies	P7-2-1
7.3	Terminal Boards & Connector	P7-3-1
7.4	Hub	P7-4-1

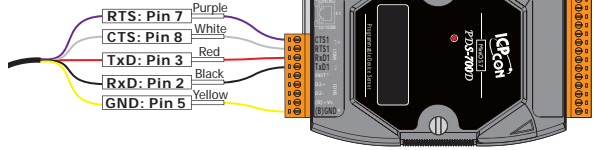


7.1. Cables



CA-0903

Pin Assignments



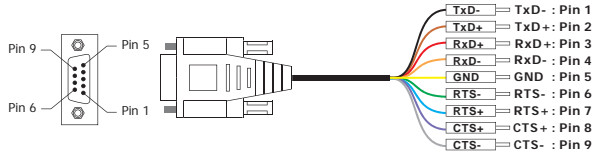
Ordering Information

CA-0903 9-Pin Female D-Sub and RS-232 Connector Cable, 30 cm



CA-090910

Pin Assignments



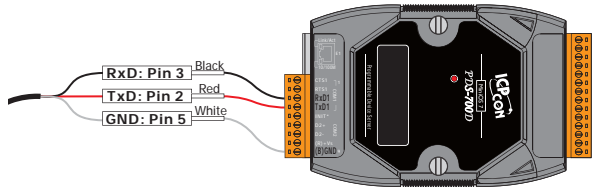
Ordering Information

CA-090910 9-Pin Female D-Sub Cable for RS-422 Connector, 1 m



CA-0910

Pin Assignments



Ordering Information

CA-0910 9-Pin Female D-Sub and 3-wire RS-232 Cable, 1 m



CA-0910F
CA-0915

Pin Assignments



Ordering Information

CA-0910F 9-Pin Female-Female D-Sub Cable, 1 m
CA-0915 9-Pin Male-Female D-Sub Cable, 1.5 m



CA-9-2505D

Pin Assignments

Pin Assignment	Terminal No.	Pin Assignment
N/A	01	14 COM8_RxD
N/A	02	15 COM8_TxD
COM8_GND	03	16 COM7_RxD
N/A	04	17 COM7_TxD
COM7_GND	05	18 COM6_RxD
N/A	06	19 COM6_TxD
COM6_GND	07	20 COM5_RxD
N/A	08	21 COM5_TxD
COM5_GND	09	22 COM4_RxD
N/A	10	23 COM4_TxD
COM4_GND	11	24 COM3_RxD
N/A	12	25 COM3_TxD
COM3_GND	13	Shield F.G.

25-Pin Male D-Sub Connector

Pin Assignment	Terminal No.	Pin Assignment
GND	05	09 --
--	04	08 --
TxD	03	07 --
RxD	02	06 --
--	01	--

RS-232 Female DB-25 to Male DB-9 Connector

Ordering Information

CA-9-2505D	Male DB-25 to 6 Male DB-9 Cable, 0.5 m
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CA-9-3705



CA-9-3715D

CA-9-3705
CA-9-3715D

Pin Assignments

Pin Assignment	Terminal No.	Pin Assignment
N.C.	01	20 RI3
DCD3	02	21 DTR3
GND	03	22 DSR3
CTS3	04	23 RTS3
RxD3	05	24 TxD3
RI4	06	25 DCD4
DTR4	07	26 GND
DSR4	08	27 CTS4
RTS4	09	28 RxD4
TxD4	10	29 RI2
DCD2	11	30 DTR2
GND	12	31 DSR2
CTS2	13	32 RTS2
RxD2	14	33 TxD2
RI1	15	34 DCD1
DTR1	16	35 GND
DSR1	17	36 CTS1
RTS1	18	37 RxD1
TxD1	19	

RS-232 Female DB-37 Connector

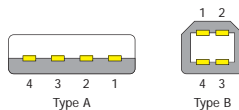
Pin Assignment	Terminal No.	Pin Assignment
GND	05	09 RI
DTR	04	08 CTS
TxD	03	07 RTS
RxD	02	06 DSR
DCD	01	

RS-232 Female DB-37 to Male DB-9 Connector

Ordering Information

CA-9-3705	Male DB-37 to 4 Male DB-9 Cable (90°), 0.3 m
CA-9-3715D	Male DB-37 to 4 Male DB-9 Cable (180°), 1.5 m

Pin Assignments



Pin	Name	Description
1	VCC	+5V
2	D-	Data-
3	D+	Data+
4	GND	Ground



CA-USB18

Ordering Information

CA-USB18	USB Type A to Type B Cable, 1.8 m
----------	-----------------------------------

7.2. Power Supplies

KA-52F
KA-52F-48



DIN-KA52F
DIN-KA52F-48

NEW
KA52F-48/DIN-KA52F-48

CE FC

Specifications

Models	KA-52F	DIN-KA52F	KA-52F-48	DIN-KA52F-48
Input				
Range	100 – 250 AC			
Frequency	50 Hz – 60 Hz			
Output				
Power	24 V _{oc} /1.04 A max., 25 W		48 V _{oc} /0.52 A max., 25 W	
Mechanical				
Dimensions (W x H x D, Unit: mm)	54 x 93 x 36	68 x 107 x 50	54 x 93 x 36	68 x 107 x 50
Installation	No-mounting	DIN-Rail Mounting	No-mounting	DIN-Rail Mounting
Environmental				
Operating Temperature	0 °C – +50 °C			
Storage Temperature	-20 °C – +85 °C			

Ordering Information

KA-52F	24 V _{oc} /1.04 A, 25 W Power Supply
DIN-KA52F	24 V _{oc} /1.04 A, 25 W Power Supply with Din-Rail Mounting
KA-52F-48	48 V _{oc} /0.52 A, 25 W Power Supply
DIN-KA52F-48	48 V _{oc} /0.52 A, 25 W Power Supply with Din-Rail Mounting

NEW



GPSU06U-6

CE FC

Specifications

Input	
Range	100 – 250 AC
Frequency	50 Hz – 60 Hz
Output	
Power	24 V _{oc} /0.25 A max., 6 W
Mechanical	
Dimensions (W x H x D)	32 mm x 66 mm x 68 mm
Installation	No-mounting
Environmental	
Operating Temperature	0 °C – +40 °C
Storage Temperature	-20 °C – +85 °C

Ordering Information

GPSU06U-6	24 V _{oc} /0.25 A, 6 W Power Supply
-----------	--

MDR-60-24/
MDR-60-48

NEW



MDR-20-24

MDR-20-24
MDR-60-24
MDR-60-48

CE FC

Specifications

Models	MDR-20-24	MDR-60-24	MDR-60-48
Input			
Range	100 – 250 AC		
Frequency	50 Hz – 60 Hz		
Output			
Power	24 V _{oc} /1 A max., 24 W	24 V _{oc} /2.5 A max., 60 W	48 V _{oc} /1.25 A max., 60 W
Mechanical			
Dimensions (W x H x D) (Unit: mm)	22.5 x 90 x 100	40 x 90 x 100	40 x 90 x 100
Installation	DIN-Rail Mounting		
Environmental			
Operating Temperature	-20 °C – +70 °C		
Storage Temperature	-20 °C – +85 °C		

Ordering Information

MDR-20-24	24 V _{oc} /1 A, 24 W Power Supply with DIN-Rail Mounting
MDR-60-24	24 V _{oc} /2.5 A, 60 W Power Supply with DIN-Rail Mounting
MDR-60-48	48 V _{oc} /1.25 A, 60 W Power Supply with DIN-Rail Mounting

NEW

DR-120-48 DR-120-24

DR-120-48
DR-120-24

CE FC

Specifications

Models	DR-120-48	DR-120-24
Input		
Range	88 – 264 AC	
Frequency	47 – 63 Hz	
Output		
Power	48 Voc/2.5 A max., 120 W	24 Voc/5.0 A max., 120 W
Mechanical		
Dimensions (W x H x D)	65 mm x 125 mm x 100 mm	
Installation	DIN-Rail Mounting	
Environmental		
Operating Temperature	-10 °C ~ +60 °C	
Storage Temperature	-20 °C ~ +85 °C	-25 °C ~ +85 °C

Ordering Information

DR-120-48	48 Voc/2.5 A, 120 W Power Supply with DIN-Rail Mounting
DR-120-24	24 Voc/5.0 A, 120 W Power Supply with DIN-Rail Mounting

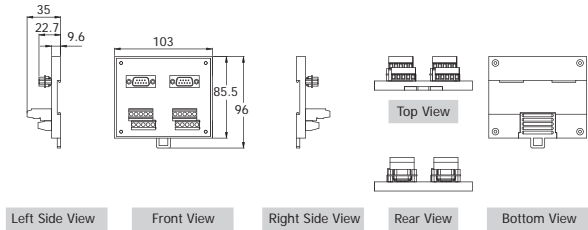
7.3. Terminal Boards & Connector

DN-09-2 CA-0915

DN-09-2F CA-0910F

DN-09-2
DN-09-2F

Dimensions (Unit: mm)



Ordering Information

DN-09-2	I/O Connector Block with DIN-Rail Mounting and Two 9-Pin Male Header Includes: CA-0915 x 2 (9-Pin Male-Female D-Sub Cable 1.5 M)
DN-09-2F	I/O Connector Block with DIN-Rail Mounting and Two 9-Pin Male Header Includes: CA-0910F x 2 (9-Pin Female-Female D-Sub Cable 1.0 M)

CA-4002

CA-PC09F

Ordering Information

CA-4002	37-Pin Male D-Sub Connector with Plastic Cover
CA-PC09F	9-Pin Female D-Sub Connector with Plastic Cover

7.4. Hub

NEW


USB-2560

4-port Industrial USB 2.0 Hub

Features

- Compliant with USB Specification Revision 2.0
- Built-in NEC uPD720114 USB 2.0 Hub Controller
- Supports High-speed (480 Mbps) and Full-speed (12 Mbps)
- Provides 4 Downstream Ports
- Only Supports Self-powered Mode
- +12 ~ 48 V_{DC} Power Input (power adapter included)
- Supports Downstream Port Status with LED
- DIN-Rail



Introduction

The USB-2560 allows you to add multiple high performance USB 2.0 peripheral devices to your computer (Or XP-8000 series). It supports the USB 2.0 high-speed mode that can achieve 480 Mbps data transmitting rate. The USB-2560 only supports self-powered mode (drawing power from an external power supply). Externally powered USB hubs are the only way to guarantee the broadest compatibility for USB devices.

Specifications

Interface	
Ports	Upstream x 1 (Type B) Downstream x 4 (Type A)
Compatibility	Universal serial bus
Transfer Speed	Specification Rev. 2.0/1.1/1.0 480 Mbit/s-high speed mode 12 Mbit/s- full speed mode 1.5 Mbit/s-low speed mode
Supply Current	500 mA max. per port
Include Cable	CA-USB18 (1.8 m Cable) x 1
Power Supply Included (USB-2560/S Only)	GPSU06U-6 x 1 for 250 mA per port
LED Indicators	
Power	1 LED
Downstream Ports	4 LEDs
Power	
Input Voltage Range	+12 ~ +48 V _{DC}
Power Consumption	0.25 A @ 24 V _{DC} for 250 mA per port 0.5 A @ 24 V _{DC} for 500 mA per port
Power Input Connection	Removable 3-Pin Terminal Block
Mechanical	
Casing	Plastic
Flammability	UL 94V-0 materials
Dimensions (W x L x H)	33 mm x 78 mm x 107 mm
Installation	DIN-Rail
Environment	
Operating Temperature	0 °C ~ +70 °C
Storage Temperature	-20 °C ~ +80 °C
Humidity	10 ~ 90% RH, non-condensing

Ordering Information

USB-2560 CR	4-port Industrial USB 2.0 Hub (RoHS)
USB-2560/S CR	4-port Industrial USB 2.0 Hub with GPSU06U-6 (Power Supply) (RoHS)

Accessories

DIN-KA52F	24 V _{DC} /1.04 A, 25 W Power Supply with DIN-Rail Mounting
MDR-20-24	24 V _{DC} /1 A, 24 W Power Supply with DIN-Rail Mounting

Related Products

8

8.1 Wireless Networking Solutions

P8-1-1



8.1. Wireless Networking Solutions

● Wireless LAN Converter

http://www.icpdas.com/products/GSM_GPRS/wireless/t-316.htm

The applications of 802.11b wireless LAN are getting more and more popular by more and more mature technology. It's not only faster than the industrial traditional transmission i.e. RS-232, RS-485, RS-422 etc, but also able to reduce the troublesomely wiring works. It also has higher mobility than Ethernet network.

Our T-316 is an Ethernet LAN to wireless LAN converter. In addition to the above advantages, it doesn't need to install any software or drivers when you use it. The setting process is very simple. Users don't need to modify the current hardware system or current running program to enjoy the benefits of wireless transmission.



● Wireless Modem

http://www.icpdas.com/products/GSM_GPRS/wireless/sst-2450.htm

SST-2450 is a spread spectrum radio modem with an RS-232/RS-485 interface port. It is designed for data acquisition and control applications between a host and remote sensors. It is also useful for those applications where the installation of cable wire is inconvenient. The SST-2450 can be used not only in peer-to-peer mode, but also in a multi-point structure.

The SST-2450 is based on a direct sequence spread spectrum and RF technology, operating in the ISM bands with a Frequency Range of 2410.496 MHz ~ 2471.936 MHz. The Channel Spacing is 4.096 MHz.

SST-900 is a radio frequency modem with an RS-232/RS-485 interface port. It supports both peer-to-peer and multi-point structure modes. The SST-900 operates in the ISM bands with a Frequency Range of 902 MHz ~ 928 MHz. The Channel Spacing is 1.5 MHz.



● Industrial GSM/GPRS Modems

<http://m2m.icpdas.com/gtm-201.html>

The GTM-201 series is industrial Quad-band GSM/GPRS modems with RS-232 and USB interfaces that work on frequencies of GSM 850 MHz, EGSM 900 MHz, DCS 1800 MHz and PCS 1900 MHz. The modems utilizes the GSM/GPRS network for convenient and inexpensive data transfer from remote instruments, meters, computers or control systems in either live data or packet data. GTM-201 series has the integrated TCP/IP stack so that even simple controllers with serial communications ports can connect to the modem without the need for special driver implementation.



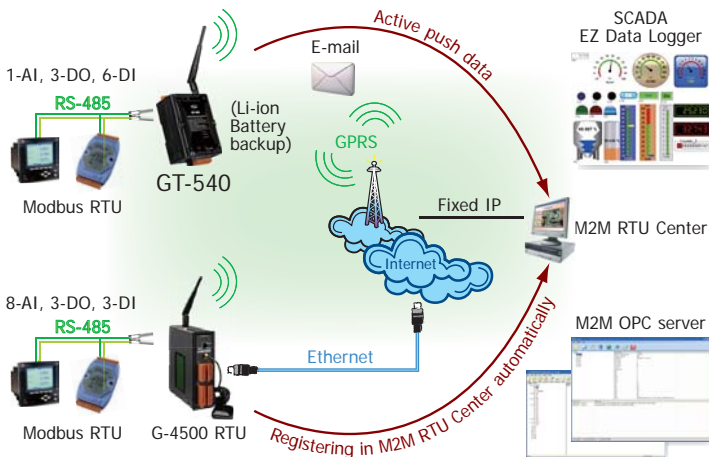
● Intelligent GPRS/GSM Modules

<http://m2m.icpdas.com/product.html>

The GT-500 series GSM Module is GSM remote control and alarm system allows users to use their mobile phone to monitor and control the business from any location. Its alarm facilities provide a flexible way to distribute critical alarm information to any number of mobile phone users.

GT-53x are intelligent SMS and GSM modules for industry applications with the external Li-Battery backup power. They feature SMS tunnel, SMS control, and voice alarm function for users to apply in remote SMS/GSM control system.

The GT-54x are an intelligent Active GPRS Remote Terminal Units. Within the high performance 32 bit CPU, the GT-54x series is suit for the hard industrial environment. It features GPRS/GSM module, 6 digital inputs, 2 digital outputs, 1 analog input, 2 RS-232, 1 RS-485, SD interface and GPS.



● Multi-function GPRS/GSM PACs

<http://m2m.icpdas.com/product.html>

The G-4500 series provided by ICP DAS is M2M (machine to machine) mini programmable controller with a cellular transceiver. It can monitor industrial equipment that sends live data to the monitoring system, and provides real-time status of equipments. With optional GPS model, the G-4500 turns into a GPS tracking system. Also, it works well management system or maritime system.



● ZigBee Converter and Repeater

http://www.icpdas.com/products/GSM_GPRS/wireless/solutions.htm#6

ZigBee is a specification based on the IEEE 802.15.4 standard for wireless personal area networks (WPANs). ZigBee operates in the ISM radio bands and its focus is to define a general-purpose, inexpensive, self-organizing, mesh network that can be used for industrial control, embedded sensing, medical data collection, smoke and intruder warning, building automation, home automation, and domotics, etc.

ZigBee uses a basic master-slave configuration that is suited to the static star networks of many infrequently used devices that talk via small data packets. Up to 254 nodes are allowed.

ICP DAS provides many ZigBee solutions such as Ethernet/RS-232/485 to ZigBee Converters, ZigBee Repeater and ZigBee Wireless I/O modules.



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- Digital Input and Output Cards
- Multi-port Serial Cards

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PAC with Display
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M2M Mini-PAC
G-4500 Series



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ICPDAS CO., LTD

Taiwan

Website: <http://www.icpdas.com>
E-mail: service@icpdas.com
TEL : 886-3-597-3366 FAX : 886-3-597-3733

China

Website: <http://www.icpdas.com.cn>
E-mail: sales_sh@icpdas.com.cn
TEL : 86-21-6247-1722 FAX : 86-21-6247-1725

Europe

Website: <http://www.icpdas-europe.com>
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TEL : 0049-711-9973775 FAX : 0049-711-9973784

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