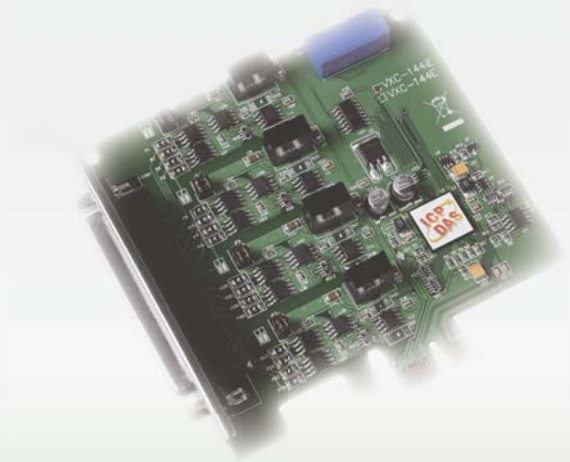


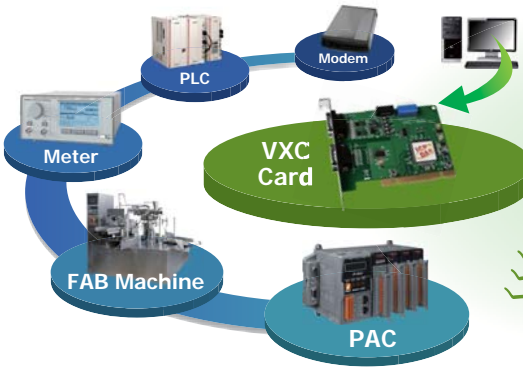
# *Multi-port Serial Cards*

# 2

2.1	Overview	P2-1-1
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.

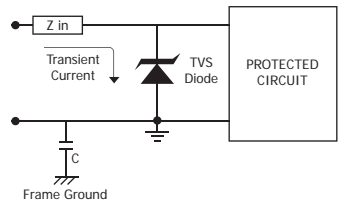


Easy COM Port Selection by DIP switch

#### 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.

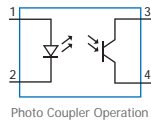
Without the help of Self-Tuner, users need to enable RS-485 transmitter before sending, and disable the transmitter after finishing sending. The timing to enable and disable transmitter (direction control) is the major issue on many communication problems, and it is very difficult to debug.

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.

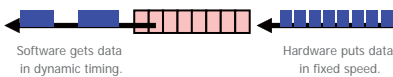
Photo coupler is a device that uses a short optical transmission path to transfer a signal between elements of a circuit, typically a transmitter and a receiver. This keeps them electrically isolated — since the signal goes from an electrical signal to an optical signal, the electrical contact along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



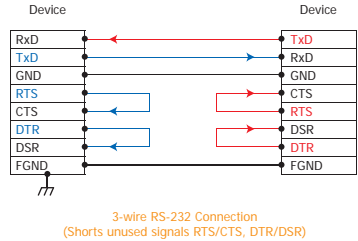
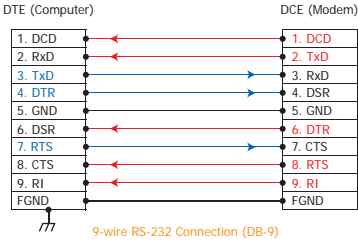
DB-37 Connector



DB-9 Connector

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

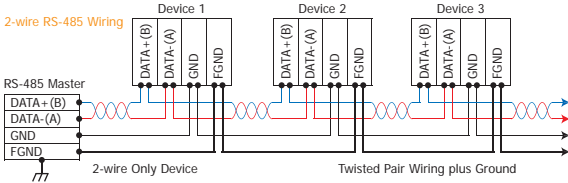
RS-232 Wiring



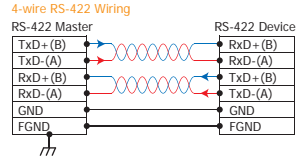
Note:

- 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. 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<sub>rms</sub> 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
<b>Communication Port</b>				
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 <sub>rms</sub>	-	2500 V <sub>rms</sub>
<b>General</b>				
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	

2

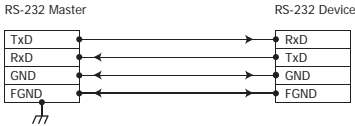
Serial Communication Cards

VXC-112/VEX-112 Series

**Wiring**

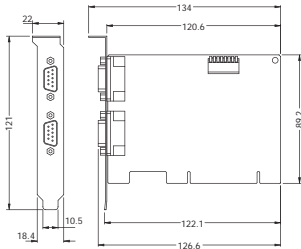
DTE Device (Computer)		DB9	DTE to DCE Connections		DCE Device (Modem)		DB9
Pin#	DB9	RS-232 Signal Names	Signal Direction		Pin#	DB9	RS-232 Signal Names
#1	Carrier Detector	DCD	←	→	#1	Carrier Detector	DCD
#2	Receive Data	RxD	←	→	#2	Transmit Data	TxD
#3	Transmit Data	TxD	→	←	#3	Receive Data	RxD
#4	Data 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

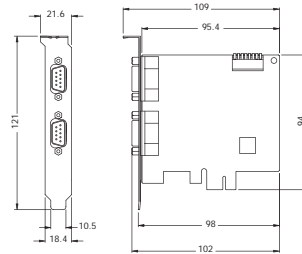


**Dimensions (Unit: mm)**

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<sub>ms</sub> 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
<b>Communication Port</b>				
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 <sub>ms</sub>	-	2500 V <sub>ms</sub>
<b>General</b>				
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	

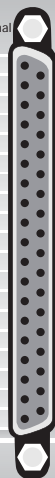


**Wiring**

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

**Ordering Information**

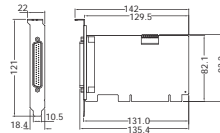
VXC-114U CR	Universal PCI, Serial Communication Card with 4 RS-232 ports (RoHS). Includes One CA-4002 Connector
VXC-114U/D2 CR	Universal PCI, Serial Communication Card with 4 RS-232 ports (RoHS). Includes One CA-9-3715D Cable
VEX-114 CR	PCI Express, Serial Communication Card with 4 RS-232 ports (RoHS).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

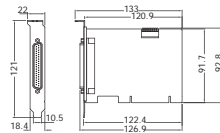
CA-4002	37-Pin Male D-Sub Connector with Plastic Cover
CA-9-3715D	Male DB-37 to 4 Male DB-9 Cable, 1.5 m For VXC Series (180°)

**Dimensions (Unit: mm)**

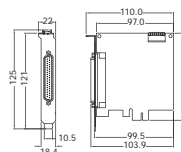
VXC-114U



VXC-114IAU



VEX-114/VEX-114I





## Features

- Built-in COM-Selector
- Short Card Design
- Provides 2 RS-422/485 ports
- 2500 V<sub>rms</sub> 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

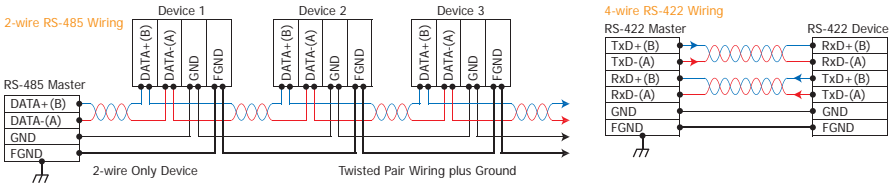
## Software

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

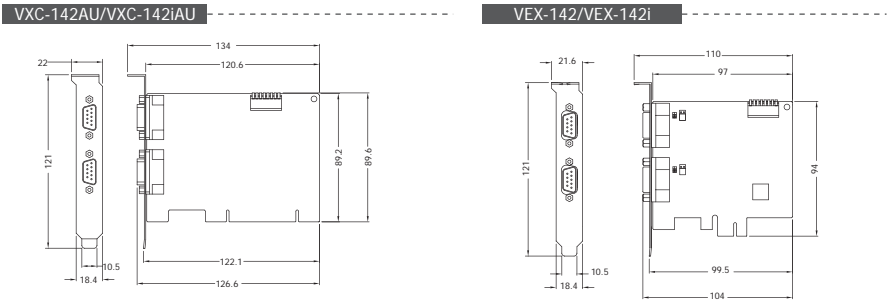
## Hardware Specifications

Models	VXC-142AU	VXC-142iAU	VEX-142	VEX-142i
<b>Communication Port</b>				
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 <sub>rms</sub>	-	2500 V <sub>rms</sub>
<b>General</b>				
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)**



**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<sub>rms</sub> 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.

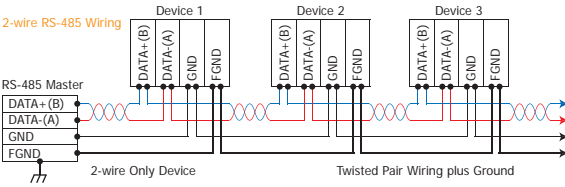
The serial communication card are designed for use with intelligent devices like bar code reader, serial printers, intelligent sensors, instrumentation equipment, computers and almost any device with an RS-232 port.

### Hardware Specifications

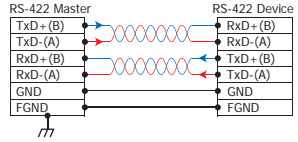
Models	VXC-144U	VXC-144IU	VEX-144	VEX-144i
<b>Communication Port</b>				
COM1 – COM4	RS-422/485	The RS-422 and RS-485 cannot be used simultaneously		
	RS-422	TxD+, TxD-, RxD+, RxD-, RTS+, RTS-, CTS+, CTS-, GND		
	RS-485	Data+, Data-, GND (Automatic RS-485 Direction Control)		
UART	16C950 compatible			
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 <sub>rms</sub>	-	2500 V <sub>rms</sub>
<b>General</b>				
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**

**2-wire RS-485 Wiring**



**4-wire RS-422 Wiring**



**Pin Assignments**

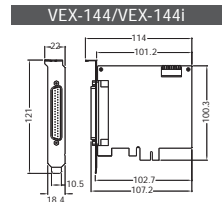
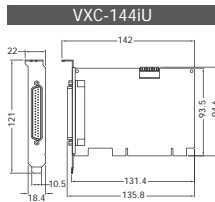
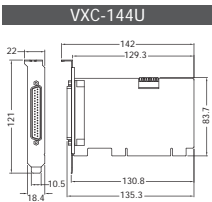
Pin Assignment	Terminal	No.	Pin Assignment
N.C.	01	20	CTS3-(A)
TxD3-(A)/Data3-(A)	02	21	RxD3-(A)
GND/VEE3	03	22	RTS3-(A)
CTS3+(B)	04	23	RTS3+(B)
TxD3+(B)/Data3+(B)	05	24	RxD3+(B)
CTS4-(A)	06	25	TxD4-(A)/Data4-(A)
RxD4-(A)	07	26	GND/VEE4
RTS4-(A)	08	27	CTS4+(B)
RTS4+(B)	09	28	TxD4+(B)/Data+(B)
RxD4+(B)	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<sub>max</sub> 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

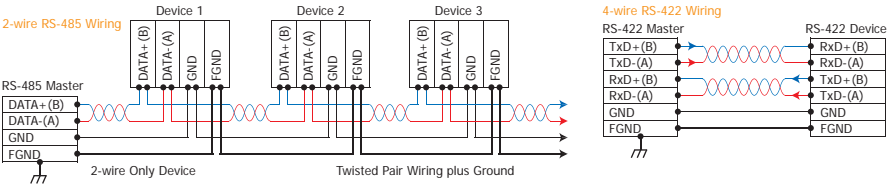
- Industrial Machinery
- Building Automation
- Restaurant Appliances
- Laboratory Equipment & Research
- Industrial Communication

### 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**

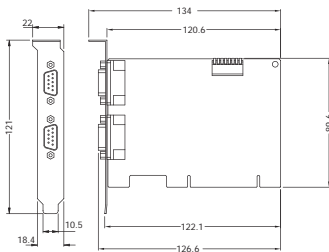
Pin Assignment	Terminal	No.	Pin Assignment
GND/VEE	05	09	CTS- (A)
RxD- (A)	04	08	CTS+ (B)
RxD+ (B)	03	07	RTS+ (B)
TxD+ (B)/Data+ (B)	02	06	RTS- (A)
TxD- (A)/Data- (A)	01		

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**

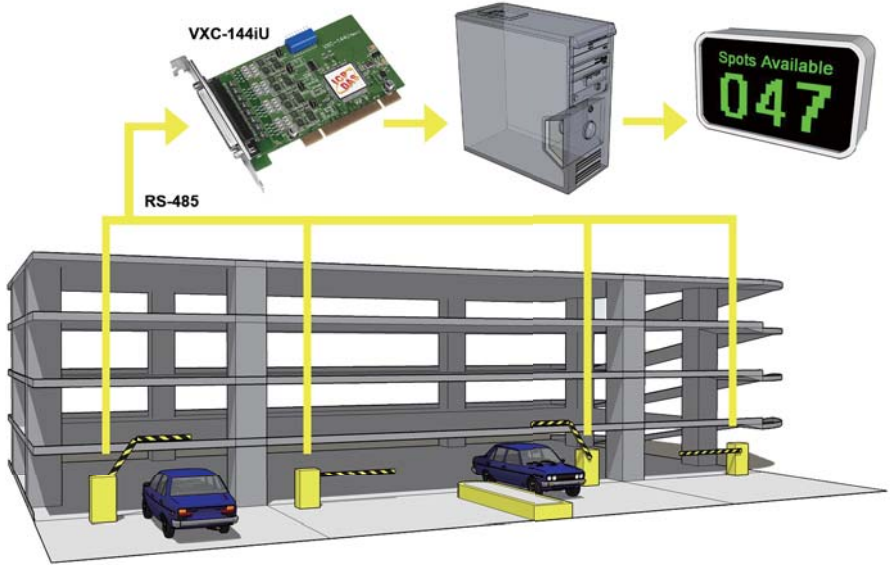
VXC-182IU CR	Universal PCI Bus, Serial Communication Card with 1 Isolated RS-422/485 port and 1 RS-232 port (RoHS)
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**Accessories**

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

