

XP-8000-CE6 User Manual (for WinCE 6.0 Based XPAC)

V1.0.3, March 2018



XP-8031-CE6/XP-8131-CE6/ XP-8331-CE6/ XP-8731-CE6

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1. Introduction





XP-8000-CE6 Series is the new generation Windows CE 6.0 based PACs of ICP DAS. It is equipped with a x86 CPU (1 GHz) dual-core, various connectivity (VGA, USB, Ethernet, RS-232/485) and 0/1/3/7 I/O slot(s) for high performance parallel I/O modules (high profile I-8K Series) and serial I/O modules (high profile I-87K series). The benefits of running Windows CE 6.0 on XPAC include hard real-time capability, small core size, fast boot speed, interrupt handling at a deeper level and achievable deterministic control. XPAC is also capable of running PC-based control software such as Visual Basic .NET, Visual C#, etc. It has all of the best features of both traditional PLCs and Windows capable PCs.

For software copy protection, programmers can design software based on the 64-bit hardware serial number for making software copy protected.

1.1. Features

The XP-8000-CE6 offers the most comprehensive configuration to meet specific application requirements. The following list shows the hardware and software features designed to simplify installation, configuration and application.

Hardware Features

- Powerful CPU module: x86 CPU (1 GHz) dual core
- Rich Memories:

System Memory: 2 GB DDR3 Built-in Flash Disk: 32 GB EEPROM: 16 KB SRAM/MRAM: 512 KB

- VGA Port x 1, USB 2.0 port x 4, Serial port (RS-232/RS-485) x 5
- 64-bit Hardware Serial Number
- Dual Watchdog Timers
- Dual Ethernet Ports (10 M/100 M/1000 M)
- Redundant Power Input
- Operating Temperature: -25 to +75 °C

Software Features

- Windows Compact Edition 6.0
- ASP
- SQL Compact Edition 3.5
- .NET Compact Framework 3.5
- Remote Display
- Built-in OPC Server (Quicker)
- Rich Software Solution SDK for Microsoft Visual Studio 2005/2008

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1.2. Specifications

The table below summarizes the specifications of the XP-8000-CE6.

Models	XP-8031-CE6	XP-8131-CE6	XP-8331-CE6	XP-8731-CE6
OS		Window	vs CE 6.0	
.Net Compact Framework		3.	5	
Embedded Service	FTP Server, AS	SP (Java Script, VB S	Script), SQL Compa	act Edition 3.5
SDK Provided		Dll for Visual Stud	io .Net 2005/2008	
Multilanguage Support		n, French, Spanish, an, Simplified Chine		•
CPU Module				
СРИ		x86 CPU, 1 G	Hz, dual-core	
SDRAM		2 GB	DDR3	
MRAM , Non-volatile Memory	512 KI	3 (Retain memory v	without battery su	ipport)
Flash	32 GB			
EEPROM	16 KB			
CF Card	CF slot with one CF card (support up to 32 GB)			2 GB)
RTC (Real Time Clock)	Provide second, minute, hour, date, day of week, month, year			
64-bit Hardware Serial Number	Yes, for software copy protection			
Dual Watchdog Timers	Yes (0.8 second)			
Rotary Switch	Yes (0 to 9)			
DIP Switch	- Yes (8 bits)			
Programmable LED Indicator	2 (L1 and L2)			
VGA & Communication Ports				
VGA Resolution	1400x1050, 1024 x 768, 800 x 600 , 640 x 480			
Dual Ethernet Port	RJ-45 x 2, 10/100/1000 Base-T (Auto-negotiating, Auto MDI/MDI-X, LED indicators)			
USB 2.0	4			
COM 1	RS-232 (RxD, TxD and GND); non-isolated		nunication with hig ries modules in slo	

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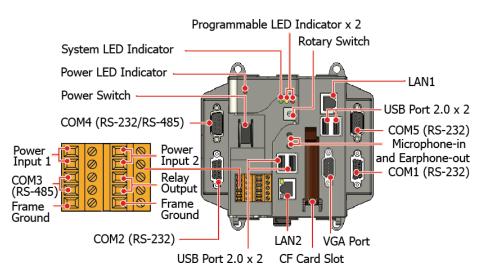
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COM 2	RS	5-232 (RxD, TxD and	d GND); non-isolat	ed
COM 3	RS-485 (Data+, Data-); 3000 V _{DC} isolated			
COM 4	RS-232/RS-485 (RxD, TxD, CTS, RTS and GND for RS-232, Data+ and Data- for RS-485); non-isolated			
COM 5	RS-232 (RxD, Tx	D, CTS, RTS, DSR, D	OTR, CD, RI and GN	D); non-isolated
Audio		Microphone-in a	nd Earphone-out	
I/O Expansion Slots				
Number of I/O slots	0	1	3	7
Supported I/O modules		I-8K and I-87K se	ries I/O Modules	
Mechanical				
Dimensions (W x L x H), unit: mm	137 x 132 x 125	169 x 132 x 125	231 x 132 x 125	355 x 132 x 125
Installation		DIN-Rail or W	/all Mounting	
Environmental				
Operating Temperature	-25 °C to +75 °C			
Storage Temperature	-30 °C to + 80 °C			
Ambient Relative Humidity	10 % to 90 % RH (non-condensing)			
Power				
Input Range		+10 V _{DC} t	o +30 V _{DC}	
Redundant Power Inputs	Yes, with one power relay (1 A @ 24 V_{DC}) for alarm			
Isolation		1	kV	
Capacity	2.2 A, 5 Vsupply to CPUand backplane,20W in total	3.7 A, 5 V supply to CPU and backplane, 1.3 A, 5 V supply to I/O expansion slots, 25 W in total	3.8 A, 5 V supply to CPU and backplane, 3.2 A, 5 V supply to I/O expansion slots, 30 W in total	4.0 A, 5 V supply to CPU and backplane, 3.0 A, 5 V supply to I/O expansion slots, 35 W in total
Consumption	12W (0.5 A @ 24 VDC)	16.6 W (0.69 A @ 24 VDC)	16.8 W (0.7 A @ 24 VDC)	18 W (0.75 A @ 24 VDC)

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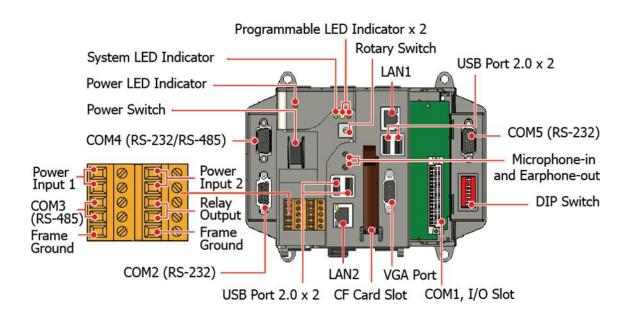
1.3. Overview

The XP-8000-CE6 is equipped with several interfaces and peripherals that can be integrated with external systems. Here is an overview of the components and its descriptions.

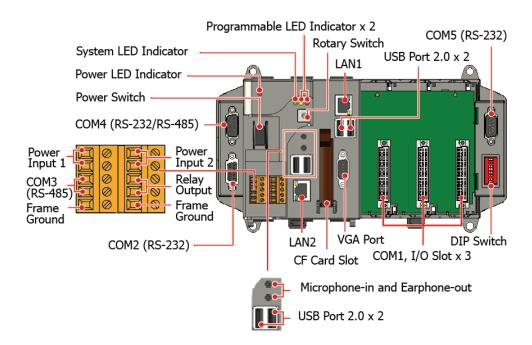


XP-8031-CE6

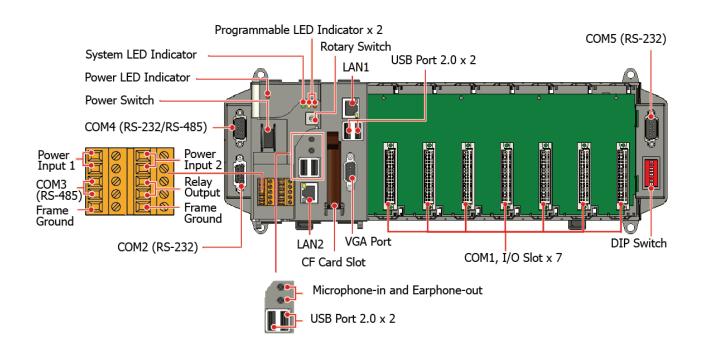
XP-8131-CE6



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XP-8731-CE6



The details of these items are as follows:

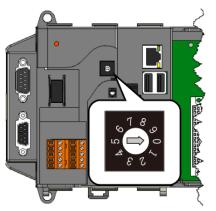
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LED Indicators

The XP-8000-CE6 has 4 LED indicators. The first is labeled PWR, located near the power switch and shows the power status. The three other are located next the rotary switch, the left one is labeled RUN and shows the operation status, the two other are denoted L1 and L2 and used for user defined. Programmable LED Indicator x 2 System LED Indicator Power LED Indicator

LED Indicator	Label	State (Color)	Meaning
Programmable LED Indicators	L1 and L2	-	Programmable LED indicators
System LED indicator	RUN	Orange	OS is running
Power LED Indicator	PWR	Green	Power 1 is on

Operating mode Selector

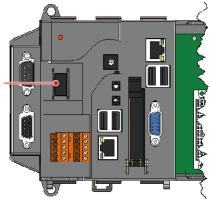


Rotary Switch is an operating mode selector. The XP-8000-CE6 has several operating modes, for more detailed information about these operating mode, please refer to "2.2 Configuring the Boot Mode"

Power Switch

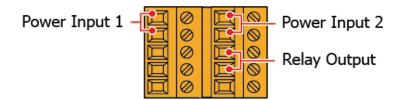
The power switch is a small switch that enables or disables power to electric circuits and loads in the XP-8000-CE6.

Power Switch -



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The XP-8000-CE6 has a 2-row 10-wire terminal block; there has 4-wire for redundant power inputs and 2-wire for relay output. The details of the redundant power are shown to the side.

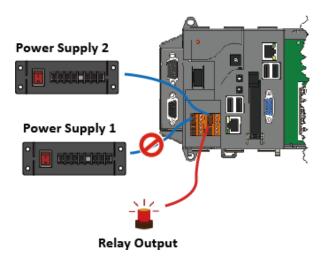


• Redundant Power

The XP-8000-CE6 provides redundant power that can keep the device running if a problem occurs in the power supply.

• Relay Output

The XP-8000-CE6 has a relay output that can be used to control a light, siren, or other low voltage device when an alarm occurs.



Communication Ports

The XP-8000-CE6 is equipped with several interfaces and peripherals that can be integrated with external systems.

• VGA Port

The VGA connector is a 3-row 15-pin connector that can be used to connect a monitor at a variety of supported VGA resolutions. and the output resolution covers, 800×600 , 1024×768 and 1400×1050 .



• CF slot

The CF slot comes with a free CF card that can be used to restore the system, and expand the memory up to 32 GB.

• Ethernet Ports (LAN1 and LAN2)

The XP-8000-CE6 has 2 Ethernet ports that can be used to connect the router to the Internet or to other devices.

Each Ethernet port has 2 LED indicators, which are used to indicate the network speed and Link/Acting, as described below.



LED Indicator	State (Color)	Meaning
1G	ON (Yellow)	Network Speed: 1 GB
	OFF	Network Speed: 10/100 MB
Link/Act	ON (Green)	The Link is active
	OFF	The Link is inactive
	Blinking(Green)	Network activity

• USB Ports (P1, P2, P3 and P4)

The XP-8000-CE6 has 4 USB 2.0 ports that can be used to connect the USB devices such as mouse, keyboard or an external USB hard drive.

• Microphone-in and Earphone-out

The XP-8000-CE6 has a microphone-in and an earphone-out that can be used to process the input and the output of sound.

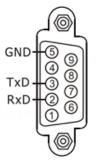
• COM1, Expansion I/O Slot (Except XP-8031-CE6)

The XP-8000-CE6 has 0/1/3/7 I/O slot(s) that can be used to integrate high performance parallel I/O modules (high profile I-8K Series) or serial I/O modules (high profile I-87K series).

• COM1 (RS-232) (for XP-8031-CE6 only)

The COM1 port is a 9-pins RS-232 connector. The details of the COM1 port specifications are shown to the side.

Port Type: Male Baud Rate: 115200, 57600, 38400, 19200, 9600, 4800, 2400, 1200 bps Data Bits: 5, 6, 7, 8 Parity: None, Even, Odd, Mark (Always 1), Space (Always 0) Stop Bits: 1, 2 FIFO: 128 bytes



• COM2 (RS-232)

The COM2 port is a 9-pins RS-232 connector. The details of the COM2 port specifications are shown to the side.

 Port Type: Female

 Baud Rate: 115200, 57600, 38400, 19200, 9600, 4800, 2400, 1200 bps

 Data Bits: 7, 8

 Parity: None, Even, Odd

 Stop Bits: 1

 FIFO: 1 byte

- COM3 (2-wire RS-485)
 - Port Type: Terminals

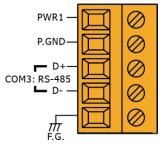
Baud Rate: 115200, 57600, 38400, 19200, 9600, 4800, 2400, 1200 bps

Data Bits: 5, 6, 7, 8

Parity: None, Even, Odd, Mark (Always 1), Space (Always 0)

Stop Bits: 1, 2

FIFO: 128 bytes



GNI

RxE

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• COM4 (RS-232/RS-485)

The COM4 port is a 9-pins RS-232/RS-485 connector. The details of the COM4 port specifications are shown to the side.

Port Type: Male

Baud Rate: 115200, 57600, 38400, 19200, 9600, 4800, 2400, 1200 bps

Data Bits: 5, 6, 7, 8

Parity: None, Even, Odd, Mark (Always 1), Space (Always 0)

COM4 can be configured as either RS-232 or RS-485, that only can select configuration depends on the pin connections as follows:

- RS-232 (RXD, TXD, CTS, RTS and GND)

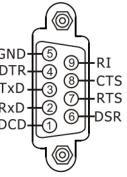
- RS-485 (Data+ and Data-)

There is no software configuration or hardware jumper needed.

• COM5 (RS-232)

The COM5 port is a 9-pins RS-232 connector. The details of the COM5 port specifications are shown to the side.

Port Type: Male Baud Rate: 115200, 57600, 38400, 19200, 9600, 4800, 2400, 1200 bps Data Bits: 5, 6, 7, 8 Parity: None, Even, Odd, Mark (Always 1), Space (Always 0) Stop Bits: 1, 2 FIFO: 16 bytes



GND

Data

Data-RTS

CTS

ļ

1. All COM ports of XP-8000-CE6 don't support Mark and Space parity settings.

2. The table below shows the data bit and their corresponding stop bit for COM2, COM3 COM4, and COM5

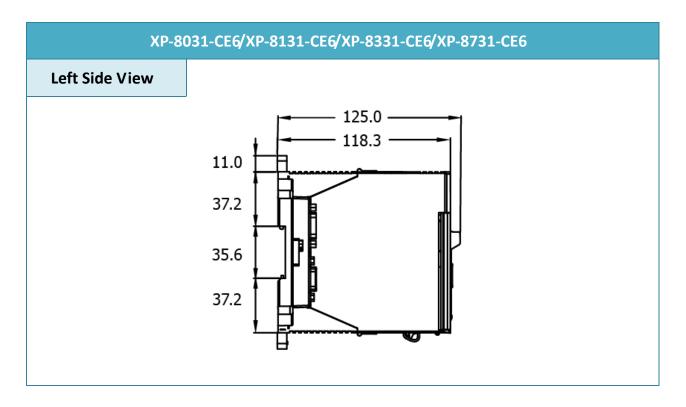
Word Length	Number of Stop Bits
5, 6, 7, 8	1
5	1.5
6, 7, 8	2

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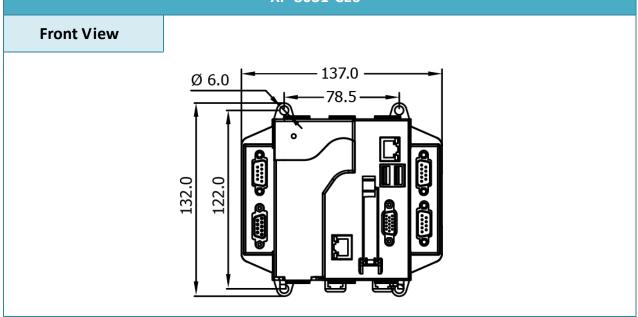
1.4. Dimensions

The diagrams below provide the dimensions of the XP-8000-CE6 to use in defining your enclosure specifications. Remember to leave room for potential expansion if you are using other components in your system.

The height dimension is the same for all XP-8000-CE6. The width depending on your choose of I/O expansion slots. All dimensions are in millimeters.

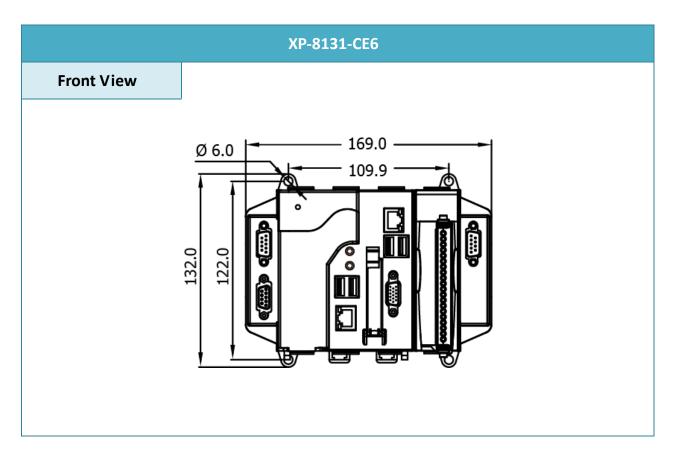


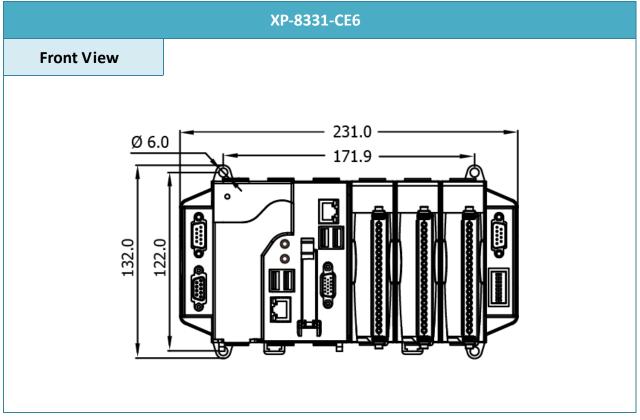
XP-8031-CE6



XP-8000-CE6 User Manual (for WinCE 6.0 Based XPAC), version 1.0.3

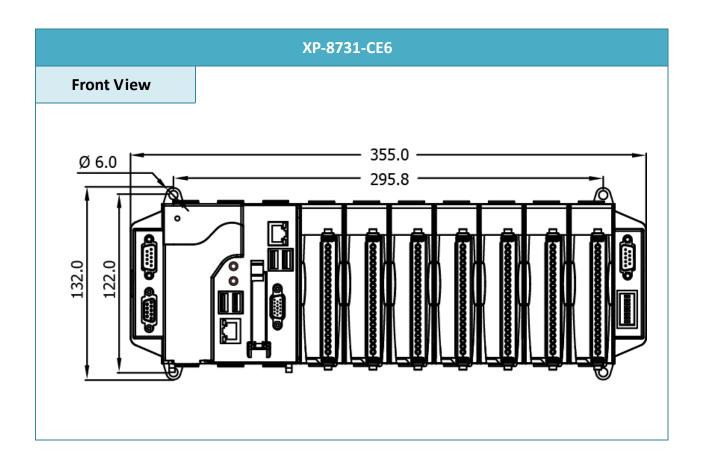
Page: 19





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1.5. Companion CD

This package comes with a CD that provides a collection of the software utility, documentation, drivers, demo program and application.

```
For XP-8x31-CE6:
 CD:\XP-8X3X-CE6\
          Backup
            The file packages for each release.
           demo
            The demo programs for examples of use in the application.
         Document
          The technical support documents for installation, operation, maintenance,
          development and application.
         OS_image
          -The related information for OS releases and technology.
          PC_Tools
            The tools and utilies for operation with PC.
          RESCUE
          -The files for system instllation.
        Rescue_Disk
         -The ghost files for OS backups and restores.
            SDK
            The sources for development and application in your application.
        System_Disk
```

- The tools and drivers related to System_Disk that install on XP-8000-CE6.

2. Getting Started

This chapter provides a guided tour of the XP-8000-CE6 installation and configuration that describes the steps needed to download, install, configure, and run the basic procedures for user working with the XP-8000-CE6 for the first time.

Before starting any task, please check the package contents. If any of the following package contents are missing or damaged, contact your dealer, distributor.



XP-8000-CE6



Quick Start Guide



CF Slot with one CF card





Screw Driver (1C016) 2.4 mm

2.1. Mounting the Hardware

Before you work with the XP-8000-CE6, you should have a basic understanding of hardware specification, such as the dimensions, the usable input-voltage range of the power supply, and the type of communication interfaces.

For more information about the hardware details, please refer to "1.2. Specifications"

For more information about the hardware dimensions, please refer to "1.4. Dimension"

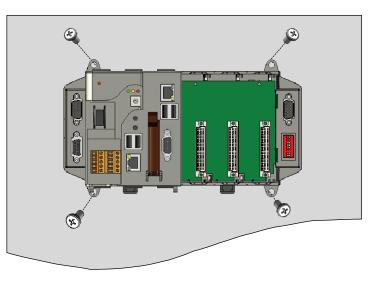
2.1.1. Mounting the XP-8000-CE6

The XP-8000-CE6 can be mounted either directly to a wall/panel, or onto a standard 35mm DIN rail.

Wall/Panel mounting

Step 1: Install the four mounting screws into the 4 keyhole mounting holes

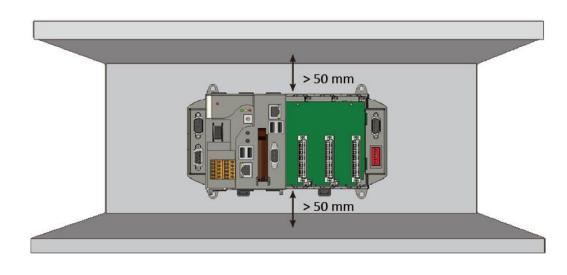
Step 2: Fasten the screws securely



Tips & Warnings



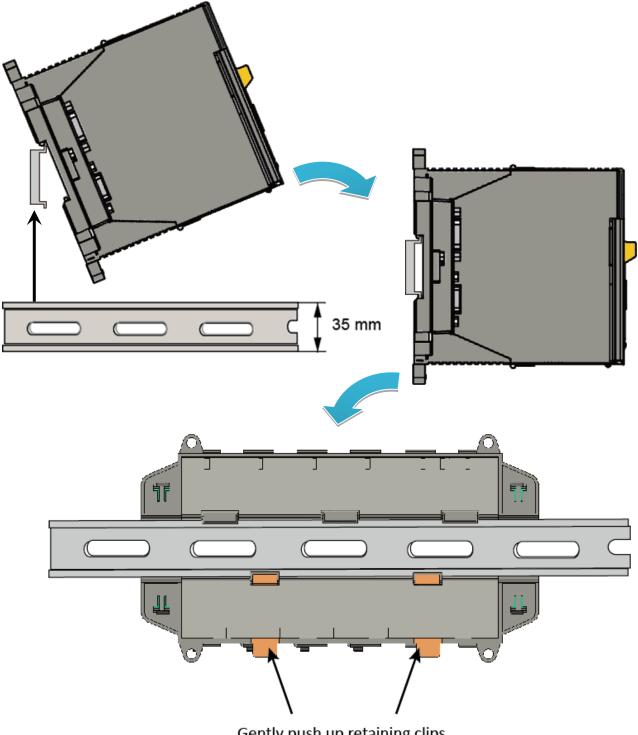
There must be a minimum clearance of 50mm between the XP-8000-CE6 and the top and bottom side of the enclosure panel.



XP-8000-CE6 User Manual (for WinCE 6.0 Based XPAC), version 1.0.3

Step 1: Hook upper tab over upper flange of DIN rail

Step 2: Tilt the module toward DIN rail until it snaps securely to DIN rail

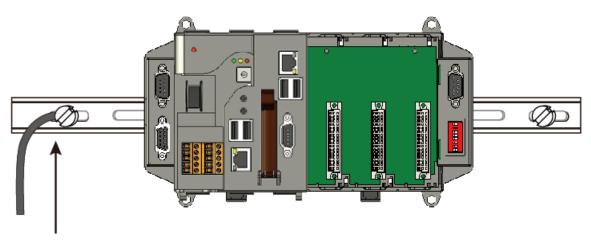


Gently push up retaining clips

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A good common ground reference (earth ground) is essential for proper operation of the XP-8000-CE6. One side of all control circuits, power circuits and the ground lead must be properly connected to earth ground by either installing a ground rod in close proximity to the enclosure or by connecting to the incoming power system ground. There must be a single-point ground (i.e. copper bus bar) for all devices in the enclosure that require an earth ground.



Connect the ground lead to the ground screw

2.1.2. Deploying a Basic XP-8000-CE6 System

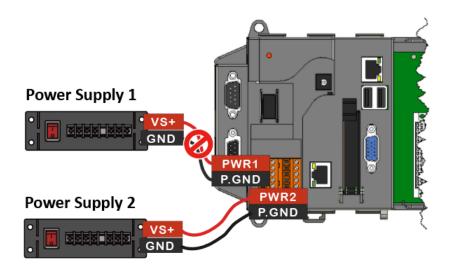
The XP-8000-CE6 provides a variety of communication interface to suit a range of application. Here is a simple application for using the XP-8000-CE6.

Step 1: Connect the positive terminal (+) of the power supply to the terminal <u>PWR1/2</u> and the negative terminal (-) of the power supply to the <u>P.GND</u>

Tips & Warnings



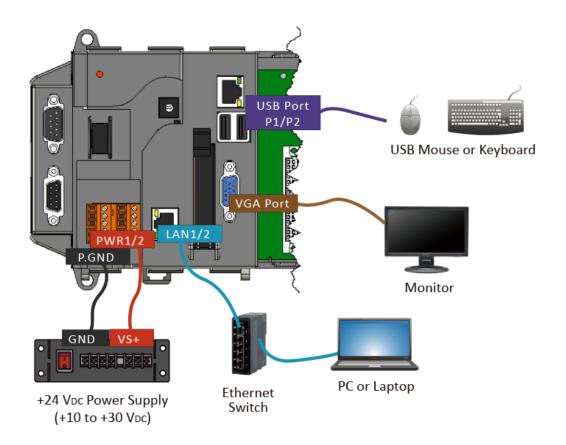
- 1. The input range of power supply is +10 to +30 V_{DC}.
- 2. The XP-8000-CE6 have two power inputs that can be connected simultaneously to the two independent power sources. If one power source fails, the other source takes over automatically. Redundant power inputs help assure non-stop operation of the XP-8000-CE6.



Step 2: Connect the USB mouse or the USB keyboard to the USB port

Step 3: Connect the monitor to the VGA port

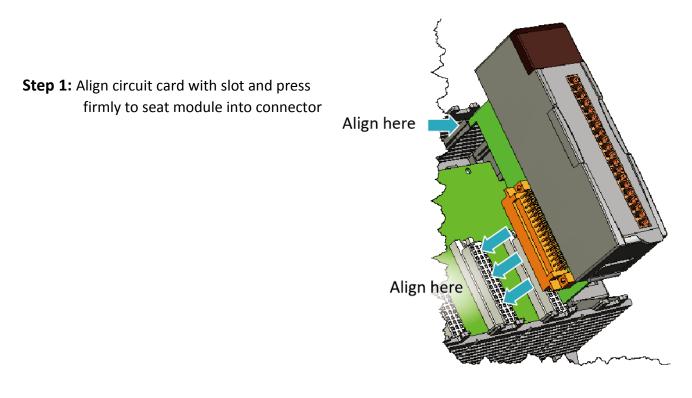
Step 4: Connect to PC or the laptop to the LAN port via an Ethernet switch



2.1.3. Inserting the I/O Modules

XP-8000-CE6 has 0/1/3/7 I/O expansion slot(s) and only supports I-8K and I-87K series I/O modules.

Before choosing the right I/O modules, you first need to know the I/O expansion capacities in order to choose the best expansion module for achieving maximal efficiency. For more information about the I/O expansion modules that are compatible with the XP-8000-CE6, please refer to: http://www.icpdas.com/root/product/solutions/remote_io/rs-485/i-8k_i-87k/i-8k_i-87k/selection.

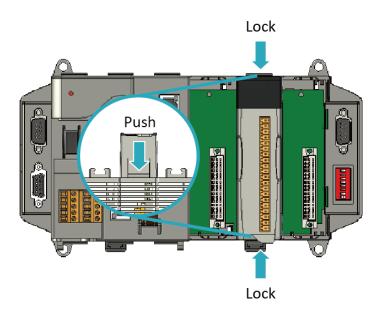


Tips & Warnings



It is recommended that the power to the XP-8000-CE6 is switched off when wring the I/O module which are plugging in the XP-8000-CE6 slots.

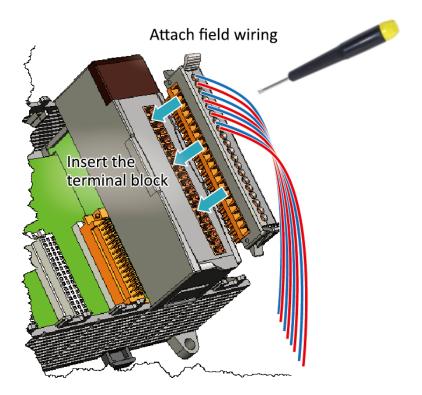
Step 2: Pull top and bottom locking tabs toward module face. Click indicates lock is engaged



Step 3: Attach field wiring using the terminal block, and then insert the terminal block

All I/O Web Page include the I/O module specifications, pin assignments and wiring connections. For example, Pin Assignments and Wiring connections for the I-87054W module are as follows:

http://www.icpdas.com/root/product/solutions/remote io/rs-485/i-8k i-87k/i-8705 4w.html

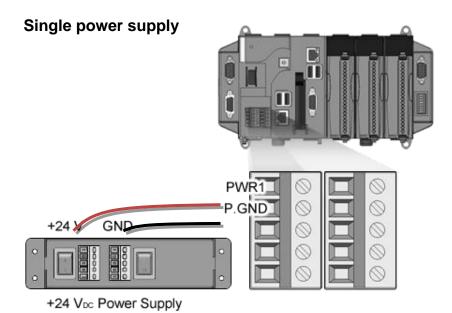


2.1.4. Powering up the XP-8000-CE6

The XP-8000-CE6 works with 24 VDC power and provides redundant power inputs with two terminal blocks for PWR1 and PWR2 input.

Step 1. Wire to power supply

There are two ways to supply power to the XP-8000-CE6.



Tips & Warnings



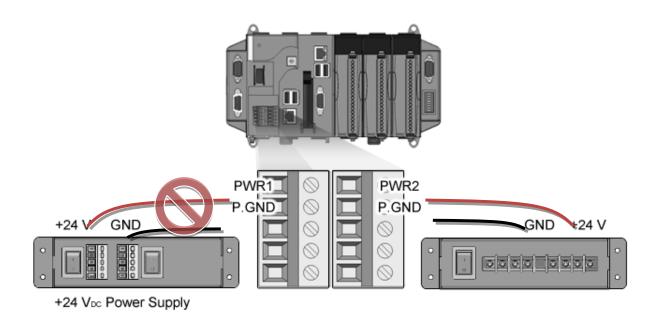
Once you wire and power up the power supply, confirm the PWR indicator (Red LED) on the CPU module is on.

If the indicator is not on, check the voltage on the terminal block with a voltage meter. If you measure 24 VDC on the terminal block, the CPU module may be defective. Please contact us.

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Redundant power supply

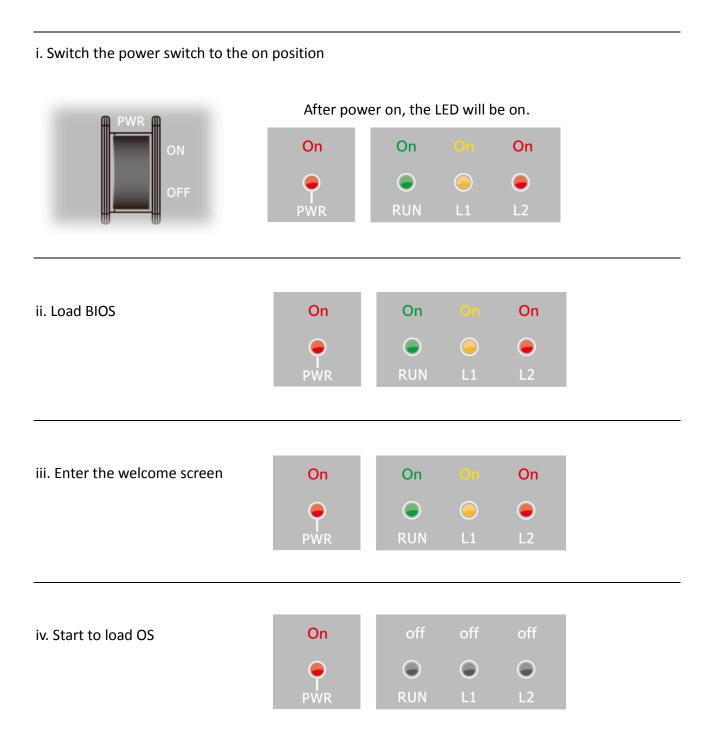
The redundant power can be used single and used two self-governed power to supply to the system, PWR1 and PWR2 input at the same time, when one power fails, the other power acts as a backup, and automatically supplies power needs.



XP-8000-CE6 User Manual (for WinCE 6.0 Based XPAC), version 1.0.3 Page: 33

Step 2. Check the boot status

When powering on the XP-8000-CE6, please note the four LED statues to make sure the boot is correct. The booting process takes about 40^{250} seconds.



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vi. The boot process has been finished successfully.

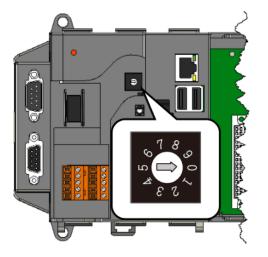
Tips & Warnings



After the boot process has been finished, the L1 and L2 LED indicators will be released. The user can use XPAC API to control them.

The LED light status of XP-8x31-CE6 is different in phase 1 and the status is same in the other phase.

2.2. Configuring the Boot Mode



The XP-8000-CE6 has several operating modes, which can be selected by a rotary switch.

The table below lists the operation modes available with the XP-8000.

Position	Operating Mode
0	Normal mode (Default)
1	Safe mode
2	(For user defined mode)
3	(For user defined mode)
4	(For user defined mode)
5	(For user defined mode)
6	(For user defined mode)
7	(For user defined mode)
8	DCON_CE
9	Remote Display mode

The following is a brief introduction of these modes.

Normal Mode (Default mode)

Normal mode is the default mode of operation and the one you will use most of the time. Use this mode for more tasks and configurations. Programs also are executed in this mode.

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Safe mode is a troubleshooting mode. The mode loads the minimum required device drivers and system services to boot the XP-8000-CE6.

If you have malicious software or a program caused the XP-8000-CE6 cannot be boot or run the normal mode, you can boot in safe mode to solve the problem.

DCON_CE

In this mode, the DCON_CE will be run automatically, and other settings are same as the normal mode.

For more information about the DCON CE, please refer to section 3.3. DCON CE.

Remote Display

In this mode, the cerdisp.exe will be run automatically, and other settings are same as the normal mode.

For more information about the Remote Display, please refer to section 2.5. Using Remote Display to Control the XP-8000-CE6 Remotely.

User Mode

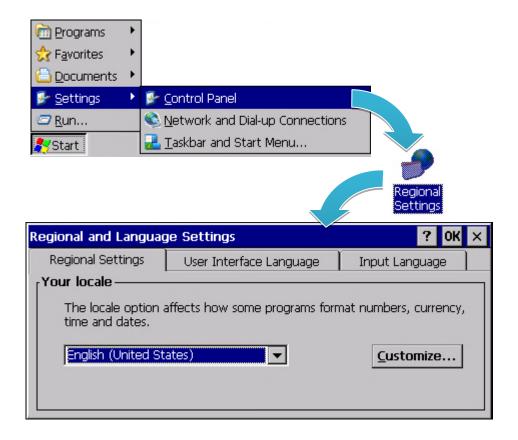
The positions 2~7 of rotary switch are reserved for user's applications.

When XP-8000-CE6 is boot with one of these positions, it is boot at normal mode. User's application can check the position of the rotary switch position to run at different mode.

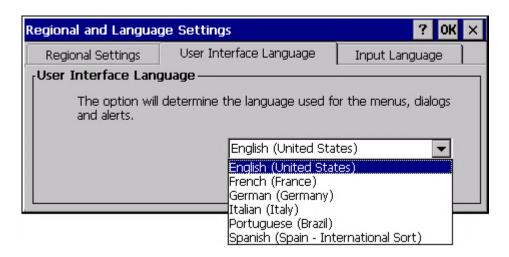
2.3. Changing the User Interface Language

The **Regional and Language Settings** is a Windows CE functionality that allows users to change the XP-8000-CE6 user interface with your native language.

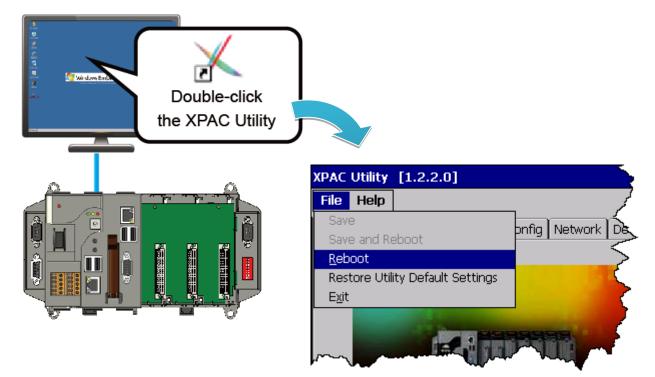
Step 1: Click Start menu, point to Settings, click Control Panel, and then click Regional Settings



Step 2: Click <u>User Interface Language</u> tab, choose to your local language, and then click <u>OK</u> button



Step 3: Double-click the <u>XPAC Utility</u> on the desktop, and then reboot the XP-8000-CE6 for changes to take effect



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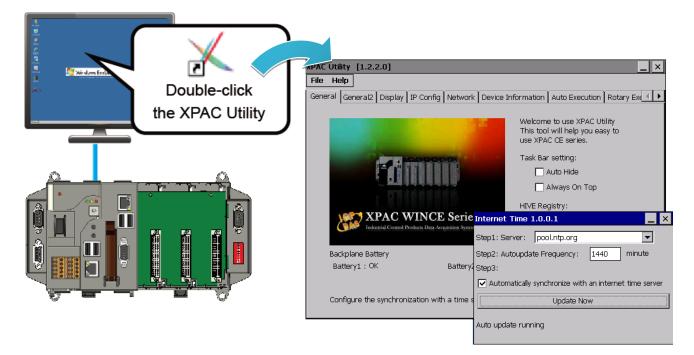
2.4. Using XPAC Utility to Manage the XP-8000

The XPAC Utility is a collection of the XP-8000-CE6 system tool that allows users to manage and configure the XP-8000-CE6 quickly and easily.

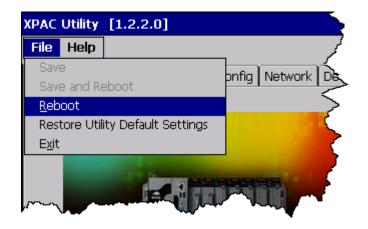
For more detailed information on XPAC Utility applications, please refer to "3.1. XPAC Utility"

Step 1: Double-click the XPAC Utility on the desktop

Step 2: Configure IP address (DHCP), FTP Server, Auto Execution files, etc.



Step 3: Reboot the XP-8000-CE6 for changes to take effect



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2.5. Using Remote Display to Control the XP-8000-CE6 Remotely

The "Remote Display" is a Windows CE functionality that allows XP-8000-CE6 to be controlled and monitored from a remote location. This tool is composed of two parts, a client and a server. The server is a program named cerdisp.exe running on XP-8000-CE6. The client is a PC-based program named cerhost.exe running on the PC.

Here are step by step instructions on how to use Remote Display to control XP-8000-CE6 remotely.

Step 1. On PC side, click client program, cerhost.exe

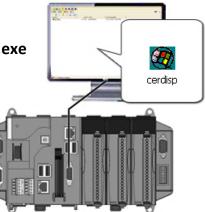
The Remote Display can be installed from the CD or by downloading the latest version from ICP DAS web site.

CD:\XP-8000-CE6\PC_Tools\Remote_Display\ ftp://ftp.icpdas.com/pub/cd/xp-8x3x-ce6/pc_tools/remote_display/



Step 2. On XPAC side, click server program, cerdisp.exe

The cerdisp.exe are pre-installed on the XP-8000-CE6, located under \System_Disk\Tools\Remote_Display



Step 3. Click OK button, click Connect button, type the IP address of the host PC

About CERDis	p.	
	Remote Control for Windows CE Version 2.03	
	CE Remote Display	?
OK	Settings Connect Hide Exit	
Connect		
Hostname:	0.1.0.118 Cancel	

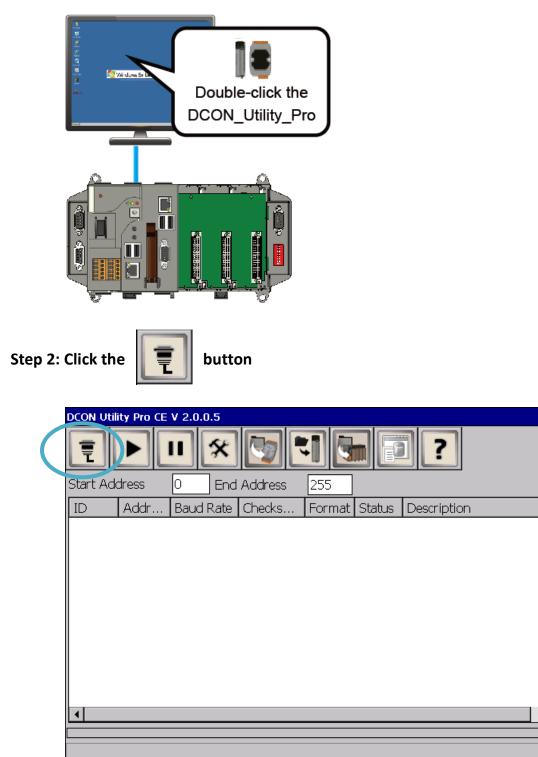
Step 4. The remote connection has been established

WindowsCE	
<u>File Zoom Iools H</u> elp	
<u>File Edit View G</u> o	
cerdisp	

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2.6. Using DCON Utility Pro Configure I/O Modules

DCON Utility Pro allows users to configure and manage the I/O modules via Ethernet or serial ports (RS-232/RS-485).



Step 1: Double-click the DCON_Utility_Pro on the desktop

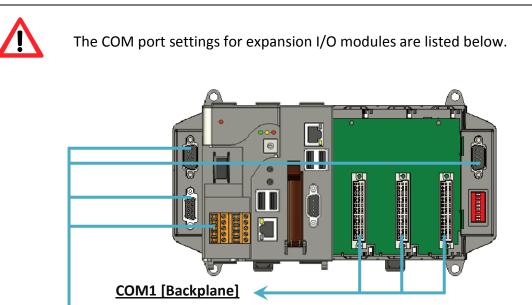
XP-8000-CE6 User Manual (for WinCE 6.0 Based XPAC), version 1.0.3

×

Step 3: Configure the communication settings

COM Port Option	×
COM Port	Timeout
COM1[Backplane]	300 ms
COM5	
COM4 e	ecksum Format
COM2 COM1[Backplane]	
	,2 🗌 E,8,1 🗌 O,8,1
OK Cancel	

Tips & Warnings



COM 2/3/4/5

For more information on these COM port selections, please refer to the specification of the pin assignments in section 1.3. Overview



Step 5: Click the module name to configure the I/O module

DCON Utility Pro CE V 2.0.0.5	×
	?
Start Address 1 End Address 8	
Addr Baud Rate Checks Format Status D	Pescription
	DCON]2*AO + 6*AI + 2*.
87028U 51013 5200 Disable N.8.1 [[8064 S ^{87026F} are[A106]	
	ost WDT About
Protocol(INIT*) DCON	
Address [00H]	
Baud Rate(INIT*) 115200	
Parity(INIT*) N,8,1-None Parity	
Checksum(INIT*) Disable	
Analog Format Engineering Form	
Fast Mode Normal Mode	
Sa	we Configurations to the File
Response Delay 0 ms Write	Configurations to I/O Module
Reverse DI State (INIT	
Exit	

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2.7. Using DCON_CE to Remote Configure the I/O Module

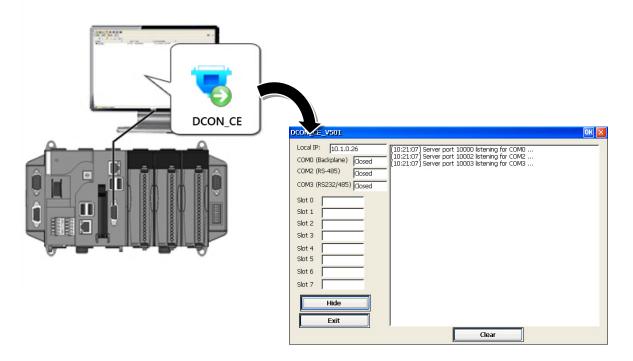
The DCON Utility is a client utility that runs on PC, and communicates with XP-8000-CE6 via DCON protocol. The DCON Utility allows users to remotely connect to I-7K and I-87K series I/O modules for management through the COM port and Ethernet port.

This tool is composed of two parts, a client and a server. The server is a program named DCON_CE_XP running on XP-8000-CE6. The client is a PC-based program named DCON Utility running on the PC.

Here are step by step instructions on how to use DCON Utility to configure the I/O modules.

Step 1. On XPAC side, click server program, DCON_CE

The DCON_CE_XP are pre-installed on the XP-8000-CE6, located under \System_Disk\Tools\DCON_CE

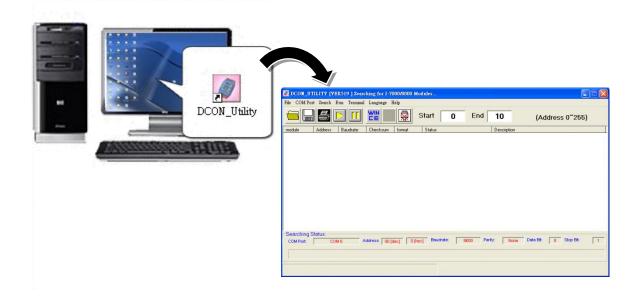


XP-8000-CE6 User Manual (for WinCE 6.0 Based XPAC), version 1.0.3

Step 2. On PC side, Run the DCON Utility

The DCON Utility can be installed from the CD that was provided with the package or by downloading the latest version from ICP DAS web site.

CD:\XP-8000-CE6\PC_Tools\DCON_Utility\ ftp://ftp.icpdas.com/pub/cd/xp-8x3x-ce6/pc_tools/dcon_utility/



Step 3. Click WINCE common button

the second	1311 Descharg for 1-20					064
	TI Lagar D	(mart)	0	End	10	(Address 0"255)
nodale Addess	tanter Anton	hend Status			Description.	1
	and the second second					
	WIN					
	CE					
Seatting Status		5				
008794 C08	Address [20 ja	al Land, pa	- T	10 A	dy [] have	Date of the B

XP-8000-CE6 User Manual (for WinCE 6.0 Based XPAC), version 1.0.3 Page: 47

Step 4. Click XPAC_CE tab, type the IP address of the XPAC, and then click Connect to XPAC_CE button

WINCE device Connection :	
WinPAC-8000	WinCon-8000 (DCON_CE_V20X)
WinCon-8000 (DCON_CE_V21X) XPAC_CE
Please confirm PAC Model before con • COM 1(Backplane COM Port) • COM 2 (Console Port) • COM 3 (RS-485)	nnect to PAC
○ COM 4 (RS232/RS-485) ○ COM 5 (RS232)	
IP: 10.1.0.26 About download DCON_CE_V60X fc ftp://ftp.icpdas.com/pub/cd/xpac/winc	

Tips & Warnings



If DCON Utility cannot connect to XP-8000-CE6, the Ethernet connection between Host PC and XP-8000-CE6 might be rejected by fire wall, please contact with MIS to open the Ethernet port.

XP-8000-CE6 User Manual (for WinCE 6.0 Based XPAC), version 1.0.3

Step 5. Click on the module name from the list to configure the settings form

DCON_UTILITY	_VER[514]	The I/O Mod	ules Found			
File COM Port	Search Ri	in Terminal	l Language	e Help		
		💥 🙀 Sta	art O	End 10	(Address 0~255)	
XPAC_CE 1(1) 960 XXXXX S0 960 XXXXX S1 960 87017 S2 960 87024 S3 960	0 Disable 0 Disable 0 Disable 0 Disable	n format St N,8,1	atus		odule] or [None] odule] or [None]	
xxxxx S4 960 xxxxx S5 960 xxxxx S6 960	Configu)17 Module	Version: A600		×
Searching Status:	- Configuration Protocol: Address[dec]: Baudrate: Checksum Dataformat: Input range: Filter Setting: Mode:	Setting: DCDN 1 3600 Disable Engineering (08) +7-10 M 60Hz Normal Mode		Channel Enable/Disc ↓ CH:0 +000.000 ↓ CH:1 +000.000 ↓ CH:2 -000.004 ↓ CH:3 -000.008 Select All	Able Setting: Runnin Image: CH:4 000.009 Image: CH:5 000.013 Image: CH:6 000.016 Image: CH:7 000.001 Image: CH:7 000.001 Clear All Exit	g!
	Parity Option:	formation	Setting	Modbus Response De	lay Time	

Tips & Warnings

If there is no operation within 30 seconds, the connection will automatically close to release the COM port occupied.



XP-8000-CE6 User Manual (for WinCE 6.0 Based XPAC), version 1.0.3

3. Tools and Tasks

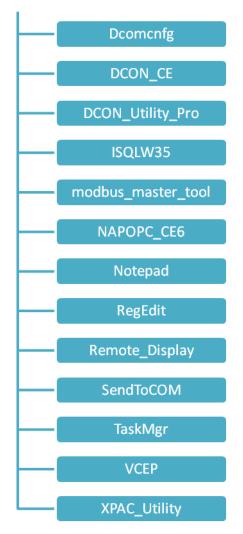
This chapter provides a brief introduction of the XP-8000-CE6 service tools and its benefits.

There are several tools and utilities built-in and designed for use with XP-80006. Some of these are pre-installed on XP-8000-CE6 and can work directly on XP-8000, and some of these are supporting tools and can help you to manage the XP-8000-CE6 remotely on a PC.

The following tools are pre-installed on XP-8000-CE6 and can work directly on XP-8000-CE6 that can be found on the CD that was provided with the package or by downloading the latest version from ICP DAS web site.

For XP-8x31-CE6:

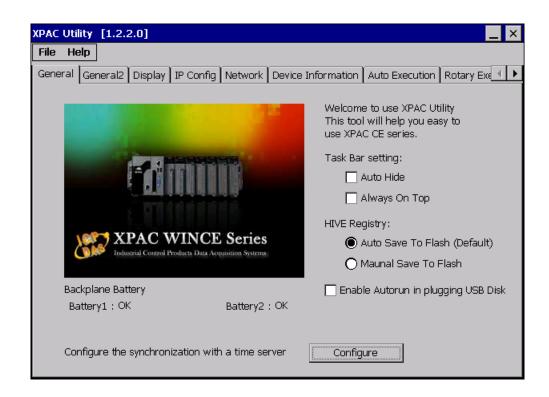
CD:\XP-8X3X-CE6\System_Disk\Tools\ http://ftp.icpdas.com/pub/cd/xp-8x3x-ce6/system_disk/tools/



XP-8000-CE6 User Manual (for WinCE 6.0 Based XPAC), version 1.0.3

3.1. XPAC Utility

XPAC Utility is a collection of software applications that enable management and configuration of XP-8000-CE6 system and features.



The XPAC Utility includes the following menu bars and property tabs. All of these functions will be explained later.

Menu bar	Property Tab
File	General
Help	General2
	Display
	IP Config
	Network
	Device Information
	Auto Execution
	Rotary Execution
	Multi-IO Module
	Backplane Compatibility

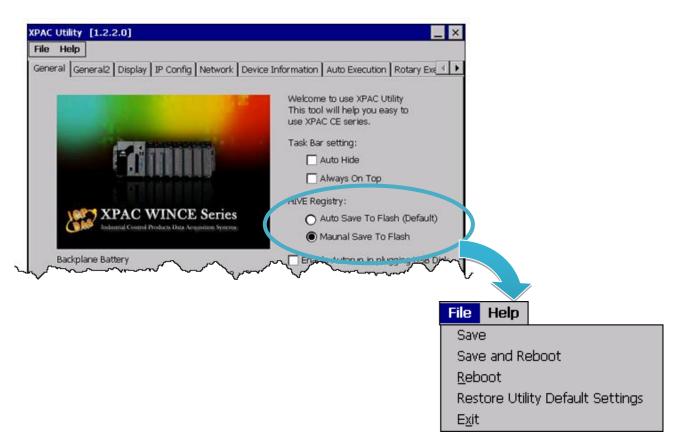
XP-8000-CE6 User Manual (for WinCE 6.0 Based XPAC), version 1.0.3

3.1.1. Menu Bar – File

By default, the available default items are shown to the right.

File	Help
Savi	8
Savi	e and Reboot
<u>R</u> eb	oot
Rest	tore Utility Default Settings
E <u>x</u> it	

All menu items will be enabled when the Manual Save To Flash option is selected.



The menus use to	How to use
Save	By default, this item is disabled until the Manual Save To Flash
	option is selected. Saves the changes.
	By default, this item is disabled until the Manual Save To Flash
Save and Reboot	option is selected. Saves the changes and reboots the
	XP-8000-CE6.
Reboot	Restarts the XP-8000-CE6.
Restore Utility Default Settings	Restore the XP-8000-CE6 to default settings.
Exit	Exits the XPAC Utility.

XP-8000-CE6 User Manual (for WinCE 6.0 Based XPAC), version 1.0.3

3.1.2. Menu Bar – Help



The menus use to	How to use
About	Displays a dialog box with information about XPAC Utility,
	including the current version and copyright information.

3.1.3. Property Tab - General

The **General** tab provides functions to configure the task bar, check the status of the battery..., etc.



The tab use to	How to use		
Lock or Auto-Hide	Auto-Hide the taskbar:		
the taskbar	Select the Auto Hide check box.		
	Lock the taskbar:		
	Select the Always On Top check box.		
Auto save or	Auto save to flash:		
manual save to	Select the Auto Save To Flash (Default) check box.		
flash	Any changes made to the XP-8000-CE6 will be saved and only take effect		
	after the XP-8000-CE6 reboots.		
	Manual save to flash:		
	Select the Manual Save to Flash File Help		
	check box. Save		
	Any changes made to the Save and Reboot		
	XP-8000-CE6 will be saved by Restore Utility Default Settings		
	clicking the Save and Reboot from		
	File menu.		

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The tab use to	How to use
Enable USB autorun	Click to check the check box for Enable Autorun in plugging USB
	Disk.
Monitor the information of	See the Battery1 and Battery2 field that displays the battery
battery 1 and battery 2	status.
Automatic synchronization	Refer to the Appendix A.2. How to configure the service for
of system time	automatically synchronizing with the internet time server.

3.1.4. Property Tab – General2

The **General2** tab provides functions to specify the name of the USB disk.



The tab use to	How to use
Specify the name of the USB disk	Enter a name in the USB Hard Disk: field, and then click
specify the name of the OSB disk	the Set button.

3.1.5. Property Tab – Display

The Display tab provides fun	ctions to configure the	monitor settings.
------------------------------	-------------------------	-------------------

XPAC Utility [1.2.7.3]	
File Help	
General General2 Display IP Config Network De	evice Information Auto Execution Rotary Exe
Screen resolution: Less More 1024 by 768 pixels	Screen refresh rate:
Display depth () 16 Bit () 32 Bit	Apply

The tab use to	How to use
Adjust the screen resolution	Move the slider to the left to decrease the resolution or move the slider to the right to increase the resolution, and then click the Apply button.
Change the screen	Select the desired refresh rate from the Screen refresh rate
refresh rate	drop-down list, and then click the Apply button.
Display depth	Select the "16 bit" or "32 bit" to setting the display depth, and then
	click the Apply button.
	The display depth default setting is "16 bit".

XP-8000-CE6 User Manual (for WinCE 6.0 Based XPAC), version 1.0.3

3.1.6. Property Tab – IP Config

The **IP Config** tab provides functions to configure either DHCP (Roaming) or manually configured (Static) network settings and to monitor the MAC address. Generally, DHCP is the default settings, but if you don't have a DHCP server, you must configure the network settings by using manual configuration.

XPAC Utility [1.2.2.	.0]				_ ×
File Help	Display IP Config Network	Devi	-e Information	Auto Execution 15	Potary Eve 🌗
j General j Generalz (1		TDevi	e information	Auto Execution F	totary ∈Xt <u>il "</u>
LAN 1:			LAN 2:		
MAC Address	: 00-0D-E0-30-25-32		MAC Address:	: 00-0D-E0-30-25-	32
Use DHCP	to get IP address		OUse DHCP	to get IP address	
🔿 Assign IP a	address		🔿 Assign IP a	address	
IP Address:	10.1.0.49		IP Address:		
Mask:	255.255.0.0		Mask:		
Gateway:	10.1.0.254		Gateway:		
DNS Server:	 [10.0.0.3		DNS Server:		
	Apply			Appl	

The tab use to	How to use
Set the network settings	Use DHCP to get IP address:
	Select the Use DHCP to get IP address option, and then click the Apply
	button.
	Assign an IP address:
	Select the Assign IP address option, and then click the Apply button.

3.1.7. Property Tab – Network

The **Network** tab comprises three tabs – Access, Login and File Server Settings.

Access

The **Access** tab provides functions to enable/disable the FTP access, enable/disable anonymous FTP access, and configure the FTP and HTTP directory path.

XPAC Utility [1	.2.2.0]
File Help	
General Genera	al2 Display IP Config Network Device Information Auto Execution Rotary Exe 🜗
Access Login	File Server Settings
	FTP Enable Disable
	Allow Anonymous 💿 Enable 🔿 Disable
	Set FTP default download directory to:
	\Temp Apply
_	
	Set HTTP document root directory to:
	\System_Disk\ICPDAS\www\ Apply

The tab use to	How to use
	Enable the FTP access:
	Select the Enable check box in the FTP field, and then click the
Enable or disable the	Apply button.
FTP access	Disable the FTP access:
	Select the Disable check box in the FTP field, and then click the
	Apply button.

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The tab use to	How to use
	Enable anonymous FTP access:
Enable or disable	Select the Enable check box in the Allow Anonymous field, and then
anonymous FTP	click the Apply button.
	Disable anonymous FTP access:
access	Select the Disable check box in the Allow Anonymous field, and then
	click the Apply button.
Set the FTP	Enter a new path in the Set FTP default download directory to: field,
directory path	and then click the Apply button.
Set the HTTP	Enter a new path in the Set HTTP document root directory to: field,
directory path	and then click the Apply button.

Login

The Login tab provides functions to maintain the FTP accounts.

XPAC Utility [1.2.2.0]
File Help
General] General2 [Display] IP Config [Network] Device Information] Auto Execution] Rotary Exe 💷 🕨
Access Login File Server Settings
Access Login File Server Settings User Name Password admin **** User name Password admin *****

The tab use to	How to use
Maintain the FTP	Refer to the Appendix D.1 How to add a user account to remote
accounts	login the XP-8000-CE6 from PC.

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The File Server Settings tab provides functions to set the SMB server.

XPAC Utility [1.2.2.0]	
File Help	
General General2 Display IP Config N	etwork Device Information Auto Execution Rotary Exe 🚺
Access Login File Server Settings	
You can create a networked file server a retrieve files, and makes use of the Inte client devices and other shared equipme	rnet for communication between
	a different device name)
	XPACL01
	The path to be shared
	\Temp
	Configure the file server to use LANx as the network adapter
	PCIVFETCE5B1
	Enable all authentication on the file server. The file server will not be accessible to all users on the network and the "admin" as the user to be allowed access to the file server
	Setting
	Help

The tab use to	How to use
Set the SMB server	Click the Settings button to set the SMB server path.

3.1.8. Property Tab – Device Information

The **Device Information** tab provides functions to monitor necessary system information of the XP-8000. The information is the most important note of version control for upgrading system.

eneral General2 Display	IP Config Network Device Ir	nformation Auto Execution Rotar	y Exe <u>∢</u>
Slot 1:	CPU Type:	R3600	
Slot 2:	Serial Number:	01-BD-FA-C6-19-00-00-9F	
Slot 3:	Backplane Version:	1.0.13.0	
Slot 4:	CPU Version:	1.0.0.0	
Slot 5:	OS Version:	1.2.0.0	
Slot 6:	.NET CF Version:	3.5.7338.00	
Slot 7:	SQL CE Version:	3.5.8080.0	
	XPacSDK Version:	4.4.1.0	

3.1.9. Property Tab – Auto Execution

The **Auto Execution** tab provides functions to configure programs running at XP-8000-CE6 startup, it allows users to configure ten execute files at most.

Tips & Warnings



The specific extensions are .exe and .bat, and they are executed in order of program 1, program 2, etc.

XPA	C Utility [1.2.2.0]			_ ×
File	e ['] Help			
Ger	neral General2 Displa	ay IP Config	Network Device Information Auto Execution	Rotary Exe 🔨 🕨
	_	Program 1:	\System_Disk\Tools\Remote_Display\cerdisp	Browse
		Program 2:	\System_Disk\Tools\VCEP\v_remote.exe	Browse
		Program 3:		Browse
	_	Program 4:		Browse
	At most 10 programs	Program 5:		Browse
	can be specified to execute automatically	Program 6:		Browse
	at system startup.	Program 7:		Browse
		Program 8:		Browse
		Program 9:		Browse
		Program10:		Browse
			Clean	oly

The tab use to	How to use
Configure programs	Click the Browse button to select the execute file which you want,
running at startup	and then click the Apply button.

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3.1.10. Property Tab – Rotary Execution

The Rotary Execution tab provides function to decide which mode XP-8000-CE6 executes at startup.

XPAC Utility [1.2.2.0]			_ ×
File Help			
General2 Display IP Co	nfig Network Devic	ce Information Auto Execution Rotary Exe	ecution 🔥 া 🕨
	Rotary Switch 0	Normal Mode	Browse
6789	Rotary Switch 1:	Safe Mode	Browse
SA CO	Rotary Switch 2:		Browse
52	Rotary Switch 3:		Browse
	Rotary Switch 4:		Browse
	Rotary Switch 5:		Browse
	Rotary Switch 6:		Browse
	Rotary Switch 7:		Browse
	Rotary Switch 8:	\System_Disk\Tools\DCON_CE\DCON_CE	Browse
	Rotary Switch 9:	\System_Disk\Tools\Remote_Display\cer	Browse
		Арр	ly

The tab use to	How to use		
Start XP-8000-CE6 in normal mode	Turn the rotary switch in position 0 and reboot the		
Start XP-8000-CE0 III Hormai mode	XP-8000-CE6. By default, this item is disabled.		
Start XP-8000-CE6 in safe mode	Turn the rotary switch in position 1 and reboot the		
Start XP-8000-CE0 III sale mode	XP-8000-CE6. By default, this item is disabled.		
	Click the Browse button to select the execute file		
Start XP-8000-CE6 in normal mode and	which you want, click the Apply button, and then		
auto execute the user-specified program	turn the rotary switch in position 2/3/4/5/6/7 and		
	reboot the XP-8000-CE6.		
Start XP-8000-CE6 in normal mode and	Turn the rotary switch in position 8 and reboot the		
auto execute the DCON CE utility	XP-8000-CE6. By default, this item is disabled.		
Start XP-8000-CE6 in normal mode and	Turn the rotary switch in position 9 and reboot the		
auto execute the Remote Display server	XP-8000-CE6. By default, this item is disabled.		

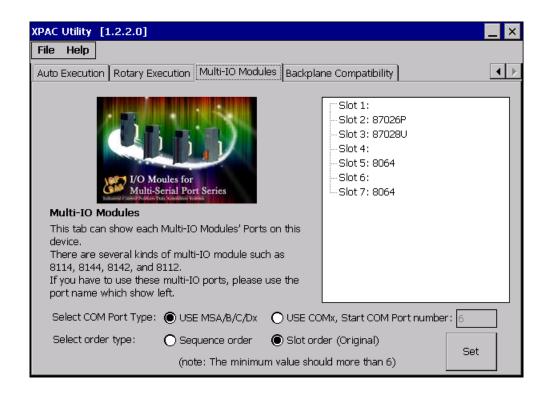
XP-8000-CE6 User Manual (for WinCE 6.0 Based XPAC), version 1.0.3

3.1.11. Property Tab – Multi-IO Modules

The Multi-serial port provides functions for installation of the RS-232/RS-422/RS-485 communication module driver.

The table below shows the expansion RS-232/RS-422/RS-485 communication modules that are compatible with the XP-8000-CE6.

Item	RS-232	RS-422/RS-485	Isolation	Connector
I-8112iW	2	-	2500 Vrms	DB-9 x 2
I-8114W	4	-	-	DB-37 x 1
I-8114iW	4	-	2500 Vrms	DB-37 x 1
I-8142iW	-	2	2500 Vrms	Terminator block x 1
I-8144iW	-	4	2500 Vrms	Terminator block x 1



The tab use to	How to use
	Select the name type and order type from the
Set the port name	Selection COM Port Type and Select order type
	options, and then click the Set button.

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3.2. DCON Utility Pro

DCON Utility Pro enables users easily to configure and manage the I/O modules via Ethernet or serial ports (RS-232/RS-485).

For more information on how to use DCON Utility Pro to configure I/O modules, please refer to 2.6. Using DCON Utility Pro to Configure I/O Modules

For more detailed information on DCON Utility application, please refer to: http://www.icpdas.com/root/product/solutions/software/utilities/dcon_utility_pro.html

Ē	Utility Pro CE	V 2.0.0.4	iress [4			?		×	
ID	Addr	Baud Rate Ch	erminal Com	mand Line 1	rool				×
		E	COM Port Baud Rate Checksum Timeout	COM0[B 115200 Disable 100		rotocol ormat lot elect ID	DCON N,8,1-None Pa Slot 0 💌	arity V	Send
	Tool for Command	d Data Logger					×]	
		ata Logger About						l	
	COM Port	COM Port	СОМВ	-	Load				
	Start Search	Protocol	DCON	-	Remove				
		Baud Rate	115200	-					
		Data Format Checksum	N,8,1	-	Add >>				
		Slot	Disable	▼	Modify				
		Timeout (ms)	200(ms)						
		Delay for Next (ms)	200(ms)	- -	Save				
		Command Reference			T				
		Send Command	\$01M					r_report\	
		Compared Response	Input Comp	nared Data					
		Compare Mode	Full Match						
								1	

3.3. DCON_CE

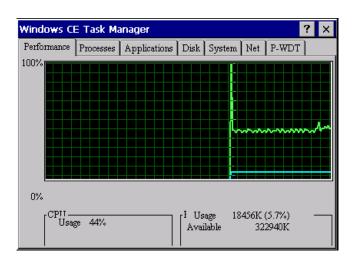
The DCON_CE is a server program based that runs on XP-8000-CE6, and communicates with PC via DCON protocol.

The DCON Utility is a client utility that runs on PC, and communicates with XP-8000-CE6 via DCON protocol. The DCON Utility allows users to remotely connect to I-7K and I-87K series I/O modules for management through the COM port and Ethernet port.

This tool is composed of two parts, a client and a server. The server is a program named DCON_CE_XP running on XP-8000-CE6. The client is a PC-based program named DCON Utility running on the PC.

3.4. TaskMgr

The TaskMgr is a Windows CE application, which provides real time info on all processes and threads including System threads, similar in appearance to the Windows Task Manager.



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3.5. VCEP

ICP DAS VCEP is designed for managing your XP-8000-CE6 anywhere. No matter where you are, ICP DAS VCEP provides a convenient environment on the Desktop PC and lets you control your XP-8000-CE6 remotely.

Virtual CE File Hel	
	Virtual CE 5
	Disconnected
	Ready
	Primary IP = 10.1.0.46 License Free Version
	Video=GDI

ICP DAS VCEP is composed of two main components: The **Server** which runs on XP-8000-CE6 and the **Client** which runs on a Desktop PC.

Once a connection is established between the client and server (initiated by the client), the client will periodically send requests for screen updates and send mouse/key click information to the server to simulate.

Each video frame is inter-compressed against the previous frame and then intra-compressed with a modified LZW scheme to minimize the amount of data transmitted from server to client.

For more detailed information on VCEP application, please refer to http://www.icpdas.com/root/product/solutions/software/utilities/vecp/vecp.html

3.6. Remote_Display

The **Remote Display** allows XP-8000-CE6 to be controlled and monitored from a remote location.

This tool is composed of two parts, a client and a server. The server is a program named cerdisp.exe running on XP-8000-CE6. The client is a PC-based program named cerhost.exe running on the PC.

Once a connection is established between the client and server (initiated by the client), the client will periodically send requests for screen updates and send mouse/key click information to the server to simulate.

3.7. SendToCOM

The **SendToCOM** uses the serial port to communicate with expansion module. To use the SendToCOM, you can send data to expansion module through the serial port, and receive data from other device through the serial port.

For more information about these commands for communicating with expansion module, please refer to:

http://www.icpdas.com/root/product/solutions/remote io/rs-485/i-8k i-87k/i-8k i-87k selection. html#b

ICPDAS Send to COM V1.0.4 2011/2/23			×
Connection Status COM Port Baudrate Data Bit Parity Stop Bit	Slot	Open	
COM Port Baudrate Data Bit Parity Stop Bit COM2 Image: 115200 8 Image: 0-None Parity 1 Image: 1		Close	
	string		+CRC
		String Send	Polling
Commands Responses Current Packet Size (bytes)	Auto ser	nd Internal (ms) 50	
Total Packet Bytes 0 Total Packet Bytes 0	St	art Stop	Set
Packet Quantity send 0 Packet Quantity received 0	Start Time	Start Time	
Clear	Stop Time	Stop Time	
<u> </u>			
· ·			
			Clear
			Cical

3.8. RegEdit

The **RegEdit** provides a hierarchical representation of the registry on a target computer, similar in appearance to the Windows Registry Editor. The standard registry roots are represented; you can add keys beneath a root to point to existing registry keys, or you can add your own keys. Values can be changed for existing keys, or added for new keys, and default keys can be specified.

Registry Editor Version 1.2.2				_ 🗗 ×
File Help				
HKEY_CLASSES_ROOT	Name	Туре	Data	
B HKEY_CURRENT_USER B HKEY_LOCAL_MACHINE				
HKEY_USERS				

3.9. ISQLW35

The **ISQLW35** is a Windows Embedded Compact 6 functionality that implements SQL Server Compact 3.5 Query.

🍄 Objects 🧮 SQL 📰 Grid 📳 Notes	
Databases	
Tools SQL 🚯 🖯 🙌	×

3.10. INotepad

The **INotepad** is a common text-only editor. The resulting files have no format tags or styles.

INote	pad			
File	Edit	Format	Help	
I				A
				Input Panel
				Esc 1 2 3 4 5 6 7 8 9 0 - = ● Tab q w e r t y u i o p [1
				[CAP]a]s]d]f]g]h]j]k]l];[']
				Shift z x c v b n m , / i ↔ Cti]áü] ` \ \ ↓ ↑ [←]→

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4. Your First XP-8000-CE6 Program

This chapter provides a guided tour that describes the steps needed to set-up a development environment, download, install, configure for user programming with XP-8000-CE6.

4.1. Setting up the Development Environment

Before writing your first program, ensure that you have the necessary development tool and the corresponding SDKs are installed on your system.

4.1.1. Preparing the Development Tools

XP-8000-CE6 has .NET Compact Framework 3.5 installed. Visual Studio takes full advantage of the .NET Compact Framework, which uses public Internet standards to enable integration with new and existing applications running on any platform.

Supported languages include

- Visual Basic.NET
- Visual C#
- Visual C++

Tips & Warnings



- 1. There is no support for development of both managed and unmanaged code on XP-8000-CE6 platform in VS2010/VS2012.
- 2. WinCE-based platform development is only supported in Visual studio Professional edition or better, no Express or Standard edition.

The table below provides a summary of the supported development tools and languages required for developing XP-8000-CE6 applications.

Development Too	Language	Visual Basic .Net	Visual C#	Visual C++
Visual Studio	Any version except Professional			
2005 or earlier	Professional	V	V	V
Visual Studio	Any version except Professional			
2008	Professional	V	v	V
Visual Studio	Any version except Professional			
2010 or later	Professional			

V: Supported, --: Unsupported

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4.1.2. Installing the XP-8000-CE6 SDK

The XP-8000-CE6 SDK offers several APIs for customizing the standard features and integrating with other applications, devices and services.

Step 1: Get the latest version of the XP-8000-CE6 SDK

The XP-8000-CE6 SDK can be found from the CD that was provided with the package or by downloading the latest version from ICP DAS web site. CD:\XP-8X3X-CE6\SDK\PlatformSDK\ <u>http://ftp.icpdas.com/pub/cd/xp-8x3x-ce6/sdk/platformsdk/</u>

File name: PACSDK_CE_n.n.n_Vxxxx.msi

- n.n.n : platform sdk version number
- xxxx: 2005 indicates VS2005, 2008 indicates VS2008

Step 2: Execute the PACSDK_CE_n.n.n_Vxxxx.msi

Follow the prompts until the installation process is complete.

4.2. First XP-8000-CE6 Program in VB.NET

The best way to learn programming with XP-8000-CE6 is to actually create a XP-8000-CE6 program.

The example below demonstrates how to create a demo program running on XP-8000-CE6 with VB.NET.

To create a demo program with VB.NET that includes the following main steps:

- 1. Create a new project
- 2. Specify the path of the PAC reference
- 3. Add the control to the form
- 4. Add the event handling for the control
- 5. Upload the application to XP-8000-CE6
- 6. Execute the application on XP-8000-CE6

All main steps will be described in the following subsection.

In this tutorial, we will assume that you have installed XP-8000-CE6 SDK on PC and used the Visual Studio 2008 for application development.

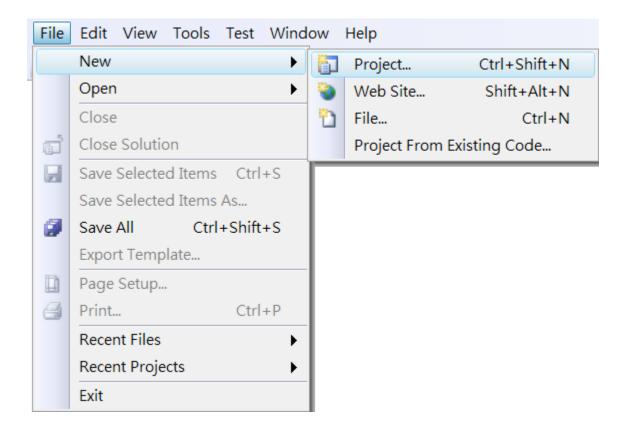
4.2.1. Create a new project

The Visual VB.net project template is a composite control that you use in this example creates a new project with this user control.

Step 1: Start Visual Studio 2008



Step 2: On the File menu, point to New, and then click Project



Step 3: In the Project types pane, expand Visual Basic node and select Smart Device

Step 4: In the list of <u>Templates</u>, select <u>Smart Device Project</u>

Step 5: Specify a name and a location for the application and then click <u>OK</u>

New Project				? ×
Project types:		Templates:		.NET Framework 3.5 ▼ 🖽 🔚
General		Visual Studio installed templates)	
MFC		Smart Device Project		
Smart Device		My Templates		
Test		Search Online Templates		
Win32				
Other Language	es			
Visual Basic				
Windows	-			
Web				
Smart Devi	ice			
Office				
Database				
Reporting Test				
WCF				
Workflow				
Visual C#	~			
	Device applications. Ch	oose target platform, Framework v	ersion, and template in the next di	alog box.
			· ·	-
Name:	SDK_Info			
Location:	C:\Users\Administrat	or\Documents\Visual Studio 2008\	Projects	▼ Browse
Solution Name:	SDK_Info		Create directory for solution	ı
				OK Cancel

Step 6: In the Target platform, select Windows CE

Step 7: In the <u>.NET Compact Framework version</u>, select <u>.NET Compact Framework</u> <u>Version 3.5.</u>

Step 8: In the list of templates, select Device Application. Click OK

dd New Smart Device Project - SDK_Info					
Target platform: .NET Compact Framework version: Templates:	Windows CE .NET Compact Framework Version 3.5	▼			
Device Class Console Application Library Application	Control Empty	Description: A project for creating a .NET Compact Framework 3.5 forms application for Windows CE Platform			
Download additonal emulator imag	es and smart device SDKs	OK Cancel			

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4.2.2. Specify the path of the PAC reference

The PAC SDK provides a complete solution to integrate with XP-8000-CE6 and it's compatible with Visual C#, Visual Basic.NET and C++. In order to use a component in your application, you must first add a reference to it.

Step1: Get the PACNET.dll



The PACNET.dll can be found from the CD that was provided with the package or by downloading the latest version from ICP DAS web site.

CD:\XP-8X3X-CE6\SDK\XPacNET\PACNET\ http://ftp.icpdas.com/pub/cd/xp-8x3x-ce6/sdk/xpacnet/pacnet/

Step 2: On the Project menu, and then click Add Reference...

省 SD	🗿 SDK_Info - Microsoft Visual Studio (Administrator)											
File	Edit	View	Proj	ect	Build	Debug	Data	Format	Tools	Test	Window	Help
				Ad	d Wind	dows Forr	n					
				Ad	d User	Control						
			1	Ad	d Com	ponent						
			1	Ad	d Mod	ule						
			₹\$	Ad	d Class							
			8	Ad	d New	Item	Ctrl+	Shift+A				
			:::	Ad	d Existi	ing Item	Shif	t+Alt+A				
				Exc	lude Fi	rom Proje	ect					
				Sh	ow All I	Files						
				Ad	d Refe	rence						
				Ad	d Web	Referenc	e					
				Set	t as Sta	rtUp Proj	ect					
			44	Re	fresh P	roject Too	box Ite	ems				
				Ch	ange T	arget Plat	form					
			m	SD	K_Info	Propertie	s	Alt+F7				

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Step 3: On the <u>Browse</u> tab and browse to where the PACNET.dll are installed, and then click<u>OK</u>

Add Reference	? ×
.NET Projects Browse Recent	
Look in: 📜 PACNET 🗸	G 🎓 📂 🗔 🗸
Name	Date modified
PACNET.dll	2014/5/30
 ١١١ 	4
File name: : PACNET	▼
Files of type: : Component Files (*.dll;*.tlb;*.olb;*.ocx;*.exe)	▼
	OK Cancel

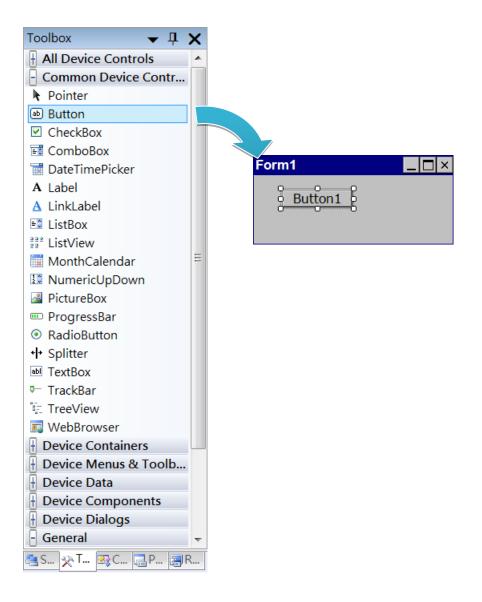
4.2.3. Add the control to the form

1

You can drag various controls from the Toolbox onto the form. These controls are not really "live"; they are just images that are convenient to move around on the form into a precise location.

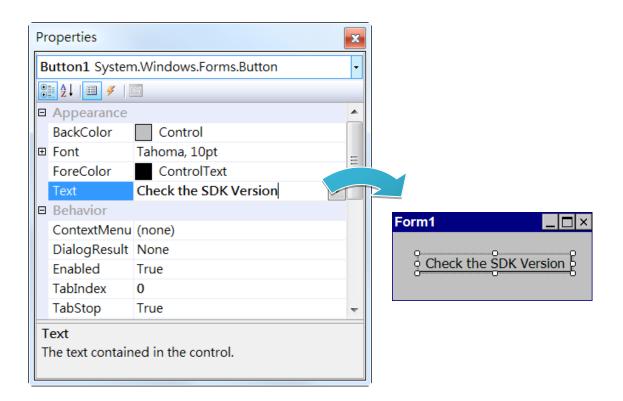
After you add a control to your form, you can use the Properties window to set its properties, such as background color and default text. The values that you specify in the Properties window are the initial values that will be assigned to that property when the control is created at run time.

Step 1: On the Toolbox panel, drag a Button control onto the form



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Step 2: On the Properties panel, type Check the SDK version in the Text field



4.2.4. Add the event handling for the control

You have finished the design stage of your application and are at the point when you can start adding some code to provide the program's functionality.

Step 1: Double-click the button on the form

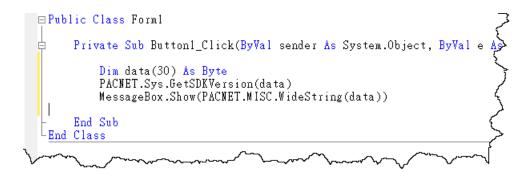
Form1	
Check the S	DK Version

Step 2: Inserting the following code

Dim data(30) As Byte

PACNET.Sys.GetSDKVersion(data)

MessageBox.Show(PACNET.MISC.WideString(data))



Tips & Warnings



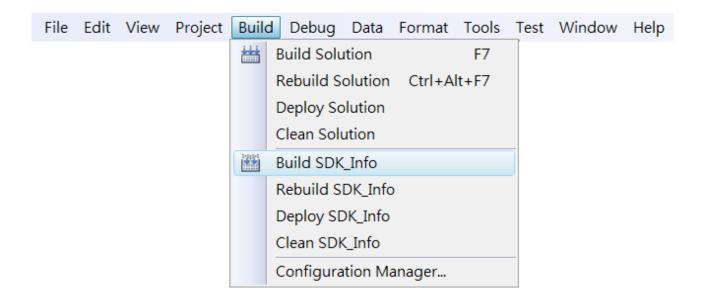
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4.2.5. Upload the application to XP-8000-CE6

XP-8000-CE6 supports FTP server service. You can upload files to XP-8000-CE6 or download files from a public FTP server.



Step 1: On the Build menu, and then click Build [Project Name]



Step 2: Open the browser and type the IP address of XP-8000-CE6

Step 3: Upload the application and the corresponding PACNET.dll files to XP-8000-CE6

Tips & Warnings

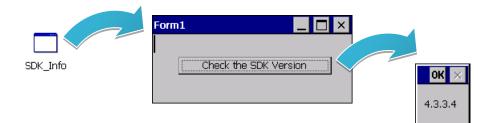


For applications programming in C# and VB.net with .net compact framework, when executing these application on XP-8000-CE6, the corresponding PACNET.dll must be in the same directory as the .exe file.

<u>F</u> ile	<u>E</u> dit	<u>V</u> iew	<u>G</u> o	F <u>a</u> vorites	
Addr	ess 🕅	mp			7
					Ę
	I ET S	GDK_Info)		2
					{
_				Δ	ح _
	\sim	· _	~~	$\sim \sim \sim$	~~

4.2.6. Execute the application on XP-8000-CE6

After uploading the application to XP-8000-CE6, you can just double-click it on XP-8000-CE6 to execute it.



4.3. First XP-8000-CE6 Program in Visual C#

The best way to learn programming with XP-8000-CE6 is to actually create a XP-8000-CE6 program.

The example below demonstrates how to create a demo program running on XP-8000-CE6 with Visual C#.

To create a demo program with Visual C# that includes the following main steps:

- 1. Create a new project
- 2. Specify the path of the PAC reference
- 3. Add the control to the form
- 4. Add the event handling for the control
- 5. Upload the application to XP-8000-CE6
- 6. Execute the application on XP-8000-CE6

All main steps will be described in the following subsection.

In this tutorial, we will assume that you have installed XP-8000-CE6 SDK on PC and used the Visual Studio 2008 for application development.

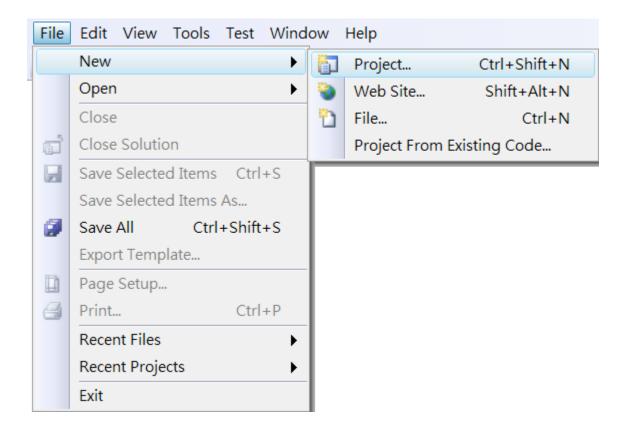
4.3.1. Create a new project

The Visual C# project template is a composite control that you use in this example creates a new project with this user control.

Step 1: Start Visual Studio 2008



Step 2: On the File menu, point to New, and then click Project



Step 3: In the Project types pane, expand Visual C# node and select Smart Device

Step 4: In the list of <u>Templates</u>, select <u>Smart Device Project</u>

Step 5: Specify a name and a location for the application and then click <u>OK</u>

New Project				2 X
Project types: Visual C++ Other Language Visual Basic Visual C# Windows	es	Templates: Visual Studio installed templates Smart Device Project My Templates Search Online Templates		.NET Framework 3.5 V III III
Web Smart Dev MySQL Office Database Reporting Test WCF Workflow Other Project Ty Test Projects				
A project for Smart	t Device applications. Ch	oose target platform, Framework ve	rsion, and template in the next di	alog box.
Name:	SDK_Info			
Location:	C:\Users\Administrat	or\Documents\Visual Studio 2008\F	Projects	▼ Browse
Solution:	Create new Solution	•	Create directory for solution	ı
Solution Name:	SDK_Info			
				OK Cancel

Step 6: In the Target platform, select Windows CE

Step 7: In the <u>.NET Compact Framework version</u>, select <u>.NET Compact Framework</u> <u>Version 3.5.</u>

Step 8: In the list of templates, select Device Application. Click OK

Add New Smart Device Project - SDK_1	nfo	? X
Target platform: .NET Compact Framework version: Templates:	Windows CE .NET Compact Framework Version 3.5	
Device Class Console Application Library Application		Description: A project for creating a .NET Compact Framework 3.5 forms application for Windows CE Platform
Download additonal emulator imag	<u>jes and smart device SDKs</u>	OK Cancel

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4.3.2. Specify the path of the PAC reference

The PAC SDK provides a complete solution to integrate with XP-8000-CE6 and it's compatible with Visual C#, Visual Basic.NET and C++. In order to use a component in your application, you must first add a reference to it.

Step1: Get the PACNET.dll

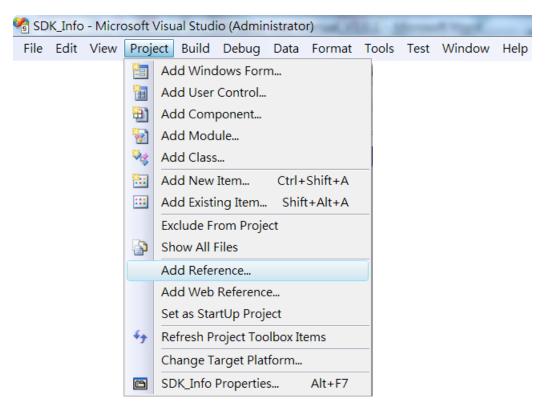


The PACNET.dll can be found from the CD that was provided with the package or by downloading the latest version from ICP DAS web site.

CD:\XP-8X3X-CE6\SDK\XPacNET\PACNET\

http://ftp.icpdas.com/pub/cd/xp-8x3x-ce6/sdk/xpacnet/pacnet/

Step 2: On the Project menu, and then click Add Reference...



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Step 3: On the <u>Browse</u> tab and browse to where the PACNET.dll are installed, and then click<u>OK</u>

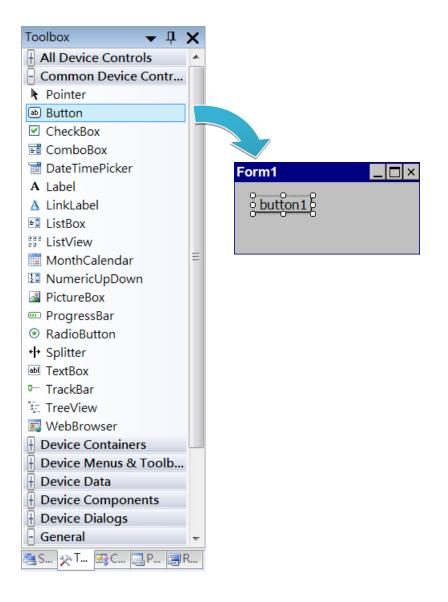
Add Reference	? X
.NET Projects Browse Recent	
Look in: 📜 PACNET 👻	G 🌶 📂 🎞 -
Name	Date modified
ACNET.dll	2014/5/30
< <u> </u>	4
File name: : PACNET	▼
Files of type: : Component Files (*.dll;*.tlb;*.olb;*.ocx;*.exe)	•
	OK Cancel

4.3.3. Add the control to the form

You can drag various controls from the Toolbox onto the form. These controls are not really "live"; they are just images that are convenient to move around on the form into a precise location.

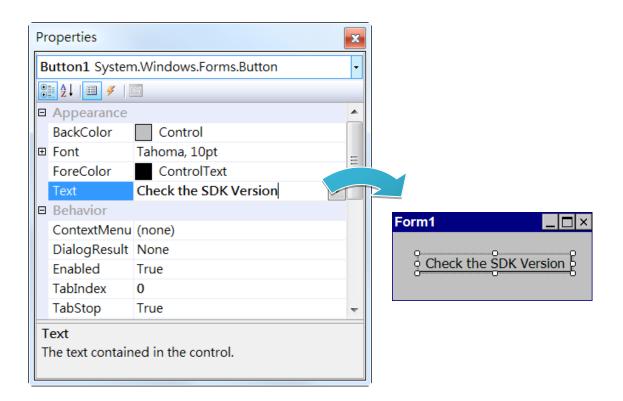
After you add a control to your form, you can use the Properties window to set its properties, such as background color and default text. The values that you specify in the Properties window are the initial values that will be assigned to that property when the control is created at run time.

Step 1: On the Toolbox panel, drag a Button control onto the form



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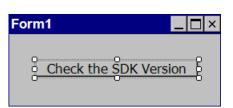
Step 2: On the Properties panel, type Check the SDK version in the Text field



4.3.4. Add the event handling for the control

You have finished the design stage of your application and are at the point when you can start adding some code to provide the program's functionality.

Step 1: Double-click the button on the form

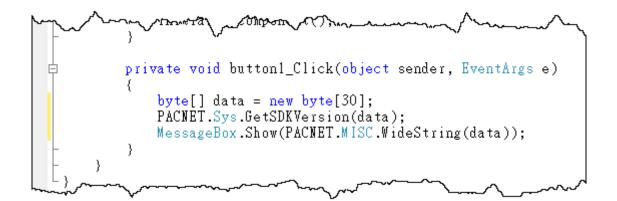


Step 2: Inserting the following code

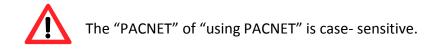
byte[] data = new byte[30];

PACNET.Sys.GetSDKVersion(data);

MessageBox.Show(PACNET.MISC.WideString(data));



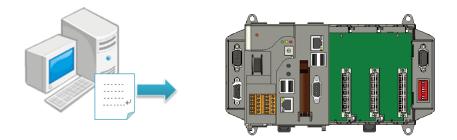
Tips & Warnings



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4.3.5. Upload the application to XP-8000-CE6

XP-8000-CE6 supports FTP server service. You can upload files to XP-8000-CE6 or download files from a public FTP server.



Step 1: On the Build menu, and then click Build [Project Name]

File	Edit	View	Project	Build	Debug	Data	Format	Tools	Test	Window	Help
				i iiii	Build Solu	ition		F7			
				1	Rebuild S	olution	Ctrl+A	lt+F7			
				(Deploy So	olution					
				(Clean Solu	ution					
					Build SDK	_Info					
				1	Rebuild S	DK_Info)				
				(Deploy SE	OK_Info					
				(Clean SDk	(_Info					
				(Configura	ition Ma	anager				

Step 2: Open the browser and type the IP address of XP-8000-CE6

Step 3: Upload the application and the corresponding PACNET.dll files to XP-8000-CE6

Tips & Warnings

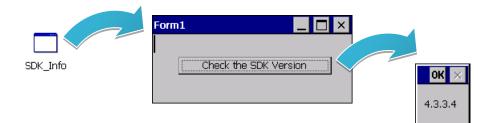


For applications programming in C# and VB.net with .net compact framework, when executing these application on XP-8000-CE6, the corresponding PACNET.dll must be in the same directory as the .exe file.

<u>F</u> ile	<u>E</u> dit	<u>V</u> iew	<u>G</u> o	F <u>a</u> vorites	×
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	I ET S	GDK_Info)		2
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# 4.3.6. Execute the application on XP-8000-CE6

After uploading the application to XP-8000-CE6, you can just double-click it on XP-8000-CE6 to execute it.



# 4.4. First XP-8000-CE6 Program in Visual C++

The best way to learn programming with XP-8000-CE6 is to actually create a XP-8000-CE6 program.

The example below demonstrates how to create a demo program running on XP-8000-CE6 with Visual C++.

To create a demo program with Visual C# that includes the following main steps:

- 1. Create a new project
- 2. Configure the Platform
- 3. Include the Header files and Libraries of the PAC SDK
- 4. Add the control to the form
- 5. Add the event handling for the control
- 6. Upload the application to XP-8000-CE6
- 7. Execute the application on XP-8000-CE6

All main steps will be described in the following subsection.

In this tutorial, we will assume that you have installed XP-8000-CE6 SDK on PC and used the Visual Studio 2008 for application development.

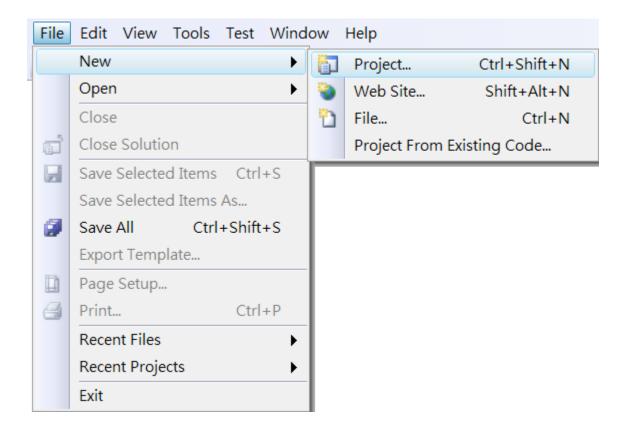
# 4.4.1. Create a new project

The Visual C# project template is a composite control that you use in this example creates a new project with this user control.

#### Step 1: Start Visual Studio 2008



## Step 2: On the File menu, point to New, and then click Project



# Step 3: In the Project types pane, expand Visual C++ node and select Smart Device

# Step 4: In the list of <u>Templates</u>, select <u>MFC Smart Device Application</u>

# Step 5: Specify a name and a location for the application and then click <u>OK</u>

New Project	3004	imputive addition and a	econes suit a feet ed ta regi liteurgin, heir add	2 X
Project types:		Templates:		.NET Framework 3.5 🔻 🖽 🔚
Visual C++ ATL CLR General MFC Smart Devic Test Win32 Other Languag Other Project T Test Projects	es	Visual Studio installed templates ATL Smart Device Project MFC Smart Device Application Win32 Smart Device Project My Templates Search Online Templates	MFC Smart Device	
	Windows Mobile and ot	her Windows CE-based devices that	uses the Microsoft Foundation C	Class Library
Name:	2DV_IIIIQ			
Location:	C:\Users\Administrat	or\Documents\Visual Studio 2008\I	Projects	<ul> <li>Browse</li> </ul>
Solution Name:	SDK_Info		Create directory for solution	n
				OK Cancel

### Step 6: On the first page of the wizard, click Next

MFC Smart Device Applic	ation Wizard - SDK_Info
Welcon	ne to the MFC Smart Device Application Wizard
Overview Platforms Application Type Document Template Strin User Interface Features Advanced Features Generated Classes	These are the current project settings:

Step 7: On the next page of the wizard, select <u>XPacSDK_CE</u> to be added to the project, and then click <u>Next</u>

MFC Smart Device Applic	ation Wizard - SDK_Info	? ×
Platfor	ms	
Overview Platforms Application Type Document Template Strin User Interface Features Advanced Features Generated Classes	Installed SDKs:     Selected SDKs:       Windows Mobile 5.0 Pocket PC SDK     >       Pocket PC 2003     >>       Smartphone 2003     >>       Windows Mobile 5.0 Smartphone S     >       AM335x_WINCE7_SDK	
	XPacSDK_CE Instruction sets: x86 < Previous Next > Finish	Cancel

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### Step 8: On the next page of the wizard, select Dialog based, and then click next

MFC Smart Device Applic	ation Wizard - SDK_Info		? ×
Applic	ation Type		
Overview	Application type:	Use of MFC:	
Platforms	○ <u>S</u> ingle document	$\bigcirc$ <u>U</u> se MFC in a shared DLL	
Application Type	Dialog based	Use MFC in a static library	
Document Template Stri	$^{ m ngs}$ $\bigcirc$ Single document with DocList		
User Interface Features	✓ Document/View architecture support		
Advanced Features	Resource language:		
Generated Classes	英文 (美國) ✓		
		< Previous Next > Finish	Cancel

Step 9: On the next page of the wizard, click <u>next</u>

FC Smart Device Applic	cation Wizard - SDK_Info	X
User I	nterface Features	
Overview	Command bar:	
Platforms	Menus only	
Application Type	O Menus and buttons	
Document Template Stri	ings	
User Interface Features	Status bar_	
Advanced Features	Dialog title:	
Generated Classes	SDK_Info	
	< Previous Next > Finish Cano	cel
		_

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### Step 10: On the next page of the wizard, click next

MFC Smart Device Applic	ation Wizard - SDK_Info	? X
Advan	ced Features	
Overview	Advanced features:	
Platforms	□ Windows H <u>e</u> lp	
Application Type	<u>Printing and print preview</u>	
Document Template Stri	ngs 🗆 ActiveX controls	
User Interface Features	□ <u>W</u> indows sockets	
Advanced Features Generated Classes	Number of files on recent file list:	
	< Previous Next > Finish	Cancel

Step 11: On the next page of the wizard, click Finish

Genera	ated Classes	
Overview Platforms Application Type Document Template Strii	Generated classes: CSDK_InfoApp CSDK_InfoDlg	
User Interface Features Advanced Features Generated Classes	Class name: CSDK_InfoApp Base class: CWinApp	.h fil <u>e:</u> SDK_Info.h .cpp file: SDK_Info.cpp
		< Previous Next > Finish Canc

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# 4.4.2. Configure the Platform

When developing applications by using Visual C++, you must configure the Platform to indicate what platform and device you intend to download the application to. Before you deploy your project, check the platform.

On the Debug configuration toolbar, select Release and select XPacSDK_CE(x86) as shown in the following illustration.



# 4.4.3. Specify the Libraries of the PAC SDK

The PAC SDK provides the PACSDK libraries with XP-8000-CE6.

It's compatible with C++. In order to use a component in your application, you must first add a reference to it.

#### Step 1: On the <u>View</u> menu, and then click <u>Property Pages</u>

File	Edit	View	Project	Build	Debug	Tools	Test	Wi	ndow	Help
		-2	Solution E	xplorer		Ctrl	+Alt+L			
			Bookmark	Windo	w (	Ctrl+K, C	Ctrl+W			
		<u></u>	Class View	v		Ctrl+S	hift+C			
			Code Defi	nition V	Vindow	Ctrl+S	hift+V	'		
		<u></u>	Object Bro	owser		Ctrl	+Alt+J			
			Output				Alt+2			
			Property I	Manage	er					
		2	Resource	View		Ctrl+S	Shift+E			
		R	Toolbox			Ctrl+	-Alt+X			
			Find Resu	lts				►		
			Other Wir	ndows						
			Toolbars					►		
			Full Scree	n	S	hift+Alt	+Enter			
		P	Navigate	Backwa	rd		Ctrl+-			
		5	Navigate	Forward	d	Ctrl+S	Shift+-			
			Next Task							
			Previous	Fask						
		e	Property I	Pages						

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# Step 2: In left pane, click Linker, and then click Input

# Step 3: In the right pane, Type PACSDK.lib in the <u>Additional Dependencies</u> item

nfiguration: Active(Relea	ase) 🔹 Platform: 🗛	ctive(XPacSDK_CE (x86))	Configuration Manager
Common Properties	Additional Dependencies	PACSDK.lib	
Configuration Properti	Ignore All Default Libraries	No	
General	Ignore Specific Library		
Debugging	Module Definition File		
Deployment	Add Module to Assembly		
C/C++	Embed Managed Resource File		
Linker	Force Symbol References		
General	Delay Loaded DLLs		
Input	Assembly Link Resource		
Manifest File			
Debugging			
System			
Optimization			
Embedded IDL			
Advanced			
Command Line			
Resources			
XML Document Gen			
Browse Information			
Build Events			
Custom Build Step Authenticode Signir			
Authenticode signir			
	Additional Dependencies		
0	Additional Dependencies Specifies additional items to add to t		그는 것 같아요. 이 것 같아요. 그는 것 같아. 그는 것 같아.

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# 4.4.4. Add the control to the form

You can drag various controls from the Toolbox onto the form. These controls are not really "live"; they are just images that are convenient to move around on the form into a precise location.

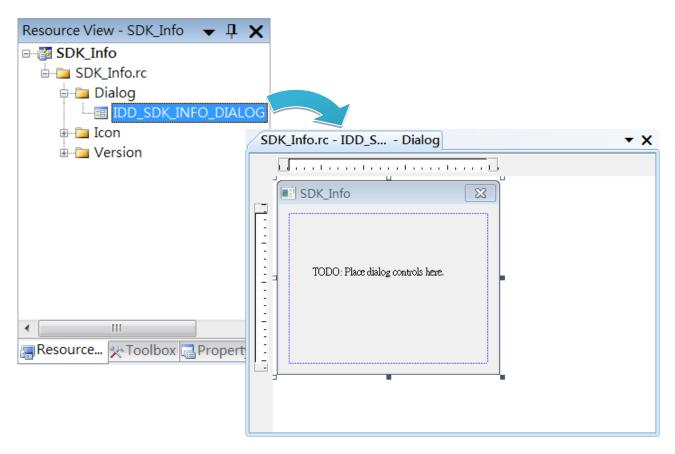
After you add a control to your form, you can use the Properties window to set its properties, such as background color and default text. The values that you specify in the Properties window are the initial values that will be assigned to that property when the control is created at run time.

#### Step 1: On the <u>View</u> menu, and then click <u>Resource View</u>

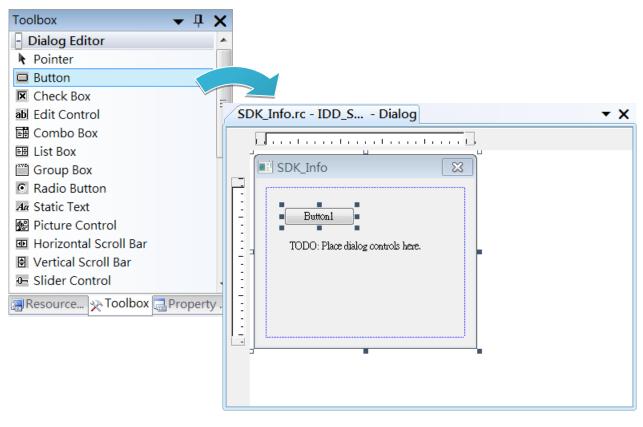
File	Edit	View	Project	Build	Debug	Tools	Test	Wind	low	Help
		¥	Code			Ctrl-	+Alt+0	)		
		-2	Solution [	Explorer		Ctrl	+Alt+L			
			Bookmarl	< Windo	w (	Ctrl+K, C	Ctrl+W	/		
		23	Class Viev	v		Ctrl+S	hift+C	;		
			Code Def	inition V	Vindow	Ctrl+S	hift+V	·		
		<u> 1</u>	Object Br	owser		Ctrl	+Alt+J	l		
			Output				Alt+2	2		
			Property	Manage	er					
		2	Resource	View		Ctrl+S	Shift+E	:		
		R	Toolbox			Ctrl+	+Alt+X	C		
			Find Resu	ilts				•		
			Other Wi	ndows				•		
			Toolbars					•		
			Full Scree	n	S	hift+Alt	+Enter			
		E	Navigate	Backwa	rd		Ctrl+-			
		E,	Navigate	Forward	d	Ctrl+S	Shift+-			
			Next Task							
			Previous	Task						
		6	Property	Pages						

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# Step 2: In the <u>Resource View</u> Panel, Expand the <u>[Project name].rc</u> file and then expand the <u>Dialog</u> item to click the plug-in dialog



Step 3: On the Toolbox panel, drag a Button control onto the form



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Step 4: On the Properties panel, type Check the SDK version in the Caption field

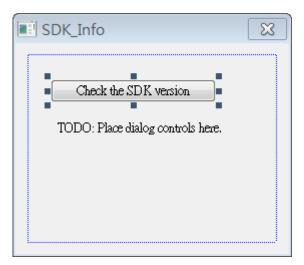
Pr	roperties	<b>→</b> ₽ X				
IC	IDC_BUTTON1 (Button Control) ICeButtonEc •					
•	8 2↓ 🔲 🖋 I 🖾					
Ξ	Appearance					
	Caption	Check the SDK version				
	Client Edge	False				
	Horizontal Alignmer	Default				
	Modal Frame	False				
	Multiline	False				
	Notify	False				
	Static Edge	False				
	Vertical Alignment	Default				
Ξ	Behavior					
	Default Button	False				
	Disabled	False				
	Owner Draw	False				
	Visible	True				
⊡	Misc					
	(Name)	IDC_BUTTON1 (Button C				
~~	Group	m				

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# 4.4.5. Add the event handling for the control

You have finished the design stage of your application and are at the point when you can start adding some code to provide the program's functionality.

#### Step 1: Double-click the button on the form



#### Step 2: Inserting the following code

char sdk_version[32];

TCHAR buf[32];

pac_GetSDKVersion(sdk_version);

pac_AnsiToWideString(sdk_version, buf);

MessageBox(buf,0,MB_OK);



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#### Step 2: Inserting the following code into the header area

#include "PACSDK.h"

```
#include "stdafx.h"
#include "SDK_InfoDlg.cpp : implementation file
#include "SDK_Info.h"
#include "SDK_InfoDlg.h"
#include "PACSDK.h"
```

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# 4.4.6. Upload the application to XP-8000-CE6

XP-8000-CE6 supports FTP server service. You can upload files to XP-8000-CE6 or download files from a public FTP server.



# Step 1: On the <u>Build</u> menu, and then click <u>Build [Project Name]</u>

File	Edit	View	Project	Build	Debug	Tools	Test	Window	Help
				***	Build Solu	ution		F7	
					Rebuild S	olution	Ctrl-	+Alt+F7	
					Deploy So	olution			
					Clean Soli	ution			
					Build SDK	_Info			Ĩ
					Rebuild S	DK_Info			
					Deploy SE	OK_Info			
					Clean SDk	(_Info			
					Project Or	nly		•	
					Batch Buil	d			_
					Configura	ation Ma	nager		
				١	Compile			Ctrl+F7	_

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Step 2: Open the browser and type the IP address of XP-8000-CE6

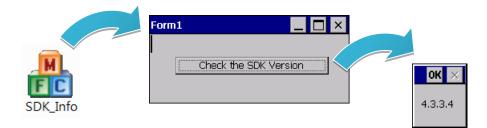
**Step 3: Upload the application to XP-8000-CE6** 

Eile	<u>E</u> dit	⊻iew	<u>G</u> o	F <u>a</u> vorites	
Addr	ress \Te	mp			7
	1				Ę
SDK_I	nfo				_ ک _ر
					<
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# 4.4.7. Execute the application on XP-8000-CE6

After uploading the application to XP-8000-CE6, you can just double-click it on XP-8000-CE6 to execute it.

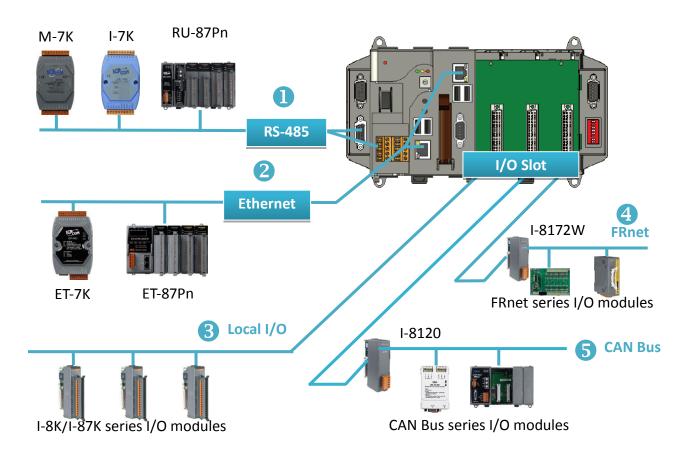


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# 5. I/O Expansion Modules and SDKs Selection

This chapter describes how to select a suitable expansion I/O module and the corresponding SDK library to be used for developing programs on XP-8000-CE6.

XP-8000-CE6 provides the following I/O expansion buses:



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#### 1. RS-485

I-7000, M-7000, RU-87Pn and high profile I-87K series modules connect to XP-8000-CE6 via a twisted-pair, multi-drop, 2-wire RS-485 network.

#### > I-7000 series I/O module

	Module	Native SDK	.NET CF SDK		
I-7000 series		PACSDK.dll	PACNET.dll		
	I-7000 series with I-7088 (D)	PACSDK_PWM.dll	PACNET.dll		

For full details regarding I-7000 series I/O modules and its demos, please refer to: http://ftp.icpdas.com/pub/cd/xp-8x3x-ce6/demo/xpac/applicabled_demo_for_7k_module.pdf

#### M-7000 series I/O module

Module	Native SDK	.NET CF SDK		
M-7000 series	Modbus Demo	Modbus Demo		

For more detailed information about M-7000 series modules using Modbus protocol and its demos, please refer to:

http://ftp.icpdas.com/pub/cd/xp-8x3x-ce6/demo/nmodbus/

#### RU-87Pn + I-87K series I/O module

Module	Native SDK	.NET CF SDK
RU-87Pn+I-87K series	PACSDK.dll	PACNET.dll

#### > Other Specified I/O

Module	Native SDK	.NET CF SDK	
Others	PACSDK.dll	PACNET.dll	

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### 2. Ethernet

The Ethernet I/O devices available include ET-7000and I-8KE4/8-MTCP, and support either the DCON or the Modbus/TCP communication protocol.

Module	Native SDK	.NET CF SDK
M-7000 series	Modbus Demo	Modbus Demo
I-8KE4/8-MTCP	Modbus Demo	Modbus Demo

For more detailed information about ET-7000 and I-8KE4/8-MTCP series modules using Modbus protocol and its demos, please refer to: http://ftp.icpdas.com/pub/cd/xp-8x3x-ce6/demo/nmodbus/

# 3. Local I/O

XP-8000-CE6 has 0/1/3/7 expansion slot(s) that can be used to add expansion I/O modules. The expansion I/O modules can be divided into two categories: High Profile I-8K series I/O modules and High profile I-87K series I/O modules. The following indicates the appropriate SDK library to be used for I/O modules.

### General I-8K/I-87K series I/O module

Module	Native SDK	.NET CF SDK	
I-8K series	PACSDK.dll	PACNET.dll	
I-87K series	PACSDK.dll	PACNET.dll	

For full details regarding I-87K series I/O modules and its demos, please refer to: http://ftp.icpdas.com/pub/cd/xp-8x3x-ce6/demo/xpac/applicabled_demo_for_87k_module.pdf

#### > Other Specified I/O

Module	Native SDK	.NET CF SDK
I-8014W	pac_i8014W.dll	pac_i8014WNET.dll
I-8017HW	pac_i8017HW.dll	pac_i8017HWNET.dll
I-8024W	pac_i8024W.dll	pac_i8024WNET.dll
I-8026W	pac_i8026W.dll	pac_i8026WNET.dll
I-8048W	pac_i8048W.dll	pac_i8048WNET.dll
I-8050W	pac_i8050W.dll	pac_i8050WNET.dll
I-8084W	pac_i8084W.dll	pac_i8084WNET.dll
I-8088W	pac_i8088W.dll	pac_i8088WNET.dll
I-8093W	pac_i8093W.dll	pac_i8093WNET.dll
I-87088W	PACSDK_PWM.dll	PACNET.dll

#### 4. FRnet

FRnet is an innovative industrial field bus technology that uses twisted pair cable as the transmission medium. The status of all I/O devices is updated on a fixed cycle, no matter how many FRnet I/O modules are connected to the FRnet network.

Module	Native SDK	.NET CF SDK
I-8172W	pac_i8172W.lib	pac8172WNet.dll

#### 5. CAN Bus

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 the error-processing mechanisms and concepts of message priority. These features can improve the network reliability and transmission efficiency.

Module	Native SDK	.NET CF SDK
I-8120W	i8120.lib	i8120net_pac.dll

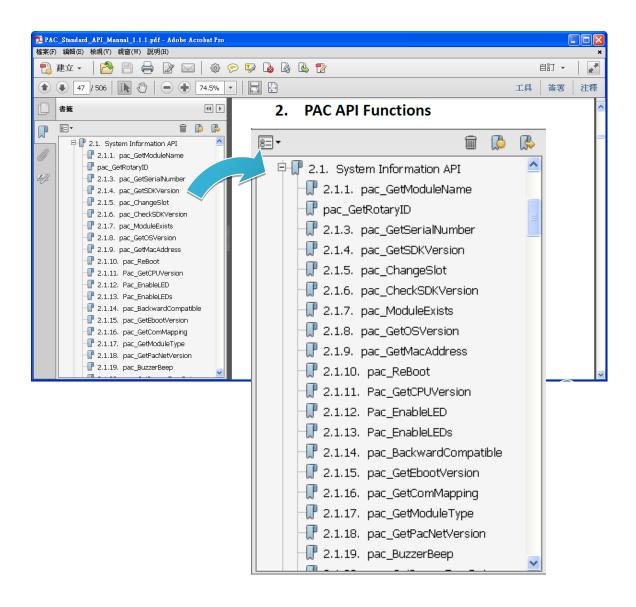
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# 6. APIs and Demo References

This chapter provides a brief overview of PAC standard APIs and demos that have been designed for XP-8000-CE6 from the PAC SDK package.

ICP DAS provides a set of demos in different programming languages. You can examine the demo codes, which includes numerous comments, to familiarize yourself with the PAC APIs. This will allow developing your own applications quickly by modifying these demo programs.

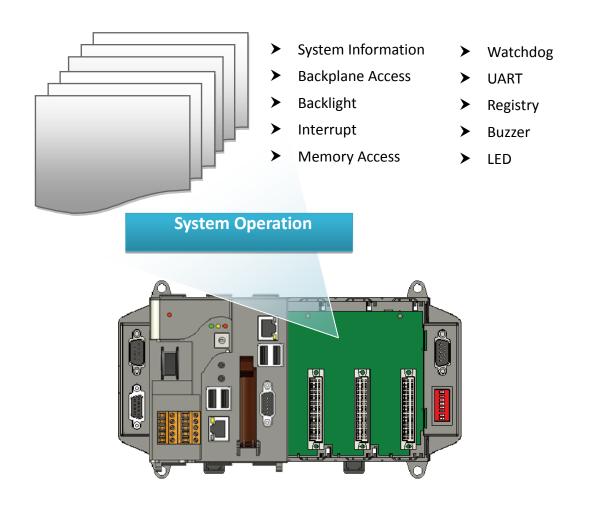
For full usage information regarding the description, prototype and the arguments of the functions, please refer to the "PAC Standard API Manual"



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# 6.1. PAC Standard APIs for System Operation

The diagram below shows the set of each system operation API provided in the PACSDK.



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# 6.1.1. VB.NET Demos for PAC Standard APIs

The PAC SDK includes the following demos that demonstrate the use of the PAC Standard APIs in a VB.NET language environment.

The following demos can be found on the CD that was provided with the package or by downloading the latest version from ICP DAS web site. CD:\XP-8X3X-CE6\demo\XPAC\VB.NET\Standard\ http://ftp.icpdas.com/pub/cd/xp-8x3x-ce6/demo/xpac/vb.net/standard/

Folder	Demo	Explanation
BPtimer	BPtimer	Retrieves information about the hardware timer.
DeviceInformation	DeviceInformation	Retrieves information about the OS version, CPU
		version, SDK version, etc.
Diagnostic	Diagnostic	Retrieves information about the slot count and the
Diagnostic	Didgitostic	module inserted in the backplane.
DIP	DIP	Retrieves information about the status of the DIP switch.
GetRotaryID	CotPotonulD	Retrieves information about the status of the rotary
GetKotaryiD	GetRotaryID	switch.
		Shows how to read/write data values from/to the
Memory	Memory	EEPROM or the backplane of the SRAM
		Writes the managed cod for the rich graphical user
RealTimeTest	RealTimeTest	interface that does not require true real-time
		performance
Pogistry	Registry	Shows how to read/write data values from/to the
Registry	Registi y	registry.
UART	UART	Shows how to read the name of the local I/O module via
UANT	UANI	a UART.
WatchDog	WatchDog	Displays information about how to operate the
WatchDog	WatchDog	watchdog.

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# 6.1.2. C# Demos for PAC Standard APIs

The PAC SDK includes the following demos that demonstrate the use of the PAC Standard APIs in a C# language environment.

The following demos can be found on the CD that was provided with the package or by downloading the latest version from ICP DAS web site. CD:\XP-8X3X-CE6\demo\XPAC\C#\Standard\

http://ftp.icpdas.com/pub/cd/xp-8x3x-ce6/demo/xpac/c%23/standard/

Folder	Demo	Explanation
BPtimer	BPtimer	Retrieves information about the hardware timer.
DeviceInformation	DeviceInformation	Retrieves information about the OS version, CPU
Devicemiormation	Devicementation	version, SDK version, etc.
Diagnostic	Diagnostic	Retrieves information about the slot count and the
Diagnostic	Diagnostic	module inserted in the backplane.
DIP	DIP	Retrieves information about the status of the DIP switch.
GetRotaryID	CotPotonulD	Retrieves information about the status of the rotary
GetKotaryiD	GetRotaryID	switch.
Memory	Momory	Shows how to read/write data values from/to the
wieniory	Memory	EEPROM or the backplane of the SRAM
		Writes the managed cod for the rich graphical user
RealTimeTest	RealTimeTest	interface that does not require true real-time
		performance
Registry	Registry	Shows how to read/write data values from/to the
Negistiy	negisti y	registry.
UART	UART	Shows how to read the name of the local I/O module via
	UANI	a UART.
WatchDog	WatchDog	Displays information about how to operate the
WatchDog	WatchDog	watchdog.

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# 6.1.3. Visual C++ Demos for PAC Standard APIs

The PAC SDK includes the following demos that demonstrate the use of the PAC Standard APIs in a Visual C++ language environment.

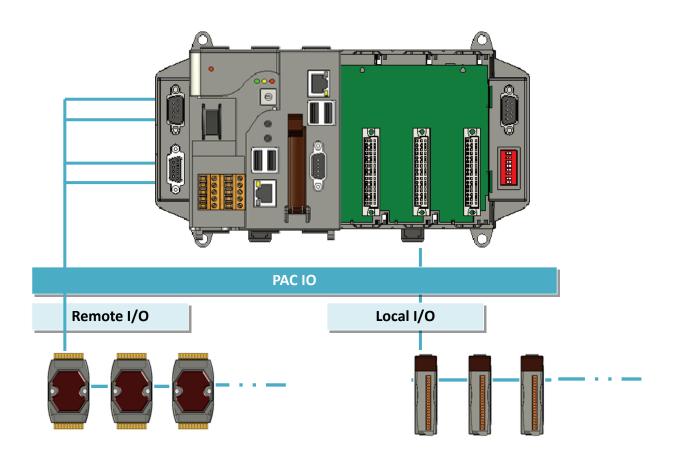
The following demos can be found on the CD that was provided with the package or by downloading the latest version from ICP DAS web site. CD:\XP-8X3X-CE6\demo\XPAC\VC2005\Standard\ http://ftp.icpdas.com/pub/cd/xp-8x3x-ce6/demo/xpac/vc2005/standard/

Folder	Demo	Explanation
BPtimer	BPtimer	Retrieves information about the hardware timer.
DeviceInformation	DeviceInformation	Retrieves information about the OS version, CPU
Devicementation	Devicementation	version, SDK version, etc.
Diagnostic	Diagnostic	Retrieves information about the slot count and the
Diagnostie	Didghostie	module inserted in the backplane.
DIP	DIP	Retrieves information about the status of the DIP switch.
GetRotaryID	GetBotanyID	Retrieves information about the status of the rotary
Getholaryid	GetRotaryID	switch.
Memory	Memory	Shows how to read/write data values from/to the
Wentory	Memory	EEPROM or the backplane of the SRAM
		Writes the managed cod for the rich graphical user
RealTimeTest	RealTimeTest	interface that does not require true real-time
		performance
Registry	Registry	Shows how to read/write data values from/to the
negisti y	Registi y	registry.
UART	UART	Shows how to read the name of the local I/O module via
UAN	UAN	a UART.
WatchDog	WatchDog	Displays information about how to operate the
watchibog	watchibog	watchdog.

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# 6.2. PAC Standard APIs for PAC Expansion I/O

The diagram below shows the types of the PAC IO APIs provided in the PACSDK.



# 6.2.1. VB.net Demos for PAC Expansion I/O

The PAC SDK includes the following demos that demonstrate the use of the PAC expansion I/O in a VB.NET language environment.

The following demos can be found on the CD that was provided with the package or by downloading the latest version from ICP DAS web site.

CD:\XP-8X3X-CE6\demo\XPAC\VB.NET\IO\

http://ftp.icpdas.com/pub/cd/xp-8x3x-ce6/demo/xpac/vb.net/io/

Folder	Demo	Explanation
	find in	Shows how to retrieve the module name and type which plugged
	find_io	in the XP-8000-CE6.
		Shows how to read the DI values of DI module.
	8k_di	This demo program is used by 8K series DI modules.
	9k do	Shows how to write the DO values to DO module.
	8k_do	This demo program is used by 8K series DO modules.
	8k dio	Shows how to read the DI and the DO values of the DIO module.
		This demo program is used by 8K series DIO modules.
Local	87k basic	Shows how to send/receive a command/response application.
LUCAI	O/K_Dasic	This demo program is used by 87K series modules.
	87K demo	Shows how use uart API and the IO modules located as slots.
	ork_demo	This demo program is used by 87K series modules.
	87k ai	Shows how to read the AI values of AI module.
	07K_di	This demo program is used by 87K series AI modules.
	87k_ao	Shows how to write the AO values to AO module.
		This demo program is used by 87K series AO modules.
	87k di	Shows how to read the DI values of DI module.
	07K_UI	This demo program is used by 87K series DI modules.
	87k do	Shows how to write the DO values to DO module.
	87K_00	This demo program is used by 87K series DO modules.
Local		Shows how to read the DI and the DO values of the
	87k_dio	DIO module.
		This demo program is used by 87K series DIO modules.
		Shows how to send/receive a command/response application.
Remote	7k87k_basic	This demo program is used by 7K or 87K series
		AI modules which connected through a COM port.

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Folder	Demo	Explanation
		Shows how to read the AI values of AI module.
	7k87k_ai	This demo program is used by 7K or 87K series
		AI modules which connected through a COM port.
		Shows how to write the AO values to AO module.
	7k87k_ao	This demo program is used by 7K or 87K series
		AI modules which connected through a COM port.
		Shows how to read the DI values of DI module.
	7k87k_di	This demo program is used by 7K or 87K series
		AI modules which connected through a COM port.
		Shows how to write the DO values to DO module.
	7k87k_do	This demo program is used by 7K or 87K series
		AI modules which connected through a COM port.
		Shows how to read the DI and the DO values of the DIO module.
	7k87k_dio	This demo program is used by 7K or 87K series
		AI modules which connected through a COM port.

# 6.2.2. C# Demos for PAC Expansion I/O

The PAC SDK includes the following demos that demonstrate the use of the PAC expansion I/O in a C# language environment.

The following demos can be found on the CD that was provided with the package or by downloading the latest version from ICP DAS web site. CD:\XP-8X3X-CE6\demo\XPAC\C#\IO\

http://ftp.icpdas.com/pub/cd/xp-8x3x-ce6/demo/xpac/c%23/io/

Folder	Demo	Explanation
	find in	Shows how to retrieve the module name and type which plugged
	find_io	in the XP-8000-CE6.
	8k di	Shows how to read the DI values of DI module.
	ok_ui	This demo program is used by 8K series DI modules.
	8k do	Shows how to write the DO values to DO module.
	ok_uu	This demo program is used by 8K series DO modules.
	8k dio	Shows how to read the DI and the DO values of the DIO module.
		This demo program is used by 8K series DIO modules.
Local	87k basic	Shows how to send/receive a command/response application.
LUCAI	O/K_Dasic	This demo program is used by 87K series modules.
	87K demo	Shows how use uart API and the IO modules located as slots.
	ork_demo	This demo program is used by 87K series modules.
	87k ai	Shows how to read the AI values of AI module.
	07K_di	This demo program is used by 87K series AI modules.
	87k_ao	Shows how to write the AO values to AO module.
		This demo program is used by 87K series AO modules.
	87k di	Shows how to read the DI values of DI module.
	07K_UI	This demo program is used by 87K series DI modules.
	87k_do	Shows how to write the DO values to DO module.
	07K_00	This demo program is used by 87K series DO modules.
Local		Shows how to read the DI and the DO values of the
	87k_dio	DIO module.
		This demo program is used by 87K series DIO modules.
		Shows how to send/receive a command/response application.
Remote	7k87k_basic	This demo program is used by 7K or 87K series
		AI modules which connected through a COM port.

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Folder	Demo	Explanation
		Shows how to read the AI values of AI module.
	7k87k_ai	This demo program is used by 7K or 87K series
		AI modules which connected through a COM port.
		Shows how to write the AO values to AO module.
	7k87k_ao	This demo program is used by 7K or 87K series
		AI modules which connected through a COM port.
		Shows how to read the DI values of DI module.
	7k87k_di	This demo program is used by 7K or 87K series
		AI modules which connected through a COM port.
		Shows how to write the DO values to DO module.
	7k87k_do	This demo program is used by 7K or 87K series
		AI modules which connected through a COM port.
		Shows how to read the DI and the DO values of the DIO module.
	7k87k_dio	This demo program is used by 7K or 87K series
		AI modules which connected through a COM port.

# 6.2.3. Visual C++ Demos for PAC Expansion I/O

The PAC SDK includes the following demos that demonstrate the use of the PAC expansion I/O in a C# language environment.

The following demos can be found on the CD that was provided with the package or by downloading the latest version from ICP DAS web site. CD:\XP-8X3X-CE6\demo\XPAC\VC2005\IO\

http://ftp.icpdas.com/pub/cd/xp-8x3x-ce6/demo/xpac/vc2005/io/

Folder	Demo	Explanation
	find in	Shows how to retrieve the module name and type which plugged
	find_io	in the XP-8000-CE6.
	8k di	Shows how to read the DI values of DI module.
	ok_ui	This demo program is used by 8K series DI modules.
	8k do	Shows how to write the DO values to DO module.
	ok_uu	This demo program is used by 8K series DO modules.
	8k dio	Shows how to read the DI and the DO values of the DIO module.
		This demo program is used by 8K series DIO modules.
Local	87k basic	Shows how to send/receive a command/response application.
LUCAI	O/K_Dasic	This demo program is used by 87K series modules.
	87K demo	Shows how use uart API and the IO modules located as slots.
	ork_demo	This demo program is used by 87K series modules.
	87k ai	Shows how to read the AI values of AI module.
	07K_di	This demo program is used by 87K series AI modules.
	87k_ao	Shows how to write the AO values to AO module.
		This demo program is used by 87K series AO modules.
	87k di	Shows how to read the DI values of DI module.
	07K_01	This demo program is used by 87K series DI modules.
	87k_do	Shows how to write the DO values to DO module.
	07K_00	This demo program is used by 87K series DO modules.
Local		Shows how to read the DI and the DO values of the
	87k_dio	DIO module.
		This demo program is used by 87K series DIO modules.
		Shows how to send/receive a command/response application.
Remote	7k87k_basic	This demo program is used by 7K or 87K series
		AI modules which connected through a COM port.

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Folder	Demo	Explanation
		Shows how to read the AI values of AI module.
	7k87k_ai	This demo program is used by 7K or 87K series
		AI modules which connected through a COM port.
		Shows how to write the AO values to AO module.
	7k87k_ao	This demo program is used by 7K or 87K series
		AI modules which connected through a COM port.
		Shows how to read the DI values of DI module.
	7k87k_di	This demo program is used by 7K or 87K series
		AI modules which connected through a COM port.
		Shows how to write the DO values to DO module.
	7k87k_do	This demo program is used by 7K or 87K series
		AI modules which connected through a COM port.
		Shows how to read the DI and the DO values of the DIO module.
	7k87k_dio	This demo program is used by 7K or 87K series
		AI modules which connected through a COM port.

# 7. Recovery and Restore

This chapter provides information of the XP-8000-CE6 restore and recovery, and a guided tour that describes the steps needed to restore and recovery the XP-8000-CE6.

The XP-8000-CE6 comes with a rescue CF card that can be used to not only boot the XP-8000-CE6 when the OS fails to load, but also recover files.

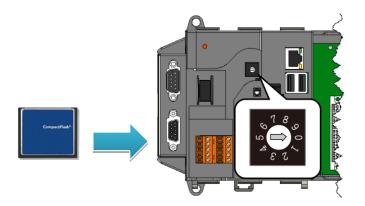
The recovery file of the rescue CF card can be found separately on the CD that was provided with the package or by downloading the latest version from ICP DAS web site.

CD:\XP-8X3X-CE6\Rescue_Disk\ http://ftp.icpdas.com/pub/cd/xp-8x3x-ce6/rescue_disk/

# 7.1. Recovering the XP-8000-CE6

If the XP-8000-CE6 crashes and won't start up, you can use the rescue CF card to start up the XP-8000-CE6 and then fix the problem that caused the crash.

Step 1: Plug the CF card in CF slot and turn the rotary switch in position 0



Step 2: Reboot the XP-8000-CE6, press Delete key to enter the BIOS setup utility

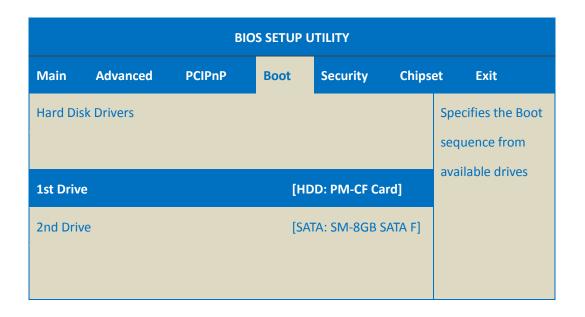
Step 3: On the Boot menu, select Hard Disk Drives and then press Enter key

	BIOS SETUP UTILITY								
Main	Advanced	PCIPnP	Boot	Security	Chipset	t Exit			
Boot Se	ttings ttings Configura	tion				Specifies the Boot Device Priority sequence from			
Hard Di	sk Drives		available Hard drives						

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#### Step 4: Select 1st Drive and then press Enter key

# Step 5: Set 1st Drive as HDD: PM-CF Card, it means the XP-8000-CE6 booting from the CF card



#### Step 6: Press F10 key and select OK to exit the setup utility and reboot the XP-8000-CE6

After rebooting the XP-8000-CE6, the system will enter the XP-8000-CE6 Rescue Utility.

#### Step 7: Enter 1, (1) create XPAC_CE default partition

Wait a while until we enter the XP-8000-CE6 Rescue Utility again.

#### Step 8: Enter 2, (2) format and restore XPAC_CE to factory default OS.

Wait a while until we enter the XP-8000-CE6 Rescue Utility again.

== Main Menu == ** the following 3 steps help you ** ** ** restore default XPAC_CE OS. (1) Step 1: create XPAC_CE default partition. (2) Step 2: format and restore XPAC_CE to factory default OS. (3) Step 3: reboot (6) Display directory information on built-in flash Please enter your choice: 2

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```
Main Menu
  ==
                                     ==
   -----
    **
        the following 3 steps help you
                                   **
    **
                                   **
        restore default XPAC_CE OS.
   (1) Step 1: create XPAC_CE default partition.
   (2) Step 2: format and restore XPAC_CE to factory default OS.
   (3) Step 3: reboot
   (6) Display directory information on built-in flash
Please enter your choice: 3
```

#### Step 10: Repeat step 2 to step 6 to set 1st Drive as SATA: SM-8GB SATA F

SATA: SM-8GB SATA F1 means Built-in flash.

BIOS SETUP UTILITY									
Main	Advanced	PCIPnP	Boot	Security	Chipse	et Exit			
Hard Disk	< Drivers					Specifies the Boot sequence from			
1st Drive	available drives								
2nd Drive	2		(HD	D: PM-CF Ca	rd]				

#### Step 11: The XP-8000-CE6 has been recovered

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# 7.2. Restoring the Rescue CF Card

The rescue CF card is rescue equipment that allows you to perform some maintenance tasks on your system in case of failure.

Once the rescue CF card are partitioned or formatted, you must restore the rescue CF card.

#### Requirements

For restoring the Rescue CF card, you should prepare Ghost 11 or later, which you could obtain by contacting Symantec (<u>http://www.symantec.com</u>)

Here are step by step instructions on how to restore the rescue CF card. In this demonstration, we will use Symantec Norton Ghost32 V.11.0 (The Symantec Norton Ghost V.11 or above version are recommend).

#### Step 1: Get the latest version of rescue ghost file, rescue.gho

The latest version of rescue.gho file can be found by downloading the latest version from ICP DAS web site.

http://ftp.icpdas.com/pub/cd/xp-8x3x-ce6/rescue_disk/

#### Step 2: Start the Symantec Norton Ghost32 V.11, and then click OK



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Symantec Bhost 11.0 Copyright (C) 1998-2006 Symantec Corporation. All rights reserved.

Step 3: Click Function Menu, point to Local, point to Disk, and then click From Image

# Step 4: Select the rescue ghost file that you saved, and then click Open

Symantec Ghost 11.0	Copyright (C)	1998-2006 \$	iymantec Corpo	ration. All rig	hts reserved.	
In	nage file name t	o restore from	n			
	Look jn:	🖃 C: 1.2: [] N	TFS drive	▼	<b>€</b>	
	Nam	ne 🛛	Size	Da	ite	
	Atom_Rescue	≥_Disk_v1400.G	244,140,886	2016/10/18 2016/08/18		
	File <u>pame</u> : Files of <u>type</u> : Image file <u>d</u> escript	*.GHO	_	V	<u>O</u> pen <u>C</u> ancel	

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#### Step 5: Select the destination to CF card and click then OK

1         476940         Basic         60801         255         63           2         953869         Basic         121601         255         63           3         1839         Basic         234         255         63           Image: State	2 953869 Basic 121601 255
3 1839 Basio 234 255 63	
Cancel	

# Step 6: Recovery the rescue ghost file into CF card and then click OK

Primary         0b         Fat32         N0 NMHE         1835         1898         181           Free         4         7         7         7         1813         1905         181           Ottal         1839         1905         181           QK         Cancel		jpe	ID	Description	Label	New Size	Old Size	Data Size
Total 1839 1905 181	1 Prir	nary	05	Fat32	NO NRHE	1835	1898	181
		_			rree	-		
gKSancel					Total	1839	1905	181
			9	к		Çano	el	

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# Step 7: The rescue CF card has been done

antec Ghost 11.0.	2 Copyright (C) 199	8-2007 Symantec Corpo	oration. All rights reserv	ed.			
Progress Indicator							
0%	25%	50%	75%	100%			
Statistics							
Percent complete	3		- 1.1				
Speed (MB/min)	140						
MB copied	7		1	~			
MB remaining	174			1			
Time elapsed	0:03			/			
Time remaining	1:14						
Details							
Connection type	Local						
Source		00_Rescue_Disk_v1000	).6HO, 1905 MB				
Destination	Local drive [3], 18						
Current partition	1/1 Type:b [Fat32], Size: 1898 MB, NO NAME						
Current file	\BIN\ZIP.EXE						
		(S) syma	antec.				

# 8. XP-8000-CE6 Updates

This chapter provides a guided tour that demonstrates the steps needed to update the XP-8000-CE6 OS and SDKs.

ICP DAS will continue to add additional features to XP-8000-CE6 SDK and OS in the future, so we advise you to periodically check the ICP DAS web site for the latest updates.

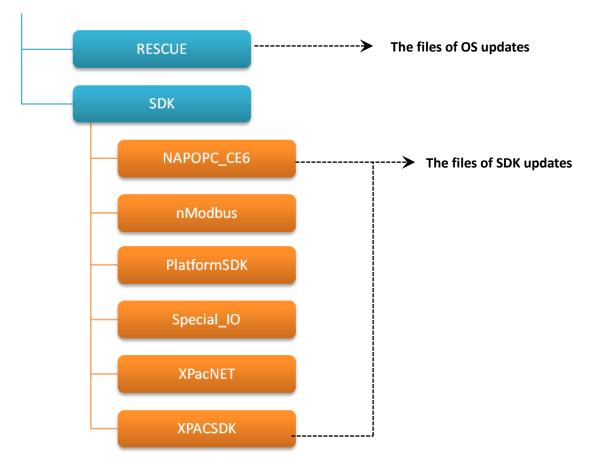
#### The file location of the OS and SDK

Both the files of OS updates and SDK updates can be found on the CD that was provided with the package or by downloading the latest version from ICP DAS web site.

• For XP-8x31-CE6:

CD:\XP-8X3X-CE6\

http://ftp.icpdas.com/pub/cd/xp-8x3x-ce6/



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# 8.1. OS updates

OS updates are part of the XP-8000-CE6 updates services to provide additional and more efficient features and functionality for XP-8000-CE6 operating system.

There are two ways to update the OS:

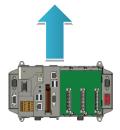
1. Update from file (Please refer to section 8.1.1)

(We recommend that you use this one for more quicker and easier to update)

2. Update from rescue CF card (Please refer to section 8.1.2)

# 8.1.1. OS Updates from file

The OS update file can be obtained via the network. Before updating the OS, make sure the XP-8000-CE6 is connected to the network.



# Step 1: Get the latest version of the OS image file, NK.bin

The latest version of the OS image file, NK.bin, can be found from ICP DAS web site.

http://ftp.icpdas.com/pub/cd/xp-8x3x-ce6/rescue/ce6/

### Step 2: Replace an old one OS with a new one

The OS image, NB.bin are pre-installed on the \System_Disk

# Step 3: Reboot the XP-8000-CE6, the OS image has been updated completely

Run the XPAC Utility, click Reboot from the File menu for changes to take effect.

z 🖉		
XPAC_Utility 🗧 🎽	XPAC Utility [1.2.2.0]	
	File Help	
	Save Save and Reboot	onfig Network De
	<u>R</u> eboot	
	Restore Utility Default Settings	
	E <u>x</u> it	

# Step 4: Check the OS version

Run the XPAC Utility, and then select the Device Information tab to check the current OS version.

XPAC_Utility	XPAC Utility [1.2.1	2.0]					
	File Help						
	General General2	Display IP Config	Network	Device Info	rmation	Auto Execution Ro	tary Exe 🔳 🕨
	Slot 1:		CPU Type:		LX800		
	Slot 2:	87026P 9	Serial Numb	er:	01-33-7E	-FD-15-00-00-D5	
	Slot 3:	87028U E	Backplane V	ersion:	1.0.15.0		
	Slot 4:		CPU Version	:	1.0.1.0		
	Slot 5:	8064 (	OS Version:		1.3.8.1		
	Slot 6:		NET CF Ver	sion:	3.5.7338	.00	
	Slot 7:	8064 9	SQL CE Vers	ion:	3.5.8080	.0	
		)	XPacSDK Ve	rsion:	4.3.3.7		

# 8.1.2. OS Updates using the Rescue CF Card

The XP-8000-CE6 can be reinstalled with the XP-8000-CE6 Rescue Utility. Before reinstalling the XP-8000-CE6, make sure the necessary updating files have been are available on your CF card.

For more information on how to reinstall the XP-8000-CE6, please refer to section 7.1. Recovering the XP-8000-CE6

# 8.2. SDK Updates

SDK update is a part of the XP-8000-CE6 update services to provide additional and more efficient features and functionality for XP-8000-CE6 operating system.

# 8.2.1. SDK Updates for VB.NET or C#

The SDK can be updated by replacing the PACNET.dll file.

# Step 1: Get the latest version of the PACNET.dll file

The latest version of the PACNET.dll file can be obtained from ICP DAS web site. <u>http://ftp.icpdas.com/pub/cd/xp-8x3x-ce6/sdk/xpacnet/pacnet/</u>

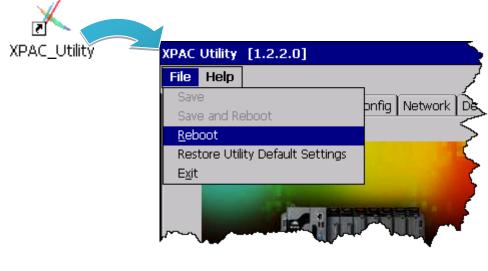
# Step 2: Copy the latest version of PACNet.dll file to PC and XP-8000-CE6

The PACNET.dll file on PC can be placed anywhere only the solution can reference it.

The PACNET.dll file on XP-8000-CE6 is located at the same directory as the .exe file.

### Step 3: Reboot the XP-8000-CE6, the SDK has been updated completely

Run the XPAC Utility, click Reboot from the File menu for changes to take effect.



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# Step 4: Check the SDK version

Run the XPAC Utility, and then select the Device Information tab to check the current SDK version.

Z XPAC_Utility					
	XPAC Utility [1.2.7 File Help	2.0]			_ ×
	General General2	Display IP Conf	ig Network Device Inf	formation Auto Execution Rota	ry Exe 🔳 🕨
	Slot 1:		CPU Type:	LX800	
	Slot 2: Slot 3:	87026P 87028U	Serial Number: Backplane Version:	01-33-7E-FD-15-00-00-D5 1.0.15.0	
	Slot 4: Slot 5:	8064	CPU Version: OS Version:	1.0.1.0 1.3.8.1	
	Slot 6: Slot 7:	8064	.NET CF Version: SQL CE Version:	3.5.7338.00 3.5.8080.0	
			XPacSDK Version:	4.3.3.7	

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# 8.2.2. SDK Updates for VB.NET or Visual C++

The SDK can be updated by replacing the PAC SDK files.

### Step 1: Get the latest version of the VC++ components

The latest version of the VC++ components can be obtained from:

http://ftp.icpdas.com/pub/cd/xp-8x3x-ce6/sdk/xpacsdk/pacsdk/

### Step 2: Copy the latest version of header files and libraries to PC

The header files are located at:

C:\Program Files\Windows CE Tools\wce600\XPacSDK_CE\Include\X86\

The libraries are located at:

C:\Program Files\Windows CE Tools\wce600\XPacSDK_CE\Lib\x86\

# Step 3: Copy the latest version of DLL files to XP-8000-CE6

The DLL files are located at:

\System_Disk\ICPDAS\System

### Step 4: Reboot the XP-8000-CE6, the SDK has been updated completely

Run the XPAC Utility, click Reboot from the File menu for changes to take effect.

	1	
XPAC_Utility	XPAC Utility [1.2.2.0]	
	File Help	
	Save Save and Reboot	onfig Network De
	<u>R</u> eboot	
	Restore Utility Default Settings E <u>x</u> it	
XP-8000-CE6 User Manual	(for WinCE 6.0 Based XPAC), ve	ersion 1.0.3

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# Step 5: Check the SDK version

Run the XPAC Utility, and then select the Device Information tab to check the current SDK version.

$\star$				
_Utility				
XPAC Utility [1.2.	2.0]			_ ×
File Help				
General General2	Display IP Confi	g Network Device Inf	ormation Auto Execution Rota	ry Exe 🔳 🕨
Slot 1:		CPU Type:	LX800	
Slot 2:	87026P	Serial Number:	01-33-7E-FD-15-00-00-D5	
Slot 3:	87028U	Backplane Version:	1.0.15.0	
Slot 4:		CPU Version:	1.0.1.0	
Slot 5:	8064	OS Version:	1.3.8.1	
Slot 6:		.NET CF Version:	3.5.7338.00	
Slot 7:	8064	SQL CE Version:	3.5.8080.0	
		XPacSDK Version:	4.3.3.7	

# 9. XP-8000-CE6 Download Center

This chapter provides a brief introduction of the XP-8000 -CE6 download center.

XP-8000 -CE6 has a download center where you can access the latest version of the software, tools, demo programs, and related information.

The XP-8000-CE6 Download Center can be found separately at: <a href="http://www.icpdas.com/root/support/download/download.php">http://www.icpdas.com/root/support/download/download.php</a>

# XP-8x31-CE6 Download Center

### Note:

When you download the software programs, you should notice if the programs conform to your machine. The published date and indicated requirement of a program can help user to determine the compatibility for your XP-8x31-CE6. Before you download any program, please read the notes of each online program first to avoid the confused situation.

OS images	SDK	Utility & Tools	Demo	Documents	System Disk	FAQ
OS images	i downl	oad				
Note:						2010 100
Before you dov	vnload the	software programs	s, you should	l notice if the pr	ograms are comp	patible to
your machine.	Please read	d the notes first in (	each chapte	r you want befo	ere download pro	grams.
How to upgra	ade OS im	age of XP-8x31-0	CE6			
There are two	methods t	to upgrade the XP-(	3x31-CE6:			
Only update (	<b>DS image</b>					
Copy a new OS	6 image, Ni	<.bin to replace the	old one.			
Reinstall XP-8	3x31-CE6					
The XP-8x31-C	E6 can be	reinstalled with the	xP-8x31-CE	E6 Rescue Utility	installed on CF c	ard. Before
reinstalling the	XP-8x31-C	E6, make sure the	necessary u	odating files hav	e been are availal	ole on your
CF card.						
For detail inform	nation, ple	ase refer to the do	cument as f	ollows:		
Update OS n	nanual				\u	
How to upda	te OS imaç	je			v 1.0.2	

The categories of updates available from the XPAC Download Center include:

- **OS images:** This category contains the latest version of the XPAC OS.
- **SDK:** This category contains the latest version of the SDK for each XPAC component SDK, such as XPAC SDK, and Modbus SDK, etc.

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- Utility & Tools: This category contains the latest version of the XPAC toolkits.
- **Demo:** This category contains all demo programs related to the XPAC.
- **Documents:** This category contains the latest versions of documents related to the XPAC.
- **System Disk:** This category contains the latest version of the XPAC toolkits.
- **FAQ:** This category contains answers to some common issues you may encounter while troubleshooting the XPAC.

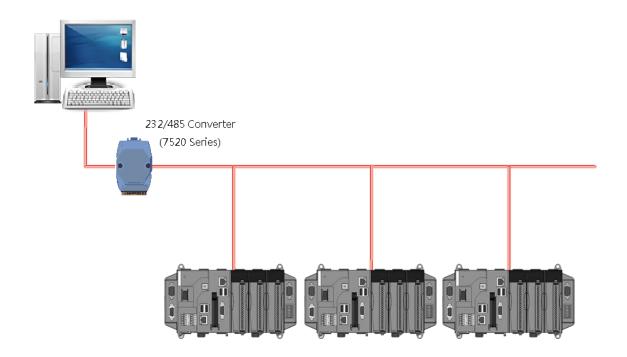
# 10. Application of RS-485 Network

The RS-485 length can be up to 4000 ft or 1.2 km over a single set of twisted–pair cables, if the RS-485 network is over 4000 ft or 1.2Km, the RS-485 repeater must be added to extend the RS-485 network.

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# 10.1. Basic RS-485 Network

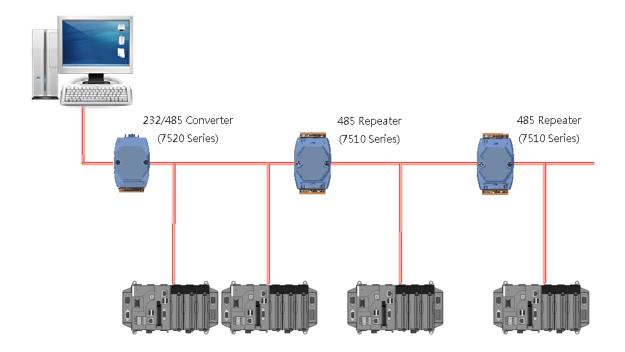
The basic component of the RS-485 network consist of a Master Controller (or using a PC as a host controller), and some RS-485 devices.



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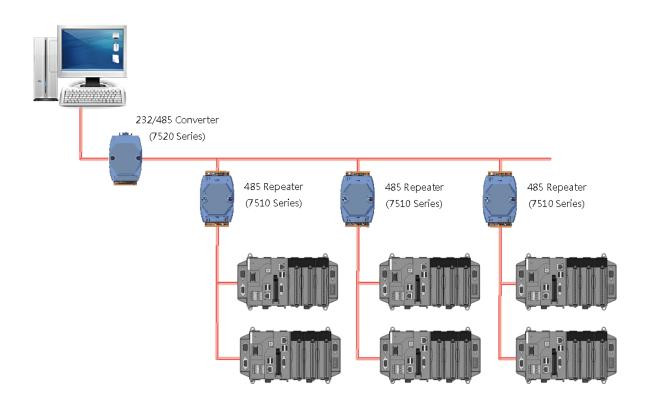
# 10.2. Daisy Chain RS-485 Network

All RS-485 devices are wired directly to the main network, If the network is up to 1.2 km, it will need a repeater (7510 series) to extend the network length.

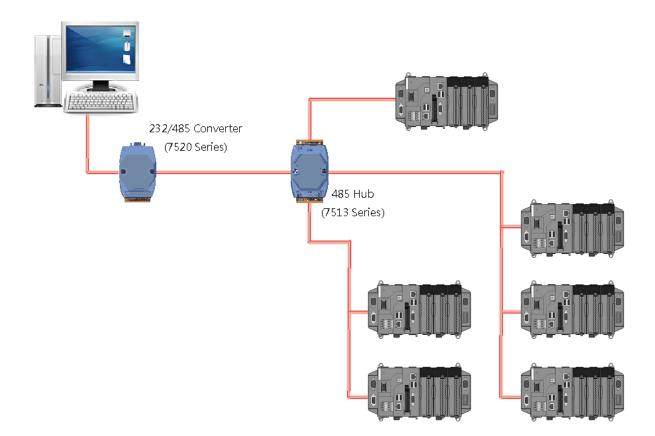


# 10.3. Star Type RS-485 Network

There are branches along the main network. In this case, it is better to have a repeater to isolate or filter the noise that is made by devices.

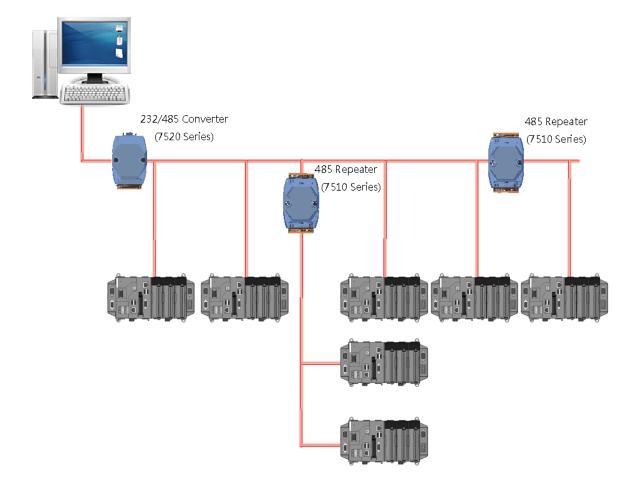


There is a better choice to use 7513 as a RS-485 hub on start type network.



# 10.4. Random RS-485 Network

There are branches along the main wire. In this case, it is better to have a repeater to isolate or filter the noise that is made by devices.

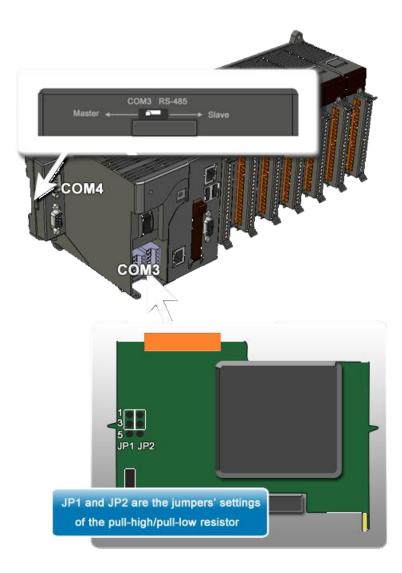


# 10.5. Master/Slave Settings

The RS-485 network based on master-slave architecture consists of a single master device and one or more slave devices.

The XPAC provides two RS-485 communication interfaces based on the master-slave system architecture, all of which have a pull-high/pull-low resistor, user can set it to master or slave for implementing an RS-485 multi-drop network.

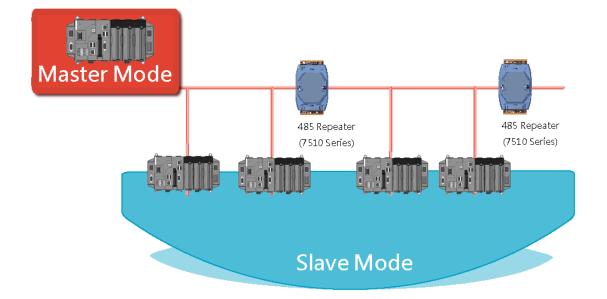
One of the RS-485 communications, COM3, its pull-high/pull-low resistor located on power board, the other, COM4, located on the right and its pull-high/pull-low resistor located on the bottom of the right as shown below.



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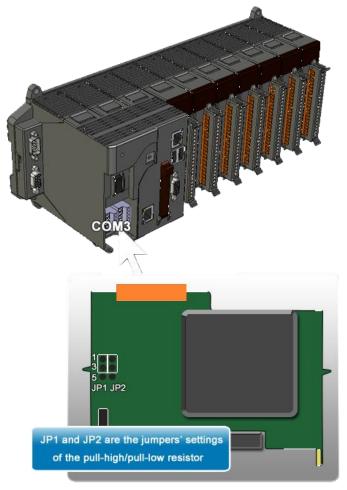
# 10.5.1. XPAC as a Master (Default)

When one of XPAC is set to master, then all the other devices on the same network must be slave mode. If the network is up to 1.2 KM, it will need a repeater (7510 series) to extend the network length.

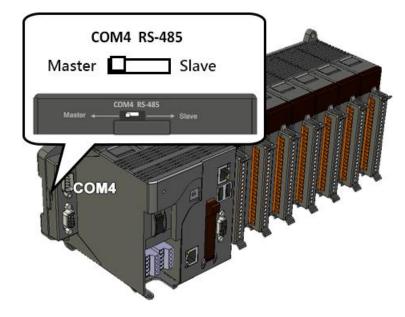


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When XPAC as a master using COM3 communication interface, the pull-high/pull-low resistor located on the power board must adjust to enable as showed below.



When XPAC as a master using COM4 communication interface, the pull-high/pull-low resistor located on the power board must adjust to enable as showed below.

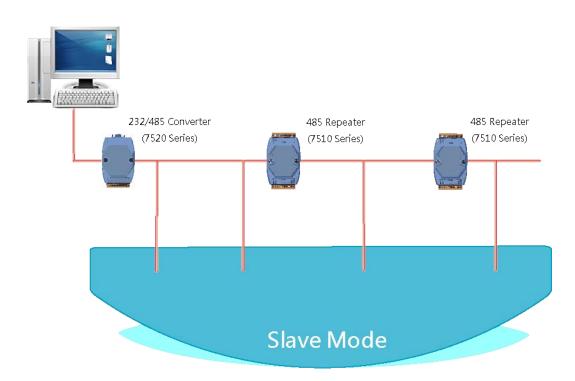


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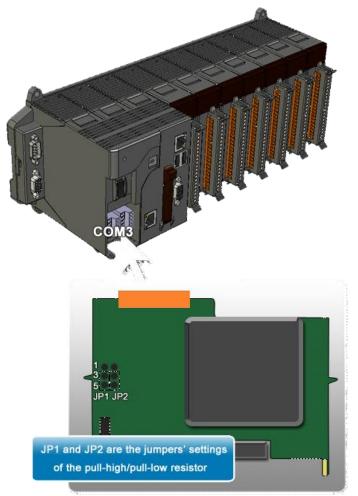
# 10.5.2. XPAC as a Slave

For most of application, when using one 7520 series as RS-232/485 converter, its pull-high/pull-low resistors are set to enabled. Then the XP-8000-CE6 and all the other devices on this network must be slave mode (the pull-high/pull-low resistors must be disabled).

If there are repeaters on the RS-485 network, there will be pull-high/pull-low resistors on both sides of the repeaters (I-7510)



When XPAC as a slave using COM3 communication interface, the pull-high/pull-low resistor located on the power board must adjust to enable as showed below.



When XPAC as a slave using COM4 communication interface, the pull-high/pull-low resistor located on the bottom of the right side, as showed below.



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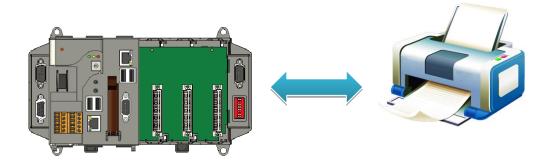
# Tips – How to

This chapter provides tips and a guided tour on using and maintaining the XP-8000.

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# A. How to Use the Printer

XP-8000-CE6 have ability to access the printer, the printer can be connected via an Ethernet or a USB.



### **Tips & Warnings**



XP-8000-CE6 only supports HP Laser Jet Printers with PCL6 driver. The following printer support is released by HP:

- HP LaserJet 4000 series/HP LaserJet 4100 series
- HP LaserJet 2100 series/HP LaserJet 2200 series
- HP LaserJet 1200
- HP LaserJet 3200/HP LaserJet 3300
- HP LaserJet 4200 series/HP LaserJet 4300 series
- HP LaserJet 5000 series/HP LaserJet 5100 series
- HP LaserJet 8000 series
- HP LaserJet 9000 series printers

If you need the latest support of HP PCL6 printer, you can refer to following link

http://h20000.www2.hp.com/bizsupport/TechSupport/Document.jsp?objec tID=bpl04568

# A.1. How to Use a Network Printer

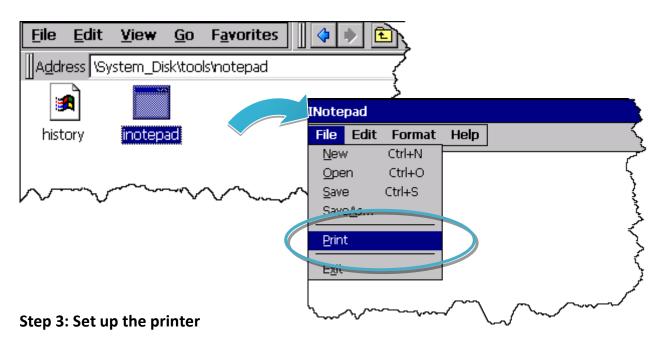
Here are step by step instructions on how to use a shared printer.

# Step 1: On PC side, check the name of the PC and the shared printer

System Properties	<b>?</b> 🔀	
	Computer Name Hardware Advanced uses the following information to identify your computer twork.	
	Identification Wizard to join a a local user account, click Network	
To rename this comp	Auto HP Laser.Jet 2200 (RD1) on KEVIN_WINPAC Properties  Grineral Sharing Port: Advanced Color Management  You can share this printer with other users on your network. To enable sharing for this printer, click Share this printer.  Do not share this printer  Share name: PrinterName  Drivers	2×
	If this printer is shared with users running different versions of Windows, you may want to install additional drivers, so that the users do not have to find the print driver when they connect to the shared printer. Additional Drivers	elp

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### Step 2: On XP-8000-CE6 side, run the Notepad, and then open a WordPad format file



- 1. Printer: PCL Laser
- 2. Port: Network
- 3. Net Path: \\ServerName\PrinterName

The "ServerName" is the name or IP of the PC.

The "PrinterName" is the name of share printer of the PC.

4. Paper Size: Select the paper size

File	Edit	View	Format	Tools	🖻 🗃	Ж	2	n	Tahom	~	14	$\sim$
Tes	st !!!				-							

Print			? ОК 🛛
Printer:	PCL Laser 💽	Print Range	Orientation
Port:	Network 🔽		Portrait
Net Path:	RD1-User2\Anna	Selection	<ul> <li>Landscape</li> </ul>
Paper Size:	A4 🔽	Margins (inches)	
Advanc	ed Draft Mode		Top: 1" Bottom: 1'

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# A.2. How to Use a USB printer

Here are step by step instructions on how to use a USB printer via a USB port.

# Step 1: Run the Notepad, and then open a WordPad format file

INote	pad			
File	Edit	Format	Help	5
<u>N</u> ew	/	Ctrl+N		·
Ope	n	Ctrl+O		ر ر
<u>S</u> ave	Э	Ctrl+S		}
Save	<u>⊐∆c</u>			, , ,
Print	t			Ś
				Ş
l \	$\sim$	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	$\sim$	$\sim$

### **Step 2: Set up the printer**

- 1. Printer: Hewlett-Packard LaserJet
- 2. Port: LPT1
- 3. Paper Size: Select the paper size

File	Edit	View	Format	Tools	0 🗃	8	; Pa	ĸ	Tahom	~	14	~
Tes	:t !!!											

Print	? ок 🔀
Printer:     Hewlett-Packard LaserJi       Port:     LTP1       Net Path:	Print RangeOrientationImage: All stateImage: PortraitImage: Selection stateImage: Landscape
Paper Size: A4	Margins (inches)Left:1.25"Top:1"Right:1.25"Bottom:1"

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# B. How to Online Debug the XP-8000-CE6 Program

Here are step by step instructions on how to online debug the XP-8000-CE6 program.

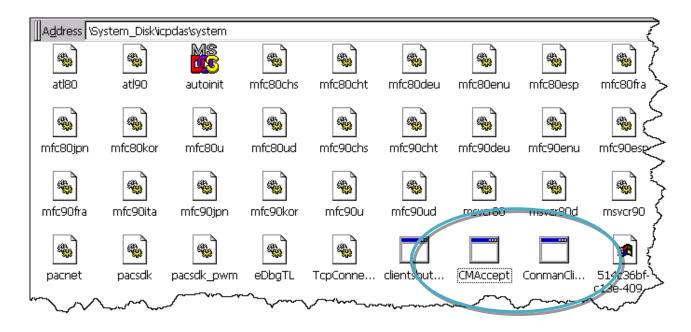
# Tips & Warnings Image: Definition on the starting online debug the XP-8000-CE6 program, make sure that the XP-8000-CE6 SDK has been installed correctly. For more information on how to install the XP-8000-CE6 SDK, please refer to 4.1.2. Installing the XP-8000-CE6 SDK.

# Step 1: Copy the following files to the \System_Disk\icpdas\system on the XP-8000

By default, these files are located on the development computer at C:\Program Files\Common Files\Microsoft Shared\CoreCon\1.0\Target\wce400\<CPU>.

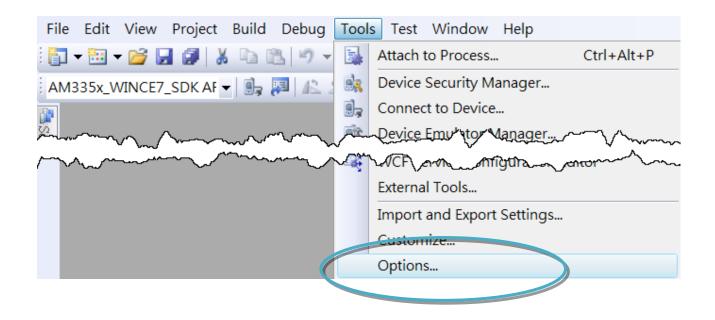
- clientshutdown.exe
- CMAccept.exe
- ConmanClient2.exe
- eDbgTL.dll
- TcpConnectionA.dll

### Step 2: Run the ConmanClient2.exe and then CMAccept.exe on the XP-8000-CE6



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### Step 3: On the Tools menu, click the Options



Step 4: In the left pane, expand <u>Device Tools</u> node and select <u>Devices</u>

Step 5: In the Show devices for platform:, select XPacSDK_CE and then click Properties

Op	otions		8 X
	Environment Projects and Solutions Source Control Text Editor Database Tools Debugging Device Tools General Devices Form Factors HTML Designer Office Tools Test Tools Text Templating Windows Forms Designer Workflow Designer	Show devices for platform: XPacSDK_CE bevices: XPacSDK_CE x86 Device Default device: XPacSDK_CE x86 Device	As Re_re Duiute Properties
			OK Cancel

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# Step 6: Click the Configure...

XPacSDK_CE x86 Device Properties		
Default output location on device:	▼	
Transport:		
TCP Connect Transport	Configure	
Bootstrapper:		
ActiveSync Startup Provider 🔹	Configure	
Detect when device is disconnected		
	OK Cancel	

# Step 7: Select the Use specific IP address:, and then type the IP address of XP-8000-CE6

Configure TCP/IP Transport		? ×
Use fixed port number:	5655	
Device IP address		
Obtain an IP address automa	atically using ActiveSync	
Use specific IP address:		
10.1.0.96		-
	ОК	Cancel

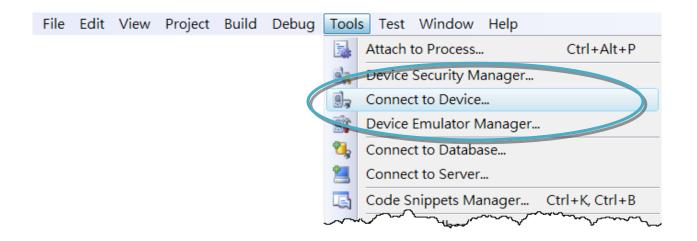
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# Step 8: Click the OK, and then click OK to end the dialog

XPacSDK_CE x86 Device Properties	2 ×	
Default output location on device:		
	•	
Transport:		
TCP Connect Transport	▼ Configure	
Bootstrapper:		
ActiveSync Startup Provider	Configure	
Detect when device is disconnected		
	OK Cancel	
Options		8 🕅
Environment	Show devices for platform:	
Projects and Solutions Source Control	XPacSDK_CE	
Text Editor	Devices:	
Database Tools Debugging	XPacSDK_CE x86 Device	Save As
Device Tools General		Rename
Devices Form Factors		Delete
HTML Designer Office Tools		Properties
Test Tools		
Text Templating Windows Forms Designer		
Workflow Designer	Default device:	
	XPacSDK_CE x86 Device	
		K Cancel

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### Step 9: On the Tools menu, click the Connect to Device...

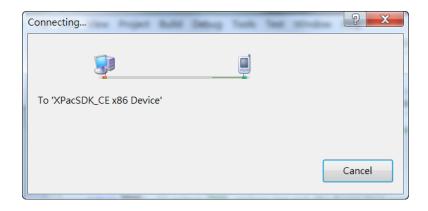


# Step 10: Click the Connect

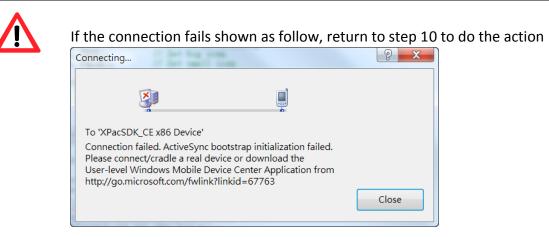
Connect to Device	? X
To connect to a physical device or launch an emulator image, select platform, then choose a device below.	Connect
Platform:	Cancei
XPacSDK_CE	
Devices:	
XPacSDK_CE x86 Device	

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### Step 11: Wait for the connection to be established



### **Tips & Warnings**



### Open the command prompt, run the

"ConmanClient2.exe/transport:tcpconnectiona.dll/property:port=5000/id:C on" at: \System_Disk\ICPDAS\System, and then run the "CMAccept.exe"

<u>File Edit Help</u>	
Pocket CMD v 6.00 > ConmanClient2.exe /transport:tcpconnections.dl	1 /property:port=5000 /id:Con
> CHAccept.exe	
Configure TCP/IP Transport	? 🔀
☑ <u>U</u> se fixed port number: 5000	
⊂ Device IP address	\$
O Obtain an IP address automatically using ActiveSync	
⊙ U₂e specific IP address:	
10.0.9.10	×
	OK Cancel

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# C. How to Automatically Synchronize XP-8000-CE6 Clock with an Internet Time Server

The clock on the XP-8000-CE6 can be synchronized with an internet time server. This means that the clock is updated to match the clock on the time server, which can help ensure that the time on the XP-8000-CE6 is accurate. Here are step by step instructions on how to synchronize the clock on the XP-8000-CE6 with an Internet time server.

### Step 1: Run the XPAC Utility



# Step 2: On the General tab, press Configure button

XPAC Utility [1.2.2.0]	
File Help	
General General2 Display IP Config Network Device	Information Auto Execution Rotary Exe 🔹 🕨
	Welcome to use XPAC Utility This tool will help you easy to use XPAC CE series. Task Bar setting: Auto Hide Always On Top HIVE Registry:
XPAC WINCE Series	Auto Save To Flash (Default)
Industrial Control Products Data Acquisition Systems	🔿 Maunal Save To Flash
Backplane Battery Battery1 : OK Battery2 : OK	Enable Autorun in plugging USB Disk
Configure the synchronization with a time serve	Configure

- Step 3: Select the domain name from the Server drop-down list, and then enter a value in the Autoupdate Frequency field
- Step 4: Check the Automatically synchronize with an internet time server check box

Internet Time 1.0.0.1	_ ×
Step1: Server: tock.usno.navy.mil	]
Step2: Autoupdate Frequency: 1440 minute	
Step3:	
$\blacksquare$ Automatically synchronize with an internet time se	rver
Update Now	
Auto update running	

Step 5: On the File menu, click Reboot

XPAC Utility [1.2.2.0]	
File Help	گر
Save	onfig Network De
Save and Reboot	
<u>R</u> eboot	
Restore Utility Default Settings	
E <u>x</u> it	
	A SISTERIAL

- Step 6: The XP-8000-CE6 will automatically synchronize with an internet time server regularly
- Step 7: Click the Update Now button to synchronize XP-8000-CE6 clock immediately

Internet Time 1.0.0.1
Step1: Server: tock.usno.navy.mil
Step2: Autoupdate Frequency: 1440 minute
Step3:
Automatically synchronize with an internet time server
Update Now
Auto update running

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# D. How to Control the User Account Control in XP-8000-CE6

User Account Control is a security feature that helps prevent unauthorized system changes to the XP-8000-CE6.

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# D.1. How to Create a User Account

Here are step by step instructions on how to add a user account.

# Step 1: Run the XPAC Utility



Step 2: On the Login tab of the Network tab, click Login tab, type the User Name and Password, and then click Add button

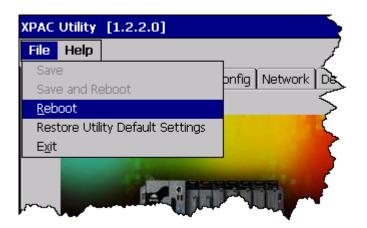
XPAC Utility [1.2.2.0]
File Help
General ] General2 ] Display ] IP Config [ Network ] Device Information ] Auto Execution ] Rotary Exe 💶 🕨
Access Login File Server Settings
User Name Password ICPDAS ****** Add Delete User name Password

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Step 3: The user has been added to the allowed under the remote login and included in the following list

XPAC Utility [1.2.2.0]
File Help
General ] General2 [ Display ] IP Config [ Network ] Device Information ] Auto Execution ] Rotary Exe 💶 🕨
Access Login File Server Settings
User Name Password Add Delete User name Password ICPDAS ****

Step 4: On the File menu, click Reboot for changes to take effect



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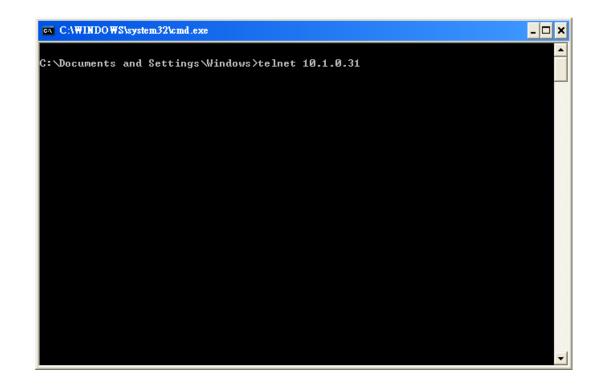
#### D.2. How to Telnet to Remote Login the XP-8000-CE6 from PC

Here are step by step instructions on how to use telnet to remote login the XP-8000-CE6 from PC.

Windows Catalog	
Windows Update	Run 🛛 🛛 🛛
Programs	Type the r 2. Type "cmd" hent, or
Construction of the second sec	Internet re. It for you.
	Open:
Help Run	
5 o Shut Down	OK Cancel Browse
🥼 start 🛛 🔤 C:\WINDOWS\Syste	

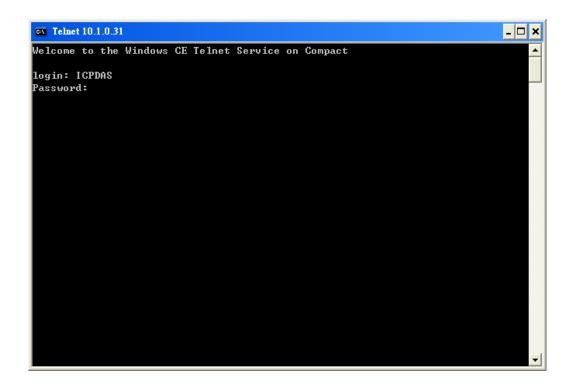
#### Step 1: On the PC, open a MS-DOS command prompt

Step 2: At the command prompt, type "telnet (IP address)"

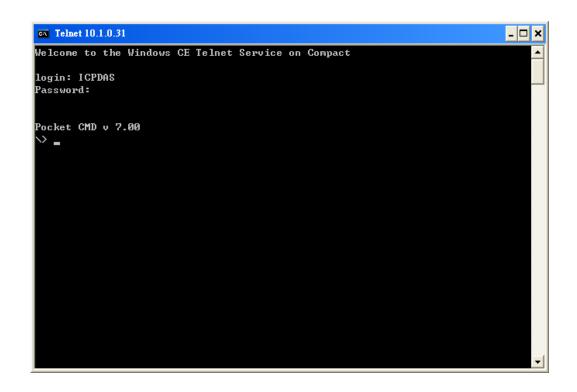


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Step 3: The connection has been set up, and then type the name and password



Step 4: The remote login has been completed



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#### D.3. How to Remove a User Account from the Login List

Here are step by step instructions on how to remote the user from the login list.

#### Step 1: Run the XPAC Utility

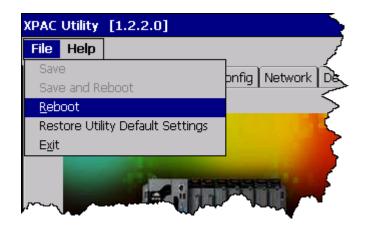


Step 2: On the Login tab of the Network tab, click Login tab, click a user from the list which you want to remove, and the user will display in the field, and then press Delete to delete the user from the login list

XPAC Utility [1.2.2.0]
File Help
General ] General2 ] Display ] IP Config [ Network ] Device Information ] Auto Execution   Rotary Exe 🚺
Access Login File Server Settings
User Name Password ICPDAS **** Add Delete User name Password ICPDAS ****

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Step 3: On the File menu, click Reboot for changes to take effect



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E. How to use PACSDK library to program the XP-8000-CE6

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#### E.1. How to Read the XPAC Mode with PACSDK library

The rotary switch is used to set the operating mode.



During normal operation, the position of the rotary switch has no effects on XP-8000-CE6. You can use PACSDK API to read back the value of the rotary switch.

int pac_GetRotaryID();

The returning value of pac_GetRotaryID() is what the arrow points to.

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#### E.2. How to Read the Module ID with XPAC API

The DIP switch can be used to set the Module ID to a number from 0 to 255. Do not use Module ID 0 for communication.

During normal operation, the positions of the DIP switches have no effects on XP-8000-CE6. You can use PACSDK API to read back the value of the DIP switches.

int pac_GetDIPSwitch();

Below is the figure of DIP switches similar to that of XP-8000-CE6. The first DIP switch is the LSB and the 8th DIP switch is the MSB. If the DIP switch slides up to the "ON" side, it represents 1. If the DIP switch slides down to the number side, it represents 0. In this way, the eight-bit DIP switches can be represented by 0 ~ 255.

ON	
$\blacksquare$	

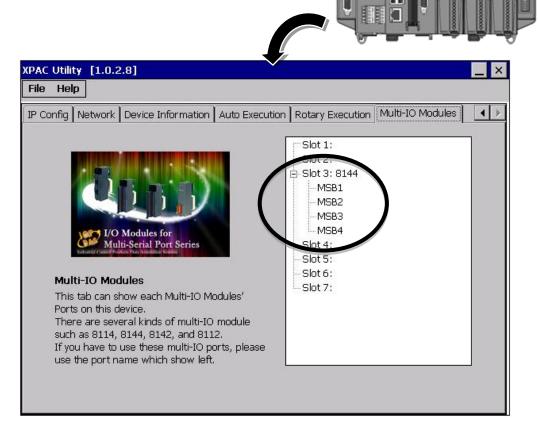
#### E.3. How to Use the Multi-IO Module with XPAC API

The Multi-IO Modules tab provides function to check the driver of multi-IO modules, such as 8114, 8144, 8142, and 8112.

For more information about expansion RS-232/RS-422/RS-485 communication module that are compatible with the XP-8000-CE6, please refer to

http://www.icpdas.com/products/Remote IO/i-8ke/selection rs232 i8k.htm

- 1. Insert the multi-IO module into XP-8000-CE6
- 2. Run the XPAC Utility
- 3. On the Multi-IO Modules tab, check the driver of the I/O modules

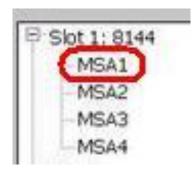


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XPAC Utility

#### 4. Program the multi-IO module

Opening 8144 in Slot 1



#### **Code Snippets**

{

BOOL ret;

HANDLE hOpen;

char buf[4096];

hOpen = uart_Open("MSA1");

```
ret = uart_SendCmd(hOpen,"$01M", buf);
uart_Close(hPort);
}
```

For more information about expansion RS-232/RS-422/RS-485 communication module that are compatible with the XP-8000-CE6, please refer to

http://www.icpdas.com/products/Remote IO/i-8ke/selection rs232 i8k.htm

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# F. How to update software from XP-8x4x-CE6 or XP-8000-Atom-CE6 to XP-8x3x-CE6

The CPU type of XP-8x4x-CE6 and XP-8000-Atom-CE6 is x86-based and the OS is also Windows CE6.0, so all software are compatible. All old programs and applications on XP-8x4x-CE6 and XP-8000-Atom-CE6 can run smoothly on XP-8x3x-CE6 without any modification and re-compiling. Upgrading applications only just copy and play from XP-8x4x-CE6 or XP-8000-Atom-CE6 to XP-8x3x-CE6.

The software compatibility is listed as following:

#### Software compatibility with XP-8x3x-CE6

Compatibility Comparison O: Compatible, X: Incompatible		
Items	Compatibility	
OS image	x	
Rescue Disk	x	
VC/C#/VB.net programs	0	
XPacSDK_CE6 SDK (DLL file)	x	
PACSDK (DLL file)	O (Since V4.4.0.1 and later)	
All DCON 8K series library	0	
XPAC utility	O (Since V1.2.7.3 and later)	
NAPOPC_CE6	0	
Tools on System_Disk	0	

Compatibility Comparison O: Work, X: Doesn't Work			
API Functions	XP-8x4x-CE6	XP-8000-Atom-CE6	XP-8x3x-CE6
pac_EnableLEDs	х	0	0
The others	0	0	0

Note: The version of PACSDK must be V4.4.0.1 or later

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### G. I-8K and I-87K Modules

I-8K and I-87K modules provide the option to expand the local I/O to 1, 3, or 7 slots and the bus type for the modules can be either parallel (high profile I-8K series) or serial (high profile I-87K series).

The differences between the two module types are listed as follows.

Item	I-8K Series	I-87K Series
Microprocessor	No	Yes (8051)
Communication Interface	Parallel Bus	Serial Bus
Communication Speed	Fast	Slow
Latched DI Function	No	Yes
Counter Input (for digital input modules)	No	Yes (100 Hz)
Power-on Value	No	Yes
Safe Value	No	Yes
Programmable Slew-Rate for AO modules	No	Yes

## H. Revision History

This chapter provides revision history information to this document.

The table below shows the revision history.

Revision	Date	Description
1.0.0	October 2016	Initial issue
1.0.1	March 2017	Modified the power specification in section 1.2. Specification
1.0.3	March 2018	Added the information about XP-8031-CE6 in Chapter 1. Introduction

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