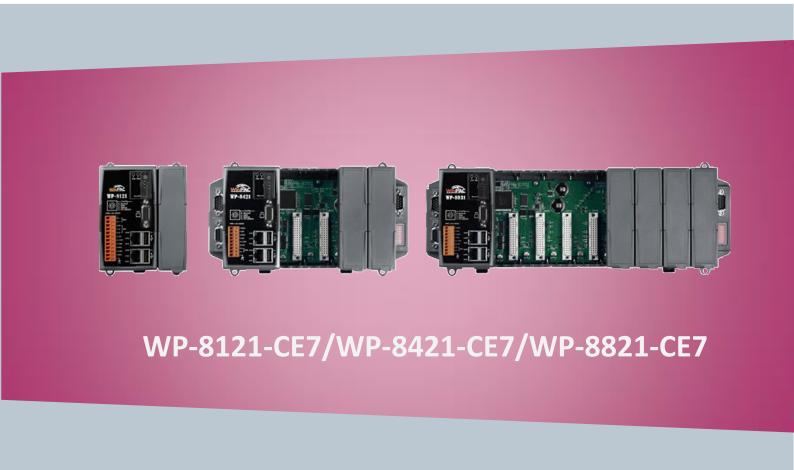


WP-8000-CE7 Series User Manual

V1.0.2, September 2020



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1. Introduction

This chapter provides an overview of the WP-8000-CE7 and its components, and introduces the fundamental concepts for user familiar with the WP-8000-CE7.

The WP-8000-CE7 is the new generation Windows CE 7.0 based PAC (Programmable Automation Controller) of ICP DAS. Each WP-8000-CE7 is equipped with a Cortex-A8 (1.0 GHz) CPU running a Windows CE 7.0 operating system, a variant of input/output ports (VGA, USB, Ethernet, RS-232/485), and 1/4/8 expansion I/O slots that can be used to integrate high performance I-8K (parallel-type) and I-87K (serial-type) series I/O modules.

Its operating system, Windows CE 7.0, has many advantages, including hard real-time capability, small core size, fast boot speed, interrupt handling at a deeper level, achievable deterministic control and low cost. Using Windows CE 7.0 in the WP-8000-CE7 gives it the ability to run PC-based Control software such as Visual Basic.NET, Visual C#, Visual C++, SCADA software, Soft PLC and etc.

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1.1. Features

The WP-8000-CE7 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
- Cortex-A8 1.0 GHz CPU
- Memory Size:
 - SDRAM (512 MB)
 - Flash (256 MB)
 - microSD card (support up to 32 GB)
- VGA Port x 1, USB 2.0 port x 2, Serial port (RS-232/RS-485) x 4
- 64-bit Hardware Serial Number
- Dual Watchdog Timers
- Dual Ethernet Ports (10 M/100 M/1000 M)
- Redundant Power Input
- Operating Temperature: -25 ~ +75 °C

Software Features

- Windows Embedded Compact 7.0
- JavaScript and VBScript
- SQL Compact Edition 3.5
- .NET Compact Framework 3.5
- Remote Display
- Rich Software Solution SDK for Microsoft Visual Studio 2008

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1.2. Specifications

The table below summarizes the specifications of the WP-8000-CE7.

Models	WP-8121-CE7	WP-8421-CE7	WP-8821-CE7
System Software			
OS	Windows CE 7.0		
.Net Compact Framework		3.5	
Embedded Service		Server (Supports VB so Embedded SQL Server	
SDK Provided	Dll for VC	, Dll for Visual Studio.	Net 2008
Multilanguage Support	_	rench, Spanish, Russi d Chinese, Traditional	
CPU Module			
CPU		Cortex-A8 (1.0 GHz)	
SDRAM		512 MB (DDR3)	
Flash		256 MB	
MRAM	128 KB		
EEPROM	16 KB		
microSD	microSD socket with one microSD card		
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)		
Programmable LED Indicator	1		
Rotary Switch	Yes (0 ~ 9)		
DIP Switch	- Yes (8 bits)		3 bits)
VGA & Communication Ports			
VGA Resolution	800 x 600, 1024 x 768		
Dual Ethernet Ports	RJ-45, 10 M/100 M/1000 M Base-TX		
USB		USB 2.0 x 2	
СОМ 0	Internal communication with the high profile I-87K series modules in slots		
COM 1 RS-232 (RxD, TxD and GND); Non-isolation		n-isolation	

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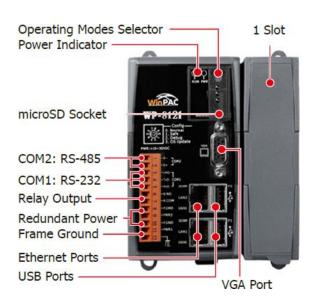
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Models	WP-8121-CE7	WP-8421-CE7	WP-8821-CE7	
VGA & Communication Po	orts			
COM 2	RS-485 (Data+, Data-);self-tuner ASIC inside; 3000 V _{DC} isolated			
	RS-232/485 (RxD, TxD, CTS, RTS and GND for			
COM 3	-		ata- for RS-485);	
		Non-is	olation	
COM 4	-	• • •	, RTS, DSR, DTR, CD, RI	
		and GND); N	Ion-isolation	
Number of I/O slots	1	4	8	
Mechanical		T		
Dimensions (W x H x D)	95 x 132 x 111	231 x 132 x 111	355 x 132 x 111	
Installation	D	IN-Rail or Wall Mountin	g	
Environmental				
Operating Temperature	-25 °C ~ +75 °C			
Storage Temperature		-30 °C ~ + 80 °C		
Ambient Relative	10 %	~ 00 % PH (non condon	scing)	
Humidity	10 % ~ 90 % RH (non-condensing)			
Environmental				
Input Range	+10 V _{DC} ~ +30 V _{DC}			
Redundant Power Inputs	Yes			
Isolation	1 kV			
	1.0A, 5V supply to	1.1A, 5V supply to	1.2A, 5V supply to	
	CPU and backplane,	CPU and backplane,	CPU and backplane,	
Capacity	0.6A, 5V supply to	4.9A, 5V supply to	4.8A, 5V supply to	
	I/O expansion slots,	I/O expansion slots,	I/O expansion slots,	
	total 8 W	total 30 W	total 30 W	
Consumption	7.3 W (0.3 A @ 24	9.1 W (0.38 A @ 24	9.6 W (0.4 A @ 24	
	V _{DC})	V _{DC})	V _{DC})	

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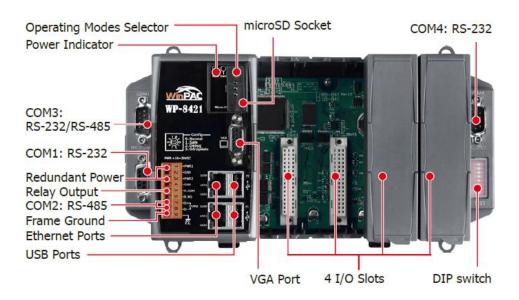
1.3. Overview

Here is an overview of the components and its descriptions.



WP-8121-CE7

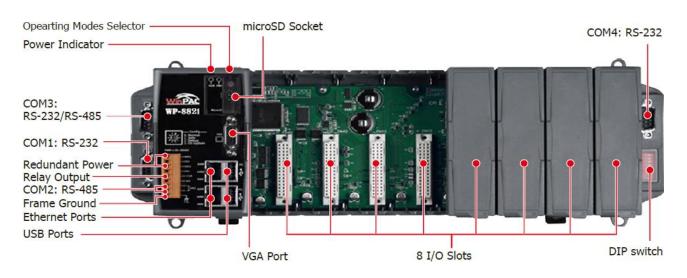
WP-8421-CE7



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WP-8821-CE7



The details of these items are as follows:

LED Indicators

Each WP-8000-CE7 has 2 system LED indicators that display the status of the system and power, the meaning of these statuses are as follows as follows:

LED Indicator	Label	State (Color)	Meaning
PWR LED Indicator	PWR	Green	Power 1 is on
System/Programmable LED RUN		Orange	OS is running
		-	Programmable LED indicators

Operating mode Selector

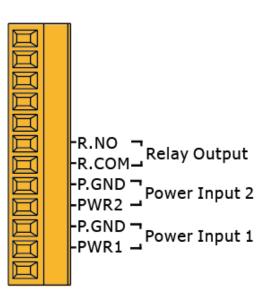


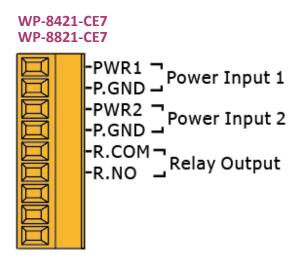
Rotary Switch is an operating mode selector. The WP-8000-CE7 has several operating modes, for more detailed information about these operating mode, please refer to "2.4 Configuring the Boot Mode"

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The WP-8121-CE7/WP-8421-CE7/WP-8821-CE7 has a terminal with 12-wire/9-wire/9-wore; there are 4-wire for redundant power inputs and 2-wire for relay output, the details of the redundant power and relay output are shown to the side.

WP-8121-CE7



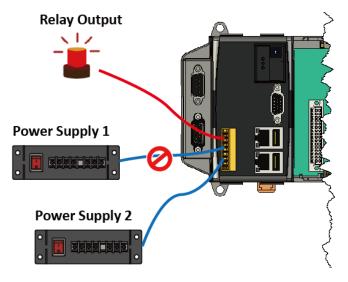


• Redundant Power

The WP-8000-CE7 provides redundant power that can keep the device running if a problem occurs in the power supply.

• Relay Output

The WP-8000-CE7 has a relay output that can be used to control a light, siren, or other low voltage device when an alarm occurs.



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Communication Ports

The WP-8000-CE7 Series modules are 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 .

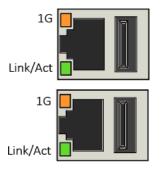


• Ethernet Ports (LAN1 and LAN2)

The WP-8000-CE7 has two Ethernet ports that can be used to connect the router to the Internet or to other devices.

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

LED Indicator	State (Color)	Meaning	
1G	ON (Orange)	Network Speed: 1000 MB 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 and P2)

The WP-8000-CE7 has two USB 2.0 ports that can be used to connect the USB devices such as mouse, keyboard or an external USB hard drive.

• microSD Socket

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

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• COM0, Expansion I/O Slot

The WP-8000-CE7 has 1/4/8 I/O slots 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 (3-wire RS-232, for WP-8121-CE7 only)

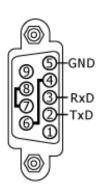
Note: 16C550 compatible Port Type: Female Baud Rate: 115200, 57600, 38400, 19200, 9600, 4800, 2400, 1200 bps Data Bits: 7, 8 Parity: None, Even, Odd Stop Bits: 1 FIFO: 64 byte

ДД	
DDD	-GND -RxD -TxD
IDD	
DDD	
ДД	

• COM1 (RS-232, for WP-8421-CE7 and WP-8821-CE7 only)

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

Note: 16C550 compatible 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



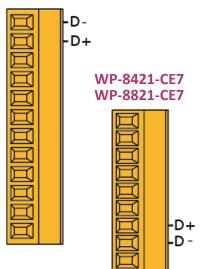
FIFO: 64 byte

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• COM2 (2-wire RS-485)

Note: 16C550 compatible 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

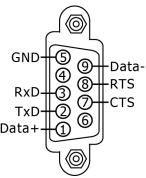




• COM3 (RS-232/RS-485, for WP-8421-CE7 and WP-8821-CE7 only)

The COM3 port is a 9-pins RS-232/RS-485 connector. The details of the COM3 port specifications are shown to the side.

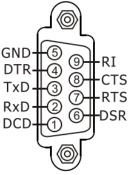
Note: 16C550 compatibleGNDPort Type: MaleGNDBaud Rate: 115200, 57600, 38400, 19200, 9600, 4800, 2400, 1200 bpsRxDData Bits: 5, 6, 7, 8TxDParity: None, Even, Odd, Mark (Always 1), Space (Always 0)Data HStop Bits: 1, 2FIFO: 128 bytes



• COM4 (RS-232, for WP-8421-CE7 and WP-8821-CE7 only)

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

Note: 16C550 compatible 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



Tips & Warnings



The table below shows the data bit and their corresponding stop bit for COM1, COM2, COM3 and COM4.

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

• DIP Switch

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.



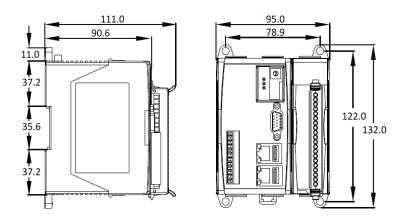
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1.4. Dimensions

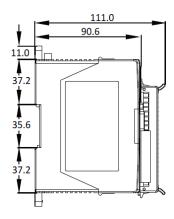
The diagrams below provide the dimensions of the WP-8000-CE7 to use in defining your enclosure specifications. Remember to leave room for potential expansion if you are using other components in your system.

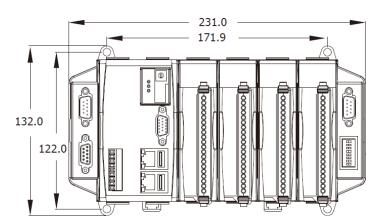
The height dimension is the same for all WP-8000-CE7. The width depending on your choose of I/O expansion slots. All dimensions are in millimeters.

WP-8121-CE7



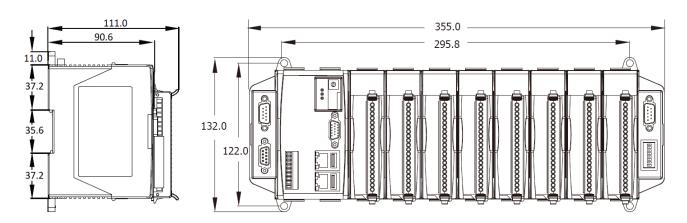
WP-8421-CE7





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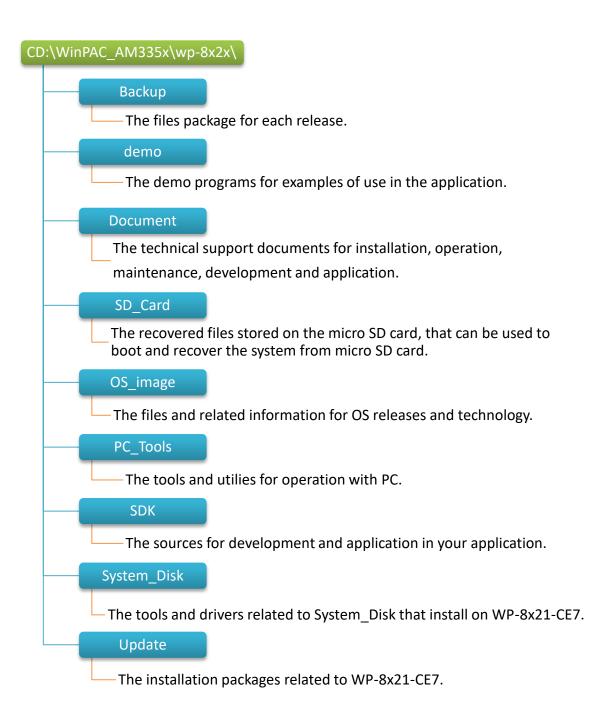


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1.5. Companion CD

This package comes with a CD that provides a collection of the software utility, documentation, drivers, demo program and application. The CD contains several subdirectories located in \wp-8x2x directory. All of them are listed below.



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2. Getting Started

This chapter provides a guided tour of the WP-8000-CE7 installation and configuration that describes the steps needed to download, install, configure, and run the basic procedures for user working with the WP-8000-CE7 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.



WP-8121-CE7/WP-8421-CE7/WP-8821-CE7



A microSD card and a micro SD/SD adapter



Quick Start Guide



Software Utility CD

Screw Driver (1C016) 2.4 mm

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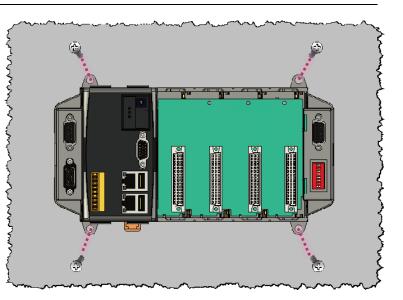
2.1. Mounting the WP-8000-CE7

The WP-8000-CE7 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

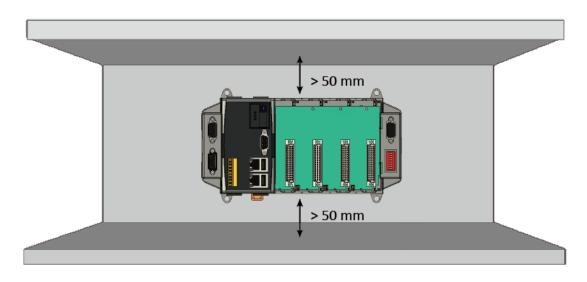
Step 2: Fasten the screws securely



Tips & Warnings



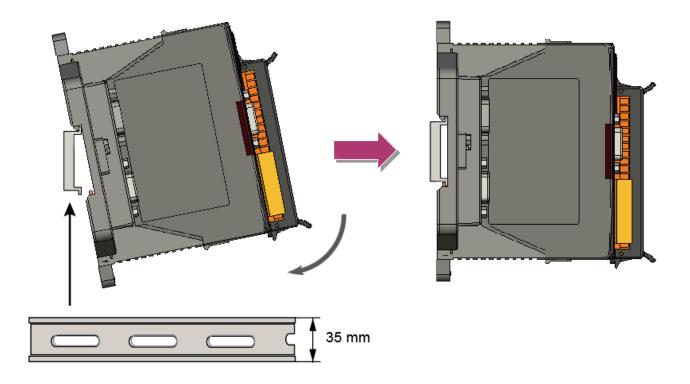
There must be a minimum clearance of 50mm between the WP-8000-CE7 and the top and bottom side of the enclosure panel.



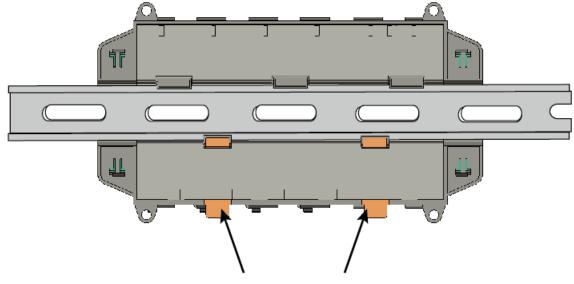
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Step 1: Hook upper tab over upper flange of DIN rail

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



Step 3: Push up retaining clips

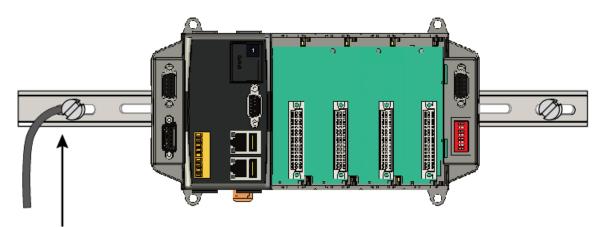


Gently push up retaining clips

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A good common ground reference (earth ground) is essential for proper operation of the WP-8000-CE7. 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

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2.2. Deploying a Basic WP-8000-CE7 System

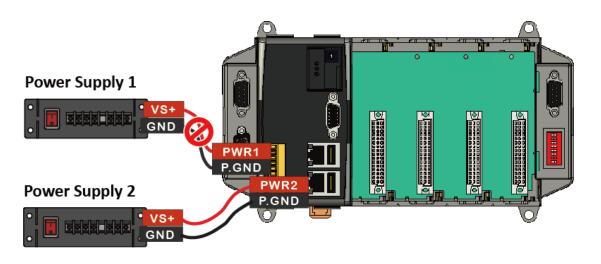
The WP-8000-CE7 provides a variety of communication interface to suit a range of application. Here is a simple application for using the WP-8000-CE7.

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 $V_{\text{DC}}.$
- 2. The WP-8000-CE7 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 WP-8000-CE7.

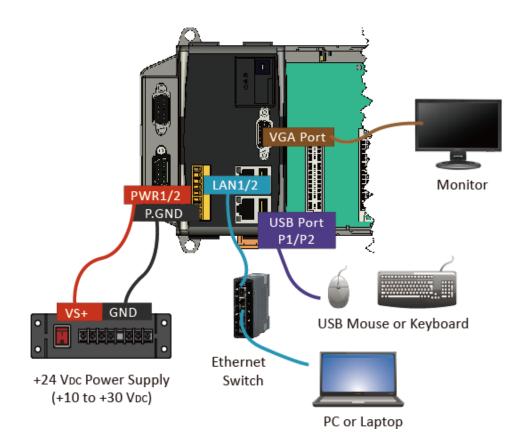


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Step 2: Connect the USB mouse or the USB keyboard to the USB port

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



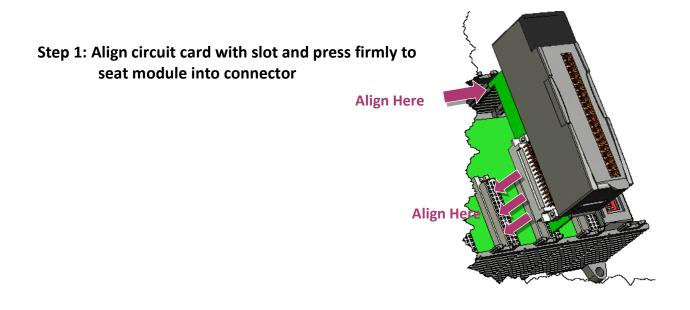
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2.3. Installing the I/O Modules

WP-8000-CE7 has 1/4/8 I/O expansion slots 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 WP-8000-CE7, please refer to: http://www.icpdas.com/en/product/guide+Remote I O Module and Unit+Software Supp ort +I-8K I-87K Software Support



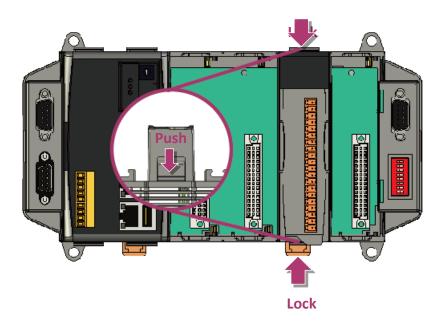
Tips & Warnings



It is recommended that the power to the WP-8000-CE7 is switched off when wring the I/O module which are plugging in the WP-8000-CE7 slots.

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

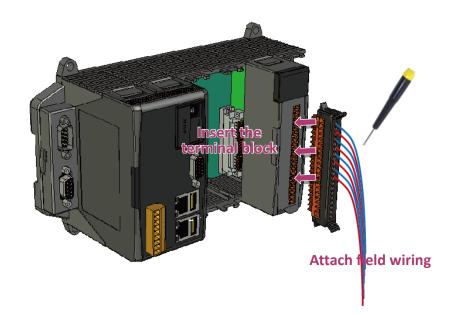


Step 3: Attach field wiring using the terminal block, and then insert the terminal block

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/en/product/I-87054-G

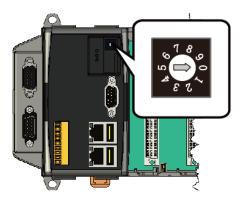


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2.4. Configuring the Boot Mode

The WP-8000-CE7 has several operating modes, which can be selected by a rotary switch.



The table below lists the operation modes available with the WP-8000-CE7.

Position	Operating Mode	
0	Normal mode (Default)	
1 Safe mode		
2	Debug mode	
3	OS update mode by Ethernet	
4	Reserve	
5	OS update mode by microSD	
6 Reserve (OS Development Mode)		
7~9	User 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 WP-8000-CE7.

If you have malicious software or a program caused the WP-8000-CE7 cannot be boot or run the normal mode, you can boot in safe mode to solve the problem.

Debug Mode

Debug mode is a special environment in which program debug functions can be used in addition to normal system functions.

Debug mode is unsupported.

OS Update Mode

OS update mode is a way used to update OS. For more information on updating the WP-8000-CE7 OS image, please refer to section 7.1. OS updates

Reserve \rightarrow OS Development Mode

The positions 4, 6, of rotary switch are reserved for OS development.

User Mode

The positions 7, 8, 9 of rotary switch are reserved for user's applications.

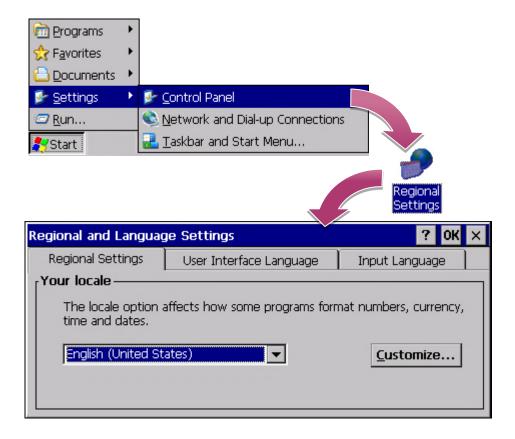
When WP-8000-CE7 is boot with one of these positions, it is boot at normal mode. User's application can check the position of the rotary switch position to run at different mode.

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2.5. Changing the User Interface Language

The **Regional and Language Settings** is a Windows CE functionality that allows users to change the WP-8000-CE7 user interface with your native language.

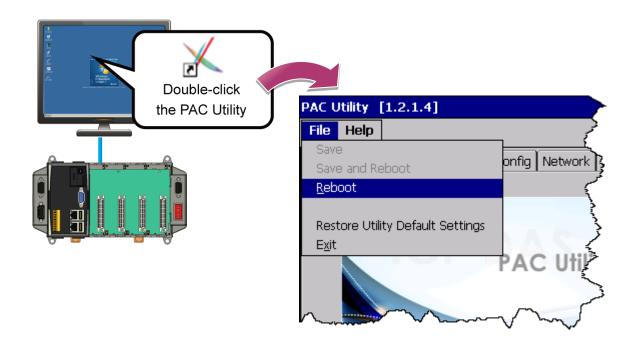
Step 1: Click <u>Start</u> menu, point to <u>Settings</u>, click <u>Control Panel</u>, and then click <u>Regional</u> <u>Settings</u>



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

Regional and Language Settings ? OK				
Regional Settings	User Interface Language Input Language			
User Interface Lan	guage			
The option wil and alerts.	option will determine the language used for the menus, dialogs alerts.			
	English (United States)			
	English (United Star French (France) German (Germany) Italian (Italy)	tes)		
	Portuguese (Brazil) Spanish (Spain - Int	ernational Sort)		

Step 3: Double-click the <u>PAC Utility</u> on the desktop, and then reboot the WP-8000-CE7 for changes to take effect



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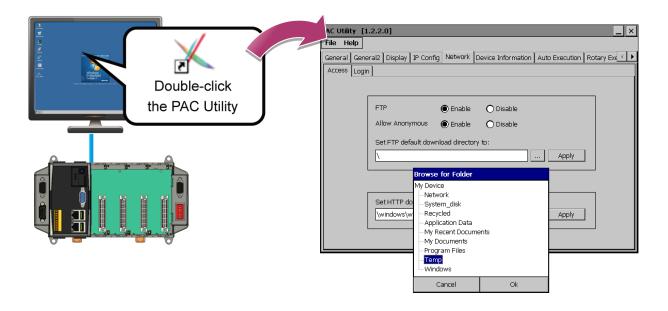
2.6. Using PAC Utility to Manage the WP-8000-CE7

The PAC Utility is a collection of the WP-8000-CE7 system tool that allows users to manage and configure the WP-8000-CE7 quickly and easily.

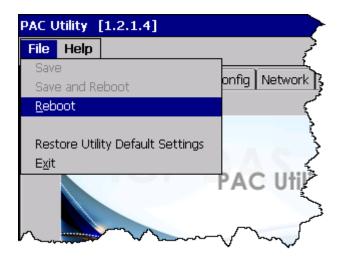
For more detailed information on PAC Utility applications, please refer to "3.1. PAC Utility"

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

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



Step 3: Reboot the WP-8000-CE7 for changes to take effect



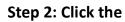
WP-8000-CE7 Series User Manual, version 1.0.2

2.7. Using DCON Utility Pro Configure I/O Modules

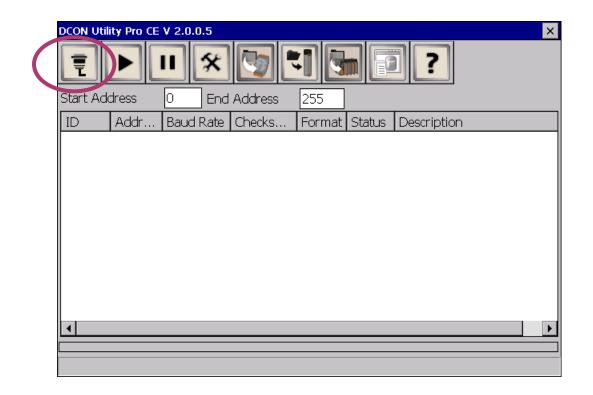
DCON Utility Pro allows users to configure and manage the I/O modules via Ethernet or serial ports (RS-232/RS-485).

Step 1: Double-click the DCON_Utility_Pro on the desktop









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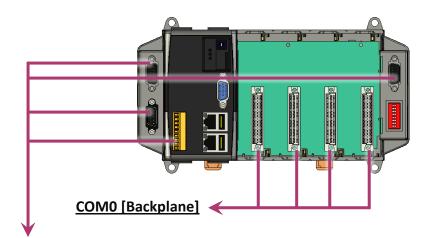
Step 3: Configure the communication settings

COM Port Option	×
COM Port	Timeout
COM0[Backplane]	300 ms
COM0[Backplane]	
COM1	ecksum Format
COM2 COM3	
COM3 COM4	3,2 □ E,8,1 □ 0,8,1
	B,2 E,8,1 O,8,1
]
OK Cancel	

Tips & Warnings



The COM port settings for expansion I/O modules are listed below.



COM1/2/3/4

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

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

	DCON Utility Pro	CE V 2.0.0.5
) * 🔄 🖬 🖬 🖻 ?
	Start Address	0 End Address 4
	D Addr.	Baud Rate Checks Format Status Description
(97015	15200 Disable N,8,1 [DCON]8*AI (Universal RTE
		97015 /mware[B209]
		Configuration AI About
		Protocol(INIT*) DCON
		Address
		Baud Rate(INIT*) 115200
		Parity(INIT*) N,8,1-None Parity
		Checksum(INIT*) Disable
	•	Analog Format Ohms 💌
		60/50 Hz 50Hz 💌
	COM:0[N,8,1]	Save Configurations to the File
		Write Configurations to I/O Module
		Response Delay 0 ms
		Exit

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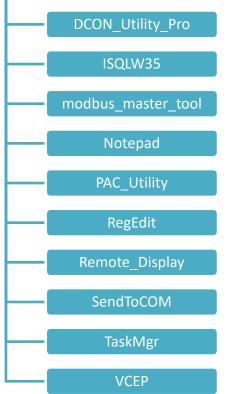
3. Tools and Tasks

This chapter provides a brief introduction of the WP-8000-CE7 service tools and its benefits.

There are several tools and utilities built-in and designed for use with WP-8000-CE7. Some of these are pre-installed on WP-8000-CE7 and can work directly on WP-8000-CE7, and some of these are supporting tools and can help you to manage the WP-8000-CE7 remotely on a PC.

The following tools are pre-installed on WP-8000-CE7 and can work directly on WP-8000-CE7 that can be found on the CD that was provided with the package or by downloading the latest version from ICP DAS web site.

CD:\WinPAC_AM335x\wp-8x2x\System_Disk\Tools\ http://ftp.icpdas.com/pub/cd/winpac_am335x/wp-8x2x/system_disk/tools/



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3.1. PAC Utility

PAC Utility is a collection of software applications that enable management and configuration of WP-8000-CE7 system and features.

PAC Utility [1.2.1.4]		
File Help		
General General2 Display I	P Config Network Device :	Information Auto Execution Rotary Exe 🔳 🕨
ICP	PAC Utility	Welcome to use PAC Utility This tool will help you easy to use PAC CE series. Task Bar setting:
	i Ao onny	Auto Hide
		🗖 Always On Top
		HIVE Registry:
		Auto Save To Flash (Default)
		O Maunal Save To Flash
Backplane Battery		Enable Autorun in plugging USB Disk
Battery1 : OK	Battery2 : OK	🔲 Enable Autorun in plugging Micro SD
RTC Battery		
Configure the synchroniz	ation with a time server	Configure Backlight Setting

The PAC 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

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3.1.1. Menu Bar – File

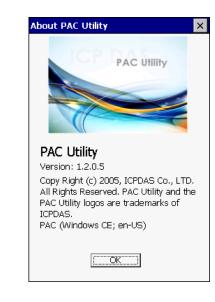
File Help Save Save and Reboot Reboot Restore Utility Default Settings Exit

The menus use to	How to use
Reboot	Restarts the WP-8000-CE7
Restore Utility Default Settings	Restore the WP-8000-CE7 to default settings.
Exit	Exits the PAC Utility.

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3.1.2. Menu Bar – Help



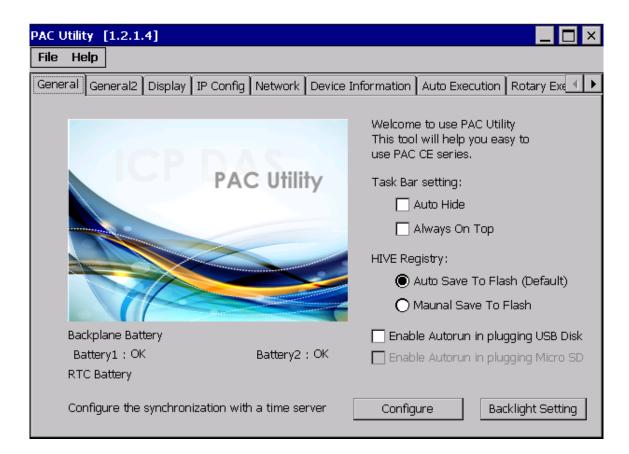


The menus use to	How to use
About	Displays a dialog box with information about PAC Utility,
	including the current version and copyright information.

WP-8000-CE7 Series User Manual, version 1.0.2

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 WP-8000-CE7 will be saved and only take		
	effect after the WP-8000-CE7 reboots.		
	Manual save to flash:	PAC Utility [1.2.1.4]	
	Select the Manual Save to Flash	File Help	
	check box.	Save onfice onfice	
	Any changes made to the	Reboot	
	WP-8000-CE7 will be saved by		
	clicking the Save and Reboot from	Restore Utility Default Settings	
	File menu.	Mar Martin	

WP-8000-CE7 Series User Manual, version 1.0.2

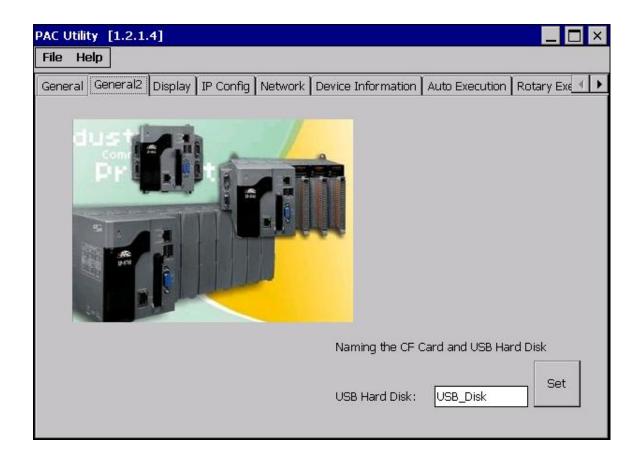
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The tab use to	How to use
Enable USB autorun	Select the Enable Autorun in plugging USB Disk check box.
Enable microSD auotrun	This item is temporarily unavailable.
Automatic synchronization	Refer to the Appendix A.2. How to configure the service for
of system time	automatically synchronizing with the internet time server.

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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

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3.1.5. Property Tab – Display

The **Display** tab provides functions to configure the monitor settings.

PAC Uti	ity	[1.2.1	.4]					_ 🗆 ×
File H	lelp]						
General) Ge	neral2	Display	IP Config	Network	Device Information	Auto Execution	Rotary Exe 🔳 🕨
		Screen Less		1: 480 pixels	More	Screen refre	sh rate:	•
								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 refresh rate	Select the desired refresh rate from the Screen refresh rate drop-down list, and then click the Apply button.

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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.

PAC Utility [1.2.1.4]	
File Help	
General General2 Display IP Config Net	work Device Information Auto Execution Rotary Exe 💶 🕨
LAN 1:	LAN 2:
MAC Address: 00-0D-E0-55-66-D1	MAC Address: 00-0D-E0-55-66-D2
O Use DHCP to get IP address	O Use DHCP to get IP address
Assign IP address	Assign IP address
IP Address:	IP Address:
Mask:	Mask:
Gateway:	Gateway:
DNS Server:	DNS Server:
Reboot for changes to take effective	e Reboot for changes to take effective
Apply	Apply

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.

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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.

PAC Utility [1	.2.1.4]
File Help	
General Gene	ral2 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:
l r	
	Set HTTP document root directory to:
	\windows\www\wwwpub\ Apply
l	

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	
	click the Apply button.	
anonymous FTP access	Disable anonymous FTP 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.

PAC Utility [1.2.1.4]
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 **** Add Delete User name Password Admin ****
User name Password Admin ****

The tab use to	How to use
Maintain the FTP	Refer to the Appendix C.1 How to add a user account to remote
accounts	login the WP-8000-CE7 from PC.

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

PAC Utility [1.2.0.6]	
File Help	
General Display IP Config Network Devic	e Information Auto Execution Rotary Execution
Access Login File Server Settings	
You can create a networked file server and retrieve files, and makes use of the Interna client devices and other shared equipment	et for communication between
Settings S	Share Files System Settings 📃 🗙
	Device Name (Each device need setting a different device name)
	Compact
Т	The path to the folder to be shared
	Configure the file server to use LANx as ne network adapter
	PCIVFETCE5B2
[[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
	Set
Ī	Help

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

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3.1.8. Property Tab – Device Information

The **Device Information** tab provides functions to monitor necessary system information of the WP-8000-CE7. The information is the most important note of version control for upgrading system.

PAC Utility [1.2.1.4]		
File Help		
General General2 Display	IP Config Network Device Int	formation Auto Execution Rotary Exe 💶 🕨
Slot 1:	Module(CPU) Type:	
Slot 2:	Serial Number:	01-82-4D-06-18-00-00-DA
Slot 3:	Backplane Version:	
Slot 4:	CPU Version:	1.0.0.0
Slot 5:	OS Version:	1.0.1.1 , 2015/10/30 09:36:5
Slot 6:	Eboot Version:	1.2.1.0 , 2015/10/22 16:26:0
Slot 7:	.NET CF Version:	3.5.7338.00
	SQL CE Version:	3.5.8154.0
	PACSDK Version:	4.3.3.4
	CPU Temperature:	

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3.1.9. Property Tab – Auto Execution

The **Auto Execution** tab provides functions to configure programs running at WP-8000-CE7 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.

PAC Utility [1.2.1.4]			_ 🗆 ×
File Help			
General General2 Displa	ay IP Config	Network Device Information Auto Execution	Rotary Exe 🔳 🕨
	Due eue un 1 :	[
	Program 1:	V_REMOTE.exe	Browse
	Program 2:		Browse
	Program 3:		Browse
	Program 4:		Browse
At most 10 programs	Program 5:		Browse
can be specified to execute automatically at system startup.	Program 6:		Browse
	Program 7:		Browse
	Program 8:		Browse
	Program 9:		Browse
	Program10:		Browse
		Clean Ap	ply

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 functions to configure programs running at WP-8000-CE7 startup in one of the user defined mode, it allows users to configure ten execute files at most.

PAC Utility [1.2.1.4]		_ 🗆 ×	
File Help			
General2 Display IP Config Network Devi			
	Normal Mode	Browse	
6789 Rotary Switch 1:	Safe Mode	Browse	
Rotary Switch 2:		Browse	
ετ Rotary Switch 3:		Browse	
Rotary Switch 4:		Browse	
Rotary Switch 5:		Browse	
Rotary Switch 6:		Browse	
Rotary Switch 7:		Browse	
Rotary Switch 8:		Browse	
Rotary Switch 9:		Browse	
	Ар	oly	

The tab use to	How to use
Configure programs running at startup	Click the Browse button to select the execute file
in one of the user defined mode	which you want, and then click the Apply 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 2.7. Using DCON Utility Pro to Configure I/O Modules

For more detailed information on DCON Utility application, please refer to: <u>http://www.icpdas.com/en/product/guide+Software+Utility_Driver+DCON_Utility_Pro</u>

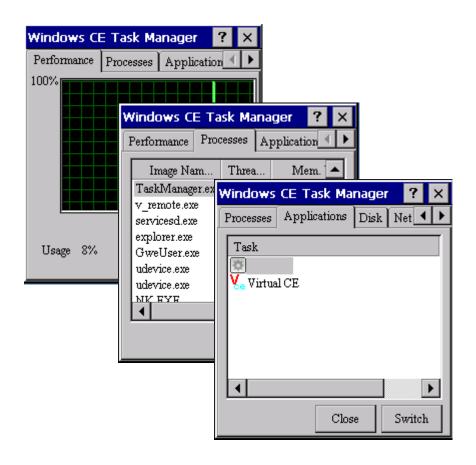
CON Utility Pro CE	V 2.0.0.4		×
tart Address D Addr	0 End Addr Baud Rate Che	ress 4 icks Format Status Description	
	Terminal COM Po Baud Ra Checksu Timeout Commar	ate 115200 Format N,8,1-None Parity um Disable Slot Slot I	Senc
Tool for Command	Response	40011	<
COM Port COMD Start Search	COM Port Protocol Baud Rate Data Format Checksum Slot	COM0 ▼ Load DCON 115200 ▼ Add >> Disable ▼ Modify	rty
	Timeout (ms) Delay for Next (ms) Command Reference Send Command Compared Response	200(ms) Save 200(ms) \$01M Input Compared Data	
	Compare Mode	Full Match	

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3.3. 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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3.4. VCEP

ICP DAS VCEP is designed for managing your WP-8000-CE7 anywhere. No matter where you are, ICP DAS VCEP provides a convenient environment on the Desktop PC and lets you control your WP-8000-CE7 remotely.

/irtual CE	
File Help	×
Virtual CE 5	
Connected	
Ready	
Primary IP = 10.1.0.96 License Free Version	
Video=GDI	
www.icpdas.com	

ICP DAS VCEP is composed of two main components: The **Server** which runs on WP-8000-CE7 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/en/product/guide+Software+Applications+VCEP (Virtual CE Pro)

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3.5. Remote_Display

The **Remote Display** allows WP-8000-CE7 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 WP-8000-CE7. 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.

3.6. 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:

ICPDAS Send to COM V1.0.4 2011/2/23

Connection Status COM Port Baudrate	Data Bit Parity	Stop Bit Slot	Open
	B O-None Parity		Close
End string with None OL	F_CR O CR O CR_LF		String Send Polling
Commands	Responses	🔘 Binary 🔘	String Senu Poling
Current Packet Size (bytes)	Current Packet Size (bytes) 0	Auto send I	nternal (ms) 500
Total Packet Bytes 0	Total Packet Bytes 0	Start	Stop Set
Packet Quantity send 0	Packet Quantity received 0	Start Time Sta	art Time
		Clear Stop Time Sto	op Time
			▲ ▼
			Clear

CD:\WinPAC\napdos\io_module\87k_high_profile_modules.htm

×

3.7. 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. For more information, see Registry Settings Management in Deployment.

Registry Editor Version 1.2.2				_ 🗗 ×
File Help				
	Name	Туре	Data	

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3.8. ISQLW35

The **ISQLW35** is a Windows Embedded Compact 7 functionality that implements SQL Server Compact 3.5 Query.

😤 Objects 🗮 SQL 🥅 Grid 📳 Notes	
Databases	
Tools SQL 🚯 🖯 💘	×

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3.9. 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				<u> </u>
				Input Panel
				Esc 1 2 3 4 5 6 7 8 9 0 - = 🗲
•				Shift Z × C ∨ b n m ,

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4. Your First WP-8000-CE7 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 WP-8000-CE7 modules.

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.

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4.1.1. Preparing the Development Tools and Programming Languages

WP-8000-CE7 is a Windows CE-based device that supports three programming languages for developing Windows CE applications.

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

Development Tools

WP-8000-CE7 supports the application development with the Professional Edition application of Visual Studio 2008.



Tips & Warnings



There are some updates for Visual Studio 2008 to provide support for Windows Embedded Compact 7.

If you have Professional Edition of Visual Studio 2008 are installed, make sure all of the following package are installed

1. Visual Studio 2008 Service Pack 1

http://www.microsoft.com/en-us/download/details.aspx?id=10986

2. Visual Studio 2008 update for Windows Embedded Compact 7

http://www.microsoft.com/en-us/download/confirmation.aspx?id=11935

3. Windows Embedded Compact 7 ATL Update for Visual Studio 2008 SP1

http://support.microsoft.com/kb/2468183/en-us

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4.1.2. Installing the WP-8000-CE7 SDK

The WP-8000-CE7 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 WP-8000-CE7 SDK, AM335x_WINCE7_SDKV100B03

The WP-8000-CE7 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:\WinPAC_AM335x\WP-8x2x\SDK\PlatformSDK\ http://ftp.icpdas.com/pub/cd/winpac_am335x/wp-8x2x/sdk/platformsdk/

Step 2: Execute the AM335x_WINCE7_SDK_YYYYMMDD.msi

Follow the prompts until the installation process is complete.

Step 3: Execute the VisualStudioDeviceWindowsEmbeddedCompact7

Follow the prompts until the installation process is complete.

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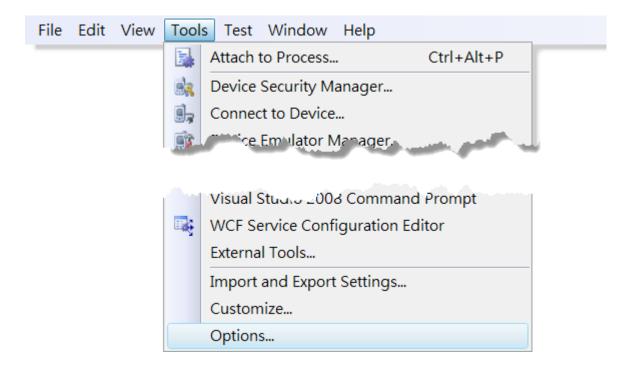
4.1.3. Setting up the Global Compiler Settings (for Visual C++)

The directories can be specified where the compiler will search for include files and libraries.

Step 1: Start Visual Studio 2008



Step 2: On the Tools menu, click Options...



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Step 3: In the <u>Options</u> dialog box, expand the <u>Projects</u> folder, and then click the <u>VC++</u> <u>Directories</u>

Step 4: In the Show directories for: drop-down list, select Include files

Step 5: Use the buttons in the Options dialog box to add additional include paths

The path of "\$(VCInstallDir)ce7\include" and "\$(VCInstallDir)ce7\atlmfc\include" must be moved to the top of the list.

Options	-	2 X
Environment Projects and Solutions General Build and Run VB Defaults VC++ Directories VC++ Project Settings Source Control Text Editor Database Tools Debugging Device Tools HTML Designer		Show directories for: Include files Tools\SDKs\AM335x_WINCE7_SDK\include Tools\SDKs\AM335x_WINCE7_SDK\include L Server\Mobile\v3.0
Office Tools Test Tools Text Templating Windows Forms Designer Workflow Designer	Include Directories Path to use when searching for include Corresponds to environment variable	de files while building a VC++ project. e INCLUDE.

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4.2. First WP-8000-CE7 Program in VB.NET

The best way to learn programming with WP-8000-CE7 is to actually create a WP-8000-CE7 program.

The example below demonstrates how to create a demo program running on WP-8000-CE7 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 WP-8000-CE7
- 6. Execute the application on WP-8000-CE7

All main steps will be described in the following subsection.

In this tutorial, we will assume that you have installed WP-8000-CE7 SDK on PC and used the Visual Studio 2008 for application development.

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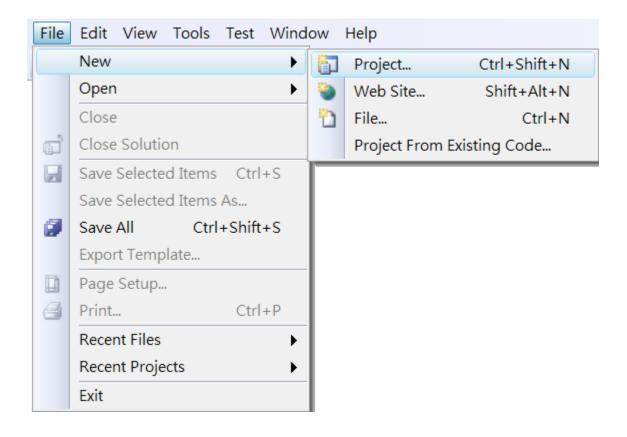
4.2.1. Create a new project

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



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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				? X
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	s			
Visual Basic				
Windows	-			
Web	=			
Smart Devi	ice			
Office Database				
Reporting Test				
WCF				
Workflow				
Visual C#	-			
	Device applications. Ch	oose target platform, Framework v	arsion and template in the next di	alog box
A projection sinart	Device applications, chi	oose target platform, framework w	ersion, and template in the next di	alog box.
Name:	SDK_Info			
Location:	C:\Users\Administrate	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>

Tips & Warnings



Windows CE7 only supports .NET Compact Framework Version 3.5, if your application uses .NET Compact Framework Version 2.0 there is no guarantee that the program will function correctly.

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

Add New Smart Device Project - SDK_I	nfo	? <mark>x</mark>
Target platform: .NET Compact Framework version:	Windows CE .NET Compact Framework Version 3.5	▼ ▼
Templates: 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	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 WP-8000-CE7 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:\WinPAC_AM335x\WP-8x2x\SDK\PACNET\ http://ftp.icpdas.com/pub/cd/winpac_am335x/wp-8x2x/sdk/pacnet/

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

🐔 SDK_Info - Microsoft Visual Studio (Administrator)												
File	Edit	View	Proj	ect Bu	ld	Debug	Data	Format	Tools	Test	Window	Help
				Add W	ind	dows For	n					
				Add U	ser	Control						
			1	Add C	om	ponent						
			1	Add M	od	ule						
			23	Add C	ass	s						
			-	Add N	ew	Item	Ctrl+	Shift+A				
			:::	Add E	isti	ing Item	. Shif	t+Alt+A				
				Exclud	e Fi	rom Proje	ect					
				Show		Files						
				Add R	efe	rence						
				Add W	'eb	Referenc	e					
				Set as	Sta	rtUp Proj	ect					
			44	Refres	۱P	roject Too	box It	ems				
				Chang	еT	arget Plat	tform					
			æ	SDK_Ir	fo	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
< <u> </u>	4
File name: : PACNET	▼
Files of type: : Component Files (*.dll;*.tlb;*.olb;*.ocx;*.exe)	•
	OK Cancel

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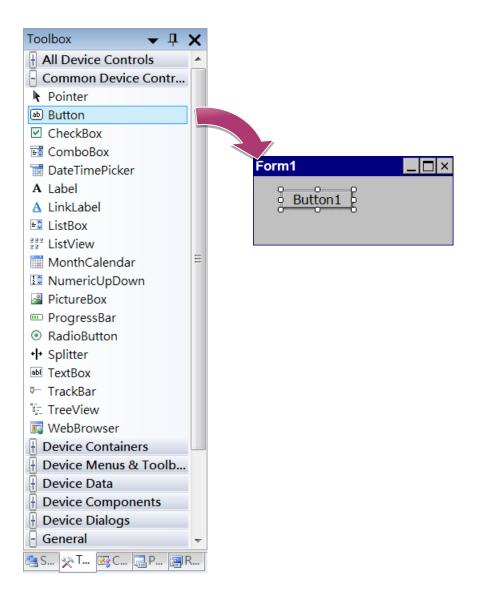
4.2.3. Add the control to the form

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.

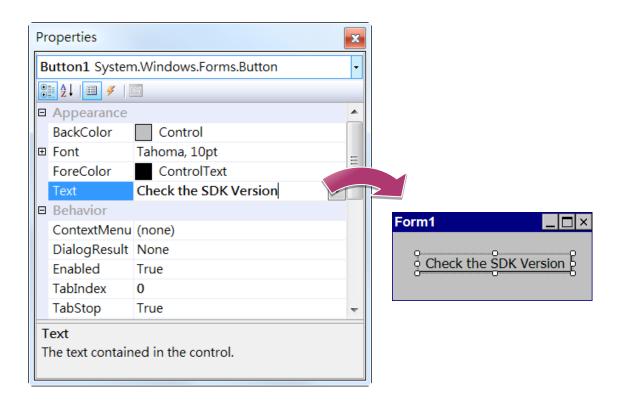
Step 1: On the Toolbox panel, drag a Button control onto the form



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



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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

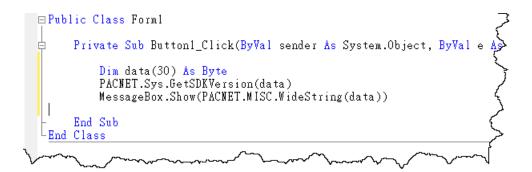
Form1	
Check the S	DK Version

Step 2: Inserting the following code

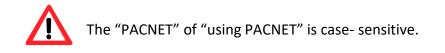
Dim data(30) As Byte

PACNET.Sys.GetSDKVersion(data)

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



Tips & Warnings



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4.2.5. Upload the application to WP-8000-CE7

WP-8000-CE7 supports FTP server service. You can upload files to WP-8000-CE7 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	Data	Format	Tools	Test	Window	Help
				## E	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				

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Step 2: Open the browser and type the IP address of WP-8000-CE7

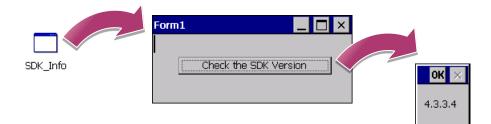
Step 3: Upload the application and the corresponding PACNET.dll files to WP-8000-CE7

Tips & V	Varnings
	For applications programming in C# and VB.net with .net compact framework, when executing these application on WP-8000-CE7, the corresponding PACNET.dll must be in the same directory as the .exe file.
	Eile Edit View Go Favorites Agdress Temp Agdress Stemp PACNET SDK_Info

```
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```

4.2.6. Execute the application on WP-8000-CE7

After uploading the application to WP-8000-CE7, you can just double-click it on WP-8000-CE7 to execute it.



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4.3. First WP-8000-CE7 Program in Visual C#

The best way to learn programming with WP-8000-CE7 is to actually create a WP-8000-CE7 program.

The example below demonstrates how to create a demo program running on WP-8000-CE7 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 WP-8000-CE7
- 6. Execute the application on WP-8000-CE7

All main steps will be described in the following subsection.

In this tutorial, we will assume that you have installed WP-8000-CE7 SDK on PC and used the Visual Studio 2008 for application development.

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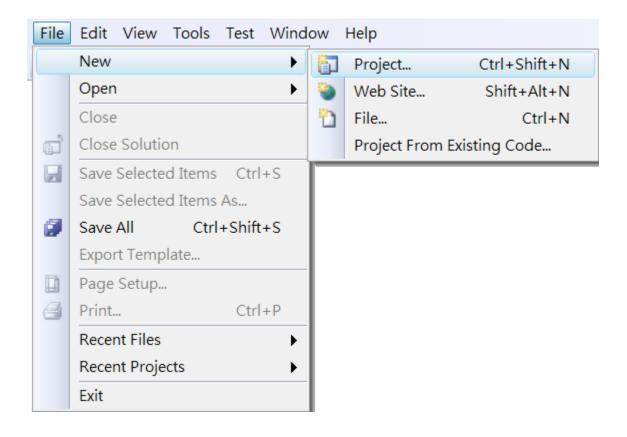
4.3.1. Create a new project

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



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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:		Templates:	.NET Framework 3.5 💌 🖽
Visual C++ Other Languag Visual Basic Visual C# Windows Web Smart Dev MySQL Office Database Reporting Test WCF Workflow Other Project To Test Projects	vice	Visual Studio installed templates	
		oose target platform, Framework version, and ter	nplate in the next dialog box.
Name: Location:	SDK_Info C:\Users\Administrat	or\Documents\Visual Studio 2008\Projects	▼ Browse
Solution:	Create new Solution	▼ Create c	lirectory for solution
Solution Name:	SDK_Info		
			OK Cancel

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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>

Tips & Warnings



Windows CE7 only supports .NET Compact Framework Version 3.5, if your application uses .NET Compact Framework Version 2.0 there is no guarantee that the program will function correctly.

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

Add New Smart Device Project - SDK_I	nfo	? X
Target platform:	Windows CE	▼
.NET Compact Framework version: Templates:	.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	les and smart device SDKs	
		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 WP-8000-CE7 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:\WinPAC_AM335x\WP-8x2x\SDK\PACNET\ http://ftp.icpdas.com/pub/cd/winpac_am335x/wp-8x2x/sdk/pacnet/

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

省 SD	省 SDK_Info - Microsoft Visual Studio (Administrator)										
File	Edit	View	Proj	ect Build	Debug	Data	Format	Tools	Test	Window	Help
				Add Win	dows Forr	n					
				Add Use	r Control						
			1	Add Con	ponent						
			1	Add Mod	lule						
			23	Add Clas	S						
			-	Add Nev	ı Item	Ctrl+	Shift+A				
			:::	Add Exis	ting Item	Shif	t+Alt+A				
				Exclude F	rom Proje	ect					
				Show All	Files						
				Add Refe	erence						
				Add Web	Referenc	e					
				Set as St	artUp Proj	ect					
			44	Refresh F	Project Too	box It	ems				
				Change 1	arget Plat	form					
			e	SDK_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
ACNET.dll	2014/5/30
< <u> </u>	4
File name: : PACNET	▼
Files of type: : Component Files (*.dll;*.tlb;*.olb;*.ocx;*.exe)	▼
	OK Cancel

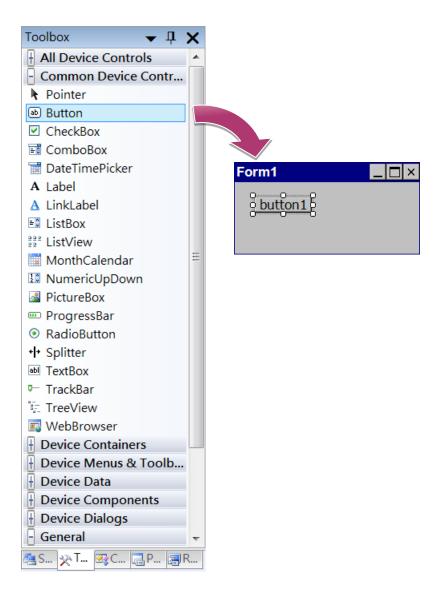
WP-8000-CE7 Series User Manual, version 1.0.2

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.

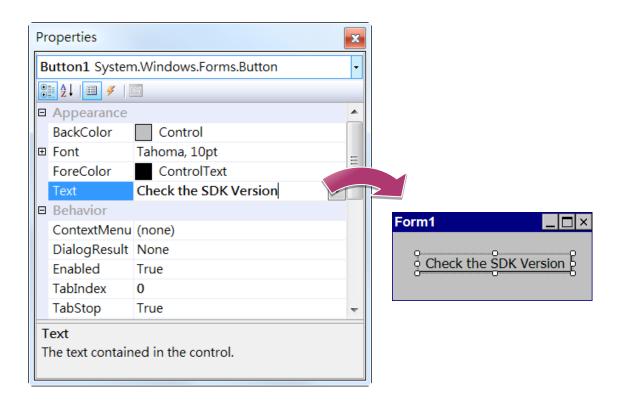
Step 1: On the Toolbox panel, drag a Button control onto the form



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



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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

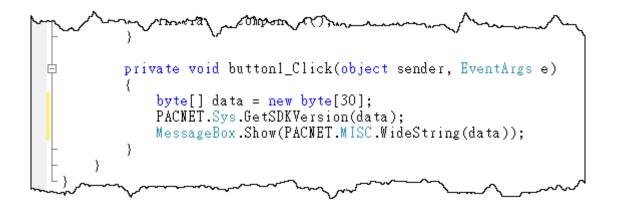


Step 2: Inserting the following code

byte[] data = new byte[30];

PACNET.Sys.GetSDKVersion(data);

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



Tips & Warnings



The "PACNET" of "using PACNET" is case- sensitive.

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4.3.5. Upload the application to WP-8000-CE7

WP-8000-CE7 supports FTP server service. You can upload files to WP-8000-CE7 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	Data	Format	Tools	Test	Window	Help
					Build Solu	ition		F7			
				1	Rebuild S	olution	Ctrl+A	t+F7			
				1	Deploy So	olution					
				(Clean Solu	ution					
					Build SDK	_Info					
					Rebuild S	DK_Info)				
				1	Deploy SE	OK_Info					
				(Clean SDk	(_Info					
					Configura	ition Ma	anager				

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Step 2: Open the browser and type the IP address of WP-8000-CE7

Step 3: Upload the application and the corresponding PACNET.dll files to WP-8000-CE7

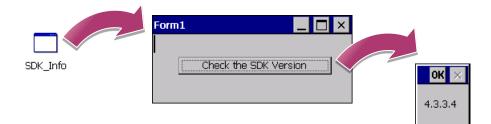
Tips & V	Varnings
	For applications programming in C# and VB.net with .net compact framework, when executing these application on WP-8000-CE7, the corresponding PACNET.dll must be in the same directory as the .exe file.
	File Edit View Go Favorites Address ITemp Image: Address Image: Addres

```
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```

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4.3.6. Execute the application on WP-8000-CE7

After uploading the application to WP-8000-CE7, you can just double-click it on WP-8000-CE7 to execute it.



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4.4. First WP-8000-CE7 Program in Visual C++

The best way to learn programming with WP-8000-CE7 is to actually create a WP-8000-CE7 program.

The example below demonstrates how to create a demo program running on WP-8000-CE7 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 WP-8000-CE7
- 7. Execute the application on WP-8000-CE7

All main steps will be described in the following subsection.

In this tutorial, we will assume that you have installed WP-8000-CE7 SDK on PC and used the Visual Studio 2008 for application development.

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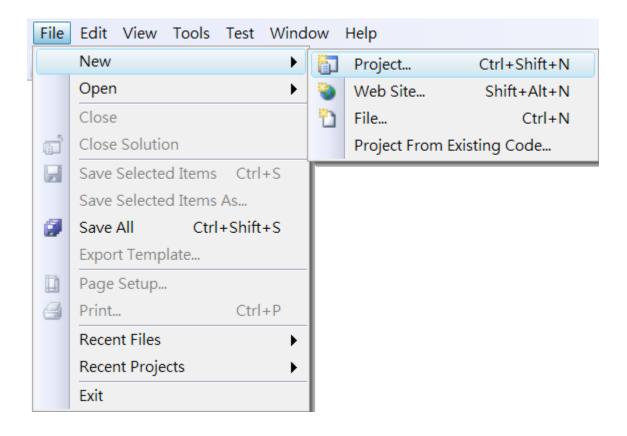
4.4.1. Create a new project

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



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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	Stops.	impative addy and regardiverses, and	expression such a first and the merge descending main and	2 ×
Project types:		Templates:		.NET Framework 3.5 🔻 🔛 🔚
Visual C++ ATL CLR General MFC Smart Device Test Win32 Other Language Other Project Ty Test Projects	es	Visual Studio installed templates ATL Smart Device Project MFC Smart Device Application Vin32 Smart Device Project My Templates Search Online Templates	📲 MFC Smart Device	e ActiveX Control
An application for N	Windows Mobile and ot	her Windows CE-based devices tha	t uses the Microsoft Foundation C	Class Library
Location: C:\Users\Administrat		or\Documents\Visual Studio 2008\	Projects	▼ Browse
Solution Name:	SDK_Info		Create directory for solution	n
				OK Cancel

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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: Windows Mobile 5.0 Pocket PC SDK Platform Single document interface Click Finish from any window to accept the current settings. After you create the project, see the project's readme.txt file for information about the project features and files that are generated.
	< Previous Next > Finish Cancel

Step 7: On the next page of the wizard, select <u>AM335x_WINCE7_SDK</u> to be added to the project, and then click <u>Next</u>

MFC Smar	t Device Applica	ation Wizard - SDK_Info	? X
	Platfor	ns	
User Inte Advance	IS	Select platform SDKs to be added to the current project.	
		< Previous Next > Finish	Cancel

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

ation Wizard - SDK_Info		? ×
ation Type		
Application type:	Use of MFC:	
\bigcirc <u>S</u> ingle document	\bigcirc <u>U</u> se MFC in a shared DLL	
Dialog based	Use MFC in a static library	
$^{ m ngs}$ \bigcirc Single document with DocList		
☑ Document/⊻iew architecture support Resource language: 英文 (美國)		
	<pre>< Previous Next > Finish</pre>	Cancel
	Application type: Single document Dialog based Dialog based Document/View architecture support Resource language:	Application Type: Single document Dialog based Use of MFC: Use of MFC: Use MFC in a shared DLL Use MFC in a static library Use MFC in a static library Document/View architecture support Resource language:

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

MFC Smart Device Applica	tion Wizard - SDK_Info		? ×
User In	terface Features		
Overview Platforms Application Type Document Template Strin User Interface Features Advanced Features Generated Classes	Command bar:		
		< Previous Next >	Finish Cancel

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

MFC Smart Device Applic	ation Wizard - SDK_Info
Advan	ced Features
Overview	Advanced features:
Platforms	Windows Help
Application Type	□ Printing and print preview
Document Template Stri	ngs 🗆 ActiveX controls
User Interface Features	□ <u>W</u> indows sockets
Advanced Features	Number of files on recent file list:
Generated Classes	4 🗸
	< Previous Next > Finish Cancel

Step 11: On the next page of the wizard, click <u>Finish</u>

Gener	ated Classes	
Overview Platforms Application Type Document Template Str User Interface Features Advanced Features Generated Classes	Generated classes: CSDK_InfoApp CSDK_InfoDlg ings Class name: CSDK_InfoApp Base class:	.h fil <u>e</u> : SDK_Info.h .cpg file:
	CWinApp	SDK_Info.cpp

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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 AM335x_WINCE7_SDK(ARMv4I) as shown in the following illustration.



4.4.3. Specify the Libraries of the PAC SDK

The PAC SDK provides the PACSDK libraries with WP-8000-CE7.

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	Wir	ndow	Help
		-2	Solution E	xplorer		Ctrl	+Alt+L			
			Bookmark	Windo	w (Ctrl+K, C	Ctrl+W			
		2	Class Viev	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			
		X	Toolbox			Ctrl+	+Alt+X	:		
			Find Resu	lts				•		
			Other Wir	ndows				►		
			Toolbars					•		
			Full Scree	n	S	hift+Alt	+Enter			
		P	Navigate	Backwa	rd		Ctrl+-			
		в,	Navigate	Forward	d	Ctrl+9	Shift+-			
			Next Task							
			Previous 7	Fask						
		B	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

DK_Info Property Pages	Q.L ##.115	CARSES ?!	9 X
Configuration: Active(Debu	g) 🔻 Platform: Acti	ve(AM335x_WINCE7_SDK (, ▼	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			
Browse Information Build Events			
Custom Build Step			
Authenticode Signir			
	Additional Dependencies		
	Specifies additional items to add to the	link line (ex: kernel32.lib); config	guration specific.
		ОК	Cancel Apply

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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.

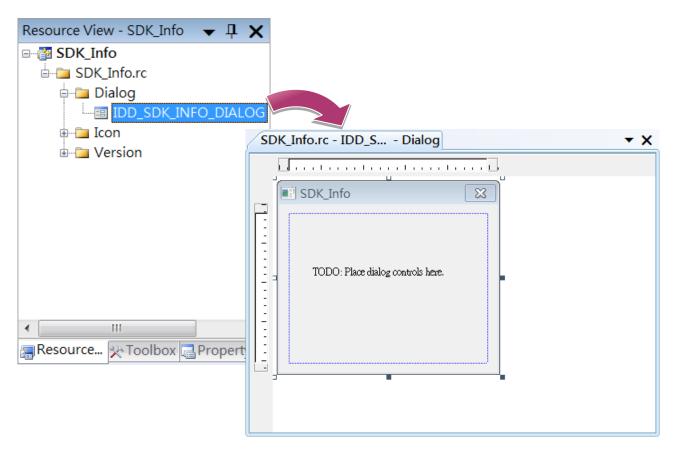
After you add a control to your form, you can use the Properties window to set its properties, such as background color and default text. The values that you specify in the Properties window are the initial values that will be assigned to that property when the control is created at run time.

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

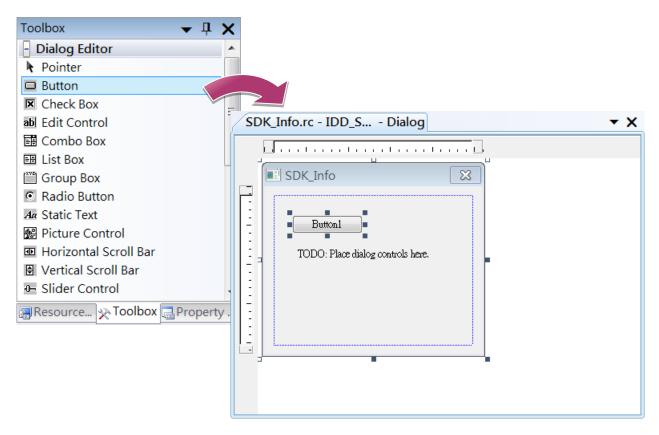
File	Edit	View	Project	Build	Debug	Tools	Test	Wind	dow	Help
		¥	Code			Ctrl-	+Alt+0)		
		-2	Solution [Explorer		Ctrl	+Alt+L	-		
			Bookmarl	< Windo	w (Ctrl+K, C	Ctrl+W	/		
		23	Class Viev	v		Ctrl+S	hift+C	2		
			Code Def	inition V	Vindow	Ctrl+S	hift+V	·		
		<u> 1</u>	Object Br	owser		Ctrl	+Alt+J	l .		
			Output				Alt+2	2		
			Property	Manage	er					
		2	Resource	View		Ctrl+S	Shift+E	:		
		R	Toolbox			Ctrl+	+Alt+X	()		
			Find Resu	ilts				•		
			Other Wi	ndows				•		
			Toolbars					•		
			Full Scree	n	S	hift+Alt	+Enter	-		
		P	Navigate	Backwa	rd		Ctrl+-	-		
			Navigate	Forward	d	Ctrl+9	Shift+-			
			Next Task							
			Previous	Task						
		e	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

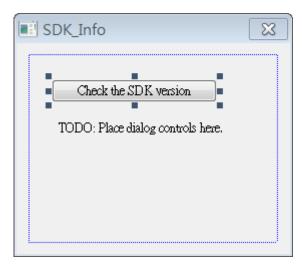
Pr	roperties	→ ₽ X				
IC	IDC_BUTTON1 (Button Control) ICeButtonEc -					
•	2↓ 🔲 🖋 I 🖾					
Ξ	Appearance					
	Caption	Check the SDK version				
	Client Edge	False				
	Horizontal Alignmer	Default				
	Modal Frame	False				
	Multiline	False				
	Notify	False				
	Static Edge	False				
	Vertical Alignment	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 WP-8000-CE7

WP-8000-CE7 supports FTP server service. You can upload files to WP-8000-CE7 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	ition		F7	
					Rebuild S	olution	Ctrl-	+Alt+F7	
				I	Deploy So	olution			
				(Clean Solu	ution			
					Build SDK	_Info			Ī
					Rebuild S	DK_Info			
				1	Deploy SE	OK_Info			
				(Clean SDk	(_Info			
				1	Project Or	nly		+	
					Batch Buil	d			
				(Configura	tion Ma	nager		
				۵	Compile			Ctrl+F7	

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Step 2: Open the browser and type the IP address of WP-8000-CE7

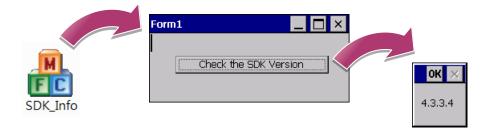
Step 3: Upload the application to WP-8000-CE7

Eile	<u>E</u> dit	⊻iew	<u>G</u> o	F <u>a</u> vorites	
Addr	ess \Te	mp			7
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SDK_I	nfo				<u>ک</u>
_					<
~~	~~~	\sim	~	~~~~	\checkmark

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4.4.7. Execute the application on WP-8000-CE7

After uploading the application to WP-8000-CE7, you can just double-click it on WP-8000-CE7 to execute it.



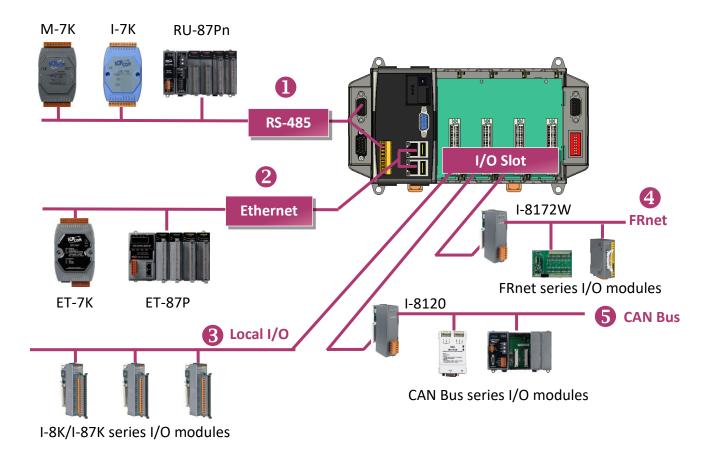
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5. I/O Expansion Modules and SDKs Selection

This chapter describes how to select a suitable expansion I/O module and the corresponding SDK library to be used for developing programs on WP-8000-CE7.

WP-8000-CE7 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 WP-8000-CE7 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/winpac_am335x/wp-8x2x/pac/applicabled_demo_for_7k_module.p df

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:

CD:\WinPAC_AM335x\Wp-8x2x\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/winpac_am335x/wp-8x2x/demo/nmodbus/

3. Local I/O

WP-8000-CE7 has 1/4/8 expansion slots 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
I-8K series with PWM	PACSDK_PWM.dll	PACNET.dll
I-87K series with PWM	PACSDK_PWM.dll	PACNET.dll

For full details regarding I-87K series I/O modules and its demos, please refer to: <u>http://ftp.icpdas.com/pub/cd/winpac_am335x/wp-8x2x/pac/applicabled_demo_for_87k_module.</u> <u>pdf</u>

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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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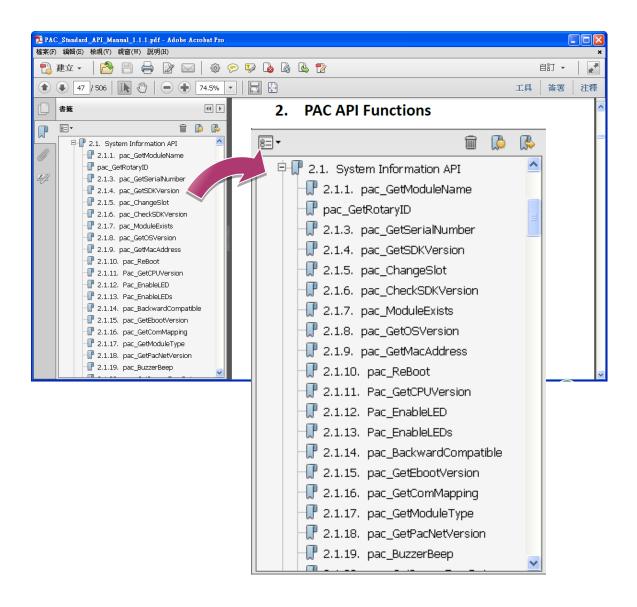
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6. API Resources and Demo References

This chapter provides a brief overview of PAC standard APIs and demos that have been designed for WP-8000-CE7 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"

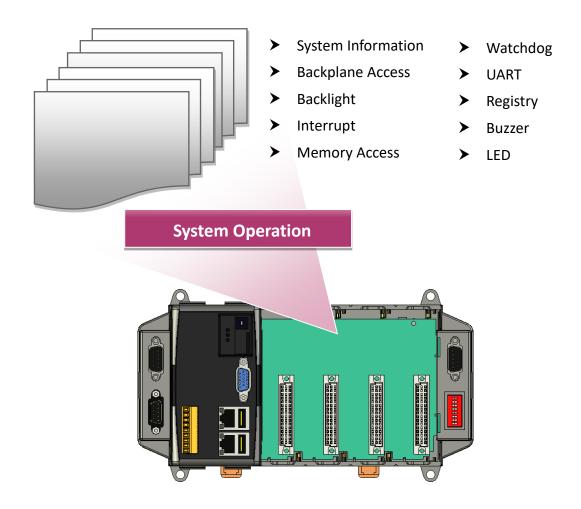


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6.1. PAC Standard APIs for System Operation

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:\WinPAC_AM335x\wp-8x2x\demo\PAC\Vb.net\Standard\ http://ftp.icpdas.com/pub/cd/winpac_am335x/wp-8x2x/demo/pac/vb.net/standard/

Folder	Demo	Explanation		
buzzer	buzzer	Shows how to make a simple buzzer beep.		
DeviceInformation	DeviceInformation	Retrieves information about the OS version, CPU version, SDK version, etc.		
GetRotaryID	GetRotaryID	Retrieves information about the status of the rotary switch		
Memory	Memory	Shows how to read/write data values from/to the EEPROM or the backplane of the SRAM		
MicroSD	MicroSD	Shows how to manage the microSD		
RealTimeTest	RealTimeTest	Writes the managed code for the rich graphical user interface that does not require true real-time performance		
Registry	Registry	Shows how to read/write data values from/to the registry		
UART	UART	Shows how to read the name of a local I/O modules via a UART		
WatchDog	WatchDog	Displays information about how to operate the 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:\WinPAC_AM335x\wp-8x2x\demo\PAC\C#\Standard\ <u>http://ftp.icpdas.com/pub/cd/winpac_am335x/wp-8x2x/demo/pac/c%23/standard/</u>

Folder	Demo	Explanation		
buzzer	buzzer	Shows how to make a simple buzzer beep.		
DeviceInformation	DeviceInformation	Retrieves information about the OS version, CPU version, SDK version, etc.		
GetRotaryID	GetRotaryID	Retrieves information about the status of the rotary switch		
Memory	Memory	Shows how to read/write data values from/to the EEPROM or the backplane of the SRAM		
MicroSD	MicroSD	Shows how to manage the microSD		
RealTimeTest	RealTimeTest RealTimeTest Writes the managed code for the rich graph real-time performance real-time performance			
Registry	Registry	Shows how to read/write data values from/to the registry		
UART	UART	Shows how to read the name of a local I/O modules via a UART		
WatchDog WatchDog		Displays information about how to operate the watchdog		

6.1.3. Visual C++ Demos for PAC Standard APIs

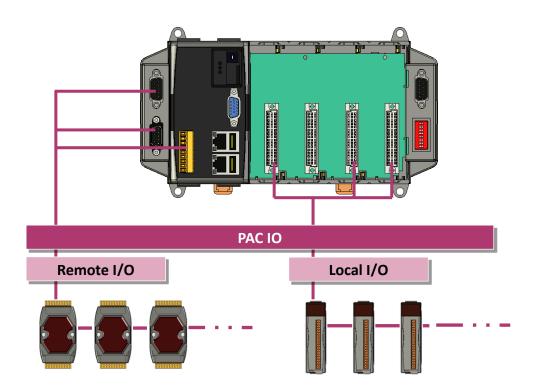
The PAC SDK includes the following demos that demonstrate the use of the PAC Standard APIs in a Visual C++ language environment.

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:\WinPAC_AM335x\wp-8x2x\demo\PAC\Vc2008\Standard\ http://ftp.icpdas.com/pub/cd/winpac_am335x/wp-8x2x/demo/pac/vc2008/standard/

Folder	Demo	Explanation		
buzzer	buzzer	Shows how to make a simple buzzer beep.		
DeviceInformation	DeviceInformation	Retrieves information about the OS version, CPU version, SDK version, etc.		
GetRotaryID	GetRotaryID	Retrieves information about the status of the rotary switch		
Memory	Memory	Shows how to read/write data values from/to the EEPROM or the backplane of the SRAM		
MicroSD	MicroSD	Shows how to manage the microSD		
RealTimeTest	eTest RealTimeTest Writes the managed code for the rich graphica real-time performance			
Registry	Registry	Shows how to read/write data values from/to the registry		
UART	UART	Shows how to read the name of a local I/O modules via a UART		
WatchDog	WatchDog	Displays information about how to operate the watchdog		

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.



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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:\WinPAC_AM335x\wp-8x2x\Demo\PAC\Vb.net\IO\ <u>http://ftp.icpdas.com/pub/cd/winpac_am335x/wp-8x2x/demo/pac/vb.net/io/</u>

Folder	Demo	Explanation
	find in	Shows how to retrieve the module names and types which
	find_io	plugged in the WinPAC.
	ok di	Shows how to read the DI values of DI module.
	8k_di	This demo program is used by 8K series DI modules.
	8k do	Shows how to write the DO values to DO module.
		This demo program is used by 8K series DO modules.
		Shows how to read the DI and the DO values of the DIO
	8k_dio	module.
		This demo program is used by 8K series DIO modules.
	87k basic	Shows how to send/receive a command/response application.
	O/K_DASIC	This demo program is used by 87K series modules.
Local	87K_demo	Shows how use uart API and the IO modules located as slots.
LUCAI	87K_demo	This demo program is used by 87K series modules.
	87k_ai	Shows how to read the AI values of AI module.
		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.
		This demo program is used by 87K series DI modules.
	97k do	Shows how to write the DO values to DO module.
	87k_do	This demo program is used by 87K series DO modules.
		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.
Domoto	7k87k_di	This demo program is used by 7K or 87K series
Remote		AI modules which connected through a COM port.
	7k87k_do	Shows how to write the DO values to DO module.
		This demo program is used by 7K or 87K series
		AI modules which connected through a COM port.
	7k87k_dio	Shows how to read the DI and the DO values of the DIO
		module.
		This demo program is used by 7K or 87K series
		AI modules which connected through a COM port.

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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:\WinPAC_AM335x\wp-8x2x\Demo\PAC\C#\IO\ <u>http://ftp.icpdas.com/pub/cd/winpac_am335x/wp-8x2x/demo/pac/c%23/io/</u>

Folder	Demo	Explanation
	find in	Shows how to retrieve the module names and types which
	find_io	plugged in the WinPAC.
	ok di	Shows how to read the DI values of DI module.
	8k_di	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.
		Shows how to read the DI and the DO values of the DIO
	8k_dio	module.
		This demo program is used by 8K series DIO modules.
	87k basic	Shows how to send/receive a command/response application.
		This demo program is used by 87K series modules.
Local	87K demo	Shows how use uart API and the IO modules located as slots.
LOCAI		This demo program is used by 87K series modules.
	87k_ai	Shows how to read the AI values of AI module.
		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.
		This demo program is used by 87K series DI modules.
	87k do	Shows how to write the DO values to DO module.
	0/K_00	This demo program is used by 87K series DO modules.
		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.
Remote	7k87k_di	This demo program is used by 7K or 87K series
Remote		AI modules which connected through a COM port.
	7k87k_do	Shows how to write the DO values to DO module.
		This demo program is used by 7K or 87K series
		AI modules which connected through a COM port.
	7k87k_dio	Shows how to read the DI and the DO values of the DIO
		module.
		This demo program is used by 7K or 87K series
		AI modules which connected through a COM port.

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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:\WinPAC_AM335x\wp-8x2x\Demo\PAC\Vc2008\IO\ http://ftp.icpdas.com/pub/cd/winpac_am335x/wp-8x2x/demo/pac/vc2008/io/

Folder	Demo	Explanation
	find in	Shows how to retrieve the module names and types which
	find_io	plugged in the WinPAC.
	ok di	Shows how to read the DI values of DI module.
	8k_di	This demo program is used by 8K series DI modules.
	8k_do	Shows how to write the DO values to DO module.
		This demo program is used by 8K series DO modules.
		Shows how to read the DI and the DO values of the DIO
	8k_dio	module.
		This demo program is used by 8K series DIO modules.
	87k basic	Shows how to send/receive a command/response application.
		This demo program is used by 87K series modules.
Local	87K demo	Shows how use uart API and the IO modules located as slots.
LUCAI	ork_demo	This demo program is used by 87K series modules.
	87k ai	Shows how to read the AI values of AI module.
	87K_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.
		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.
		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.
Remote	7k87k_di	This demo program is used by 7K or 87K series
Remote		AI modules which connected through a COM port.
	7k87k_do	Shows how to write the DO values to DO module.
		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
	7k87k_dio	module.
		This demo program is used by 7K or 87K series
		AI modules which connected through a COM port.

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7. WP-8000-CE7 Updates

This chapter provides a guided tour that demonstrates the steps needed to update the WP-8000-CE7 OS and SDKs.

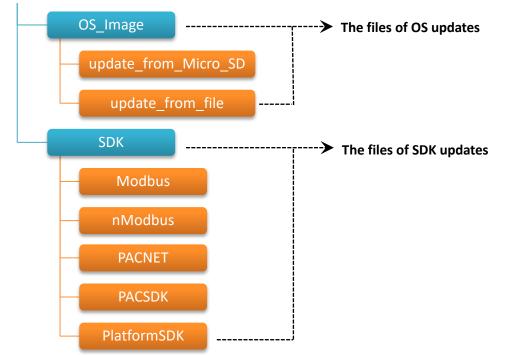
ICP DAS will continue to add additional features to WP-8000-CE7 SDK and OS in the future, so we advise you to periodically check the ICP DAS web site for the latest updates.

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.

CD:\WinPAC_AM335x\wp-8x2x\

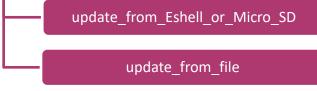
http://ftp.icpdas.com/pub/cd/winpac_am335x/wp-8x2x/



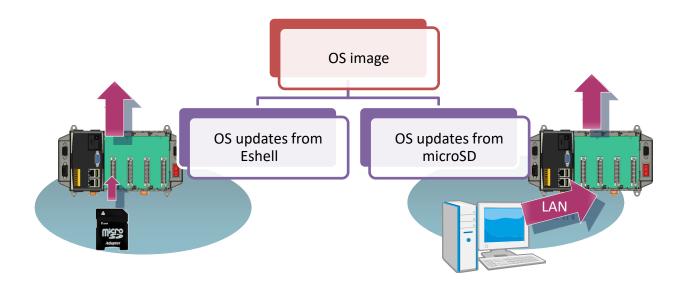
7.1. OS Updates

The latest version of the WP-8000-CE7 OS image 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:\WinPAC_AM335x\wp-8x2x\OS_Image\
http://ftp.icpdas.com/pub/cd/winpac_am335x/wp-8x2x/os_image/
```



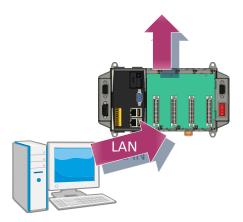
There are two ways to update the OS:



- OS updates from Eshell (Please refer to section 7.1.1)
 (We recommend that you use this one for more quicker and easier to update)
- 2. OS updates from microSD (Please refer to section 7.1.2)

7.1.1. OS Updates from Eshell

By default, the OS update is updated via a LAN. Before updating the OS, make sure the LAN is connected to PC.



Step 1: Get the latest version of the installation package file and then unzip it

The latest version of the installation package file can be found from ICP DAS web site.

http://ftp.icpdas.com/pub/cd/winpac_am335x/wp-8x2x/os_image/update_from_esh_ell_or_micro_sd

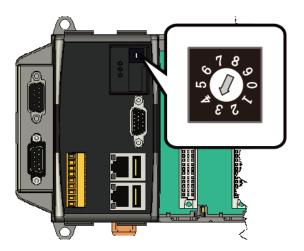
Step 2: Run the registry clear.exe

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

CD:\WinPAC_AM335x\WP-8x2x\PC_Tools\Eshell

http://ftp.icpdas.com/pub/cd/winpac_am335x/wp-8x2x/pc_tools/eshell

Step 3: Place the rotary switch in position 3, OS update mode



Step 4: Run the ESHELL.exe, and then restart the WP-8000-CE7-CE7

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



CD:\WinPAC_AM335x\WP-8x2x\PC_Tools\Eshell

http://ftp.icpdas.com/pub/cd/winpac_am335x/wp-8x2x/pc_tools/eshell

Step 5: Select the device which you want to update the OS image, and then click OK

Select the device name which you want to update the OS image from the list.

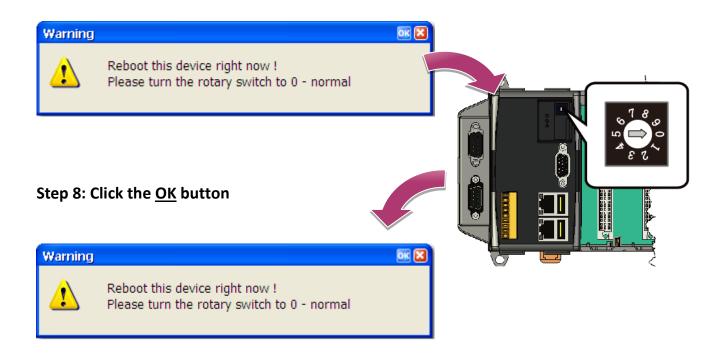
Select Device	
Enter Device Name: WINPAC	OK
Or Select From the List	Cancel
WINPAC S	Reset devices to automatically put names on the list.

Step 6: Select the latest version of the OS image file

Open	
Look in: Dim WP523is_20040821_Ver.1.0.0	ui_mi 💌 🗢 🖻 📸 🎫
My Recent Documents	
Desktop	Marrowski Wandows CE Dybug Shell - 77_64400 (Mällinde J:WashAChaupdows 2000)_ce20005_imag/wp-23v1/w
	VP_WWW98: Bootloader Version 1.0, IP: 10.1.0.50, MMC: 00001F01A002 Downloading '\\Rdfs\cd_2\VinPAC\napdos\vp-2000_ce50\05_image\vp-23v1\update_fron_Eshell\en\VI Jumping to inage on UP_WWW08 Connecting to VP_WWW08 using Ethernet
My Computer	<
File name: NK.BIN Files of type: NK Images (*.	2
Files of type: NK Images (*.	
	S Really

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Step 7: Once the procedure is completed, the "Warning !" dialog box will appear as below shown, then turn the rotary switch in position 0, normal mode



Step 9: Check the OS version

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

PAC_Utility					
	PAC Utility [1.2.1.4] File Help				_ 🗆 ×
	General General2 Disp	lay IP Config Network	Device Information	Auto Execution Rota	ry Exe 🔳 🕨
	Slot 1:	Module(CPU Serial Numb Backplane V CPU Version OS Version Eboot Versi NET CF Ve SQL CE Ver PACSDK Ve CPU Temp	Der: D1-82-4E /ersion:		

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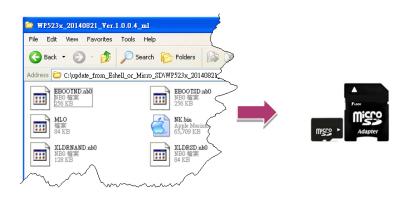
7.1.2. OS updates from microSD

The microSD card can be used to reinstall the WP-8000-CE7 OS image to factory default settings in the event of the WP-8000-CE7 failure.

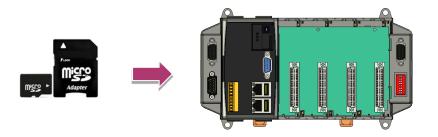
Step 1: Get the latest version of the installation package file, then unzip the file, and then copy them to microSD card

The latest version of the installation package file can be found from ICP DAS web site.

http://ftp.icpdas.com/pub/cd/winpac_am335x/wp-8x2x/os_image/update_from_esh ell_or_micro_sd



Step 2: Plug the microSD card into SD slot



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OS update mode

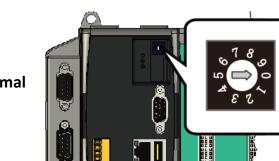
Step 3: Turn the rotary switch in position 5,

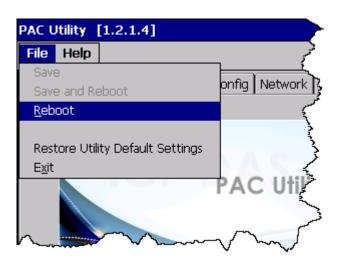
Step 4: Reboot the WP-8000-CE7

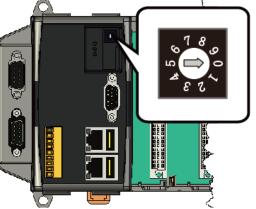
Step 5: Wait a few minutes for the following desktop to be displayed

Step 6: Turn the rotary switch in position 0, normal mode

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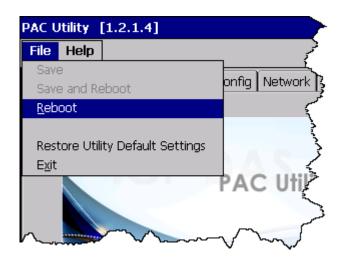






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Step 7: Reboot the WP-8000-CE7



Step 8: Check the OS version

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

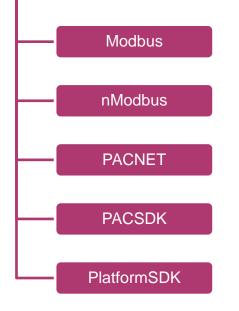
PAC_Utility			
-	PAC Utility [1.2.1.4]		
	File Help		
	General 🛛 General2 🗍 Display 🗍 IP Co	onfig Network Device Ir	nformation Auto Execution Rotary Exe
	Slot 1:	Module(CPU) Type:	
	Slot 2:	Serial Number:	01-82-4D-06-18-00-00-DA
	Slot 3:	Backplane Version:	
	Slot 4:	CPU Version:	1.0.0.0
	Slot 5:	OS Version:	1.0.1.1 , 2015/10/30 09:36:5
	Slot 6:	Eboot Version:	1.2.1.0 , 2015/10/22 16:26:0
	Slot 7:	.NET CF Version:	3.5.7338.00
		SQL CE Version:	3.5.8154.0
		PACSDK Version:	4.3.3.4
		CPU Temperature:	

7.2. SDK Updates

SDK update is a part of the WP-8000-CE7 update services to provide additional and more efficient features and functionality for WP-8000-CE7 operating system.

The SDK update files 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:\WinPAC_AM335x\wp-8x2x\SDK\ http://ftp.icpdas.com/pub/cd/winpac_am335x/wp-8x2x/sdk/



7.2.1. SDK Updates for VB.NET or C#

The SDK can be updated by changing the SDK 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.

http://ftp.icpdas.com/pub/cd/winpac_am335x/wp-8x2x/sdk/pacnet/

Step 2: Copy the latest version of PACNet.dll file to PC and WP-8000-CE7

The PACNET.dll file on PC can be placed anywhere only the solution can reference it. The PACNET.dll file on WP-8000-CE7 is located at the same directory as the .exe file.

7.2.2. SDK Updates for VB.NET or Visual C++

The SDK can be updated by changing the SDK file.

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/winpac_am335x/wp-8x2x/sdk/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\SDKs\AM335x_WINCE7_SDK\Include\Armv4i

The libraries are located at:

C:\Program Files\Windows CE Tools\SDKs\AM335x_WINCE7_SDK\Lib\ARMv4I

Step 3: Copy the latest version of DLL files to WinPAC

The DLL files are located at:

\System_Disk\ICPDAS\System

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8. Download Center

This chapter provides a brief introduction of the WP-8000-CE7 download center.

WP-8000-CE7 has a download center where you can access the latest version of the software, tools, demo programs, and related information.

The WP-8000-CE7 Download Center can be found at:

http://www.icpdas.com/root/support/download/pac/wp-8000-ce7/wp-8000-ce7 download os i mages.html

	00-CE7 Download Center			
Note:				
When you download the software programs, you should notice if the programs conform to your machine. Before you download any program, please read the notes of each online program first to avoid the confused situation.				
OS images SDK Utility 8	k Tools Demo Documents System Disk FAQ			
OS images download				
Note:				
Before you download the software p	rograms, you should notice if the programs are compatible to			
your machine. Please read the notes	first in each chapter you want before download programs.			
Touch Panel driver				
	Mount, and ELO touch panels (USB/RS-232). Please download			
the driver(s) to your WinPAC and double-click it to install the driver.				
Touch Panel driver download				
Support type	Model			
	ADP-1080T-U			
Support type				
Support type PenMount USB TOUCH	ADP-1080T-U			

Tips – How to

This chapter provides tips and a guided tour on using and maintaining the WP-8000-CE7.

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A. How to Online Debug the WP-8000-CE7 Program

Here are step by step instructions on how to online debug the WP-8000-CE7 program.

Tips & Warnings



Before starting online debug the WP-8000-CE7 program, make sure that the WP-8000-CE7 SDK has been installed correctly.

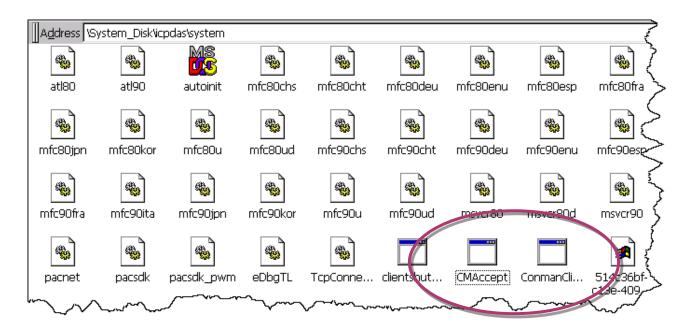
For more information on how to install the WP-8000-CE7 SDK, please refer to 4.1.2. Installing the WP-8000-CE7 SDK.

Step 1: Copy the following files to the \System_Disk\icpdas\system on the WP-8000-CE7

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 WP-8000-CE7



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Step 3: On the Tools menu, click the Options

File Edit View Project Build Debug	Tools	Test	Window	Help	
🛅 🕶 🛅 🕶 📂 🛃 🎒 👗 🗈 🛍 🕫 💌		Attach	to Process		Ctrl+Alt+P
AM335x_WINCE7_SDK AF 👻 🎚 🚛 👔	3	Device	Security Ma	anager	
	9,	Connec	t to Device.		
And the former of the second s	<u>price</u>	<u>Device</u>	Emution	lanager	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
		ACF ,	ลช _ไ ญ	gtina	nom
		Externa	l Tools		
		Import	and Export	Settings	
		Custon	ize		
		Option	s		

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

Step 5: In the <u>Show devices for platform</u>:, select <u>AM335x_WINCE7_SDK</u> and then click <u>Properties</u>

Options	2 ×
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	Snow devices for platform: AM335x_WINCE7_SDK Devices: AM335x_WINCE7_SDK ARMV7 Device Same Rena Delete Properties Default device: AM335x_WINCE7_SDK ARMV7 Device
	OK Cancel

Step 6: Click the Configure...

AM335x_WINCE7_SDK ARMV7 Device Properties	2 X
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 WP-8000-CE7

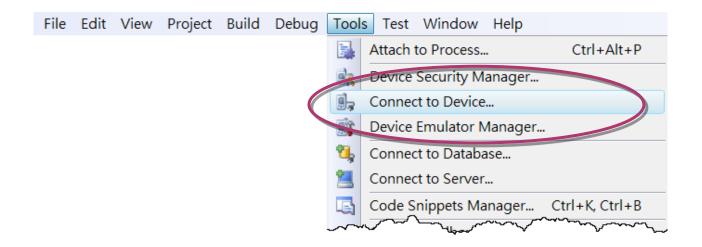
Configure TCP/IP Transport		? ×
Use fixed port number:	5655	
Device IP address		
Obtain an IP address automa	atically using ActiveSync	
Use specific IP address:		
10.1.0.96		•
	ОК	Cancel

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

AM335x_WINCE7_SDK ARMV7 Device Properti	es	2 ×	
Default output location on device:			
		-	
Transport:			
TCP Connect Transport	▼ Configure.		
Bootstrapper:			
ActiveSync Startup Provider	Configure.		
Detect when device is disconnected			
	ОК	Cancel	
Options	_		? ×
 Environment Projects and Solutions 	Show devices for platform:		
 Source Control Text Editor 	AM335x_WINCE7_SDK		•
> Database Tools	Devices: AM335x_WINCE7_SDK ARM	V7 Device	Cruz Az
 Debugging Device Tools 			Save As
General Devices			Rename
Form Factors			Delete
> HTML Designer > Office Tools			Properties
> Test Tools > Text Templating			
 > Windows Forms Designer > Workflow Designer 			
y worklow besigner	Default device:		
	AM335x_WINCE7_SDK ARM	V/ Device	▼
			OK Gancel

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



Step 10: Wait for the connection to be established

Connecting	? ×
To 'AM335x_WINCE7_SDK ARMV7 Device' Connection succeeded.	
	Close

Tips & Warnings



If the connection fails, as shown below, please repeat the step 2 to step 9 to try it again.



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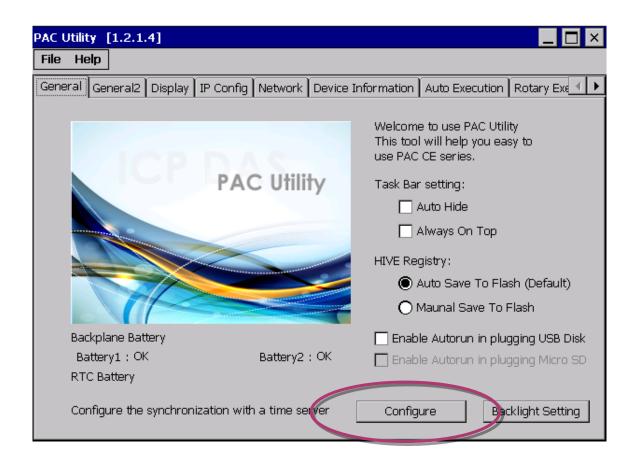
B. How to Automatically Synchronize WP-8000-CE7 Clock with an Internet Time Server

The clock on the WP-8000-CE7 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 WP-8000-CE7 is accurate. Here are step by step instructions on how to synchronize the clock on the WP-8000-CE7 with an Internet time server.

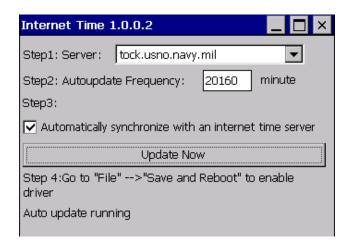
Step 1: Run the PAC Utility



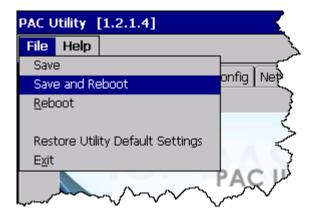
Step 2: On the General tab, press Configure button



- 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



Step 5: On the File menu, click Save and Reboot



Step 6: The WP-8000-CE7 will automatically synchronize with an internet time server regularly

Stop 7. Click the Undete New button to	Step1: Server: tock.usno.navy.mil	
Step 7: Click the Update Now button to synchronize WP-8000-CE7 clock	Step2: Autoupdate Frequency: 20160 minute	
immediately	Step3:	
initiediately	Sacomatically synchronize with an internet time serve:	
(Update Now	
	Step 4:50 to "File">"Save and Reboot" to enable driver	
	Auto update running	

-+ T:-- + 0.0.0

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C. How to Control the User Account Control in WP-8000-CE7

User Account Control is a security feature that helps prevent unauthorized system changes to the WP-8000-CE7.

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C.1. How to Create a User Account

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

Step 1: Run the PAC Utility



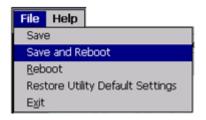
Step 2: On the Login tab of the Network tab, click Login tab, type the User Name and Password, and then click Add button

PAC Utilit	y [1.2.2	.0]					_ ×
File He	lp						
General	General2	Display	IP Config	Network	Device Information	Auto Execution	Rotary Exe 🔳 🕨
Access	Login						
User N		Passwo		Add	Delete		
User r	name Pa	assword					

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

PAC Utility [1.2.2.0]	×
File Help	
General General2 Display IP Config Network Device Information Auto Execution Rotary Exe	
Access Login	
User Name Password	
ICP DAS Add Delete	
User name Password	
ICP DAS ****	

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



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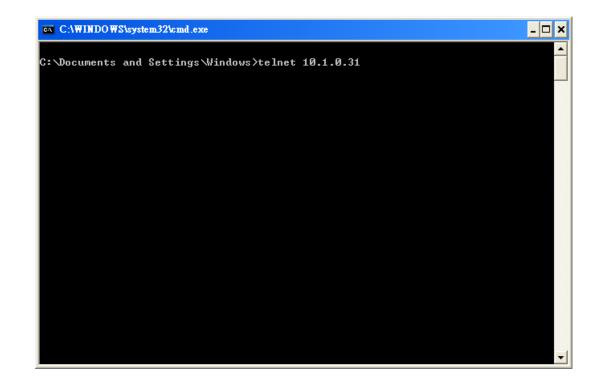
C.2. How to Telnet to Remote Login the WinPAC from PC

Here are step by step instructions on how to use telnet to remote login the WinPAC from PC.

Windows Catalog	
Windows Update	Run 🦻 🛛
Programs 🕨	
Cocuments	Type the r 2. Type "cmd" hent, or
Construction of the second sec	Internet rest to the for you.
Sea +	Open: Emd
C Shut Down	
Shut Down	OK Cancel Browse
Start C:\WINDOWS\Syste	

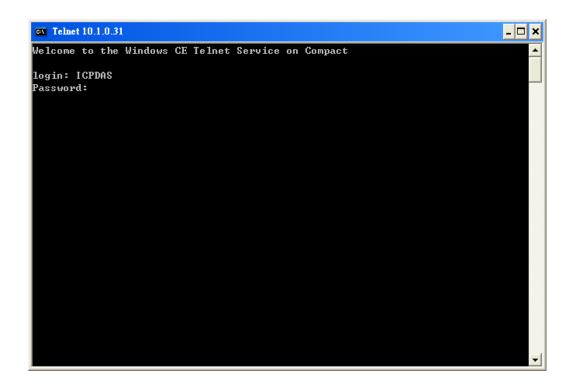
Step 1: On the PC, open a MS-DOS command prompt

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

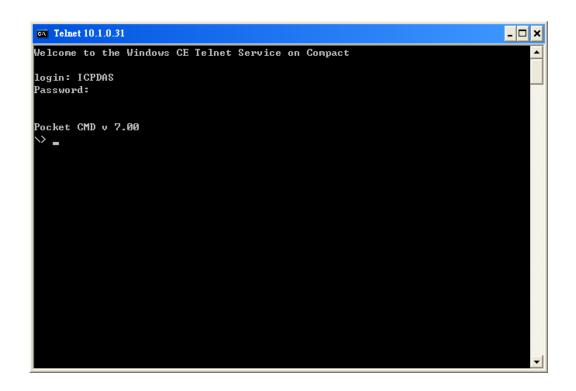


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Step 3: The connection has been set up, and then type the name and password



Step 4: The remote login has been completed



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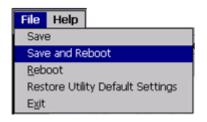
C.3. How to Remove a User Account from the Login List

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

Step 1: 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

PAC Utility [1.2.2.0]						_ ×
File Help						
General General2 Display I	P Config Netw	ork Device Info	rmation	Auto Execution	Rotary Exe	∢ ▶
Access Login		•				
User Name Password		dd Delet	-			
User name Password						
ICP DAS ****						

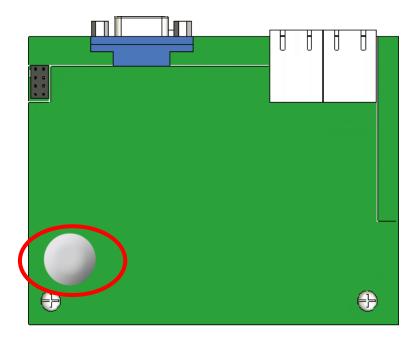
Step 2: On the File menu, click Save and Reboot for changes to take effect



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D. How to change the battery

RTC is retained by a Li-ion battery, which can supply continuous power for 10 years. The battery design has the added function of preventing data from being lost while replacing the battery. The following figures show the location of the battery installed in the WinPAC CPU board.



Checking the current battery power

- 1. Run the PAC utility and check the Battery 1 fields that display the current status. Refer to Section 3.1 PAC utility "General" for more details. If the power level is low that the battery should be replaced.
- 2. When programming this, call the pac_GetBatteryLevel() API function in the PACSDK.dll to check whether the battery power is low. When the power of the battery is low, it's recommended that the battery is replaced immediately, otherwise the RTC time will be reset.

Replacing the battery

- 1. Power off the WinPAC device.
- 2. Remove the CPU board.
- 3. Remove the battery that is running low on power from the battery holder in CPU board.
- 4. Insert a new battery.
- 5. Set the RTC time.

Ordering information

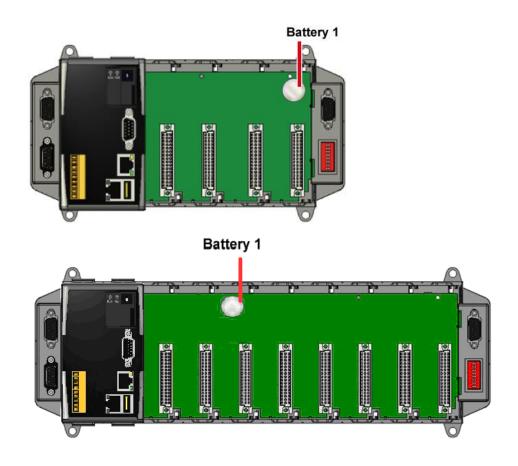
Battery type: BR1632 (Part number is 2LB010 for ICP DAS) For more detailed information, contact your local sales office or distributor.

Tips & Warnings



Please ignore the battery on the backplane.

It uses to backward compatible the WP8x4x and WP8x3x device.



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E. How to Using the Practical Functions of the 3G/4G I/O Module

E.1. How to Auto Dial 3G/4G GPRS network and redial when the network disconnected

The AutoDialer allows user to automatically dial GRPS network after boot. When the GRPS network disconnect the AutoDialer will automatically re-dial Internet access.

Tips & Warnings



Before installing the SIM card, please cancel the PIN lock function of SIM card; otherwise you will not be able to dial the Internet

The 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:\WinPAC_AM335x\wp-5231\demo\3g_modem\autodialer\ http://ftp.icpdas.com/pub/cd/winpac_am335x/wp-5231/demo/3g_modem/autodialer/

The description of the demo can be found by downloading the latest version from ICP DAS web site.

http://ftp.icpdas.com/pub/cd/winpac_am335x/wp-5231/document/faq/development/

W5-13_How_to_use_Auto_dial_GPRS_network_and_redial_when_the_network_disconnected_en

E.2. How to Use the SMS Function and Get the GPS Data

The 3G/4G modem allows the user to use the SMS function and get the GPS data.

The API manual can be found by downloading the latest version from ICP DAS web site. <u>http://ftp.icpdas.com/pub/cd/winpac_am335x/wp-5231/demo/3g_modem/3g_modem_sms_dem_o/gsm_lib_manual_v1.0.1.pdf</u>

The 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:\WinPAC_AM335x\Wp-5231\demo\3g_modem \3G_modem_SMS_Demo\ http://ftp.icpdas.com/pub/cd/winpac_am335x/wp-5231/demo/3g_modem/3g_modem_sms_dem 0

The description of the demo can be found by downloading the latest version from ICP DAS web site.

http://ftp.icpdas.com/pub/cd/winpac_am335x/wp-5231/document/faq/development/ W5-14_How_to_use_the_SMS_function_and_get_the_GPS_data_en

E.3. How to Synchronize the System Time by GPS Data

The 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:\WinPAC_AM335x\Wp-5231\demo\3g_modem\gpstimesynchronization\ http://ftp.icpdas.com/pub/cd/winpac_am335x/wp-5231/demo/3g_modem/gpstimesynchronizati on

The description of the demo can be found by downloading the latest version from ICP DAS web site.

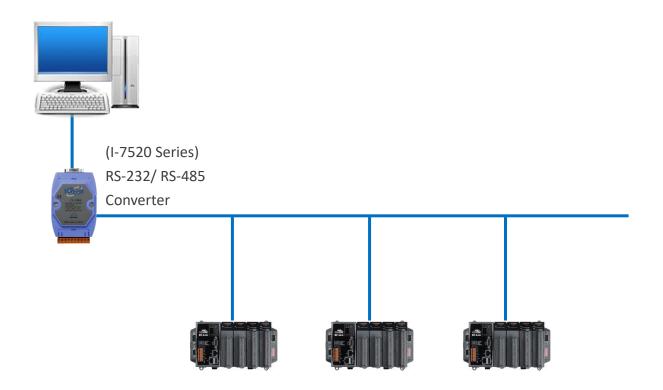
http://ftp.icpdas.com/pub/cd/winpac_am335x/wp-5231/document/faq/development/ W5-15_How_to_Synchronize_the_system_time_by_GPS_data_en

F. 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.

F.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.

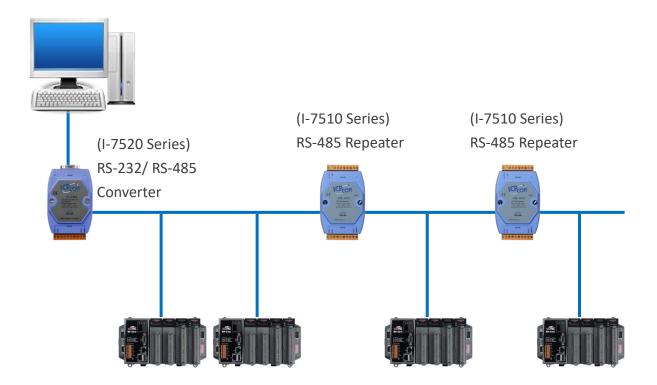


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F.2. Daisy Chain RS-485 Network

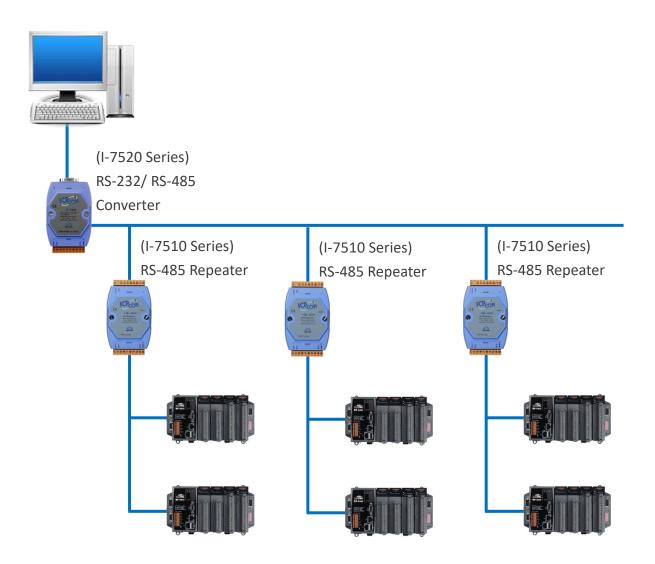
All RS-485 devices are wired directly to the main network, If the network is up to 1.2 km, it will need a repeater (7510 series) to extend the network length.



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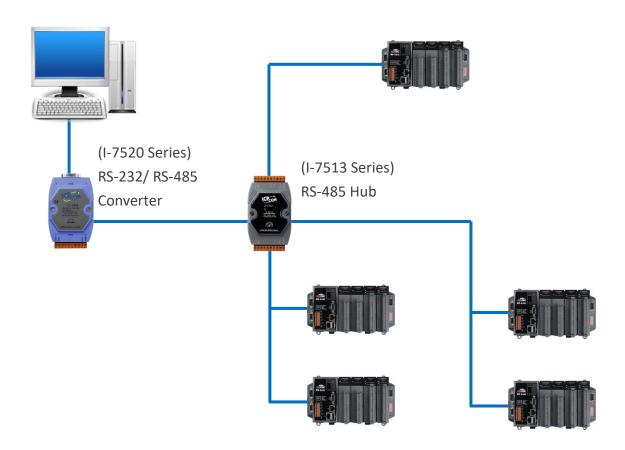
F.3. Star Type RS-485 Network

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.



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

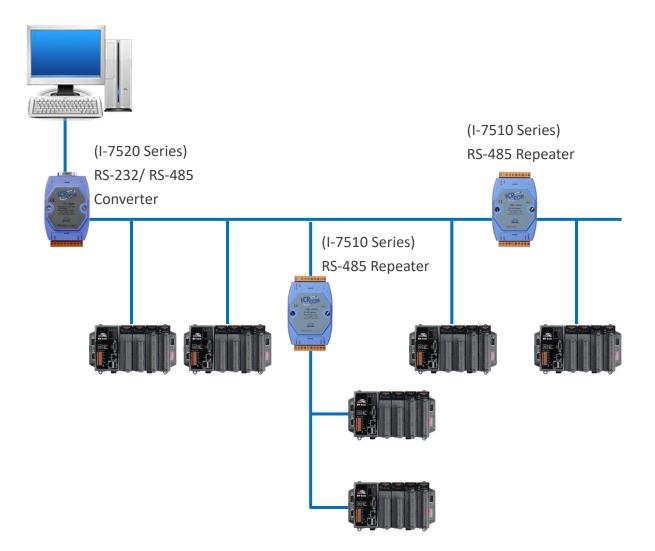


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F.4. Random RS-485 Network

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.



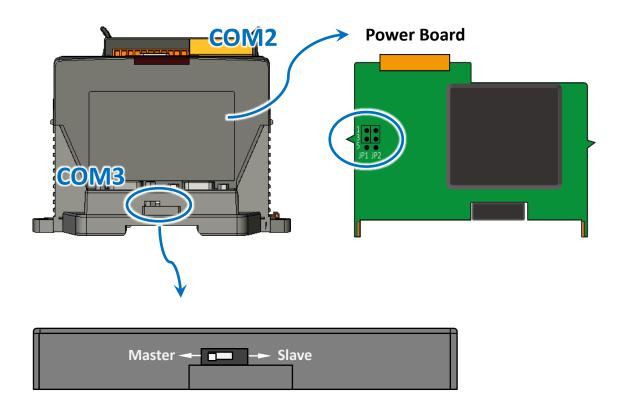
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F.5. Master/Slaves Settings

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

The WinPAC 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.

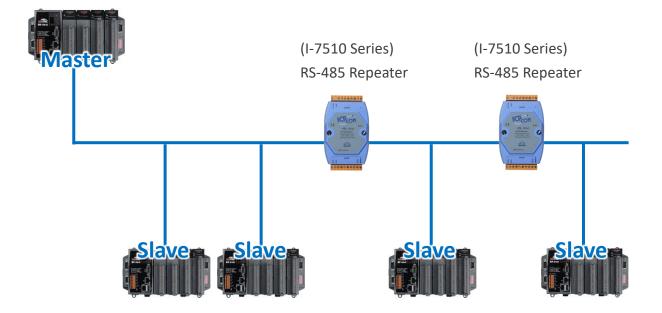
One of the RS-485 communications, COM2, its pull-high/pull-low resistor located on power board, the other, COM3, located on the right and its pull-high/pull-low resistor located on the bottom of the right side, as shown below.



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F.5.1. WinPAC acts as a Master (default)

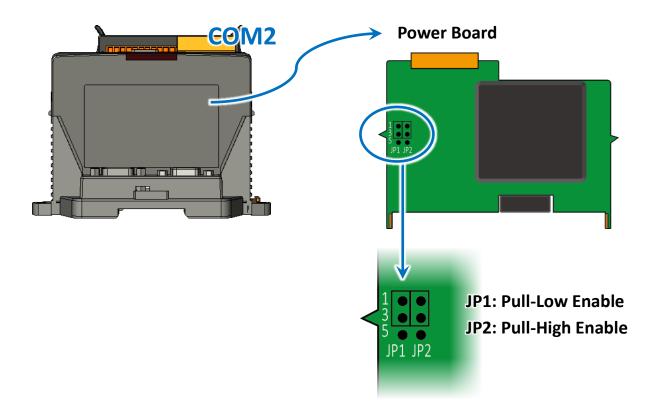
When one of WinPAC is set to master, then all the other devices on the same network must be slave mode. If the network is up to 1.2 KM, it will need a repeater (7510 series) to extend the network length.



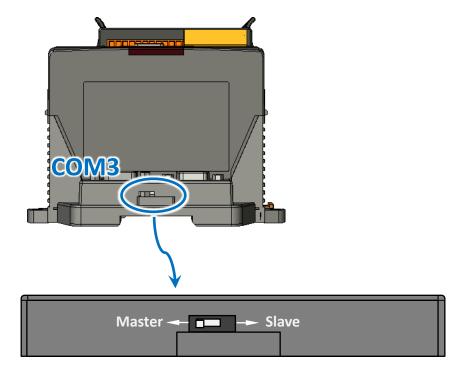
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When WinPAC as a master using COM2 communication interface, the pull-high/pull-low resistor located on the power board must adjust to enable as shown below.



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



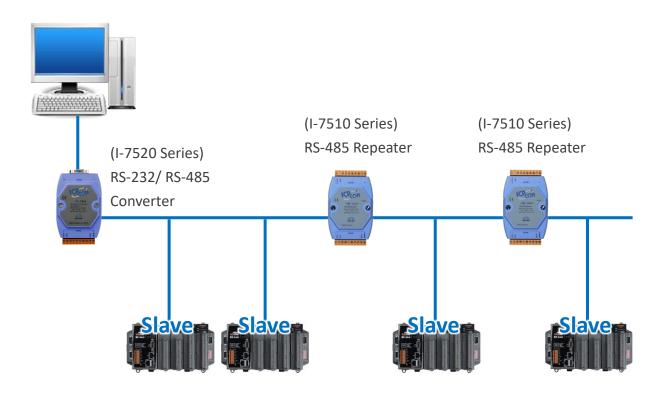
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F.5.2. WinPAC acts as a Slave

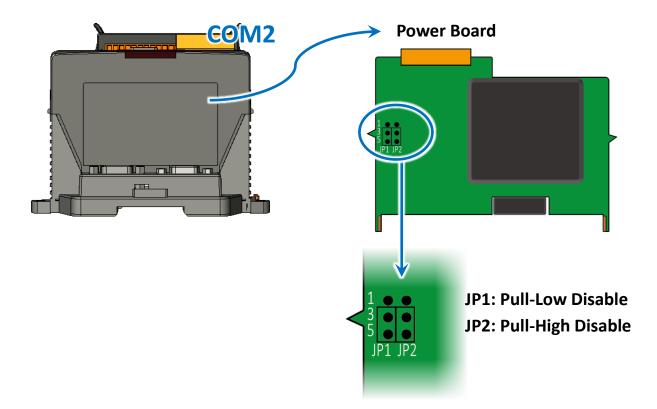
For most of application, when using one 7520 series as RS-232/485 converter, its pull-high/pull-low resistors are set to enabled. Then the WinPAC-8000 and all the other devices on this network must be slave mode (the pull-high/pull-low resistors must be disabled).

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)

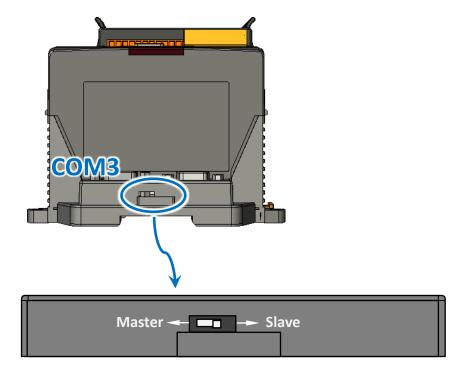


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When WinPAC as a slave using COM2 communication interface, the pull-high/pull-low resistor located on the power board must adjust to disabled as shown below.



When WinPAC as a slave using COM3 communication interface, the pull-high /pull-low resistor located on the power board must set to "Slave" as shown below.



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G. Revision History

This chapter provides revision history information to this document.

The table below shows the revision history.

Revision	Release Date	Description	
1.0.0	June 2016	Initial issue	
1.0.1	June 2016	1. Added the information about how to change the battery in	
		Appendix D.	
		2. Added the information about the 3G/4G applications in	
		Appendix E.	
1.0.2	September 2020	Added the appendix about RS-485 network in Appendix F.	

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