

WP-9000-CE7 Series User Manual

V1.0.0, January 2016



WP-9221-CE7/WP-9421-CE7/WP-9821-CE7

Written by Sean Hsu Edited by Anna Huang

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1. Introduction

This chapter provides an overview of the WP-9000-CE7 and its components, and introduces the fundamental concepts for user familiar with the WP-9000-CE7.



The WP-9000-CE7 is the new generation Windows CE 7.0 based PAC (Programmable Automation Controller) of ICP DAS. Each WP-9000-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 2/4/8 expansion I/O slots that can be used to integrate high performance I-9K (parallel-type) and I-97K (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-9000-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-9000-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)
 - SD card (support up to 32 GB)
- VGA Port x 1, USB 2.0 port x 2, Series 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

Models	WP-9221-CE7	WP-9421-CE7	WP-9821-CE7
System Software			
OS	Windows CE 7.0		
.Net Compact Framework		3.5	
Embedded Service	FTP Server, Web Server (Supports VB script, JAVA script), Embedded SQL Server		
SDK Provided	DII for V	C, Dll for Visual Studio.	Net 2008
Multilanguage Support	English, German, French, Spanish, Russian, Italian, Korean, Simplified Chinese, Traditional Chinese		
CPU Module			
CPU		Cortex-A8 (1.0 GHz)	
SDRAM		512 MB (DDR3)	
Flash	256 MB		
MRAM	128 KB		
EEPROM	16 KB		
SD	SD slot with one SD 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	2 (L1,L2)		
Rotary Switch	Yes (0 ~ 9)		
VGA & Communication Ports			
VGA Resolution 80		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-97K series modules in slots		
COM 1	RS-232/485 (RxD, TxD and GND for RS-232; Data+, Data- for RS-485); 3000 V _{DC} isolated		

The table below summarizes the specifications of the WP-9000-CE7.

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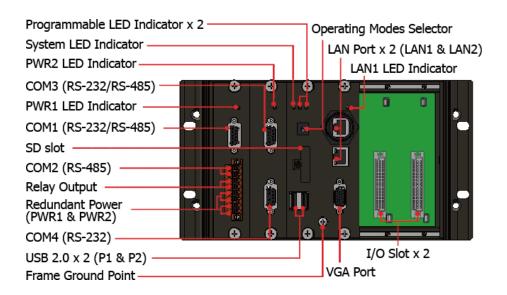
Models	WP-9221-CE7	WP-9421-CE7	WP-9821-CE7
COM 2	RS-485 (Data+, Data-); 3000 V _{DC} isolated		
СОМ 3	RS-232/485 (RxD, TxD and GND for RS-232; Data+, Data- for RS-485); 3000 V _{DC} isolated		
COM 4	RS-232 (RxD, TxD, CTS, RTS, DSR, DTR, CD, RI and GND); 3000 V_{DC} isolated		
I/O Expansion Slots			
Number of I/O slots	2	4	8
Supported types of I/O modules	I-9K and I-97K series I/O Modules		
Mechanical			
Dimensions (W x H x D)	239 x 133 x 164	300 x 133 x 164	422 x 133 x 164
Installation	Wall and DIN-rail mounting		
Environmental			
Operating Temperature	-25 °C ~ +75 °C		
Storage Temperature	-30 °C ~ + 80 °C		
Ambient Relative Humidity	10 % ~ 90 % RH (non-condensing)		
Input Range	+10 V _{DC} ~+30 V _{DC}		
Redundant Power Inputs	Yes		
Isolation	1 kV		
Capacity	1.5 A, 5 V supply to CPU and backplane; 6.5 A, 5 V supply to I/O expansion slots, total 40 W		
Consumption	10.8 W (0.45 A @ 24 V _{DC})		

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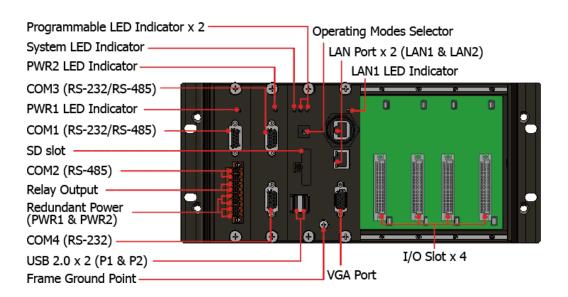
1.3. Overview

The WP-9000-CE7 Series modules are equipped with several interfaces and peripherals that can be integrated with external systems. Here is an overview of the components and its descriptions.

WP-9221-CE7

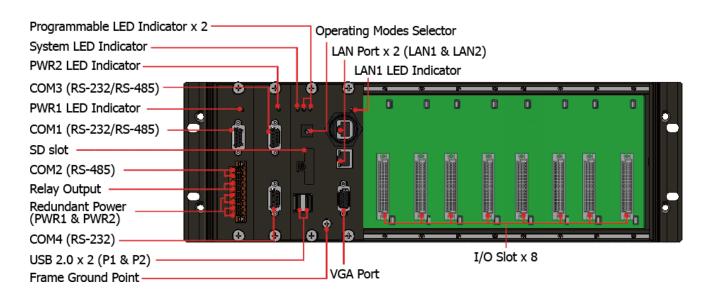


WP-9421-CE7



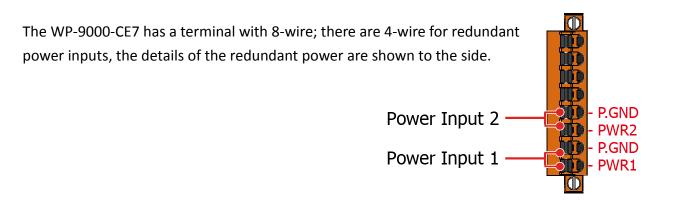
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The details of these items are as follows:

Redundant Power (PWR1 and PWR2)

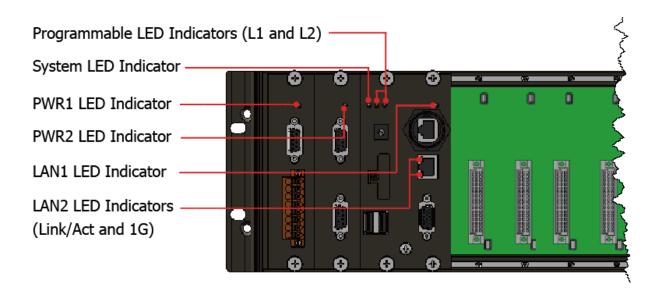


Operating mode Selector



Rotary Switch is an operating mode selector. The WP-9000-CE7 has several operating modes, for more detailed information about these operating mode, please refer to "2.4 Configuring the Boot Mode"

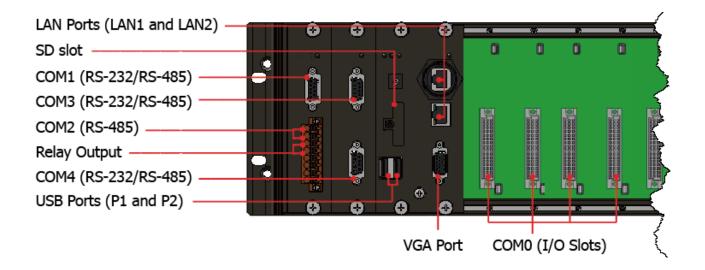
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LED Indicator	Label	State (Color)	Meaning
Programmable LED Indicators	L1 and L2	-	Programmable LED indicators
System LED indicator	RUN	Orange	OS is running
PWR1 LED Indicator	PWR	Green	Power 1 is on
PWR2 LED Indicator	PWR	Green	Power 2 is on
LAN1 LED indicator	Link/Act	Green	The Link is active
	Link/Act	Blinking	Network activity
	Link/A at	Green	The Link is active
LAN2 LED indicator	Link/Act	Blinking	Network activity
	1G	Orange	The network speed is 1 G

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Communication Ports



• LAN Ports (LAN1 and LAN2)

The WP-9000-CE7 has two Ethernet ports that can be used to connect the router to the Internet or to other devices.

SD slot

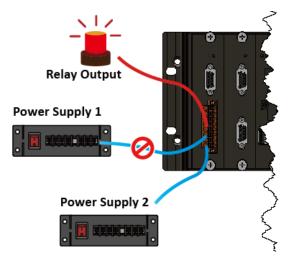
The SD slot can be used to restore the WP-9000-CE7 system and expand the memory up to 32 GB.

• USB Ports (P1 and P2)

The WP-9000-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.

• Relay Output

The WP-9000-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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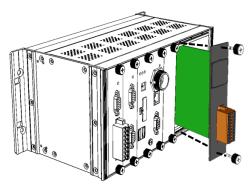
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• VGA Port

The WP-9000-CE7 has a VGA port that can be used with a variety of supported VGA resolutions, and the output resolution covers, 800 x 600, 1024 x768.

• COM0, Expansion I/O Slot

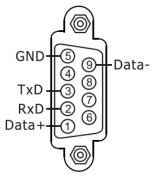
The WP-9000-CE7 has 2/4/8 I/O slots that can be used to integrate high performance parallel I/O modules (high profile I-9K Series) or serial I/O modules (high profile I-97K series).



• COM1 (RS-232/RS-485)

The COM1 port is a 9-pins RS-232/RS-485 connector. The details of the COM1 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: 64 bytes



• COM2 (2-wire RS-485)

Note: 16C550 compatible Port Type: Terminals Baud Rate: 115200, 57600, 38400, 19200, 9600, 4800, 2400, 1200 t Data Bits: 5, 6, 7, 8 Parity: None, Even, Odd, Mark (Always 1), Space (Always 0) Stop Bits: 1, 2 FIFO: 128 bytes

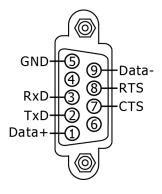
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• COM3 (RS-232/RS-485)

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

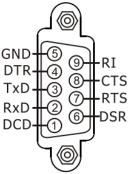
Note: 16C550 compatible Port Type: Male Baud Rate: 115200, 57600, 38400, 19200, 9600, 4800, 2400, 1200 bps Data Bits: 5, 6, 7, 8 Parity: None, Even, Odd, Mark (Always 1), Space (Always 0) Stop Bits: 1, 2 FIFO: 128 bytes



• COM4 (RS-232)

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



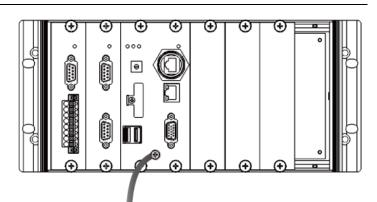
The table below shows the data bit and their corresponding stop bit for COM1, COM2, COM3 and COM4.

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

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The frame ground point is a small piece of metal that can be used to terminate the shield.

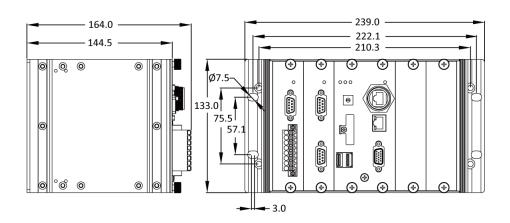


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1.4. Dimensions

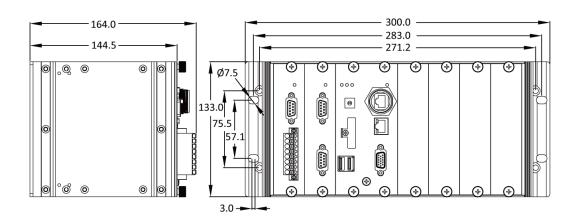
The diagrams below provide the dimensions of the WP-9000-CE7 to use in defining your enclosure specifications. Remember to leave room for potential expansion if you are using other components in your system.

The height dimension is the same for all WP-9000-CE7. The width depending on your choose of I/O expansion slots. All dimensions are in millimeters.



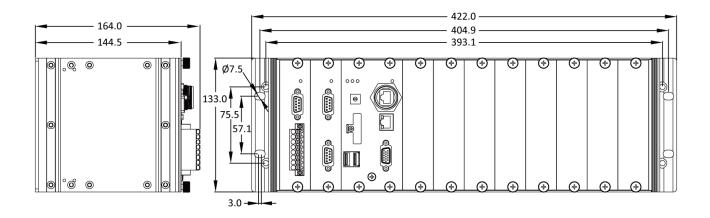
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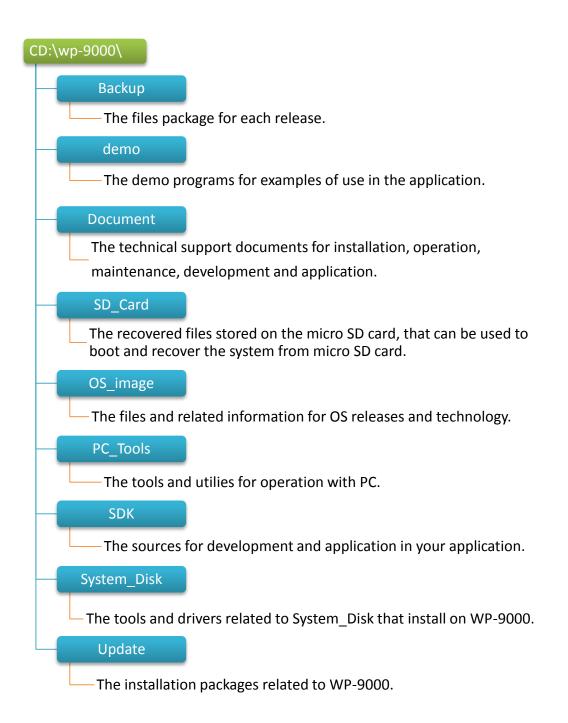
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1.5. Companion CD

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-9000 directory. All of them are listed below.



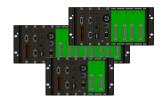
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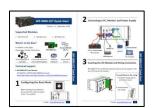
2. Getting Started

This chapter provides a guided tour of the WP-9000-CE7 installation and configuration that describes the steps needed to download, install, configure, and run the basic procedures for user working with the WP-9000-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-9221-CE7/WP-9421-CE7/WP-9821-CE7



Quick Start Guide





44 mm DIN-Rail Clip * 2



M3x6L Screw * 8



<u>A microSD card and a micro</u> <u>SD/SD adapter</u>



Software Utility CD



<u>Screw Driver</u> (1C016) 2.4 mm

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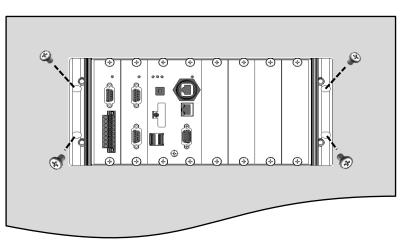
2.1. Mounting the WP-9000-CE7

The WP-9000-CE7 can be mounted either directly to a wall/panel, or onto a stainless 35mm DIN rail.

Wall/Panel mounting

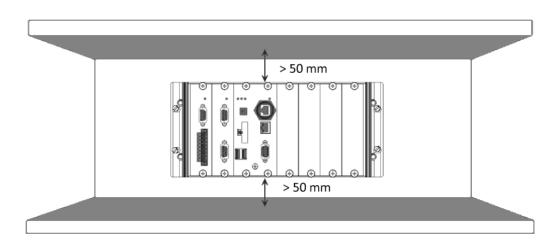
Step 1: Install the four mounting screws into the 4 keyhole mounting holes

Step 2: Fasten the screws securely



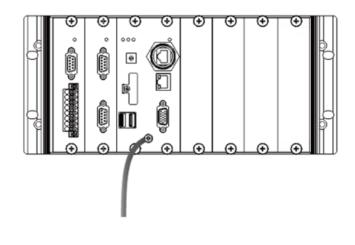
Tips & Warnings

There must be a minimum clearance of 50mm between the WP-9000-CE7 and the top and bottom side of the enclosure panel.



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Step 3: Connect the ground lead to the frame ground point



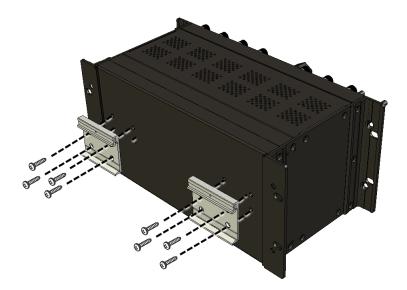
Tips & Warnings



A good common ground reference (earth ground) is essential for proper operation of the WP-9000-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.

DIN Rail mounting

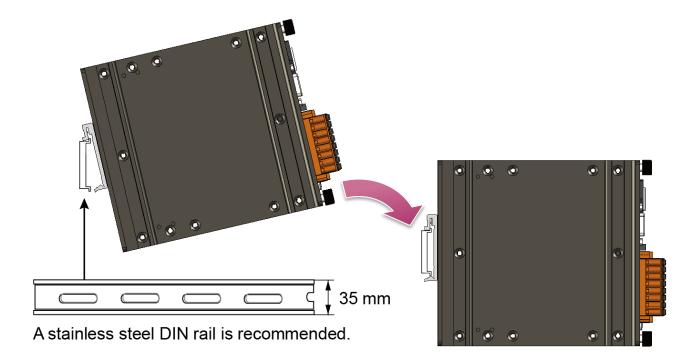
Step 1: Fasten the DIN rail clip to the WP-9000-CE7



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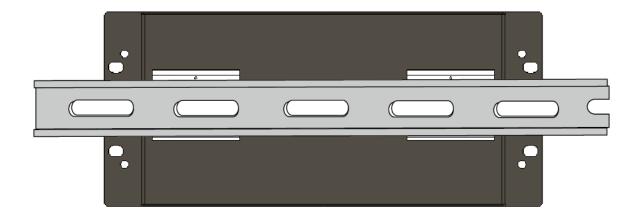
Step 2: Clip the device onto a stainless DIN rail



Tips & Warnings

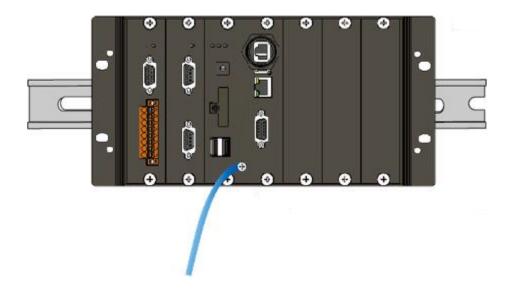


For DIN rail mounting, it is strongly recommended that only a stainless steel DIN rail be used to support the weight of WP-9000-CE7 system, providing stability and preventing WP-9000-CE7 from leaning



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Step 3: Connect the ground lead to the frame ground point



Tips & Warnings



A good common ground reference (earth ground) is essential for proper operation of the WP-9000-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.

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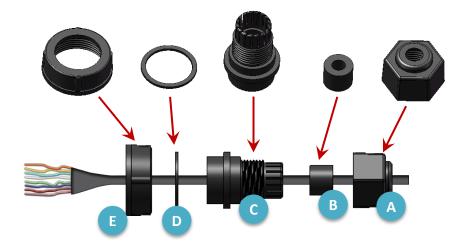
2.2. Installing the RJ-45 waterproof connector assembly

The WP-9000-CE7 is equipped with an RJ-45 waterproof connector to withstand contaminant in dusty environment.

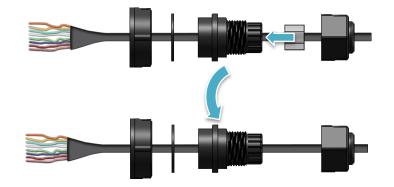
Step 1: Remove the RJ-45 connector from the RJ-45 cable



Step 2: Feed the end of the RJ-45 cable through the (A) sealing nut, (B) rubber sealing insert, (C) clamping ring, (D) panel gasket and (E) cable gland base



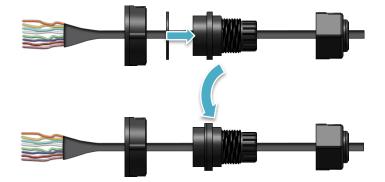
Step 3: Wrap the (C) clamping ring around the (B) rubber sealing insert



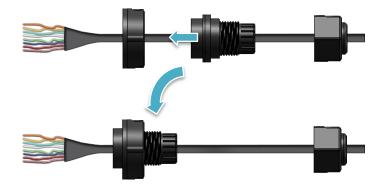
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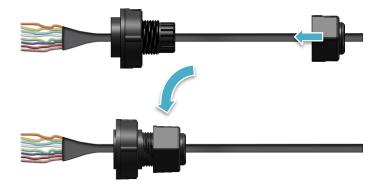
Step 4: Insert the (D) panel gasket into the (C) clamping ring



Step 5: Seat the (C) clamping ring and (D) panel gasket in the (E) cable gland base



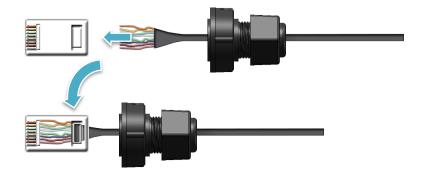
Step 6: Push the (E) sealing nut forward and Hand-tighten it to seal the assembly



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Step 7: Insert the RJ-45 cable into the RJ-45 connector



Step 8: Push the RJ-45 waterproof connector assembly forward



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2.3. Deploying a Basic WP-9000-CE7 System

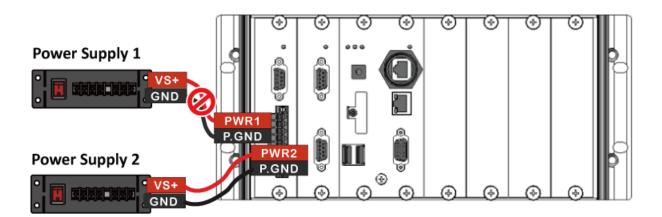
The WP-9000-CE7 provides a variety of communication interface to suit a range of application. Here is a simple application for using the WP-9000-CE7.

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-9000-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-9000-CE7.

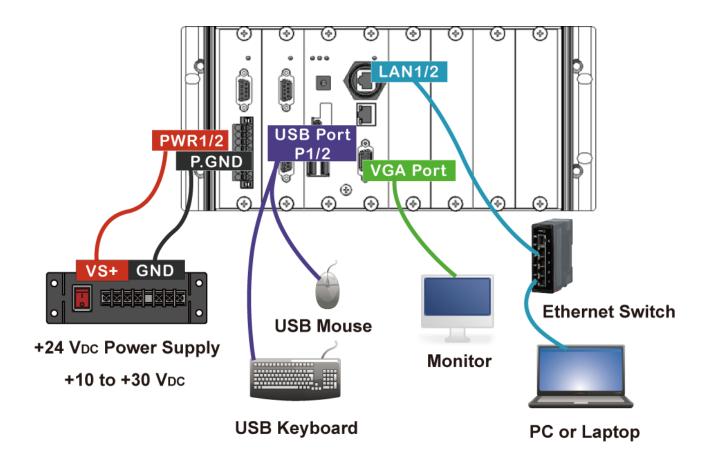


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Step 2: Connect the USB mouse or the USB keyboard to the USB port

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



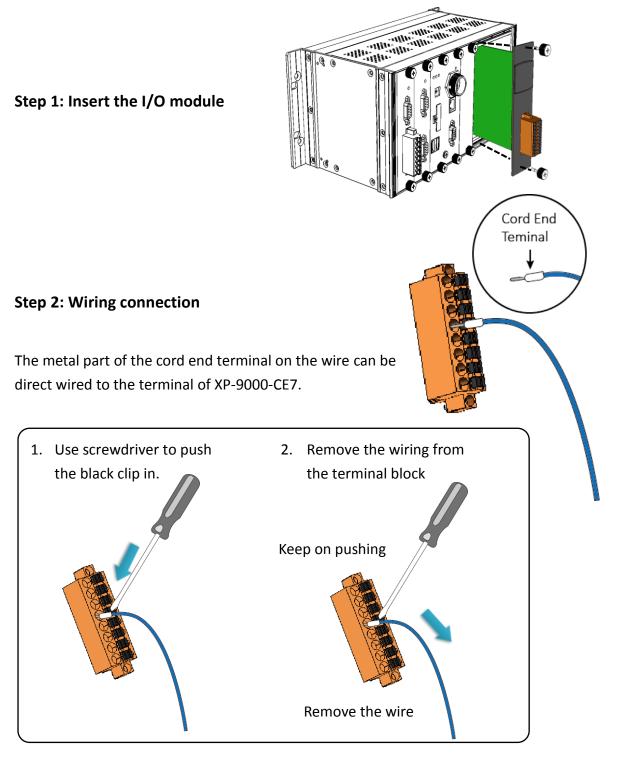
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2.4. Inserting the I/O Modules

WP-9000-CE7 has 2/4/8 I/O expansion slots and only supports I-9K and I-97K 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-9000-CE7, please refer to: http://www.icpdas.com/root/product/solutions/remote_io/i-9k_i-97k/i-9k_i-97k_selection.html



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2.5. Configuring the Boot Mode

The WP-9000-CE7 has several operating modes, which can be selected by a rotary switch.

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 SD	
6	Reserve (OS Development Mode)	
7~9	User Mode	

The table below lists the operation modes available with the WP-9000-CE7.

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.

Safe Mode

Safe mode is a troubleshooting mode. The mode loads the minimum required device drivers and system services to boot the WP-9000-CE7.

If you have malicious software or a program caused the WP-9000-CE7 cannot be boot or run the normal mode, you can boot in safe mode to solve the problem.

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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-9000-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.

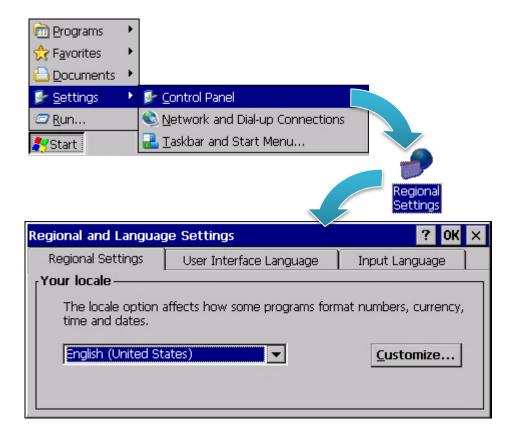
When WP-9000-CE7 is boot with one of these positions, it is boot at normal mode. User's application can check the position of the rotary switch position to run at different mode.

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2.6. Changing the User Interface Language

The **Regional and Language Settings** is a Windows CE functionality that allows users to change the WP-9000-CE7 user interface with your native language.

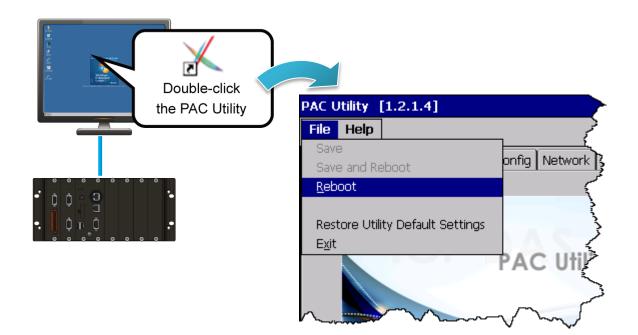
Step 1: Click <u>Start</u> menu, point to <u>Settings</u>, click <u>Control Panel</u>, and then click <u>Regional</u> <u>Settings</u>



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 Language					
The option will determine the language used for the menus, dialogs and alerts.					
	English (United States)				
English (United States) French (France) German (Germany) Italian (Italy)					
	Portuguese (Brazil) Spanish (Spain - Int	ernational Sort)			

Step 3: Double-click the <u>PAC Utility</u> on the desktop, and then reboot the WP-9000-CE7 for changes to take effect



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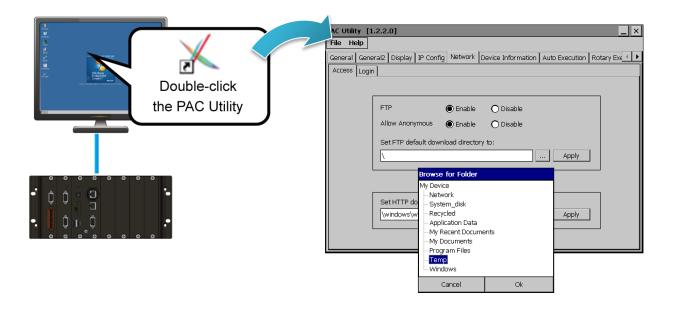
2.7. Using PAC Utility to Manage the WP-9000-CE7

The PAC Utility is a collection of the WP-9000-CE7 system tool that allows users to manage and configure the WP-9000-CE7 quickly and easily.

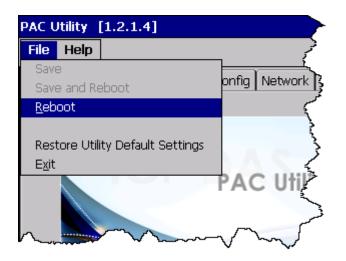
For more detailed information on PAC Utility applications, please refer to "3.1. PAC Utility"

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-9000-CE7 for changes to take effect

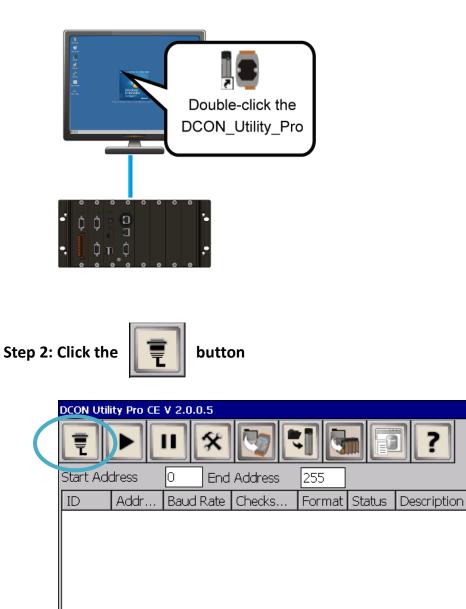


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2.8. Using DCON Utility Pro Configure I/O Modules

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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×

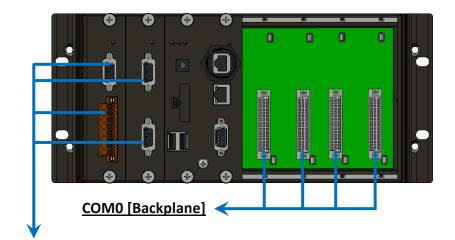
Step 3: Configure the communication settings

COM Port Option	×
COM Port	Timeout
COM0[Backplane]	300 ms
COM0[Backplane]	
COM1 COM2 COM3	ecksum Format
COM4	3,2 🔲 Е,8,1 🗌 О,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

DN Utility Pro CE V 2.0.0.5	×
art Address 0 End Address 4	
Addr Baud Rate Checks Format Status Description	
7015 5 15200 Disable N,8,1 [DCON]8*AI (Universal R	TC
97015 rmware[8209]	×
Configuration AI About	
Protocol(INIT*) DCON	
Address [00H]	
Baud Rate(INIT*)	
Parity(INIT*) N,8,1-None Parity	
Checksum(INIT*) Disable	
Analog Format Ohms 💌	
60/50 Hz 50Hz 🔽	
M:0[N,8,1] Save Configurations to) the File
Write Configurations to	
Response Delay 0 ms	170 Piodule
Exit	

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3. Tools and Tasks

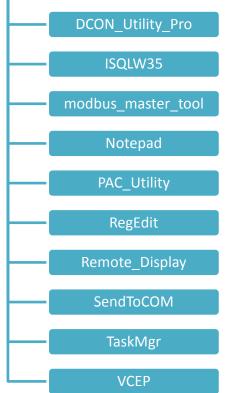
This chapter provides a brief introduction of the WP-9000-CE7 service tools and its benefits.

There are several tools and utilities built-in and designed for use with WP-9000-CE7. Some of these are pre-installed on WP-9000-CE7 and can work directly on WP-9000-CE7, and some of these are supporting tools and can help you to manage the WP-9000-CE7 remotely on a PC.

The following tools are pre-installed on WP-9000-CE7 and can work directly on WP-9000-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:\wp-9000\System_Disk\Tools\

http://ftp.icpdas.com/pub/cd/winpac_am335x/wp-9000/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-9000-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

3.1.1. Menu Bar – File

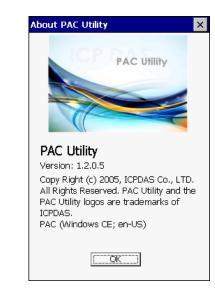
File	Help
Save	9
Savi	e and Reboot
<u>R</u> eb	oot
Rest	tore Utility Default Settings
E <u>x</u> it	

The menus use to	How to use
Reboot	Restarts the WP-9000-CE7
Restore Utility Default Settings	Restore the WP-9000-CE7 to default settings.
Exit	Exits the PAC Utility.

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3.1.2. Menu Bar – Help



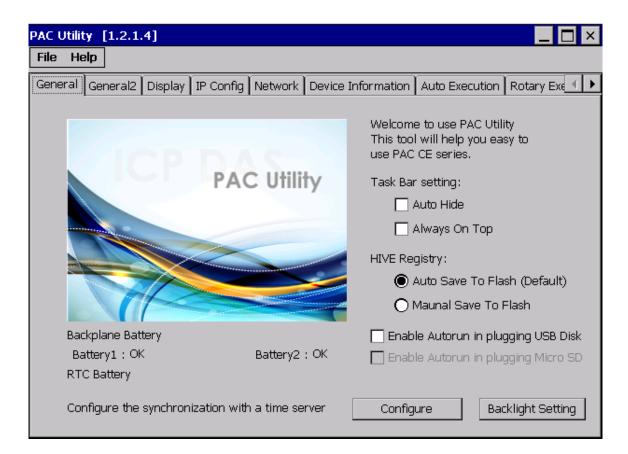


The menus use to	How to use	
About	Displays a dialog box with information about PAC Utility,	
	including the current version and copyright information.	

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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-9000-CE7 will be saved and only take				
	effect after the WP-9000-CE7 reboots.				
	Manual save to flash:	PAC Utility [1.2.1.4]			
	Select the Manual Save to Flash	File Help			
	check box.	Save and Reboot			
	Any changes made to the	Reboot			
	WP-9000-CE7 will be saved by				
	clicking the Save and Reboot from	Restore Utility Default Settings			
	File menu.				

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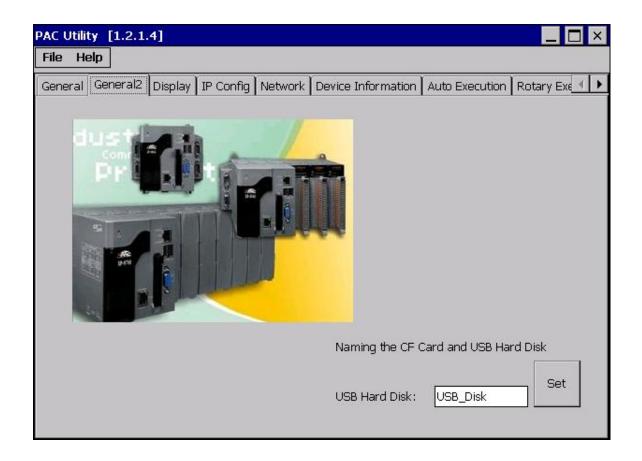
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The tab use to	How to use		
Enable USB autorun	Select the Enable Autorun in plugging USB Disk check box.		
Enable SD auotrun	This item is temporarily unavailable.		
Automatic synchronization	Refer to the Appendix A.2. How to configure the service for		
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 U	Jtilit	y I	1.2.1	.4]						_	
File	He	lp									
Gene	ral	Ger	neral2	Display	IP Config	Network	De	vice Information	Auto Execution	Rotary I	Exe
			icreen ess	·	1: 480 pixels	More		Screen refre:	sh rate:	•	
										Apply	

How to use
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.
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 Network I	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	\bigcirc 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	Reboot for changes to take effective
Apply	Apply

The tab use to	How to use
	Use DHCP to get IP address:
Set the network settings	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 Gener	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
ll 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	Disable anonymous FTP access:
access	Select the Disable check box in the Allow Anonymous field, and then
	click the Apply button.
Set the FTP	Enter a new path in the Set FTP default download directory to: field,
directory path	and then click the Apply button.
Set the HTTP	Enter a new path in the Set HTTP document root directory to: field,
directory path	and then click the Apply button.

Login

The Login tab provides functions to maintain the FTP accounts.

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 ****
Admin Add Delete
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-9000-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 Device	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 Interne client devices and other shared equipment.	
	hare Files System Settings 📃 🗙
	different device name) Compact
Т	he path to the folder to be shared
	onfigure the file server to use LANx as ie network adapter
1	PCIVFETCE5B2
C	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
	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-9000-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 In	formation Auto Execution Rotary Exe 🔨 🕨
Slot 1:	Module(CPU) Type:	
Slot 2:		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-9000-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 🔳 🕨
	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	Program 6:		Browse
at system startup.	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-9000-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 Co	nfig Network Devic	e Information Auto Execution Rotary Ex	ecution 🔥 া 🕨
	Rotary Switch 0	Normal Mode	Browse
6780	Rotary Switch 1:	Safe Mode	Browse
5 A C	Rotary Switch 2:		Browse
53	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
		Ap	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/root/product/solutions/software/utilities/dcon_utility_pro.html</u>

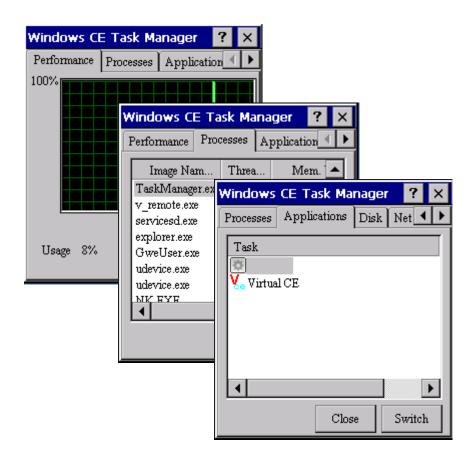
ON Utility Pro CE	V 2.0.0.4		:
art Address	End Add	Z C Z Z Z Z Z tress 4	
D Addr	Baud Rate Che	ecks Format Status Description	
		Command Line Tool	
	COM Po		
	Baud Ra Checksu		Send
	Timeou		
	Commar	, ,	
	Respons		
Tool for Comman		×	
	Data Logger About		
	1	COMD Load	
Start Search	Baud Rate	115200 Remove	
	Data Format		
	Checksum	N,8,1 Add >> Disable Image: Constraint of the second sec	
	Slot	Modify rt	
	Timeout (ms)	200(ms) Save	
	Delay for Next (ms)	200(ms)	
	Command Reference		
	Send Command	\$01M	
	Compared Response	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-9000-CE7 anywhere. No matter where you are, ICP DAS VCEP provides a convenient environment on the Desktop PC and lets you control your WP-9000-CE7 remotely.

firtual 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-9000-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://ftp.icpdas.com.tw/pub/cd/winpac_am335x/WP-9000-CE7/pc_tools/vcep/

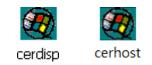
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3.5. Remote_Display

The **Remote Display** allows WP-9000-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-9000-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:

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

ICPDAS Send to COM V1.0.4 2011/2/23	×
Connection Status COM Port Baudrate Data Bit Parity Stop Bit COM2 I15200 8 0-None Parity 1 Image: Comparity	Slot Close
End string with None LF_CR CR CR_LF LF Commands Responses Current Packet Size (bytes) 0	string +CRC Binary String Send Polling Auto send Internal (ms) 500 Start Stop Set Start Time Stop Time Stop Time
	Clear

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				
HKEY_CLASSES_ROOT	Name	Туре	Data	
HKEY_CURRENT_USER			r.	
HKEY_USERS				

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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				A
				Input Panel
				[ssc]1]2]3]4[5]6]7[8]9]0]- = ● Tab[q]w]e]r]t]y]u]i]0]p[[]]
				CAP a s d f g h j k l ; '
				Shift Z × [c v] b] n]m] ,] , [/] ← J Cti]áü] `] \]

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4. Your First WP-9000-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-9000-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-9000-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-9000-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

4.1.2. Installing the WP-9000-CE7 SDK

The WP-9000-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-9000-CE7 SDK, AM335x_WINCE7_SDKV100B03

The WP-9000-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:\WP-9000\SDK\PlatformSDK\

http://ftp.icpdas.com/pub/cd/winpac_am335x/wp-9000/sdk/platformsdk/

Step 2: Execute the AM335x_WINCE7_SDK_YYYMMDD.msi

Follow the prompts until the installation process is complete.

Step 3: Execute the VisualStudioDeviceWindowsEmbeddedCompact7

Follow the prompts until the installation process is complete.

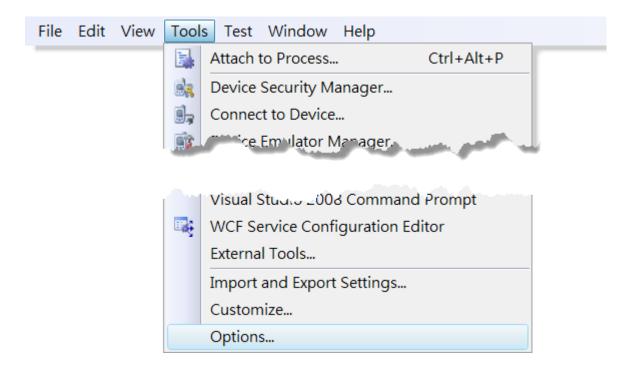
4.1.3. Setting up the Global Compiler Settings (for Visual C++)

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...



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\atImfc\include" must be moved to the top of the list.

Environment	Platform:	Show directories for:				
Environment Projects and Solutions General Build and Run VB Defaults VC++ Directories VC++ Project Settings Source Control Text Editor Database Tools Debugging Device Tools	C:\Program Files (x86)\Windows CE \$(VCInstallDir)ce7\atlmfc\include \$(VCInstallDir)ce\atlmfc\include	AM335x_WINCE7_SDK (ARMv4I) Include files (VCInstallDir)ce\include (VCInstallDir)ce7\include C:\Program Files (x86)\Windows CE Tools\SDKs\AM335x_WINCE7_SDK\include C:\Program Files (x86)\Windows CE Tools\SDKs\AM335x_WINCE7_SDK\include\ (VCInstallDir)ce7\atlmfc\include				
HTML Designer Office Tools Test Tools Text Templating Windows Forms Designer Workflow Designer	Include Directories Path to use when searching for inclu Corresponds to environment variable	de files while building a VC++ project. e INCLUDE.				

4.2. First WP-9000-CE7 Program in VB.NET

The best way to learn programming with WP-9000-CE7 is to actually create a WP-9000-CE7 program.

The example below demonstrates how to create a demo program running on WP-9000-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-9000-CE7
- 6. Execute the application on WP-9000-CE7

All main steps will be described in the following subsection.

In this tutorial, we will assume that you have installed WP-9000-CE7 SDK on PC and used the Visual Studio 2008 for application development.

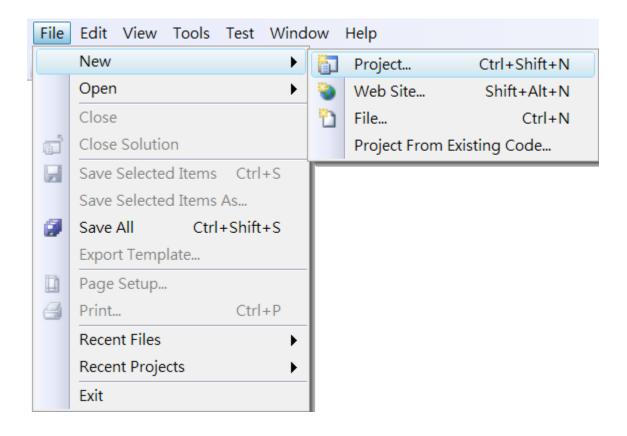
4.2.1. Create a new project

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

Step 1: Start Visual Studio 2008



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



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

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

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

New Project				? X
Project types:		Templates:		.NET Framework 3.5 💌 🖽 🔚
General		Visual Studio installed templates	b	
MFC		🔟 Smart Device Project		
Smart Device	;	My Templates		
Test		Search Online Templates		
Win32				
Other Language	es			
Visual Basic				
Windows	-			
Web				
Smart Dev Office	lice			
Database				
Reporting Test				
WCF				
Workflow				
Visual C#	~			
	Device applications. Ch	oose target platform, Framework v	ersion, and template in the next d	ialog box.
Name:	SDK_Info			
			- •	
Location:	C:\Users\Administrat	or\Documents\Visual Studio 2008\	Projects	▼ Browse
Solution Name:	SDK_Info		Create directory for solution	n
				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: Templates:	Windows CE NET Compact Framework Version 3.5				
Device Class Console Application Library Application	Control Empty Library Project	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-9000-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:\WP-9000\SDK\PACNET\

http://ftp.icpdas.com/pub/cd/winpac_am335x/wp-9000/sdk/pacnet/

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

省 SD	K_Info	- Micro	osoft	Visual	Stud	io (Admir	nistrato	r)			a number	
File	Edit	View	Proj	ect E	Build	Debug	Data	Format	Tools	Test	Window	Help
				Add	Wind	lows Forr	n					
				Add	User	Control						
			B	Add	Com	ponent						
			1	Add	Mod	ule						
			₩\$	Add	Class							
			8	Add	New	Item	Ctrl+	Shift+A				
			:::	Add	Existi	ng Item	Shif	t+Alt+A				
				Exclu	ude Fi	rom Proje	ect					
				Show	w All I	Files						
				Add	Refe	rence						
				Add	Web	Referenc	e					
				Set a	as Sta	rtUp Proj	ect					
			fy	Refr	esh P	roject Too	box It	ems				
				Char	nge Ta	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

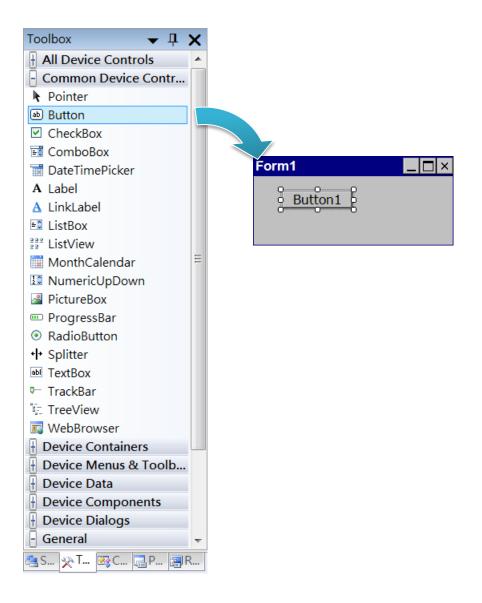
4.2.3. Add the control to the form

,

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.

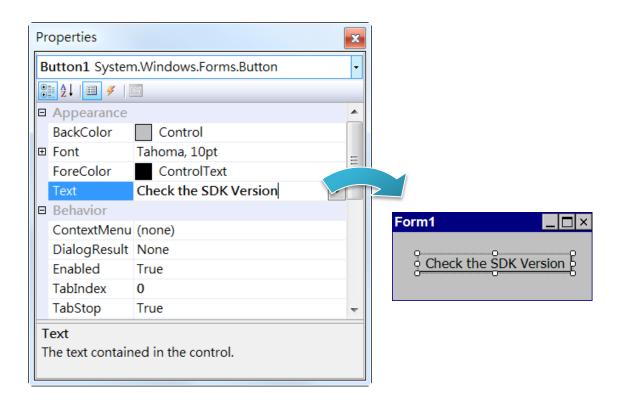
Step 1: On the Toolbox panel, drag a Button control onto the form



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



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4.2.4. 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

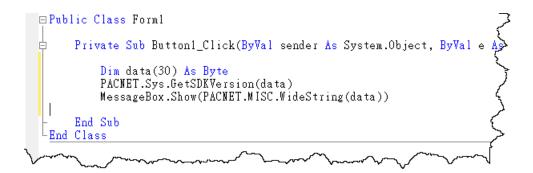
Form1	
Check the S	DK Version

Step 2: Inserting the following code

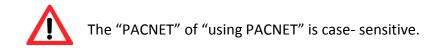
Dim data(30) As Byte

PACNET.Sys.GetSDKVersion(data)

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



Tips & Warnings

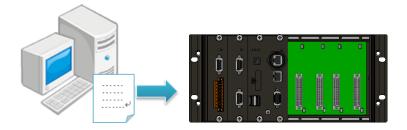


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4.2.5. Upload the application to WP-9000-CE7

WP-9000-CE7 supports FTP server service. You can upload files to WP-9000-CE7 or download files from a public FTP server.



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

File	Edit	View	Project	Build	Debug	Data	Format	Tools	Test	Window	Help
				***	Build Solu	ution		F7			
					Rebuild S	olution	Ctrl+A	lt+F7			
					Deploy So	olution					
					Clean Sol	ution					
					Build SDK	(_Info					
					Rebuild S	DK_Info)				
					Deploy SI	OK_Info					
					Clean SDR	<_Info					
					Configura	ation Ma	anager				

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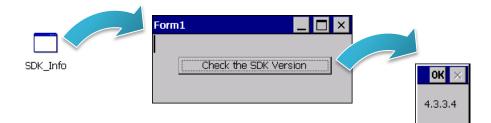
Step 2: Open the browser and type the IP address of WP-9000-CE7

Step 3: Upload the application and the corresponding PACNET.dll files to WP-9000-CE7

Tips & V	Varnings
	For applications programming in C# and VB.net with .net compact framework, when executing these application on WP-9000-CE7, the corresponding PACNET.dll must be in the same directory as the .exe file.
	Eile Edit View Go Favorites Address Temp Address Temp PACNET SDK_Info

4.2.6. Execute the application on WP-9000-CE7

After uploading the application to WP-9000-CE7, you can just double-click it on WP-9000-CE7 to execute it.



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4.3. First WP-9000-CE7 Program in Visual C#

The best way to learn programming with WP-9000-CE7 is to actually create a WP-9000-CE7 program.

The example below demonstrates how to create a demo program running on WP-9000-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-9000-CE7
- 6. Execute the application on WP-9000-CE7

All main steps will be described in the following subsection.

In this tutorial, we will assume that you have installed WP-9000-CE7 SDK on PC and used the Visual Studio 2008 for application development.

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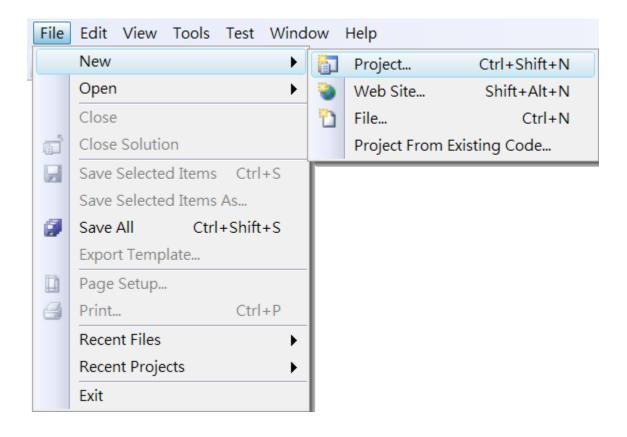
4.3.1. Create a new project

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



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: .NET Compact Framework version: Templates:	Windows CE .NET Compact Framework Version 3.5	 ▼ 1
Device Class Console Application Library Application	Control Empty n Library Project	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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4.3.2. Specify the path of the PAC reference

The PAC SDK provides a complete solution to integrate with WP-9000-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:\WP-9000\SDK\PACNET\

http://ftp.icpdas.com/pub/cd/winpac_am335x/wp-9000/sdk/pacnet/

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

省 SD	🕤 SDK_Info - Microsoft Visual Studio (Administrator)											
File	Edit	View	Proj	ect E	Build	Debug	Data	Format	Tools	Test	Window	Help
				Add	Wind	lows Forr	n					
				Add	User	Control						
			B	Add	Com	ponent						
			1	Add	Mod	ule						
			₩\$	Add	Class							
			8	Add	New	Item	Ctrl+	Shift+A				
			:::	Add	Existi	ng Item	Shif	t+Alt+A				
				Exclu	ude Fi	rom Proje	ect					
				Show	w All I	Files						
				Add	Refe	rence						
				Add	Web	Referenc	e					
				Set a	as Sta	rtUp Proj	ect					
			fy	Refr	esh P	roject Too	box It	ems				
				Char	nge Ta	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>

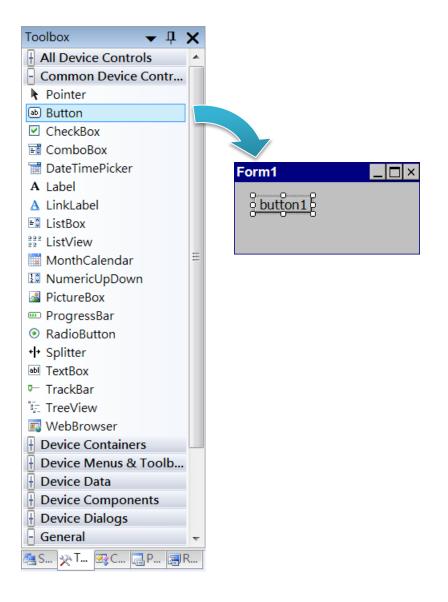
Add Reference	? ×
.NET Projects Browse Recent	
Look in: 📜 PACNET 👻	G 🌶 📂 🖽 -
Name	Date modified
ACNET.dll	2014/5/30
< <u> </u>	4
File name: : PACNET	▼
Files of type: : Component Files (*.dll;*.tlb;*.olb;*.ocx;*.exe)	▼
	OK Cancel

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.

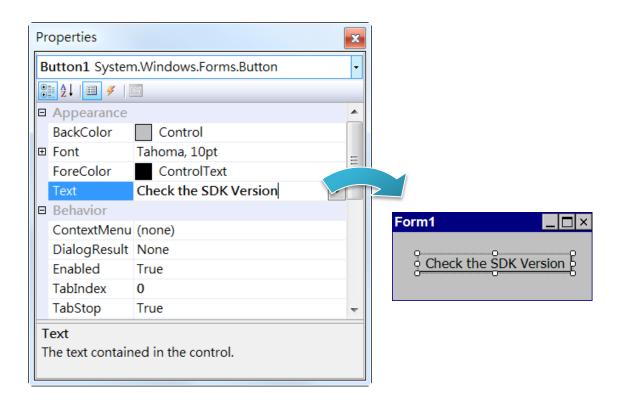
Step 1: On the Toolbox panel, drag a Button control onto the form



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

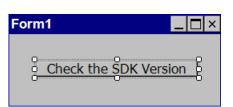


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4.3.4. Add the event handling for the control

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

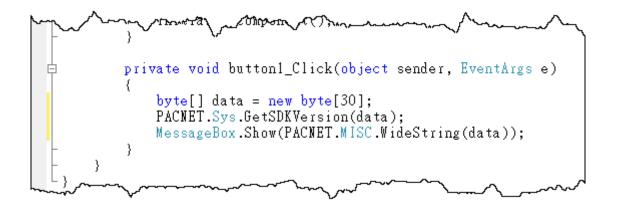


Step 2: Inserting the following code

byte[] data = new byte[30];

PACNET.Sys.GetSDKVersion(data);

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



Tips & Warnings



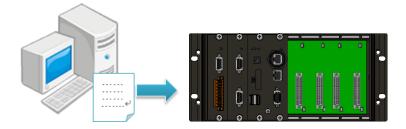
The "PACNET" of "using PACNET" is case- sensitive.

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4.3.5. Upload the application to WP-9000-CE7

WP-9000-CE7 supports FTP server service. You can upload files to WP-9000-CE7 or download files from a public FTP server.



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

File	Edit	View	Project	Build	Debug	Data	Format	Tools	Test	Window	Help
				***	Build Solu	ution		F7			
					Rebuild S	olution	Ctrl+A	lt+F7			
					Deploy So	olution					
					Clean Sol	ution					
					Build SDK	(_Info					
					Rebuild S	DK_Info)				
					Deploy SI	OK_Info					
					Clean SDI	<_Info					
					Configura	ation Ma	anager				

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Step 2: Open the browser and type the IP address of WP-9000-CE7

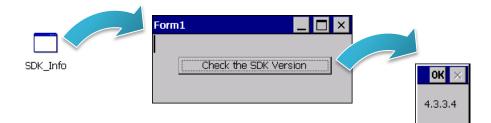
Step 3: Upload the application and the corresponding PACNET.dll files to WP-9000-CE7

Tips & V	Varnings
	For applications programming in C# and VB.net with .net compact framework, when executing these application on WP-9000-CE7, the corresponding PACNET.dll must be in the same directory as the .exe file.
	Eile Edit View Go Favorites Address \Temp Address \Temp PACNET SDK_Info

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4.3.6. Execute the application on WP-9000-CE7

After uploading the application to WP-9000-CE7, you can just double-click it on WP-9000-CE7 to execute it.



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4.4. First WP-9000-CE7 Program in Visual C++

The best way to learn programming with WP-9000-CE7 is to actually create a WP-9000-CE7 program.

The example below demonstrates how to create a demo program running on WP-9000-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-9000-CE7
- 7. Execute the application on WP-9000-CE7

All main steps will be described in the following subsection.

In this tutorial, we will assume that you have installed WP-9000-CE7 SDK on PC and used the Visual Studio 2008 for application development.

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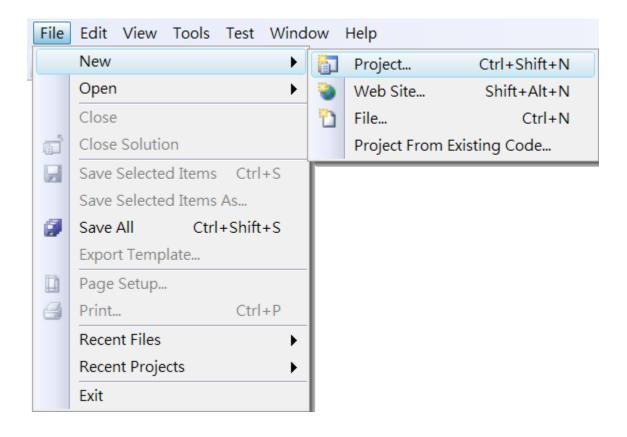
4.4.1. Create a new project

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	800A	impative additional and a	women un a het ad be registerratio, her ade	2 X
Project types:		Templates:		.NET Framework 3.5 🔻 🖽 🔚
Visual C++ ATL CLR General MFC Smart Device Test Win32 Other Languag 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	
An application for Name:	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
Welcor	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 ngs Click Finish from any window to accept the current settings. After you create the project, see the project's readme.bt 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 Smart Device Application Wizard - SDK_Info						
P	latforms					
Overview Platforms Application Type Document Templ User Interface Feat Advanced Features Generated Classes	Installed SDKs: Selected SDKs: AM335x_WINCE7_SDK					
	AM335x_WINCE7_SDK Instruction sets: ARMv4I, ARMv4I < Previous Next > Finish	Cancel				

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

MFC Smart Device Application 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 Applie	ation Wizard - SDK_Info	2 ×
User I	nterface Features	
Overview Platforms Application Type Document Template Str User Interface Features Advanced Features Generated Classes	Command bar: Menus only Menus and buttons s Status bar Dialog title: SDK_Info	
		< Previous Next > Finish Cancel

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Step 10: On the next page of the wizard, click <u>next</u>

MFC Smart Device Appli	IFC Smart Device Application Wizard - SDK_Info						
Advan	iced Features						
Overview	Advanced features:						
Platforms	□ Windows H <u>e</u> lp						
Application Type	□ Printing and print preview						
Document Template Str	ings ActiveX controls						
User Interface Features	□ <u>W</u> indows sockets						
Advanced Features Generated Classes	Number of files on recent file list:						
	< Previous Next > Finish	Cancel					

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

Conci	ated Classes	
Overview Platforms Application Type Document Template Str	Generated classes: CSDK_InfoApp CSDK_InfoDlg ings	
User Interface Features Advanced Features	, Class name: CSDK_InfoApp	.h fil <u>e</u> : SDK_Info.h
Generated Classes	B <u>a</u> se class: └WinApp	.cpg file: 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-9000-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> 1</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 Additional	Dependencies item
---------------------------	-----------------------------------	--------------------------

DK_Info Property Pages	Q.L ##.15	QUARABON .	ନ୍ତି <mark>×</mark>
Configuration: Active(Debu	g) 🔻 Platform: 🛛	ctive(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 Build Events			
Custom Build Step Authenticode Signir			
Authenticode Signir			
	Additional Dependencies		
	Specifies additional items to add to	the link line (ex: kernel32.lib); confi	guration specific.
		ОК	Cancel Apply
		OK	

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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.

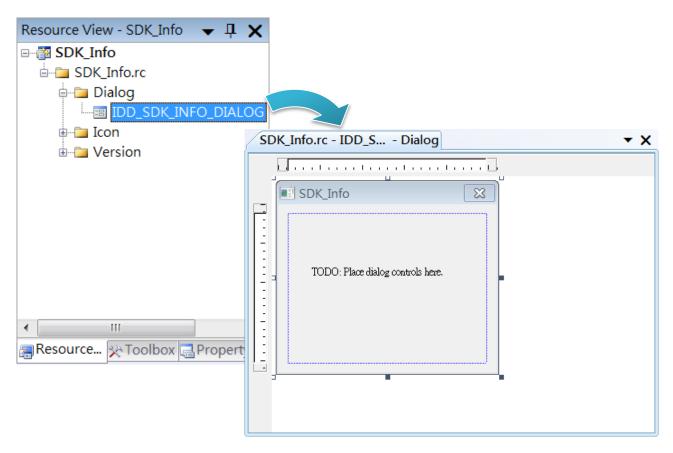
After you add a control to your form, you can use the Properties window to set its properties, such as background color and default text. The values that you specify in the Properties window are the initial values that will be assigned to that property when the control is created at run time.

Step 1: On the View menu, and then click Resource View

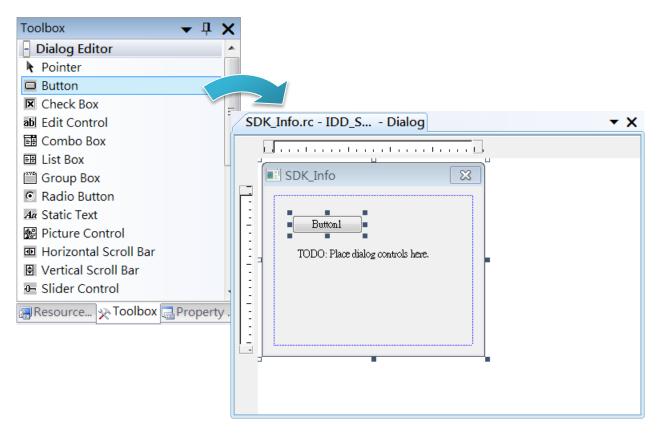
File	Edit	View	Project	Build	Debug	Tools	Test	Wind	low	Help
		¥	Code			Ctrl-	+Alt+0)		
		-2	Solution [Explorer		Ctrl	+Alt+L			
			Bookmarl	< Windo	w (Ctrl+K, C	Ctrl+W	/		
		<u></u>	Class Viev	v		Ctrl+S	hift+C	;		
			Code Def	inition V	Vindow	Ctrl+S	hift+V	·		
		<u></u>	Object Br	owser		Ctrl	+Alt+J	l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

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



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



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

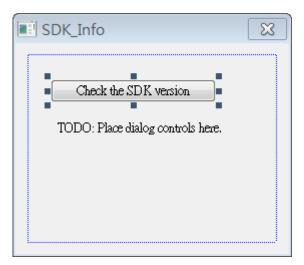
Pr	roperties	→ ₽ X					
IC	IDC_BUTTON1 (Button Control) ICeButtonEc •						
•	2↓ 🔲 🖋 I 🖾						
Ξ	Appearance						
	Caption	Check the SDK version					
	Client Edge	False					
	Horizontal Alignmer	Default					
	Modal Frame	False					
	Multiline	False					
	Notify	False					
	Static Edge	False					
	Vertical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

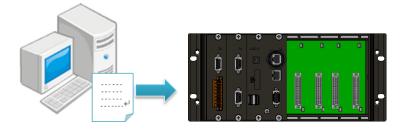
```
#include "stdafx.h"
#include "SDK_InfoDlg.cpp : implementation file
#include "SDK_Info.h"
#include "SDK_InfoDlg.h"
#include "PACSDK.h"
```

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4.4.6. Upload the application to WP-9000-CE7

WP-9000-CE7 supports FTP server service. You can upload files to WP-9000-CE7 or download files from a public FTP server.



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

File	Edit	View	Project	Build	Debug	Tools	Test	Window	Help
					Build Solu	ition		F7	
					Rebuild So	olution	Ctrl+	+Alt+F7	
				1	Deploy So	lution			
				(Clean Solu	ution			
					Build SDK	_Info			Ī
					Rebuild SI	DK_Info			
					Deploy SE	OK_Info			
				(Clean SDK	(_Info			
					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-9000-CE7

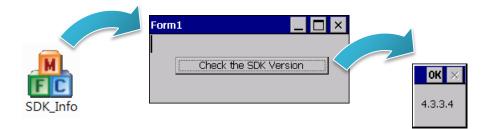
Step 3: Upload the application to WP-9000-CE7

Eile	<u>E</u> dit	⊻iew	<u>G</u> o	F <u>a</u> vorites	
Addr	ess \Te	mp			7
	1				{
SDK_I	nfo				<u>ک</u>
_					<
~~	~~~	\sim	~	~~~~	\checkmark

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4.4.7. Execute the application on WP-9000-CE7

After uploading the application to WP-9000-CE7, you can just double-click it on WP-9000-CE7 to execute it.



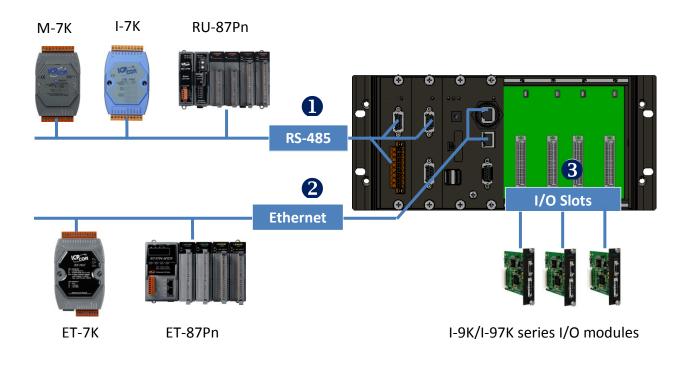
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5. I/O Expansion Modules and SDKs Selection

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-9000-CE7.

WP-9000-CE7 provides the following I/O expansion buses:



RS-485 (I-7000 series and M-7000 series)

I-7000, M-7000, RU-87Pn and high profile I-87K series modules connect to WP-9000-CE7 via a twisted-pair, multi-drop, 2-wire RS-485 network.

I-7000 series I/O modules

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-9000/pac/applicabled_demo_for_7k_module. pdf

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> M-7000 series I/O modules

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:\Wp-9000\demo\nModbus\

RU-87Pn + I-87K series I/O modules

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

Ethernet (ET-7000 series and I-8KE4/8-MTCP)

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-9000/demo/nmodbus/

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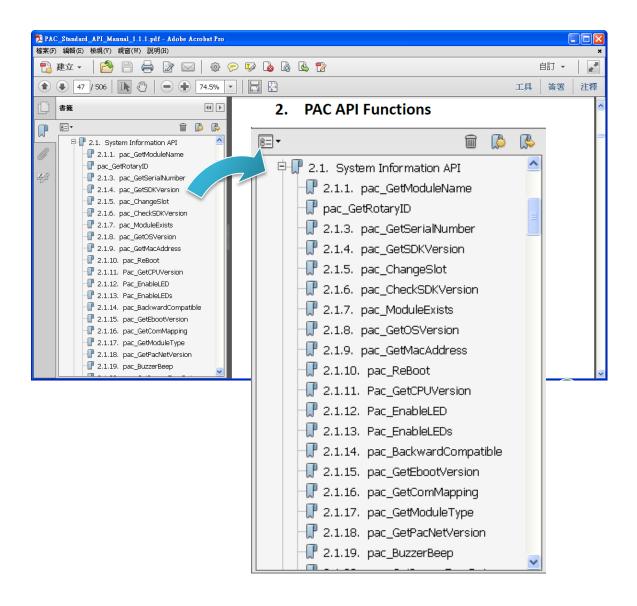
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6. API Resources and Demo References

This chapter provides a brief overview of PAC standard APIs and demos that have been designed for WP-9000-CE7 from the PAC SDK package.

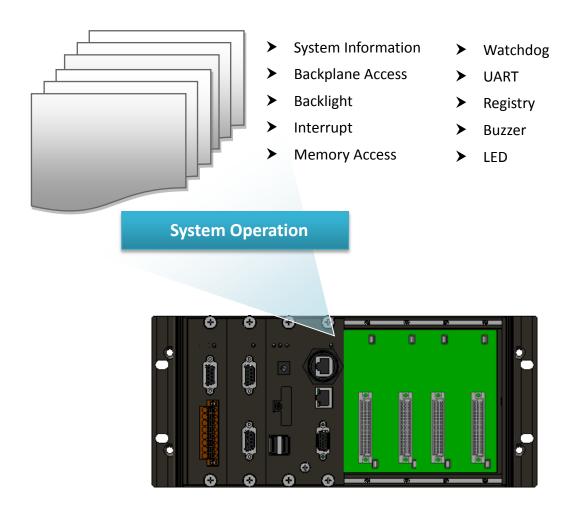
ICP DAS provides a set of demos in different programming languages. You can examine the demo codes, which includes numerous comments, to familiarize yourself with the PAC APIs. This will allow developing your own applications quickly by modifying these demo programs.

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



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:\WP-9000\Demo\PAC\Vb.net\Standard\

http://ftp.icpdas.com/pub/cd/winpac_am335x/wp-9000/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
Gethotaryib	Gethotaryib	rotary switch
Memory	Memory	Shows how to read/write data values from/to
Internol y	Memory	the EEPROM or the backplane of the SRAM
MultiRT	MultiRT	Shows how to manage the SD
		Writes the managed cod for the rich graphical
RealTimeTest	RealTimeTest	user interface that does not require true
		real-time performance
Dogistry	Dogistry	Shows how to read/write data values from/to
Registry	Registry	the registry
UART	UART	Shows how to read the name of a local I/O
UARI	UARI	modules via a UART
WatchDog	WatchDog	Displays information about how to operate the
WatchDog	WatchDog	watchdog

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:\WP-9000\Demo\PAC\C#\Standard\

http://ftp.icpdas.com/pub/cd/winpac_am335x/wp-9000/demo/pac/c%23/standard/

Folder	Demo	Explanation
buzzer	buzzer	Shows how to make a simple buzzer beep.
DeviceInformation	DeviceInformation	Retrieves information about the OS version, CPU
Devicemiormation	Devicemiormation	version, SDK version, etc.
GetRotaryID	GetRotaryID	Retrieves information about the status of the
Gethotalyib	Gethotal yib	rotary switch
Memory	Memory	Shows how to read/write data values from/to
Memory	Memory	the EEPROM or the backplane of the SRAM
MultiRT	MultiRT	Shows how to manage the SD
		Writes the managed cod for the rich graphical
RealTimeTest	RealTimeTest	user interface that does not require true
		real-time performance
Dogistry	Dogistry	Shows how to read/write data values from/to
Registry	Registry	the registry
UART	UART	Shows how to read the name of a local I/O
UART	UART	modules via a UART
WatchDog	WatchDog	Displays information about how to operate the
watchDog	watchDog	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.

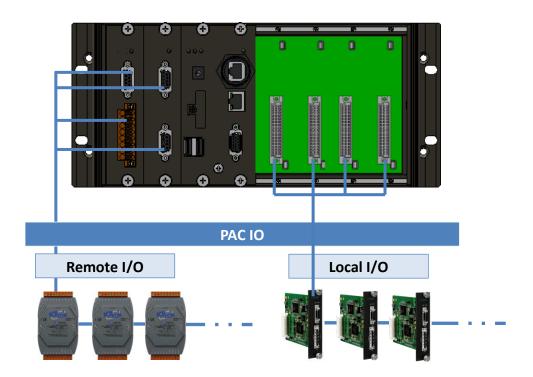
The following demos can be found on the CD that was provided with the package or by downloading the latest version from ICP DAS web site. CD:\WP-9000\Demo\PAC\Vc2008\Standard\

http://ftp.icpdas.com/pub/cd/winpac_am335x/wp-9000/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
Devicementation	Devicention mation	version, SDK version, etc.
GetRotaryID	GetRotaryID	Retrieves information about the status of the
Gethotal yib		rotary switch
Memory	Memory	Shows how to read/write data values from/to
wieniory	wieniory	the EEPROM or the backplane of the SRAM
MultiRT	MultiRT	Shows how to manage the SD
		Writes the managed cod for the rich graphical
RealTimeTest	RealTimeTest	user interface that does not require true
		real-time performance
Pogistry	Pogistry	Shows how to read/write data values from/to
Registry	Registry	the registry
UART	UART	Shows how to read the name of a local I/O
UANT	UANI	modules via a UART
WatchDog	WatchDog	Displays information about how to operate the
watchD0g	watchDog	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:\WP-9000\Demo\PAC\Vb.net\IO\

http://ftp.icpdas.com/pub/cd/winpac_am335x/wp-9000/demo/pac/vb.net/io/

Folder	Demo	Explanation
		Shows how to send/receive a command/response application.
	7k87k_basic	This demo program is used by 7K or 87K series
		AI modules which connected through a COM port.
		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
Remote		AI modules which connected through a COM port.
Nemole		Shows how to read the DI values of DI module.
	7k87k_di	This demo program is used by 7K or 87K series
		AI modules which connected through a COM port.
		Shows how to write the DO values to DO module.
	7k87k_do	This demo program is used by 7K or 87K series
		AI modules which connected through a COM port.
		Shows how to read the DI and the DO values of the DIO module.
	7k87k_dio	This demo program is used by 7K or 87K series
		AI modules which connected through a COM port.

6.2.2. C# Demos for PAC Expansion I/O

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

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

CD:\WP-9000\Demo\PAC\C#\IO\

http://ftp.icpdas.com/pub/cd/winpac_am335x/wp-9000/demo/pac/c%23/io/

Folder	Demo	Explanation
		Shows how to send/receive a command/response application.
	7k87k_basic	This demo program is used by 7K or 87K series
		AI modules which connected through a COM port.
		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
Remote		AI modules which connected through a COM port.
Nemole		Shows how to read the DI values of DI module.
	7k87k_di	This demo program is used by 7K or 87K series
		AI modules which connected through a COM port.
		Shows how to write the DO values to DO module.
	7k87k_do	This demo program is used by 7K or 87K series
		AI modules which connected through a COM port.
	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.

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:\WP-9000\Demo\PAC\Vc2008\IO\

http://ftp.icpdas.com/pub/cd/winpac_am335x/wp-9000/demo/pac/vc2008/io/

Folder	Demo	Explanation
		Shows how to send/receive a command/response application.
	7k87k_basic	This demo program is used by 7K or 87K series
		AI modules which connected through a COM port.
		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
Domoto		AI modules which connected through a COM port.
Remote		Shows how to read the DI values of DI module.
	7k87k_di	This demo program is used by 7K or 87K series
		AI modules which connected through a COM port.
		Shows how to write the DO values to DO module.
	7k87k_do	This demo program is used by 7K or 87K series
		AI modules which connected through a COM port.
		Shows how to read the DI and the DO values of the DIO module.
	7k87k_dio	This demo program is used by 7K or 87K series
		AI modules which connected through a COM port.

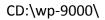
7. WP-9000-CE7 Updates

This chapter provides a guided tour that demonstrates the steps needed to update the WP-9000-CE7 OS and SDKs.

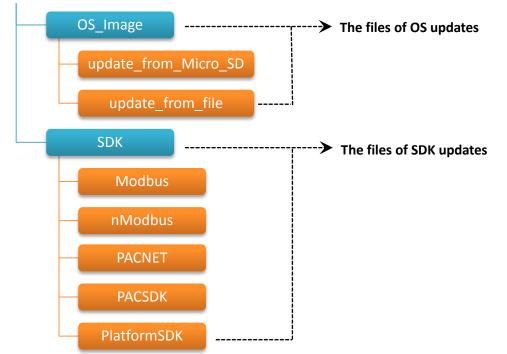
ICP DAS will continue to add additional features to WP-9000-CE7 SDK and OS in the future, so we advise you to periodically check the ICP DAS web site for the latest updates.

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.



http://ftp.icpdas.com/pub/cd/winpac_am335x/wp-9000/

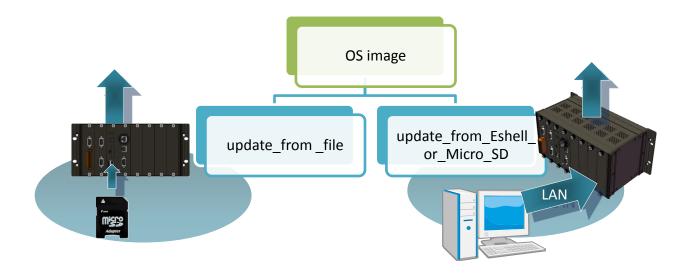


7.1. OS Updates

The latest version of the WP-9000-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.



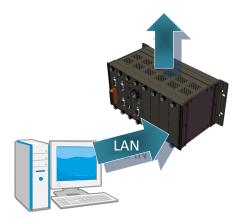
There are two ways to update the OS:



- 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 SD (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-9000-CE7/os image/update fro m eshell or micro sd

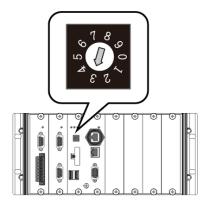
Step 2: Run the <u>registry clear.exe</u>

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:\WP-9000\PC_Tools\Eshell

http://ftp.icpdas.com/pub/cd/winpac_am335x/WP-9000-CE7/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-9000-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:\WP-9000\PC_Tools\Eshell

http://ftp.icpdas.com/pub/cd/winpac_am335x/wp-9000/pc_tools/eshell

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

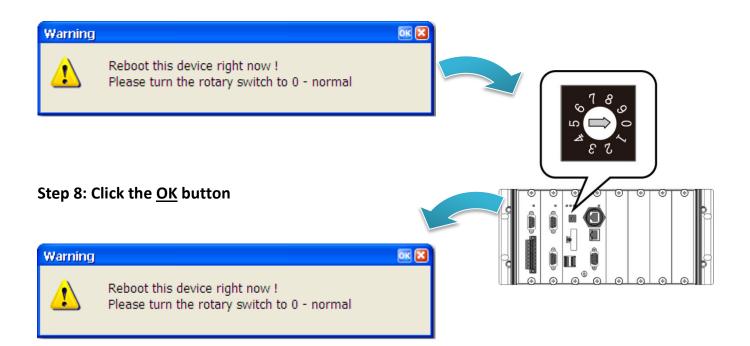
Select the device name which you want to update the OS image from the list.

Select Device	
Enter Device Name:	ОК
Or Select From the List	Cancel
	Reset devices to automatically put names on the list.
~	list.

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

Open	
Look in: Dim WP523is_20040821_Ver.1.0.0	u_ml 💌 🖛 🖻 💣 🎟 -
My Recent Documents	
Desktop	Thisrandi Windowy CE Dybeg SheE - 77_64400 (MAdfield 20Wind/AChangdoolog 2000).cc50005 jimagelog-22/e1/m
	<pre>VP_bbb08: Bootloader Version 1.0, IP: 10.1.0.50, MMC: 08001F81A002 Downloading '\\Rdfs\cd_2\WinPAC\napdos\vp-2000_ce50\05_image\vp-23w1\update_fron_Eshell\en\Ui Jamping to image on UP_bbb08 Cennecting to VP_bbb08 using Ethernet</pre>
My Computer	¢8
File name: NK.BIN Files of type: NK Images (*.	0
	S Ready

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	r	ity [1.2.1	.4]					_	
	General		Display	IP Config	Network	Device Info	ormation	Auto Execution Rot	ary Exe 🔳 🕨
		Slot 1: Slot 2: Slot 3: Slot 4: Slot 5: Slot 6: Slot 7:			Module(CPL Serial Numb Backplane V CPU Version OS Version Eboot Versio .NET CF Ver SQL CE Ver PACSDK Ver CPU Tempe	/ersion: 	1.0.0.0]]]]]]]

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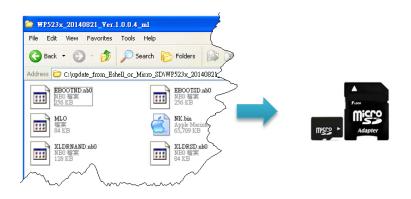
7.1.2. OS updates using SD

The SD card can be used to reinstall the WP-9000-CE7 OS image to factory default settings in the event of the WP-9000-CE7 failure.

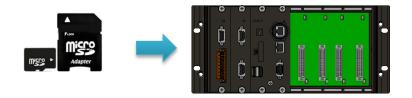
Step 1: Get the latest version of the installation package file, then unzip the file, and then copy them to SD card

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-9000/os image/update from es hell or micro sd

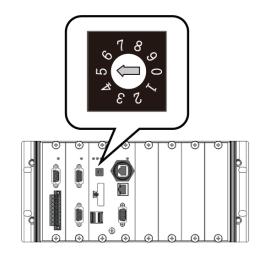


Step 2: Plug the SD card into SD slot



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PAC Utility [1.2.1.4] File Help Save Save and Reboot Restore Utility Default Settings Exit PAC Utility PAC Utility

Step 4: Reboot the WP-9000-CE7

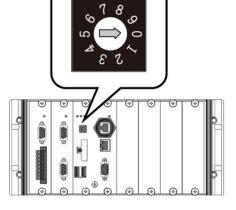
Step 3: Turn the rotary switch in position 5,

OS update mode

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



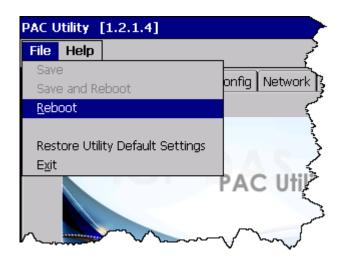
Step 6: Turn the rotary switch in position 0, normal mode



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Step 7: Reboot the WP-9000-CE7



Step 8: Check the OS version

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

\checkmark			
PAC_Utility			
-	PAC Utility [1.2.1.4]		
	File Help		
	General General2 Display IP Cor	nfig Network Device In	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:	

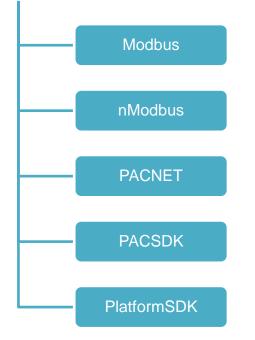
7.2. SDK Updates

SDK update is a part of the WP-9000-CE7 update services to provide additional and more efficient features and functionality for WP-9000-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:\wp-9000\SDK\

http://ftp.icpdas.com/pub/cd/winpac_am335x/wp-9000/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-9000/sdk/pacnet/

Step 2: Copy the latest version of PACNet.dll file to PC and WP-9000-CE7

The PACNET.dll file on PC can be placed anywhere only the solution can reference it. The PACNET.dll file on WP-9000-CE7 is located at the same directory as the .exe file.

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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-9000/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

8. WP-9000-CE7 Download Center

This chapter provides a brief introduction of the WP-9000-CE7 download center.

WP-9000-CE7 has a download center where you can access the latest version of the software, tools, demo programs, and related information.

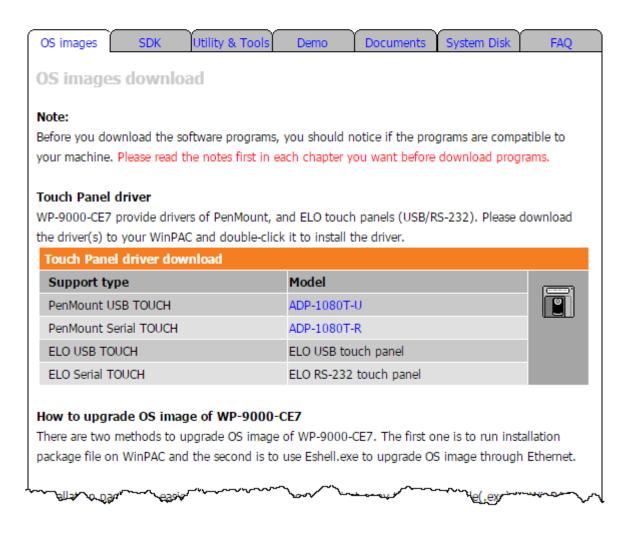
The WP-9000-CE7 Download Center can be found at:

http://www.icpdas.com/root/support/download/pac/wp-9000-ce7/wp-9000-ce7 download os i mages.html

WP-9000-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.



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Tips – How to

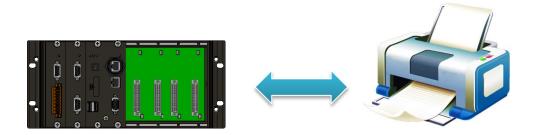
This chapter provides tips and a guided tour on using and maintaining the WP-9000-CE7.

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A. How to Use the Printer

WP-9000-CE7 have ability to access the printer, the printer can be connected via an Ethernet or a USB.



Tips & Warnings



WP-9000-CE7 only supports HP Laser Jet Printers with PCL6 driver. The following printer support is released by HP:

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

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

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

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A.1. How to Use a Network Printer

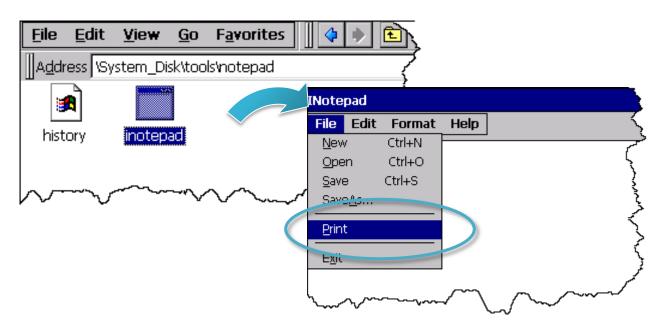
Here are step by step instructions on how to use a shared printer.

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

System Properties	? 🔀	
System Restore General		
domain and create a ID.	ICPDAS.COM Identification Wizard to join a local user account, click Network	
▲ Changes will ta	General Sharing Pott Advanced Color Management II Vou can share this printer with other users on your network. To enable sharing for this printer, click Share this printer. Do not share this printer Share this printer Share this printer Share name: PrinterName Drivers If this printer is shared with users running different versions of Windows, you may want to install additional drivers, so that the users do not have to find the print driver when they connect to the shared printer. Additional Drivers	
	OK Cancel Apply Help	

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Step 2: On WP-9000-CE7 – Run the Notepad, and then open a WordPad format file



Step 3: Set up the printer

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

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

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

4. Paper Size: Select the paper size

File	Edit	View	Format	Tools	े 🗃	Ж	e C	Ю	Tahom	~	14	~
Tes	st !!!											

Print			? ОК 🔀
Printer:	PCL Laser 🔽	Print Range	Orientation
Port:	Network) All	Ortrait
Net Path:	RD1-User2\Anna	O Selection	O Landscape
Paper Size:	A4 🔽	Margins (inches)	-
Advanc	ed Draft Mode	· · · · · · · · · · · · · · · · · · ·	Fop: 1" Bottom: 1"

A.2. How to Use a USB printer

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

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

	[Note	pad			
	File	Edit	Format	Help	4
- [New	/	Ctrl+N		
	Ope	n	Ctrl+O		ر م
	<u>S</u> ave	Э	Ctrl+S		
	Save	- <u>A</u> c			
	Print	t			4
	Exit				
Į	~~~	~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	· ~~~	\sim

Step 2: Set up the printer

- 1. Printer: Hewlett-Packard LaserJet
- 2. Port: LPT1

ſ

3. Paper Size: Select the paper size

File	Edit	View	Format	Tools) 🗃 🥔	8	Þ	Ŋ	Tahom	~	14	~
Tes	t !!!											

Print			? ОК 🔀
Printer:	Hewlett-Packard LaserJ	Print Range	Orientation
Port:	LTP1 🔽	\sim	Portrait
Net Path:		Selection	
Paper Size:	Α4 🔽	Margins (inches)	op; 1"
Advance	ed Draft Mode		op: 1" ottom: 1"

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B. How to Online Debug the WP-9000-CE7 Program

Here are step by step instructions on how to online debug the WP-9000-CE7 program.

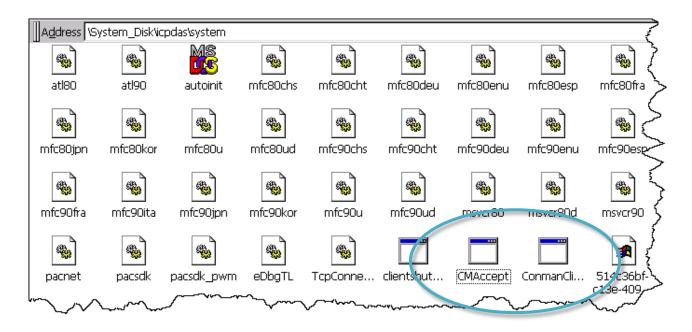
Tips & W	/arnings
	Before starting online debug the WP-9000-CE7 program, make sure that the WP-9000-CE7 SDK has been installed correctly.
	For more information on how to install the WP-9000-CE7 SDK, please refer to 4.1.2. Installing the WP-9000-CE7 SDK.

Step 1: Copy the following files to the \System_Disk\icpdas\system on the WP-9000-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-9000-CE7



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Step 3: On the Tools menu, click the Options

File Edit View Project Build Debug	Tool	s Test	Window	Help	
🛅 🕶 🖼 🕶 🚅 🛃 🎒 👗 🗈 🛍 🕫 💌		Attach	to Process		Ctrl+Alt+P
AM335x_WINCE7_SDK AF 👻 🎰 👰 🛝 💈	3	Device	Security Ma	anager	
	9,	Connec	t to Device.		
Finance (many many	, nic.	<u>Device</u>	Emutator	lanager	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
	~~~~	$\sqrt{CF}$	a~~	igtina	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 ×
Source Co Text Editor Database Debuggin Device Too Genera Devices Form F. HTML Des Office Too Test Tools Text Temp	nd Solutions ntrol F Tools g bls l actors igner ls lating Forms Designer	Snow devices for platform: AM335x_WINCE7_SDK Devices: AM335x_WINCE7_SDK ARMV7 Device Default device: AM335x_WINCE7_SDK ARMV7 Device	Sans Ren Delete Properties
			OK Cancel

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## 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-9000-CE7

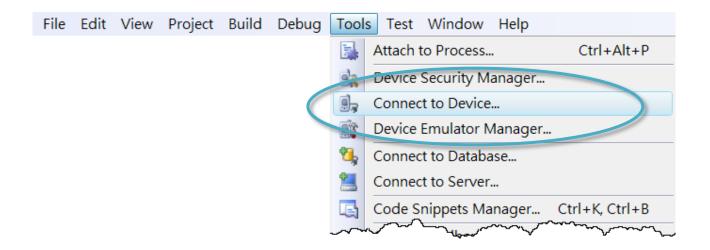
Configure TCP/IP Transport		? ×
Use fixed port number:	5655	
Device IP address		
Obtain an IP address automa	atically using ActiveSync	
Use specific IP address:		
10.1.0.96		•
	ОК	Cancel

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

AM335x_WINCE7_SDK ARMV7 Device Propertie	s ? X	
Default output location on device:		
	•	
Transport:		
TCP Connect Transport	Configure	
Bootstrapper:		
ActiveSync Startup Provider	Configure	
Detect when device is disconnected		
	OK Cancel	
Options		
Environment     Projects and Solutions	Show devices for platform:	
Source Control     Text Editor	AM335x_WINCE7_SDK	
> Database Tools	Devices: AM335x_WINCE7_SDK ARMV7 Device	Save As
<ul> <li>&gt; Debugging</li> <li>A Device Tools</li> </ul>		
General Devices		Rename
Form Factors HTML Designer		Delete
> Office Tools		Properties
> Test Tools > Text Templating		
Windows Forms Designer     Workflow Designer		
	Default device: AM335x_WINCE7_SDK ARMV7 Device	
		DK Cancel
		Carreer

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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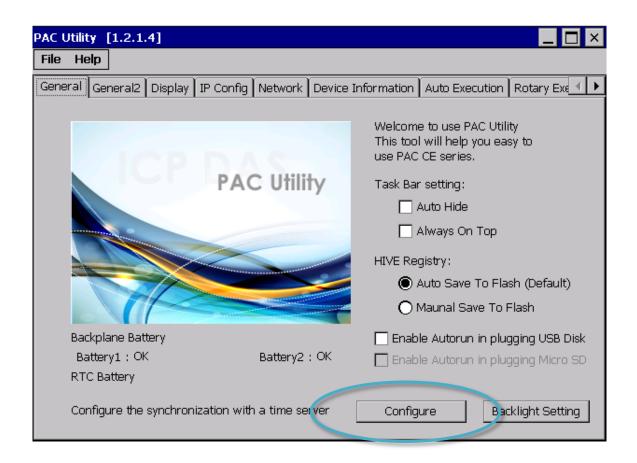
# C. How to Automatically Synchronize WP-9000-CE7 Clock with an Internet Time Server

The clock on the WP-9000-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-9000-CE7 is accurate. Here are step by step instructions on how to synchronize the clock on the WP-9000-CE7 with an Internet time server.

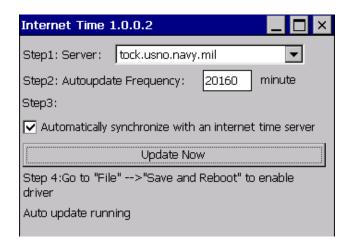
### **Step 1: Run the PAC Utility**



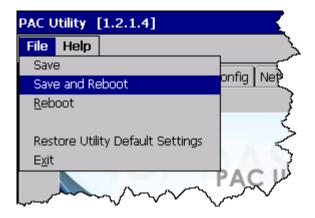
# Step 2: On the General tab, press Configure button



- 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-9000-CE7 will automatically synchronize with an internet time server regularly

Internet Time 1.0.0.2

Step1: Server:	tock.usno.navy.	mil 💌
Step2: Autoupdat	te Frequency:	20160 minute
Step3:		
🔽 Automatically s	synchronize with a	an internet time sen
	Update Nov	V
	e">"Save and I	Reboot" to enable
	iing	
	Step2: Autoupda Step3: ✓ Automatically s Step 4:Co to "File driver	Step2: Autoupdate Frequency: Step3: Automatically synchronize with a Update Nov Step 4:Co to "File">"Save and b

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**□** ×

Pro Ca

# D. How to Control the User Account Control in WP-9000-CE7

User Account Control is a security feature that helps prevent unauthorized system changes to the WP-9000-CE7.

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### D.1. How to Create a User Account

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

### Step 1: Run the PAC Utility



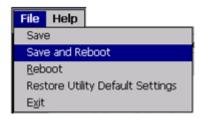
Step 2: On the Login tab of the Network tab, click Login tab, type the User Name and Password, and then click Add button

PAC Utility [1.2.2.0]							
File Hel	lp						
General	General2	Display	IP Config	Network	Device Information	Auto Execution	Rotary Exe 🔳 🕨
Access	Login						
User Na		Passwo		Add	Delete		
		assword		1100			
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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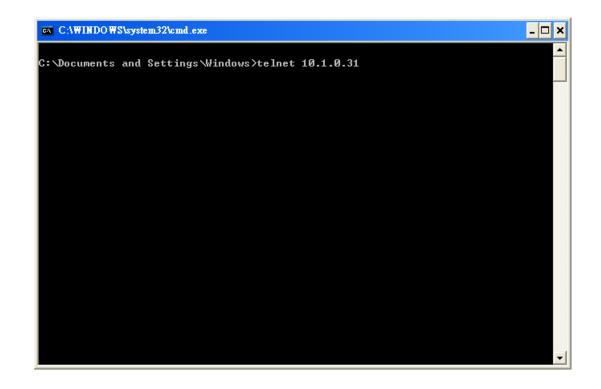
## D.2. How to Telnet to Remote Login the WinPAC from PC

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

Windows Catalog	
Windows Update	Run
Programs +	
Documents	Type the r 2. Type "cmd" lent, or
Documents Settings Sea	Internet re. 2. Type Child It for you.
Sea 1	Open: md
A Shut Down	
5 O Shut Down	OK Cancel Browse
start C:\WINDOWS\Syste	

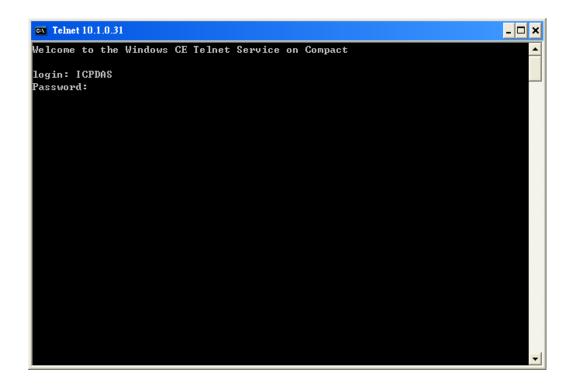
# Step 1: On the PC, open a MS-DOS command prompt

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

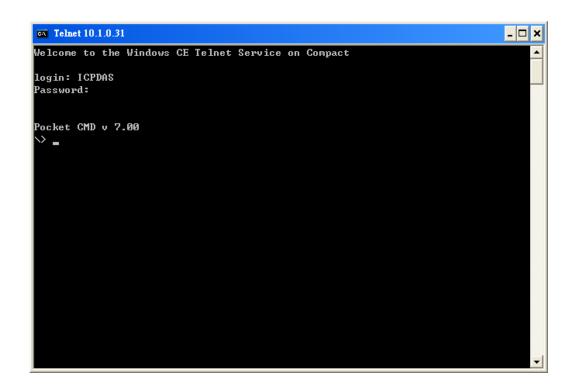


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Step 3: The connection has been set up, and then type the name and password



Step 4: The remote login has been completed



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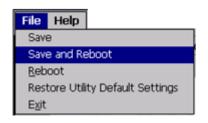
## D.3. How to Remove a User Account from the Login List

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

Step 1: 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	0]						×
File Help	_							
General G	eneral2	Display	IP Config	Network	Device Information	Auto Execution	Rotary Exe	••
	ogin			1				
User Nar ICP DAS	me me Pa	Passwo *** ssword **	rd	Add	Delete			

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



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# E. Revision History

This chapter provides revision history information to this document.

The table below shows the revision history.

Revision	Date	Description
1.0.0	January 2016	Initial issue

WP-9000-CE7 Series User Manual, version 1.0.0