

WP-9000-CE7 Series User Manual

V1.0.2, September 2020



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

Written by Sean Hsu Edited by Anna Huang All products manufactured by ICP DAS are under warranty regarding defective materials for a period of one year, beginning from the date of delivery to the original purchaser.

Warning

ICP DAS assumes no liability for any damage resulting from the use of this product. ICP DAS reserves the right to change this manual at any time without notice. The information furnished by ICP DAS is believed to be accurate and reliable. However, no responsibility is assumed by ICP DAS for its use, not for any infringements of patents or other rights of third parties resulting from its use.

Copyright

Copyright @ 2020 by ICP DAS Co., Ltd. All rights are reserved.

Trademark

The names used for identification only may be registered trademarks of their respective companies.

Contact US

If you have any problem, please feel free to contact us.

You can count on us for quick response.

Email: service@icpdas.com

WP-9000-CE7 Series User Manual, version 1.0.2

Contents

CONTENTS			
1. INT	RODU	ICTION	.6
1.1.	Feat	ures	. 7
1.2.	Spec	ifications	. 8
1.3.	Over	view	10
1.4.	Dime	ensions	17
1.5.	Com	panion CD	19
2. GET	TTING	STARTED	20
2.1.	Mou	nting the WP-9000-CE7	21
2.2.	Insta	Iling the RJ-45 waterproof connector assembly	25
2.3.	Depl	oying a Basic WP-9000-CE7 System	28
2.4.	Inser	rting the I/O Modules	30
2.5.	Conf	iguring the Boot Mode	31
2.6.	Char	nging the User Interface Language	33
2.7.	Usin	g PAC Utility to Manage the WP-9000-CE7	35
2.8.	Usin	g DCON Utility Pro Configure I/O Modules	36
3. то	OLS AI	ND TASKS	39
3.1.	PAC	Utility	40
3.1.	.1.	Menu Bar – File	41
3.1.	.2.	Menu Bar – Help	42
3.1.	.3.	Property Tab - General	43
3.1.	.4.	Property Tab – General2	45
3.1.	.5.	Property Tab – Display	46
3.1.	.6.	Property Tab – IP Config	47
3.1.	.7.	Property Tab – Network	48
3.1.	.8.	Property Tab – Device Information	51
3.1.	.9.	Property Tab – Auto Execution	52
3.1.	.10.	Property Tab – Rotary Execution	53
3.2.	DCO	N Utility Pro	54
3.3.	Taskl	Mgr	55
3.4.	VCEF	>	56
3.5.	Rem	ote_Display	57
3.6.	Send	ΙΤοCOM	58
3.7.	RegE	dit	59
3.8.	ISQL	W35	60

WP-9000-CE7 Series User Manual, version 1.0.2

3	.9.	INotepad	61
4.	YOU	R FIRST WP-9000-CE7 PROGRAM	62
4	.1.	Setting up the Development Environment	62
	4.1.1		
	4.1.2		
	4.1.3		
4	.2.	First WP-9000-CE7 Program in VB.NET	
	4.2.1	Create a new project	68
	4.2.2	2. Specify the path of the PAC reference	71
	4.2.3	8. Add the control to the form	73
	4.2.4	Add the event handling for the control	75
	4.2.5	5. Upload the application to WP-9000-CE7	76
	4.2.6	5. Execute the application on WP-9000-CE7	78
4	.3.	First WP-9000-CE7 Program in Visual C#	79
	4.3.1	. Create a new project	80
	4.3.2	2. Specify the path of the PAC reference	83
	4.3.3	8. Add the control to the form	85
	4.3.4	Add the event handling for the control	87
	4.3.5	5. Upload the application to WP-9000-CE7	88
	4.3.6	5. Execute the application on WP-9000-CE7	90
4	.4.	First WP-9000-CE7 Program in Visual C++	91
	4.4.1	. Create a new project	92
	4.4.2	2. Configure the Platform	97
	4.4.3	8. Specify the Libraries of the PAC SDK	98
	4.4.4	Add the control to the form	. 100
	4.4.5	5. Add the event handling for the control	. 103
	4.4.6		
	4.4.7	 Execute the application on WP-9000-CE7 	. 107
5.	I/O I	EXPANSION MODULES AND SDKS SELECTION	108
6.	API	RESOURCES AND DEMO REFERENCES	112
6	.1.	PAC Standard APIs for System Operation	. 113
	6.1.1	VB.NET Demos for PAC Standard APIs	. 114
	6.1.2	2. C# Demos for PAC Standard APIs	. 115
	6.1.3	8. Visual C++ Demos for PAC Standard APIs	. 116
6	.2.	PAC Standard APIs for PAC Expansion I/O	. 117
	6.2.1		. 118
	6.2.2	2. C# Demos for PAC Expansion I/O	. 119
	6.2.3	8. Visual C++ Demos for PAC Expansion I/O	. 120

WP-9000-CE7 Series User Manual, version 1.0.2

7.	WP-	9000-CE7 UPDATES	121
7	' .1.	OS Updates	122
	7.1.1	L. OS Updates from Eshell	123
	7.1.2	2. OS updates using SD	126
7	. 2.	SDK Updates	129
	7.2.1	L. SDK Updates for VB.NET or C#	130
	7.2.2	2. SDK Updates for VB.NET or Visual C++	131
8.	WP-	9000-CE7 DOWNLOAD CENTER	132
тір	S – HC	DW TO	133
A	А. Н	ow to Use the Printer	134
	A.1.	How to Use a Network Printer	135
	A.2.	How to Use a USB printer	137
E	в. н	ow to Online Debug the WP-9000-CE7 Program	138
C	С. Н	ow to Automatically Synchronize WP-9000-CE7 Clock with an Internet Time Server	143
0). H	ow to Control the User Account Control in WP-9000-CE7	145
	D.1.	How to Create a User Account	146
	D.2.	How to Telnet to Remote Login the WinPAC from PC	148
	D.3.	How to Remove a User Account from the Login List	150
E	. н	ow to change the battery	151
F	. н	ow to Using the Practical Functions of the 3G/4G I/O Module	152
	F.1.	How to Auto Dial 3G/4G GPRS network and redial when the network disconnected	152
	F.2.	How to Use the SMS Function and Get the GPS Data	153
	F.3.	How to Synchronize the System Time by GPS Data	154
C	5. A	oplication of RS-485 Network	155
	G.1.	Basic RS-485 Network	156
	G.2.	Daisy Chain RS-485 Network	157
	G.3.	Star Type RS-485 Network	158
	G.4.	Random RS-485 Network	160
	G.5.	Master/Slaves Settings	161
H	l .Revi	sion History	165

WP-9000-CE7 Series User Manual, version 1.0.2

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.

WP-9000-CE7 Series User Manual, version 1.0.2

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

WP-9000-CE7 Series User Manual, version 1.0.2

Page: 7

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	Dll 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 КВ		
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	800 x 600, 1024 x 768		
Dual Ethernet Ports	et Ports RJ-45, 10 M/100 M/1000 M Base-TX		ase-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.

WP-9000-CE7 Series User Manual, version 1.0.2

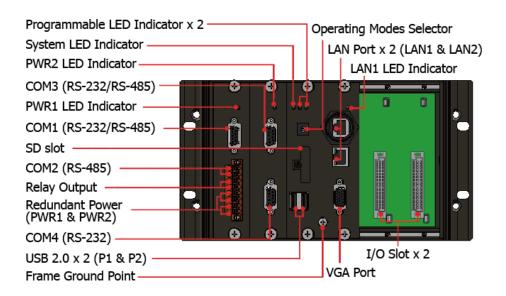
Models	WP-9221-CE7	WP-9421-CE7	WP-9821-CE7
COM 2	RS-485 (Data+, Data-); 3000 V _{DC} isolated		
СОМ 3	RS-232/485 (RxD, TxD and GND for RS-232; Data+, Data- for RS-485); 3000 V _{DC} isolated		
COM 4	RS-232 (RxD, TxD, CTS, RTS, DSR, DTR, CD, RI and GND); 3000 V_{DC} isolated		
I/O Expansion Slots			
Number 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})		

WP-9000-CE7 Series User Manual, version 1.0.2

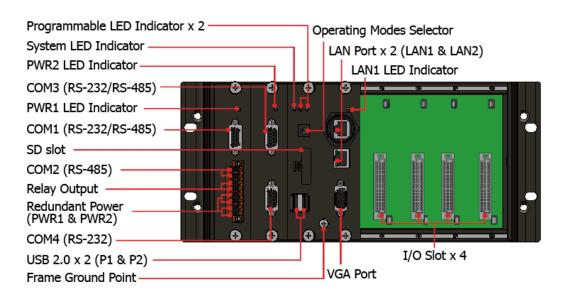
1.3. Overview

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

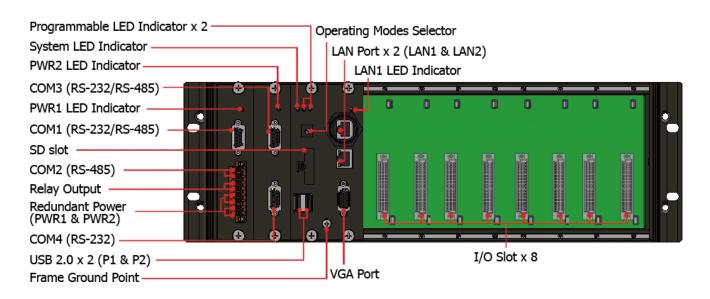


WP-9421-CE7



WP-9000-CE7 Series User Manual, version 1.0.2

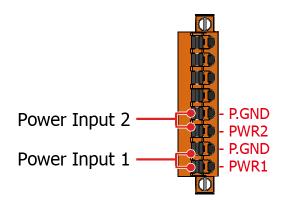
Page: 10



The details of these items are as follows:

Redundant Power (PWR1 and PWR2)

The WP-9000-CE7 has a terminal with 8-wire; there are 4-wire for redundant power inputs, the details of the redundant power are shown to the side.



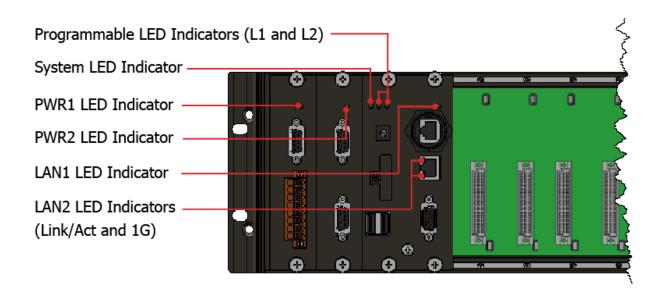
Operating mode Selector



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"

WP-9000-CE7 Series User Manual, version 1.0.2

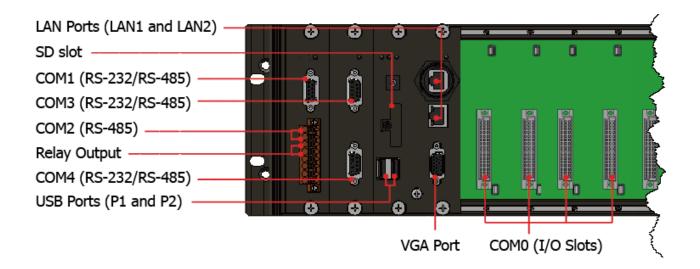
LED Indicators



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
LANII LED indicator	Link/Act	Green	The Link is active
LAN1 LED indicator		Blinking	Network activity
	Link/Act	Green	The Link is active
LAN2 LED indicator	Link/Act	Blinking	Network activity
	1G	Orange	The network speed is 1 G

WP-9000-CE7 Series User Manual, version 1.0.2

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

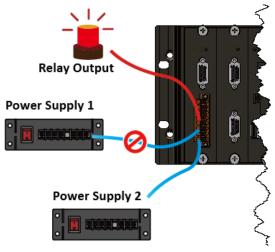
The SD slot can be used to restore the WP-9000-CE7 system and expand the memory up to 32 GB.

• 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.



WP-9000-CE7 Series User Manual, version 1.0.2

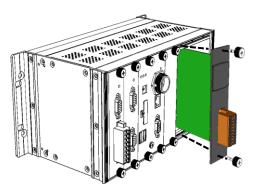
Page: 13

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

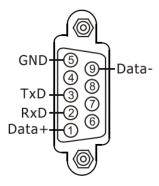
The WP-9000-CE7 has 2/4/8 I/O slots that can be used to integrate high performance parallel I/O modules (high profile I-9K Series) or serial I/O modules (high profile I-97K series).



• 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



• COM2 (2-wire RS-485)

FIFO: 64 bytes

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

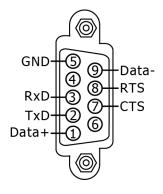
WP-9000-CE7 Series User Manual, version 1.0.2

Page: 14

• 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.

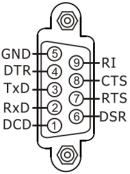
Note: 16C550 compatible Port Type: Male Baud Rate: 115200, 57600, 38400, 19200, 9600, 4800, 2400, 1200 bps Data Bits: 5, 6, 7, 8 Parity: None, Even, Odd, Mark (Always 1), Space (Always 0) Stop Bits: 1, 2 FIFO: 128 bytes



• 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



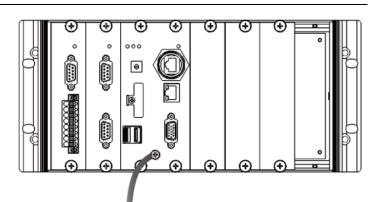
The table below shows the data bit and their corresponding stop bit for COM1, COM2, COM3 and COM4.

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

WP-9000-CE7 Series User Manual, version 1.0.2

Page: 15

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



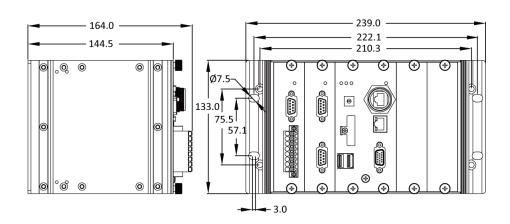
WP-9000-CE7 Series User Manual, version 1.0.2

Page: 16

1.4. Dimensions

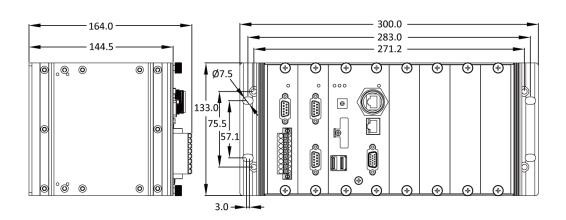
The diagrams below provide the dimensions of the WP-9000-CE7 to use in defining your enclosure specifications. Remember to leave room for potential expansion if you are using other components in your system.

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.



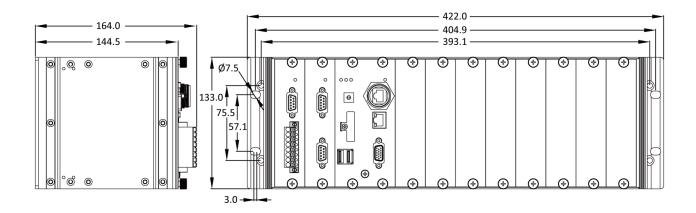
WP-9221-CE7

WP-9421-CE7



WP-9000-CE7 Series User Manual, version 1.0.2

Page: 17

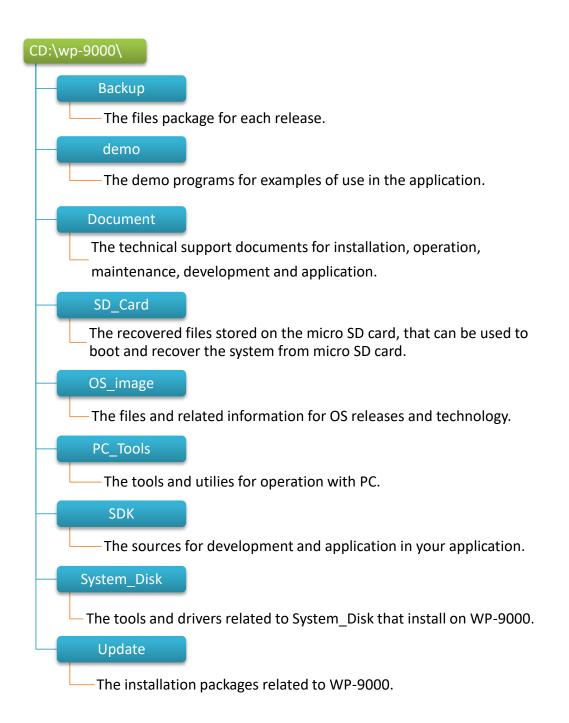


WP-9000-CE7 Series User Manual, version 1.0.2

Page: 18

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.



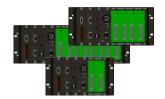
WP-9000-CE7 Series User Manual, version 1.0.2

Page: 19

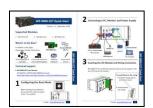
2. Getting Started

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

WP-9000-CE7 Series User Manual, version 1.0.2

Page: 20

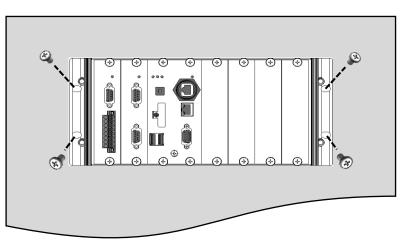
2.1. Mounting the WP-9000-CE7

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

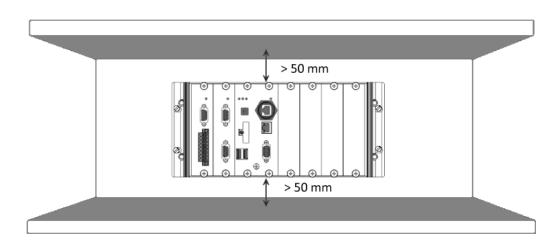
Step 2: Fasten the screws securely



Tips & Warnings

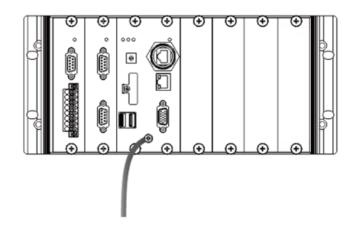


There must be a minimum clearance of 50mm between the WP-9000-CE7 and the top and bottom side of the enclosure panel.



WP-9000-CE7 Series User Manual, version 1.0.2

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



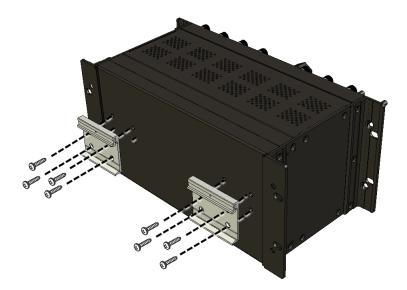
Tips & Warnings



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

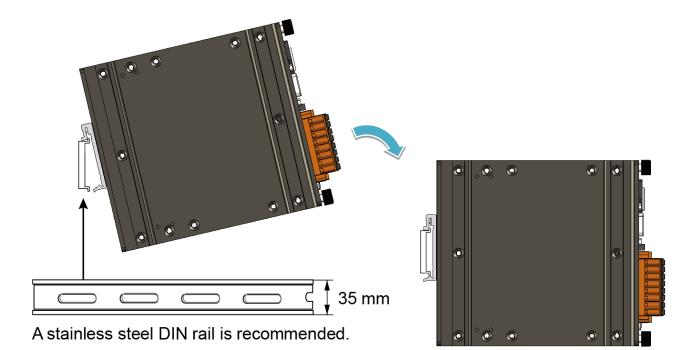
Step 1: Fasten the DIN rail clip to the WP-9000-CE7



WP-9000-CE7 Series User Manual, version 1.0.2

Page: 22

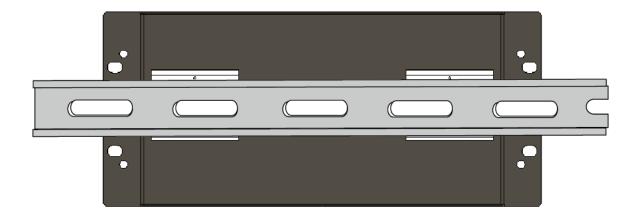
Step 2: Clip the device onto a stainless DIN rail



Tips & Warnings

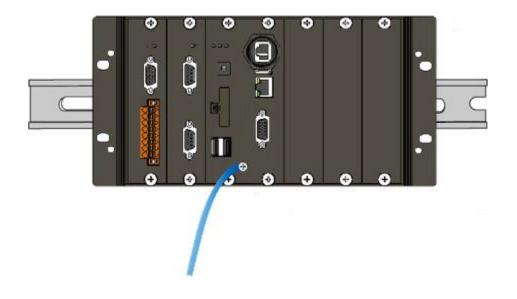


For DIN rail mounting, it is strongly recommended that only a stainless steel DIN rail be used to support the weight of WP-9000-CE7 system, providing stability and preventing WP-9000-CE7 from leaning



WP-9000-CE7 Series User Manual, version 1.0.2

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.

WP-9000-CE7 Series User Manual, version 1.0.2

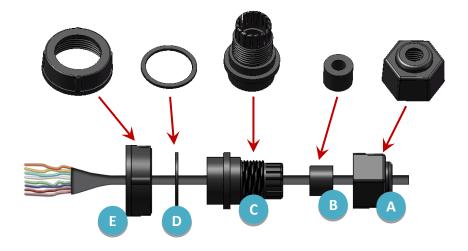
2.2. Installing the RJ-45 waterproof connector assembly

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

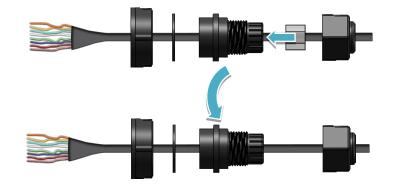
Step 1: Remove the RJ-45 connector from the RJ-45 cable



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



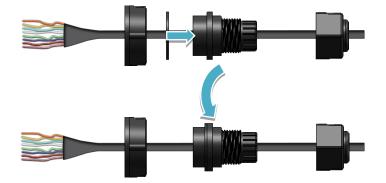
Step 3: Wrap the (C) clamping ring around the (B) rubber sealing insert



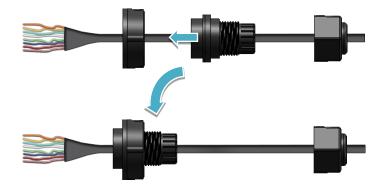
WP-9000-CE7 Series User Manual, version 1.0.2

Page: 25

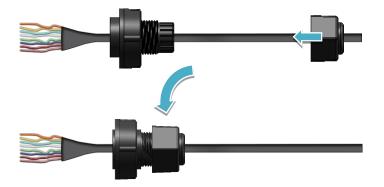
Step 4: Insert the (D) panel gasket into the (C) clamping ring



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

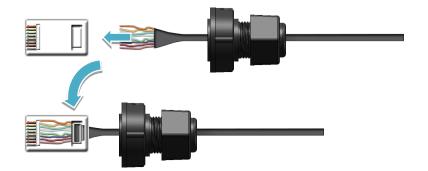


Step 6: Push the (E) sealing nut forward and Hand-tighten it to seal the assembly



WP-9000-CE7 Series User Manual, version 1.0.2

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



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



WP-9000-CE7 Series User Manual, version 1.0.2

2.3. Deploying a Basic WP-9000-CE7 System

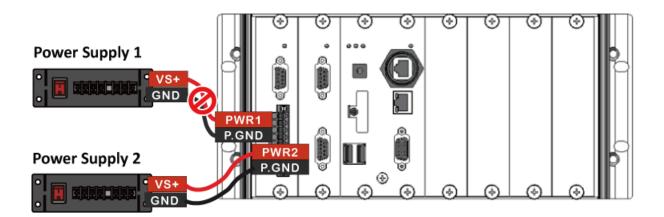
The WP-9000-CE7 provides a variety of communication interface to suit a range of application. Here is a simple application for using the WP-9000-CE7.

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 $V_{\text{DC}}.$
- 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.

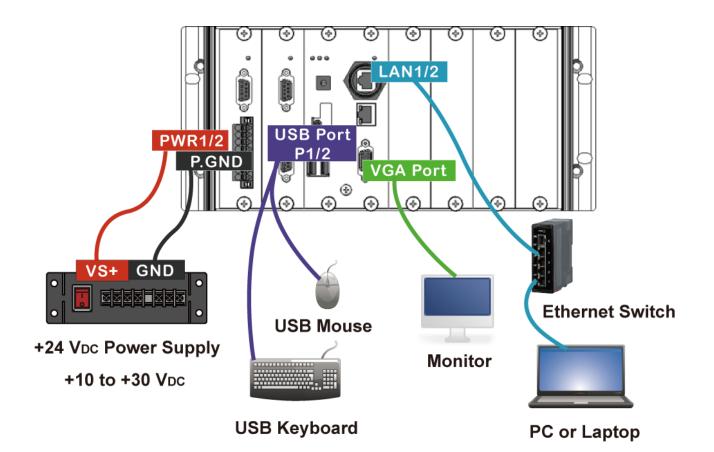


WP-9000-CE7 Series User Manual, version 1.0.2

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

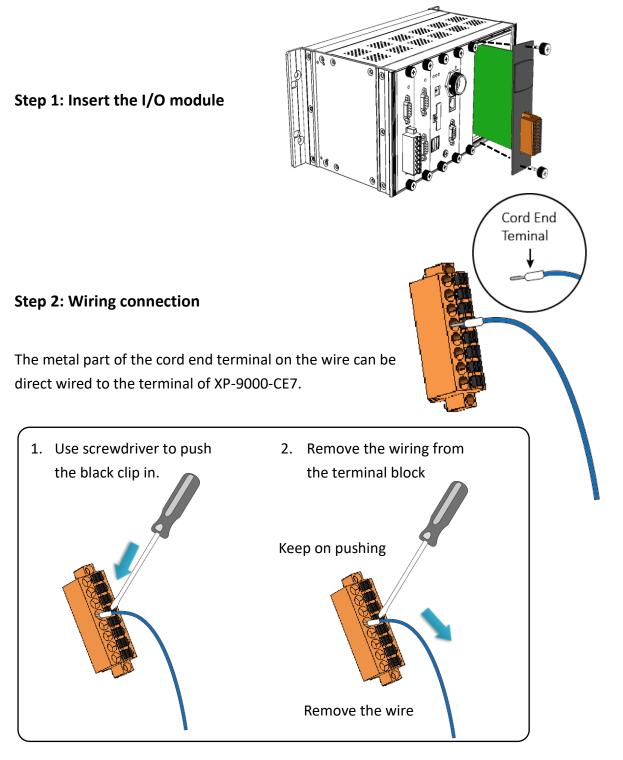


WP-9000-CE7 Series User Manual, version 1.0.2

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



WP-9000-CE7 Series User Manual, version 1.0.2

Page: 30

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.

WP-9000-CE7 Series User Manual, version 1.0.2

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.

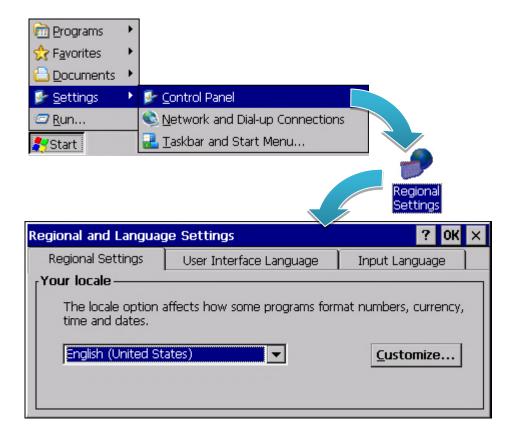
When WP-9000-CE7 is boot with one of these positions, it is boot at normal mode. User's application can check the position of the rotary switch position to run at different mode.

WP-9000-CE7 Series User Manual, version 1.0.2

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.

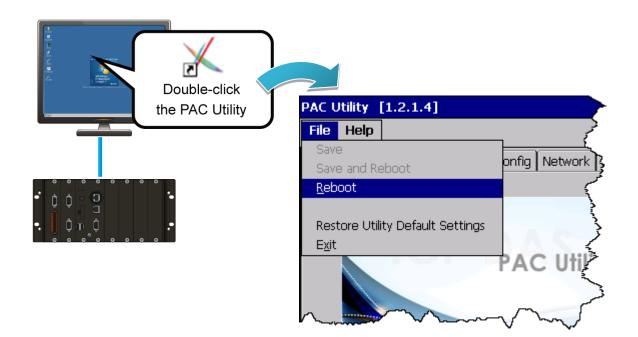
Step 1: Click <u>Start</u> menu, point to <u>Settings</u>, click <u>Control Panel</u>, and then click <u>Regional</u> <u>Settings</u>



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



WP-9000-CE7 Series User Manual, version 1.0.2

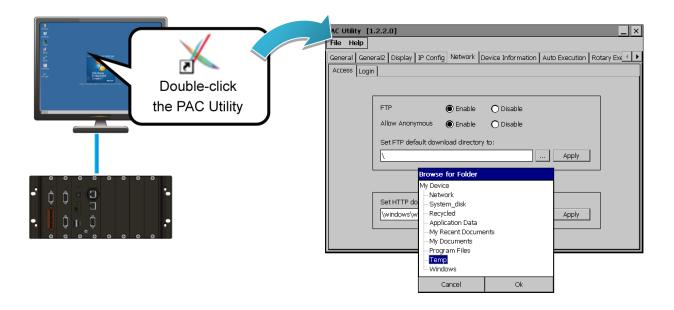
2.7. Using PAC Utility to Manage the WP-9000-CE7

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.

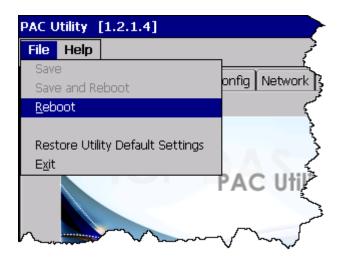
For more detailed information on PAC Utility applications, please refer to "3.1. PAC Utility"

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

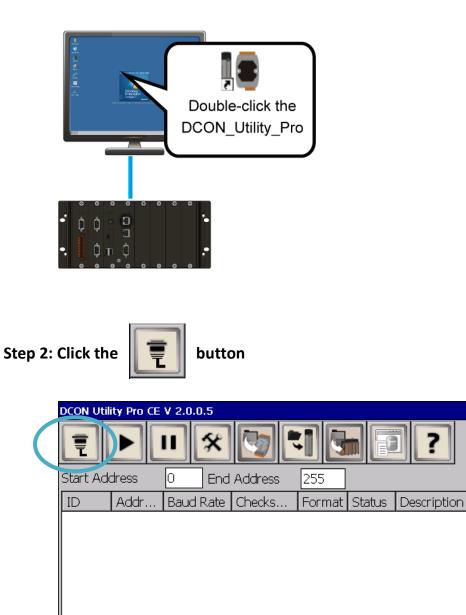


WP-9000-CE7 Series User Manual, version 1.0.2

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



WP-9000-CE7 Series User Manual, version 1.0.2

Page: 36

×

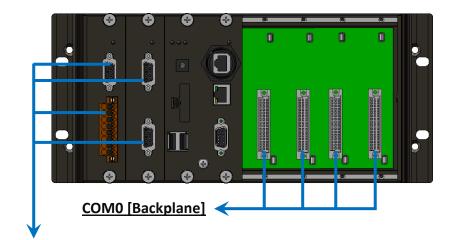
Step 3: Configure the communication settings

COM Port Option	×
COM Port	Timeout
COM0[Backplane]	300 ms
COM0[Backplane]	
COM2	ecksum Format
COM3 COM4	8,2 🗖 E,8,1 🗖 O,8,1
	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

WP-9000-CE7 Series User Manual, version 1.0.2



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

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

WP-9000-CE7 Series User Manual, version 1.0.2

3. Tools and Tasks

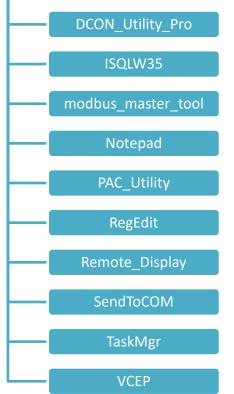
This chapter provides a brief introduction of the WP-9000-CE7 service tools and its benefits.

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/



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

WP-9000-CE7 Series User Manual, version 1.0.2

3.1.1. Menu Bar – File

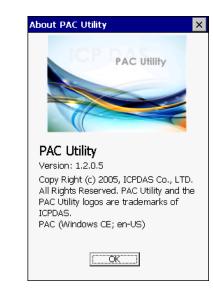
File	Help
Save	9
Savi	e and Reboot
<u>R</u> eb	oot
Rest	tore Utility Default Settings
E <u>x</u> it	

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.

WP-9000-CE7 Series User Manual, version 1.0.2

3.1.2. Menu Bar – Help



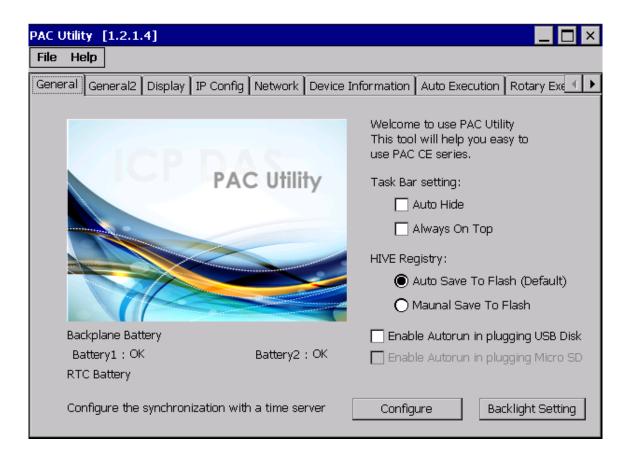


The menus use to	How to use
About	Displays a dialog box with information about PAC Utility,
	including the current version and copyright information.

WP-9000-CE7 Series User Manual, version 1.0.2

3.1.3. Property Tab - General

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



The tab use to	How to use		
Lock or Auto-Hide	Auto-Hide the taskbar:		
the taskbar	Select the Auto Hide check box.		
	Lock the taskbar:		
	Select the Always On Top check box.		
Auto save or	Auto save to flash:		
manual save to	Select the Auto Save To Flash (Default) check box.		
flash	Any changes made to the WP-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	5	
	clicking the Save and Reboot from	Restore Utility Default Settings	
	File menu.	Non market	

WP-9000-CE7 Series User Manual, version 1.0.2

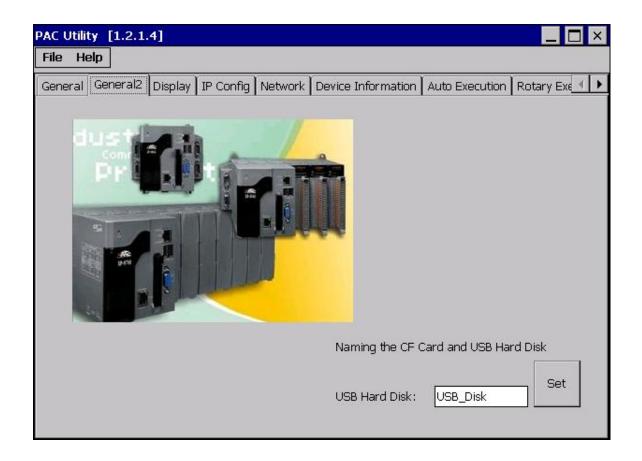
Page: 43

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.

WP-9000-CE7 Series User Manual, version 1.0.2

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

WP-9000-CE7 Series User Manual, version 1.0.2

3.1.5. Property Tab – Display

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

PAC Utilit	ty [1.2.1	.4]					_ 🗆 ×
File He	alb						
General	General2	Display	IP Config	Network	Device Information	Auto Execution	Rotary Exe 🔳 🕨
	Screen Less		1: 480 pixels	More	Screen refre	sh rate:	
							Apply

The tab use to	How to use
Adjust the screen resolution	Move the slider to the left to decrease the resolution or move the slider to the right to increase the resolution, and then click the Apply button.
Change the screen refresh rate	Select the desired refresh rate from the Screen refresh rate drop-down list, and then click the Apply button.

WP-9000-CE7 Series User Manual, version 1.0.2

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 Assign an IP address:	Select the Use DHCP to get IP address option, and then click the Apply
	button.
	Assign an IP address:
	Select the Assign IP address option, and then click the Apply button.

WP-9000-CE7 Series User Manual, version 1.0.2

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.

WP-9000-CE7 Series User Manual, version 1.0.2

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.

WP-9000-CE7 Series User Manual, version 1.0.2

Page: 49

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	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 Internet client devices and other shared equipment.	
	nare Files System Settings × evice Name (Each device need setting different device name)
C	ompact
Th	e path to the folder to be shared
	nfigure the file server to use LANx as e network adapter
	CIVFETCE5B2
	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.

WP-9000-CE7 Series User Manual, version 1.0.2

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 Inf	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:	

WP-9000-CE7 Series User Manual, version 1.0.2

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:		Droupo
	riogram I.	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.

WP-9000-CE7 Series User Manual, version 1.0.2

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 Config Network Devi	ce Information Auto Execution Rotary Ex	ecution 🕅 🕨
Rotary Switch 0	Normal Mode	Browse
6789 Rotary Switch 1:	Safe Mode	Browse
Rotary Switch 2:		Browse
ετ Rotary Switch 3:		Browse
Rotary Switch 4:		Browse
Rotary Switch 5:		Browse
Rotary Switch 6:		Browse
Rotary Switch 7:		Browse
Rotary Switch 8:		Browse
Rotary Switch 9:		Browse
	Ар	oly

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

WP-9000-CE7 Series User Manual, version 1.0.2

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

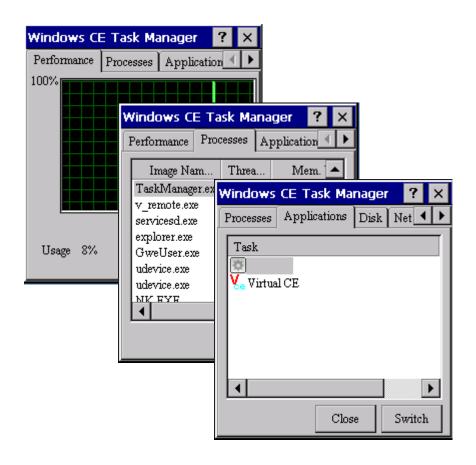
For more detailed information on DCON Utility application, please refer to: <u>http://www.icpdas.com/root/product/solutions/software/utilities/dcon_utility_pro.html</u>

CON Utility Pro CE V 2.0.0.4	
₹ ▶ Ⅲ ☆ ⊠ ₹1 ⓑ ॿ ⋷ ?	
tart Address 0 End Address 4	
ID Addr Baud Rate Checks Format Status Description	
Terminal Command Line Tool	
Baud Rate 115200 🔽 Format N,8,1-None Parity 🔽 🗸	Send
Checksum Disable Slot Slot	
Timeout 100 rms Select ID	
Command \$00M	
Response	
Tool for Command Data Logger X	
Edit Command Data Logger About	
COM Port COM Port COMD Load	
Start Search Baud Rate 115200	
Data Format N,8,1 Add >>	
Checksum Disable Modify	_
Timeout (ms) 200(ms) Save Delay for Next (ms) 200(ms) Image: Construction of the second	
Send Command \$01M Compared Response Input Compared Data	
Compare Mode Full Match	

WP-9000-CE7 Series User Manual, version 1.0.2

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.



WP-9000-CE7 Series User Manual, version 1.0.2

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.

Virtual 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/

WP-9000-CE7 Series User Manual, version 1.0.2

Page: 56

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	Slot	Open
COM2 Instance December 10 may December 10 may December 11 COM2 Instance 115200 Instance 10 may December 11 Instance 10 may December 11 Instance 10 may December 10 may December 10 may December 10 may December 11 Instance 10 may December 10 may Dece		Close
	string	+crc
Commands Responses	🔿 Binary 🔘 St	ring Send Polling
Current Packet Size (bytes)	Auto send Inte	ernal (ms) 500
Total Packet Bytes 0 Total Packet Bytes 0	Start	Stop Set
Packet Quantity send 0 Packet Quantity received 0	Start Time Start	: Time
Clear	Stop Time Stop	Time
A		
~		-
		Clear

WP-9000-CE7 Series User Manual, version 1.0.2

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		•		
HKEY_LOCAL_MACHINE HKEY_USERS				
HKET_USERS				

WP-9000-CE7 Series User Manual, version 1.0.2

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 🚯 🖯 🙌	×

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
				Esc 1 2 3 4 5 6 7 8 9 0 - = 🗲
				Tab[q]w]e[r]t]y]u]i[o[p][]] CAP[a]s]d[r]g[n]j[k]];]
				Shift z x c v b n m , / ↓ Cti áü ` \

WP-9000-CE7 Series User Manual, version 1.0.2

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.

WP-9000-CE7 Series User Manual, version 1.0.2

Page: 62

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

WP-9000-CE7 Series User Manual, version 1.0.2

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_YYYYMMDD.msi

Follow the prompts until the installation process is complete.

Step 3: Execute the VisualStudioDeviceWindowsEmbeddedCompact7

Follow the prompts until the installation process is complete.

WP-9000-CE7 Series User Manual, version 1.0.2

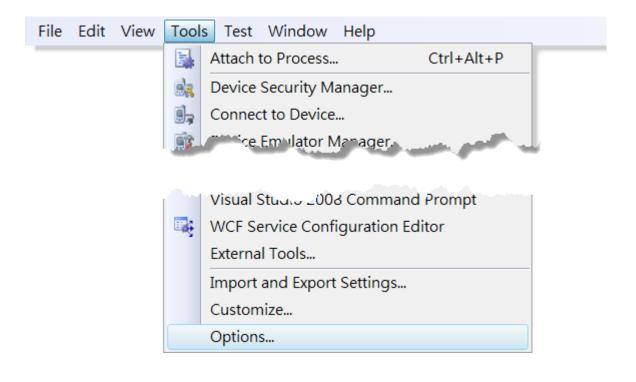
4.1.3. Setting up the Global Compiler Settings (for Visual C++)

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.

Dptions 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 HTML Designer	\$(VCInstallDir)ce\include \$(VCInstallDir)ce7\include C:\Program Files (x86)\Windows CE C:\Program Files (x86)\Windows CE \$(VCInstallDir)ce7\atlmfc\include \$(VCInstallDir)ce\atlmfc\include	\$(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				
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.

WP-9000-CE7 Series User Manual, version 1.0.2

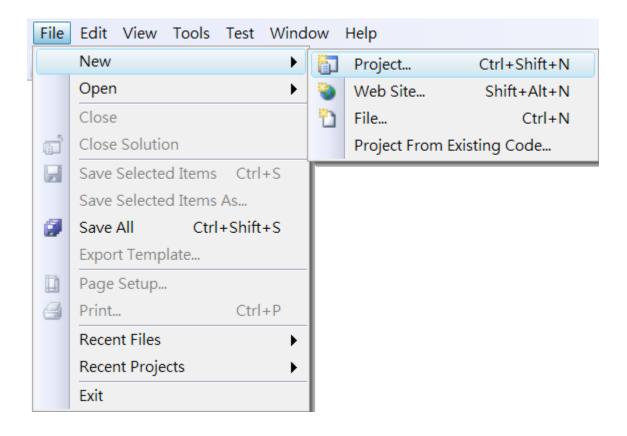
4.2.1. Create a new project

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



WP-9000-CE7 Series User Manual, version 1.0.2

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

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

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

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

Step 6: In the Target platform, select Windows CE

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

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>×</mark>			
Target platform: .NET Compact Framework version: Templates:	Windows CE • NET Compact Framework Version 3.5 •				
Device 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			

WP-9000-CE7 Series User Manual, version 1.0.2

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)	44.5		a number	
File	Edit	View	Proj	ect E	Build	Debug	Data	Format	Tools	Test	Window	Help
				Add	Wind	lows Forr	n					
				Add	User	Control						
			1	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				

WP-9000-CE7 Series User Manual, version 1.0.2

Page: 71

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

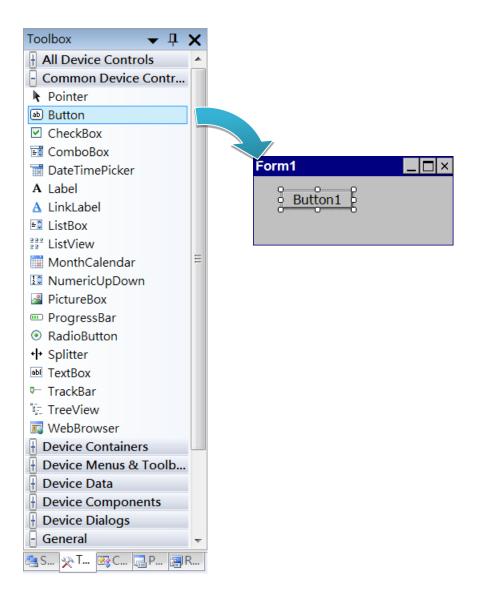
Add Reference	? X
.NET Projects Browse Recent	
Look in: 📜 PACNET 👻	G 🌶 📂 🖽 -
Name	Date modified
PACNET.dll	2014/5/30
< <u>III</u>	4
File name: : PACNET	→
Files of type: : Component Files (*.dll;*.tlb;*.olb;*.ocx;*.exe)	•
	OK Cancel

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.

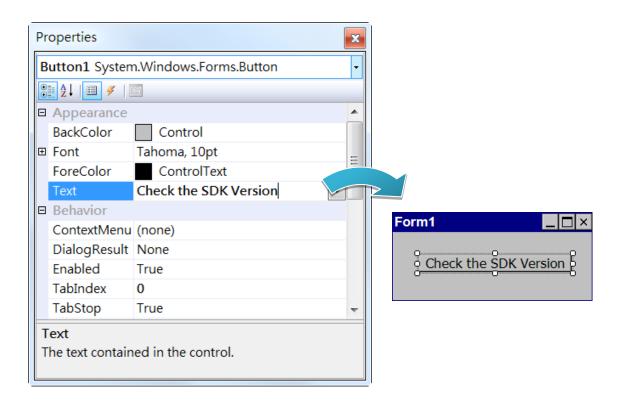
Step 1: On the Toolbox panel, drag a Button control onto the form



WP-9000-CE7 Series User Manual, version 1.0.2

Page: 73

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



4.2.4. Add the event handling for the control

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

Step 1: Double-click the button on the form

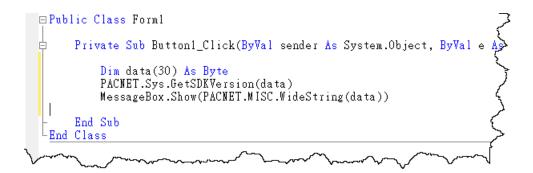
Form1	
Check the S	DK Version

Step 2: Inserting the following code

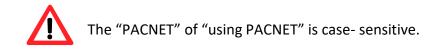
Dim data(30) As Byte

PACNET.Sys.GetSDKVersion(data)

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



Tips & Warnings

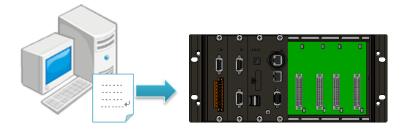


WP-9000-CE7 Series User Manual, version 1.0.2

Page: 75

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 <u>Build</u> menu, and then click <u>Build [Project Name]</u>

File	Edit	View	Project	Build	Debug	Data	Format	Tools	Test	Window	Help
				***	Build Solu	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 SDF	<_Info					
					Configura	ation M	anager				

WP-9000-CE7 Series User Manual, version 1.0.2

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

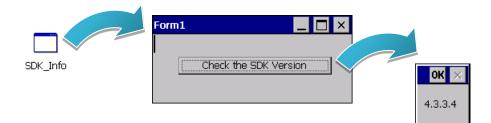
Step 3: Upload the application and the corresponding PACNET.dll files to WP-9000-CE7

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 Stemp PACNET SDK_Info

WP-9000-CE7 Series User Manual, version 1.0.2

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.



WP-9000-CE7 Series User Manual, version 1.0.2

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.

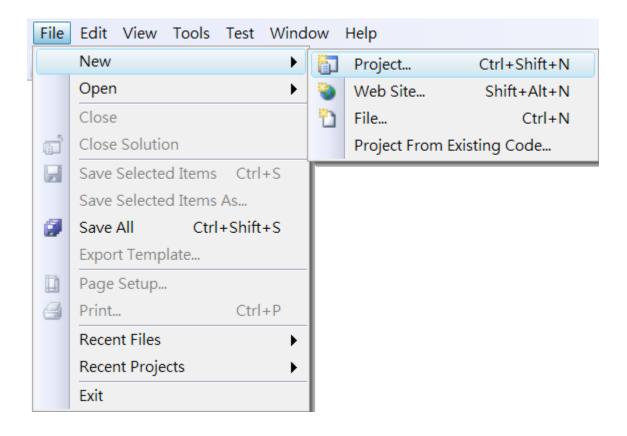
4.3.1. Create a new project

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

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	▼
Device Application Library Application	Control Empty	Description: A project for creating a .NET Compact Framework 3.5 forms application for Windows CE Platform
Download additonal emulator imag	es and smart device SDKs	OK Cancel

WP-9000-CE7 Series User Manual, version 1.0.2

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	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				

WP-9000-CE7 Series User Manual, version 1.0.2

Page: 83

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

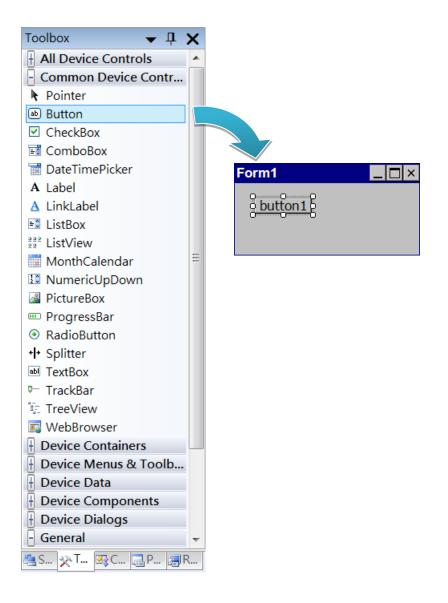
Add Reference	? X
.NET Projects Browse Recent	
Look in: 📜 PACNET 👻	o 🌶 📂 🖽 🗸
Name	Date modified
PACNET.dll	2014/5/30
< III	•
File name: : PACNET	
Files of type: : Component Files (*.dll;*.tlb;*.olb;*.ocx;*.exe)	▼
	OK Cancel

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.

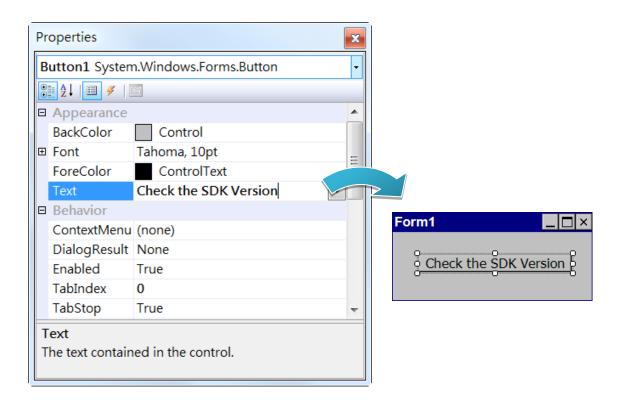
Step 1: On the Toolbox panel, drag a Button control onto the form



WP-9000-CE7 Series User Manual, version 1.0.2

Page: 85

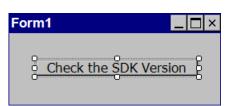
Step 2: On the Properties panel, type Check the SDK version in the Text field



4.3.4. Add the event handling for the control

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

Step 1: Double-click the button on the form

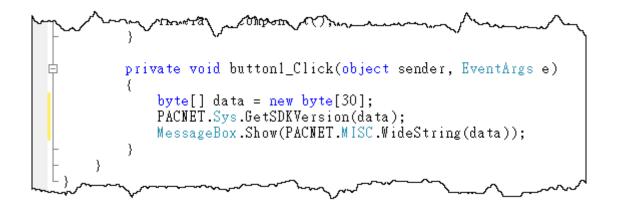


Step 2: Inserting the following code

byte[] data = new byte[30];

PACNET.Sys.GetSDKVersion(data);

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



Tips & Warnings



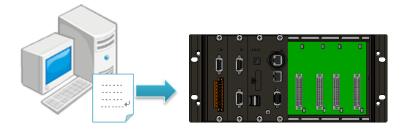
The "PACNET" of "using PACNET" is case- sensitive.

WP-9000-CE7 Series User Manual, version 1.0.2

Page: 87

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 <u>Build</u> menu, and then click <u>Build [Project Name]</u>

File	Edit	View	Project	Build	Debug	Data	Format	Tools	Test	Window	Help
				***	Build Solu	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 SDF	<_Info					
					Configura	ation M	anager				

WP-9000-CE7 Series User Manual, version 1.0.2

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

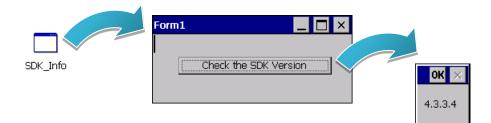
Step 3: Upload the application and the corresponding PACNET.dll files to WP-9000-CE7

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 Stemp PACNET SDK_Info

WP-9000-CE7 Series User Manual, version 1.0.2

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.



WP-9000-CE7 Series User Manual, version 1.0.2

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.

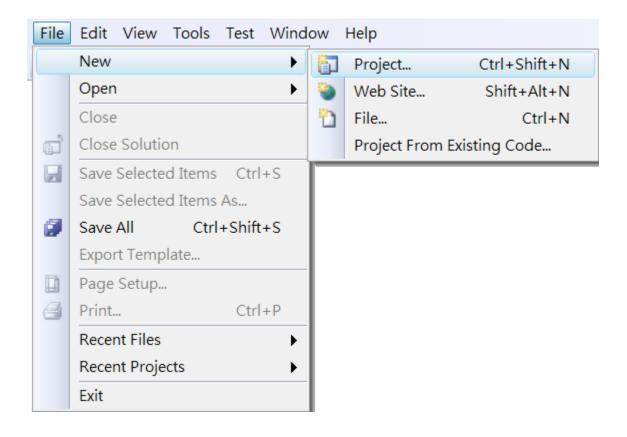
4.4.1. Create a new project

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

Step 1: Start Visual Studio 2008



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



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

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

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

New Project	5004	requirieres, and a	enament suit a field and the range consumption, main auto-	? ×
Project types:		Templates:		.NET Framework 3.5 ▼ 🔛 🔚
Visual C++ ATL CLR General MFC Smart Devic Test Win32 Other Languag Other Project T Test Projects	es	Visual Studio installed templates ATL Smart Device Project MFC Smart Device Application Win32 Smart Device Project My Templates Search Online Templates	MFC Smart Device	e ActiveX Control
An application for Name:	Windows Mobile and ot	her Windows CE-based devices that	uses the Microsoft Foundation C	Class Library
		or\Documents\Visual Studio 2008\F	▼ Browse	
Solution Name: SDK_Info			Create directory for solutio	n
				OK Cancel

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 Click Finish from any window to accept the current settings. After you create the project, see the project's readme.txt file for information about the project features and files that are generated.
	< Previous Next > Finish Cancel

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

MFC Smart Device Applica	tion Wizard - SDK_Info	? ×
Platform	ns	
Overview Platforms Application Type Document Template Strin User Interface Features Advanced Features Generated Classes	Select platform SDKs to be added to the current project.	
	Instruction sets: ARMv4I, ARMv4I Previous Next > Finish	Cancel

WP-9000-CE7 Series User Manual, version 1.0.2

Page: 94

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

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

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

MFC Smart Device Applic	ation Wizard - SDK_Info			? <mark>×</mark>
User I	nterface Features			
Overview Platforms Application Type Document Template Stri User Interface Features Advanced Features Generated Classes	Command bar: <u>Menus only</u> Menus and buttons s Status bar Dialog title: SDK_Info			
		< Previous	Next > Fir	nish Cancel

WP-9000-CE7 Series User Manual, version 1.0.2

Page: 95

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

MFC Smart Device Appli	MFC Smart Device Application Wizard - SDK_Info					
Advan	ced 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	\square <u>W</u> indows sockets					
Advanced Features	Number of files on recent file list:					
Generated Classes	4 🗸					
	< Previous Next > Finish	Cancel				

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

Genera	ted Classes		
Overview Platforms Application Type Document Template Strir	Generated classes: CSDK_InfoApp CSDK_InfoDlg		
User Interface Features Advanced Features	r Class name: CSDK_InfoApp	.h fil <u>e</u> : SDK_Info.h	
Generated Classes	B <u>a</u> se class: CWinApp ♥	.cp <u>p</u> file: SDK_Info.cpp	
		< Previous Next > Finish Ca	

WP-9000-CE7 Series User Manual, version 1.0.2

Page: 96

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			
		<u> </u>	Class Viev	v		Ctrl+S	hift+C			
			Code Defi	nition V	Vindow	Ctrl+S	hift+V	,		
		1	Object Bro	owser		Ctrl	+Alt+J			
			Output				Alt+2			
			Property I	Manage	er					
		2	Resource	View		Ctrl+S	Shift+E			
		R	Toolbox			Ctrl+	-Alt+X	:		
			Find Resu	lts						
			Other Wir	ndows				►		
			Toolbars					►		
			Full Scree	n	S	hift+Alt	+Enter			
		P	Navigate	Backwa	rd		Ctrl+-			
		в,	Navigate	Forward	d	Ctrl+9	Shift+-			
			Next Task							
			Previous 7	- ask						
		e	Property I	Pages						

WP-9000-CE7 Series User Manual, version 1.0.2

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

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

DK_Info Property Pages	Q.L ##.150	(CANCER)	2 X
Configuration: Active(Debu	g) 🔻 Platform: Acti	ve(AM335x_WINCE7_SDK (, ▼	Configuration Manager
Common Properties	Additional Dependencies	PACSDK.lib	
Configuration Properti	Ignore All Default Libraries	No	
General	Ignore Specific Library		
Debugging	Module Definition File		
Deployment	Add Module to Assembly		
C/C++	Embed Managed Resource File		
Linker	Force Symbol References		
General	Delay Loaded DLLs		
Input	Assembly Link Resource		
Manifest File	,		
Debugging			
System			
Optimization			
Embedded IDL			
Advanced			
Command Line			
Resources			
XML Document Gen Browse Information			
Browse Information Build Events			
Custom Build Step Authenticode Signir			
Authenticode signir			
	Additional Dependencies		
	Specifies additional items to add to the	link line (ex: kernel32.lib); config	guration specific.
		ОК	Cancel Apply

4.4.4. Add the control to the form

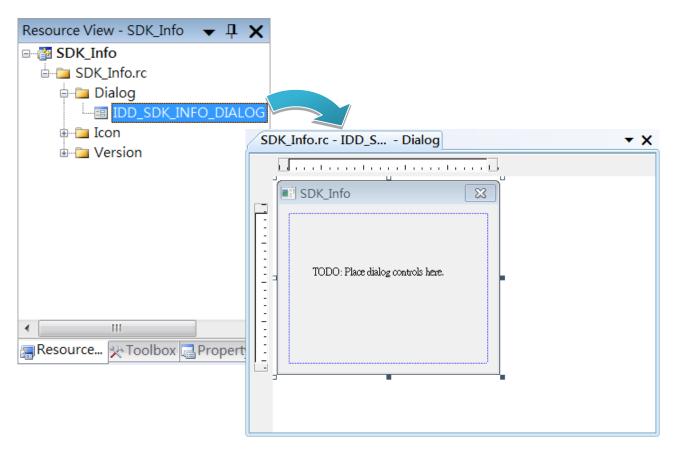
You can drag various controls from the Toolbox onto the form. These controls are not really "live"; they are just images that are convenient to move around on the form into a precise location.

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

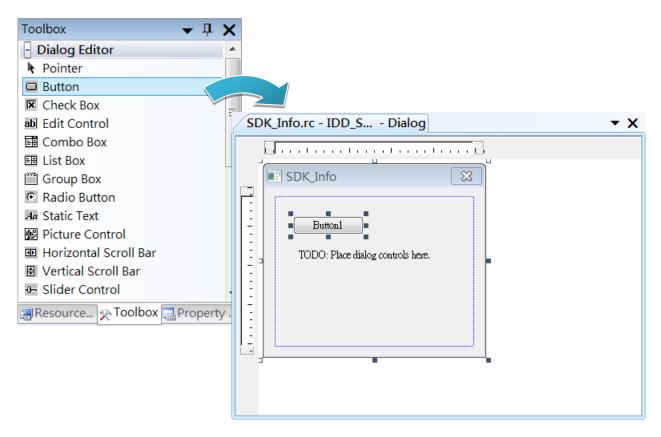
Step 1: On the <u>View</u> menu, and then click <u>Resource View</u>

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

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



WP-9000-CE7 Series User Manual, version 1.0.2

Page: 101

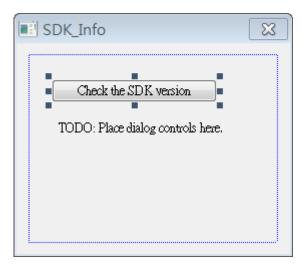
Step 4: On the Properties panel, type Check the SDK version in the Caption field

P	roperties	→ ₽ X			
IC	OC_BUTTON1 (Butto	n Control) ICeButtonEc -			
•	2↓ 🔲 🖋 🖾				
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			
Ξ	Misc				
	(Name)	IDC_BUTTON1 (Button C			
~	Group	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			

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);



WP-9000-CE7 Series User Manual, version 1.0.2

Step 2: Inserting the following code into the header area

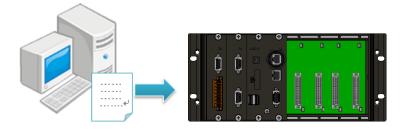
#include "PACSDK.h"

```
    // SDK_InfoDlg.cpp : implementation file
    //
    #include "stdafx.h"
    #include "SDK_Info.h"
    #include "SDK_InfoDlg.h"
    #include "PACSDK.h"
    #ifdef _DEBUG
    */
```

WP-9000-CE7 Series User Manual, version 1.0.2

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 <u>Build</u> menu, and then click <u>Build [Project Name]</u>

File	Edit	View	Project	Build	Debug	Tools	Test	Window	Help
					Build Solu	ition		F7	
					Rebuild 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	

WP-9000-CE7 Series User Manual, version 1.0.2

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

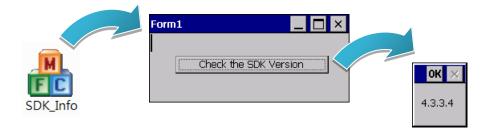
Step 3: Upload the application to WP-9000-CE7

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

WP-9000-CE7 Series User Manual, version 1.0.2

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.



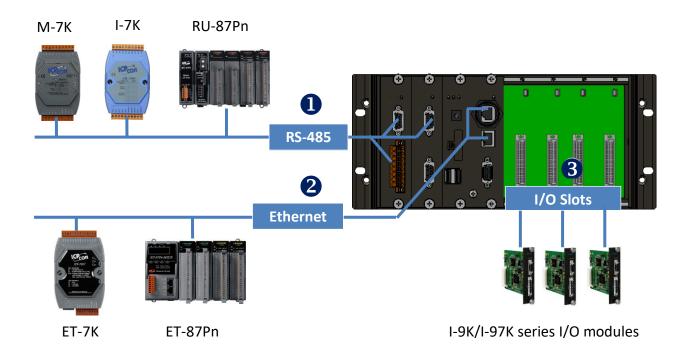
WP-9000-CE7 Series User Manual, version 1.0.2

Page: 107

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:



1. 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

WP-9000-CE7 Series User Manual, version 1.0.2

Page: 108

> 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

2. 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/

3. Local I/O

WP-9000-CE7 has 2/4/8 expansion slot(s) that can be used to add expansion I/O modules. The expansion I/O modules can be divided into two categories: High Profile I-9K series I/O modules and High profile I-97K series I/O modules. The following indicates the appropriate SDK library to be used for I/O modules.

Module	Native SDK	.NET CF SDK
I-9K series	PACSDK.dll	PACNET.dll
I-97K series	PACSDK.dll	PACNET.dll
I-9K series with PWM	PACSDK_PWM.dll	PACNET.dll
I-97K series with PWM	PACSDK_PWM.dll	PACNET.dll

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

For full details regarding I-97K series I/O modules and its demos, please refer to:

http://ftp.icpdas.com/pub/cd/winpac_am335x/wp-9000/demo/pac/applicabled_demo_for_97k_module.pdf

> Other Specified I/O

Module	Native SDK	.NET CF SDK
I-9014	pac_i8014W.dll	pac_i8014WNet.dll
I-9014C	pac_i8017HW.dll	pac_i8017HWNet.dll
I-9017	pac_i8017HW.dll	pac_i8017HWNet.dll
I-9017-15	pac_i8024W.dll	pac8024WNet.dll
I-9024	pac_i8028U.dll	pac_i8028UNet.dll
I-9024U	pac_i8028U.dll	pac_i8028UNet.dll
I-9028U	pac_i8048W.dll	pac_i8048WNet.dll
I-9048	pac_i8172W.dll	pac8172WNet.dll

4. FRnet

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

Module	Native SDK	.NET CF SDK	
I-9172	pac_i8014W.dll	pac_i8014WNet.dll	

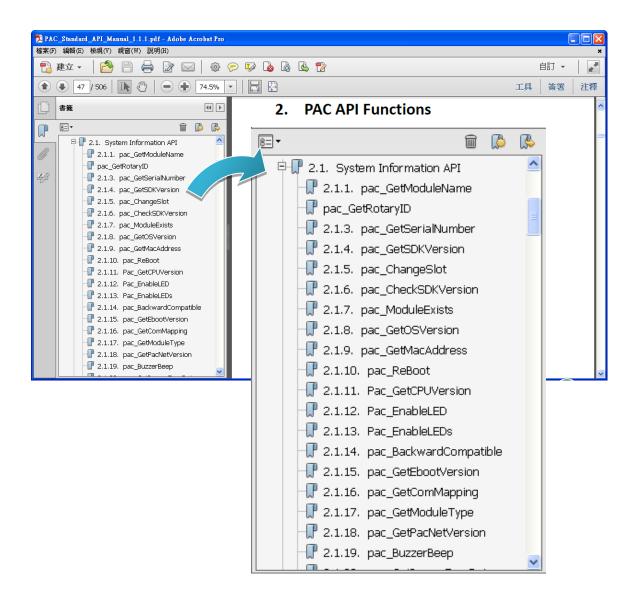
WP-9000-CE7 Series User Manual, version 1.0.2

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.

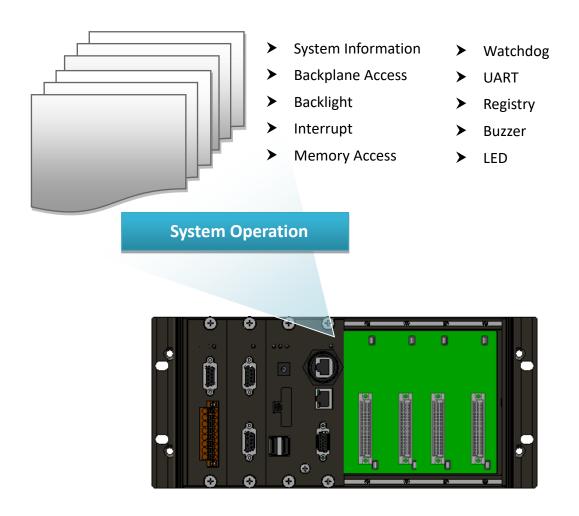
ICP DAS provides a set of demos in different programming languages. You can examine the demo codes, which includes numerous comments, to familiarize yourself with the PAC APIs. This will allow developing your own applications quickly by modifying these demo programs.

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.



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
Devicemonnation	Devicemiormation	version, SDK version, etc.
GetRotaryID	GetRotaryID	Retrieves information about the status of the
Gethotal yib	Gethotal yib	rotary switch
Memory	Memory	Shows how to read/write data values from/to
IMEITIOLY	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

6.1.2. 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
Devicemonnation	Devicemiormation	version, SDK version, etc.
GetRotaryID	GetRotaryID	Retrieves information about the status of the
Gethotal yib	Getholaryid	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
Pogistry	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	UANI	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\

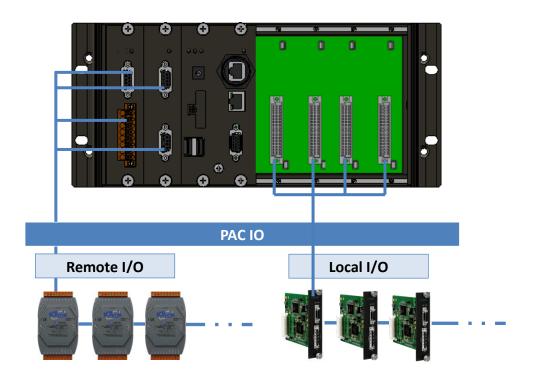
http://ftp.icpdas.com/pub/cd/winpac_am335x/wp-9000/demo/pac/vc2008/standard/

Folder	Demo	Explanation
buzzer	buzzer	Shows how to make a simple buzzer beep.
DeviceInformation	DeviceInformation	Retrieves information about the OS version, CPU
Devicemiormation	Devicemiormation	version, SDK version, etc.
GetRotaryID	GetRotaryID	Retrieves information about the status of the
Gethotal yib	Gethotal yib	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
Pogistry	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	UART	modules via a UART
WatchDog	WatchDog	Displays information about how to operate the
watchDog	watchDog	watchdog

WP-9000-CE7 Series User Manual, version 1.0.2

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.



WP-9000-CE7 Series User Manual, version 1.0.2

Page: 117

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.
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
	ļ	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.
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.
	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
Remote		AI modules which connected through a COM port.
Remote	7k87k_di	Shows how to read the DI values of DI module.
		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.

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.

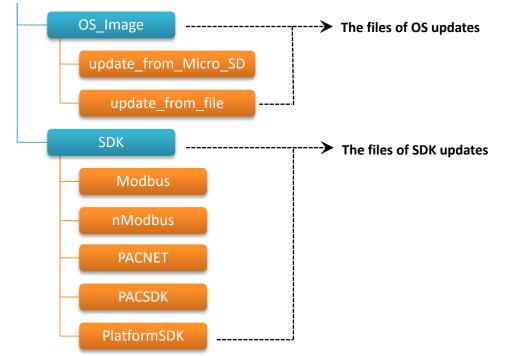
ICP DAS will continue to add additional features to WP-9000-CE7 SDK and OS in the future, so we advise you to periodically check the ICP DAS web site for the latest updates.

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.

CD:\wp-9000\

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

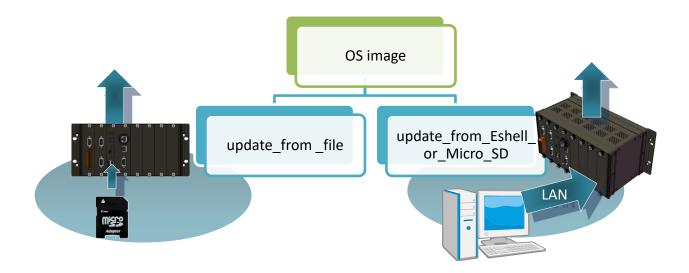


7.1. OS Updates

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.



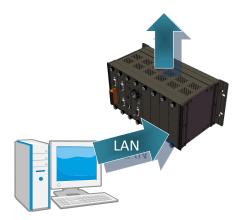
There are two ways to update the OS:



- 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\

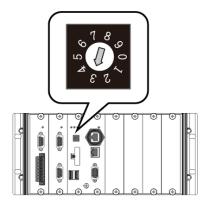
Step 2: Run the <u>registry clear.exe</u>

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.

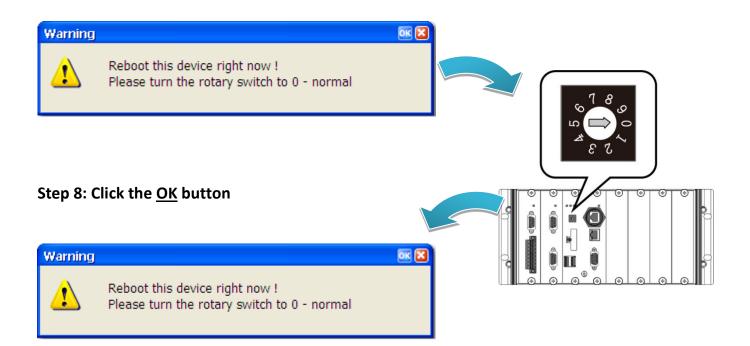
Select Device	
Enter Device Name:	ОК
Or Select From the List	Cancel
	Reset devices to automatically put names on the list.
~	list.

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

Open	
Look in: 😂 WP5236_20040821_Wei:1.0.0	ing 🖛 🔁 👉 🎟 -
My Recent Documents	
	Microsoft Windows CE Debug Shell - 77_44400 (#2416cd_2/Wind/AChapdeolog-2000_ce50705_inagelog-23v1/n
Desktop	UP wave; Bootloader Version 1.0, IP; 10.1.0.50, MBC; 00001F010002
My Documents	<pre>ov_exects is set to der version 1.e, ir i 10.1.0.50, mmc; otherreindo2 Downloading '\\Rdfs\cd_2\VirAC\napdos\vp-2000_ceS0\05_image\vp-23u1\update_fron_Eshell\en\UI Jumping to inage on UP_NAN98 Connecting to UP_NAN98 using Ethernet</pre>
My Computer	8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8
File name: NK.BIN	
Files of type: NK Images (*.	
	E Bady

WP-9000-CE7 Series User Manual, version 1.0.2

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



Step 9: Check the OS version

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

PAC_Utility						
	PAC Utility [1.2.1 File Help	4]				
		Display IP	° Config Network	Device Information	Auto Execution Ro	tary Exe 🔳 🕨
	Slot 1: Slot 2: Slot 3: Slot 4: Slot 5: Slot 6: Slot 7:		Module(CPU) Serial Numb Backplane V CPU Version OS Version Eboot Versio .NET CF Ver SQL CE Vers PACSDK Ver CPU Tempe	er: 01-82-40 ersion: 1.0.0.0 i.0.1.1, in: 1.2.1.0, sion: 3.5.7338 iion: 3.5.8154 sion: 4.3.3.4		Ξ Ι

WP-9000-CE7 Series User Manual, version 1.0.2

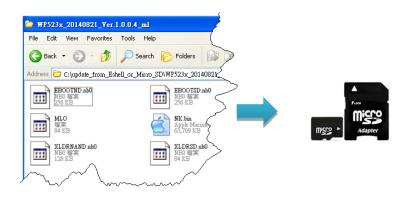
7.1.2. OS updates using SD

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.

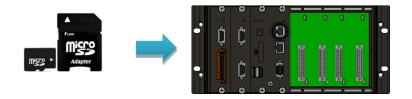
Step 1: Get the latest version of the installation package file, then unzip the file, and then copy them to SD card

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

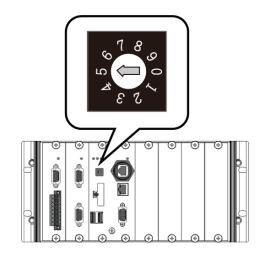


Step 2: Plug the SD card into SD slot



WP-9000-CE7 Series User Manual, version 1.0.2

Page: 126



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

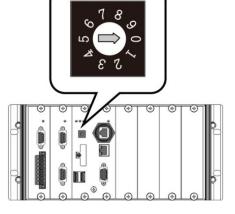
Step 3: Turn the rotary switch in position 5,

OS update mode

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



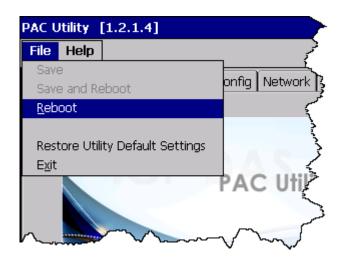
Step 6: Turn the rotary switch in position 0, normal mode



WP-9000-CE7 Series User Manual, version 1.0.2

Page: 127

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	iformation 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:	

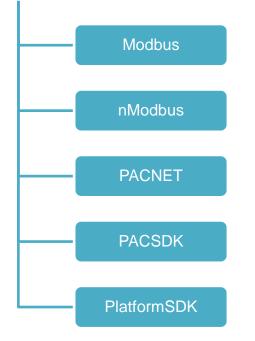
7.2. SDK Updates

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.

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.

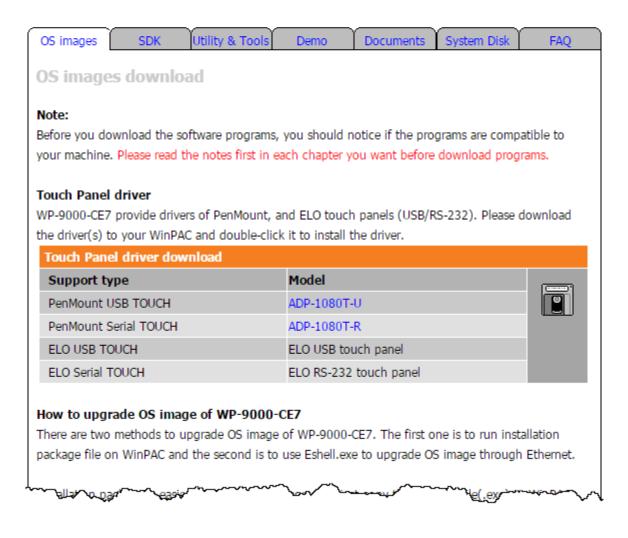
The WP-9000-CE7 Download Center can be found at:

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.



WP-9000-CE7 Series User Manual, version 1.0.2

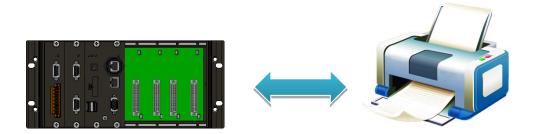
Tips – How to

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

WP-9000-CE7 Series User Manual, version 1.0.2

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

A.1. How to Use a Network Printer

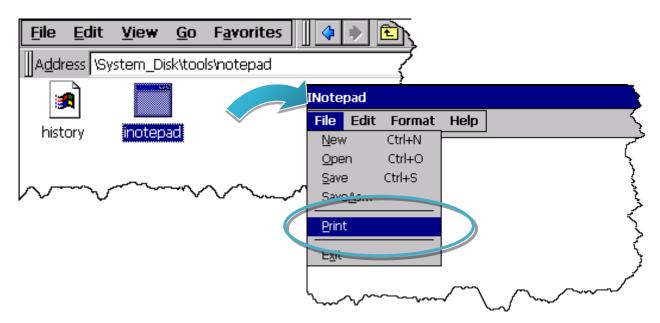
Here are step by step instructions on how to use a shared printer.

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

System Properties	? 🔀	
System Restore General Windows u on the netw Computer <u>d</u> escription: Full computer name:	For example: "Kitchen Computer" or "Mary's Computer". ServerName.	
domain and create a l ID.	ICPDAS.COM dentification Wizard to join a local user account, click Network Auto HP Laser Jet 2200 (RD1) on KEVIN_WINPAC Properties ?	
🔥 Changes will ta	Grineral Sharing Port Advanced Color Management II You can share this printer with other users on your network. To enable sharing for this printer, click Share this printer. Do not share this printer O Do not 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. <u>Additional Drivers</u>	
	OK Cancel Apply Help	

WP-9000-CE7 Series User Manual, version 1.0.2

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	8 🗃	*	e C	Ŋ	Tahom	~	14	\sim
Tes	it !!!											

Print			? OK 🔀
Printer:	PCL Laser 💽	Print Range	Orientation
Port:	Network) All	Ortrait
Net Path:	RD1-User2\Anna	O Selection	 Landscape
Paper Size:	A4 🗸	Margins (inches)	
Advanc	ed Draft Mode		Top: 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

INote	pad			
File	Edit	Format	Help	5
<u>N</u> ev	/	Ctrl+N		·
Ope	n	Ctrl+O		ړ
<u>S</u> ave	Э	Ctrl+S		}
Save	<u>⊳∆</u> ⊂			, , ,
Prin	t			5
Exit				۲ ۲
<u></u>	\sim	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	· ~~~	\sim

Step 2: Set up the printer

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

File	Edit	View	Format	Tools] 🗄 🗃	χ [e C	ю	Tahom	~	14	~
Tes	st !!!											

Print			? ОК 🔀
Printer:	Hewlett-Packard LaserJi 💌	Print Range	Orientation
Port:	LTP1 🔽		Portrait
Net Path:		Selection	
Paper Size:	A4 🔽	Margins (inches)	on: 1"
Advance	ed Draft Mode		op: 1"

WP-9000-CE7 Series User Manual, version 1.0.2

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.

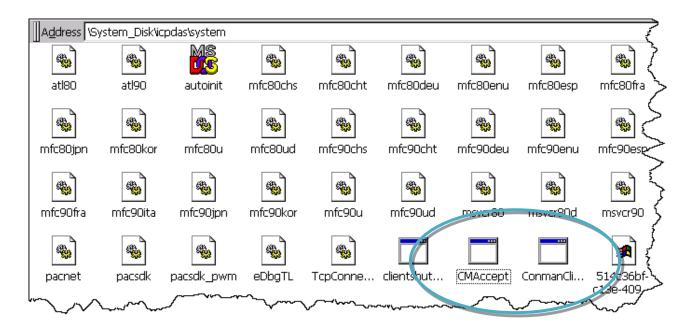
Tips & W	Tips & Warnings						
	Before starting online debug the WP-9000-CE7 program, make sure that the WP-9000-CE7 SDK has been installed correctly.						
	For more information on how to install the WP-9000-CE7 SDK, please refer to 4.1.2. Installing the WP-9000-CE7 SDK.						

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



WP-9000-CE7 Series User Manual, version 1.0.2

Page: 138

Step 3: On the Tools menu, click the Options

File Edit View Project Build Debug	Tools Test Window Help
🛅 🕶 🖼 🕶 🚅 🛃 🎒 👗 🗈 🛍 🔊 🕶	Attach to Process Ctrl+Alt+P
AM335x_WINCE7_SDK AF 🗸 🖳 🚛 🚛	Device Security Manager
	归 Connect to Device
And the former and the second	Device Emulator Manager
	VCF or antiguina on comment
	External Tools
	Import and Export Settings
	Customize
	Options

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	? ×
Environment Projects and Solutions Source Control Text Editor Database Tools Debugging Device Tools General Devices Form Factors HTML Designer Office Tools Test Tools Text Templating Windows Forms Designer Workflow Designer	Snow devices for platform: AM335x_WINCE7_SDK Devices: AM335x_WINCE7_SDK ARMAY / Device Network Certain Cer
	OK Cancel

Step 6: Click the Configure...

AM335x_WINCE7_SDK ARMV7 Device Properties	2 X
Default output location on device:	
	•
Transport:	
TCP Connect Transport	Configure
Bootstrapper:	
ActiveSync Startup Provider 🔹	Configure
Detect when device is disconnected	
	OK Cancel

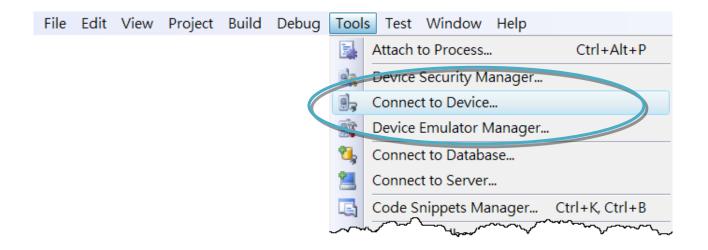
Step 7: Select the Use specific IP address:, and then type the IP address of WP-9000-CE7

Configure TCP/IP Transport		? <mark>X</mark>
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

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

AM335x_WINCE7_SDK ARMV7 Device Propertie	s	
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
 Debugging Device Tools 		
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	
		OK Jancel
		ancer

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.



WP-9000-CE7 Series User Manual, version 1.0.2

Page: 142

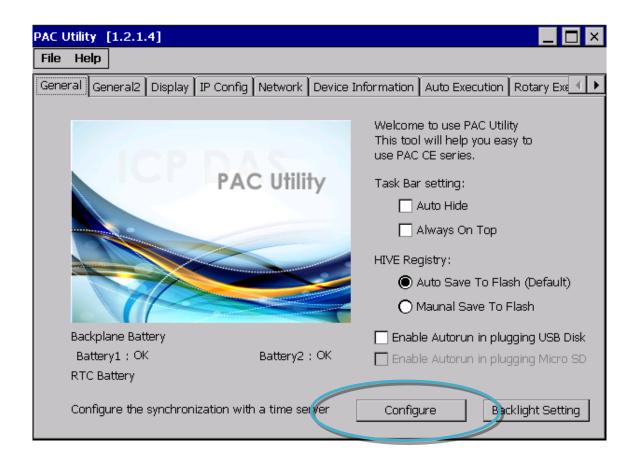
C. How to Automatically Synchronize WP-9000-CE7 Clock with an Internet Time Server

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.

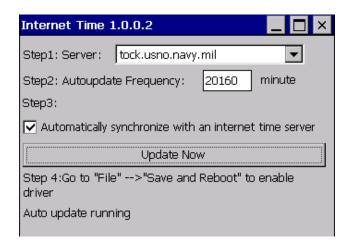
Step 1: Run the PAC Utility



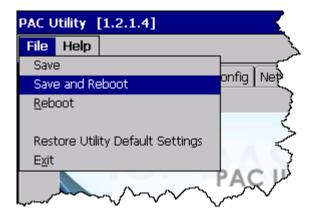
Step 2: On the General tab, press Configure button



- 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

Step 7: Click the Update Now button to synchronize WP-9000-CE7 clock immediately	Step1: Server: tock.usno.navy.mil Step2: Autoupdate Frequency: 20160 minute Step3: Catennatically synchronize with an internet time serve Update Now
	Step 4:30 to "File">"Save and Reboot" to enable driver Auto update running

WP-9000-CE7 Series User Manual, version 1.0.2

Page: 144

X

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.

WP-9000-CE7 Series User Manual, version 1.0.2

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



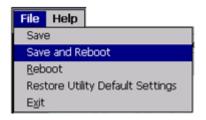
Step 2: On the Login tab of the Network tab, click Login tab, type the User Name and Password, and then click Add button

PAC Utilit	PAC Utility [1.2.2.0]						
File He	elp						
General	General2	Display	IP Config	Network	Device Information	Auto Execution	Rotary Exe 🔳 🕨
Access	Login						
User N		Passwo		Add	Delete		
User	name P	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



WP-9000-CE7 Series User Manual, version 1.0.2

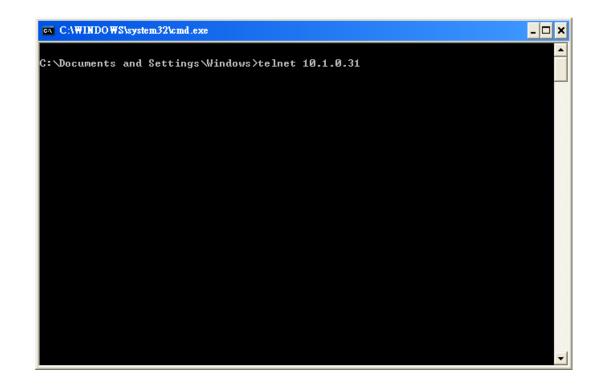
D.2. How to Telnet to Remote Login the WinPAC from PC

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

Windows Catalog Windows Update	Run
Programs Programs Documents Settings Sea	Type the r Internet re. 2. Type "cmd" hent, or It for you.
	Open:
Help t Run Shut Down start C:\WINDOWS\Syste	OK Cancel <u>B</u> rowse

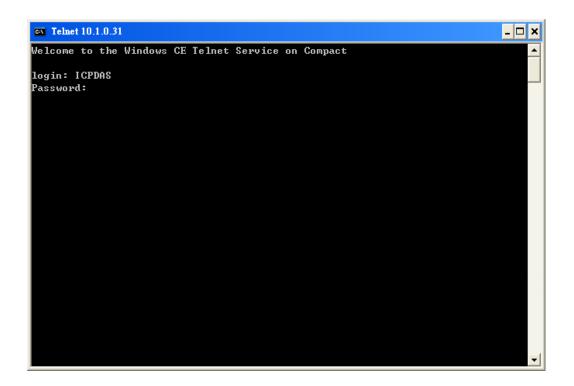
Step 1: On the PC, open a MS-DOS command prompt

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

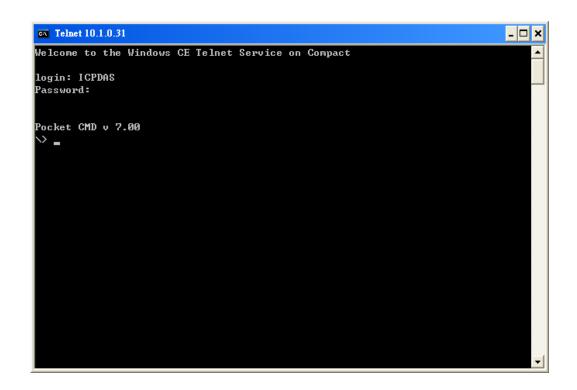


WP-9000-CE7 Series User Manual, version 1.0.2

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



Step 4: The remote login has been completed



WP-9000-CE7 Series User Manual, version 1.0.2

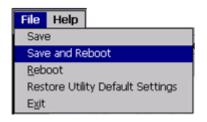
D.3. How to Remove a User Account from the Login List

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

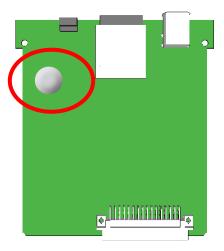
PAC Utility [1.2.2.0]				
File Help				
General General2 Display IP Config	Network	Device Information	Auto Execution	Rotary Exe 🔳 🕨
Access Login				
User Name Password				
ICP DAS	Add	Delete		
User name Password				
ICP DAS ****				

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



E. How to change the battery

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



Checking the current battery power

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

Replacing the battery

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

Ordering information

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

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

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

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

Tips & Warnings



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

The demos can be found on the CD that was provided with the package or by downloading the latest version from ICP DAS web site. CD:\WinPAC_AM335x\wp-5231\demo\3g_modem\autodialer\

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

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

http://ftp.icpdas.com/pub/cd/winpac_am335x/wp-5231/document/faq/development/ W5-13_How_to_use_Auto_dial_GPRS_network_and_redial_when_the_network_disconnected_en

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

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

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

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

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

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

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

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

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

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

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

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

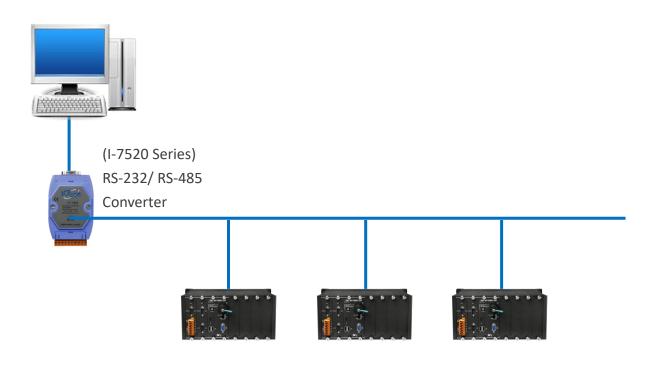
G. Application of RS-485 Network

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

WP-9000-CE7 Series User Manual, version 1.0.2

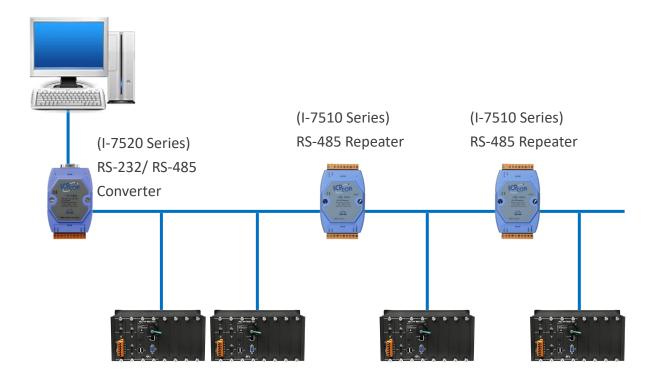
G.1. Basic RS-485 Network

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



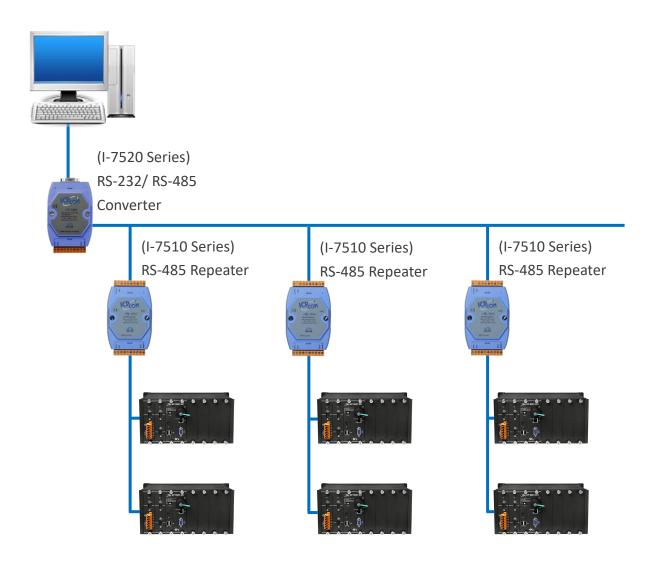
G.2. Daisy Chain RS-485 Network

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



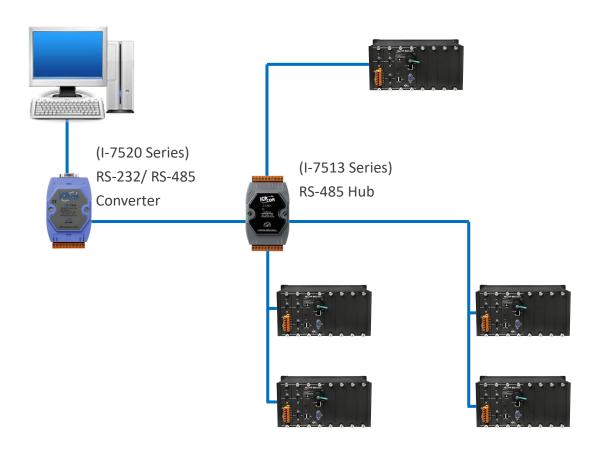
G.3. Star Type RS-485 Network

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



WP-9000-CE7 Series User Manual, version 1.0.2

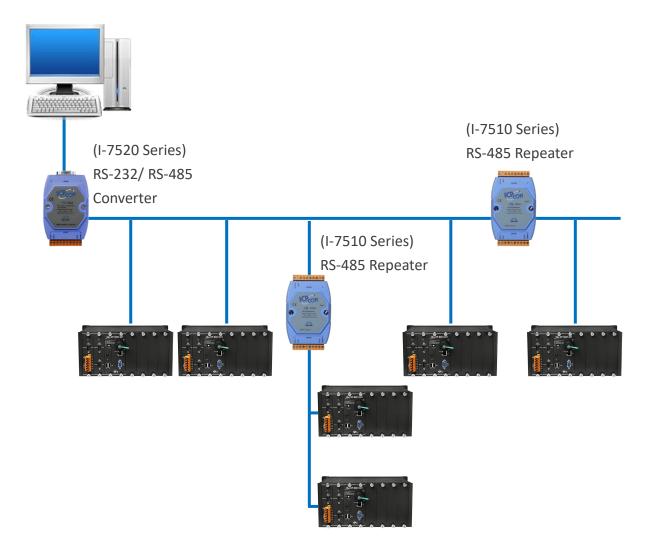
There is a better choice to use 7513 as a RS-485 hub on star type network.



WP-9000-CE7 Series User Manual, version 1.0.2

G.4. Random RS-485 Network

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



G.5. Master/Slaves Settings

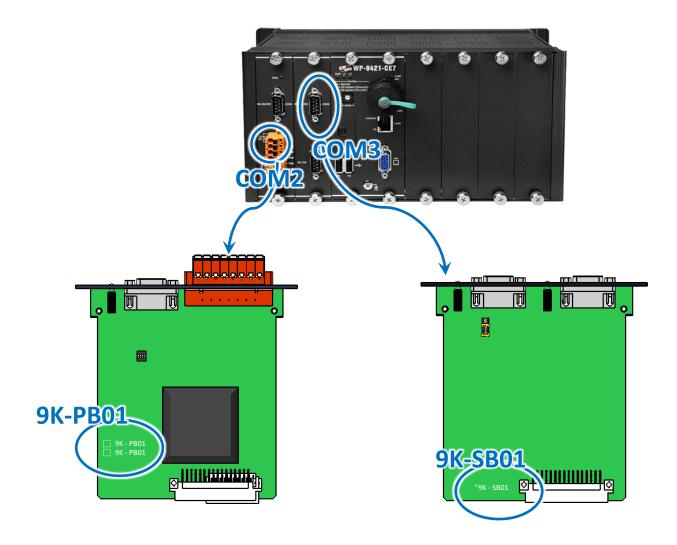
The RS-485 network based on master-slave architecture consists of a single master device and one or more slave devices.

The WinPAC provides two RS-485 communication interfaces based on the master-slave system architecture, COM2 have a pull-high/pull-low resistor, user can set it to master or slave for implementing an RS-485 multi-drop network. COM3 is always set in Master mode.

The termination resistor, with the same value as the line impedance (120 ohm), eliminates the majority of the signal reflection. The WinPAC provides on-board 1200hm termination resistor for each RS-485 port.

The pull-high/pull-low resistor and its termination resistor of COM2 are located on the 9K-PB01 power board, as shown below.

The termination resistor of COM3 is located on the 9K-SB01 board, as shown below.

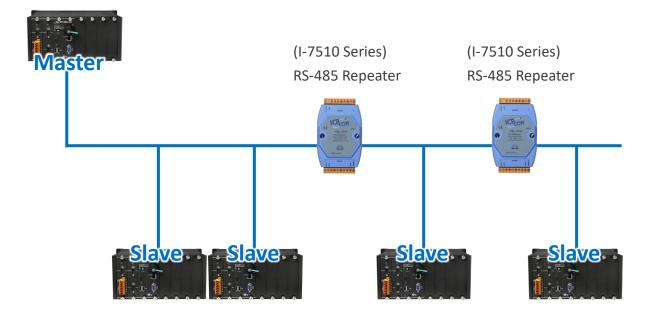


WP-9000-CE7 Series User Manual, version 1.0.2

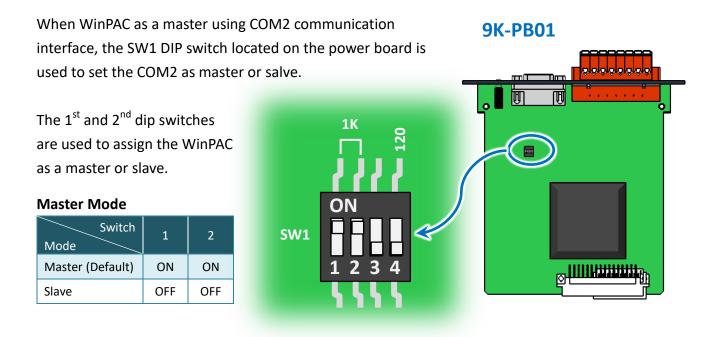
Page: 161

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

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



WP-9000-CE7 Series User Manual, version 1.0.2

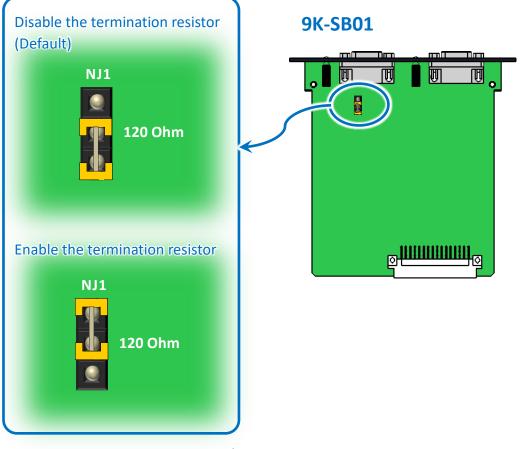


The 3rd dip switch is reserved. The default setting is OFF.

The 4th dip switch is used to enable or disable the termination resistor. The default setting is OFF.

COM3 is always on Master mode

There is a jumper-selectable 120-ohm termination resistor for COM3, as shown below.



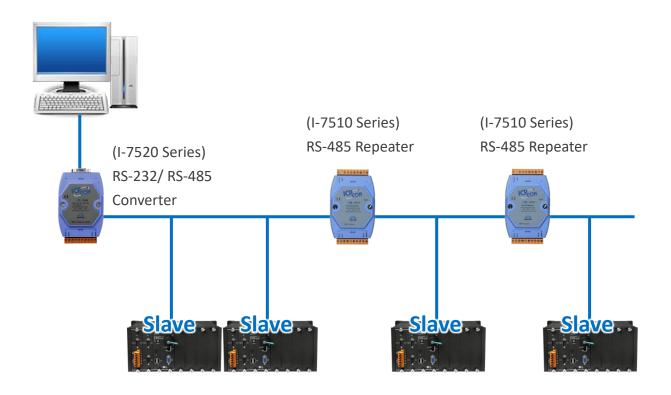
WP-9000-CE7 Series User Manual, version 1.0.2

Page: 163

G.5.2. WinPAC acts as a Slave

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

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



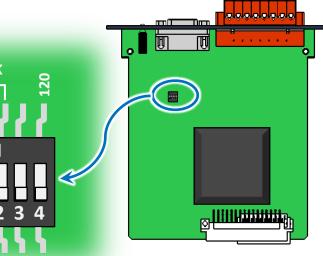
When WinPAC as a master using COM2 communication **9K-PB01** interface, the SW1 DIP switch located on the power board is used to set the COM2 as master or salve.

The 1st and 2nd dip switches are used to assign the WinPAC as a master or slave.

Slave Mode

Switch Mode	1	2
Master (Default)	OFF	OFF
Slave	ON	ON

SW1



WP-9000-CE7 Series User Manual, version 1.0.2

Page: 164

H.Revision History

This chapter provides revision history information to this document.

The table below shows the revision history.

Revision	Date	Description
1.0.0	January 2016	Initial issue
1.0.1	April 2018	Added the information about the 3G/4G applications in Appendix E.
1.0.2	September 2020	Added the appendix about RS-485 network in Appendix F.