

WP-2641M-CE7 User Manual

v1.0.1, February 2020

Service and usage information for



Written by Tunglu Yu Edited by Anna Huang

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1. Introduction

This chapter provides an overview of the WP-2641M-CE7 and its components, and introduces the fundamental concepts for user familiar.



The WP-2641M-CE7 are equipped a Quad-core Cortex-A9, 1GHz/Core and running a windows CE.NET 7.0 operating system. The optional I/O expansion board, XV-board, provides high-protection I/O. Using the built-in Flash and microSD, the WP-2641M-CE7 can save application program, image file and data.

The mobile network module of WinPAC series(Except for WP-2641M-CE7) work on frequencies of WCDMA 900/2100 MHz, TD-SCDMA1900/2100 MHz, CDMA2000 (BC0) 800 MHz, FDD LTE:B1/B3/B8, TDD LTE: B38/B39/B40/B41 and GSM 850/900/1800/1900 MHz, WCDMA 2100/1900/900/850 MHz, FDD LTE:B1/B3/B5/B7/B8/B20 and GSM 850/900/1800/1900 MHz.

1.1. Features

The WP-2641M-CE7 offer the most comprehensive configuration and remote system upgrade solutions to meet specific application requirements. The following list shows the hardware and software features designed to simplify installation, configuration and application.

Windows Embedded Compact 7.0



- Support PC based software: Visual Studio.NET
- Web server, FTP server, Telnet server

Local I/O and Communication Expansion Board



WP-2641M-CE7 is equipped with an I/O expansion bus to support one optional expansion board, called XV-board. It can be used to implement various I/O functions such as DI, DO, A/D, D/A, Timer/Counter

For more information about these available expansion boards, please refer to http://www.icpdas.com/root/product/solutions/hmi touch monitor/touchpad/xv-board selection http://www.icpdas.com/root/product/solutions/hmi touch monitor/touchpad/xv-board selection

Various Memory Expansions

WP-2641M-CE7 provides various memory storage options, such as FRAM and microSD. Customers can choose the memory based on their characteristics.

- 64 KB FRAM: no limit on the number of write-erase cycles.
- microSD/microSDHC: to implement portable data logging applications; supports up to 32 GB.

Unique 64-bit Hardware Serial Number to Protect Your Program

A unique 64-bit serial number is assigned to each hardware device to protect your software against piracy.

Remote I/O Module and Expansion Unit

With the built-in RS-485 and Ethernet port, the WP-2641M-CE7 can connect RS-485/Ethernet remote I/O units (RU-87Pn/ET-87Pn) or modules (I-7000/M-7000/ET-7000).







Plastic and Metal Housing

The WP-2641M-CE7 comes with the metal casing.



> Highly Reliable Under Harsh Environment

Our WP-2641M-CE7 operates in a wide range of temperature and humidity.



- Operating Temperature: -25 ~ +75 °C
- Storage Temperature: -40 ~ +80 °C
- Humidity: 10% ~ 90% RH, non-condensing

1.2. Specifications

The table below summarizes the specifications of the WP-2641M-CE7.

System Software			
OS	Windows CE 7.0 Professional		
Framework Support	.Net Compact Framework 3.5		
Embedded Service	FTP Server, Web Server		
SDK Provided	DII for Visual Studio.Net 2008		
Multilanguage Support	English, German, French, Spanish, Russian, Italian, Korean, Simplified Chinese, Traditional Chinese		
CPU Module			
CPU	Quad-core Cortex-A9, 1GHz/Core		
DDR3 SDRAM	1GB DDR3		
Flash	8 GB eMMC		
MRAM	128 KB		
FRAM	64 KB		
Expansion Elash Momory	microSD socket with one 4 GB microSD card		
Expansion Flash Memory	(support up to 32 GB microSDHC 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		
Rotary Switch	Yes (0 to 9)		
LED Indicators	1 LED for Power, 1 LED for Running, 1 LED for mobile network and 3 LEDs for		
	user defined		
VGA & Communication Ports			
Resolution	640 x 480, 800 x 480, 800 x 600, 1024 x 768		
Ethomat	RJ-45 x 2, 10/100/1000 Base-TX		
Ethernet	(Auto-negotiating, Auto MDI/MDI-X, LED indicators)		
USB 2.0	2		
COM 1	RS-232 (RxD, TxD, and GND); Non-isolated		
COM 2	RS-232 (RxD, TxD, and GND); Non-isolated		
COM 3	RS-485 (Data+, Data-); 2500 V _{DC} isolated		
COM 4	RS-485 (Data+, Data-); 2500 V_{DC} isolated		
I/O Expansion			
I/O Expansion Bus	Yes, one optional XV-board		

Mechanical		
Dimensions (W x H x D)	35 mm x 167 mm x 119 mm	
Housing	Metal	
Installation	DIN-rail mounting	
Environmental		
Operating Temperature	-25 °C to +75 °C	
Storage Temperature	-40 °C to + 80 °C	
Ambient Relative Humidity	10 % to 90 % RH (non-condensing)	
Power		
Input Range	+12 V _{DC} to +48 V _{DC}	
Consumption	4.8 W (0.2 A @ 24 V _{DC})	

1.3. Overview

WP-2641M-CE7 is equipped with several interfaces and peripherals that can be integrated with external systems. Here is an overview of the components and its descriptions.



Front View

Item	Description		
LED Indicators	The WP-2641M-	CE7 has 6	LED indicators shown as below.
	LED Indicator	Color	Meaning
	RUN	Green	Power on and OS is running
	PWR	Red	Power is on.
	L1	Green	
	L2	Orange User programmable LED indicator.	
	L3 Red		

Ethernet Port	connected to a com The Link/Act and 10	7 has an Ethernet por nputer or device via a G LED indicators displ 7. The details are sho	ay the status of
	LED Indicator	State (Color)	Meaning
	1G	ON (Orange)	Network Speed: 1 G
		OFF	Network Speed: 10/100 M
		ON (Green)	The Link is active
	Link/Act	OFF	The Link is inactive
		Blinking(Green)	Network activity
USB Port microSD Card Socket		support for the USI an external USB ha tcan be used to resto	7 has two USB 2.0 port that allows 3 devices such as mouse, keyboard or rd drive. re the WP-2641M-CE7 system and
XV-Board Slot	expand the memory up to 32 GB. The XV-board slot can be used to support up to one XV-board service.		
Pin Assignment		in Signal	Description
		1 TxD 2 RxD 3 GND	COM1 (RS-232)
		4 TxD 5 RxD 6 GND	COM2 (RS-232)
		7 D+ 8 D- 9 ISO.GND	COM3 (RS-485)
		10 D+ 11 D-	COM4 (RS-485)
		12 ISO.GND	



ltem	Description		
VGA Port	A VGA connector is a 3-row 15-pin connector that can be used with a variety of supported VGA resolutions, and the output resolution covers 640x480, 800x480, 800x600, 1024x768.		
Rotary Switch	Rotary Switch is an operating mode selector switch which provides seven functions related to the selection of the operating mode.		
Power Input and	The WP-2641M-CE7 has a terminal with 3pins, there are 2 pins for power		
Frame Ground	input and a pin for frame ground as follows:		
	F.G. P.GND PWR PWR		

1.4. Dimensions

The diagrams below provide the dimensions of the WP-2641M-CE7 to use in defining your enclosure specifications. Remember to leave room for potential expansion if you are using other components in your system.

All dimensions are in millimeters.



2. Getting Started

This chapter provides a guided tour of the WP-2641M-CE7 installation and configuration that describes the steps needed to download, install, configure, and run the basic procedures for user working with the WP-2641M-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-2641M-CE7



WP-2641M-CE7 Quick Start Guide



A microSD card and a micro SD/SD adapter



The following items are included with mobile network expansion card





GPS Active External Antenna (ANT-115-03)

2.1. Mounting the Hardware

The WP-2641M-CE7 has simple rail clips for mounting reliably on a standard 44 mm DIN rail.

Step 1: Mounting WP-2641M-CE7 onto a 44 mm DIN rail



Step 2: Connecting to a PC, the USB device, and the power supply

- i. Connect the mouse or keyboard to the USB port.
- ii. Connect PC to the Ethernet port through an Ethernet switch.
- iii. Connect the power supply (+12 to +48 VDC) to PWR and P.GND terminals.
- iv. Connect the monitor to the VGA port.



2.2. Mounting the Expansion Components/Accessories

2.2.1. Mounting the XV-Board

WP-2641M-CE7 has one expansion I/O slots to expand the functions. For more detailed information about the XV-board specifications, please refer to Appendix B. XV-Board Modules.

Step 1: Remove stripped screws and then remove the cover

Step 2: Hold the XV-board vertically and align the socket, and then carefully press the XV-board onto the I/O expansion bus

Step 3: Fasten the XV-board using the screws supplied



Step 4: Close the cover and then fasten the screws



2.2.2. Inserting the SIM Card

(for Mobile network expansion card had installed)

The SIM card tray is located on the top side of the module. The eject button is on the right side of the tray door.

Step 1: Remove stripped screws and then remove the cover



Step 2: Insert the SIM card into the Socket



Tips & Warnings



Make sure to turn the WP-2641M-CE7 off before inserting or removing the SIM card. Do not bend or scratch the SIM card.

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2.2.3. Installing the antenna

(for Mobile network expansion card had installed)

The Mobile network expansion card has an antenna connector that can be used to connect the 3G/4G antenna. To install the antenna, just screw the antenna tightly into the connector, and put the antenna in the purpose place.



2.3. Configuring the Boot Mode

The WP-2641M-CE7 has several operating modes, which can be selected by a rotary switch.



The table below lists the operation modes available with the WP-2641M-CE7.

Position	Operating Mode
0	Normal mode (Default)
1	Safe mode
2	Debug mode
3	OS update mode by Ethernet
4	Reserve
5	OS update mode by Micro SD
6	
0	Reserve (OS Development Mode)
7~9	User Mode

The following is a brief introduction of these modes.

Normal Mode (Default mode)

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

Safe Mode

Safe mode is a trouble shooting. The mode loads the minimum required device drivers and system services to boot the WP-2641M-CE7.

If you have malicious software or a program caused the WP-2641M-CE7 cannot be boot or run the normal mode, you can boot in safe mode to solve the problem.

Debug Mode

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

Debug mode is unsupported.

OS Update Mode

OS update mode is a way used to update OS. For more information on updating the WP-2641M-CE7 OS image, please refer to section 6.1. 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-2641M-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.

2.4. Using PAC Utility to Manage WinPAC

The PAC Utility is a collection of the WinPAC system tool that allows user quickly and easily manage and configure the WinPAC.

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-2641M-CE7



2.5. Changing the User Interface Language

The Windows CE operating system on the WP-2641M-CE7 comes with several built-in functions.

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



Step 2: Click User Interface Language tab, choose to your local language, and then click OK

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

Step 3: Run the PAC Utility, and then reboot the WinPAC for changes to take effect



2.6. Using DCON Utility Pro to Configure I/O Modules

DCON Utility Pro enables users easily 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





Step 3: Configure the communication settings

COM Port Option	×
COM Port	Timeout
COM0[Backplane]	200 ms
COM1	
COM0[Backplane]	ecksum Format
COM3	
COM2	,2 O E,8,1 O O,8,1
COM4	
OK Cancel	

Tips & Warnings



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



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

DCON Utility Pro	2.0.0.0 for CE7 arm(WP5231) X	
Start Address	0 End Address 1	
ID , td-	Baud Rate Checks Format Status Description	
XV107 214	5200 Disable N,8,1 [Modbus RTU]8*DI + 8*DC	
	XV107 Firmware[0100]	×
	Configuration DO Host WDT DI DI Latch DI Counter About	
	DO Status	
	0 1 2 3 4 5 6 7	
	Set Power On Read DO	
•	Set Safe Value OR Read Safe Value	
L COM:0[N,8,1]		
	Exit	_
		_

×

2.7. Using Dial-up Networking to Make a GPRS Connection

(for Mobile network expansion card had installed)

The Windows CE dial-up networking component driver can be efficiently used to include support for transferring data over GPRS modems in WP-2641M-CE7

Step 1: Click Start menu, point to Settings, click Network and Dial up Connections, and then click Make New Connection



Step 2: Type the name of the connection, select the Connection type as the Dialup connection, and then click Next button



Step 3: Select USB Modem as a modem diver in the select a modem option and then click Configure button



Step 4: Select 115200 in the Baud Rate option and click then click OK button



Step 5: Select Call Options tab, enter the modem dialing settings in the commands field, and then click OK button

The modem dialing settings depends on each of the telecom company. For example, the settings provided by Telecom Company in Taiwan is

+CGDCONT=1,"IP","INTERNET"

and a Telecom Company in China is

```
+CGDCONT=1,"IP","CMNET"
```

Device Properties OK >	×
Port Settings Call Options	
Call Setup ✓ ⊆ancel the call if not connected within 120 seconds ✓ Wait for dial tone before dialing Wait for credit card tone 0 seconds	
Extra Services (special modem commands may be inserted into the dial string) +CGDCONT=1, "IP", "INTERNET"	

Step 6: Select Phone Number tab, enter the phone number settings in the Phone number option, and then click OK button

The phone number settings should fit the Telecom Company's setting. For example, the following setting is for Telecom Company in Taiwan.

*99***1#

My Connection Propert	ties OK 🗙	
Modem Phone Number		
My Connection		
 Country/region code:	1	
<u>A</u> rea code: <u>P</u> hone number:	*99***1 #	>
Eorce long distance		

Step 7: Double-click the new connection that you have created, and enter the User name and Password, and then Click Connect button

Make Ni V My VIN2 LAN1 Connection
Dial-Up Connection
Et a
User Name: guest *99***1#
Password: Work
Domain. , Dial Properties
Save password Connect Cancel

Step 8: Wait for the connection to be established



Tips & Warnings



3. Tools and Tasks

This chapter provides a brief introduction of the WP-2641M-CE7 service tools and its benefits.

There are several tools and utilities built-in and designed for use with WP-2641M-CE7. Some of these are pre-installed on WP-2641M-CE7 and can work directly on WP-2641M-CE7, and some of these are supporting tools and can help you to manage the WP-2641M-CE7 remotely on a PC.

The following tools are pre-installed on WP-2641M-CE7 and can work directly on WP-2641M-CE7 that can be found by downloading the latest version from ICP DAS web site.




The following tools are supporting tools for remote managing the WP-2641M-CE7 used on PC that can be found by downloading the latest version from ICP DAS web site.

http://ftp.icpdas.com/pub/cd/winpac_imx6/wp-2641/pc_tools/



3.1. PAC Utility

PAC Utility is a collection of software applications that enable management and configuration of WinPAC system and features.



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	• Display
	• IP Config
	• Network
	Device Information
	• Auto Execution
	Rotary Execution

3.1.1. Menu Bar – File

File Help	
Save	
Save and Reboot	
<u>R</u> eboot	
Restore Utility Default Setting	ļs
E <u>x</u> it	

The menus use to	How to use
Reboot	Restarts the WinPAC
Restore Default Settings	Restore the settings of WinPAC to its default.
Exit	Exits the PAC Utility.

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3.1.2. Menu Bar – Help





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

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 the taskbar	Auto-Hide:
	Select the Auto Hide check box.
	Lock:
	Select the Always On Top check box.
Auto save or manual save to flash	By default, these options are unavailable.
	Auto save to flash:
	This option is checked by default.
	Any changes made to the WP-2641M-CE7 will be saved and
	only take effect after the WP-2641M-CE7 reboots.
	Manual save to flash:
	This option is useless.
Check the status of the battery	See the Battery1 field that displays the display resolution.
Automatic synchronization of	Refer to the Appendix A.2. How to Automatically Synchronize
system time	WinPAC Clock with an Internet Time Server.

3.1.4. Property Tab – Display

The Display tab provides functions to configure the monitor settings.

PAC Utilit	y [1.2.	0.6]					_	_ 🗆 ×
File He	lp							
General	Display	IP Config	Network	Device Info	rmation	Auto Execution	Rotary Execution	
								_
		n resolutior	n: 800 x 60		S	creen refresh rat	e:	
	Less	, , , 800 by	00 pixels	More	7	0	•	
] [Apply]

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

3.1.5. 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 Uti	lity [1.2.	.0.6]				_	. 🗆 ×
File I	lelp						
Genera	l Display	IP Config	Network	Device Information	Auto Execution	Rotary Execution	
	LAN 1:						
	MAC Addr	ess: 78-C5	-E5-88-96-	-8C			
	🔘 Use DH	HCP to get I	P address				
	🔿 Assign	IP address					
	IP Addres	s: 10.1.	J.86				
	Mask:	255.2	55.0.0				
	Gateway:	10.1.	0.254				
	DNS Serve	er: 10.0.	0.3				
	Reboot f	for changes	to take ef	fective			
			Арр	ly			

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

3.1.6. 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.	.2.0.6]
File Help	
General Displa	ay IP Config Network Device Information Auto Execution Rotary Execution
Access Login	File Server Settings
	FTP 💿 Enable 🔿 Disable
	Allow Anonymous 💿 Enable 🔿 Disable
	Set FTP default download directory to:
	\Temp Apply
[Set HTTP document root directory to:
	\windows\www\wwwsub Apply

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

The tab use to	How to use
Set the FTP	Enter a new path in the Set FTP default download directory to: field, and then
directory path	click the Apply button.
Set the HTTP	Enter a new path in the Set HTTP document root directory to: field, and then
directory path	click the Apply button.

Login

The Login tab provides functions to maintain the FTP accounts.

PAC Utility [1.2.0.6]
File Help
General Display IP Config Network Device Information Auto Execution Rotary Execution
Access Login File Server Settings
User Name Password
User name Password
ICPDAS ****

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

File Server Settings

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 serv retrieve files, and makes use of the I client devices and other shared equip Settings	internet for communication between
	Configure the file server to use LANx as the network adapter
	CPSW3G1
	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.

3.1.7. Property Tab – Device Information

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

PAC Utility [1.2.0.6	6]		
File Help			
General Display IP	Config Network	Device Information	Auto Execution Rotary Execution
Slot 1: [CPU Type:	WP523x
Slot 2: [Serial Number:	01-A8-2C-1F-16-00-00-20
Slot 3: [E	Backplane Version:	N/A
Slot 4: [CPU Version:	N/A
Slot 5: [OS Version:	1005
Slot 6: [E	Eboot Version:	5.2.5.25
Slot 7: [NET CF Version:	3.5.7338.00
	9	SQL CE Version:	3.5.8154.0
	F	PACSDK Version:	4.3.2.1

3.1.8. Property Tab – Auto Execution

The Auto Execution tab provides functions to configure programs running at WinPAC 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.

AC Utility [1.2.0.6]			_ 🗆 ×
File Help			
General Display IP Cont	fig Network C	Device Information Auto Execution Rotary Exec	tution
	Program 1:	\System_Disk\Tools\Vcep\v_remote.exe	Browse
	Program 2:	\System_Disk\Tools\PAC_Utility\PAC_Utility,	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	DIV

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

3.1.9. Property Tab – Rotary Execution

The Rotary Execution tab provides functions to configure programs running at WinPAC startup in one of the user defined mode, it allows users to configure ten execute files at most.

PAC Utility [1.2.0.6]			_ 🗆 ×
File Help			
General Display IP Cor	nfig Network Device	e Information Auto Execution Rotary Exe	cution
	Rotary Switch 0	Normal Mode	Browse
6789	Rotary Switch 1:	Safe Mode	Browse
S S S	Rotary Switch 2:	Debug Mode	Browse
52	Rotary Switch 3:	OS update mode by Ethernet	Browse
	Rotary Switch 4:	Reserved	Browse
	Rotary Switch 5:	OS update mode by Micro_SD	Browse
	Rotary Switch 6:	Reserved	Browse
	Rotary Switch 7:		Browse
	Rotary Switch 8:		Browse
	Rotary Switch 9:		Browse
		Ар	ply

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

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 detailed information on how to use DCON Utility Pro to configure I/O modules, please refer to "2.4. Using DCON Utility Pro to Configure I/O Modules"

DCON Utility Pro 2.0.0.0 for CE7 arm(WP5231)	×
Start Address 0 End Address 1	
ID Addr Baud Rate Checks Format Status Description	
	►

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.



3.4. VCEP

ICPDAS VCEP is designed for managing your WinPAC anywhere. No matter where you are, ICPDAS VCEP provides a convenient environment on the Desktop PC and lets you control your WinPAC remotely.

ICPDAS VCEP is composed of two main components: The "Server" which runs on WinPAC 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 <u>http://ftp.icpdas.com.tw/pub/cd/winpac/napdos/wp-8x4x_ce50/pc_tools/vcep_5.0.0.0/</u>

v 1.0.1

3.5. Remote_Display

The "Remote Display" allows WinPAC 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 WinPAC. The client is a PC-based program named cerhost.exe running on the PC.

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#

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

3.7. RegEdit

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

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

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			
		Format	Help	
I				
				Input Panel
				[5sc]1]2]3]4]5]6]7[8]9]0]- = 4 Tab q]w e r t]y u i 0 p []3
_				CAP_a s d f g n j k l ; ' Shift [z × c ∨ b n m , . / ←
				[Cti]áü]`]\] ↓[↑]←]-

4. Your First WinPAC 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 the WP-2641M-CE7.

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

Development Tools

WP-2641M-CE7 are Windows CE-based units. Windows CE is a mature embedded operating system which supports rapid development.

The table below lists the supported development tools and development languages to develop WP-2641M-CE7 applications.

Development Tools	Languages	Visual Basic.Net	Visual C#	Visual C++
Visual Studio 2005	Any versions except Professional	-	-	-
or earlier	Professional	-	-	-
Visual Studio 2008	Any versions except Professional	-	-	-
	Professional	V	V	V
Visual Studio 2012	Any versions except Professional	-	-	-
or later	Professional	-	-	-

4.1. Preparing the Development Tools

WP-2641M-CE7 is a Windows CE-based unit. Windows CE is a mature embedded operating system which supports rapid development. The standard development tool is list as follows which is highly integrated, with comprehensive support for developing applications of Windows CE-based WP-2641M-CE7.

Visual Studio 2008



WP-2641M-CE7 has .NET Compact Framework 3.5 installed. Visual Studio 2008 takes full advantage of the .NET Compact Framework, which uses public Internet standards to enable integration with new and existing applications running on any platform. Supported languages include Visual C#, Visual C++ and Visual Basic .NET.

Installation Steps:

1. Visual Studio 2008 Professional

Purchase from MSDN subscription

Microsoft DreamSpark: https://www.dreamspark.com/Product/Product.aspx?productid=1

2. Visual Studio 2008 Service Pack 1

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

3. Visual Studio 2008 update for Windows Embedded Compact 7

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

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

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

4.2. Installing WP-2641M-CE7 SDK

The WinPAC SDK is a Software Development Kit (SDK) that contains C header files, C libraries and documents.

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

The installation program for the latest version of the WinPAC Platform SDKs can be obtained from: http://ftp.icpdas.com/pub/cd/winpac_imx6/wp-2641/sdk/platformsdk/

File name: File name: GuruCE_imx6_SDK_CE7_yyyymmdd.msi yyyymmdd: platform sdk released date

Step 2: Follow the prompts until the installation is complete

Step 3: Execute the "VisualStudioDeviceWindowsEmbeddedCompact7.msi"

The VisualStudioDeviceWindowsEmbeddedCompact7.msi can be obtained from: http://ftp.icpdas.com/pub/cd/winpac_imx6/wp-2641/sdk/platformsdk/

Step 4: Execute any VS2008 C++ project include the GuruCE_imx6_SDK (ARMv4I) platform and the click the "Tools"->"Options..."



Step 5: Click the "Projects and Solutions"->"VC++ Directories" and then select the

"GuruCE_imx6_SDK (ARMv4I)" < "Include files" at "Platform:" and "Show directories for:" item

Options		? 🔀
- Environment	Platform:	Show directories for:
Projects and Solutions	GuruCE iMX6 SDK (ARMv4I)	Include files 👻
-General Build and Bun		✓ ★ ★ ★
- Build and Run - VB Defaults - VC++ Directories - VC++ Project Settings Source Control - Text Editor Database Tools Debugging Device Tools - HTML Designer - Office Tools	\$(VCInstallDir)ce\include \$(VCInstallDir)ce\atImfc\include C:\Program Files\Windows CE Tools\SD C:\Program Files\Windows CE Tools\SD \$(VSInstallDir)SmartDevices\SDK\SQL	Ks\GuruCE iMX6 SDK\include\ARMv4I Ks\GuruCE iMX6 SDK\include
Test Tools Text Templating	×	>
Windows Forms Designer Workflow Designer	Include Directories Path to use when searching for include fi Corresponds to environment variable INC	les while building a VC++ project.
		OK Cancel

Step 6: Add the path "\$(VCInstallDir)ce7\include" and "\$(VCInstallDir)ce7\atImfc\include" and then click the OK button.

Platform:	Show directories for:
GuruCE iMX6 SDK (ARMv4I)	Include files 🗸 🗸
	✓ ➡ × + +
\$(VCInstallDir)ce\include \$(VCInstallDir)ce\atlmfc\include C:\Program Files\Windows CE Tools\SD C:\Program Files\Windows CE Tools\SD \$(VSInstallDir)SmartDevices\SDK\SQL	Ks\GuruCE iMX6 SDK\include

Tips & Warnings

The path "\$(VCInstallDir)ce7\include" and "\$(VCInstallDir)ce7\atImfc\include" must be on the top of box.

4.3. First WinPAC Program in VB.NET

The best way to learn programming with WinPAC is to actually create a WinPAC program.

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

All main steps will be described in the following subsection.

In this tutorial, we will assume that you have installed WP-2641M-CE7 SDK on PC and used the Visual Studio 2008 for application development.

4.3.1. 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: Run the Visual Studio 2008

Visual Studio 2008



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



Step 3: In the Project types pane, expand Visual Basic, and then click Smart Device

Step 4: In the Templates pane, click Smart Device

Step 5: Type a name in the Name field, and then click OK

Here we will enter the name "SDKInformation" and a different location for the project if you wish

New Project				? 🔀
Project types: ✓ Visual Basic Windows ✓ Web ✓ Smart Devi → Office ✓ Database ← Reporting ← Test ← Workflow ✓ Visual C# ↔ Visual C++ ↔ Other Project T ↔ Test Projects		Templates: Visual Studio installed templates Smart Device Project My Templates Search Online Templates	NET Framework 3.5	
A project for Smart	Device applications. (Choose target platform, Framework version, and tem	plate in the next dialog box.	
<u>N</u> ame:	SDKInformation			
Location:	C:\Documents and S	ettings\Windows\My Documents\WM_Windows4 M	ly Documents 🛛 🔽 🌔	<u>B</u> rowse
Solution Na <u>m</u> e:	SDKInformation	Create <u>d</u> in	ectory for solution	
			OK	Cancel

Tips & Warnings



The WCE7 only support .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 7: in the .NET Compact Formwork version item, choose .NET Compact Framework Version 3.5

Step 8: in the Templates pane, choose Device Application, and then click Next

Add New Smart Device Project -	SDKInformation	? 🛛
Target platform: .NET <u>C</u> ompact Framework version: <u>T</u> emplates:	Windows CE .NET Compact Framework Version 3.5	
Application A	Console Control Empty Project pplication Library	Description: A project for creating a .NET Compact Framework 3.5 forms application for Windows CE Platform
Download additonal emulator images	s and smart device SDKs	OK Cancel

4.3.2. Specify the Path of PAC Reference

The PAC SDK provides a complete solution to integrate with WP-2641M-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 and copy it to the project folder

The PACNET.dll can be obtained from the link below that has been provided by downloading the latest version from ICP DAS web site. http://ftp.icpdas.com/pub/cd/winpac_imx6/WP-2641/sdk/pacnet/



Step 2: In Solution Explorer, right-click the References node, and then click Add Reference...

Solution Ex	cplore	er - MyPorject	×
	¢ [¥ 🗉 🖧	
	m My	Porject' (1 project)	٦
🖻 📲 🕅		Build	
		R <u>e</u> build	
		Deploy	
		Clea <u>n</u>	
		A <u>d</u> d >	
		Add Reference	
		Add Web Reference	
	æ,	<u>V</u> iew Class Diagram	
		Set as StartUp Project	
		Debug 🕨	
	*	Cut	
	8	Paste	
	\times	Remo <u>v</u> e	
		Rena <u>m</u> e	
		Unload Project	
	Ĩ	Open Folder in Windows Explorer	
		Change Target Platform	
		Properties	
	_		
Resource	View	Solution Explorer 🐼 Class View	

dd Reference		?
NET Projec	ts Browse Recent	
	🔁 SDKInformation 🛛 🔽 🌀 🌮 🖽 •	•
🛅 bin 🍋 My Projec	t	
Dobj	an	
<u>N</u> ame:	PACNET.dll	~
<u>N</u> ame: File types:	PACNET.dll Component Files (*.dll;*.tlb;*.olb;*.ocx;*.exe)	*

Step 3: Select Browse tab and add the PACNET.dll

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: From the Toolbox, drag a Button control onto the form



Step 2: Right-click the Button control, and then click Properties

	orm1.vb [Design]*	Start Page	
Form1			
ę	P		
2	Button1 þ		7
3.25		View <u>C</u> ode	
	<u>_</u>	Bring to Front	
		Send to Back	
	-	Align to Grid	
		Lock Controls	
		Select Form1'	
	*	Cut	
		Сору	11
	EL.	Paste	6
10	×	Delete	>
🛓 mainMenul		P <u>r</u> operties	

Step 3: In the Properties window, type Check the SDK version, and press ENTER to set the Text property



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.

2	SDKInformation*	Form1.vb [Design]*	₹×
	Form1		^
Step 1: Double-click the button on the form	<u>}</u>	heck the SDK Version	
	x		~
	< <u> </u>		>
	喜 mainMenul		
Step 2: Inserting the following code			
Dim data(30) As Byte			
PACNET.Sys.GetSDKVersion(data)			
MessageBox.Show(PACNET.MISC.WideS	String(data))		
□Public Class Form1			
 Private Sub Button1_Click(ByVal sender As System.Object, By Dim data(30) As Byte PACNET.System.GetSDKVersion(data) MessageBox.Show(PACNET.MISC.WideString(data)) End Sub End Class 	Val e As System.EventA	rgs) Handles Button1.Click	

Tips & Warnings

The "PACNET" of "using PACNET" is case- sensitive.
4.3.5. Upload the Application to WinPAC

WinPAC supports FTP server service. You can upload files to WinPAC or download files from a public FTP server.



Step 1: On the Build menu, click Build SDKInformation



Step 2: Open the browser and type the IP address of WinPAC

Step 3: Upload the SDKInformation.exe application and the corresponding PACSDK.dll and PACNET.dll files to WinPAC

Tips & Warnings



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

<u>F</u> ile	<u>E</u> dit	<u>V</u> iew	<u>G</u> o	F <u>a</u> vorites	
]]A <u>d</u> dr	ess NTe	emp			
ą	\$	*			
PACN	ET.dll	PACSDK	.dl ŝ	DKInformati on.exe	

4.3.6. Execute the Application on WinPAC

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



4.4. First WinPAC Program in Visual C#

The best way to learn programming with WinPAC is to actually create a WinPAC program.

The example below demonstrates how to create a demo program running on WinPAC with C#.

To create a demo program with 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 WinPAC
- 6. Execute the application on WinPAC

All main steps will be described in the following subsection.

4.4.1. Create a New Project

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

Step 1: Run the Visual Studio 2008

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#, and then click Smart Device

Step 4: In the Templates pane, click Smart Device

Step 5: Type a name in the Name field, and then click OK

Here we will enter the name "SDKInformation" and a different location for the project if you wish.

New Project				? 🗙
Project types:		Templates:	.NET Framework 3.5	▼
 Pisual Basic Visual C# Windows Web Smart Devi Office Database Reporting Test WCF Window Wisual C++ Other Project T Test Projects 		▼isual Studio installed templates Image: Studio Studio Image: Studio Studio My Templates Image: Search Online Templates		
A project for Smart	Device applications. C	Choose target platform, Framework version, and template	in the next dialog box.	
<u>N</u> ame:	SDKInformation			
Location:	C:\Documents and S	ettings\Windows\My Documents\WM_Windows4 My Do	cuments 💌	<u>B</u> rowse
Solution Na <u>m</u> e:	SDKInformation	Create directory	/ for solution	
			OK	Cancel

Step 7: in the .NET Compact Formwork version item, choose .NET Compact Framework Version 3.5

Step 8: in the Templates pane, choose Device Application, and then click Next

Add New Smart Device Project -	SDKInformation	? 🔀
Target platform: .NET <u>C</u> ompact Framework version: <u>T</u> emplates:	Windows CE NET Compact Framework Version 3	× 5 ×
	Console Control Empty Pro	pject Description: A project for creating a .NET Compact Framework 3.5 forms application for Windows CE Platform
Download additonal emulator images	and smart device SDKs	OK Cancel

Tips & Warnings

The WCE7 only support .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.

v 1.0.1

4.4.2. Specify the Path of PAC Reference

The PAC SDK provides a complete solution to integrate with WP-2641M-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 and copy it to the project folder

The PACNET.dll can be obtained from the link below that has been provided by downloading the latest version from ICP DAS web site. http://ftp.icpdas.com/pub/cd/winpac_imx6/WP-2641/sdk/pacnet/



Step 2: In Solution Explorer, right-click the References node, and then click Add Reference...

Solution Explorer			×
Solution SDKIr		ation' (1 project)	
SDXInfor SDXInfor Proper Refere: Form1 For For Form2 For Form4 Form4		Build Rebuild Deploy Clean	
- 🕍 Progra		A <u>d</u> d	
		Add Reference	
		Add Web Reference	
	岛	<u> </u>	
		Set as StartUp Project Debug	
	× 🖉 ×	Cut Paste Remo <u>v</u> e Rena <u>m</u> e	
		Unload Project	
	ГĨ	Open Folder in Windows Explorer	
		Change Target Platform	
		Properties	
Resource View	Sol	ution Explorer 🙀 Class View	

? × Add Reference Projects Browse Recent NET 🔽 🔇 🦻 📂 🛄 -Location: C SDKInformation 🛅 bin 🛅 My Project 🛛 🚞 obj S PACNET.dll Name: PACNET.dll Y File types: Component Files (*.dll;*.tlb;*.olb;*.ocx;*.exe) ¥ OK Cancel

Step 3: Select Browse tab and add the PACNET.dll

4.4.3. 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: From the Toolbox, drag a Button control onto the form



Step 2: Right-click the Button control, and then click Properties

_			
j b	utton1		
0		View <u>C</u> ode	
	G	Bring to Front	
	2	Send to Back	
		Align to Grid	
		Lock Controls	
		Select Form1'	
	*	Cut	
	Ba	Сору	
	123	Pasta	
	×	Delete	
		Properties	>
🛓 mainMenul			

Step 3: In the Properties window, type Check the SDK version, and press ENTER to set the Text property

		×
Forms.Button		•
		^
Control		
Tahoma, 10pt		
ControlText		
Check the SDK Version	*	
(none)		v
	Control Tahoma, 10pt ControlText Check the SDK Version	Control Tahoma, 10pt ControlText Check the SDK Yersion

4.4.4. 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));

```
mamespace SDKInformation
{
    public partial class Form1 : Form
    {|
        public Form1()
        {
            InitializeComponent();
        }
        private void button1_Click(object sender, EventArgs e)
        {
            byte []data = new byte[30];
            PACNET.Sys.GetSDKVersion(data);
            MessageBox.Show(PACNET.MISC.WideString(data));
        }
    }
}
```

4.4.5. Upload the Application to WinPAC

WinPAC supports FTP server service. You can upload files to WinPAC or download files from a public FTP server.



Step 1: On the Build menu, click Build SDKInformation



Step 2: Open the browser and type the IP address of WinPAC

Step 3: Upload the SDKInformation.exe application and the corresponding PACSDK.dll and PACNET.dll files to WinPAC

Tips & Warnings



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

<u>F</u> ile	<u>E</u> dit	<u>V</u> iew	<u>G</u> o	F <u>a</u> vorites	
]]A <u>d</u> dr	ess NTe	emp			
ą	\$	*			
PACN	ET.dll	PACSDK	.dll §	DKInformati on.exe	

4.4.6. Execute the Application on WinPAC

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



4.5. First WinPAC Program in Visual C++

The best way to learn programming with WinPAC is to actually create a WinPAC program.

The example below demonstrates how to create a demo program running on WinPAC 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. Specify the path of the PAC reference
- 4. Add the control to the form
- 5. Add the event handling for the control
- 6. Upload the application to WinPAC
- 7. Execute the application on WinPAC

All main steps will be described in the following subsection.

Tips & Warnings



Before beginning a new project, the "Embedded Compact 7 ATL Update" must be installed. If this update is not installed, the error message "atlconv.h error C2039: lstrlenW" will be displayed after the program is compiled.

The update can be found by downloading the latest version from Microsoft.

http://download.microsoft.com/download/9/D/D/9DDBD3EC-A43C-4BCE-A7A9-AEE9B1007 BCE/VisualStudioDeviceWindowsEmbeddedCompact7.msi

v 1.0.1

4.5.1. 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: Run the Visual Studio 2008

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++, and then click Smart Device

Step 4: In the Templates pane, click MFC Smart Device Application

Step 5: Type a name in the Name field, and then click OK

Here we will enter the name "SDKInformation" and a different location for the project if you wish

New Project	🖉 Visual St	U dio 2008		X
Project types: Visual C++ ATL CLR General MFC Smart Device Test Win32 > Other Languag > Other Project Ty > Test Projects	es	Templates: Visual Studio installed templates ATL Smart Device Project MFC Smart Device Application Win32 Smart Device Project My Templates Search Online Templates	MFC Smart Device	
An application for Name:	Windows Mobile and ot SDKInformation	her Windows CE-based devices that	uses the Microsoft Foundation C	ilass Library
Location:	C:\Users\Administrat	or\Documents\Visual Studio 2008\I	Projects	▼ Browse
Solution Name:	SDKInformation		Create directory for solution	n
				OK Cancel

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

MFC Smart Device	Application Wizard - SDKInformation ?
Welcome FC Wizard	e to the MFC Smart Device Application
Overview Platforms Application Type Document Template Strings 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.

Step 7: On the next page of the wizard, select GuruCE_imx6_SDK to be added to the project, and then click Next

MFC Smart Device	Application Wizard - SDKInformation ?
Platform	5
Overview Platforms Application Type Document Template Strings User Interface Features Advanced Features Generated Classes	Select platform SDKs to be added to the current project. Installed SDKs: Pocket PC 2003 Smartphone 2003 Windows Mobile 5.0 Pocket PC SE Windows Mobile 5.0 Smartphone XPacSDK_CE W8x8xGM1 PAC270 AM335x_WINCE7_SDK GuruCE iMX6 SDK Instruction sets: ARMv4I
	< Previous Next > Finish Cancel

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

MFC Smart Device Applie	ation Wizard - SDKInformation		? X
Applic	ation Type		
Overview	Application type:	Use of MFC:	
Platforms	\bigcirc <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			
Generated Classes	Resource <u>l</u> anguage: 英文 (美國)		
		< Previous Next > Finish	Cancel
		Filibil	Cuncer

Step 9: On the next page of the wizard, click next

User Iı	nterface Features	
Overview	Command bar:	
Platforms	Menus only	
Application Type	O Menus and buttons	
Document Template Strin	ngs	
User Interface Features	Status ba <u>r</u>	
Advanced Features	Dialog title:	
Generated Classes	SDKInformation	

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

AFC Smart Device Application Wizard - SDKInformation				
Advar	nced Features			
Overview	Advanced features:			
Platforms	□ Windows Help			
Application Type	□ Printing and print preview			
Document Template St	rings 🗌 ActiveX controls			
User Interface Features	□ <u>W</u> indows sockets			
Advanced Features Generated Classes	Number of files on recent file list:			
	< Previous Next > Finish	Cancel		

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

	ated Classes	
Overview Platforms Application Type Document Template Stri	Generated classes: CSDKInformationApp CSDKInformationDlg	
User Interface Features Advanced Features Generated Classes	, Class name: CSDKInformationApp Base class: CWinApp	.h fil <u>e</u> : SDKInformation.h .cpg file: SDKInformation.cpp

4.5.2. 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 then on the Pocket PC 2003 (ARMV4) configuration toolbar, select GuruCE_imx6_SDK(ARMv4I), as shown in the following illustration.

Release 🔹	GuruCE iMX6 SD: 🔻 对 main	- C
nDlg.cop	GuruCE iMX6 SDK (ARMv4I)	集國)] - Dialog

4.5.3. Specify the Path of PACSDK library and header files

The PAC SDK provides the PACSDK library and header files with WP-2641M-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: Right-click the project name, and then click Properties

lution Explorer - SDKInfo	rmation
1 1 2 3	
灵 Solution 'SDKInformation' (1 project)
BOKInformation	Build Rebuild
h Resource.h Resourceppc.h M SDKInformation	Depl <u>o</u> y Clean
b SDKInformation SDKInformation SDKInformation	Project Only
🛅 SDKInformation 😫 SDKInformation	Custom <u>B</u> uild Rules Tool Build Order
SDKInformation stlafx.cpp istlafx.h	A <u>d</u> d ► References Add Web Reference
Æ	
	Set as StartUp Project Debug
×	
>	K Remo <u>v</u> e
	Rename Unload Project
Ó	Open Folder in Windows Explorer
	Properties

Step 2: In left pane, expand Configuration Properties, and then click Link

Step 3: In the right pane, choose the PACSDK_CE.lib in the Additional Dependencies item

SDKInformatio	n Property Pages						? 🛛
<u>C</u> onfiguration:	Active(Debug)	~	<u>P</u> latform:	Active(XPacSDK_	_CE (x86))	*	Configuration Manager
Inp 	ion Properties l ging ment ut nifest File bugging tem timization bided del IDL vanced mmand Line ces locument Generator .information	Additional D Ignore All D. Ignore Speci Module Defi Add Module Embed Mana Force Symbo Delay Loade Assembly Lin Assembly Lin Additional D Specifies additio	efault Librar fic Library nition File to Assembly ged Resourd I References d DLLs nk Resource	ies r re File :	PACSDK.lib No (ex: kernel32.lib); conf	iguration spe	wific.
					- Bi	定 (取消 套用(点)

Step 4: In the right pane, choose the following path in the "Additional Include Directories" item

C:\Program Files\Windows CE Tools\SDKs\GuruCE imx6 SDK\Include\Armv4i C:\Program Files\Microsoft Visual Studio 9.0\VC\ce7\atImfc\include

SDKInformation Prope	erty Pages	?×
Configuration: Active(Re	elease) 🛛 🖌 Platform	: Active(GuruCE iMX6 SDK (ARMv4I)) Configuration Manager
Configuration Propertie Configuration Propertie Configuration Propertie Configuration Propertie Coeneral Debugging Deployment C/C++ Coeneral Optimization Preprocessor Code Genera Language Precompiled Output Files Prowse Infon Advanced Command Li Linker Resources XML Documen Browse Inform Ruid Evente Number State	Additional Include Directories Resolve #using References Debug Information Format Suppress Startup Banner Warning Level Detect 64-bit Portability Issues Treat Warnings As Errors Additional Include Directories	C:\Program Files\Windows CE Tools\SDKs\GuruCE iMX(Program Database (/Zi) Yes (/nologo) Level 3 (/W3) No No void No No No No No Yes (include path; use semi-colon delimited list if more than one. (/I[pa
		確定 取消 套用(A)

4.5.4. 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: In Resource View, expand the resources tree by opening the top level folder

Step 2: Open the Dialog folder and then double-click the dialog resource name IDD_SDKINFORMATION_DIALOG



The resource editor appears in the right pane.

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



Step 4: Right-click the Button control, and then click Properties



Step 5: In the Properties window, type Check the SDK version, and press ENTER to set the Text property

Properties		×
IDC_BUTTON1 (Butto	n Control) ICeButtonEditor	•
21 🗐 🖋 🔟		
🖻 Appearance		^
Caption	Check the SDK version	
Client Edge	False	
Horizontal Alignment	Default	
Modal Frame	False	
Multiline	False	
Notify	False	
Static Edge	False	
· · · · · ·		1000

4.5.5. 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

F	SDKInformation	
	Check the SDK version	
	TODO: Place dialog controls here.	
	J	

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); void CSDKInformationDlg::OnBnClickedButton1() { // TODO: Add your control notification handler code here char sdk_version[32]; TCHAR buf[32]; pac_GetSDKVersion(sdk_version); pac_AnsiToWideString(sdk_version, buf); MessageBox(buf,0,MB_OK);

Step 3: Inserting the following code into the header area

#include "PACSDK.h"

	<pre>#include #include</pre>	"stdafx.h" "SDKInformation.h" "SDKInformationDlg.h" "PACSDK.H"
--	------------------------------	---

4.5.6. Upload the Application to WinPAC

WinPAC supports FTP server service. You can upload files to WinPAC or download files from a public FTP server.



Step 1: On the Build menu, click Build SDKInformation



Step 2: Open the browser and type the IP address of WinPAC

Step 3: Upload the SDKInformation.exe application to WinPAC



4.5.7. Execute the Application on WinPAC

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



5. APIs and Demo Programs

This chapter provides a brief overview of PAC APIs and demo programs that have been designed for ICP DAS PACs.

ICP DAS provides a set of demo programs in different programming languages. You can examine the sample 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"



5.1. PAC Standard APIs

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


5.1.1. VB.NET Demo Programs for PAC Standard APIs

The PAC SDK includes the following demo programs that demonstrate the use of the PAC Standard APIs in a VB.NET language environment. The following demo programs can be found by downloading the latest version from ICP DAS web site.

For VB.NET applications, these demo programs can be obtained from: http://ftp.icpdas.com/pub/cd/winpac imx6/WP-2641/demo/pac/vb.net/standard/

Folder	Demo	Explanation
buzzer	buzzer	Shows how to make a simple buzzer beep.
		Retrieves information about the OS version, CPU
DeviceInformation	DeviceInformation	version, SDK version, etc.
		Retrieves information about the
GetRotaryID	GetRotaryID	status of the rotary switch
		Shows how to read/write data
Memory	Memory	values from/to the EEPROM or
		the backplane of the SRAM
MicroSD	MicroSD_Management	Shows how to manage the microSD
		Writes the managed cod for the rich graphical
	VB_UI_Call_VC_Realti	user interface that does not require true
	me	real-time
RealTimeTest		performance
		Shows how to use the function of JIT compiler
	VBOnly	and garbage collector
		Shows how to read/write data
Registry	Registry	values from/to the registry
		Shows how to read the name of a
UART	UART	local I/O modules via a UART
		Displays information about how to
WatchDog	WatchDog	operate the watchdog

5.1.2. C# Demo Programs for PAC Standard APIs

The PAC SDK includes the following demo programs that demonstrate the use of the PAC Standard APIs in a C# language environment. The following demo programs can be found by downloading the latest version from ICP DAS web site.

For C# applications, these demo programs can be obtained from: http://ftp.icpdas.com/pub/cd/winpac_imx6/WP-2641/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
Devicemormation	Devicemormation	version, SDK version, etc.
CatPatandD	CatPotandD	Retrieves information about the
GetRotaryID	GetRotaryID	status of the rotary switch
		Shows how to read/write data
Memory	Memory	values from/to the EEPROM or
		the backplane of the SRAM
MicroSD	MicroSD_Management	Shows how to manage the microSD
	CSharp_UI_call_VC_Re	Writes the managed cod for the rich graphical
RealTimeTest	altime	user interface that does not require true real-time performance
	<u>CCharpOnk</u>	Shows how to use the function of JIT compiler
	CSharpOnly	and garbage collector
Desistar	Desistar	Shows how to read/write data
Registry	Registry	values from/to the registry
UART	LIADT	Shows how to read the name of a
UART	UART	local I/O modules via a UART
WatchDog	MatchDog	Displays information about how to
WatchDog	WatchDog	operate the watchdog

5.1.3. Visual C++ Demo Programs for PAC Standard APIs

The PAC SDK includes the following demo programs that demonstrate the use of the PAC Standard APIs in a Visual C++ language environment. The following demo programs can be found by downloading the latest version from ICP DAS web site.

For Visual C++ applications, these demo programs can be obtained from: http://ftp.icpdas.com/pub/cd/winpac_imx6/WP-2641/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,
Devicemormation	Devicemormation	CPU version, SDK version, etc.
CotPotonulD	CotPoton/D	Retrieves information about the
GetRotaryID	GetRotaryID	status of the rotary switch
		Shows how to read/write data
Memory	Memory	values from/to the EEPROM or
		the backplane of the SRAM
MultiRT	MultiRT	Shows how to manage the microSD
		Writes the managed cod for the rich
DeplTimeTest	D 17' T 1	graphical user interface that does not require
RealTimeTest	RealTimeTest	true real-time
		performance
Decistry	Docietar	Shows how to read/write data
Registry	Registry	values from/to the registry
		Shows how to read the name of a
UART	UART	local I/O modules via a UART
WatchDog	WatchDoo	Displays information about how to
WatchDog	WatchDog	operate the watchdog



5.2.1. VB.NET Demo Programs for PAC Standard APIs

The PAC SDK includes the following demo programs that demonstrate the use of the PAC IO APIs in a VB.NET language environment. The following demo programs can be found by downloading the latest version from ICP DAS web site.

For VB.NET applications, these demo programs can be obtained from: http://ftp.icpdas.com/pub/cd/winpac_imx6/WP-2641/demo/pac/vb.net/io/

Folder	Demo	Explanation
XVBoard/XV107	XV107_Modbus_RTU_Master_	Shows how to use the XV107 module of
AV BOard/AV107	VB_demo	the XV-board
Domoto	For full details regarding the rem	ote I/O modules and its demos, please
Remote	refer to:	
(I-7000 or I-87K modules	http://ftp.icpdas.com/pub/cd/wi	inpac imx6/WP-2641/demo/pac/applica
in RU-87Pn I/O unit)	bled demo for 7k module.pdf	

5.2.2. C# Demo Programs for PAC Standard APIs

The PAC SDK includes the following demo programs that demonstrate the use of the PAC IO APIs in a C# language environment. The following demo programs can be found downloading the latest version from ICP DAS web site.

For C# applications, these demo programs can be obtained from:

http://ftp.icpdas.com/pub/cd/winpac_imx6/WP-2641/demo/pac/c%23/io/

Folder	Demo	Explanation
XVBoard/XV107	ModbusRTU_Master_Console	Shows how to use the XV107 module of the XV-board in console mode
	XV107_Modbus_RTU_Master _demo	Shows how to use the XV107 module of the XV-board
Remote	For full details regarding the rer	note I/O modules and its demos, please
	http://ftp.icpdas.com/pub/cd/winpac_imx6/WP-2641/demo/pac/applic	
(I-7000 or I-87K modules in		
RU-87Pn I/O unit) abled demo for 7k module.pdf		<u>df</u>

5.2.3. Visual C++ Demo Programs for PAC Standard APIs

The PAC SDK includes the following demo programs that demonstrate the use of the PAC Standard APIs in a Visual C++ language environment. The following demo programs can be found downloading the latest version from ICP DAS web site.

For Visual C++ applications, these demo programs can be obtained from: http://ftp.icpdas.com/pub/cd/winpac imx6/WP-2641/demo/pac/vc2008/io/

Folder	Demo	Explanation
Remote	For full details regarding the remote I	/O modules and its demos, please
	refer to:	
(I-7000 or I-87K modules	http://ftp.icpdas.com/pub/cd/winpage	c imx6/WP-2641/demo/pac/applica
in RU-87Pn I/O unit)	bled demo for 7k module.pdf	

6. I/O Modules and SDK Selection

This chapter describes how to select a suitable I/O expansion module and the corresponding SDK library to be used for developing programs on WinPAC series devices.



Selecting an SDK Library for I/O Expansion

Local I/O Module (XV-Board)

There are more than 8 XV-Board available for expanding the function of the WP-2641M-CE7 The following table shows the appropriate SDK library to be used for I/O modules.

Module	Native SDK	.NET CF SDK
XV-Board	Modbus Demo	Modbus Demo

For more detailed information about these support modules, please refer to http://www.icpdas.com/root/product/solutions/hmi touch monitor/touchpad/xv-board selection.html

2 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-2641M-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_imx6/WP-2641/demo/pac/applicabled_demo_for_7k_module.pd f

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:

http://ftp.icpdas.com/pub/cd/winpac_imx6/WP-2641/demo/nmodbus/

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

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

> Other specified I/O

Module	Native SDK	.NET CF SDK
I-7088W	PACSDK_PWM.dll	PACNET.dll

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

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

Module	Native SDK	.NET CF SDK
ET-7000	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_imx6/WP-2641/demo/nmodbus/

7. WP-2641M-CE7 Updates

This chapter provides information of the WinPAC OS and SDKs, and a guided tour that demonstrates the steps needed to update the WinPAC OS and SDKs.

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

Both the files of OS updates and SDK updates can be found by downloading the latest version from ICP DAS web site.



http://ftp.icpdas.com/pub/cd/winpac_imx6/wp-2641/

7.1. OS Updates

OS updates are part of the WP-2641M-CE7 updates services to provide additional and more efficient features and functionality for WP-2641M-CE7 operating system.

The updates files of OS image can be found by downloading the latest version from ICP DAS web site.

http://ftp.icpdas.com/pub/cd/winpac_imx6/wp-2641/os_image/



There are two ways to update the OS:



1. Update from eshell (Please refer to section 7.1.1)

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

2. Update from micro_SD (Please refer to section 7.1.2)

7.1.1. OS Updates using Eshell

By default, the OS updates via LAN. Therefore, to update the OS image, make sure LAN is connected to the 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. <u>http://ftp.icpdas.com/pub/cd/winpac_imx6/WP-2641/os_image/update_from_eshell_or_micro_sd/</u>

Step 2: Run the registry clear.exe

The registry.exe can be found by downloading the latest version from ICP DAS web site. <u>http://ftp.icpdas.com/pub/cd/winpac_imx6/WP-2641/pc_tools/eshell/</u>



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



Step 4: Run the ESHELL.exe, and then restart the WP-2641M-CE7



The ESHELL.exe can be found by downloading the latest version from ICP DAS web site. <u>http://ftp.icpdas.com/pub/cd/winpac_imx6/WP-2641/pc_tools/eshell/</u>

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:	OK
WINPAC270_535 Or Select From the List	Cancel
WINPAC270_535	Reset devices to automatically put names on the list.

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

Open					? 🔀		
Look in:	🗀 WP523x_20	0140821_Ver.1	1.0.0.4_ml 💌	🗢 🗈 📸 📰 -			
My Recent Documents	NK.bin		a Josh Options Yow Halp	15 - 77_44400 (NA11A-4_20W-07A	Changel celwy-2000_ce	50005_imag/wp-23+1%a	
Desktop			UP_664098; Bootloader Versi	• <u>* </u> • • • •	: 00001F01A002		~
My Documents			Downloading '\\Rdfs\cd_2\V Jumping to image on UP_644 Connecting to UP_64498 usi	LaPAC\napdos\vp-2000_ce50 98 ng Ethernet	,05_image\vp-23	r1\apdate_fron_Eshell	3,en3,01
			<				
My Computer							
My Network	File name:	NK.BIN					
	Files of type:	NK Image					
			<u>4</u>]				<u>×</u>
			Realy				1

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

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



General Display IP Config Network Device Information Auto Execution Rotary Execution Slot 1: CPU Type: WP523x Serial Number: Slot 2: 01-A8-2C-1F-16-00-00-20 Slot 3: Backplane Version: N/A Slot 4: CPU Version: N/A Slot 5: OS Version: 1001 .NET CF Version: Slot 6: 3.5.7338.00 Slot 7: SQLICE Version: PACSDK Version: 4.3.0.0

7.1.2. OS Updates using micro_SD

The microSD card can be used to reinstall the WP-2641M-CE7 OS image to factory default settings in the event of the WP-2641M-CE7 failure.



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

http://ftp.icpdas.com/pub/cd/winpac imx6/WP-2641/os image/update from eshell or micro_sd

Step 2: Run the CEWrite.exe



The CEWriter.exe can be found by downloading the latest version from ICP DAS web site. <u>http://ftp.icpdas.com/pub/cd/winpac_imx6/WP-2641/pc_tools/cewriter/</u>

Step 3: Select the drive of the connected micro SD, and then click Write!

Make sure the correct drive is selected in the "Drive" list, and press "Write!" to start the flashing process.

GuruCE CE	Writer v3.0.0.0			
Drive:	3.7 GB disk, 1 partition: U: (3.6 GB)	Refresh		
Bootloader:	C:\GuruCE\eboot.bin	Browse		
Kemel:	C:\GuruCE\NK.bin	Browse		
Boot splash:	C:\GuruCE\GuruCE logo.bmp	Browse		
Max boot spla	sh resolution: 1920x1080 🔹 Era:	se boot splash		
Erase boot config Always partition disk 💟 Write!				

Tips & Warnings

The GuruCE CEWriter tool allows you to quickly and easily flash the OS kernel and any boot splash screen image to an attached Micro_SD card.

CEWriter reserves 136 MB at the very beginning of the Micro_SD card. The boot splash screen image and OS kernel are stored in this space. CEWriter partitions the remaining space as an exFAT partition that can be used in Windows CE (and on your PC) to store files.

CEWriter also automatically converts the splash screen image to be a single plane, 24bpp bitmap image. You can select jpg, png or bmp files as boot splash screen image. When using CEWriter make sure you select the correct drive from the "Drive" list.

The "Erase boot splash" button erases an existing boot splash screen image from the Micro_SD card.

The "Erase boot config" button erases the boot configuration, so the next time you boot using this Micro_SD card, the bootloader will revert to factory defaults.

Step 4: Plug the microSD card into microSD slot



Step 5: Turn the rotary switch in position 5, OS update mode



Step 6: Reboot the WP-2641M-CE7

Step 7: Wait a few minutes for the following desktop to be displayed



Step 8: Turn the rotary switch in position 0, normal mode



Step 9: Reboot the WP-2641M-CE7

Step 10: Check the OS version

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

Double-click PAC Utility sh	ortcut	Network Device Information	Auto Execution Rotary Execution
_	Slot 1:	CPU Type:	WP523x
	Slot 2:	Serial Number:	01-A8-2C-1F-16-00-00-20
	Slot 3:	Backplane Version:	N/A
	Slot 4:	CPU Version:	N/A
	Slot 5:	OS Version:	1001
	Slot 6:	.NET CF Version:	3.5.7338.00
	Slot 7:	SQL CE Version:	
		PACSDK Version:	4.3.0.0

7.2. SDK Updates

SDK updates are part of the WP-2641M-CE7 update services to provide additional and more efficient features and functionality for WP-2641M-CE7 operating system.

The updates files of SDK files can be found by downloading the latest version from ICP DAS web site.

http://ftp.icpdas.com/pub/cd/winpac_imx6/wp-2641/sdk/



7.2.1. SDK Updates for VB.NET or C#

You can just change the old one with a new one.

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

The latest version of the PACNET. dll can be obtained from ICP DAS web site. <u>http://ftp.icpdas.com/pub/cd/winpac_imx6/WP-2641/sdk/pacnet/</u>

Step 2: Copy the PACNET.dll file to PC and WP-2641M-CE7

The DLL files on PC are located at anywhere only the solution can reference it. The DLL files on WP-2641M-CE7 are located at the same directory as the .exe file.

7.2.2. SDK Updates for C++

You can just change the old one with a new one.

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_imx6/WP-2641/sdk/pacsdk/

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

The header files are located at: C:\Program Files\Windows CE Tools\SDKs\GuruCE imx6 SDK\Include\Armv4i The libraries are located at: C:\Program Files\Windows CE Tools\SDKs\GuruCE imx6 SDK\lib\ARMv4I

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

The DLL files are located at: \System_Disk\ICPDAS\System

Appendix. A. Tips – How to

A.1. How to Online Debug the WP-2641M-CE7 Program

Here are step by step instructions on how to online debug the WP-2641M-CE7 program.

Tips & Warnings



Before starting online debug the WP-2641M-CE7 program, make sure that the WP-2641M-CE7 SDK has been installed correctly.

For more information on how to install the WP-2641M-CE7 SDK, please refer to 4.2. Installing WP-2641M-CE7 SDK.

Step 1: Copy the following files to the \System_Disk\icpdas\system on the WP-2641M-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-2641M-CE7



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



Step 4: In the left pane, expand Device Tools node and select Devices

Step 5: In the Show devices for platform:, select GuruCE_imx6_SDK and then click Properties

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 	Shew aevices for platform: GuruCE iMX6 SDK Decices: CuruCE iMX6 SDK ARMV7 Device Polete Properties Defeut Broperties
	OK Cancel

Step 6: Click the Configure...

GuruCE iMX6 SDK ARMV7 Device Properties	? 🗙
Default output location on device: Program Files Folder	~
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-2641M-CE7

Configure TCP/IP Transport	
Use fixed port number:	5655
Device IP address	
Obtain an IP address automa	atically using ActiveSync
Ouse specific IP address:	
10.1.0.96	▼
	OK Cancel

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

GuruCE iMX6 SDK ARMV7 Device Proper	rties ? 🔀
Default output location on device:	
Program Files Folder	~
Transport:	
TCP Connect Transport	Configure
Bootstrapper:	
ActiveSync Startup Provider	Configure
Detect when device is disconnected	
	OK Carel



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



Step 10: Wait for the connection to be established



Tips & Warnings



A.2. How to Automatically Synchronize WinPAC Clock

You can synchronize your WinPAC clock with an Internet time server.

If synchronization is enabled, the WinPAC clock is synchronized with an Internet time server.

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



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

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

Step 4: Check the Automatically synchronize with an internet time server check box

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

File Help
Save
Save and Reboot
Reboot
Restore Utility Default Settings
E <u>x</u> it

Step 6: The WinPAC will automatically synchronize with an internet time server regularly

Step 7: Click the Update Now button to synchronize WinPAC clock immediately

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

A.3. How to use User Account Control in WinPAC

A.3.1. How to Create an User Account

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

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

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

PAC Utility [1.2.2.0]					_ ×
File Help					
General General2 Di	isplay IP Config	Network	Device Information	Auto Execution	Rotary Exe 🔳 🕨
Access Login					
User Name Pa	******	Add	Delete		

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 Con	fig 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

File	Help
Save	3
Save	e and Reboot
<u>R</u> eb	oot
Rest	tore Utility Default Settings
E <u>x</u> it	

A.3.2. How to Use 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	
Programs Documents Documents Documents Documents Documents Documents Programs Documents Programs Documents Programs Documents Programs Documents Programs Documents Programs Setting Programs Documents Programs Documents Programs Programs Documents Program Program Program Program Program	Run 2. Type "cmd" Image: Comparison of the source, and workdown of the source, and workdown will open it for you. Open: OK Cancel Browse

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

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



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



Step 4: The remote login has been completed



A.3.3. 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



A.4. How to change the battery

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



Checking the current battery power

- 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.

A.5. How to Using the Practical Functions of the 3G/4G I/O Module

The Mobile network module of WinPAC series (Except for WP-2641M-CE7) that use the 3G/4G network to implement SMS and GPRS connection to send and receive functions.

A.5.1. 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 by downloading the latest version from ICP DAS web site. <u>http://ftp.icpdas.com/pub/cd/winpac_imx6/wp-2641/demo/3g_modem/autodialer/</u>

The description of the demo can be found by downloading the latest version from ICP DAS web site. <u>http://ftp.icpdas.com/pub/cd/winpac_imx6/wp-2641/document/faq/development/</u> W5-13_How_to_use_Auto_dial_GPRS_network_and_redial_when_the_network_disconnected_en

A.5.2. 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_imx6/wp-2641/demo/3g_modem/3g_modem_sms_demo/gsm_li_b_manual_v1.0.1.pdf</u>

The demos can be found by downloading the latest version from ICP DAS web site. http://ftp.icpdas.com/pub/cd/winpac imx6/wp-2641/demo/3g modem/3g modem sms demo

The description of the demo can be found by downloading the latest version from ICP DAS web site. <u>http://ftp.icpdas.com/pub/cd/winpac_imx6/wp-2641/document/faq/development/</u> W5-14_How_to_use_the_SMS_function_and_get_the_GPS_data_en

A.5.3. How to Synchronize the System Time by GPS Data

The demos can be found by downloading the latest version from ICP DAS web site. <u>http://ftp.icpdas.com/pub/cd/winpac_imx6/wp-2641/demo/3g_modem/gpstimesynchronization</u>

The description of the demo can be found by downloading the latest version from ICP DAS web site. <u>http://ftp.icpdas.com/pub/cd/winpac_imx6/wp-2641/document/faq/development/</u> W5-15_How_to_Synchronize_the_system_time_by_GPS_data_en

Appendix. B. XV-Board Modules

The XV-board series are for LP-2641M, WP-2641M-CE7. One PAC can only plug only one XV-board. The XV-board series have following common specification:

- DI channel is dry contact, sink type.
- DO channel is open collector, sink type.



	DI	DI			DO	
Model	Channel	Туре	Sink/Source	Channel	Sink/Source	
XV107			Source		Sink	
XV107A	8	Wet	Sink	8	Source	
XV110	16	Dry/Wet	Sink/Source	-	-	
XV111				10	Sink	
XV111A	11A -			16	Source	

DIO Expansion

Relay Output Expansion

	DI			Relay Output	
Model Channel		Туре	Sink/Source	Channel	Туре
	_			2	Signal Relay
XV116 5 Wet		Wet	Sink/Source	4	Power Relay

Multi-Function Expansion

	AI	AO	DI			DO	
Model	Channel		Туре	Sink/Source	Channel	Sink/Source	
XV308	8	-	DI+DO=8	Dry/Wet	Source	DI+DO=8	Sink
XV310	4	5	4		Sink		Source

For more detailed information about these support modules, please refer to

http://www.icpdas.com/root/product/solutions/hmi_touch_monitor/touchpad/xv-board_selection.html

Appendix. C. Revision History

This chapter provides revision history information to this document.

The table below shows the revision history.

Revision	Date	Description
1.0.1	February 2020	Initial issue