P-8000-CE6 User Manual

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10-8741-CE6

Version 1.0.6, February 2010

Service and usage information for XP-8000-CE6 series

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XP-8000-CE6 User Manual, version 1.0.6.Last Revised: February 2010

Page: 2

	1. GENERAL INFORMATION	5
Table	1.1. INTRODUCTION	6
Table	1.2. Features	7
Contents	1.3. Specifications	11
Industrial Communication Products	1.4. DIMENSION (UNIT: MM)	14
	1.5. Overview	18
	1.6. Companion CD	21
	1.7. Rescue Compact Flash Card	22
2. QUICK START AND RESCUE		23
2.1. GETTING STARTED WITH XP-8000-CE	6 Hardware	24
2.2. REGIONAL AND LANGUAGE OPTIONS		
2.3. GETTING STARTED WITH XP-8000-CE6 SOFTWARE TOOLS		
2.4. XPAC UTILITY FOR CONFIGURING XP-8000-CE6		
2.4.1. XPAC UTILITY MENU BAR		31
2.4.2. XPAC UTILITY PROPERTY TABS		
2.4.3. The factory default settings		
2.5. DCON UTILITY FOR CONFIGURING I-7K	K AND I-87K SERIES I/O MODULES	44
2.6. Rescue the XP-8000-CE6		48
2.7	. UPDATING THE XP-8000- <mark>CE6</mark>	51
	2.7.1. ONLY UPDATE OS IMAGE	52
	2.7.2. REINSTALL XP-8000-CE6	52
2.8	. Restore The Rescue Disk	53

XP-8000-CE6 User Manual, version 1.0.6.Last Revised: February 2010Page: 3Copyright © 2009 ICP DAS Co., Ltd. All Rights Reserved. \boxtimes E-mail: service@icpdas.com

3. XPAC_CE6 Tools	56	าเอา	
3.1. DCON UTILITY (FOR PC SIDE)	58	1910	
3.2. XPAC UTILITY	59		
4. Your First Program		60	
4.1. Setting up the Development Environment	1	61	0
4.1.1. Installing and Setting Platform SDK		61	n
4.1.2. API AND SDKs		64	
4.2. CREATING YOUR FIRST PROGRAM		65	
4.2.1. YOUR FIRST VISUAL C++ PROGRAM		66	
4.2.2. YOUR FIRST VISUAL C# PROGRAM		75	nunicati
Appendix A. Frame Ground		81	on Produc
APPENDIX B. APPLICATION OF RS-485 NETWO	RK	83	
B.1. BASIC RS-485 NETWORK		84	
B.2. DAISY CHAIN RS-485 NETWORK		84	
B.3. STAR TYPE RS-485 NETWORK		85	
B.4. RANDOM RS-485 NETWORK		86	
B.5. MASTER/SLAVES SETTINGS		87	
Appendix C. Tips – How To		90	
C.1. How to Use Rotary Switch		91	
C.2. How to Use DIP Switch		92	
C.3. How to online debug XP-8000-CE6		93	
C.4. How To use Multi-IO Modules		100	
XP-8000-CE6 User Manual, version 1.0.6.	Last Rev	ised: February	2010 Page: 4



This chapter covers the basic information necessary to help you maximize the effectiveness of the XP-8000-CE6.

XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 5

1.1. INTRODUCTION

What is XP-8000-CE6?

XP-8000-CE6 is the new generation PAC of ICP DAS. It equips a AMD LX 800 CPU (500 MHz) running a Windows Embedded CE 6.0 operating system, variant connectivity (VGA, USB, Ethernet, RS-232/RS-485) and 0/3/7 slots for high performance parallel I/O modules (high profile I-8K series) and serial-type I/O modules (high profile I-87K I/O modules).

Its operating system, Windows Embedded CE 6.0 R3, has many advantages including hard real-time capability, small core size, interrupt handling at a deeper level, achievable deterministic control and low cost. Compared with CE5.0, CE6.0 updates its virtual memory architecture to increase system robustness and security. Besides, CE 6 R3 delivers rich user experiences and a unique connection to Windows PCs, servers, services, and devices. XP-8000 also supports SoftPLC such as ISaGRAF and K.W.



XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

1.2. FEATURES

Software Features

☑ <u>Windows Embedded CE 6.0</u>

Most of the popular features in Microsoft software are included, such as:

ASP Web Server (Javascript and VBScript):

ASP stands for Active Server Pages. ASP is an active scripting engine that runs on the server side and dynamically creates web pages for client's requests. In XP-8000-CE6, ASP Web Server is provided. The ASP Web Server supports both VBScript and JavaScript.

SQL Server Compact 3.5

SQL, Structured Query Language, is a computer language for database. SQL Server is a server of database that implements SQL query language. Microsoft SQL Server Compact 3.5 is an embedded database engine which provides faster, trusted, productive environments and better decision making support.

.NET Compact Framework 3.5:

Microsoft's .NET Compact Framework provides a run-time environment, CLR, and plenty of class libraries to simplify development processes. CLR is Common Language Runtime. It provides cross-language integration, enhanced security, etc. Windows Embedded CE 6.0 supports .NET Compact Framework 3.5. Therefore, we provide .NET Compact Framework 3.5 in XP-8000-CE6.

Many others:

There still are others such as Jscript, VBScript, etc.

XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

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Page: 7

☑ <u>DCON Utility</u>

DCON Utility is an application that provides an environment with easy and quick search, configure and test I/O modules in the networks.

☑ <u>Rich Software Solutions</u>

XP-8000-CE6 equips with Windows Embedded CE 6.0 which is compatible with the popular operating system, Windows XP. Thus there are rich software solutions users can find. The followings are commonly-used development tools: Microsoft Visual Studio.NET 2005/2008:

ICP DAS provides SDK as well as demo programs for Visual C#.NET, Visual Basic.NET and Visual C++.

SCADA solution: InduSoft provides simple "drag and drop", "point and click" developing environment for HMI and SCADA applications.



XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 8



Hardware Features

☑ <u>Power CPU module</u>

The most important features of the CPU module are

AMD LX 800 CPU (32-bit and 500 MHz) 512 MB RAM 4 GB Built-in Flash Disk

☑ <u>Built-in VGA Port</u>

A built-in VGA port can be directly connected to a regular LCD display. Users can operate the HMI or SCADA software (running on the XP-8000-CE6) with display, keyboard and mouse just as how they usually did on regular PCs.

☑ <u>64-bit Hardware Serial Number</u>

The 64-bit hardware serial number is unique and individual. Every serial number of XP-8000-CE6 is different. Users can add a checking mechanism to their AP to prevent software from pirating.

🗹 <u>Built-in Flash Disk (4 GB)</u>

In normal situation, users can store their AP or data to the CF card or USB Flash disk. But in some vibration environment (for example, like driving ships), the two storage media would be bad connection. Then the built-in Flash disk will be the best storage media in such the vibration environment.

☑ <u>Dual Watchdog Timer</u>

A system could be hanged up when the OS or the AP fails. There are two watchdogs (OS watchdog and AP watchdog) designed to automatically reset the CPU when the situations happen. The design will increase the reliability of the system.

XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 9

☑ Dual Battery-Backup SRAM (512 KB)

To maintain important data while power off, non-volatile memory is the ideal design. The XP-8000-CE6 equips a 512 KB SRAM with two Li-batteries to maintain data while power off.

The two Li-batteries can continually supply power to the 512 KB SRAM to retain the data for 5 years; and the dual-battery design can avoid data lost while replacing a new battery.

☑ <u>Dual Ethernet Ports</u>

XP-8000-CE6 provides two Ethernet ports. The two Ethernet ports can be used to implement redundant Ethernet communication and separate Ethernet communication (one for global Internet, one for private Ethernet).

☑ <u>Redundant Power Input</u>

To prevent the XP-8000-CE6 from failing by the power loss, the power module is designed with two input connectors. Once a power input fails, the power module switches to the other power input. And there is a relay output for informing the power failure.

✓ <u>Ventilated housing designed to operate between -25°C ~ +75°C</u>

Each XP-8000-CE6 is housed in a plastic-based box with a column-like ventilator that can help to cool the working environment inside the box and allow the XP-8000-CE6 operating between -25° C and $+75^{\circ}$ C.

XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 10

1.3. SPECIFICATIONS

Feature	Items	Description	
	CPU	AMD LX 800 processor	
System		AMD CS5536	
Processor	Chipset		
Module	System	512M RAM	
	Memory		
	BIOS	Award 4M bits flash ROM BIOS	
Operating System		Windows CE6 R3	
	Flash	4 GB as IDE Master (Flash)	
	Dual		
	Battery	512 KB (for 5 years data retain)	
torage	Backup SRAM		
torage	EEPROM	16 KB, data retention: 40 years	
		1,000,000 erase/write cycles.	
	CF Card	- (support up to 32 GB)	
	CF Card	- (hot plug unsupported)	
	Graphic Chip	AMD LX 800 integrated graphic controller	
Graphic	VGA resolution	(640 x 480 ~ 1024 x 768 or above)	
		RJ-45*2, 10/100Mbps Base-TX Ethernet	
Ethernet	Controller	Controller	
Ethernet	Controller	(Auto-negotiating, Auto_MDIX, LED	
		indicator)	
		One Proprietary-definition expansion for ISA	
Expansion Slots		and DC-in	
Expansion Slots		One PCI-expansion with Hirose	
		FX8C-120P-SV6(22)	
Dual Watchdog Timer		Yes	
64-bit Hardware	Serial Number	Yes	
Rotary Switch		Yes (0 ~ 9)	
DIP Switch		Yes (8 bits) (for XP-8341/8741-CE6 only)	
USB2.0		x 2	

XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

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Page: 11

Feature	Items	Description
		RS-232
		(Internal communications
		with I-87K modules in slots, for
		XP-8341/8741-CE6 only;
		external COM1 only for
	COM1	XP-8041-CE6)
		Baud Rate: 115200 bps
		Data Bits: 8
		Parity: None, Even, Odd
		Stop Bits: 1
		Note: CPU built-in UART
		RS-232, Non-isolation (TxD, RxD and GND)
		(used to update firmware)
		Baud Rate: 115200, 57600,
	60140	38400, 19200, 9600, 4800,
	COM2	2400, 1200 bps
		Data Bits: 7, 8
		Parity: None, Even, Odd
		Stop Bits: 1
Contal Dout		Note: CPU built-in UART RS-485
Serial Port		
		Baud Rate: 115200, 57600, 38400, 19200, 9600, 4800, 2400, 1200 bps
		Data Bits: 5, 6, 7, 8
	СОМЗ	Parity: None, Even, Odd, Mark (Always 1),
	domb	Space (Always 0)
		Stop Bits: 1, 2
		FIFO: 16 bytes
		Note: 16C550 compatible
		RS-232/485
		Baud Rate: 115200, 57600, 38400, 19200,
		9600, 4800, 2400, 1200 bps
		Data Bits: 5, 6, 7, 8
	COM4	Parity: None, Even, Odd,
		Mark (Always 1), $CTS \rightarrow 7 \circ \circ 3$ RXD
		Space (Always 0) $Data - 9 \circ \circ^4 $
		Stop Bits: 1, 2
		FIFO: 16 bytes
		Note: 16C550 compatible

Feature	Items	Description
		COM4 can be configured as either RS-232 or RS-485, and the configuration depends on the pin connections as follows: RS-232 (RxD, TxD, CTS, RTS and GND) RS-485 (Data+ and Data-) There is no software configuration or hardware jumper needed.
	COM5	RS-232 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 Note: 16C550 compatible
	Operating Temp	-25°C ~ +75°C
FIFO: 16 bytes	Storage Temp	-30°C ~ +85°C
Environment	Relative Humidity	5% ~ 90% RH, non-condensing
	XP-8041-CE6	116 mm (W) x 132 mm (L) x 125 mm (H)
Mechanical	XP-8341-CE6	231 mm (W) x 132 mm (L) x 125 mm (H)
	XP-8741-CE6	355 mm (W) x 132 mm (L) x 125 mm (H)
	XP-8041-CE6	Capacity: 1.8A, 5V supply to CPU and backplane, total 15 W Consumption:14.4 W (0.6 A @ 24 VDC)
Power	XP-8341-CE6	Capacity: 1.8A, 5V supply to CPU and backplane; 5.2A, 5V supply to I/O expansion slots, total 35 W Consumption:14.4 W (0.6 A @ 24 VDC)
	XP-8741-CE6	Capacity: 2.0A, 5V supply to CPU and backplane; 5.0A, 5V supply to I/O expansion slots, total 35 W Consumption:16.8 W (0.7 A @ 24 VDC)

XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 13

1.4. DIMENSION (UNIT: MM)

XP-8041-CE6



XP-8341-CE6





XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 16



XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 17

1.5. OVERVIEW

XP-8041-CE6



Overview Item Descriptions

1. Power LED Indicator 2. Rotary Switch 3. Ethernet Port 1 4. USB 2.0 Ports 5. COM Port 5 (RS-232) 6. COM Port 4 (RS-232/RS-485) 7. Power Switch 8. COM Port 2 (RS-232) 9. Power and Ground 10. COM Port 3 (RS-485) 11. Redundant Power and Ground 12. Relay Output R.COM and R.NO 13. Frame Ground 14. Ethernet Port 2 15. CF (Compact Flash) Card Slot 16. VGA Port 17. COM Port 1 (RS-232)

XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 18

XP-8341-CE6



Overview Item Descriptions

1. Power LED Indicator 2. Rotary Switch 3. Ethernet Port 1 4. USB 2.0 Ports 5. COM Port 5 (RS-232) 6. COM Port 4 (RS-232/RS-485) 7. Power Switch 8. COM Port 2 (RS-232) 9. Power and Ground 10. COM Port 3 (RS-485) 11. Redundant Power and Ground 12. Relay Output R.COM and R.NO 13. Frame Ground 14. Ethernet Port 2 15. CF (Compact Flash) Card Slot 16. VGA Port 17. Slot 1 ~ Slot 3 18. DIP Switch

XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 19

XP-8741-CE6



Overview Item Descriptions

1. Power LED Indicator 2. Rotary Switch 3. Ethernet Port 1 4. USB 2.0 Ports 5. COM Port 5 (RS-232) 6. COM Port 4 (RS-232/RS-485) 7. Power Switch 8. COM Port 2 (RS-232) 9. Power and Ground 10. COM Port 3 (RS-485) 11. Redundant Power and Ground 12. Relay Output R.COM and R.NO 13. Frame Ground 14. Ethernet Port 2 15. CF (Compact Flash) Card Slot 16. VGA Port 17. Slot 1 ~ Slot 7 18. DIP Switch

XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 20

1.6. COMPANION CD

The companion CD contains full usage documents, software tools and development resources related to the XP-8000-CE6.



1.7. RESCUE COMPACT FLASH CARD

The Rescue Compact Flash Card not only support rescue mechanism but also contains full usage documents, software tools and development resources related to the XP-8000-CE6.



XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010



2.Quick Start and Rescue

This chapter covers basic steps required to help you install the XP-8000-CE6 and give you a brief of outline of its main functions.

XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 23

2.1. GETTING STARTED WITH XP-8000-CE6 HARDWARE

Follow these steps below to install and start-up the XP-8000-CE6.

The XP-8000-CE6 installation must provide proper ventilation, spacing, and grounding to ensure the equipment will operate as specified. A minimum clearance of 50mm between the XP-8000-CE6 and the top and bottom side of the enclosure panels must be provided.



There is a minimum of 50mm clearance between the top and bottom edges of the XP-8000-CE6 and the enclosure panels.

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Step 1: Mount the hardware

There are two simple methods of mounting:

1. DIN-Rail mounting



2. Screw mounting







Step 3: Insert and wire the I/O modules



2.2. REGIONAL AND LANGUAGE OPTIONS

Follow these steps below to localize your environment.

Step 1: Go to "Control Panel"

🖻 Programs	►	
👷 F <u>a</u> vorites	►	
🕒 Documents	►	
👺 Settings	×	🚰 <u>C</u> ontrol Panel
🖅 <u>R</u> un		🔌 Network and Dial-up Connections 👘
💦 Start		🛃 Taskbar and Start Menu

Step 2: Click on "Regional Settings"



Step 3: Change to your local language in "User Interface Language"

Regional and Language Settings 🛛 🥂 🦻 🧏 🦻				
Regional Settings	User Interface Language	Input Language		
_[User Interface Lang	juage —			
The option will and alerts.	determine the language used fo	or the menus, dialogs		
	English (United Sta	tes) 💌		
English (United States) French (France) German (Germany) Italian (Italy) Russian Spanish (Spain - International Sort)				

Step 4: Reboot the device to make language setting take effect



XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 27

2.3. GETTING STARTED WITH XP-8000-CE6 SOFTWARE TOOLS

Follow these steps below to install necessary development resources and tools using companion CD, CF card or download from our FTP Server.

Step 1: Copy the PlatformSDK, XPacSDK_CE.msi, and install on the host PC.

The file is used for developing on visual studio 2005/2008 and located at: CD root\ICPDAS\XP-8000-CE6\SDK\PlatformSDK (in the companion CD) CF Card root\SDK\PlatformSDK ftp://ftp.icpdas.com/pub/cd/xp-8000-ce6/sdk/platformsdk/

Step 2: Copy the "Demo" file folder to the host PC

These files are located at: CD root\ICPDAS\XP-8000-CE6\SDK\Demo (in the companion CD) CF Card root\SDK\Demo <u>ftp://ftp.icpdas.com/pub/cd/xp-8000-ce6/sdk/demo</u>



Step 3: Install DCON_Utility

DCON Utility is used to set IO module from host PC, and you have to install it on your host PC. It's located at CD root\ICPDAS\XP-8000-CE6\Tools\DCON_CE\PC CF Card root\Tools\DCON_CE\PC ftp://ftp.icpdas.com/pub/cd/xp-8000-ce6/tools/dcon_ce/pc

Step 4: Install Remote_Display

The tool is used to control XP-8000-CE6 remotely, and you have to install cerhost.exe on your host PC. It's located at CD root\ICPDAS\XP-8000-CE6\Tools\Remote_Display\PC CF Card root\Tools\Remote_Display\PC ftp://ftp.icpdas.com/pub/cd/xp-8000-ce6/tools/remote_display/pc



2.4. XPAC UTILITY FOR CONFIGURING XP-8000-CE6

The XPAC Utility is a tool which is designed to quickly control and management the XP-8000-CE6 controller.

Starting the XPAC Utility to configure the XP-8000-CE6

To start the XPAC Utility, you can double-click the XPAC Utility shortcut on the desktop. The XPAC Utility window contains two basic components: menu bar and property tabs.



2.4.1. XPAC Utility Menu Bar

The XPAC Utility includes the following function menu; all function menus will be explained later.

≻ File Menu



Help Menu



XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 31

File Menu

File Help

Restore Utility Default Settings <u>R</u>eboot E<u>x</u>it

The menu commands	Used to
Restore Utility Default	Restore every setting of
Settings	XPAC Utility to its default.
Reboot	Restart the XP-8000-CE6.
Exit	Exits the XPAC Utility.

XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 32



The menu commands	Used to
About	Displays a dialog box with information
	about XPAC Utility, including the
	current version and copyright
	information.

Related Control Products Line Acquines Investor	
XPAC Utility Version: 1.0.0.5 Copy Right (c) 2009, ICPDAS Co, LTD. All Rights Reserved. XPAC Utility and the XPAC Utility logos are trademarks of ICPDAS.	
XPAC (Windows CE 6.0; en-US) XPAC Utility 1.0.0.5	

XP-8000-CE6 User Manual, version 1.0.6.



2.4.2. XPAC UTILITY PROPERTY TABS

The XPAC Utility includes the following property tabs, all property tabs will be explained later.

	General Display IP Config Network Device Informati	on Auto Execution Rotary Execution M	√1. ▲ ►
	<image/>	Welcome to use XPAC Utility This tool will help you easy to use XPAC CE series. Task Bar setting: Auto Hide Always On Top	
	General tab		
	≻ Display tab		
	≻ IP Confi <mark>g</mark> tab		
	> Network tab		
1	Device Information tab		
	Auto Execution tab		
	Rotary Execution tab		
	≻ Multi-IO Modules tab		
	XP-8000-CE6 User Manual, version 1.0.6.	Last Revised: February 2010	Page: 34

General tab

The General tab provides functions to configure the task bar.



The tab used to	How to use	
Lock the taskbar	Select the Always On Top check box.	
Auto-Hide the taskbar Select the Auto Hide check box		
* Be sure to reboot to make the setting take effect.		



Display tab

The Display tab provides functions to configure the monitor setting.

General	Display	IP Config	Network	Device Info	ormation	Auto Execution	Rotary Execution	м∎∙►
	Screer Less	n resolution	1: , 768 pixels	More		creen refresh rat '5 Hz	e: v	
							Apply	

The tab used to	How to use		
Screen resolution	Change the Track bar.		
Screen refresh rate	Select the combo box		
* Be sure to reboot to make the setting take effect.			

XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 36
IP Config tab

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.

General Display IP Co	nfig Network Device	Informatio	n 🛾 Auto Executi	on Rotary Execution Mu
LAN 1:			LAN 2:	
MAC Address:	00-10-F3-16-1D-A2		MAC Address:	00-10-F3-16-1D-A3
O Use DHCP	to get IP address	1	🖲 Use DHCP to	get IP address
🔿 Assign IP a	lddress	I	🔿 Assign IP add	dress
IP Address:	10.1.0.64		IP Address:	10.1.0.61
Mask:	255.255.0.0		Mask:	255.255.0.0
Gateway:	10.1.0.254]	Gateway:	255.255.0.0
DNS Server:	10.0.0.33		DNS Server:	10.0.0.33
	Apply			Apply

The tab used to	How to use
Configure the	• Obtaining an IP address automatically from DHCP:
network settings	Select the Use DHCP to get IP address option.
	• Manually assign an IP address:
	Select the Assign IP address option.
Monitor the MAC	See the MAC Address 1 and MAC Address 2 fields that
address	displays the physical address of LAN1 and LAN2.

XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 37

Network tab

The Network tab provides functions to enable/disable the FTP access, enable/disable anonymous FTP access, configure the FTP directory path, and change HTTP document root directory.

General D	isplay 🗍 IP Config 🛛 Network 🗍 Device Information 🗋 Auto Execution 🗋 Rotary Execution 🗋 Mu 💶 🗌	•
	FTP Enable Disable	
	Allow Anonymous 💿 Enable 🔿 Disable	
	Set FTP default download directory to:	
	Temp Apply	
	Set HTTP document root directory to:	
	\System_Disk\ICPDAS\www\ Apply	

The tab used to	How to use
Enable/disable	• Enable: Select Enable in the FTP field.
the FTP access	• Disable: Select Disable in the FTP field.
Enable/disable	• Enable: Select Enable in the Allow Anonymous field.
anonymous	• Disable: Select Enable in the Allow Anonymous field.
FTP access	
Change the FTP	Enter a new path in the "Change FTP default download
directory path	directory to" field, and then press the Apply button.
Change HTTP	Enter a new path in the "Change HTTP document root
document root	directory to" field, and then press the Apply button.
directory	

XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 38

Device Information tab

The Device Information tab provides functions to monitor necessary system information of the XP-8000-CE6. The system information is most important note of version control for upgrading system.



The tab used to	How to use
Monitor the local I/O slots	See the Slot 1 \sim Slot 7 field that displays the
	module names plugged in XP-8000-CE6.
Monitor the serial	See the Serial Number field that displays the
number	64-bit hardware serial number of the
	XP-8000-CE6.
Monitor the backplane	See the Backplane Version field that displays the
version	backplane version of the XP-8000-CE6.
Monitor the CPU version	See the CPU Version field that displays the CPU
	version of the XP-8000-CE6.
Monitor the OS version	See the OS Version field that displays the OS
	version of the XP-8000-CE6.
Monitor the .NET	See the .NET CF Version field that displays
compact framework	the .NET compact framework version of the
version	XP-8000-CE6.
Monitor the SQL CE	See the SQL CE Version field that displays the SQL
version	CE version of the XP-8000-CE6.
Monitor the	See the XPacSDK Version field that displays the
XPacSDK_CE.dll version	version of XPacSDK_CE.dll.

XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 39

Auto Execution tab

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



The allowed file types are .exe and .bat, and they are executed in order of program 1, program 2, etc.

General Display IP C	onfig Network	Device Information Auto Execution Rotary Execution M.
	Program 1:	Browse
	Program 2:	Browse
	Program 3:	Browse
	Program 4:	Browse
At most 10 prograr	ns Program 5:	Browse
can be specified to execute automatica	Program 6:	Browse
at system startup.	Program 7:	Browse
	Program 8:	Browse
	Program 9:	Browse
	Program10:	Browse
		Clean Apply

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

XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 40

Rotary Execution tab

The Rotary Execution tab decides which mode XP-8000-CE6 executes at startup.

General Display IP Config Network Device Information Auto Execution Rotary Execution Mu			
	Rotary Switch 0	Normal Mode	Browse
6789	Rotary Switch 1:	Safe Mode	Browse
u Do	Rotary Switch 2:		Browse
524	Rotary Switch 3:		Browse
	Rotary Switch 4:		Browse
	Rotary Switch 5:		Browse
	Rotary Switch 6:		Browse
	Rotary Switch 7:		Browse
	Rotary Switch 8:	\System_Disk\Tools\DCON_CE\DCON_CE	Browse
	Rotary Switch 9:	\System_Disk\Tools\Remote_Display\cer	Browse
		Арр	ly

The tab used to	How to use		
Run at Normal Mode	Rotary Switch to 0 and reboot XP-8000-CE6, and		
	then it is in the Normal Mode.		
Run at Safe Mode	Rotary Switch to 1 and reboot XP-8000-CE6, and		
	then it is in the Safe Mode. (In Safe Mode,		
	XP-8000-CE6 clears the data saved in the registry,		
	starts as factory default, and no applications run at		
	startup.)		
Run at Normal Mode	Rotary Switch to 8 and reboot XP-8000-CE6, and		
but execute	then it is in the Normal Mode but executes		
DCON_CE_V600.exe	DCON_CE_V600.exe. This makes users can use		
	DCON Utility on PC side to configure I/O modules		
	without a monitor.		
Run at Normal Mode	Rotary Switch to 9 and reboot XP-8000-CE6, and		
but execute cerdisp.exe	then it is in the Normal Mode but executes		
	cerdisp.exe. This makes users can use cerhost.exe		
	on PC side to remote display Windows CE without a		
	monitor.		
Run at Normal Mode	Rotary Switch to $2 \sim 7$ and reboot XP-8000-CE6,		
but execute	and then it is in the Normal Mode but executes the		
user-specified program.	program user specified in the field of "Rotary		
	Switch 2 ~ 7".		

XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 41

Multi-IO Modules tab

KARC

This tab displays the port names of multi-IO modules such as 8114, 8144, 8142, and 8112. These multi-IO modules are in the slots of XP-8000-CE6. If you have to use these multi-IO ports, please use the port name shown in the tree.

Take the below figure as an example, using XPacSDK_CE.dll, opening a serial port of 8144 in slot 3 is:

HANDLE hPort = uart_Open("MSB1");

8144 in the slot 3 has four serial ports, and one of the port name is "MSB1".

For more information about expansion RS-232/RS-422/RS-485 communication module that are compatible with the XP-8000-CE6, please refer to http://www.icpdas.com/products/Remote_I0/i-8ke/selection_rs232_i8k.htm

General IP Config Network Device Information Auto Execution Rotary Execution Multi-IO Modules Slot 1: Slot 2: 🖻 Slot 3: 8144 MSB1 MSB2 MSB3 MSB4 I/O Modules for **Multi-Serial Port Series** Multi-IO Modules This tab can show each Multi-IO Modules' Ports on this device. There are several kinds of multi-IO module such as 8114, 8144, 8142, and 8112. If you have to use these multi-IO ports, please use the port name which show left. Page: 42 XP-8000-CE6 User Manual, version 1.0.6. Last Revised: February 2010

2.4.3. The factory default settings

The following table lists the factory default settings of the XPAC Utility.

General tab:		
Function	Settings	
Auto Hide	Uncheck	
Always On Top	Uncheck	

Display tab:

Function	Settings
Screen resolution	1024 by 768 pixels
Screen refresh rate	75 Hz

IP Config tab:

Function	Settings	
LAN1	DHCP	
LAN2	DHCP	

Network tab:

Function	Settings
FTP	Disable
Allow Anonymous	Disable
FTP default download directory	\Temp
HTTP document root directory	\System_Disk\ICPDAS\www\

Auto Execution tab:

Function	Settings	
All field	Empty	

Rotary Execution tab:

Function	Settings
Rotary Switch 8	\System_Disk\Took\DCON_CE\DCON_CE_V600.exe
Rotary Switch 9	\System_Disk\Tools\Remote_Display\cerdisp.exe

XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 43

2.5. DCON UTILITY FOR CONFIGURING I-7K AND I-87K SERIES I/O MODULES

The DCON Utility is a tool which is designed to quickly control and management I-7K and I-87K series I/O modules via COM port and Ethernet port.

The following table summarizes the information about TCP port mapping and I-7K and I-87K series expansion modules of COM port on XP-8000-CE6.

COM port of XP-800-CE6	TCP Port	Support modules
COM 1 (Backplane)	10000	87K (High profile series)
COM 2 (Console Port)	10001	7K, 87K *
COM 3 (RS-485)	10002	7K, 87K
COM 4 (RS-232/RS-485)	10003	7K, 87K
COM 5 (RS-232)	10004	7K, 87K *

* with RS-232/RS-485 converter, such as I-7520

(http://www.icpdas.com/products/Industrial/communication_module/comm unication_list.htm).

XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 44

Starting the DCON Utility to configure I-87K series I/O modules

Step 1: On the XP-8000-CE6, execute the DCON firmware

The DCON firmware can be obtained from: $System_Disk\Tools\DCON_CE$ or the link on the desktop.

:ON_CE_V 600	DCON_CE_V600	[17:47:22] Server port 10000 listening for COM1	ок
	COM1 (Backplane) Closed COM2 (Console Closed Dout) COM3 (R5-485) Closed COM4 (R5232/485) Closed	[17:47:22] Server port 10001 listening for COM2 [17:47:22] Server port 10002 listening for COM3 [17:47:22] Server port 10003 listening for COM4 [17:47:22] Server port 10004 listening for COM5	
	COM5 (RS-232) Closed		
	Slot 3		
	Slot 5		
	Slot 7	Clear List	
	Exit	Timer	

Step 2: Double-Click the DCON Utility shortcut on the desktop of Host PC



Step 3: Click on the WIN CE command button

	DCOM_ETILITY (VERSII) Searching for 1-70004000 Molader
	He COMPut South Rus Semini Language Holp
	5
	nodde Addent Baulute O
	WIN
	e
	COMPLET CONT Addres [00]doc1 [00ms] Backer 1000 Petr None Datable
XP-8000-CE6 U	Je

Last Revised: February 2010

Page: 45

Step 4: On the "WINCE device connection" dialog, choose a connection type and then type the IP address in the "IP" field, then click the "Connect" button to search i-7K and I-87K series I/O modules



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

Step 5: Click on the module name from the list to enter the configuration form.



DCON	UTIL	ITY	VER[514]	The I/O	Module	s Found				
	OM Po	1/2				Language		p		
]			<mark>¥</mark>	Start	0	End	10	(Address 0 [~]	255)
module	Address	Baudr			Status			Description		
XPAC_CE	1[1] S0	9600 9600	Disable Disable	N,8,1				XPAC_CE Syst	tem(DCON) odule] or [None]	
*****	S1	9600	Disable						odule] or [None]	
87017	S2	9600	Disable					8*AI (mA,mV,V)		
87024 xxxxx	S3 S4	9600 960	Disable					4*A0 (mA,V)		
*****	S5	960	🥒 Configu	tration for	r 87017	Module V	Version	1: A600		×
XXXXX	S6 S7	960 960 (Configuration	Settina:			Channel	Enable/Disa	ble Setting:	
XXXXX	57	360	Protocol:	DCON						Running !
			Address[dec]:				CH:0	+000.000	CH:4 -000.	.009
			Baudrate:	-			₩ CH:1	+000.000	CH:5 -000.	013
			baudrate:	9600		7	1	1		
			Checksum	Disable		v	CH:2	-000.004	CH:6 -000	.016
			Dataformat:	Engineering		-	CH:3	-000.008	CH:7 -000	.001
I			Input range:	[08] +/- 10 V		-				
-Searching S			Filter Setting:	60Hz						E
TCP/IP Addre	ess:	10.0					S	Select All	Clear All	Exit
			Mode:	Normal Mode		•				
			Parity Option:	None Parity(N	,8,1)	~				
							Modbus F	Response De	lay lime	
			Varian	formation	Sett	ing	Delay T	ime: 0	(0 ~ 30 ms)	Setting
			veision ir	normation	Sett	ing				

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

CON_Utility 30 seconds timeout to communicate with Please re-connect again	the WINCE device
確定	

2.6. Rescue the XP-8000-CE6

The XP-8000-CE6 rescue mechanism can help you easily and quickly restore your XP-8000-CE6 OS in case your XP-8000-CE6 cannot start or crashed.

Warning: XP-8000-CE6 has to run under **normal mode**, which means **rotary switch = 0**, to rescue XP-8000-CE6 to factory default

Please follow the steps below to recovery your XP-8000-CE6

Step 1: Reboot your XP-8000-CE6. While rebooting, press "delete" key to enter BIOS setup utility

Step 2: Choose "Advanced BIOS Features" and then press "Enter" key

Phoenix - AwardBIO	S CMOS Setup Utility
▶ System Information	Load Fail-Safe Defaults
▶ Standard CMOS Features	Load Optinized Defaults
Advanced BIOS Fea	tures assword
▶ Integrated Peripherals	Save & Exit Setup
▶ PnP/PCI Configurations	Exit Without Saving
▶ PC Health Status	
Esc : Quit F10 : Save & Exit Setup	†↓→← : Select Item
Virus Protection,	, Boot Sequence

XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 48

Step 3: Set "First Boot Device" as "HDD-1", HDD-1 means compact flash

Phoeni	ix - AwardBIOS CMOS S Advanced BIOS Feat
Virus Warning	[Disabled]
First Boot Device	[HDD-1]
Second Boot Device	[Disabled]

Step 4: Save and Exit Setup



XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 49

Step 5: After restarted the devise, will enter into XP-8000-CE6 Recue Utility as following. Choose (a) or (1), create XP-8000-CE6 default partition.

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

Step 6: Wait about several seconds for step 1 and reboot, then choose (b) or(2), format and restore XP-8000-CE6 to factory default OS.(Refer to above figure)

Step 7: After finishing recovery, choose (c) or (3) to reboot. (Refer to above figure)

Step 8: Repeat step 1 ~ 4 to set "First Boot Device" as "HDD-0", HDD-0 means Built-in flash, and then reboot the XP-8000-CE6.

Step9: The XP-8000-CE6 will set itself default when the first reboot after recovery procedure. It needs about 1 min. After above steps, the XP-8000-CE6 recovery is completed.

XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 50

2.7. UPDATING THE XP-8000-CE6

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

There are two ways to update the XP-8000-CE6:

i. Only update OS image

Each release will contain new features, reliability, application compatibility, security, and more. Before you download any release files, we highly recommend you read the ReadMe.txt file, which contains all of this release contents.

For more information about service pack, please refer to the documents which come with every release.

ii. Reinstall XP-8000-CE6

If you don't like just update OS image, you can reinstall new version XP-8000-CE6 OS in your device.

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

The necessary files can be obtained at: http://ftp.icpdas.com/pub/cd/xp-8000-ce6/rescue

Caution:

- 1. Before reinstall XP-8000-CE6, please check you have backup your data.
- 2. Ensure your XP-8000-CE6 running on normal mode (rotary switch = 0) during reinstall XP-8000-CE6.

XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 51

2.7.1. Only update OS image

Please follow the steps below to update OS image only

Step 1: download OS image, NK.bin, form ftp://ftp.icpdas.com/pub/cd/xp-8000-ce6/rescue/ce6

- Step 2: Replace old OS image which is located at \System_Disk on XP-8000-CE6 devices with the NEW OS image (download from step 1).
- Step 3: After replaced the image and restarted the devise, XP-8000-CE6 has been updated completely.

2.7.2. Reinstall XP-8000-CE6

Warning:

- XP-8000-CE6 has to run under **normal mode**, which means **rotary switch = 0**, to reinstall XP-8000-CE6 to factory default
- When reinstall XP-8000-CE6, it will not only clear built-in flash (System_Disk), but also restore all files to System_Disk
- Before reinstall XP-8000-CE6, please check you have backup your data.

Pre-requires for reinstall XP-8000-CE6

Step 1: Download all updating files from ftp://ftp.icpdas.com/pub/cd/xp-8000-ce6/rescue

Step 2: Copy files, which download from Step 1, to root of CF card

Please follow the steps below to reinstall XP-8000-CE6

- Step 1: Change the boot order. (It is the same as the step 1 to step 4 of above section, 2.6 Rescue the XP-8000-CE6).
- Step 2: After restarted the devise, will enter into XP-8000-CE6 Rescue Utility as the same as the step 5 to step 9 of above section, 2.6 Rescue the XP-8000-CE6).

XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 52

2.8. RESTORE THE RESCUE DISK

This section will show you how to restore your rescue disk in case of that the rescue disk crashed or been formatted.

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

There is ghost file "Rescue_Disk.gho" can recover Rescue Disk if your Rescue Disk crashed.

The ghost file can be obtained at: CD root\ICPDAS\XP-8000-CE6\Rescue_Disk (in the companion CD)

Note: Below example is used "Symantec Norton Ghost32 V.11" (The "Symantec Norton Ghost V.11" or above version are recommend) as a demonstration how to do recovery the Rescue Disk.

Please follow below steps to recover Rescue Disk.



Select the "Rescue_Disk.gho" file 3.

Image file name	to restore fr	om			
Look jn:	🖃 E: 2.1: CD	IATA] NTFS drive			
Na	me	Size	0. 2010/01/25	ate	
🕷 Resoue_Disl	«GHO	93,782,815	2010/01/20		
File <u>n</u> ame:				<u>O</u> pen	
Files of <u>typ</u> e:	*.GHO		V	<u>C</u> ancel	
Image file <u>d</u> escrip	tion;				

Select the destination to CF card and click 'OK' 4.



XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

5. Recovery the "Rescue_Disk.gho" file into CF card and click 'OK'

estin	ation	Drive De	tails					
P	Part	Type	ID	Description	Label	New Size	Old Size	Data Size
	1	Primary	Ob	Fat32	N0 NAME	7357	7357	162
					Free	1	1	
					Total	7359	7359	162
				<u>ok</u>		Cano	el	

6. Recovering Rescue Disk

ymantec Ghost 11.0	.2 Copyright (C) 199	8-2007 Symantec Corpo	oration. All rights reserv	ed.
Progress Indicator				
0%	25%	50%	75%	100%
Statistics				
Percent complete	13		- 1.1	1
Speed (MB/min)	330		~ .1	
MB copied	22		1	7)
MB remaining	140		1	
Time elapsed	0:04			
Time remaining	0:25			
Details				
Connection type	Local			
Source		CUE DISK\Rescue_Disk.G	HO, 7359 MB	
Destination	Local drive [3], 73			6
Current partition	1/1 Typeib [Fat32], Si			
Current file	\MININT\SYSTEM32\D	RIVERS\B1USA.T4		3
		Con cum	antec.	6
		John	ance.	
				เลี้สมบทและกละเลสมบที่ไ

7. So far, Rescue Disk has been done.

For more information of reinstall OS, please refer to ii. Reinstall XP-8000 of Rescue the XP-8000-CE6

XP-8000-CE6 User Manual, version 1.0.6.Last Revised: February 2010

Page: 55



• DCON_Utility

With Host PC running the DCON Utility, on the XP-8000-CE6, the DCON_CE_V600.exe allows users to view and monitor the status of I/O modules of XP-8000-CE6 through the DCON Utility.

• ISQLW35

The ISQLW35 implements SQL server compact 3.5 Query Analyzer.

RegEdit

The RegEdit edits the registry of Windows Embedded CE6 on XP-8000-CE6.

• Remote_Display

The remote display application allows user to view the display of XP-8000-CE6 remotely on a Host PC. Users need to run cerhost.exe on the host PC and at the same time run cerdisp.exe on XP-8000-CE6.

TaskMgr

The TaskMgr provides details about programs and processes running on the XP-8000-CE6.

• XPAC Utility

The XPAC Utility provides various useful functions such as configuring Ethernet settings, monitoring system settings and FTP services .etc for easy and quick management.

For more information about the XPAC Utility, please refer to "3.2. XPAC Utility".

XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 57

3.1. DCON UTILITY (FOR PC SIDE)



The DCON Utility is toolkits that help user search the network, easily to configure the I/O modules and test the I/O status via the serial port (RS-232/485) or Ethernet port (using virtual com port). It supports not only the DCON Protocol I/O modules but also the M Series I/O Modules (Modbus RTU M-7K,M-87K and will support Modbus ASCII M-87K) now.

For more detailed information on DCON Utility application, please refer to http://www.icpdas.com/products/dcon/introduction.htm.

XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 58

3.2. XPAC UTILITY

The XPAC Utility is a tool which is designed to quickly control and manage the XP-8000-CE6.

For more detailed information on XPAC Utility applications, please refer to "2.4. XPAC Utility for configuring the XP-8000-CE6"



4.Your First Program

This chapter provides basic and necessary information to start developing your own program.

XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 60

4.1. SETTING UP THE DEVELOPMENT ENVIRONMENT

Before creating your first program, you must first ensure that you have the necessary development tools and the required corresponding SDKs are installed on your PC.

Integrated Development Environment (IDE) Tools

The XP-8000-CE6 uses Microsoft Visual Studio 2005/2008 (for Visual C#.NET and Visual Basic.NET) as its IDE tools.

We have XP-8000-CE6 SDK for Visual Studio 2005/2008.

4.1.1. Installing and Setting Platform SDK

The Platform SDK, XPacSDK_CE.msi, is necessary for application developers targeting Windows CE-based XP-8000-CE6. The corresponding XPacSDK_CE must be installed on the Host PC.

The platform SDK is located at:

CD root\ICPDAS\XP-8000-CE6\SDK\PlatformSDK (in the companion CD) CF Card root\SDK\PlatformSDK (in the companion compact flash) ftp://ftp.icpdas.com/pub/cd/xp-8000-ce6/sdk/platformsdk/

To install the XPacSDK_CE, please perform the following steps: Step 1: Run the XPacSDK_CE.msi Step 2: Follow the prompts until the XPacSDK_CE installation process is complete

XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 61

XP-8041-CE6

XPAC

Warning:

If your PC only has installed Microsoft Visual Studio 2008 without installing Microsoft Visual Studio 2005, you might encounter an error message as below when you installing XPacSDK_CE.

Plea This	istaller Information
Stat	ToolsMsmCA(Error): IHxFilters filter registration failure: Err = 0x80040305, Context = pFilters->SetNamespace(
	Namespace)
	<u> </u>

To solve this problem, you should install XPacSDK_CE as following steps:

- 1. Run the XPacSDK_CE.msi
- 2. Choose Setup Type, select 「Custom」

	Custom Allows users to choose which program features will be installed
<u>_</u>	and where they will be installed. Recommended for advanced users.
	Complete All program features will be installed. (Requires most disk
	space)

3. Custom Setup, unavailable documentation

XPacSDK for Windows Compact Edition Setu	
Custom Setup	
Select the way you want features to be installed	
Click on the icons in the tree below to change the	e way features will be installed.
Native Development Support Common	Documentation of the WinCE
	platform APIs
	This feature requires OKB on your hard drive.
1	
	Browse
<u>R</u> eset Disk <u>U</u> sage <	< Back Next > Cancel
low the prompts until the XPa	cSDK_CE installation process
complete	

5. Finish

XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 63

4.1.2. API and SDKs

Several SDKs are provided for XP-8000-CE6, it enables you to quickly and efficiently develop your own programs. These SDKs are located at:

CD root\ICPDAS\XP-8000-CE6\SDK (in the companion CD) CF Card root\SDK (in the companion compact flash) ftp://ftp.icpdas.com/pub/cd/xp-8000-ce6/sdk

We will continue to add additional functions on XP-8000-CE6 SDKs, For details of XP-8000-CE6 Standard API reference, please refer to: CD root\ICPDAS\XP-8000-CE6\Document\SDK (in the companion CD) CF Card root\Document\SDK (in the companion compact flash) ftp://ftp.icpdas.com/pub/cd/xp-8000-ce6/document/sdk

And demo programs of frequently-used APIs, please refer to: CD root\ICPDAS\XP-8000-CE6\SDK\Demo (in the companion CD) CF Card root\SDK\Demo (in the companion compact flash) ftp://ftp.icpdas.com/pub/cd/xp-8000-ce6/sdk/demo

XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 64

4.2. CREATING YOUR FIRST PROGRAM

ICP DAS provides SDKs to help you develop your application. The following sections briefly explain how to build your first program of different development tools and different programming languages.

Here we demonstrate how to build your first program with Microsoft Visual Studio 2008 in both C++ (section 4.2.1) and C#.NET (section 4.2.2).

XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 65

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4.2.1. Your First Visual C++ Program

This section help you start developing applications by using "**MFC Smart Device Application**". Follow these steps to create a new program running on the XP-8000-CE6.

Step 1: Start Microsoft Visual Studio 2008.

Step 2: On the **File** menu, click **New** → **Projects**... The **New Project** dialog box appears.

Step 3: In the New Project dialog box, choose the project type as Smart Device in Other Languages. Then choose MFC Smart Device Application in Visual Studio installed templates. And specify project name and location.

Project types: SSIS_ScriptTask Test WCF Workflow Other Languages Visual C++ ATL CLR General MFC Smart Device Test Win32		Templates: Visual Studio installed templates: ATL Smart Device Project MFC Smart Device Application Win32 Smart Device Project My Templates Search Online Templates	IS MFC	NET Framework 3.5 Smart Device ActiveX Co Smart Device DLL	ontrol	
 Test WCF Workflow Other Languages Visual Basic Visual C++ ATL CLR General MFC Smart Device Test Win32 		MFC Smart Device Project MFC Smart Device Application Win32 Smart Device Project My Templates	IS MFC		ontrol	
General MFC <mark>Smart Device</mark> Test Win32		📷 Search Online Templates				
Other Project Types Test Projects An application for Windows Mo	∨ ⊃bile and ot	ther Windows CE-based devices that u	ses the Microsoft	Foundation Class Library		
Name: <enter_na< td=""><td>me></td><td></td><td></td><td></td><td></td><td></td></enter_na<>	me>					
Location:				~	<u>B</u> rowse.	
Solution Name: <a>Enter_na	me>		Create <u>d</u> irector;	y for solution		
				OK	Cancel	

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Step 4: Configure the settings of the project. Just follow the **MFC Smart Device Wizard**, as the following figures show:

1. Next	
MFC Smart Device Application	Wizard - IESI 🤶 🔀
Welcome FC Wizard	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: Pocket PC 2003 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. Very set of the project features and files that are generated. Very set of the project features and files that are generated. Since the project features are provided by the project features are generated. Since the project features are provided by the project features are generated. Since the project features are provided by the provided by the project features are provided by the project features are provided by the provide

2. Make **XPacSDK_CE** selected and Next

Platform	s
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
	XPacSDK_CE Instruction sets: x86 < Previous

XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

ary 2010 Page: 67

3. Choose Dialog based as Application type.

MFC Smart Device Application	Wizard - TEST		? ×
Applicati	on Type		
Overview Platforms Application Type Document Template Strings User Interface Features Advanced Features Generated Classes	Application type: Single documer Dialog based Single document with DocList Concentry/Jew architecture support Resource [anguage:	Use of MFC: ↓ Use MFC in a shared DLL ④ Use MFC in a static library HFC in a static library ext > Finish Can	

4. Next

User Inte	erface Features		
Overview Platforms Application Type Document Template Strings User Interface Features Advanced Features Generated Classes	Command bar:	Finish Cancel	

XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 68

5. Next

MFC Smart Device Application	Wizard - TEST ? 🔀
Advance	d Features
Overview Platforms Application Type Document Template Strings User Interface Features Advanced Features Generated Classes	Advanced features: Windows Hgp ActiveX controls Mumber of files on recent file list:

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XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 69

Step 5: Add XPacSDK_CE.lib and XPacSDK_CE.h to the project.



Project -> Add Existing Item...

Step 6: #include "XPACSDK_CE.h" in the testDlg.cpp file



XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 70

- Step 7: Then you can use XPacSDK_CE to develop Visual C++ applications on the XP-8000-CE6. Here we take I-8051W, a Digital Input (DI) module, for example to demonstrate How powerful XPacSDK_CE is.
- Step 7.1: Put the I-8051W in the slot 1 of the XP-8000-CE6. And connect the GND pin and the DI3 pin to turn on the digital input value of the channel 3.

You can see the detail information on the web site of ICP DAS : http://www.icpdas.com/products/Remote IO/i-8ke/i-8051w.htm



XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 71

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MPacSDK x86 Device - 🦳 🚚 🔺	2 ふ 🚽 🔟 🗐 🖬 🖷 山 🖻					
Toolbox - 🕂 🗙 test.rc	- IDD_TEST [英文 (美國)] - [Dialog	₹×	Resource View	- test 🛛 🕹 🗙
Dialog Editor					🗉 🚰 test	
	ralaanlaralar W				e-test.rc	
Button			×		🖻 🗀 Dial	og DD TEST DIALOG
Check Box					E-Ca Icon	
abl Edit Control					Ders Vers	
El List Box	Sample edit box	utton1				
Group Box						
Radio Button						
Aa Static Text					•	•
Be Picture Control						Class 🔚 Resour
I Horizontal Scroll						
🗉 Vertical Scroll Bar					Properties	
De Slider Control					Dialog Node	IDlgRes
Server Exp 📯 Toolbox					21 🖂	
Error List				→ ₽ ×	🖬 Misc	
30 Errors ▲0 Warnings 0 0 Mes	sages				(Name)	Dialog Node
Description	File	Line	Column	Project	Condition	
						IDD TEST DIA
					Language	華文(美國) ▼
					(Name)	
Item(s) Saved						1.

Step 7.2: Make a simple User Interface in the Dialog as the following figure shows.

- 1. Click on the **Resource View**
- 2. Double click on the Dialog item
- 3. Draw a **Button** and an **Edit Control**
- 4. Double click on the Button to write the On-Click Event

XP-8000-CE6 User Manual, version 1.0.6.

Page: 72
Step 7.3: Write the content of the On-Click function. You can see that simply writing one line make us have the digital input value read back. The line for reading digital value back is:

pac_ReadDI(h, slot, total_ch, &di_value);



Note

The arguments of the above example is described here:

h: handle of UART. The I-8K series I/O modules ignore this argument.slot: the slot which I-8051W plugs in.

total_ch: the number of total DI channels. In I-8051W, total_ch=16. **di_value**: the DI value read back.

See XPAC_CE6_Standard_API_manualpdf for more information. XPAC_CE6_Standard_API_manualpdf can be found in the companion CD or downloaded from the FTP site of ICP DAS.

XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 73

Step 7.4: The snapshot of the demo program.



Note

The read back DI value is the binary representation of the total 16 DI channels. If DI3 turns on, the read back DI value is

"0000,0000,0000,1000" of binary representation, that is, DI is 8 as its decimal form. Users can use pac_GetBit(DI_Value, index) to get the DI value of a specified channel. See XPAC_CE6_Standard_API_manual.pdf for details.

Note

To execute the program you build, be sure to put XPacSDK_CE.dll and the program's .exe file in the same directory.

XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 74

4.2.2. Your First Visual C# Program

This section help you start developing applications by using "**Smart Device Project**". Follow these steps to create a new .NET program running on the XP-8000-CE6.

Step 1: Start Microsoft Visual Studio 2008.

Step 2: On the **File** menu, click **New** → **Projects...** The **New Project** dialog box appears.

Step 3: In the New Project dialog box, choose the project type as Smart Device in Visual C#. Then choose Smart Device Project in Visual Studio installed templates. And specify project name and location.

Project types:		Templates:		.NET Framework 3.5 - 18 1
Project types: → Visual C# → Windows → Web → Smart Devic ⊕ Office → Database - Reporting → Test → WOrk → Workflow ⊕ Other Language ⊕ Other Project T ⊕ Test Projects	s	Visual Studio installed ter Smart Device Project My Templates Search Online Templates.	mplates	
A project for Smar Name: Location:	Device applications. Ch test D:\WORK\CE6	oose target platform, Framework	version, and template in the next dialog bo	x. ▼ Browse
Name:	test	oose target platform, Framework	version, and template in the next dialog bo	
Name: Location:	test D:\WORK\CE6	loose target platform, Framework		



Step 4: Configure the settings of the project as below: Target platform= Windows CE .NET Compact Framework version= .NET Compact Framework Version 3.5 Templates= Device Application

Target platform: Winde	ws CE		-
.NET Compact Framework version: .NET			-
Templates:			
Device Application Class Library Console Application	Control Empty Project Library	Description: A project for creating a .NET Compact Framework 3.5 form application for Windows CE Platform	S
Download additonal emulator images and sn	a <u>rt device SDKs</u>	OK Cance	:1
000-CE6 User Manual, version 1.0.6	Last Revis	sed: February 2010	Page:

Step 5: Make a simple User Interface in the Dialog as the following figure shows. Then double click on the button.



010100010101001101



Step 6: **using** System.Runtime.InteropServices to **DllImport** pac_ReadDI, then implement the function: button1_Click().

using System.Windows.Forms; using System.Runtime.InteropServices; ■ namespace test { public partial class Form1 : Form ł //in MPacSDK.h, we can find that: //BOOL pac ReadDI(HANDLE hPort, int slot, int iDI TotalCh, DWORD* IDI Value); [DllImport("XPacSDK_CE.dll", EntryPoint = "pac_ReadDI")] public extern static bool pac_ReadDI(IntPtr h, int slot, int total_ch, ref uint di_value); public Form1() { InitializeComponent(); } private void button1_Click(object sender, EventArgs e) { IntPtr h = new IntPtr(); int slot = 1; int total ch = 16; uint di value = 0; pac_ReadDI(h, slot, total_ch, ref di_value); textBox1.Text = di_value.ToString(); }

Note

In the function **pac_ReadDI**(h, slot, total_ch, di_value); The arguments of the above example is described here: **h**: handle of UART. The I-8K series I/O modules ignore this argument.

slot: the slot which I-8051W plugs in.

total_ch: the number of total DI channels. In I-8051W, total_ch=16. **di_value**: the DI value read back.

See XPAC_CE6_Standard_API_manual.pdf for more information. XPAC_CE6_Standard_API_manual.pdf can be found in the companion CD or downloaded from the FTP site of ICP DAS.

XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 78

- Step 7: Then you can use XPACSDK_CE to develop Visual C# applications on the XP-8000-CE6. Here we take I-8051W, a Digital Input (DI) module, for example to demonstrate How powerful XPACSDK_CE is.
- Step 7.1: Put the I-8051W in the slot 1 of the XP-8000-CE6. And connect the GND pin and the DI3 pin to turn on the digital input value of the channel 3.

You can see the detail information on the web site of ICP DAS : http://www.icpdas.com/products/Remote IO/i-8ke/i-8051w.htm



XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 79

Step 7.2: The snapshot of the demo program.

8	Read DI	

Note

The read back DI value is the binary representation of the total 16 DI channels. If DI3 turns on, the read back DI value is "0000,0000,0000,1000" of binary representation, that is, DI is 8 as its decimal form. Users can use pac_GetBit(DI_Value, index) to get the DI value of a specified channel. See XPAC_CE6_Standard_API_manual.pdf for details.

Note

To execute the program you build, **be sure to** put XPACSDK_CE.dll and the program's .exe file in the same directory.

XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 80

Production

Appendix A. Frame Ground

Electronic circuits are constantly vulnerable to Electro-Static Discharge (ESD), which become worse in a continental climate area. Some I-7000, M-7000 and I-8000 series modules feature a new design for the frame ground, which provides a path for bypassing ESD, allowing enhanced static protection (ESD) capability and ensures that the module is more reliable.

To protect XP-8000-CE6 from ESD damage, connect the Frame Ground pins to the earth. (In section 1.5 Overview, please refer to Item 13 in "Overview Item Description" to see where the Frame Ground pins are)

The XP-8000-CE6 Series provide another better protection from ESD:

The XP-8000-CE6 controller has a metallic board attached to the back of the plastic basket as shown in below.



When mounted to the DIN rail, be sure to connect the DIN rail to the earth ground. Because the DIN rail is in contact with the upper Frame Ground as shown in below.



XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 82



The D

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 1.2 km, the RS-485 repeater must be added to extend the RS-485 network.

XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 83

B.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.



B.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.



B.3. STAR TYPE RS-485 NETWORK

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



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



B.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.



B.5. MASTER/SLAVES SETTINGS

There must exist one master to have a pull-high/pull-low resistor in the same network. In a master/slave applications, "Master" is the default configuration of XP-8000-CE6.

XP-8000-CE6 as a Slave:

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

Please refer to the following figure to set the jumpers to the slave mode. The jumpers are located at the power board of XP-8000-CE6.





If there are repeaters on the RS-485 network, you can see that there are pull-high/pull-low resistors on both sides of the repeaters (I-7510)



XP-8000-CE6 as a Master (default):

When one of XP-8000-CE6 is set to the master mode, then all the other devices on the same network must be set to the slave mode. Set an XP-8000-CE6 to the master mode by adjusting the jumpers on the power board of XP-8000-CE6 (the pull-high/pull-low resistors are adjusted to be enabled.) Refer to the following figure:





XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 90

C.1. HOW TO USE ROTARY SWITCH



The rotary switch is reserved for application uses. During normal operation, the position of the rotary switch has no effects on XP-8000-CE6.

We provide XPacSDK to read back the value of the rotary switch.

int pac_GetRotaryID();

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

XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 91

C.2. HOW TO USE DIP SWITCH

The DIP switches are reserved for application uses. During normal operation, the positions of the DIP switches have no effects on XP-8000-CE6.

We provide XPacSDK to read back the value of DIP switches.

int pac_GetDIPSwitch();

The returning value of pac_GetDIPSwitch() is a integer ranged from 0 to 255, which corresponds to the positions of the DIP switches.

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



C.3. HOW TO ONLINE DEBUG XP-8000-CE6

Debug XP-8000-CE6 programs in Visual Studio 2005/2008

Step 1: Make sure the following file are listed with the matching version numbers

Path	File
C:\Program Files\Common Files\Microsoft	1. ActiveSyncBootstrap.dll
Shared\CoreCon\1.0\Bin	2. ConMan2.dll
	3. ConManPS.dll
	4. DesktopDMA.dll
	5. eDbgTL.dll
	6. TcpConnectionC.dll
C:\Program Files\Common Files\Microsoft	conmanui.dll
Shared\CoreCon\1.0\Bin\1033	
C:\Program Files\Common Files\Microsoft	1. Device Agent
Shared\CoreCon\1.0\Target\wce400\X86	Transport.dll
	2. eDbgTL.dll
	3. TcpConnectionA.dll
	4. clientshutdown.exe
	5. CMAccept.exe
	6. ConmanClient2.exe

Step 2: If the version matches correctly and the entire file are there, copy the following files to XP-8000-CE6 :\ System_Disk\ICPDAS\System folder

- Clientshutdown.exe
- ConmanClient2.exe
- CMaccept.exe
- eDbgTL.dll
- TcpConnectionA.dll

XP-8000-CE6 User Manual, version 1.0.6.

Last Revised: February 2010

Page: 93

File	<u>E</u> dit	<u>V</u> iew	<u>P</u> roject	Build	Debug	D <u>a</u> ta	F <u>o</u> rmat	<u>T</u> oc	ols <u>W</u> indow	<u>C</u> ommunity	<u>H</u> elp
								5	Attach to <u>P</u> roc	ess	Ctrl+Alt+P
								. ,	Connect to De	<u>v</u> ice	
								۹,	Connect to <u>D</u> a	tabase	
								1	Connect to <u>S</u> er	rver	
								B	Code Snippe <u>t</u> s	Manager C	trl+K, Ctrl+B
									Choose Toolb	o <u>x</u> Items	
									<u>A</u> dd-in Manag	;er	
									<u>M</u> acros		•
									Create <u>G</u> UID		
									Dot <u>f</u> uscator Co	ommunity Editi	on
									<u>E</u> xternal Tools	s	
								<u>i</u> r	Device Emulat	tor Manager	
									Import and Ex	port Settings	
									<u>C</u> ustomize		
									Options		

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

Step 4: On the "Options" dialog, select "XPacSDK_CE" from the "Show devices platform" list, and then click the "Properties..." button

	 Keyboard Startup Task List Web Browser Projects and Solutions Source Control Text Editor Database Tools Debugging Device Tools General Devices Form Factors HTML Designer Office Tools Test Tools Test Tools Text Templating Windows Forms Designer Workflow Designer 	 Show devices for platform: XPacSDK_CE Devices: XPacSDK_CE x86 Device Default device: XPacSDK_CE x86 Device 	Save As Rename Delete Properties
OK Cancel			OK Cancel

Step 5: On the "XPacSDK_CE x86 Device Properties" dialog, click the "Configure..." button

XPacSDK_CE x86 Device Properties	? 🔀
Default output location on device:	
Root Folder Transport:	¥
TCP Connect Transport	Configure
<u>B</u> ootstrapper:	
ActiveSync Startup Provider	Con <u>f</u> igure
Detect when device is disconnected	
	OK Cancel

Step 6: On the "Configure TCP/IP Transport" dialog, select the "Use specific IP address" option and type the IP address of XP-8X4X-CE6, and then click the "OK" button

Options				? 🗙
	Show devices XPacSDK_C Devices: XPacSDK_C P/IP Transport	E		ave As
Text	lress IP address automa iic IP address:	5655 tically using ActiveSy	nc	~
	1	(OK	Cancel
8000-CE6 User Manual, vers	ion 1.0.6.	Last Revised: Fo	ebruary 2010	Page: 95

Step 7: On the "XPacSDK_CE x86 Device Properties" dialog, click the "OK" button

XPacSDK_CE x86 Device Properties	? 🔀
Default output location on device:	
Root Folder	×
Transport:	
TCP Connect Transport	Configure
<u>B</u> ootstrapper:	
ActiveSync Startup Provider	Con <u>f</u> igure
☑ Detect when device is disconnected	
	OK Cancel

Step 8: On the "Options" dialog, click the "OK" button

Kaubaard	01 1 C 1 C	
 Keyboard Startup Task List Web Browser Projects and Solutions Source Control Text Editor Database Tools Debugging Device Tools General Devices Form Factors HTML Designer Office Tools Text Templating Windows Forms Designer Workflow Designer 	Show devices for platform: XPacSDK_CE Deyices: XPacSDK_CE x86 Device Default device: XPacSDK_CE x86 Device	Save As Rename Delete Properties
-8000-CE6 User Manual, version :	.0.6. Last Revised: Fe	ebruary 2010 Page: 9

Step 9: On the XP-8000-CE6 controller side, run the "ConmanClient2" and the "CMAccept.exe" applications which is located at: \System_Disk\ICPDAS\System

Eile	<u>E</u> dit	⊻iew	<u>G</u> o F <u>a</u> vorites		€ × ₽	*							×
Add	ress Sy	stem_Dis	<td>ч</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>-</td>	ч									-
	IS <mark>1</mark> 5						*	*	*				
AUT(AutoIni	t reboot	redraw	regsvr32	sleep	XPacSDK_CE TcpConr	e eDbgTL	DeviceAge	ConmanClien t2	CMAccept	clientshut	
	A												
	36bf- 409												
_	_	_											_

Step 10: On the "Tools" menu, click "Connect to Device..." command

<u>F</u> ile	<u>E</u> dit	<u>V</u> iew	<u>P</u> roject	<u>B</u> uild	<u>D</u> ebug	D <u>a</u> ta	Too	ols <u>W</u> indow <u>C</u> ommunity <u>H</u> elp
							5	Attach to Process Ctrl+Alt+P
							9,	Connect to De <u>v</u> ice
							۰.	Connect to <u>D</u> atabase
							1	Connect to Server
							B	Code Snippets Manager Ctrl+K, Ctrl+B
								Choose Toolbo <u>x</u> Items
								<u>A</u> dd-in Manager
								Macros
								Create <u>G</u> UID
								Dotfuscator Community Edition
								<u>E</u> xternal Tools
							.	Device Emulator Manager
								Import and Export Settings
								<u>C</u> ustomize
								Options
P-8000-0	CE6 Use	er Manı	ual, versio	on 1.0.6.			Las	t Revised: February 2010 Page: 9

Step 11: On the "Connect to Device" dialog, select "XPacSDK_CE" from "Platform" list and then click the "Connect" button

Connect to Device	? 🛛
To connect to a physical device or launch an emulator image, select a platform; Platform: <u>XPacSDK_CE</u> <u>Devices:</u> <u>XPacSDK_CE x86 Device</u>	<u>Connect</u> Cancel

Step 12: On the "Tools" menu, click "Connect to Device..." command



Step 13: Connection established. Then you can debug on line.



FAQ:

If the connection fails shown as follow, return to step 11 to do the action below



Open the command prompt, run the

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

<u>File E</u> dit <u>H</u> elp	
Pocket CMD v 6.00	
\> ConmanClient2.exe /transport:tcpconnectiona.dll /property:port=5000 /id:	Con
\> CMAccept.exe	

✓ Use fixed port number: Device IP address	5000		k	
O <u>O</u> btain an IP address autor	natically using ActiveSync			
⊙ U <u>s</u> e specific IP address:				
10.0.9.10			*	
		OK	Cancel	

C.4. How To use Multi-IO Modules

The multi-IO modules, including I-8114W, I-8112W, I-8144W, and I-8142W, make your device have expansion COM ports. The section will describe how to use these kind modules.

Step 1: Plug the IO Modules into XP-8000-CE6

Step 2: Open XPAC_Utility to check the ports' names of modules



Step 3: Open Multi-IO Modules Tab



Step 4: Now you can use the IO ports on your program.



Code Snippets:

{

}

BOOL ret; HANDLE hOpen; char buf[4096];

```
hOpen = uart_Open("MSA1");
ret = uart_SendCmd(hOpen,"$01M", buf);
uart_Close(hPort);
```

For more information about expansion RS-232/RS-422/RS-485 communication module that are compatible with the XP-8000-CE6, please refer to http://www.icpdas.com/products/Remote_IO/i-8ke/selection_rs232_i8k.htm

Last Revised: February 2010

Page: 101