



WP-8128-CE7 WP-8428-CE7



WP-8828-CE7

Win-GRAF based WinPAC-8000-CE7

## Features

- Cortex-A8, 1GHz CPU
- 512 MB DDR3 and 256 MB Flash
- Windows CE 7.0 Professional
- Embedded Win-GRAF SoftLogic (IEC 61131-3)
- Hard Real-Time Capability
- VGA Port Output
- Modbus RTU/TCP (Master, Slave)
- Support eLogger HMI
- Redundant Power Inputs
- Operating Temperature: -25 ~ +75 °C



## Introduction

The **Win-GRAF WinPAC-8000-CE7 Series (WP-8128-CE7/8428-CE7/8828-CE7)** is the new generation Windows CE 7.0 based PAC (Programmable Automation Controller) of ICP DAS. Each WP-8000-CE7 is equipped with a Cortex-A8 (1.0 GHz) CPU running a Windows CE 7.0 operating system, a variant of input/output ports (VGA, USB, Ethernet, RS-232/485), and 1/4/8 expansion I/O slots that can be used to integrate high performance I-8K (parallel-type) and I-87K (serial-type) series I/O modules.

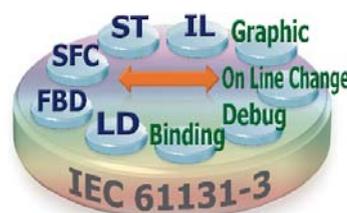
The benefits of running Windows CE 7.0 on a WinPAC device include hard real-time capability, achievable deterministic control and allowing PAC can have a PC-like window displays and operating environment. The WP-8xx8-CE7 series PACs are capable of running Win-GRAF (IEC 61131-3 Standard) software to develop logic control applications, and also supporting M.S. VS 2008 software (VB .NET, C#) to develop HMI and data management applications that can exchange data with Win-GRAF applications. So the application's design is more convenient and more practical.

## Win-GRAF

Win-GRAF is a powerful, PLC-like, softlogic development software. It is installed on PC with Windows 7/8 (or later version). It supports the international PLC language standard - IEC 61131-3 - Ladder Diagram (LD), Function Block Diagram (FBD), Sequential Function Chart (SFC), Structured Text (ST), Instruction Set (IL), suitable to develop applications for the full range of Win-GRAF PACs from ICP DAS.

### The features of the Win-GRAF:

- IEC 61131-3 Standard Open PLC Syntax (LD, FBD, SFC, ST, IL)
- Using ST Syntax in the FBD or LD Program
- Event Triggered Data Binding (Exchange Data between PACs)
- Online Debugging/Control/Monitoring, Offline Simulation
- On Line Change
- Various Protocols:
  - Modbus TCP/UDP, Modbus RTU/ASCII Master
  - Modbus TCP, RTU Slave
  - DCON ...
- Plenty of Functions, Function Blocks, I/O Boards
- Redundancy (For XP-8xx8-CE6 PAC only)



## ■ PAC Specifications

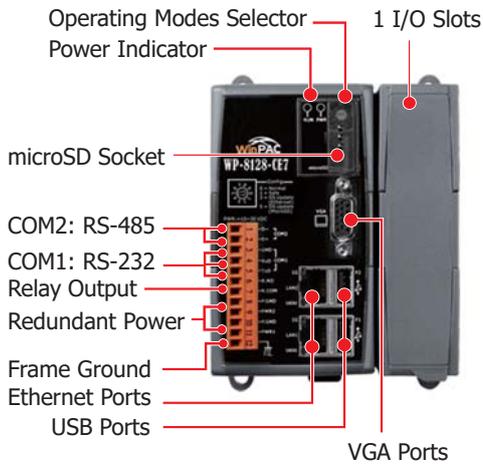
Models	WP-8128-CE7	WP-8428-CE7	WP-8828-CE7
<b>System Software</b>			
OS	Windows CE 7.0		
.Net Compact Framework	3.5		
Embedded Service	FTP server, Web server (support VB script, JAVA script ), Embedded SQL server		
Multilanguage Support	English, German, French, Spanish, Russian, Italian, Korean, Simplified Chinese, Traditional Chinese		
<b>Development Software</b>			
Win-GRAF Software	Win-GRAF	IEC 61131-3 standard	
	Languages	LD, ST, FBD, SFC, IL	
	Max. Code Size	2 MB	
	Scan Time	3 ~ 15 ms for normal program; 15 ~ 50 ms for complex or large program	
Non-Win-GRAF	Options: VS.NET 2008 (VB.NET, C#.NET, C)		
<b>CPU Module</b>			
CPU	Cortex-A8 (1.0 GHz)		
DDR3 SDRAM	512 MB		
MRAM	128 KB		
Flash	256 MB		
EEPROM	16 KB		
Expansion Flash Memory	microSD socket with a 4 GB microSD card (support up to 32 GB)		
RTC (Real Time Clock)	Provides seconds, minutes, hours, date, day of week, month, year		
64-bit Hardware Serial Number	Yes, for Software Copy Protection		
Dual Watchdog Timers	Yes		
Programmable LED Indicator	1		
Rotary Switch	Yes (0 ~ 9)		
DIP Switch	-	Yes (8 bits)	Yes (8 bits)
<b>VGA &amp; Communication Ports</b>			
VGA	800 x 600, 1024 x 768		
Ethernet	RJ-45 x 2, 10/100/1000 Base-T (Auto-negotiating, Auto MDI/MDI-X, LED indicators)		
USB 2.0	2		
COM0	Internal communication with the high profile I-87K series modules in slots		
COM1	RS-232 (Rx/D, Tx/D and GND); Non-isolation		
COM2	RS-485 (Data+, Data-) with internal self-tuner ASIC; 3000 VDC isolated		
COM 3	-	Yes	Yes
	RS-232/RS-485 (RS-232: Rx/D, Tx/D, CTS, RTS, GND; RS-485: Data+, Data-); non-isolated		
COM 4	-	Yes	Yes
	RS-232 (Rx/D, Tx/D, CTS, RTS, DSR, DTR, CD, RI, GND); non-isolated		
<b>I/O Expansion Slot</b>			
Slot Number	1	4	8
	Note: For High Profile I-8K and I-87K Modules Only		
<b>Mechanical</b>			
Dimensions (W x L x H)	95 mm x 132 mm x 111 mm	231 mm x 132 mm x 111 mm	355 mm x 132 mm x 111 mm
Installation	DIN-Rail or Wall Mounting		
<b>Environmental</b>			
Operating Temperature	-25 ~ +75° C		
Storage Temperature	-30 ~ +80° C		
Ambient Relative Humidity	10 ~ 90% RH (non-condensing)		
<b>Power</b>			
Input Range	+10 ~ +30 VDC		
Isolation	1 kV		
Redundant Power Inputs	Yes, with one power relay (1 A @ 24 VDC) for alarm		
Capacity	1.0A, 5V supply to CPU and backplane, 0.6A, 5V supply to I/O expansion slots, total 8 W	1.1A, 5V supply to CPU and backplane, 4.9A, 5V supply to I/O expansion slots, total 30 W	1.2A, 5V supply to CPU and backplane, 4.8A, 5V supply to I/O expansion slots, total 30 W
Consumption	7.3 W (0.3 A @ 24 VDC)	9.1 W (0.38 A @ 24 VDC)	9.6 W (0.4 A @ 24 VDC)

## Win-GRAF Specifications

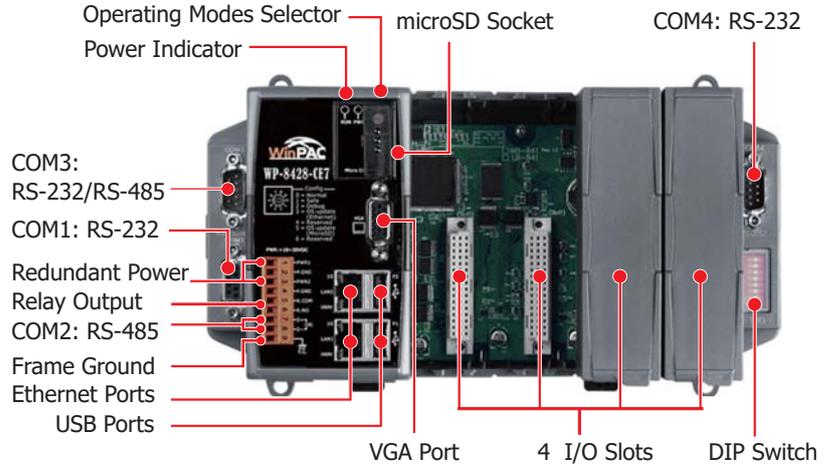
Protocols (Note that certain protocols require optional devices)	
NET ID	1~255, for Modbus TCP/RTU Slave, user-assigned
Modbus TCP Master	A max. of 32 IP links to access/control the devices supporting Standard Modbus TCP Slave protocol.
Modbus RTU/ASCII Master	A max. of 36 ports: COM1 ~ 37 to connect other Modbus Slave devices (Like M-7000). Recommend connecting no more than 32 devices in each port for better scan rate. (*)
Modbus RTU Slave	A max. of 16 ports: COM1 ~ 37 for connecting SCADA/HMI/OPC Server. (*)
Modbus TCP Slave	Two Ethernet ports (LAN1 & LAN2) support up to 32 connections. If the PAC uses 1 connection to connect each PC/HMI, it can connect up to 32 PCs/HMIs; If the PAC uses 2 connections to connect each PC/HMI, it can connect up to 16 PCs/HMIs; If one of the Ethernet port malfunctions, the other one can still be used to connect the PC/HMI.
User-defined Protocol	Custom protocols can be applied at COM1~37 by using Serial communication functions or function blocks. (*)
DCON Remote I/O	A max. of 16 RS-485 ports: COM1 ~ 37. Each port can connect max. 50 nos I-7000 series modules or 50 nos I-87xxxW I/O modules in expansion units (I-87K4, I-87K8, I-87K9, RU-87P8, RU-87P4). Recommend connecting no more than 32 modules in each port for better scan rate.
Local I/O Modules	Supports only high profile I/O modules. Slot 0~7 supports I-8xxxW parallel I/O modules and I-87xxxW serial I/O modules.
App Protection	Using the unique 64-bit (8 bytes) PAC serial number to generate a protection password by your own algorithm to protect your Win-GRAF application. Then, if someone intend to copy your application in the PAC to another new PAC with the same PAC model, this application will not work properly in that new PAC.
Data Binding	Exchange data between ICP DAS Win-GRAF PAC via Ethernet ports (LAN1 and LAN2). The data transmission is event triggered. It is much efficient than polling way. Beside, user can setup the Redundant Binding in two ethernet ports by Software, then if one Ethernet port fail, it can switch to use the other port.
On Line Change	For application field that not allowed to stop the Win-GRAF program and wish to run a new program modified a little from the original program.
Modbus RTU I/O	When software enables Modbus RTU Master function, the PAC can connect ICP DAS M-7000 and tM series and LC series I/O modules which support Modbus RTU protocol.
Modbus TCP I/O	When software enable Modbus TCP Master function, the PAC can connect ET-7000, I-8KE4/8-MTCP and tPET/tET series I/O modules of ICP DAS which support Modbus TCP protocol.
HART Master	Support I-87H17W modules in slot 0 to 7 to communicate with other HART devices.
Schedule Control	Supports the "Schedule-Control Utility" (free) to implement schedule control. Each PAC can control max. 10 Targets (devices) with different schedule settings in each day / holiday / special day / season / year.
Retain Variables	Built-in the fast retain memory that can retain up to 12,000 Win-GRAF variables.
File Access & Data Log	The Win-GRAF supports file operation functions to read/write files in the PAC's micro_SD or flash memory to do data log or file access.
eLogger HMI	Support to run HMI program (developed by the eLogger) together with the Win-GRAF logic-control program in the same PAC.
<p><b>* Note: The COM6 ~ COM37 ports are located in the expansion boards if they are installed in slot 0~7 of WP-8xx8-CE7. WP-8128-CE7 has no COM3 and COM4.</b></p>	

## Appearance

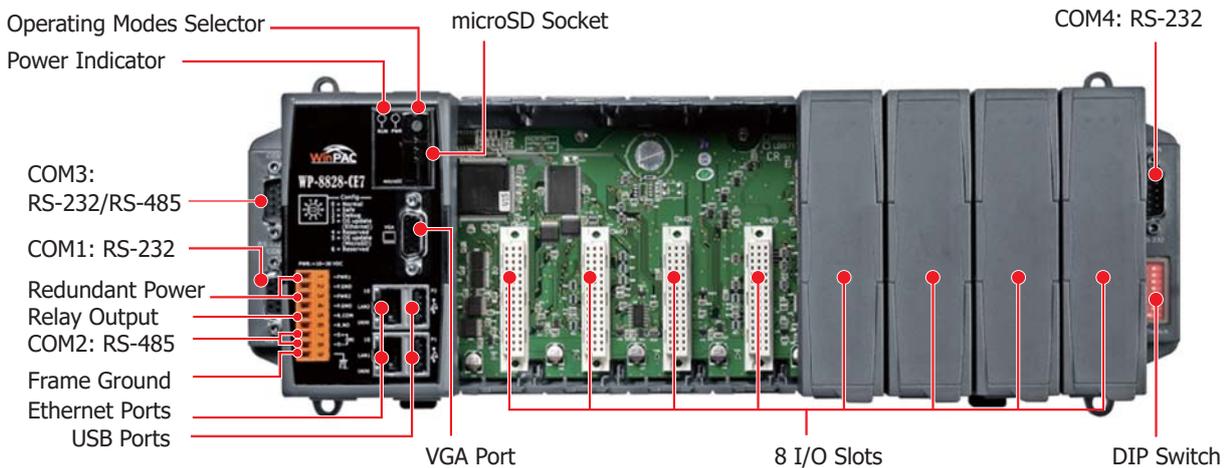
**WP-8128-CE7**



**WP-8428-CE7**



**WP-8828-CE7**

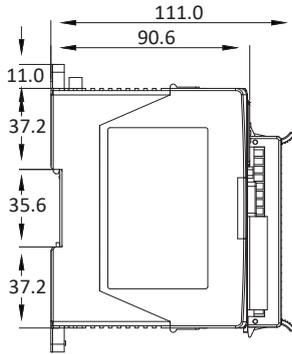


## Pin Assignment

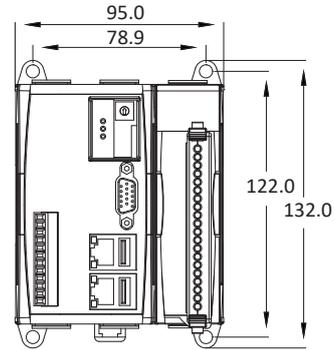
WP-8128-CE7	WP-8428-CE7 / WP-8828-CE7			
COM1: RS-232 COM2: RS-485	COM2: RS-485	COM1: RS-232	COM3: RS-232/485	COM4: RS-232
PWR: +10 ~ 30 V <sub>DC</sub> D- } COM2: RS-485 D+ } GND } RxD } COM1: RS-232 TxD } R.NO R.COM P.GND PWR2 P.GND PWR1 F.G.	PWR: +10 ~ 30 V <sub>DC</sub> PWR1 P.GND PWR2 P.GND R.COM R.NO D+ } COM2: RS-485 D- } F.G.	GND RxD TxD	Data+ TxD RxD GND CTS RTS Data-	DCD RxD TxD DTR GND DSR RTS CTS RI

## ■ Dimensions

### WP-8128-CE7

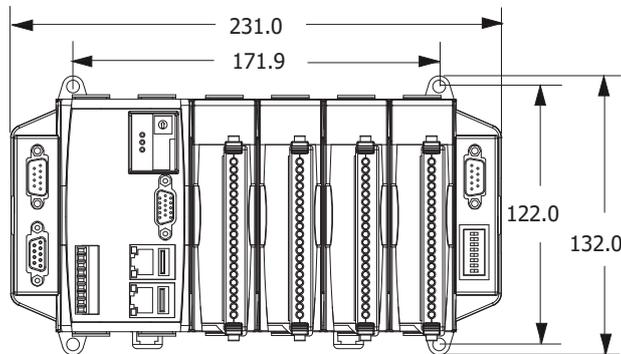


Top View



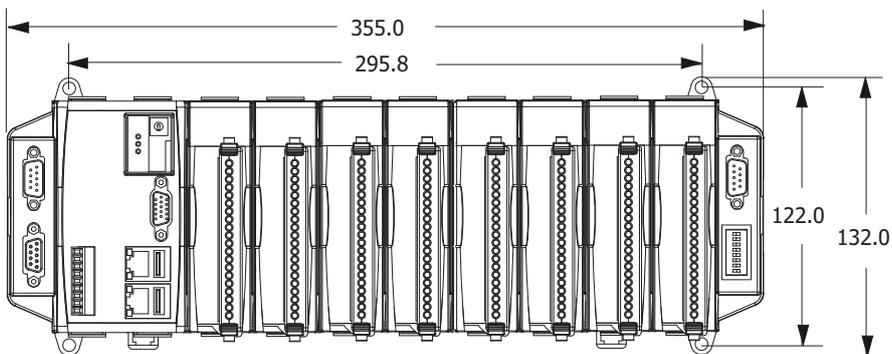
Front View

### WP-8428-CE7



Front View

### WP-8828-CE7



Front View

## ■ Ordering Information

<b>WP-8128-CE7 CR</b>	Win-GRAF based WinPAC-8000-CE7 with 1 I/O Slot
<b>WP-8428-CE7 CR</b>	Win-GRAF based WinPAC-8000-CE7 with 4 I/O Slots
<b>WP-8828-CE7 CR</b>	Win-GRAF based WinPAC-8000-CE7 with 8 I/O Slots

## ■ Related Products

<b>Win-GRAF Development Software</b>	
<b>Win-GRAF Workbench</b>	Win-GRAF Workbench Software (Large I/O Tags) with one USB Dongle