WP-8148 **WP-8448**

WP-8848

Features

- PXA270, 520 MHz CPU
- Windows CE 5.0
- Embedded Win-GRAF SoftLogic (IEC 61131-3)
- Hard Real-Time Capability
- VGA Port Output
- Modbus RTU/TCP (Master, Slave)
- Support Soft-GRAF HMI
- Redundant Power Inputs
- Operating Temperature: -25 ~ +75°C

Introduction

The **Win-GRAF WinPAC-8000** Series **(WP-8148/8448/8848)** is the new generation WinCE 5.0 based Win-GRAF PAC (Programmable Automation Controller) from ICP DAS. Each WP-8xx8 is equipped with a PXA270 CPU (520 MHz) running a Windows CE 5.0 operating system, a variety of input/output ports (VGA, USB, Ethernet, RS-232/485), and a range of I/O slots that can be used to integrate high performance parallel I/O modules (high profile I-8K Series) or serial I/O modules (high profile I-87K series).

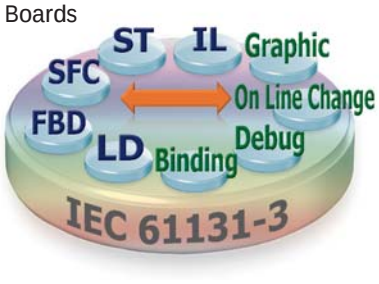
The benefits of running Windows CE 5.0 on a WinPAC device include hard real-time capability, achievable deterministic control and allowing PAC can have a PC-like window displays and operating environment. The WP-8xx8 series PACs are capable of running Win-GRAF (IEC 61131-3 Standard) software to develop logic control applications, and also supporting M.S. VS 2008 or VS 2010 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 or 8. 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)
- Data Binding (Exchange Data Between PACs)
- Using ST Syntax in the FBD or LD Program
- On Line Debug/Control/Monitor, Off Line 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, XP-9xx8-CE6 PAC only)

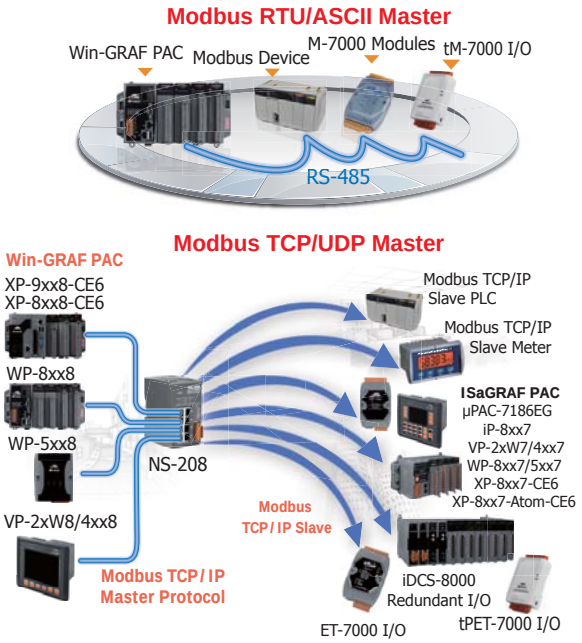


Applications

On Line Change

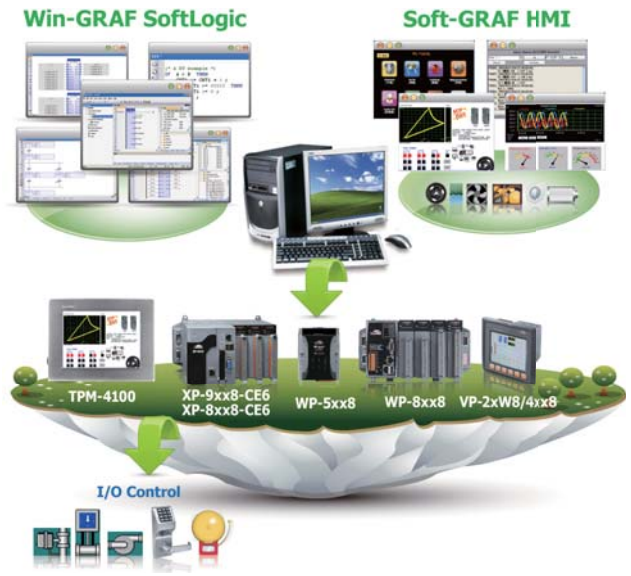
- Replace the current running project to a new modified one without stopping the project.

Modbus Master Ports

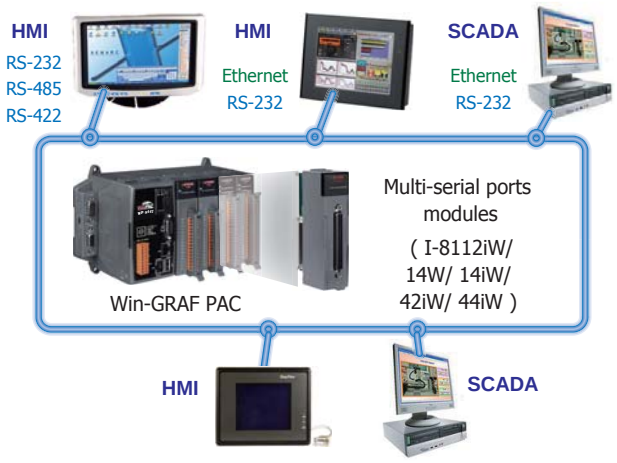


XP-9xx8-CE6/XP-8xx8-CE6 support max. 200 devices.
WP-8xx8/5xx8 & VP-2xW8/4xx8 support max. 32 devices.

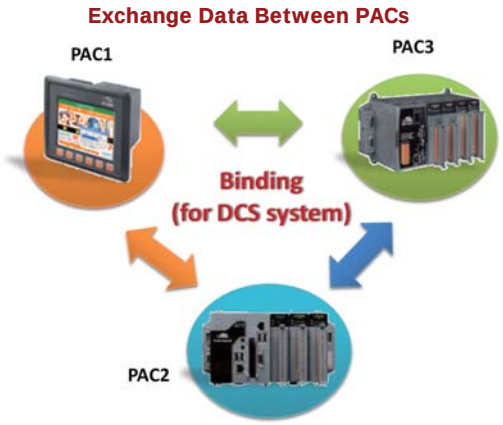
Soft-GRAF Colorful HMI



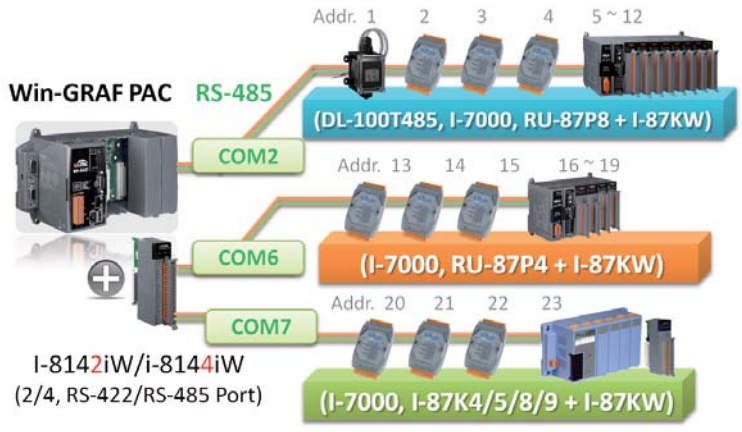
Modbus RTU/TCP Slave Ports



Data Binding



DCON Remote I/O



PAC Specifications

Models		WP-8148	WP-8448	WP-8848
System Software				
OS		Windows CE 5.0		
.Net Compact Framework		3.5		
Embedded Service		FTP server, Web server		
Multilanguage Support		English, German, French, Spanish, Russian, Italian, Korean, Simplified Chinese, Traditional Chinese		
Development Software				
Win-GRAF Software	Win-GRAF	IEC 61131-3 standard.		
	Languages	LD, ST, FBD, SFC & IL; Support Soft-GRAF HMI: WP-8xx8, WP-5xx8, XP-8xx8-CE6, XP-9xx8-CE6, VP-25W8/4138 PAC		
	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 2008/2010 (VB.NET, C#.NET, C)		
CPU Module				
CPU		PXA270, 520 MHz		
SDRAM		128 MB		
Fast Retain Memory		512 KB (for retain variables)		
Flash		96 MB		
EEPROM		16 KB		
Memory Expansion		microSD socket with one microSD card (support up to 32 GB)		
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		
Programmable LED Indicator		1		
Rotary Switch		Yes (0 ~ 9)		
DIP Switch		-	Yes (8 bits)	
VGA & Communication Ports				
VGA		Yes (640 x 480, 800 x 600)		
Ethernet		RJ-45 x 2, 10/100 Base-TX (Auto-negotiating, LED indicators)		
USB 1.1 (host)		1		
COM 0		Internal communication with the high profile I-87K series modules in slots		
COM 1		RS-232 (to update firmware) (RxD, TxD and GND); non-isolated		
COM 2		RS-485 (Data+, Data-) with internal self-tuner ASIC; 2500 VDC isolated for WP-8138 and WP-8148; 3000 VDC isolated for other models.		
COM 3		-	Yes	
		RS-232/RS-485 (RxD, TxD, CTS, RTS and GND for RS-232, Data+ and Data- for RS-485); non-isolated		
COM 4		-	Yes	
		RS-232 (RxD, TxD, CTS, RTS, DSR, DTR, CD, RI and GND); non-isolated		
I/O Expansion Slots				
Slot Number		1	4	8
		Note: For High Profile I-8K and I-87K Modules Only		
Mechanical				
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		
Environmental				
Operating Temperature		-25 ~ +75°C		
Storage Temperature		-30 ~ +80°C		
Ambient Relative Humidity		10 ~ 90% RH (non-condensing)		
Power				
Input Range		+10 ~ +30 VDC		
Isolation		1 kV		
Redundant Power Inputs		Yes, with one power relay (1 A @ 24 VDC) for alarm		
Capacity		8 W	30 W	30 W
Consumption		7.3 W	9.1 W	9.6 W

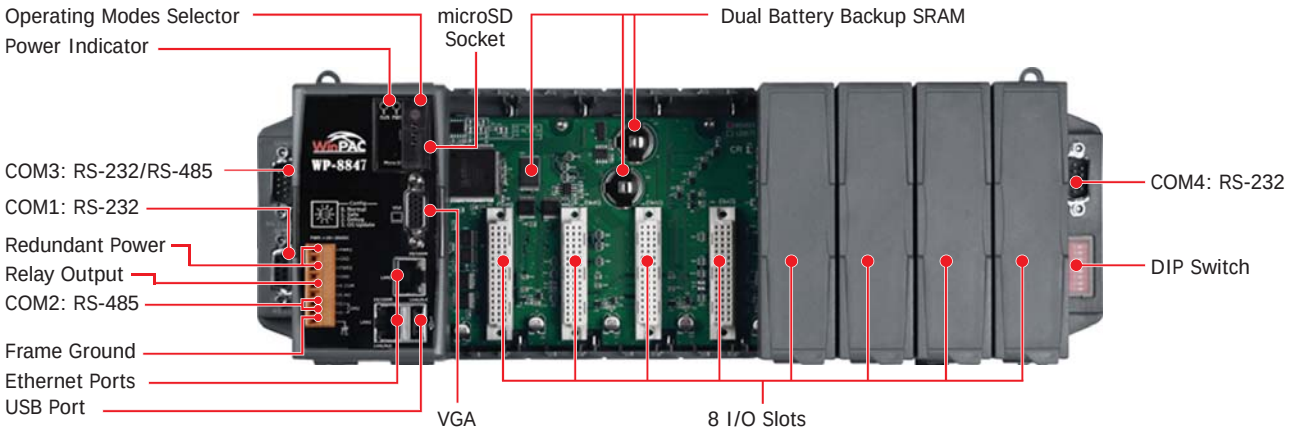
Win-GRAF Specifications

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. (Refer Optional I/O List)
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		Used to exchange data between ICP DAS Win-GRAF PAC via Ethernet ports (LAN1 and LAN2). And can setup the Redundant Binding 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 ICP DAS I-8KE4/8-MTCP, PETL-7000, tPET/tET series I/O modules which support Modbus TCP protocol.
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.
Soft-GRAF HMI		Support to run HMI program (developed by the Soft-GRAF Studio) together with the Win-GRAF logic-control program in the same PAC.
Optional I/O List (Refer to http://www.icpdas.com/root/product/solutions/remote_io/rs-485/i-8k_i-87k/i-8k_i-87k_selection.html#a)		
Digital Input (DI)		I-8040W, I-8046W, I-8051W, I-8052W, I-8053W, I-8053PW, I-87040W, I-87040PW, I-87046W, I-87051W, I-87052W, I-87053W, I-87053PW, I-87053W-A2, I-87053W-A5, I-87053W-E5
Digital Input/Output (DIO)		I-8042W, I-8050W, I-8054W, I-8055W, I-87042W, I-87054W, I-87055W
Digital Output (DO)		I-8037W, I-8041W, I-8041AW, I-8056W, I-8057W, I-87037W, I-87041W, I-87057W, I-87057PW
Relay Output		I-8060W, I-8063W, I-8064W, I-8068W, I-8069W, I-87061W, I-87061PW, I-87063W, I-87064W, I-87065W, I-87066W, I-87068W, I-87068W-2A, I-87069W, I-87069PW
AC Input		I-8058W, I-87053W-AC1, I-87058W, I-87059W
Analog Input (AI)		I-8017DW, I-8017HW, I-8017HCW, I-87017W, I-87017RW, I-87017RCW, I-87017DW, I-87017EW, I-87018W, I-87018RW, I-87018PW, I-87018ZW, I-87019PW, I-87019RW, I-87019ZW
Analog Output (AO)		I-8024W, I-87024CW, I-87024UW, I-87024DW, I-87024RW, I-87024W, I-87028CW, I-87028UW, I-87028VW, I-87028VW-20V
Multifunction (DIO, AIO)		I-87026W
Temperature Input	Thermister	I-87005W
	RTD	I-87013W, I-87015W, I-87015PW
	T/C	I-87018W, I-87018RW, I-87018PW, I-87018ZW, I-87019PW, I-87019RW, I-87019ZW
Strain Gauge		I-87016W
Counter/Frequency Input		I-8084W, I-87082W, I-87084W
Encoder Input		I-8093W
PWM Output		I-8088W
Communication Module		I-8112iW, I-8114W, I-8114iW, I-8142iW, I-8144iW
Temperature & Humidity Input		DL-100T485, DL-100T485-W, DL-100T485P, DL-100T485P-W (DCON Protocol) DL-100TM485, DL-100TM485-W, DL-100TM485P, DL-100TM485P-W (Modbus RTU Protocol)

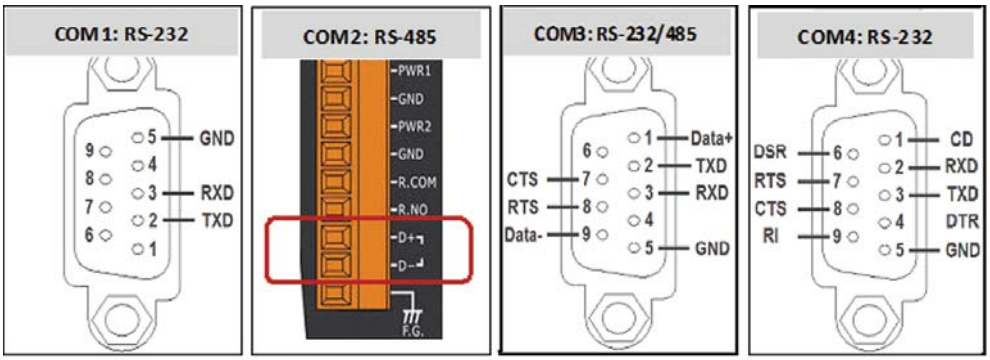
*** Note: The COM6 ~ COM37 ports are located in the expansion boards if they are installed in slot 0~7 of WP-8xx8.**
*** WP-8148 has no COM3 & COM4.**
*** ICP DAS recommends using NS-205/208 or RS-405/408 (Ring Switch) Industrial Ethernet Switches.**

Appearance

WP-8848



Pin Assignment



Ordering Information

WP-8148-EN	Win-GRAF based WinPAC-8000 with 1 I/O Slot (Multilanguage Version of OS)
WP-8448-EN	Win-GRAF based WinPAC-8000 with 4 I/O Slots (Multilanguage Version of OS)
WP-8848-EN	Win-GRAF based WinPAC-8000 with 8 I/O Slots (Multilanguage Version of OS)
WP-8148-TC	Win-GRAF based WinPAC-8000 with 1 I/O Slot (Traditional Chinese Version of OS)
WP-8448-TC	Win-GRAF based WinPAC-8000 with 4 I/O Slots (Traditional Chinese Version of OS)
WP-8848-TC	Win-GRAF based WinPAC-8000 with 8 I/O Slots (Traditional Chinese Version of OS)
WP-8148-SC	Win-GRAF based WinPAC-8000 with 1 I/O Slot (Simplified Chinese Version of OS)
WP-8448-SC	Win-GRAF based WinPAC-8000 with 4 I/O Slots (Simplified Chinese Version of OS)
WP-8848-SC	Win-GRAF based WinPAC-8000 with 8 I/O Slots (Simplified Chinese Version of OS)

Software and Accessories

Win-GRAF Development Software	
Win-GRAF Workbench	Win-GRAF Workbench Software (Large I/O Tags) with one USB Dongle
Accessories	
DP-660	24 V_{DC}/2.5 A, 60 W and 5 V_{DC}/0.5 A, 2.5 W Power Supply with DIN-Rail Mounting
DP-1200 CR	24 V_{DC}/5.0 A, 120 W Power Supply with DIN-Rail Mounting (RoHS)
MDR-60-24 CR	24 V_{DC}/2.5 A, 60 W Power Supply with DIN-Rail Mounting (RoHS)
NS-205 CR / NS-208 CR	5-port / 8-port Unmanaged Industrial 10/100 Ethernet Switch with Plastic Case (RoHS)
RS-405 CR / RS-408 CR	5-port / 8-port Real-time Redundant Ring Switch (RoHS)
TPM-4100/TP-4100	10.4" (800 x 600) resistive touch panel monitor with RS-232 or USB interface