

WP-5238-CE7

Features

- Cortex A8, 1 GHz CPU
- 512 MB SRAM and 256 MB Flash
- Windows CE 7.0 Professional
- Embedded Win-GRAF SoftLogic (IEC 61131-3)
- Hard Real-Time Capability
- 64-bit Hardware Serial Number for Software Protection
- I/O Expansion Bus
- 10/100/1000M Ethernet Port
- 4 Serial Ports (RS-232/485)
- Operating Temperature: -25 ~ +75°C

Introduction

The **Win-GRAF WinPAC-5000** Series (**WP-5238-CE7**) is the new generation WinCE 7.0 based Win-GRAF PAC (Programmable Automation Controller) from ICP DAS. This series PAC is equipped an Cortex A8 CPU (1 GHz) and running a windows CE.NET 7.0 operating system. The optional I/O expansion board, XV-board, provides high-protection I/O. Using the built-in micro SD, the Win-GRAF WP-5000 series can save application program, image file and data.

The benefits of running Windows CE 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 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.

Windows CE7

Microsoft Windows CE.net

Windows CE 7.0 is a compact and real-time OS used to quickly create time critical and high performance applications. Using Windows CE 7.0 gives an ability to run PC-based control software such as Visual Basic .NET, Virtual C#.

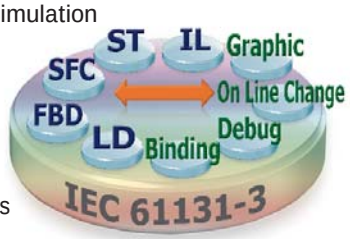
- ★ FTP Server
- ★ Web Server
- ★ SQL Compact Edition 3.5
- ★ .NET Compact Framework 3.5
- ★ Virtual CE Pro (VCEP)

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)
- 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-8x38-CE6 PAC only)

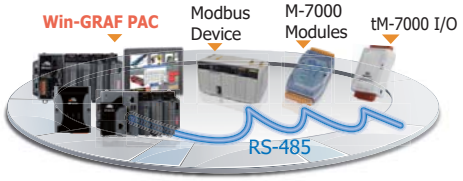




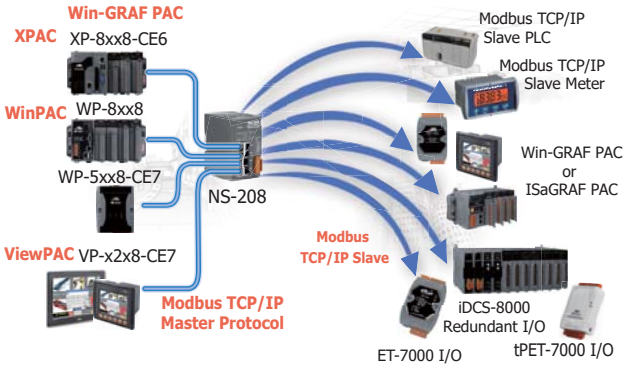
Applications

Modbus Master Ports

Modbus RTU/ASCII Master



Modbus TCP/IP Master



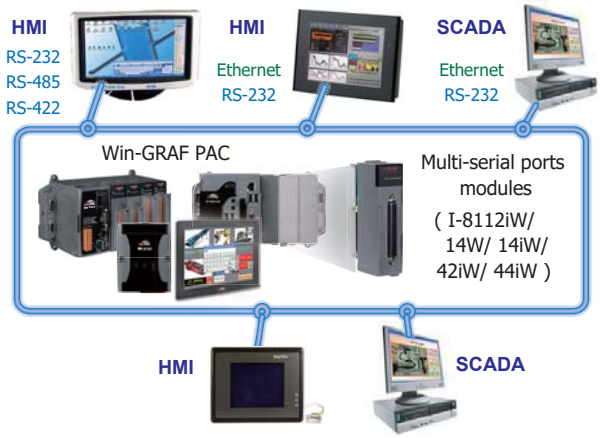
Win-GRAF XPAC support max. 200 devices.
Win-GRAF WinPAC & ViewPAC support max. 32 devices.

On Line Change

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

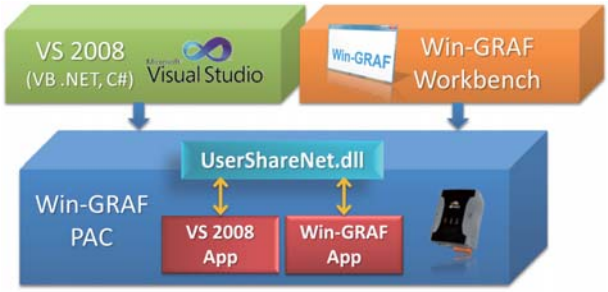


Modbus RTU/TCP Slave Ports

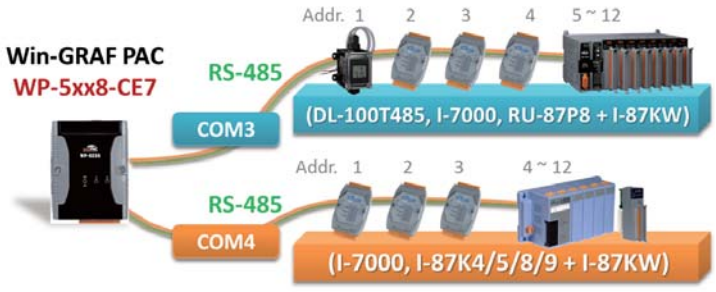


Support VS 2008 Development

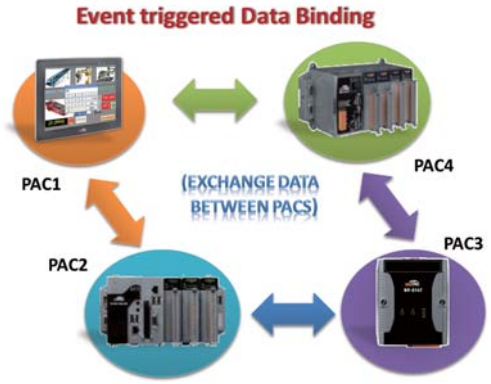
- The Win-GRAF PACs support to use VS 2008 (VB.net, C#) to develop user own HMI and data management programs, and can exchange variables with the Win-GRAF control programs.



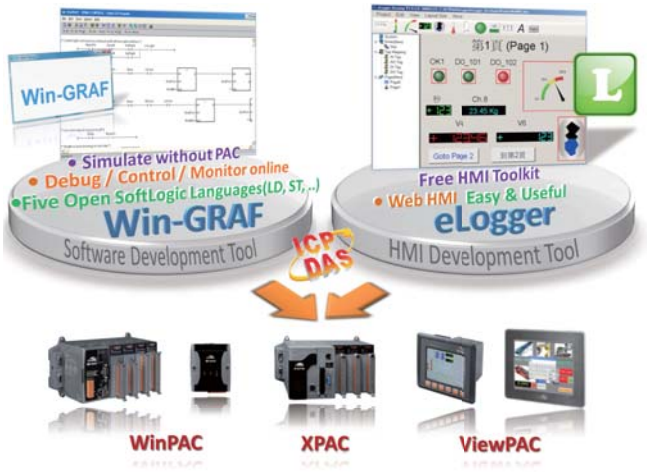
DCON Remote I/O



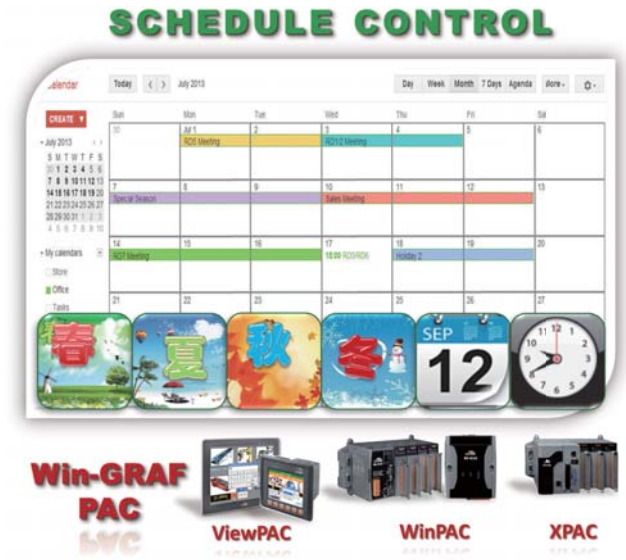
Data Binding



eLogger HMI

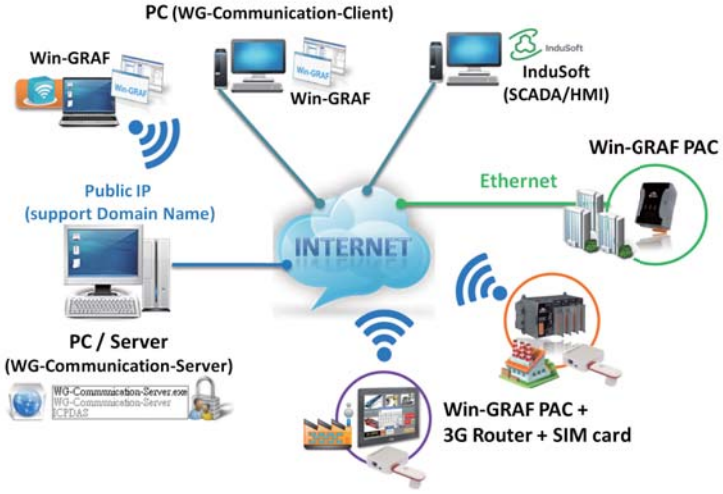


Schedule Control



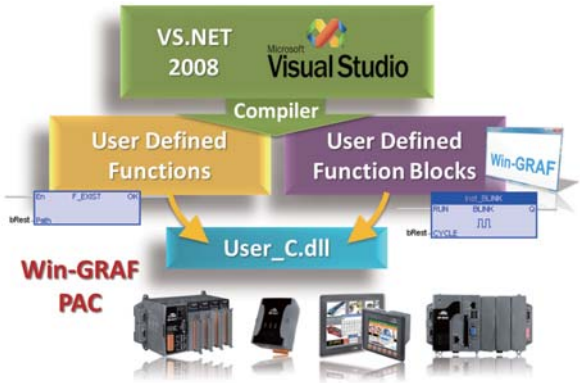
Intelligent Win-GRAF 3G Solution

- Only the WG-Communication Server (behavior like a Cloud Server) needs a public IP (Support Domain Name). Other PACs and PCs that connect to this Server no need a public IP.
- The user can monitor the remote PAC by using a 3G wireless network or an intranet.
- The user can use the Win-GRAF Workbench to connect to a remote PAC to debug/update the Win-GRAF program or update the Win-GRAF PAC Driver.
- The PAC can actively send a Log File to a PC (WG-Communication-Server).



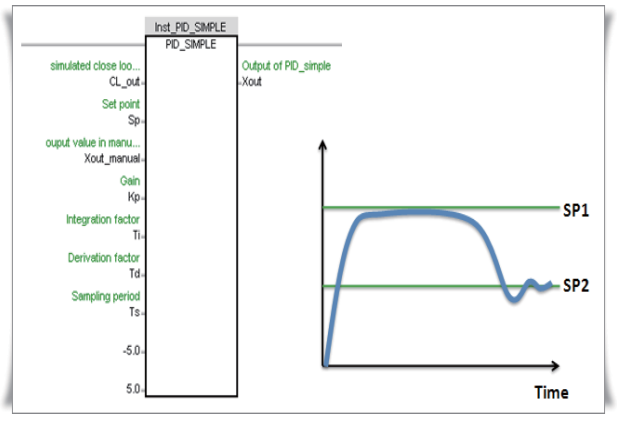
Create Your Own Functions and Function Blocks

- For some reason (like business protection, integration with your own product protocol, and etc.), you can develop your own functions and function blocks by VS 2008. Then, you can use these functions and function blocks in the Win-GRAF project.



PID Control

- Can Control more than 200 PID in one PAC.



PAC Specifications

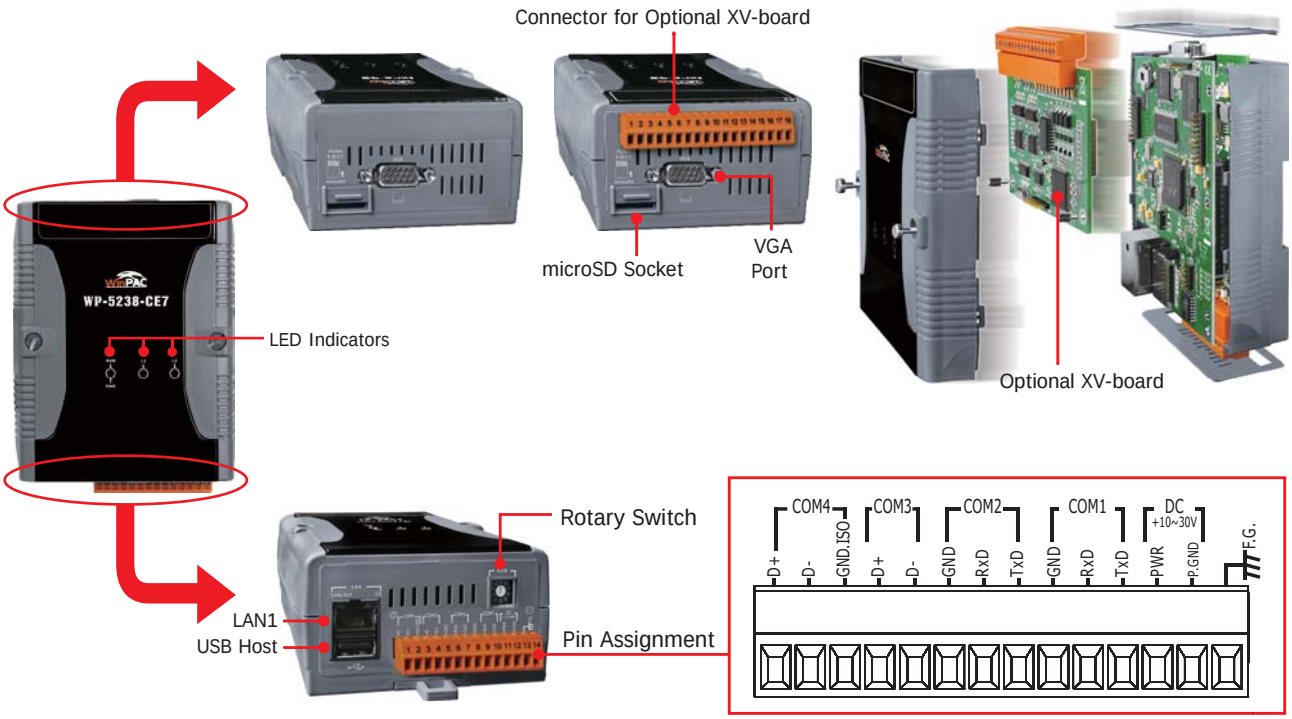
Models		WP-5238-CE7
System Software		
OS		Windows CE 7.0 Core
.Net Compact Framework		3.5
Embedded Service		FTP server, Web server
SDK Provided		Dll for Visual Studio.Net 2008
Multilanguage Support		English, German, French, Spanish, Russian, Italian, Korean, Simplified Chinese, Traditional Chinese
Development Software		
Win-GRAF Software	Win-GRAF	IEC 61131-3 standard.
	Languages	LD, ST, FBD, SFC & IL
	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)
CPU Module		
CPU		Cortex A8, 1 GHz
DDR3 SDRAM		512 MB
Flash		256 MB
FRAM		64 KB (for retain variables)
Expansion Flash Memory		microSD socket with one 4 GB microSD card (support up to 32 GB microSDHC card)
RTC (Real Time Clock)		Provide second, minute, hour, date, day of week, month, year
64-bit Hardware Serial Number		Yes, for Software Copy Protection
Dual Watchdog Timers		Yes
LED Indicators		1 LED for Power and Running; 2 LED for user defined
Rotary Switch		Yes (0 ~ 9)
VGA & Communication Ports		
VGA		Yes. Resolution: 640 × 480, 800 × 480, 800 × 600, 1024 × 768
Ethernet		RJ-45 x 1, 10/100/1000 Based-TX (Auto-negotiating, Auto MDI/MDI-X, LED indicators)
USB 2.0 (host)		1
COM 1		RS-232 (RxD, TxD and GND); Non-isolated
COM 2		RS-232 (RxD, TxD and GND); Non-isolated
COM 3		RS-485 (Data+, Data-); Non-isolated
COM 4		RS-485 (Data+, Data-); 2500 VDC isolated
I/O Expansion		
I/O Expansion Bus		Yes, one optional XV-board
Mechanical		
Dimensions (W x L x H)		91 mm x 132 mm x 52 mm
Installation		DIN-Rail Mounting
Environmental		
Operating Temperature		-25 ~ +75 °C
Storage Temperature		-40 ~ +80 °C
Ambient Relative Humidity		10 ~ 90% RH (non-condensing)
Power		
Input Range		+10 ~ +30 V_{DC}
Consumption		4.8 W

Win-GRAF Specifications

Models	WP-5238-CE7
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 200 IP links to access/control the devices supporting Standard Modbus TCP Slave protocol.
Modbus RTU/ASCII Master	A max. of 4 ports: COM1 ~ 4 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 4 ports: COM1 ~ 4 for connecting SCADA/HMI.
Modbus TCP Slave	One Ethernet ports (LAN1) support up to 64 connections. If the PAC uses 1 connection to connect each PC/HMI, it can connect up to 64 PCs/HMIs; If the PAC uses 2 connections to connect each PC/HMI, it can connect up to 32 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 ~ 4 by using Serial communication functions or function blocks.
DCON Remote I/O	A max. of 4 RS-485 ports: COM1 ~ 4. 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 one I/O XV-board. (Refer Optional I/O XV-board 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	Exchange data between ICP DAS Win-GRAF PAC via Ethernet port (LAN1). The data transmission is event triggered. It is much efficient than polling way.
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.
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.
Optional I/O XV-board List (http://www.icpdas.com/root/product/solutions/hmi_touch_monitor/touchpad/xv-board_selection.htm)	
Digital Input (DI)	XV110
Digital Input/Output (DIO)	XV107 , XV107A
Digital Output (DO)	XV111 , XV111A
Relay Output	XV116
Multi-function (DIO, AIO)	XV308 , XV310
GPS	GPS-721

*** Note: The expansion I/O is located in the optional XV-board series if it is installed inside the WP-5xx8-CE7.**
*** ICP DAS recommends using NS-205/208 or RS-405/408 (Ring Switch) Industrial Ethernet Switches.**
*** For application with 1000 Mbps Ethernet communication, please select proper switch which support 1000 Mbps (like the NS-208AG, ...)**

Appearance



Ordering Information

WP-5238-CE7 CR	Win-GRAF based WP-5000 PAC with WinCE 7.0 and one LAN port (RoHS)

Related Products

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

Option Accessories

XV-board	Add-on I/O Expansion Board
DP-660	24 VDC/2.5 A, 60 W and 5 VDC/0.5 A, 2.5 W Power Supply with DIN-Rail Mounting
DP-1200 CR	24 VDC/5.0 A, 120 W Power Supply with DIN-Rail Mounting (RoHS)
MDR-20-24 CR	24 VDC/1.0 A, 24 W Power Supply with DIN-Rail Mounting (RoHS)
MDR-60-24 CR	24 VDC/2.5 A, 60 W Power Supply with DIN-Rail Mounting (RoHS)
NS-205 CR	5-port Unmanaged Industrial 10/100 Ethernet Switch with Plastic Case (RoHS)
NS-208 CR	8-port Unmanaged Industrial 10/100 Ethernet Switch with Plastic Case (RoHS)
NS-208AG CR	Unmanaged 8-port 10/100/1000 Base-T Ethernet Switch with Power Input +12 VDC ~ +48 VDC (RoHS)
RS-405 CR	5-port Real-time Redundant Ring Switch (RoHS)
RS-408 CR	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