Compact PAC

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2.1. XP-8000 and XP-8000-Atom Series

• Overview

Microsoft Windows Embedded Standard 2009

Microsoft Windows CE.net

intel Atom inside

The XP-8000-Atom combines the functionality and openness of PC, the reliability of a programmable logic controller (PLC), and the intelligence of I/O modules. Compared to PC and PLC, the price/performance of PAC is the best. Moreover, XP-8000-Atom can be widely used in Factory Automation, Building Automation, Machine Automation, Laboratory Automation, chemical industry, environmental monitoring, M2M…etc.

XP-8000-Atom is the new generation PAC of ICP DAS. It is equipped a Intel Atom CPU running a Windows Embedded Standard 2009(XPE) or Windows Embedded CE6 Operating System, various connectivity (VGA, USB, Ethernet, RS-232/RS-485) and 1/3/7 slots for high performance parallel I/O modules. Compared with the XP-8000 (AMD LX800), it not only improves the CPU performance (5~6 times faster than AMD LX800), but also adds many features, such as DDR2 memory, Dual Gigabits Ethernet, HD Audio, replaceable SSD (8G), etc.

With the Intel Hyper-Threading Technology of Atom CPU, the XP-8000-Atom can be used for deterministic operation. XP-8000-Atom supports Windows Embedded Standard 2009(XPE) and Windows CE6 R3.

Windows Embedded Standard 2009 has the same Win32 API as Windows XP Professional. Most popular applications on desktop can be easily ported to Windows Embedded Standard 2009. It's also compatible with rich Windows IDEs, such as Visual studio, Delphi, Borland C++ Builder, etc. These points effectively reduce the efforts of developments and shorten the time to market.

Windows Embedded CE is a componentized, real-time, high performance, and highly reliable operating system. Windows CE 6 R3 delivers rich user experiences and a unique connection to Windows PCs, servers, services, and devices. XP-8000-Atom also supports Soft PLC such as ISaGRAF and K.W..

XP-8000-Atom ≒ IPC+I/O Cards

Main Components:

1 Main Control Unit (MCU)

The MCU is the powerhouse of the XP-8000-Atom. Each MCU comprises a Central Processor Module (CPM), a power supply, and a 1, 3, 7-slot backplane for I/O modules. The CPM is powerful integrated processing engine comprising a CPU, RAM and ROM, and an option of communication interfaces including Ethernet, RS-485, RS-232, CAN bus and FRnet.

3 I/O Modules

I/O modules have two types, i.e., parallel bus and serial bus. The parallel bus type I/O modules (high profile I-8K series) are high speed ones used only in the PACs including XPAC, WinPAC, iPAC, ViewPAC, etc. And the serial bus type I/O modules (high profile I-87K series) are low speed ones used in both PACs including XPAC, WinPAC, iPAC, ViewPAC, etc., and I/O expansion units including RU-87Pn, ET-87Pn, USB-87Pn, etc.

4 Remote I/O Expansion

XP-8000-Atom uses built-in RS-485 and Ethernet ports to connect RS-485/Ethernet remote I/O units (RU-87Pn/ ET-87Pn) or modules (I-7000/M-7000/ET-7000). In this configuration, XP-8000-Atom expands the I/O very easily.
Using CAN or FRnet communication module, XP-8000-Atom can connect CAN bus devices, remote I/O units or FRnet I/O modules for deterministic control system.

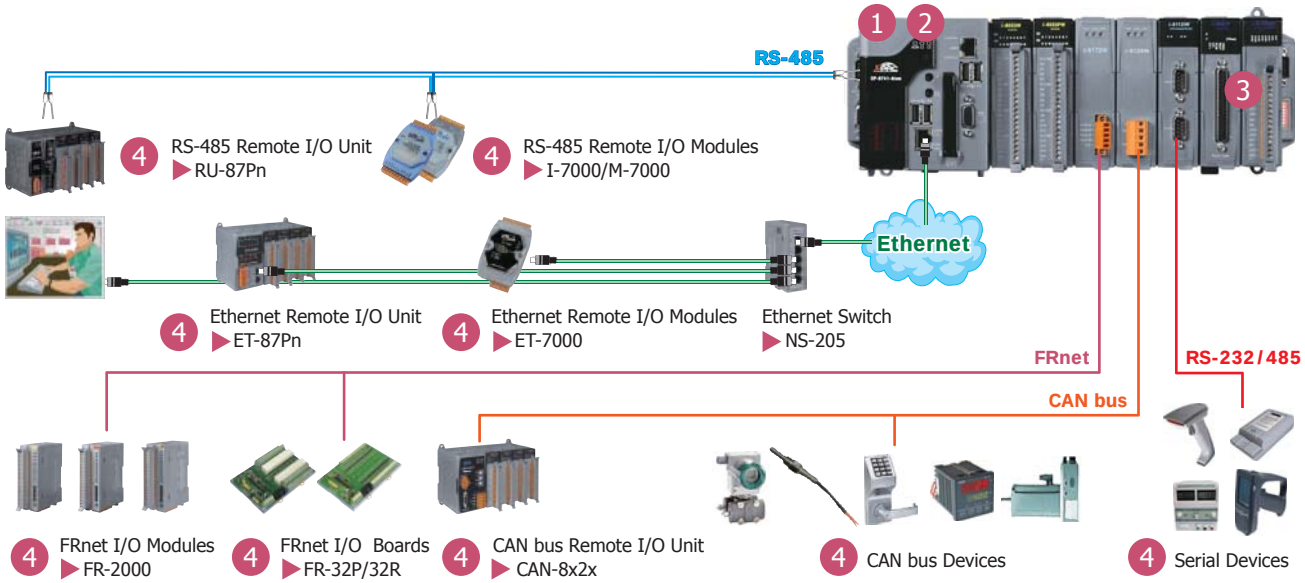
2 Embedded OS

- **Windows Embedded Standard 2009(XPE)**

Most of the popular features in Windows software are included, such as EWF(Enhanced Write Filter), Remote Desktop Connection, IIS, ASP/ASP.NET, SQL Server 2005 Express Edition, .NET Framework 3.5 and also supports rich development software solutions, such as VS 6.0, VS.NET 2005/2008, VB, Delphi, BCB, InduSoft, etc.

- **Windows CE6**

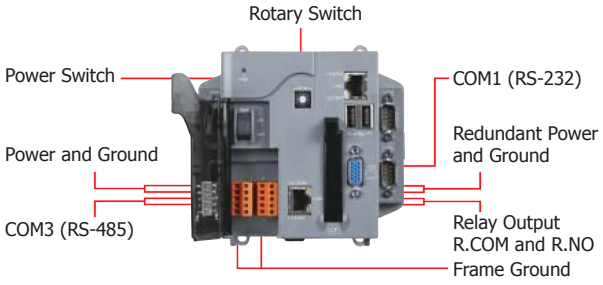
Windows CE 6 is a compact and real-time OS used to quickly create time critical and high performance applications. With Windows CE 6, users can use familiar tools (VS .NET 2005/2008) to develop software. Its kernel architecture supports significantly more simultaneously running processes, from 32 up to 32,000 simultaneous processes, each of which can run in a 2GB virtual memory address space. This allows developers to incorporate larger numbers of more complex applications into the XP-8000-Atom-CE6. Further more, the development tools of Soft PLC (ISaGRAF) and SCADA (InduSoft) are also available.



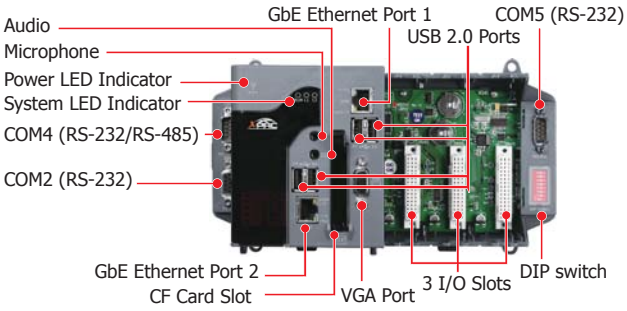
• Hardware

• Appearance

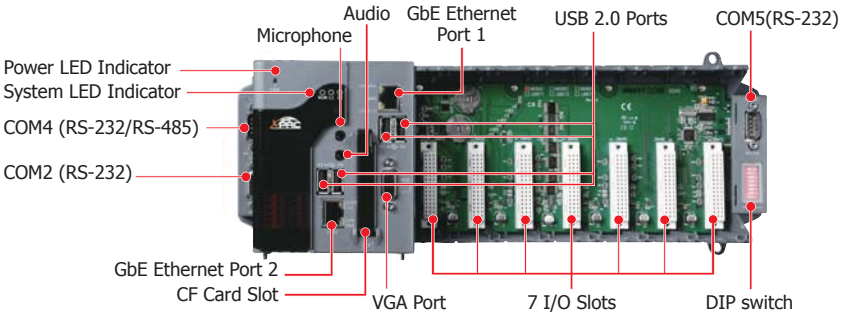
XP-8041



XP-8341-Atom



XP-8741-Atom



• Selection Guide

XP-8 X X X - Atom

- **NO. of I/O Slot**
- **Hardware**
  4: VGA 1600 x 1200
- **Software**
  1: Standard

XP-8 X X X

- **NO. of I/O Slot**
- **Hardware**
  4: VGA 1600 x 1200
- **Software**
  1: Standard

Standard XPAC (Windows Embedded Standard 2009)

Model Name	OS	Pre-installed Software	CPU	Flash	SDRAM	VGA Resolution	Ethernet Port	RS-232/RS-485	I/O Slot
XP-8141-Atom	WES 2009	None	Atom Z520, 1.33 GHz	8 GB	DDR2 x 1 GB	1600 x 1200	2	4	1
XP-8341-Atom									3
XP-8741-Atom									7
XP-8041			LX800, 500 MHz	4 GB	DDR x 1 GB			5	0
XP-8341								4	3
XP-8741									7

The controller supports following software development tools:
1. DLLs of I/O modules for VS.NET 2005/2008
2. OPC server for SCADA softw

XP-8 X X X -Atom-CE6

- X: NO. of I/O Slot
- X: Hardware
  - 4: VGA 1600 x 1200
- X: Software
  - 1: Standard
  - 7: ISaGRAF
  - 9: InduSoft

XP-8 X X X - CE6

- X: NO. of I/O Slot
- X: Hardware
  - 4: VGA 1024 x 768 OR above
- X: Software
  - 1: Standard
  - 7: ISaGRAF
  - 9: InduSoft

Standard XPAC (Windows CE .NET 6.0 Inside)

Model Name	OS	Pre-installed Software	CPU	Flash	SDRAM	VGA Resolution	Ethernet Port	RS-232/RS-485	I/O Slot
XP-8141-Atom-CE6	CE 6.0	None	Atom Z510, 1.10 GHz	2 GB	DDR2 x 512 MB	1024 x 768	2	4	1
XP-8341-Atom-CE6									3
XP-8741-Atom-CE6									7
XP-8041-CE6			LX800, 500 MHz	4 GB	DDR x 512 MB			5	0
XP-8341-CE6								4	3
XP-8741-CE6									7

The controller supports following software development tools:
1. DLLs of I/O modules for eVC, VS.Net 2005/2008
2. DLLs of Modbus/RTU and Modbus/TCP for eVC and VS.Net 2005/2008
3. OPC server (Quicker)

ISaGRAF Based XPAC (Windows CE .NET 6.0 Inside)

Model Name	OS	Pre-installed Software	CPU	Flash	SDRAM	VGA Resolution	Ethernet Port	RS-232/RS-485	I/O Slot
XP-8147-Atom-CE6	CE 6.0	ISaGRAF	Atom Z510 (1.10 GHz)	2 GB	DDR2 x 512 MB	1024 x 768	2	4	1
XP-8347-Atom-CE6									3
XP-8747-Atom-CE6									7
XP-8047-CE6			LX800, 500 MHz	4 GB	DDR x 512 MB			5	0
XP-8347-CE6								4	3
XP-8747-CE6									7

The controller fully supports all five of the IEC61131-3 standard PLC languages:
1. Ladder diagram,
2. Function block diagram,
3. Sequential function chart,
4. Structured text,
5. Instruction List plus flow chart.

It supports Modbus protocol and can link to distributed I/O modules with Modbus or DCON protocol via the RS-232/485 or Ethernet.

InduSoft Based XPAC (Windows CE .NET 6.0 Inside)

Model Name	OS	Pre-installed Software	CPU	Flash	SDRAM	VGA Resolution	Ethernet Port	RS-232/RS-485	I/O Slot
XP-8149-Atom-CE6	CE 6.0	InduSoft	Atom Z510 (1.10 GHz)	2 GB	DDR2 x 512 MB	1024 x 768	2	4	1
XP-8349-Atom-CE6									3
XP-8749-Atom-CE6									7
XP-8049-CE6			LX800, 500 MHz	4 GB	DDR x 512 MB			5	0
XP-8349-CE6								4	3
XP-8749-CE6									7

The controller can be used to develop following applications:
1. Human Machine Interfaces (HMI)
2. Supervisory Control and Data Acquisition System (SCADA)
3. Web server

XP-8041

XP-8141-Atom

XP-8341

XP-8341-Atom

XP-8741

XP-8741-Atom

Features

- LX800, 500 MHz CPU or Atom Z520, 1.33 GHz CPU
- Windows Embedded Standard 2009
- SQL Server 2005 Express Edition
- Audio with Microphone-In and Earphone-Out
- VGA Port Output
- Support eLogger HMI
- Redundant Power Inputs
- Operating Temperature: -25 ~ +75°C

Introduction

XP-8x41-Atom series is the new generation Windows Embedded Standard 2009 based PACs of XP-8x41. It is equipped with an Intel Atom Z520 Series CPU at 1.33GHz, while XP-8x41 is equipped with a LX800 CPU at 500 MHz. They provide various connectivity (VGA, USB, Ethernet, RS-232/485) and 0/1/3/7 I/O slots for high performance parallel I/O modules (high profile I-8K Series) and serial I/O modules (high profile I-87K series). The benefits of running Windows Embedded Standard 2009 include

- Enhanced Write Filter (EWF): Protects disk against improper disk write operations.
- Same Win32 API: Makes developing applications just like Windows XP Professional developers do.

This makes almost every PC-based program can be easily ported to XPAC-Atom and effectively reduces the system development efforts and shortens the time to market.

For software copy protection, programmers can design software based on the 64-bit hardware serial number for making software copy protected.

Windows Embedded Standard 2009

Microsoft Windows Embedded Standard 2009

Windows Embedded Standard 2009 has the same Win32 API as Windows XP Professional. Most popular applications on desktop can be easily ported to Windows Embedded Standard 2009. It's also compatible with rich Windows IDEs, such as Visual studio, Delphi, Borland C++ Builder, etc. These points effectively reduce the efforts of developments and shorten the time to market.

The key features are

- Full Win32 API
- Remote Desktop Protocol 5.1
- Silverlight 4.0
- Enhanced Write Filter
- MS SQL Server 2008 R2 Express
- Microsoft .NET Framework 3.5

Specifications

Models	XP-8041	XP-8341	XP-8741	XP-8141-Atom	XP-8341-Atom	XP-8741-Atom
System Software						
OS	Microsoft Windows Embedded Standard 2009					
.Net Compact Framework	3.5					
Embedded Service	FTP Server, Internet Information Service 5.1, ASP (Java Script, VB Script), SQL Server 2005 Express					
SDK Provided	Dll for VC, VB, Delphi, BCB, Visual Studio .NET 2005/2008					
Multilanguage Support	English, German, French, Spanish, Russian, Italian, Czech, Japanese, Korean, Simplified Chinese, Traditional Chinese					
CPU Module						
CPU	LX800, 500 MHz			Atom Z520, 1.33 GHz		
System Memory	1 GB DDR SDRAM			1 GB DDR2 SDRAM		
Dual Battery Backup SRAM	512 KB; data valid up to 5 years					
Flash	4 GB as IDE Master			8 GB as IDE Master		
EEPROM	16 KB					
CF Card	8 GB (support up to 32 GB)					
RTC (Real Time Clock)	Provide second, minute, hour, date, day of week, month, year					
Programmable LED Indicator	-			2		
64-bit Hardware Serial Number	Yes, for Software Copy Protection					
Dual Watchdog Timers	Yes					
Rotary Switch	Yes (0 ~ 9)					
DIP Switch	-	Yes (8 bits)				
Audio	-			Microphone-In and Earphone-Out		
VGA & Communication Ports						
VGA	Yes, (resolution: 1600 x 1200, 1024 x 768, 800 x 600 , 640 x 480)					
Ethernet (Giga bit)	RJ-45 x 2, 10/100/1000 Base-T (Auto-negotiating, Auto MDI/MDI-X, LED indicators)					
USB 2.0	2			4		
COM 1	RS-232 (RxD, TxD and GND); non-isolated	Internal communication with the high profile I-87K series modules in slots				
COM 2	RS-232 (RxD, TxD and GND); non-isolated					
COM 3	RS-485 (Data+, Data-) with internal self-tuner ASIC; 3000 V_{DC} isolated					
COM 4	RS-232/RS-485 (RxD, TxD, CTS, RTS and GND for RS-232, Data+ and Data- for RS-485); non-isolated					
COM 5	RS-232 (RxD, TxD, CTS, RTS, DSR, DTR, CD, RI and GND); non-isolated					
I/O Expansion Slots						
Slot Number	0	3	7	1	3	7
Mechanical						
Dimensions (W x L x H)	137 x 132 x 125 mm	231 x 132 x 125 mm	355 x 132 x 125 mm	169 x 132 x 125 mm	231 x 132 x 125 mm	355 x 132 x 125 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 V_{DC}					
Isolation	1 kV					
Redundant Power Inputs	Yes, with one power relay (1 A @ 24 V_{DC}) for alarm					
Capacity	15 W	35 W	35 W	25 W	35 W	35 W
Consumption	14.4 W	14.4 W	16.8 W	16.6 W	16.8 W	18 W

Ordering Information

XP-8041 CR	Standard XP-8000 without I/O Slot (Multilingual Version of OS) (RoHS)
XP-8341 CR	Standard XP-8000 with 3 I/O Slots (Multilingual Version of OS) (RoHS)
XP-8741 CR	Standard XP-8000 with 7 I/O Slots (Multilingual Version of OS) (RoHS)
XP-8141-Atom CR	Standard XP-8000-Atom with 1 I/O Slot (Multilingual Version of OS) (RoHS)
XP-8341-Atom CR	Standard XP-8000-Atom with 3 I/O Slots (Multilingual Version of OS) (RoHS)
XP-8741-Atom CR	Standard XP-8000-Atom with 7 I/O Slots (Multilingual Version of OS) (RoHS)
Note: Call for customized XPAC-8000-Atom	

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	Unmanaged 5-port Industrial 10/100 Ethernet Switch with Plastic Case (RoHS)
NS-208 CR	Unmanaged 8-port Industrial 10/100 Ethernet Switch with Plastic Case (RoHS)

Features

- LX800, 500 MHz CPU or Atom Z510, 1.1 GHz CPU
- Windows CE 6.0 R3 Core
- Hard Real-Time Capability
- Audio with Microphone-In and Earphone-Out
- VGA Port Output
- Support eLogger HMI
- Redundant Power Inputs
- Operating Temperature: -25 ~ +75°C

Introduction

XP-8x41-Atom-CE6 Series is the new generation Windows CE 6.0 based PACs of XP-8x41-CE6. It is equipped with an Intel Atom Z510 Series CPU at 1.1GHz, while XP-8x41 is equipped with a LX800 at 500 MHz. They provide various connectivity (VGA, USB, Ethernet, RS-232/485) and 0/1/3/7 I/O slots for high performance parallel I/O modules (high profile I-8K Series) and serial I/O modules (high profile I-87K series). The benefits of running Windows CE 6.0 on XPAC-Atom include hard real-time capability, small core size, fast boot speed, interrupt handling at a deeper level and achievable deterministic control. XPAC-Atom is also capable of running PC-based control software such as Visual Basic .NET, Visual C#, etc. It has all of the best features of both traditional PLCs and Windows capable PCs.

For software copy protection, programmers can design software based on the 64-bit hardware serial number for making software copy protected.

Windows CE6

Microsoft Windows CE.net

Windows CE 6 is a compact and real-time OS used to quickly create time critical and high performance applications. With Windows CE 6, users can use familiar tools (VS .NET 2005/2008) to develop software. Its kernel architecture supports significantly more simultaneously running processes, from 32 up to 32,000 simultaneous processes, each of which can run in a 2GB virtual memory address space. This allows developers to incorporate larger numbers of more complex applications into the XP-8000-Atom-CE6. Further more, the development tools of Soft PLC (ISaGRAF) and SCADA (InduSoft) are also available.

- FTP Server
- Web Server
- SQL Compact Edition 3.5
- .NET Compact Framework 3.5
- Virtual CE Pro (VCEP)
- Remote Display
- OPC Server (NAPOPC_CE6 DA Server)
- Soft PLC solution: XP-8xx7-CE6 and XP-8xx7-Atom-CE6 (ISaGRAF inside)
- SCADA solution: XP-8xx9-CE6 and XP-8xx9-Atom-CE6 (InduSoft inside)

Specifications

Models	XP-8041-CE6	XP-8341-CE6	XP-8741-CE6	XP-8141-Atom-CE6	XP-8341-Atom-CE6	XP-8741-Atom-CE6
System Software						
OS	Windows CE 6.0 R3 Core					
.Net Compact Framework	3.5					
Embedded Service	FTP Server, ASP (Java Script, VB Script), SQL Compact Edition 3.5					
SDK Provided	Dll for Visual Studio .Net 2005/2008					
Multilanguage Support	English, German, French, Spanish, Russian, Italian, Czech, Japanese, Korean, Simplified Chinese, Traditional Chinese					
CPU Module						
CPU	LX800, 500 MHz			Atom Z510, 1.1 GHz		
System Memory	512 MB DDR SDRAM			512 MB DDR2 SDRAM		
Dual Battery Backup SRAM	512 KB; data valid up to 5 years					
Flash	4 GB as IDE Master			2 GB as IDE Master		
EEPROM	16 KB					
CF Card	2 GB (support up to 32 GB)					
RTC (Real Time Clock)	Provide second, minute, hour, date, day of week, month, year					
Programmable LED Indicator	-			2		
64-bit Hardware Serial Number	Yes, for Software Copy Protection					
Dual Watchdog Timers	Yes					
Rotary Switch	Yes (0 ~ 9)					
DIP Switch	-	Yes (8 bits)				
Audio	-			Microphone-In and Earphone-Out		
VGA & Communication Ports						
VGA	Yes, (resolution: 1024 x 768, 800 x 600 , 640 x 480)					
Ethernet (Giga bit)	RJ-45 x 2, 10/100/1000 Base-T (Auto-negotiating, Auto MDI/MDI-X, LED indicators)					
USB 2.0	2			4		
COM 1	RS-232 (RxD, TxD and GND); non-isolated	Internal communication with the high profile I-87K series modules in slots				
COM 2	RS-232 (RxD, TxD and GND); non-isolated					
COM 3	RS-485 (Data+, Data-) with internal self-tuner ASIC; 3000 V_{DC} isolated					
COM 4	RS-232/RS-485 (RxD, TxD, CTS, RTS and GND for RS-232, Data+ and Data- for RS-485); non-isolated					
COM 5	RS-232 (RxD, TxD, CTS, RTS, DSR, DTR, CD, RI and GND); non-isolated					
I/O Expansion Slots						
Slot Number	0	3	7	1	3	7
Mechanical						
Dimensions (W x L x H)	137 x 132 x 125 mm	231 x 132 x 125 mm	355 x 132 x 125 mm	169 x 132 x 125 mm	231 x 132 x 125 mm	355 x 132 x 125 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 V_{DC}					
Isolation	1 kV					
Redundant Power Inputs	Yes, with one power relay (1 A @ 24 V_{DC}) for alarm					
Capacity	15 W	35 W	35 W	25 W	35 W	35 W
Consumption	14.4 W	14.4 W	16.8 W	16.6 W	16.8 W	18 W

Ordering Information

XP-8041-CE6 CR	0 I/O slot WinCE 6.0 Based Standard XPAC (OS: Multi-Language version) (RoHS)
XP-8341-CE6 CR	3 I/O slots WinCE 6.0 Based Standard XPAC (OS: Multi-Language version) (RoHS)
XP-8741-CE6 CR	7 I/O slots WinCE 6.0 Based Standard XPAC (OS: Multi-Language version) (RoHS)
XP-8141-Atom-CE6 CR	1 I/O slot WinCE 6.0 Based Standard XPAC (OS: Multi-Language version) (RoHS)
XP-8341-Atom-CE6 CR	3 I/O slots WinCE 6.0 Based Standard XPAC (OS: Multi-Language version) (RoHS)
XP-8741-Atom-CE6 CR	7 I/O slots WinCE 6.0 Based Standard XPAC (OS: Multi-Language version) (RoHS)

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	Unmanaged 5-port Industrial 10/100 Ethernet Switch with Plastic Case (RoHS)
NS-208 CR	Unmanaged 8-port Industrial 10/100 Ethernet Switch with Plastic Case (RoHS)

XP-8047-CE6 | XP-8147-Atom-CE6

XP-8347-CE6 | XP-8347-Atom-CE6

XP-8747-CE6 | XP-8747-Atom-CE6

Features

- LX800, 500 MHz CPU or Atom Z510, 1.1 GHz CPU
- Windows CE 6.0 R3 Core
- ISaGRAF Ver.3 SoftLogic Inside (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

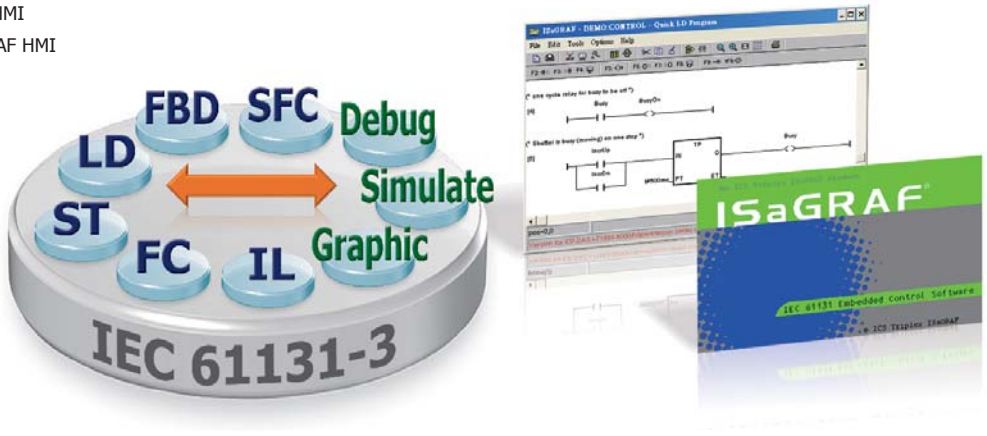
XP-8x47-CE6 Series is the new generation ISaGRAF based PACs of ICP DAS. It is equipped with an AMD LX800 CPU (500 MHz), various connectivity (VGA, USB, Ethernet, RS-232/485) and 0/3/7 I/O slots for high performance parallel I/O modules (high profi le I-8K Series) and serial I/O modules (high profi le I-87K series).

The benefi ts of running Windows CE 6.0 on XPAC include hard real-time capability, small core size, fast boot speed, interrupt handling at a deeper level and achievable deterministic control. XPAC is also capable of running ISaGRAF and PC-based control software such as Visual Basic .NET, Visual C#,.... etc. It has all of the best features of both traditional PLCs and Windows capable PCs.

ISaGRAF Features

ISaGRAF is the most powerful SoftLogic package on the market. ISaGRAF is a PLC-like software and it supports IEC 61131-3 standard PLC programming languages (LD, FBD, SFC, ST, IL, FC), and can run the application generated by the workbench on any ISaGRAF PACs. The ISaGRAF workbench Ver. 3.x features.

- IEC 61131-3 Standard Open PLC Programming Languages (LD, FBD, SFC, ST, IL, FC) + Flow Chart (FC)
- Auto-Scan I/O
- On-Line Debug/Control/Monitor, Off-Line Simulation
- Simple Graphic HMI
- Support Soft-GRAF HMI

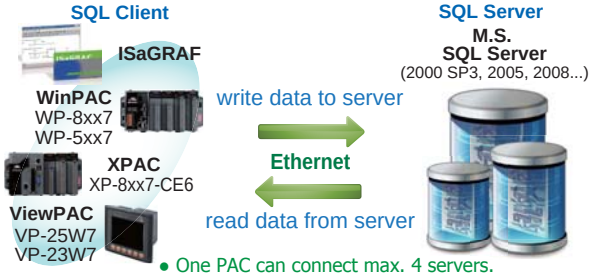


Soft-GRAF Studio Colorful HMI

Running HMI and Control Logic on the Same PAC

M2B Machine To Business Application

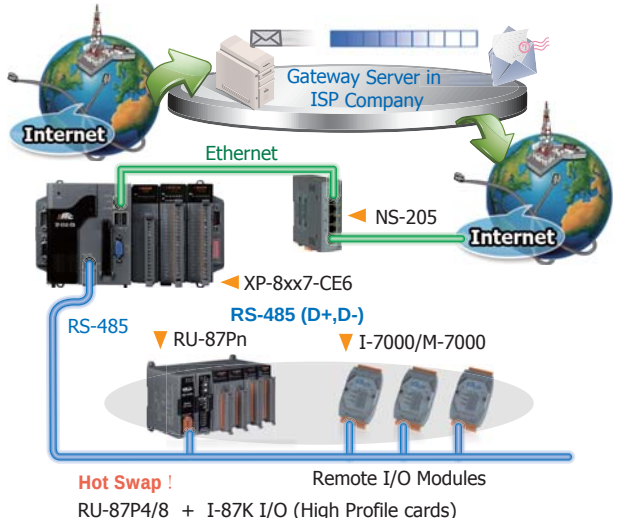
SQL Server Communication



- One PAC can connect max. 4 servers.

Motion Control: Using I-8094F/8092F/8094

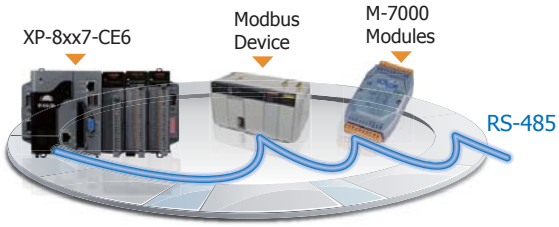
Send Email with one Attached File



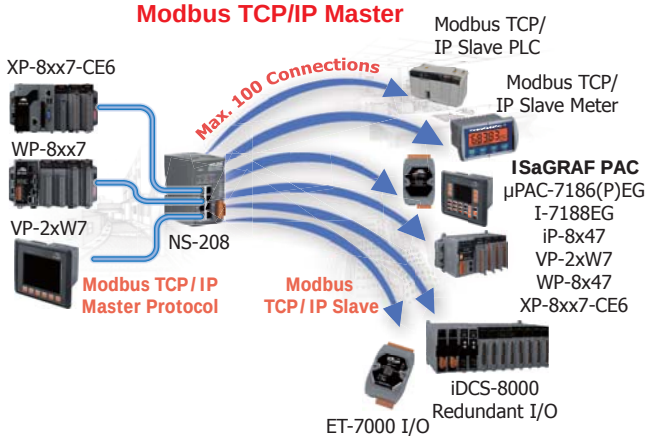
RU-87P4/8 + I-87K I/O (High Profile cards)

Modbus Master Ports

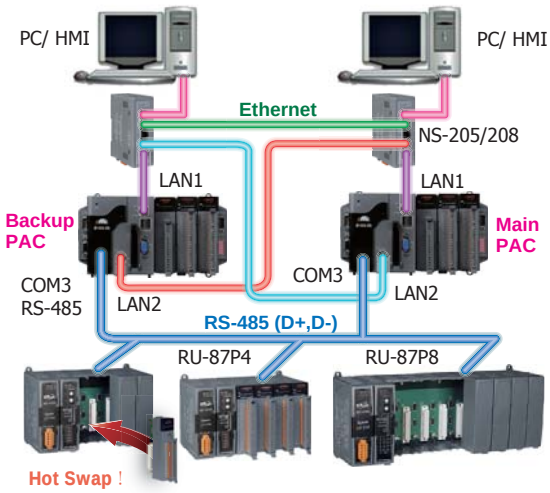
Modbus RTU/ASCII Master



Modbus TCP/IP Master



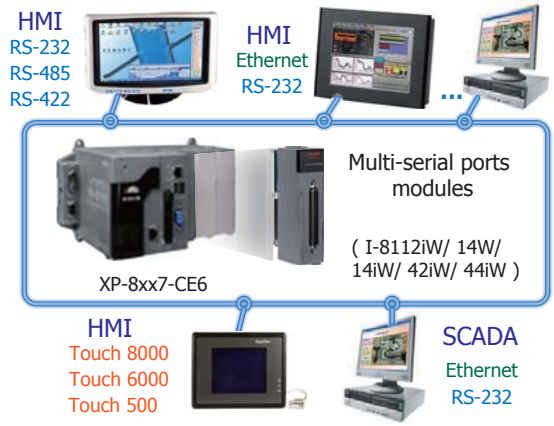
Hot-Swap Redundant System



RU-87P4/8 + I-87K I/O (High Profile cards)

Modbus Slave : RTU / TCP

- Modbus RTU (RS-232/485/422) Slave: max. 9 ports
- Modbus TCP/IP Slave: max. 64 connections



Specifications

Models		XP-8047-CE6	XP-8347-CE6	XP-8747-CE6	XP-8147-Atom-CE6	XP-8347-Atom-CE6	XP-8747-Atom-CE6
System Software							
OS		Windows CE 6.0 R3 Core					
.Net Compact Framework		3.5					
Embedded Service		FTP Server, ASP (Java Script, VB Script), SQL Compact Edition 3.5					
SDK Provided		Dll for Visual Studio .Net 2005/2008					
Multilanguage Support		English, German, French, Spanish, Russian, Italian, Czech, Japanese, Korean, Simplified Chinese, Traditional Chinese					
Development Software							
ISaGRAF Software	ISaGRAF Ver.3	IEC 61131-3 standard.					
	Languages	LD, ST, FBD, SFC, IL & FC Support Soft-GRAF HMI: XP-8xx7-CE6, WP-8xx7, VP-2xW7 and WP-5xx7 PAC					
	Max. Code Size	2 MB					
	Scan Time	3 ~ 15 ms for normal program 15 ~ 50 ms (or more) for complex or large program					
Non-ISaGRAF		Options: VS.NET 2005/2008 (VB.NET, C#.NET)					
Web Service							
Web HMI		PC running Internet Explorer can monitor/control PAC via Internet/modem					
Security		Web HMI supports three levels username and password protection. (high/middle/low)					
CPU Module							
CPU		LX800, 500 MHz			Atom Z510, 1.1 GHz		
System Memory		512 MB DDR SDRAM			512 MB DDR2 SDRAM		
Dual Battery Backup SRAM		512 KB; data valid up to 5 years (for retain variables)					
Flash		4 GB as IDE Master			2 GB as IDE Master		
EEPROM		16 KB					
CF Card		2 GB (support up to 32 GB)					
RTC (Real Time Clock)		Provide second, minute, hour, date, day of week, month, year					
Programmable LED Indicator		-			2		
64-bit Hardware Serial Number		Yes, for Software Copy Protection					
Dual Watchdog Timers		Yes					
Rotary Switch		Yes (0 ~ 9)					
DIP Switch		-	Yes (8 bits)				
Audio		-			Microphone-In and Earphone-Out		
VGA & Communication Ports							
VGA		Yes, (resolution: 1024 x 768, 800 x 600, 640 x480)					
Ethernet		RJ-45 x 2, 10/100 Base-TX (Auto-negotiating, Auto MDI/MDI-X, LED indicators).					
USB 2.0		2			4		
COM 1		RS-232 (RxD, TxD and GND); non-isolated	Internal communication with the high profile I-87K series modules in slots				
COM 2		RS-232 (RxD, TxD and GND); non-isolated					
COM 3		RS-485 (Data+, Data-) with internal self-tuner ASIC; 3000 V_{DC} isolated					
COM 4		RS-232/RS-485 (RxD, TxD, CTS, RTS and GND for RS-232, Data+ and Data- for RS-485); non-isolated					
COM 5		RS-232 (RxD, TxD, CTS, RTS, DSR, DTR, CD, RI and GND); non-isolated					
I/O Expansion Slots							
Slot Number		0	3	7	1	3	7
Mechanical							
Dimensions (W x L x H)		137 x 132 x 125 mm	231 x 132 x 125 mm	355 x 132 x 125 mm	169 x 132 x 125 mm	231 x 132 x 125 mm	355 x 132 x 125 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 V_{DC}					
Isolation		1 kV					
Redundant Power Inputs		Yes, with one power relay (1 A @ 24 V_{DC}) for alarm					
Capacity		15 W	35 W	35 W	25 W	35 W	35 W
Consumption		14.4 W	14.4 W	16.8 W	16.6 W	16.8 W	18 W

ISaGRAF Specifications

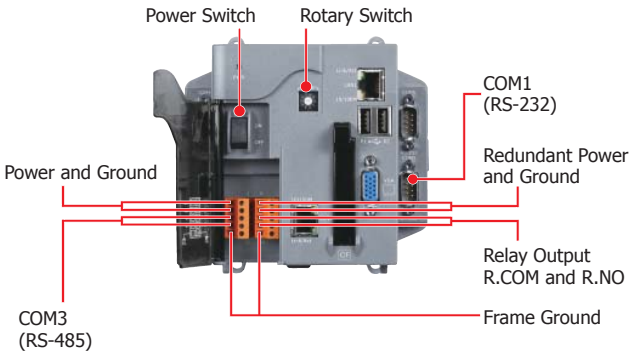
Protocols (some protocols need optional devices)		
Net ID		1 ~ 255, user-assigned by software
Modbus TCP/IP Master		Link to max. 100 devices that support Standard Modbus TCP/IP Slave protocol (FAQ-113)
Modbus RTU/ASCII Master		Max. 33 Ports : COM1 ~ 33 (To connect to other Modbus Slave devices). (*)
Modbus RTU Slave		Max. 9 Ports : COM1 ~ 33 (For connecting ISaGRAF, PC/HMI/OPC Server & HMI panels). (*)
Modbus TCP/IP Slave		2 Ethernet Ports all support Modbus TCP/IP Slave protocol for connecting ISaGRAF & PC/HMI. 2 Ports support up to 64 connections. Note: If PAC uses 1 connection to connect each PC/HMI, it can connect up to 64 PC/HMI; If PAC uses 2 connections to connect each PC/HMI, it can connect up to 32 PC/HMI; When one Ethernet port is broken, the other one can still connect to PC/HMI.
Web HMI Protocol		Ethernet Ports for connecting PC running Internet Explorer.
I-7000 & I-87K RS-485 Remote I/O		One of COM3~4 supports I-7000 I/O modules, I-87K base + I-87K Serial I/O boards or RU-87Pn + I-87K High Profile I/O boards as remote I/O. Max. 255 modules of I-7000/87K Remote I/O for one PAC.
M-7000 Series Modbus I/O		Max. 33 RS-485 ports. Each port can connect up to 32 M-7000 Modules. (*)
Modbus TCP/IP I/O		LAN2 supports ICP DAS Ethernet I/O : I-8KE4-MTCP and I-8KE8-MTCP. If LAN2 is broken, it will switch to LAN1 automatically to continuously work. (This need LAN1 & LAN2's IP are set in the same IP domain) (FAQ-042)
FRnet I/O		Support max 7 pcs. I-8172W boards in slot 1 ~ 7 to connect to FRnet I/O modules, like FR-2053, FR-2057 FR-32R, FR-32P. (FAQ-048). Each I-8172W board can link max. 256 DI plus 256 DO ch.
Send Email		Supports mail_snd and mail_set functions to send email with one attached file via Ethernet port.
Ebus		To exchange data between ICP DAS's ISaGRAF Ethernet PACs via Ethernet port. (LAN2 Port only)
SMS: Short Message Service		COM4 or COM5 can link to a GSM Modem to support SMS. User can request data/control the controller by cellular phone. The controller can also send data & alarms to user's cellular phone. Optional GSM Modem: GTM-201-RS232 (850/900/1800/1900 GSM/GPRS External Modem)
User-Defined Protocol		User can write his own protocol applied at COM1~COM5 & COM6~COM33 by Serial communication function blocks. (*)
MMICON/LCD		COM4 or COM5 supports ICP DAS's MMICON.
UDP Server & UDP Client : Exchange Message & Auto-Report		LAN1 or LAN2 support UDP Server and UDP Client protocol to send/receive message to / from PC/HMI or other devices. For example, to automatically report data to InduSoft's RXTX driver.
TCP Client : Exchange Message & Auto-Report		LAN1 or LAN2 support TCP Client protocol to send / receive message to / from PC/HMI or other devices which support TCP server protocol.
GPRS/SMS		Support the I-8212W (2G/3G) card to receive/send a short message or to dial up to link the Internet by GPRS connection to send an email or communicate with remote stations by using "Ftp Client" (FAQ-151) and "TCP Client" / "UDP Server" / "UDP Client" (FAQ-143).
SQL Client		Support SQL Client function to write data to (or read data from) Microsoft SQL Server (2000 SP3, 2005, 2008).
Hot-Swap and Redundant System		This redundant system has setup two "Active IP" address point to the active LAN1 and LAN2 ports always. One or more PC/HMI/SCADA can communicate with this redundant system via one of the two given active IP. So the PC/HMI/SCADA can access to the system easily without any notice about which PAC is currently active. Moreover, the new redundant system can integrate with the RU-87P4/87P8 Expansion Unit plus the I-87K high-profile I/O cards to support the hot-swap application. If the I/O card is damaged, the maintenance person just takes one good-card with same model number to hot-swap the damaged one without stopping this redundant system. (FAQ-138 and FAQ-125)
CAN/CANopen		COM1, 2, 4, 5 or COM6~COM33 to connect one I-7530 (converter: RS-232 to CAN) to support CAN/CANopen devices and sensors. One PAC supports max.32 RS-232 ports to connect max.32 I-7530. (*) (FAQ-086)
CANopen Master		Support the I-8123W CANopen Master card to connect other CANopen slave devices. (FAQ-145)
HART Solutions		Support I-87H17W modules in slot 1 to 7 to communicate with other HART devices.
FTP Client		Support FTP client to upload files in the PAC to a remote FTP server on PC. (FAQ-151)
Soft-GRAF HMI		Support the Soft-GRAF HMI . User can use the Soft-GRAF Studio on the PC to design the HMI screen and then download it to the PAC to display the HMI on the PAC. (FAQ-146)
Optional I/O Functions (Refer to ISaGRAF PAC I/O Selection Guide for I/O Module list)		
PWM Output	High Speed PWM Module	I-7088, I-8088W, I-87088W: 8-ch PWM outputs, software support 1 Hz ~ 100 kHz (non-continuous), duty: 0.1 ~ 99.9%
	DO Module as PWM	88-ch max. 250 Hz max. For Off=2 & On=2 ms. Output square wave: Off: 2~32766 ms, On: 2 ~ 32766 ms. Optional DO Boards: I-8037W, 8041W, 8041AW, 8042W, 8050W, 8054W, 8055W, 8056W, 8057W, 8060W, 8063W, 8064W, 8068W, 8069W. (Relay Output boards cannot generate fast square wave)
Counter, Encoder, Frequency	Parallel DI Counter	8 ch. max. for 1 controller. Counter val: 32 bit. 250 Hz max. Min. ON & OFF width must >2 ms. Optional DI boards: I-8040W, 8040PW, 8042W, 8046W, 8048W, 8050W, 8051W, 8052W, 8053W, 8053PW, 8054W, 8055W, 8058W, 8063W.
	Serial DI Counter	Counter input: 100 Hz max. Counter value: 0 ~ 65535 (16 bit) Optional serial I-87K DI boards: I-87040W, 87046W, 87051W, 87052W, 87053W, 87053W-A5, 87054W, 87055W, 87058W, 87059W, 87063W.
	Remote DI Counter	All remote I-7000 & I-87K DI modules support counters. 100 Hz max. value: 0 ~ 65535
	High Speed Counter	I-87082W: 100 kHz max. 32 bit; I-8084W: 250 kHz max. 32 bit
	Encoder	I-8093W: 3-axis Encoder Module, max. 1M Hz for quadrant input mode, max. 4 MHz for pulse/direction and cw/ccw input mode. (FAQ-112) I-8084W: 250 kHz max., 4-ch encoder, pulse/direction or up/down or A/B phase (Quad. mode). Not support Encoder Z-index. (FAQ-100)
	Frequency	I-87082W: 2-ch, 1 Hz ~ 100 kHz; I-87088W: 8-ch, 0.1 Hz ~ 500 kHz; I-8084W: 8-ch, 1 Hz ~ 250 kHz;
Motion	Motion Control	XP-8347-CE6 / XP-8747-CE6 : Integrate with one or several I-8092F (2-axis) or I-8094F/I-8094 (4-axis)

*** Note: COM6 ~ COM33 are resided at the expansion boards if they are plugged on slot 1~7 of XP-8xx7-CE6.**
XP-8347-CE6/8747-CE6's COM1 is for internal communication with I-87K modules in slots only.

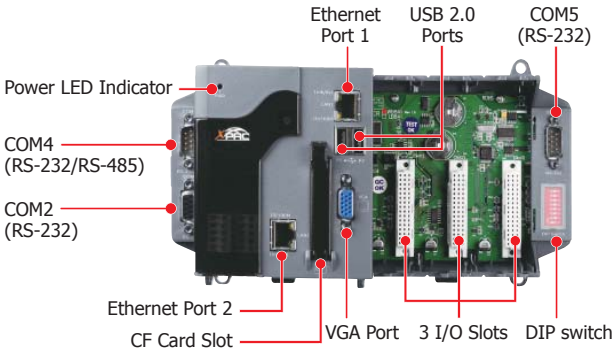
*** ISaGRAF FAQ: http://www.icpdas.com/faq/isagraf.htm**

Appearance

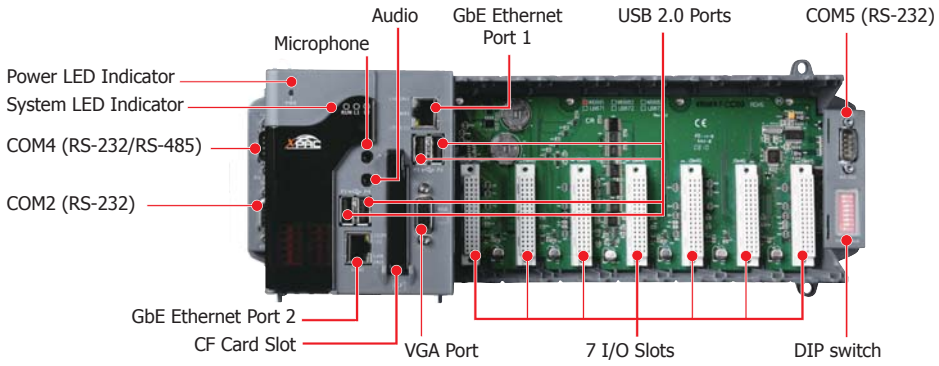
XP-8047-CE6



XP-8347-CE6



XP-8747-Atom-CE6



Ordering Information

XP-8047-CE6 CR	0 I/O slot WinCE 6.0 Based ISaGRAF PAC (OS: Multi-Language version) (RoHS)
XP-8347-CE6 CR	3 I/O slots WinCE 6.0 Based ISaGRAF PAC (OS: Multi-Language version) (RoHS)
XP-8747-CE6 CR	7 I/O slots WinCE 6.0 Based ISaGRAF PAC (OS: Multi-Language version) (RoHS)
XP-8147-Atom-CE6 CR	1 I/O slot WinCE 6.0 Based Standard XPAC (OS: Multi-Language version) (RoHS)
XP-8347-Atom-CE6 CR	3 I/O slots WinCE 6.0 Based Standard XPAC (OS: Multi-Language version) (RoHS)
XP-8747-Atom-CE6 CR	7 I/O slots WinCE 6.0 Based Standard XPAC (OS: Multi-Language version) (RoHS)
Note: Call for customized XPAC-8000-Atom-CE6	

Accessories

ISaGRAF Development Software	
ISaGRAF-256-E	ISaGRAF Workbench Software Ver.3 (256 I/O Tags) with One Application Book (English version) and one USB Dongle
ISaGRAF-256-C	ISaGRAF Workbench Software Ver.3 (256 I/O Tags) with One Application Book (Chinese version) and one USB Dongle
ISaGRAF-32-E	ISaGRAF Workbench Software Ver.3 (32 I/O Tags) with One Application Book (English version) Note: No upgrade service from ISaGRAF-32 to ISaGRAF-256. (Using ISaGRAF-32 can control more than 32 I/O tags. Please refer to ISaGRAF User's Manual Ch. 3.4)
ISaGRAF-32-C	ISaGRAF Workbench Software Ver.3 (32 I/O Tags) with One Application Book (Chinese version) Note: No upgrade service from ISaGRAF-32 to ISaGRAF-256. (Using ISaGRAF-32 can control more than 32 I/O tags. Please refer to ISaGRAF User's Manual Ch. 3.4)
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	Unmanaged 5-port Industrial 10/100 Ethernet Switch with Plastic Case (RoHS)
NS-208 CR	Unmanaged 8-port Industrial 10/100 Ethernet Switch with Plastic Case (RoHS)

XP-8049-CE6

XP-8149-Atom-CE6

XP-8349-CE6

XP-8349-Atom-CE6

XP-8749-CE6

XP-8749-Atom-CE6

Features

- LX800, 500 MHz CPU or Atom Z510, 1.1 GHz CPU
- Windows CE 6.0 R3 Core
- InduSoft Web Studio v6.1
- Hard Real-Time Capability
- VGA Port Output
- Redundant Power Inputs
- Operating Temperature: -25 ~ +75°C

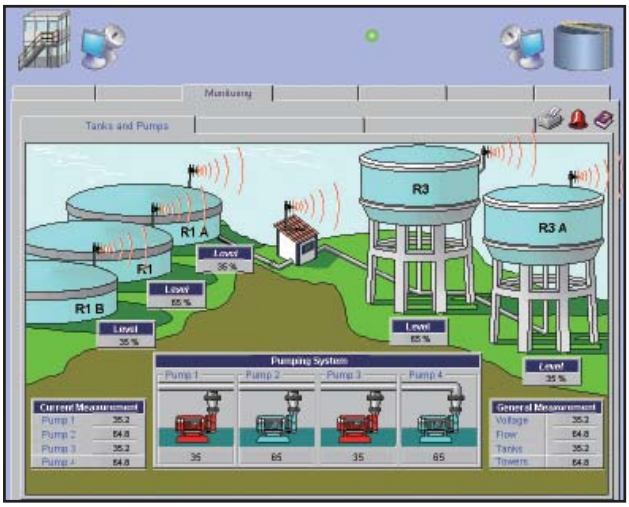
Introduction

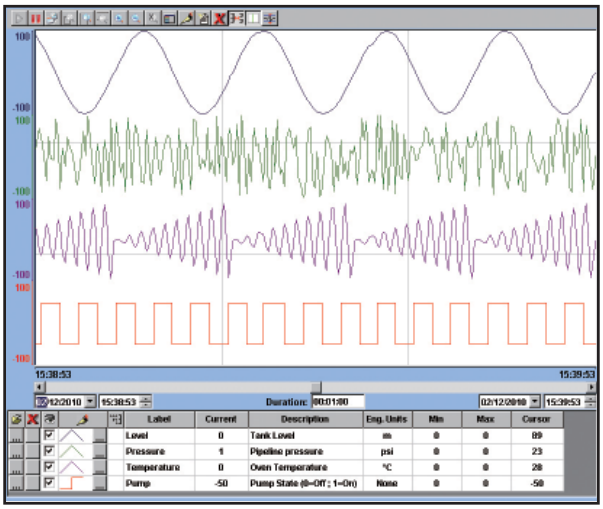
XP-8x49-CE6 Series is the new generation InduSoft based PACs of ICP DAS. It is equipped with an AMD LX800 CPU (500 MHz), various connectivity (VGA, USB, Ethernet, RS-232/485) and 0/3/7 I/O slots for high performance parallel I/O modules (high profile I-8K Series) and serial I/O modules (high profile I-87K series). The benefits of running Windows CE 6.0 on XPAC include hard real-time capability, small core size, fast boot speed, interrupt handling at a deeper level and achievable deterministic control. XPAC is also capable of running InduSoft and PC-based control software such as Visual Basic .NET, Visual C#,.... etc. It has all of the best features of both traditional PLCs and Windows capable PCs.

InduSoft Features

InduSoft Web Studio is a powerful, integrated collection of automation tools that includes all the building blocks needed to develop modern Human Machine Interfaces (HMI), Supervisory Control and Data Acquisition (SCADA) systems, and ViewPAC applications. InduSoft Web Studio's application runs in native Windows NT, 2000, XP, CE and CE .NET environments and conforms to industry standards such as Microsoft .NET, OPC, DDE, ODBC, XML, and ActiveX.

- Elegant Graphics
- Multi-Language
- Database (Access, Excel, SQL, Oracle…)
- Recipes and Reports
- Online and History Alarm / Event / Trend
- Remote Web Client Control & Security
- Various Communication Driver (DCON, Modbus, OPC, DDE, TCP/IP…)
- ActiveX (GSM / SHM / COM /WEB provided by ICP DAS)
- System Redundancy
- Online Configuration and debugging
- Others (VBScript, E-mail, FTP, SNMP...)

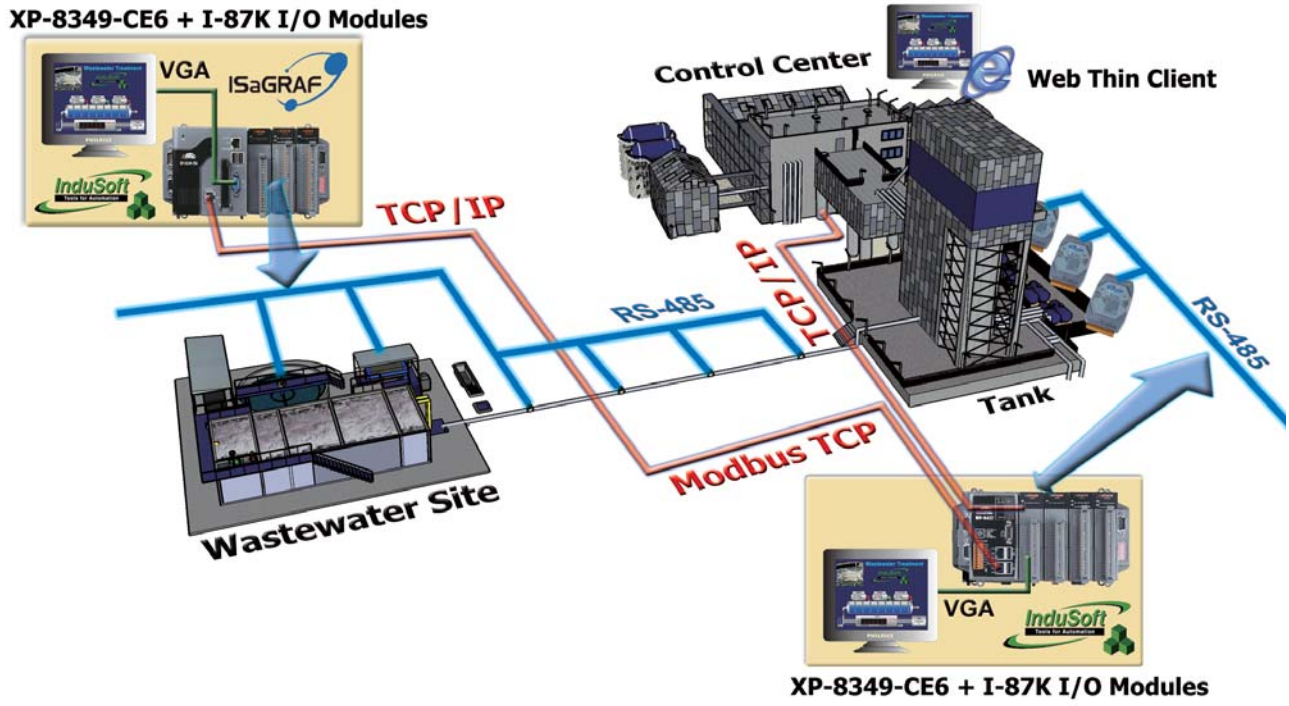




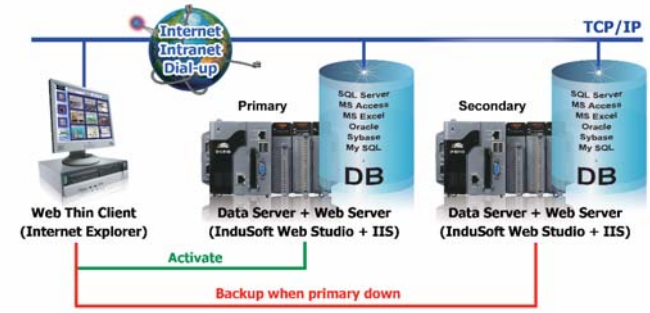
Specifications

Models	XP-8049-CE6	XP-8349-CE6	XP-8749-CE6	XP-8149-Atom-CE6	XP-8349-Atom-CE6	XP-8749-Atom-CE6
System Software						
OS	Windows CE 6.0 R3 Core					
.Net Compact Framework	3.5					
Embedded Service	FTP Server, ASP (Java Script, VB Script), SQL Compact Edition 3.5					
SDK Provided	Dll for Visual Studio .Net 2005/2008					
Multilanguage Support	English, German, French, Spanish, Russian, Italian, Czech, Japanese, Korean, Simplified Chinese, Traditional Chinese					
Development Software						
InduSoft Software	InduSoft Web Studio v6.1 Service Pack 6					
Non-ISaGRAF	Options: .NET 2005/2008 (VB .NET 2005/2008, C# .NET 2005/2008)					
Web Service						
Web HMI	Support Web HMI function, PC running Internet Explorer can access to the XP-8x49 via Local Ethernet or Internet or dial Modem, monitoring and control.					
Security	Web HMI supports three levels user name and password protection					
CPU Module						
CPU	LX800, 500 MHz			Atom Z510, 1.1 GHz		
System Memory	512 MB DDR SDRAM			512 MB DDR2 SDRAM		
Dual Battery Backup SRAM	512 KB; data valid up to 5 years					
Flash	4 GB as IDE Master			2 GB as IDE Master		
EEPROM	16 KB					
CF Card	2 GB (support up to 32 GB)					
RTC (Real Time Clock)	Provide second, minute, hour, date, day of week, month, year					
Programmable LED Indicator	-			2		
64-bit Hardware Serial Number	Yes, for Software Copy Protection					
Dual Watchdog Timers	Yes					
Rotary Switch	Yes (0 ~ 9)					
DIP Switch	-	Yes (8 bits)				
Audio	-			Microphone-In and Earphone-Out		
VGA & Communication Ports						
VGA	Yes, (resolution: 1024 x 768, 800 x 600 , 640 x 480)					
Ethernet (Giga bit)	RJ-45 x 2, 10/100/1000 Base-T (Auto-negotiating, Auto MDI/MDI-X, LED indicators)					
USB 2.0	2			4		
COM 1	RS-232 (RxD, TxD and GND); non-isolated	Internal communication with the high profile I-87K series modules in slots				
COM 2	RS-232 (RxD, TxD and GND); non-isolated					
COM 3	RS-485 (Data+, Data-) with internal self-tuner ASIC; 3000 V_{DC} isolated					
COM 4	RS-232/RS-485 (RxD, TxD, CTS, RTS and GND for RS-232, Data+ and Data- for RS-485); non-isolated					
COM 5	RS-232 (RxD, TxD, CTS, RTS, DSR, DTR, CD, RI and GND); non-isolated					
I/O Expansion Slots						
Slot Number	0	3	7	1	3	7
Mechanical						
Dimensions (W x L x H)	137 x 132 x 125 mm	231 x 132 x 125 mm	355 x 132 x 125 mm	169 x 132 x 125 mm	231 x 132 x 125 mm	355 x 132 x 125 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 V_{DC}					
Isolation	1 kV					
Redundant Power Inputs	Yes, with one power relay (1 A @ 24 V_{DC}) for alarm					
Capacity	15 W	35 W	35 W	25 W	35 W	35 W
Consumption	14.4 W	14.4 W	16.8 W	16.6 W	16.8 W	18 W

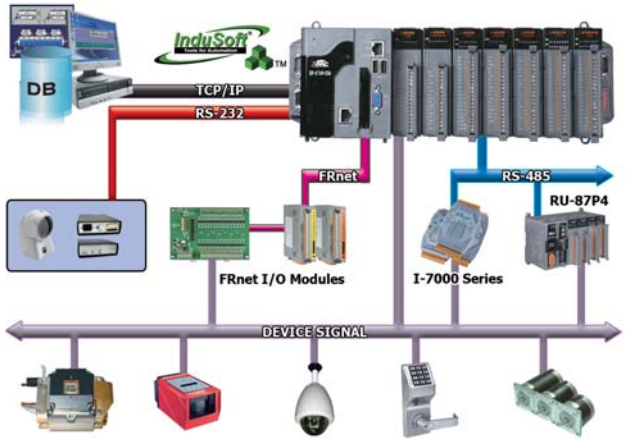
WP-8xx9 Total Solution



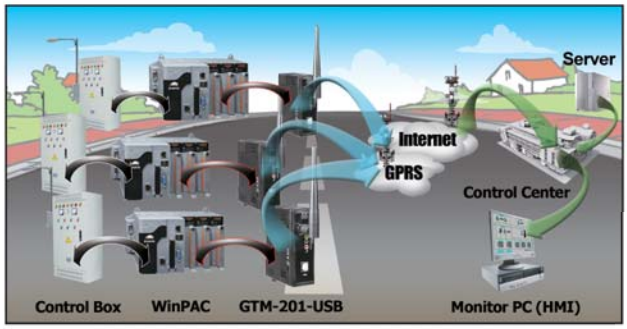
Database & Redundancy



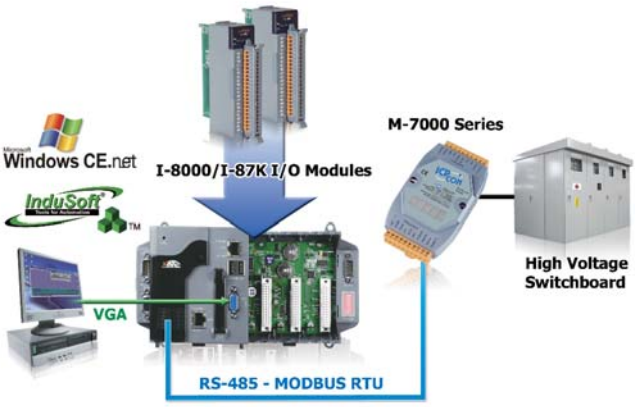
Variety of I/O supported



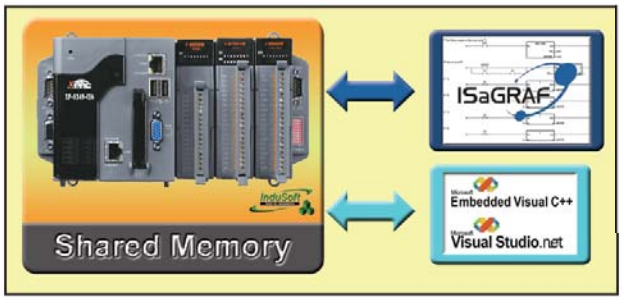
Street lamp monitor and control system



Variety of communication drivers

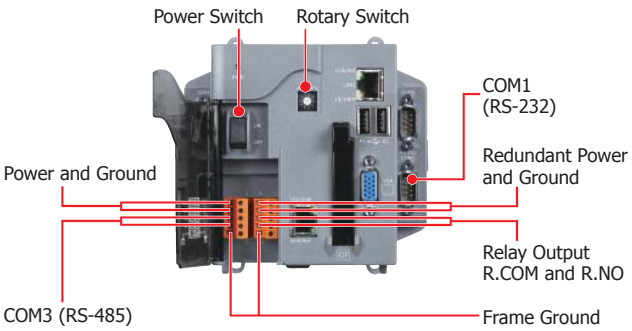


Share data with 3rd. party application

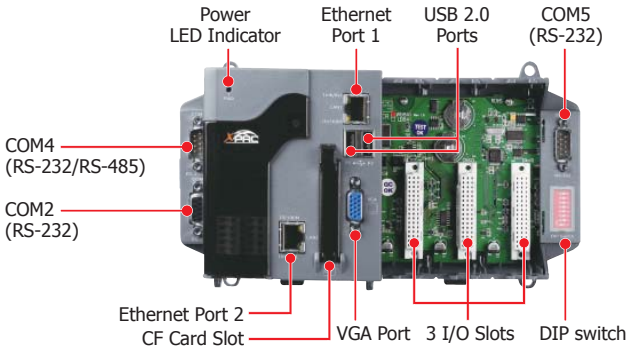


Appearance

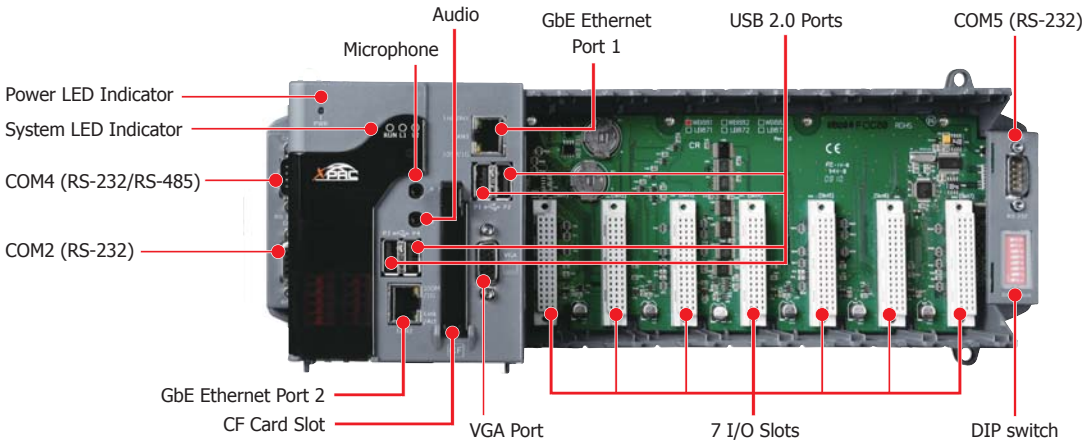
XP-8049-CE6



XP-8349-CE6



XP-8749-Atom-CE6



Ordering Information

XP-8049-CE6 CR	0 I/O slot WinCE 6.0 Based InduSoft PAC (OS: Multi-Language version) (RoHS)
XP-8349-CE6 CR	3 I/O slots WinCE 6.0 Based InduSoft PAC (OS: Multi-Language version) (RoHS)
XP-8749-CE6 CR	7 I/O slots WinCE 6.0 Based InduSoft PAC (OS: Multi-Language version) (RoHS)
Note: The default runtime license (CEView Lite Plus - 300 tags and 3 driver) is installed.	
XP-8149-Atom-CE6 CR	1 I/O slot WinCE 6.0 Based Standard XPAC (OS: Multi-Language version) (RoHS)
XP-8349-Atom-CE6 CR	3 I/O slots WinCE 6.0 Based Standard XPAC (OS: Multi-Language version) (RoHS)
XP-8749-Atom-CE6 CR	7 I/O slots WinCE 6.0 Based Standard XPAC (OS: Multi-Language version) (RoHS)
Note: Call for customized XPAC-8000-Atom-CE6	

Accessories

InduSoft Development Software	
InduSoft-NT512000D	Advanced Server for Windows NT/2000/XP (512,000 Tags, unlimited drivers)
InduSoft-NT64000D	Control Room for Windows NT/2000/XP (64,000 Tags, 8 drivers)
InduSoft-NT4000D	Operator Workstation for Windows NT/2000/XP (4,000 Tags, 5 drivers)
InduSoft-NT1500D	Local Interface for Windows NT/2000/XP (1500 Tags, 3 drivers)
InduSoft-NT300D	NTView PRO for Windows NT/2000/XP (300 Tags, 3 drivers)
InduSoft Runtime License	
InduSoft-CE1500R	CEView standard for Windows CE Run-time (CE View)(1500 Tags, 3 drivers)
InduSoft-CE300R	CEView Lite Plus for Windows CE Run-time (300 Tags, 3 drivers)
Power Supply	
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)

2.2. WinPAC-8000 Series

• Overview

WinPAC-8000 is the new generation PAC of ICP DAS. It is equipped a PXA270 CPU (520 MHz) running a Windows CE.NET 5.0 operating system, various connectivities (VGA, USB, Ethernet, RS-232/485) and 1/4/8 slots for high performance Parallel I/O modules (high profile I-8K series) and serial I/O modules (high profile I-87K I/O modules).

WinPAC operating system, Windows CE 5.0, has many advantages, including hard real-time capability, small core size, short boot time, interrupt handling at a deeper level, achievable deterministic control, and low cost. Using Windows CE.Net 5.0 in the WinPAC-8000 gives it the ability to run PC-based Control software such as Visual Basic. NET, Visual C#, Embedded Visual C++, SCADA software, SoftPLC ... etc.

WinPAC ≒ IPC+PLC

Compared with the first generation WinCon-8000, WinPAC-8000 not only improves the CPU performance (from 206 MHz to 520 MHz) and upgrading OS (from CE 4.1 to CE 5.0), but also adds many reliability features, such as dual LAN, redundant power inputs, dual battery backup SRAM, etc. It gives you all of the best features of both traditional PLCs and Windows capable PCs.

Main Components:

1 Main Control Unit (MCU)

The MCU is the powerhouse of the WinPAC-8000. Each MCU comprises a Central Processor Module (CPM), a power supply, and a 1, 4, 8-slot backplane for 1, 4, 8 I/O modules. The CPM is powerful integrated processing engine comprising a CPU, RAM and ROM, and an option of communication interfaces including Ethernet, RS-485, CAN bus and FRnet.

2 Embedded OS

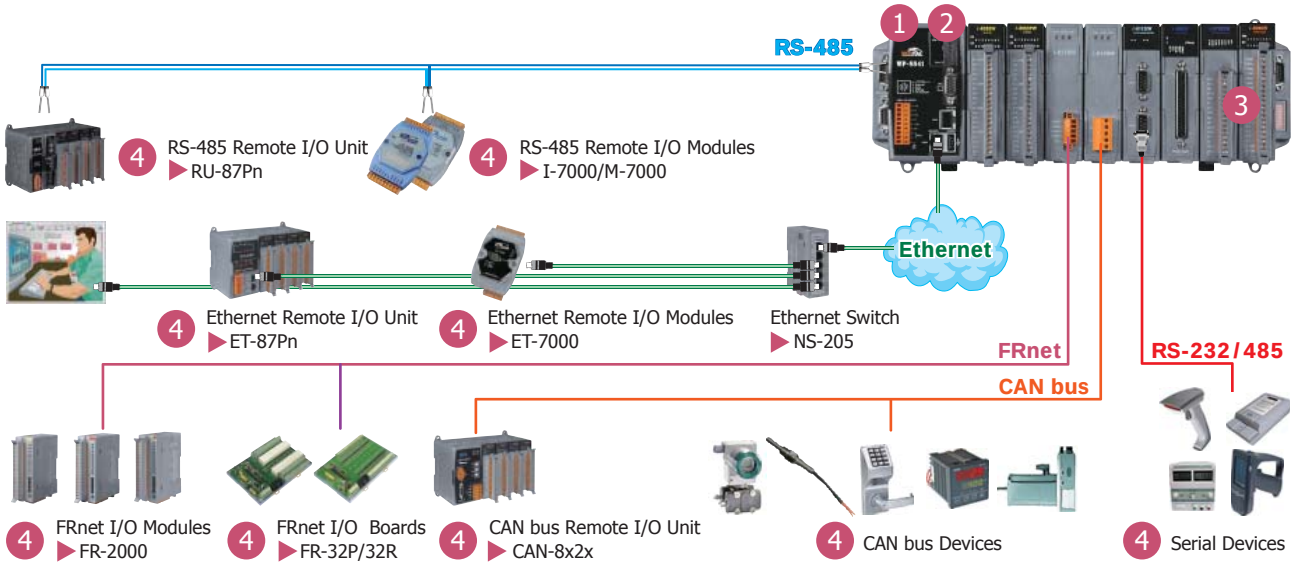
All WinPAC have Windows CE OS inside, and most of the popular features in MS software are included, such as FTP Server, HTTP Server, ASP (Java/VB script), SQL Server embedded 3.5 and compact .NET Framework 3.5. WinPAC supports rich software & development solutions: VB.Net 2005/2008, Visual C#.NET 2005/2008, eVC++ 4.0, ISaGRAF, InduSoft etc.

3 I/O Modules

I/O modules have two types, i.e., parallel bus and serial bus. The parallel bus type I/O modules (high profile I-8K series) are high speed ones used only in the PACs including XPAC, WinPAC, iPAC, ViewPAC, etc. And the serial bus type I/O modules (high profile I-87K series) are low speed ones used in both PACs including XPAC, WinPAC, iPAC, ViewPAC, etc., and I/O expansion units including RU-87Pn, ET-87Pn, USB-87Pn, etc.

4 Remote I/O Expansion

WinPAC uses built-in RS-485 and Ethernet ports to connect RS-485/Ethernet remote I/O units (Ru-87Pn/ET-87Pn) or modules (I-7000/M-7000/ET-7000). In this configuration, WinPAC expands the I/O very easily. Using CAN or FRnet communication module, WinPAC can connect CAN bus devices, remote I/O units or FRnet I/O modules for deterministic control system.



Selection Guide

WP-8 X X X - XX

- **X** — NO. of I/O Slot
- **X** — Hardware
  - 3: PXA270 CPU & VGA 1024 x 768
  - 4: PXA270 CPU & VGA 800 x 600
  - 5: PXA270 CPU & VGA 800 x 600
- **X** — Software
  - 1: Standard
  - 7: ISaGRAF
  - 9: InduSoft
- **XX** — Language
  - EN: English
  - TC: Traditional Chinese
  - SC: Simplified Chinese

Standard WinPAC

Model Name	OS	Pre-installed Software	CPU	Flash	SDRAM	VGA Resolution	USB	RS-232/RS-485	I/O Slot	Memory Expansion	Audio
WP-8131	CE 5.0	None	PXA270, 520 MHz	128 MB	128 MB	1024 x 768	2	2	1	microSD	-
WP-8431								4	4		
WP-8831									8		
WP-8141	CE 5.0	None	PXA270, 520 MHz	96 MB	128 MB	800 x 600	1	2	1	microSD	-
WP-8441								4	4		
WP-8841									8		
WP-8051	CE 5.0	None	PXA270, 520 MHz	128 MB	128 MB	800 x 600	2	5	0	CF	Yes
WP-8351								4	3		
WP-8751									7		

The controller supports the following software development tools:
1. DLLs of I/O modules for eVC, VS.Net 2005/2008
2. DLLs of Modbus/RTU and Modbus/TCP for eVC and VS.Net 2005/2008
3. OPC server (Quicker)

ISaGRAF Based WinPAC

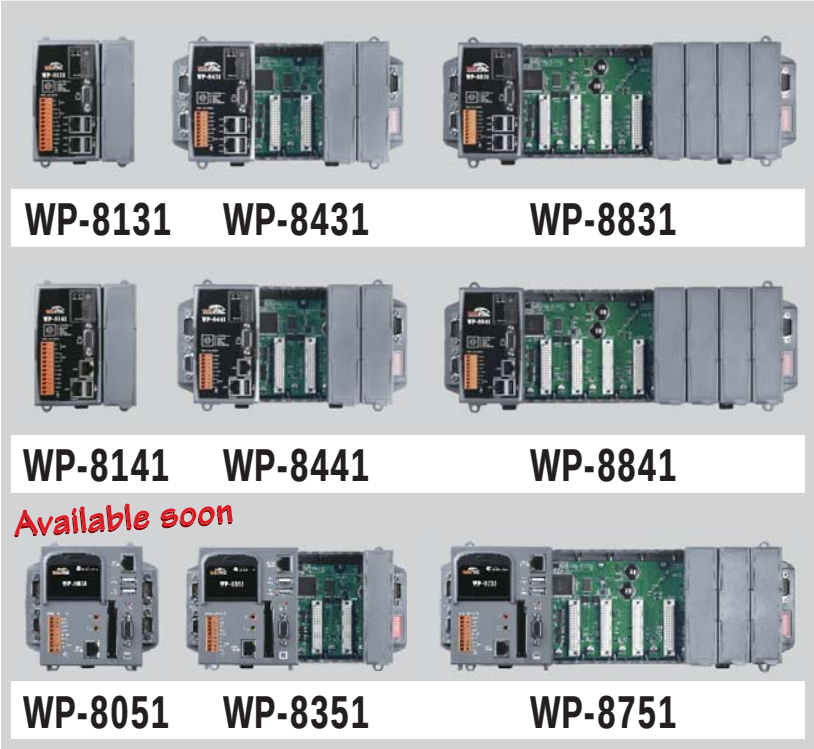
Model Name	OS	Pre-installed Software	CPU	Flash	SDRAM	VGA Resolution	USB	RS-232/RS-485	I/O Slot	Memory Expansion	Audio
WP-8137	CE 5.0	ISaGRAF	PXA270, 520 MHz	128 MB	128 MB	1024 x 768	2	2	1	microSD	-
WP-8437								4	4		
WP-8837									8		
WP-8147	CE 5.0	ISaGRAF	PXA270, 520 MHz	96 MB	128 MB	800 x 600	1	2	1	microSD	-
WP-8447								4	4		
WP-8847									8		
WP-8057	CE 5.0	ISaGRAF	PXA270, 520 MHz	128 MB	128 MB	800 x 600	2	5	0	CF	Yes
WP-8357								4	3		
WP-8757									7		

The controller fully supports all five of the IEC61131-3 standard PLC languages:
1. Ladder diagram 2. Function block diagram 3. Sequential function chart 4. Structured text 5. Instruction List plus flow chart
It supports Modbus protocol and can link to distributed I/O modules with Modbus or DCON protocol via the RS-232/485 or Ethernet.

InduSoft Based WinPAC

Model Name	OS	Pre-installed Software	CPU	Flash	SDRAM	VGA Resolution	USB	RS-232/RS-485	I/O Slot	Memory Expansion	Audio
WP-8139	CE 5.0	InduSoft	PXA270, 520 MHz	128 MB	128 MB	1024 x 768	2	2	1	microSD	-
WP-8439								4	4		
WP-8839									8		
WP-8149	CE 5.0	InduSoft	PXA270, 520 MHz	96 MB	128 MB	800 x 600	1	2	1	microSD	-
WP-8449								4	4		
WP-8849									8		
WP-8059	CE 5.0	InduSoft	PXA270, 520 MHz	128 MB	128 MB	800 x 600	2	5	0	CF	Yes
WP-8359								4	3		
WP-8759									7		

The controller supports the following software development tools:
1. DLLs of I/O modules for eVC, VS.Net 2005/2008
2. DLLs of Modbus/RTU and Modbus/TCP for eVC and VS.Net 2005/2008
3. OPC server (Quicker)



Features

- PXA270, 520 MHz CPU
- Windows CE 5.0
- Hard Real-Time Capability
- VGA Port Output
- Support eLogger HMI
- Redundant Power Inputs
- Operating Temperature: -25 ~ +75°C

Introduction

WP-8x31, WP-8x41 and WP-8x51 Series are the new generation Windows CE 5.0 based PACs of ICP DAS. It is equipped with a PXA270 CPU (520 MHz), various connectivity (VGA, USB, Ethernet, RS-232/485) and I/O slots for high performance parallel I/O modules (high profile I-8K Series) and serial I/O modules (high profile I-87K series). The benefits of running Windows CE 5.0 on WinPAC include hard real-time capability, small core size, fast boot speed, interrupt handling at a deeper level and achievable deterministic control. WinPAC is also capable of running PC-based control software such as Visual Basic .NET, Visual C#, SCADA software, SoftPLC.... etc. It has all of the best features of both traditional PLCs and Windows capable PCs.

For software copy protection, programmers can design software based on the 64-bit hardware serial number for making software copy protected.

Windows CE5

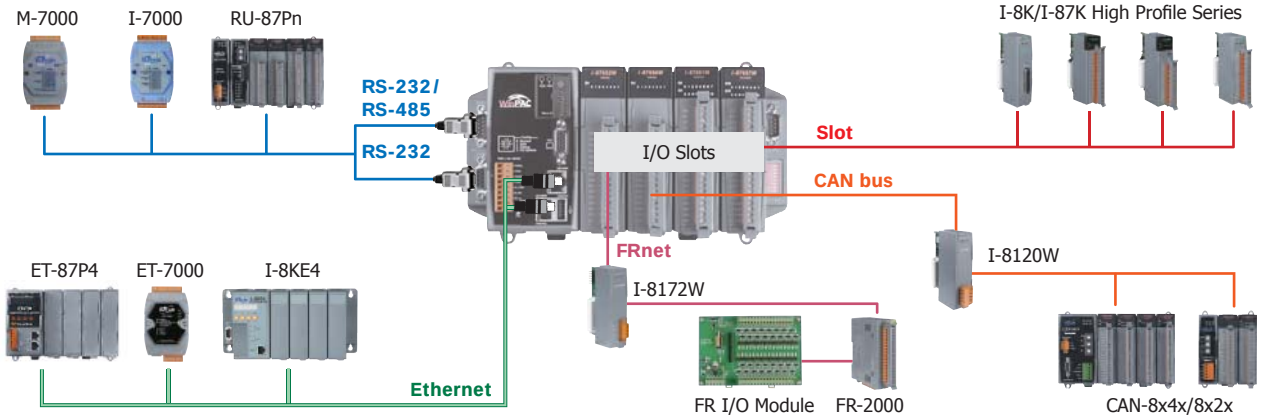
Microsoft Windows CE.net

Windows CE 5 is a compact and real-time OS used to quickly create time critical and high performance applications. Using Windows CE 5 gives an ability to run PC-based control software such as Visual Basic .NET, Virtual C#, SCADA software, SoftPLC... etc.

- ★ FTP Server
- ★ Web Server
- ★ SQL Compact Edition 3.5
- ★ .NET Compact Framework 3.5
- ★ Virtual CE Pro (VCEP)
- ★ OPC Server (NAPOPC_CE5 DA Server)
- ★ Soft PLC solution: WP-8xx7, WP-5xx7 and VP-25W7 (ISaGRAF inside)
- ★ SCADA solution: WP-8xx9, WP-5xx9 and VP-25W9 (InduSoft inside)

Applications

Rich I/O Expansion Ability

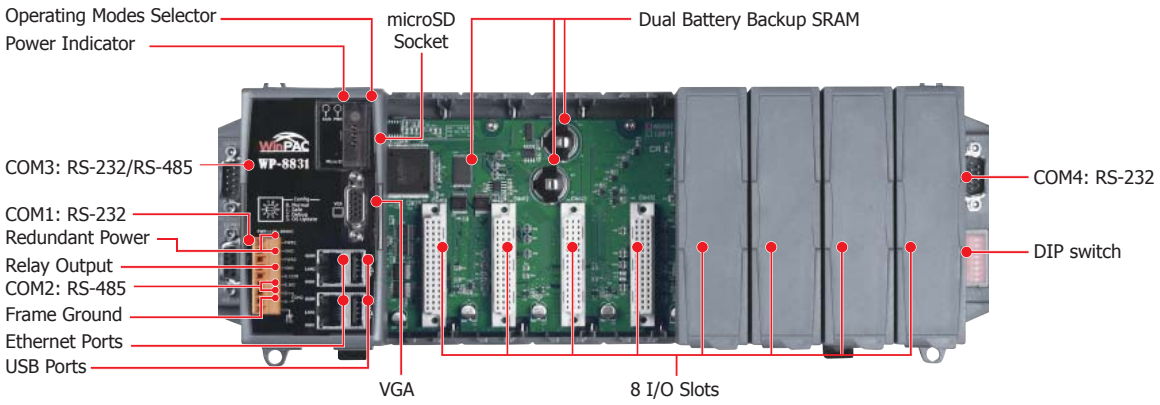


Specifications

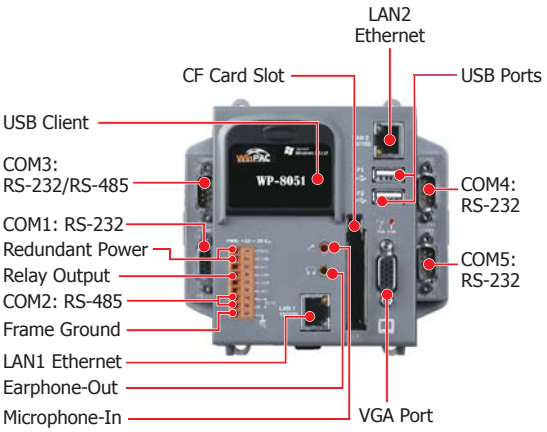
Models	WP-8131	WP-8431	WP-8831	WP-8141	WP-8441	WP-8841	WP-8051	WP-8351	WP-8751
System Software									
OS	Windows CE 5.0								
.Net Compact Framework	3.5								
Embedded Service	FTP server, Web server (supports VB script, JAVA script), Embedded SQL server								
SDK Provided	Dll for eVC, Dll for Visual Studio.Net 2005/2008								
Multilanguage Support	English, German, French, Spanish, Russian, Italian, Korean, Simplified Chinese, Traditional Chinese								
CPU Module									
CPU	PXA270, 520 MHz								
SDRAM	128 MB								
Dual Battery Backup SRAM	512 KB; data valid up to 5 years								
Flash	128 MB			96 MB			128 MB		
EEPROM	16 KB								
Memory Expansion	microSD socket with one 2 GB microSD card (support up to 32 GB microSDHC card)						CF slot with 2 GB CF 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)		-	Yes (8 bits)		-	Yes (8 bits)	
Audio	-						Microphone-In and Earphone-Out		
VGA & Communication Ports									
VGA	Yes 640 x 480, 800 x 600, 1024 x 768			Yes 640 x 480, 800 x 600					
Ethernet	RJ-45 x 2, 10/100 Base-TX (Auto-negotiating, Auto MDI/MDI-X, LED indicators)								
USB 1.1 (host)	2			1			2		
USB 1.1 (client)	-						1		
COM 0	Internal communication with the high profile I-87K series modules in slots								
COM 1	RS-232 (RxD, TxD and GND); non-isolated								
COM 2	RS-485 (Data+, Data-) with internal self-tuner ASIC; 2500 V_{DC} isolated for WP-8131 and WP-8141; 3000 V_{DC} isolated for other models.								
COM 3	-	Yes		-	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		-	Yes				
	RS-232 (RxD, TxD, CTS, RTS, DSR, DTR, CD, RI and GND); non-isolated								
COM 5	-						Yes	-	
	RS-232 (RxD, TxD, and GND); non-isolated								
I/O Expansion Slots									
Slot Number	1	4	8	1	4	8	0	3	7
	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: WP-8131, WP-8141 137 mm x 132 mm x 111 mm: WP-8051 231 mm x 132 mm x 111 mm: WP-8431, WP-8441, WP-8351 355 mm x 132 mm x 111 mm: WP-8831, WP-8841, WP-8751								
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 V_{DC}								
Isolation	1 kV								
Redundant Power Inputs	Yes, with one power relay (1 A @ 24 V_{DC}) for alarm								
Capacity	8 W	25 W	25 W	8 W	30 W	30 W	15 W	30 W	30 W
Consumption	7.3 W	9.1 W	9.1 W	7.3 W	9.1 W	9.1 W	8.4 W	9.6 W	10 W

Appearance

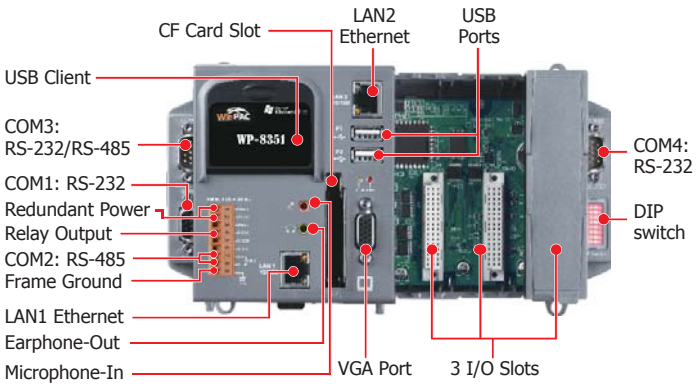
WP-8831



WP-8051



WP-8351

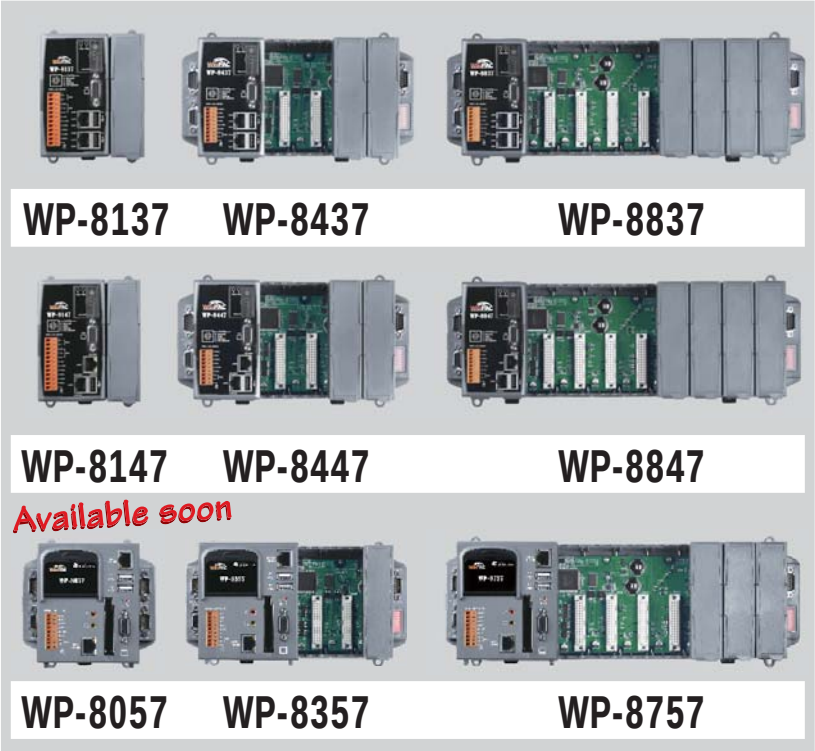


Ordering Information

WP-8131-EN	WP-8141-EN	Standard WinPAC-8000 with 1 I/O Slot (Multilanguage Version of OS)
WP-8431-EN	WP-8441-EN	Standard WinPAC-8000 with 4 I/O Slots (Multilanguage Version of OS)
WP-8831-EN	WP-8841-EN	Standard WinPAC-8000 with 8 I/O Slots (Multilanguage Version of OS)
WP-8131-TC	WP-8141-TC	Standard WinPAC-8000 with 1 I/O Slot (Traditional Chinese Version of OS)
WP-8431-TC	WP-8441-TC	Standard WinPAC-8000 with 4 I/O Slots (Traditional Chinese Version of OS)
WP-8831-TC	WP-8841-TC	Standard WinPAC-8000 with 8 I/O Slots (Traditional Chinese Version of OS)
WP-8131-SC	WP-8141-SC	Standard WinPAC-8000 with 1 I/O Slot (Simplified Chinese Version of OS)
WP-8431-SC	WP-8441-SC	Standard WinPAC-8000 with 4 I/O Slots (Simplified Chinese Version of OS)
WP-8831-SC	WP-8841-SC	Standard WinPAC-8000 with 8 I/O Slots (Simplified Chinese Version of OS)
WP-8051		Standard WinPAC-8000 without I/O Slot (Multilanguage Version of OS)
WP-8351		Standard WinPAC-8000 with 3 I/O Slots (Multilanguage Version of OS)
WP-8751		Standard WinPAC-8000 with 7 I/O Slots (Multilanguage Version of OS)

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)



Features

- PXA270, 520 MHz CPU
- Windows CE 5.0
- ISaGRAF Ver.3 SoftLogic Inside (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

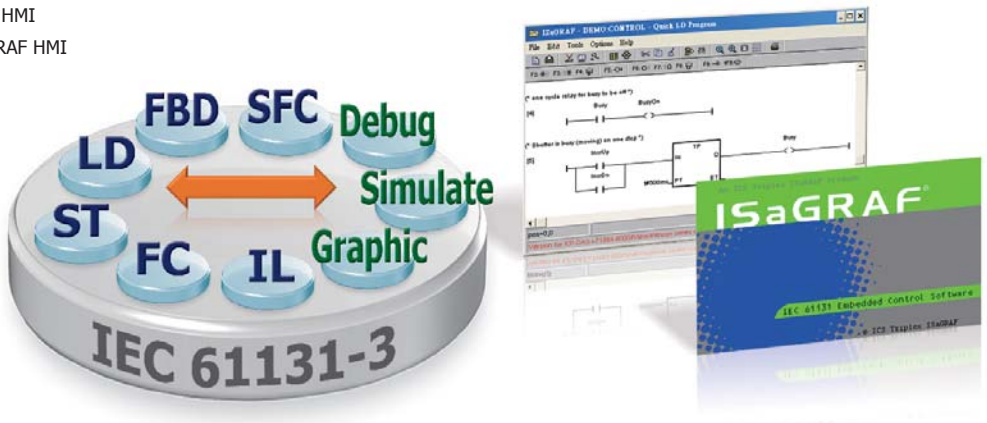
Introduction

WP-8x37, WP-8x47 and WP-8x57 Series are the new generation ISaGRAF based PACs of ICP DAS. It is equipped with a PXA270 CPU (520 MHz), various connectivity (VGA, USB, Ethernet, RS-232/485) and I/O slots for high performance parallel I/O modules (high profile I-8K Series) and serial I/O modules (high profile I-87K series). The benefits of running Windows CE 5.0 on WinPAC include hard real-time capability, small core size, fast boot speed, interrupt handling at a deeper level and achievable deterministic control. WinPAC is also capable of running ISaGRAF and PC-based control software such as Visual Basic .NET, Visual C#,.... etc. It has all of the best features of both traditional PLCs and Windows capable PCs.

ISaGRAF Features

ISaGRAF is the most powerful SoftLogic package on the market. ISaGRAF is a PLC-like software and it supports IEC 61131-3 standard PLC programming languages (LD, FBD, SFC, ST, IL, FC), and can run the application generated by the workbench on any ISaGRAF PACs. The ISaGRAF workbench Ver. 3.x features.

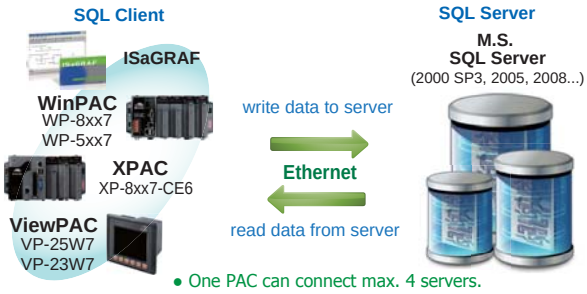
- IEC 61131-3 Standard Open PLC Programming Languages (LD, FBD, SFC, ST, IL, FC) + Flow Chart (FC)
- Auto-Scan I/O
- On-Line Debug/Control/Monitor, Off-Line Simulation
- Simple Graphic HMI
- Support Soft-GRAF HMI



Soft-GRAF Studio Colorful HMI

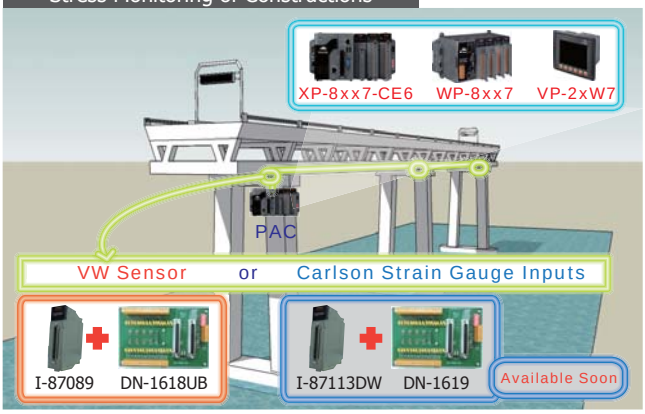
M2B Machine To Business Application

SQL Server Communication

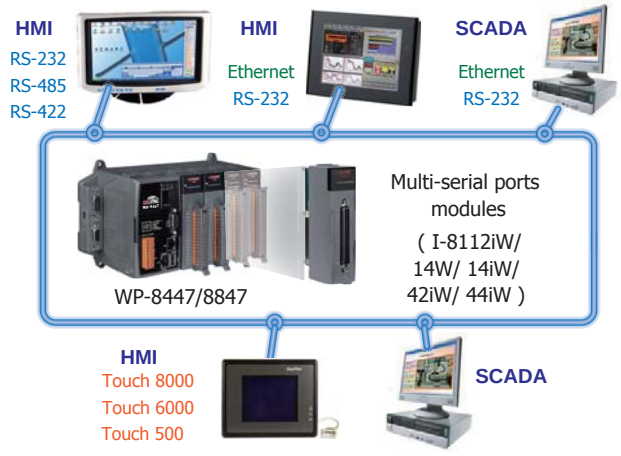


• One PAC can connect max. 4 servers.

Stress Monitoring of Constructions

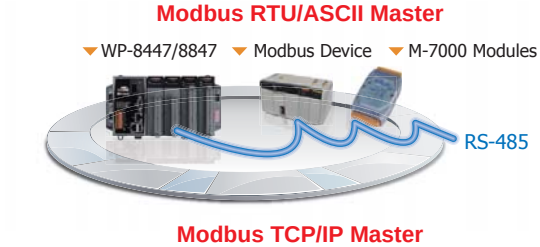


Modbus RTU/TCP Slave Ports

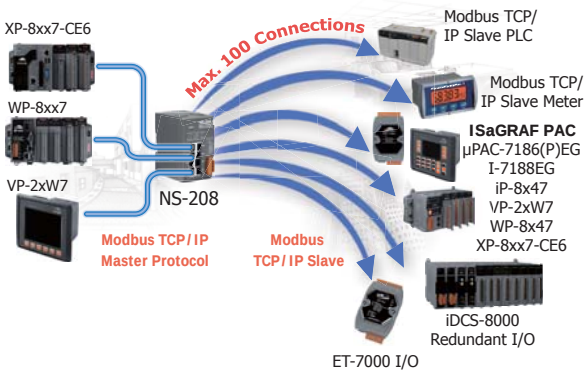


Modbus Master Ports

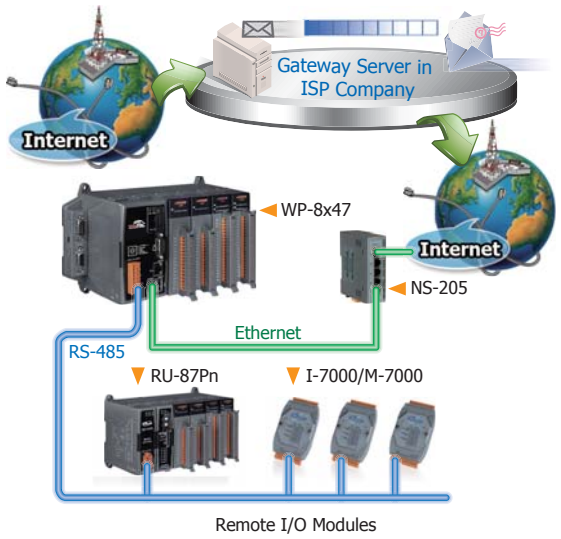
Modbus RTU/ASCII Master



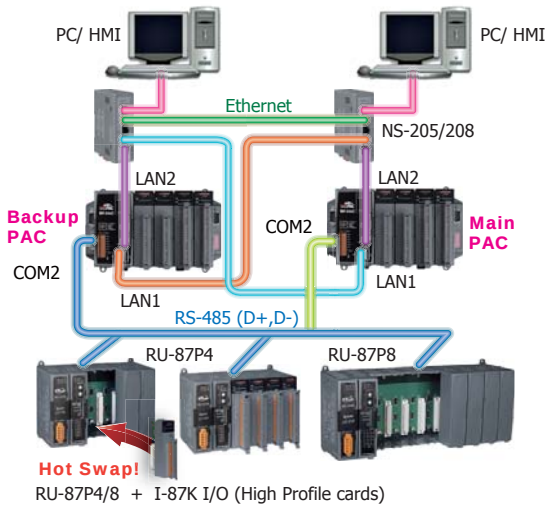
Modbus TCP/IP Master



Send Email with one Attached File



New Hot-Swap Redundant System



RU-87P4/8 + I-87K I/O (High Profile cards)

PAC Specifications

Models	WP-8137	WP-8437	WP-8837	WP-8147	WP-8447	WP-8847	WP-8057	WP-8357	WP-8757
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									
ISaGRAF Software – ISaGRAF Ver.3	IEC 61131-3 standard.								
ISaGRAF Software – Languages	LD, ST, FBD, SFC, IL & FC; Support Soft-GRAF HMI: XP-8xx7-CE6, WP-8xx7, VP-2xW7 and WP-5xx7 PAC								
ISaGRAF Software – Max. Code Size	1 MB								
ISaGRAF Software – Scan Time	3 ~ 15 ms for normal program; 15 ~ 50 ms for complex or large program								
Non-ISaGRAF	Options: MS eVC++ 4.0 or VS.NET 2005/2008 (VB.NET, C#.NET)								
Web Service									
Web HMI	PC running Internet Explorer can monitor/control PAC via Internet/modem								
Security	Support three levels username and password protection. (high/middle/low)								
CPU Module									
CPU	PXA270, 520 MHz								
SDRAM	128 MB								
Dual Battery Backup SRAM	512 KB; data valid up to 5 years (for retain variables)								
Flash	128 MB			96 MB			128 MB		
EEPROM	16 KB								
Memory Expansion	microSD socket with one 2 GB microSD card (support up to 32 GB microSDHC card)						CF slot with 2 GB CF 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)		-	Yes (8 bits)		-	Yes (8 bits)	
Audio	-						Microphone-In and Earphone-Out		
VGA & Communication Ports									
VGA	Yes 640 x 480, 800 x 600, 1024 x 768			Yes 640 x 480, 800 x 600					
Ethernet	RJ-45 x 2, 10/100 Base-TX (Auto-negotiating, Auto MDI/MDI-X, LED indicators)								
USB 1.1 (host)	2			1			2		
USB 1.1 (client)	-						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 V_{DC} isolated for WP-8131 and WP-8141; 3000 V_{DC} isolated for other models.								
COM 3	-	Yes		-	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		-	Yes				
	RS-232 (RxD, TxD, CTS, RTS, DSR, DTR, CD, RI and GND); non-isolated								
COM 5	-						Yes	-	
	RS-232 (RxD, TxD, and GND); non-isolated								
I/O Expansion Slots									
Slot Number	1	4	8	1	4	8	0	3	7
	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: WP-8137, WP-8147 137 mm x 132 mm x 111 mm: WP-8057 231 mm x 132 mm x 111 mm: WP-8437, WP-8447, WP-8357 355 mm x 132 mm x 111 mm: WP-8837, WP-8847, WP-8757								
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 V_{DC}								
Isolation	1 kV								
Redundant Power Inputs	Yes, with one power relay (1 A @ 24 V_{DC}) for alarm								
Capacity	8 W	25 W	25 W	8 W	30 W	30 W	8 W	30 W	30 W
Consumption	7.3 W	9.1 W	9.6 W	7.3 W	9.1 W	9.6 W	7.3 W	9.1 W	9.6 W

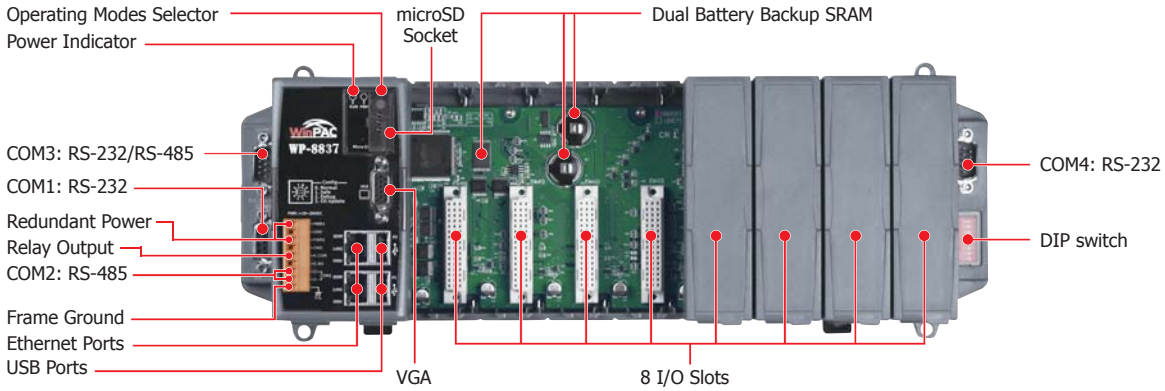
ISaGRAF Specifications

Protocols (some protocols need optional devices)		
NET ID		1~255, user-assigned by software
Modbus TCP/IP Master		Link to max. 100 devices that support Standard Modbus TCP/IP Slave protocol (FAQ-113)
Modbus RTU/ASCII Master		Max. 10 ports: COM1 ~ 14 (To connect to other Modbus Slave devices). Support Multi-ports. (*)
Modbus RTU Slave		Max. 5 ports: COM1, one of COM2/3, COM4 ~ 8 (For connecting ISaGRAF, PC/HMI/OPC Server & HMI panels). (*)
Modbus TCP/IP Slave		Ethernet LAN1 & LAN2 support total up to 32 connections. (If WP-8xx7 uses 1 connection to connect each PC/HMI, it can connect up to 32 PC/HMI; If WP-8xx7 uses 2 connections to connect each PC/HMI, it can connect up to 16 PC/HMI; ...) When one Ethernet port is broken, the other one can still connect to PC/HMI.
Web HMI Protocol		Ethernet Ports for connecting PC running Internet Explorer
I-7000 & I-87K RS-485 Remote I/O		One of COM2, COM3 supports I-7000 I/O modules, I-87K base + I-87K Serial I/O boards and RU-87Pn + I-87K High Profile I/O boards as Remote I/O. Max. 255 modules for one controller. (*)
M-7000 Series Modbus I/O		Max. 10 RS-485 ports (COM1 ~ 14) can support M-7000 I/O. Each port can connect up to 32 M-7000 Modules.
Modbus TCP/IP I/O		LAN2 supports ICP DAS Ethernet I/O: I-8KE4-MTCP and I-8KE8-MTCP. If LAN2 is broken, it will switch to LAN1 automatically to continuously work. (LAN1 & LAN2's IP are requested set in the same IP domain) (FAQ-042)
FRnet I/O		Support max 8 pcs. I-8172W boards in slot 0 to 7 to connect to FRnet I/O modules, like FR-2053, FR-2057 FR-32R, FR-32P (FAQ-048). Each I-8172W board can connect up to 256 DI plus 256 DO channels.
Send Email		Supports functions to send email with one attached file via Ethernet port.
Ebus		LAN2 to exchange data between ISaGRAF Ethernet PAC via Ethernet port.
SMS: Short Message Service		WP-84x7/88x7's COM4/5 and WP-81x7's COM1/COM5 can link to a GSM Modem to support SMS. User can request data/control the controller by cellular phone. The controller can also send data & alarms to user's cellular phone. (*) Optional GSM Modem: GTM-201-RS232 (850/900/1800/1900 GSM/GPRS External Modem)
User-Defined Protocol		COM1 ~ COM14 by Serial communication function blocks (*)
MMICON/LCD		COM4 or COM5 and supports ICP DAS's MMICON. (*)
UDP Server & UDP Client : Exchange Message & Auto-Report		LAN1 or LAN2 support UDP Server and UDP Client protocol to send/receive message to/from PC/HMI or other devices. For example, to automatically report data to InduSoft's RXTX driver.
TCP Client : Exchange Message & Auto-Report		LAN1 or LAN2 (To send/receive message to/from PC/HMI or other devices which support TCP server protocol.) Ex: automatically report data to InduSoft's RXTX driver, or to connect a location camera.
GPRS/SMS		Support the I-8212W (2G/3G) card to receive / send a short message or to dial up to link the Internet by GPRS connection to send an email or communicate with remote stations by using "Ftp Client" (FAQ-151) and "TCP Client" / "UDP Server" / "UDP Client" (FAQ-143).
SQL Client		Support SQL Client function to write data to (or read data from) Microsoft SQL Server (2000 SP3, 2005, 2008).
Hot-Swap and Redundant System		This redundant system has setup two "Active IP" address point to the active LAN1 and LAN2 ports always. One or more PC/HMI/SCADA can communicate with this redundant system via one of the two given active IP. So the PC/HMI/SCADA can access to the system easily without any notice about which WP-8xx7 is currently active. Moreover, the new redundant system can integrate with the RU-87P4/87P8 Expansion Unit plus the I-87K high-profile I/O cards to support the hot-swap application. If the I/O card is damaged, the maintenance person just takes one good-card with same model number to hot-swap the damaged one without stopping this redundant system. (FAQ-093)
CAN/CANopen		COM1, COM3 ~ COM14 can connect one I-7530 (converter: RS-232 to CAN) to support CAN/CANopen devices and sensors. One WP-8xx7 supports max.10 RS-232 ports to connect max.10 I-7530. (*) (FAQ-086)
CANopen Master		Support the I-8123W CANopen Master card to connect other CANopen slave devices. (FAQ-145)
HART Solutions		Support I-87H17W modules in slot 0 to 7 to communicate with other HART devices.
FTP Client		Support FTP client to upload files in the PAC to a remote FTP server on PC. (FAQ-151)
Soft-GRAF HMI		Support the Soft-GRAF HMI . User can use the Soft-GRAF Studio on the PC to design the HMI screen and then download it to the PAC to display the HMI on the PAC. (FAQ-146)
Optional I/O Functions (Refer to ISaGRAF PAC I/O Selection Guide for I/O Module list)		
PWM Output	High Speed PWM Module	I-7088, I-8088W, I-87088W: 8-ch. PWM outputs, software support 1Hz~100KHz (non-continuous), duty: 0.1~99.9%
	DO Module as PWM	8-ch max. 250 Hz max. For Off=2 & On=2 ms. Output square wave: Off: 2~32766 ms, On: 2 ~ 32766 ms. Optional DO Boards: I-8037W, 8041W, 8041AW, 8042W, 8050W, 8054W, 8055W, 8056W, 8057W, 8060W, 8063W, 8064W, 8068W, 8069W. (Relay Output boards cannot generate fast square wave)
Counter, Encoder, Frequency	Parallel DI Counter	8 ch. max. for 1 controller. Counter val: 32 bit. 250 Hz max. Min. ON & OFF width must > 2 ms. Optional DI boards: I-8040W, 8040PW, 8042W, 8046W, 8048W, 8050W, 8051W, 8052W, 8053W, 8053PW, 8054W, 8055W, 8058W, 8063W.
	Serial DI Counter	Counter input: 100 Hz max. Counter value: 0 ~ 65535 (16 bit) Optional serial I-87K DI boards: I-87040W, 87046W, 87051W, 87052W, 87053W, 87053W-A5, 87054W, 87055W, 87058W, 87059W, 87063W.
	Remote DI Counter	All I-7K/I-87K DI modules support counters. 100 Hz max. value: 0 ~ 65535
	High Speed Counter	I-87082W: 100 kHz max.; I-8084W: 250 kHz max.
	Encoder	I-8093W: 3-axis Encoder Module, max. 1M Hz for quadrant input mode, max. 4 MHz for pulse/direction and cw/ccw input mode. (FAQ-112) I-8084W: 250 kHz max., 4-ch encoder, can be dir/pulse, or up/down or A/B phase (Quad. mode), Not support Encoder Z-index. (FAQ-100)
	Frequency	I-87082W: 2-ch, 1 Hz ~ 100 kHz; I-87088W: 8-ch, 0.1 Hz ~ 500 kHz; I-8084W: 8-ch, 1 Hz ~ 250 kHz
Motion	Motion Control	Integrate with one I-8091W (2-axis) or two I-8091W (4-axis)

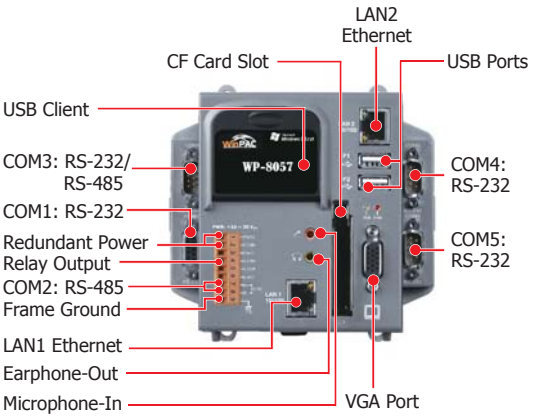
*** Note: COM5 ~ COM14 are resided at the expansion boards if they are plugged on slot 0~7 of WP-8xx7. WP-8137/8147 has no COM3 & COM4.**
*** ISaGRAF FAQ: http://www.icpdas.com/faq/isagraf.htm**

Appearance

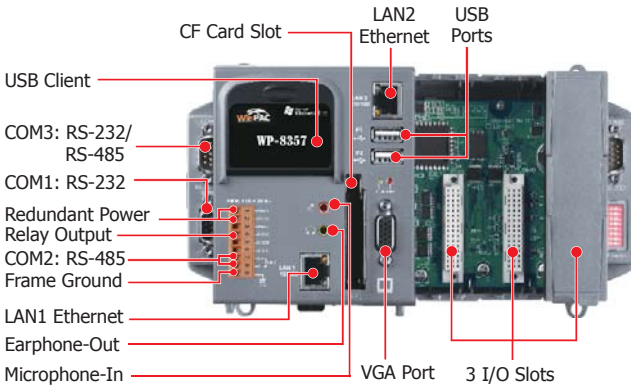
WP-8837



WP-8057



WP-8357

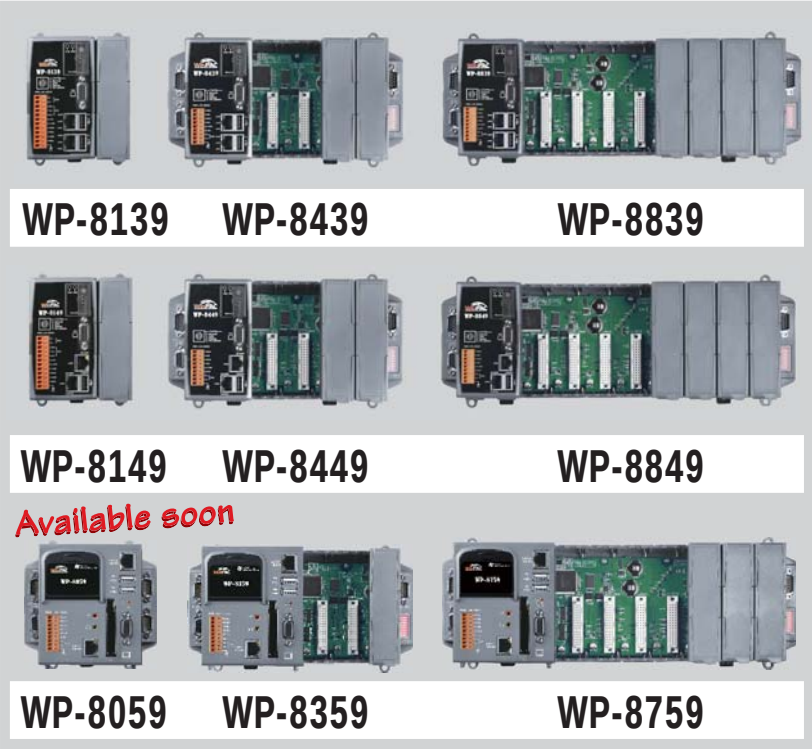


Ordering Information

WP-8137-EN	**WP-8147-EN**	ISaGRAF based WinPAC-8000 with 1 I/O Slot (Multilanguage Version of OS)
WP-8437-EN	**WP-8447-EN**	ISaGRAF based WinPAC-8000 with 4 I/O Slots (Multilanguage Version of OS)
WP-8837-EN	**WP-8847-EN**	ISaGRAF based WinPAC-8000 with 8 I/O Slots (Multilanguage Version of OS)
WP-8137-TC	**WP-8147-TC**	ISaGRAF based WinPAC-8000 with 1 I/O Slot (Traditional Chinese Version of OS)
WP-8437-TC	**WP-8447-TC**	ISaGRAF based WinPAC-8000 with 4 I/O Slots (Traditional Chinese Version of OS)
WP-8837-TC	**WP-8847-TC**	ISaGRAF based WinPAC-8000 with 8 I/O Slots (Traditional Chinese Version of OS)
WP-8137-SC	**WP-8147-SC**	ISaGRAF based WinPAC-8000 with 1 I/O Slot (Simplified Chinese Version of OS)
WP-8437-SC	**WP-8447-SC**	ISaGRAF based WinPAC-8000 with 4 I/O Slots (Simplified Chinese Version of OS)
WP-8837-SC	**WP-8847-SC**	ISaGRAF based WinPAC-8000 with 8 I/O Slots (Simplified Chinese Version of OS)
WP-8057		ISaGRAF based WinPAC-8000 without I/O Slot (Multilanguage Version of OS)
WP-8357		ISaGRAF based WinPAC-8000 with 3 I/O Slots (Multilanguage Version of OS)
WP-8757		ISaGRAF based WinPAC-8000 with 7 I/O Slots (Multilanguage Version of OS)

Accessories

ISaGRAF Development Software	
ISaGRAF-256-E	ISaGRAF Workbench Software Ver.3 (256 I/O Tags) with One Application Book (English version) and one USB Dongle
ISaGRAF-256-C	ISaGRAF Workbench Software Ver.3 (256 I/O Tags) with One Application Book (Chinese version) and one USB Dongle
ISaGRAF-32-E	ISaGRAF Workbench Software Ver.3 (32 I/O Tags) with One Application Book (English version) Note: No upgrade service from ISaGRAF-32 to ISaGRAF-256. (Using ISaGRAF-32 can control more than 32 I/O tags. Please refer to ISaGRAF User's Manual Ch. 3.4)
ISaGRAF-32-C	ISaGRAF Workbench Software Ver.3 (32 I/O Tags) with One Application Book (Chinese version) Note: No upgrade service from ISaGRAF-32 to ISaGRAF-256. (Using ISaGRAF-32 can control more than 32 I/O tags. Please refer to ISaGRAF User's Manual Ch. 3.4)
Power Supply	
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)



Features

- PXA270, 520 MHz CPU
- Windows CE 5.0
- InduSoft Web Studio v6.1
- Hard Real-Time Capability
- VGA Port Output
- Redundant Power Inputs
- Operating Temperature: -25 ~ +75°C

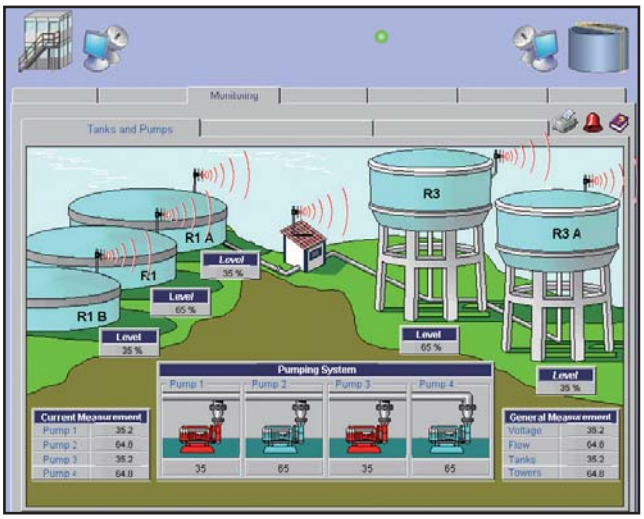
Introduction

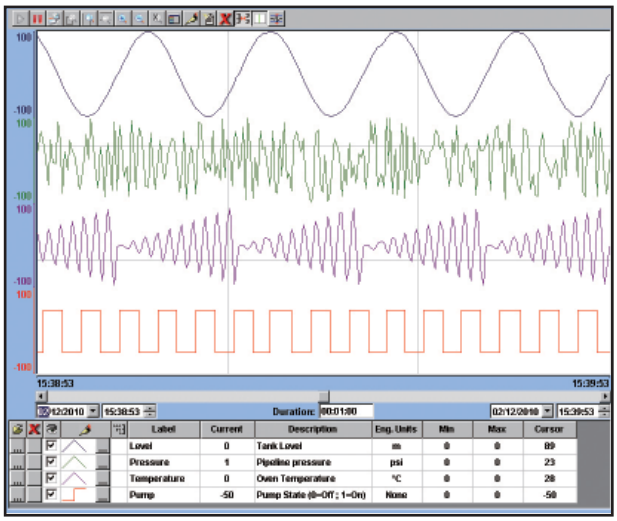
WP-8x39, WP-8x49 and WP-8x59 Series are the new generation InduSoft based PACs of ICP DAS. It is equipped with a PXA270 CPU (520 MHz), various connectivity (VGA, USB, Ethernet, RS-232/485) and 1/4/8 I/O slots for high performance parallel I/O modules (high profile I-8K Series) and serial I/O modules (high profile I-87K series). The benefits of running Windows CE 5.0 on WinPAC include hard real-time capability, small core size, fast boot speed, interrupt handling at a deeper level and achievable deterministic control. WinPAC is also capable of running InduSoft and PC-based control software such as Visual Basic .NET, Visual C#,.... etc. It has all of the best features of both traditional PLCs and Windows capable PCs.

InduSoft Features

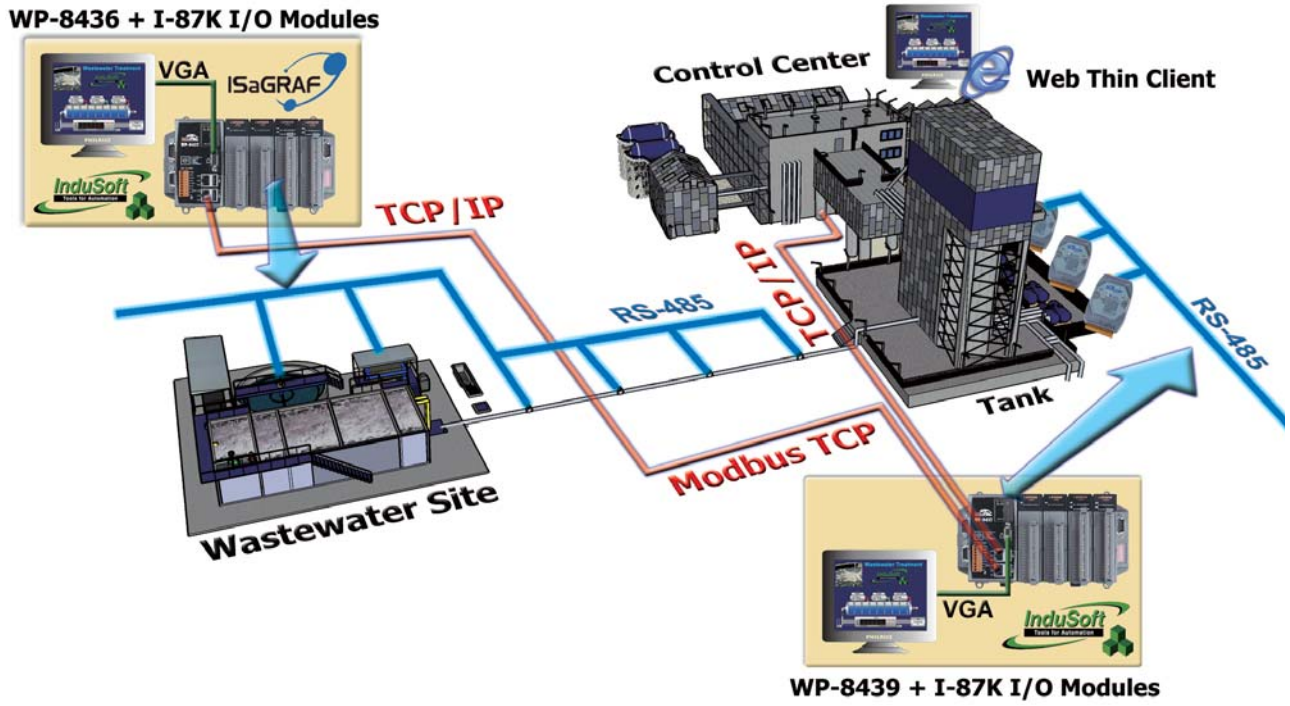
InduSoft Web Studio is a powerful, integrated collection of automation tools that includes all the building blocks needed to develop modern Human Machine Interfaces (HMI), Supervisory Control and Data Acquisition (SCADA) systems, and ViewPAC applications. InduSoft Web Studio's application runs in native Windows NT, 2000, XP, CE and CE .NET environments and conforms to industry standards such as Microsoft .NET, OPC, DDE, ODBC, XML, and ActiveX.

- Elegant Graphics
- Multi-Language
- Database (Access, Excel, SQL, Oracle…)
- Recipes and Reports
- Online and History Alarm / Event / Trend
- Remote Web Client Control & Security
- Various Communication Driver (DCON, Modbus, OPC, DDE, TCP/IP…)
- ActiveX (GSM / SHM / COM /WEB provided by ICP DAS)
- System Redundancy
- Online Configuration and debugging
- Others (VBScript, E-mail, FTP, SNMP...)

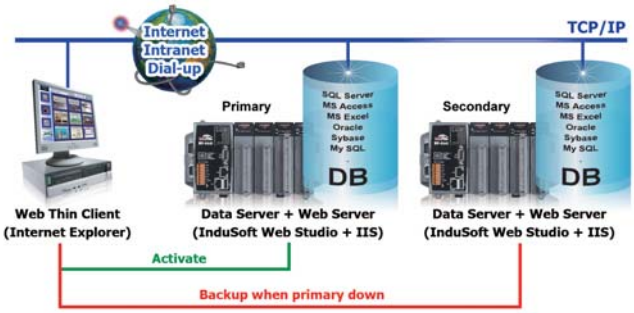




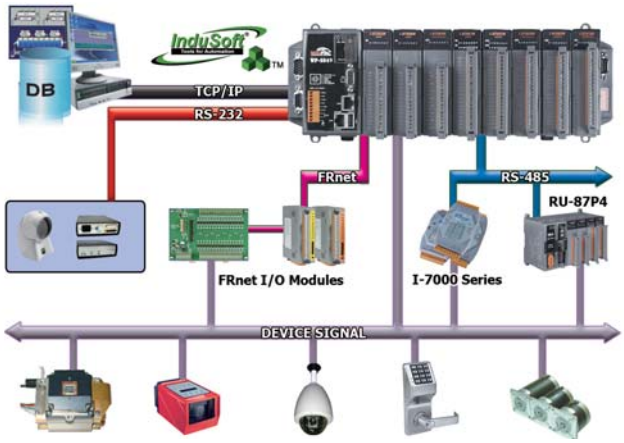
WP-8xx9 Total Solution



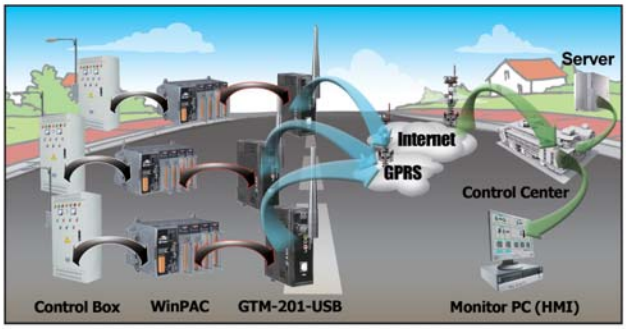
Database & Redundancy



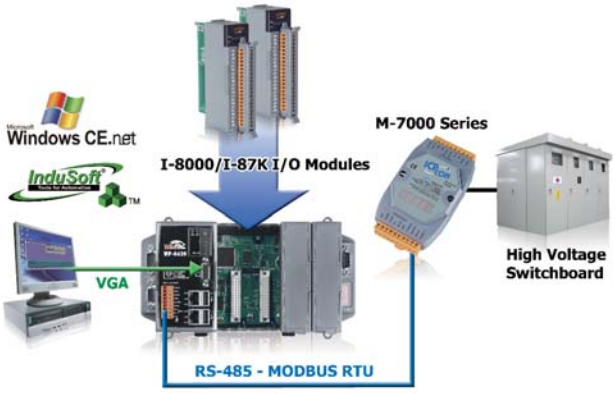
Variety of I/O supported



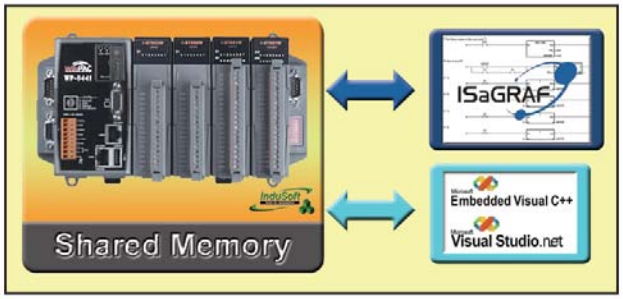
Street lamp monitor and control system



Variety of communication drivers



Share data with 3rd. party application

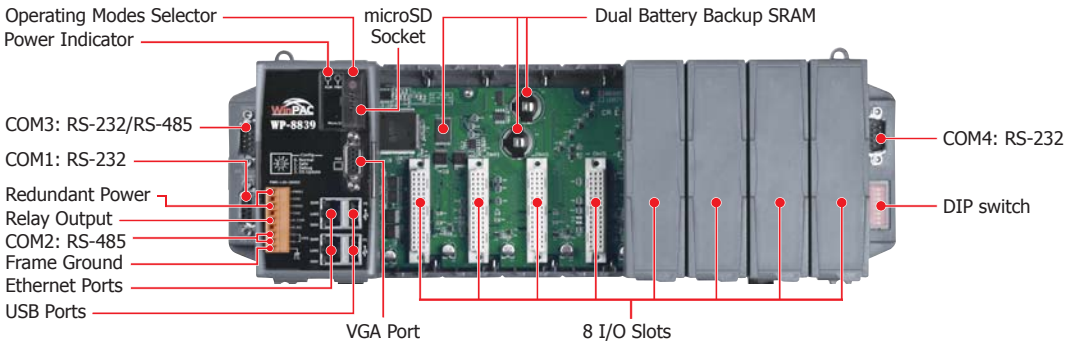


Specifications

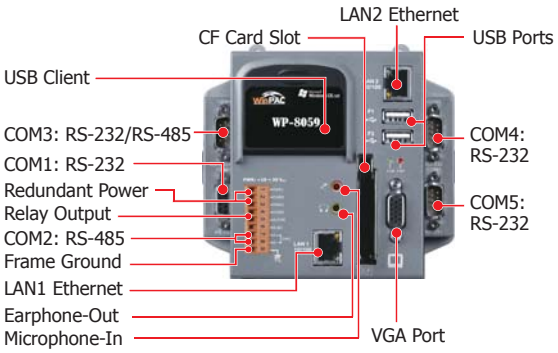
Models	WP-8139	WP-8439	WP-8839	WP-8149	WP-8449	WP-8849	WP-8059	WP-8359	WP-8759
System Software									
OS	Windows CE 5.0								
.Net Compact Framework	3.5								
Embedded Service	FTP server, Web server (supports VB script, JAVA script), Embedded SQL server								
Multilanguage Support	English, German, French, Spanish, Russian, Italian, Korean, Simplified Chinese, Traditional Chinese								
Development Software									
InduSoft Software	InduSoft Web Studio v6.1 Service Pack 6								
Non-ISaGRAF	Options: Microsoft EVC++4.0 or VS .NET 2005/2008 (VB .NET 2005/2008, C# .NET 2005/2008)								
Web Service									
Web HMI	Support Web HMI function, PC running Internet Explorer can access to the WP-8x39 via Local Ethernet or Internet or dial Modem, monitoring and control.								
Security	Web HMI supports three levels user name and password protection								
CPU Module									
CPU	PXA270, 520 MHz								
SDRAM	128 MB								
Dual Battery Backup SRAM	512 KB; data valid up to 5 years								
Flash	128 MB			96 MB			128 MB		
EEPROM	16 KB								
Memory Expansion	microSD socket with one 2 GB microSD card (support up to 32 GB microSDHC card)						CF slot with 2 GB CF 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)		-	Yes (8 bits)		-	Yes (8 bits)	
Audio	-						Microphone-In and Earphone-Out		
VGA & Communication Ports									
VGA	Yes 640 x 480, 800 x 600, 1024 x 768			Yes 640 x 800, 800 x 600					
Ethernet	RJ-45 x 2, 10/100 Base-TX (Auto-negotiating, Auto MDI/MDI-X, LED indicators)								
USB 1.1 (host)	2			1			2		
USB 1.1 (client)	-						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-8131 and WP-8141; 3000 VDC isolated for other models.								
COM 3	-	Yes		-	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		-	Yes				
	RS-232 (RxD, TxD, CTS, RTS, DSR, DTR, CD, RI and GND); non-isolated								
COM 5	-						Yes	-	
	RS-232 (RxD, TxD, and GND); non-isolated								
I/O Expansion Slots									
Slot Number	1	4	8	1	4	8	0	3	7
	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: WP-8139, WP-8149 137 mm x 132 mm x 111 mm: WP-8059 231 mm x 132 mm x 111 mm: WP-8439, WP-8449, WP-8359 355 mm x 132 mm x 111 mm: WP-8839, WP-8849, WP-8759								
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	25 W	25 W	8 W	30 W	30 W	8 W	30 W	30 W
Consumption	7.3 W	9.1 W	9.6 W	7.3 W	9.1 W	9.6 W	7.3 W	9.1 W	9.6 W

Appearance

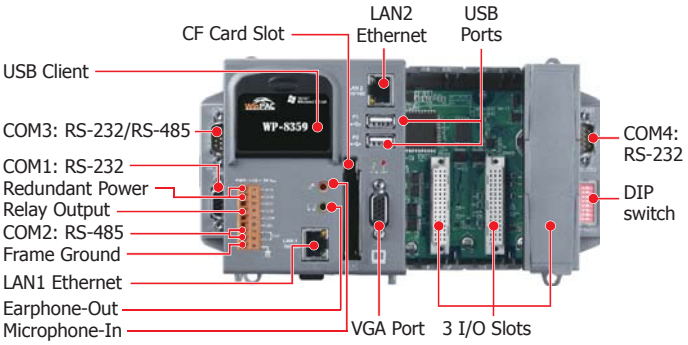
WP-8839



WP-8059



WP-8359



Ordering Information

WP-8139-EN	**WP-8149-EN**	InduSoft based WinPAC-8000 with 1 I/O Slot (Multilanguage Version of OS)
WP-8439-EN	**WP-8449-EN**	InduSoft based WinPAC-8000 with 4 I/O Slots (Multilanguage Version of OS)
WP-8839-EN	**WP-8849-EN**	InduSoft based WinPAC-8000 with 8 I/O Slots (Multilanguage Version of OS)
WP-8139-TC	**WP-8149-TC**	InduSoft based WinPAC-8000 with 1 I/O Slot (Traditional Chinese Version of OS)
WP-8439-TC	**WP-8449-TC**	InduSoft based WinPAC-8000 with 4 I/O Slots (Traditional Chinese Version of OS)
WP-8839-TC	**WP-8847-TC**	InduSoft based WinPAC-8000 with 8 I/O Slots (Traditional Chinese Version of OS)
WP-8139-SC	**WP-8149-SC**	InduSoft based WinPAC-8000 with 1 I/O Slot (Simplified Chinese Version of OS)
WP-8439-SC	**WP-8449-SC**	InduSoft based WinPAC-8000 with 4 I/O Slots (Simplified Chinese Version of OS)
WP-8839-SC	**WP-8849-SC**	InduSoft based WinPAC-8000 with 8 I/O Slots (Simplified Chinese Version of OS)
WP-8059		InduSoft based WinPAC-8000 without I/O Slot (Multilanguage Version of OS)
WP-8359		InduSoft based WinPAC-8000 with 3 I/O Slots (Multilanguage Version of OS)
WP-8759		InduSoft based inPAC-8000 with 7 I/O Slots (Multilanguage Version of OS)
Note: The default runtime license (CEView Lite Plus - 300 tags and 3 driver) is installed.		

Accessories

InduSoft Development Software	
InduSoft-NT512000D	Advanced Server for Windows NT/2000/XP (512,000 Tags, unlimited drivers)
InduSoft-NT64000D	Control Room for Windows NT/2000/XP (64,000 Tags, 8 drivers)
InduSoft-NT4000D	Operator Workstation for Windows NT/2000/XP (4,000 Tags, 5 drivers)
InduSoft-NT1500D	Local Interface for Windows NT/2000/XP (1500 Tags, 3 drivers)
InduSoft-NT300D	NTView PRO for Windows NT/2000/XP (300 Tags, 3 drivers)
InduSoft Runtime License	
InduSoft-CE1500R	CEView standard for Windows CE Run-time (CE View)(1500 Tags, 3 drivers)
InduSoft-CE300R	CEView Lite Plus for Windows CE Run-time (300 Tags, 3 drivers)
Power Supply	
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)

2.3. LinPAC-8000 Series

• Overview

The LinPAC-8000 is a second generation Linux-based PAC from ICP DAS and is equipped with a PXA270 CPU (520 MHz) or Atom Z520 CPU (1.33 GHz) running a Linux kernel 2.6 operating system, multiple communication interfaces (VGA, USB, Ethernet and RS-232/485) and 1/4/8-slot or 0/3/7-slot backplane for both high performance Parallel I/O modules (high profile I-8K series) and Serial I/O modules (high profile I-87K series).

Compared with the first generation LinCon-8000, not only is the CPU performance improved have been added (from 206 MHz to 520 MHz or 1.33 GHz) and uses an upgraded OS from Linux kernel 2.4 to Linux kernel 2.6, but many reliability features, such as dual LAN, redundant power inputs, and dual battery backup SRAM, etc. That's the powerful and flexible embedded control systems available.

LinPAC ≒ IPC+PLC

The LinPAC-8000 gives users all of the best features of both traditional PLCs and Windows capable PCs. The LinPAC-8000 includes a VGA port allowing users to choose a regular LCD monitor for display of HMI application, USB port to connect with Keyboard, Mouse, USB device for storage or touch monitor, microSD/ microSDHC memory for storage of program and data.

Main Components:

1 Main Control Unit (MCU)

The MCU is the powerhouse of the LinPAC Series. Each MCU comprises a Central Processor Module (CPM), a power supply, and a 1, 4, 8-slot or 0, 3, 7-slot backplane for I/O modules. The CPM is powerful integrated processing engine comprising a CPU, RAM and ROM, and an option of communication interfaces including Ethernet, RS-485, CAN bus and FRnet.

2 Embedded OS

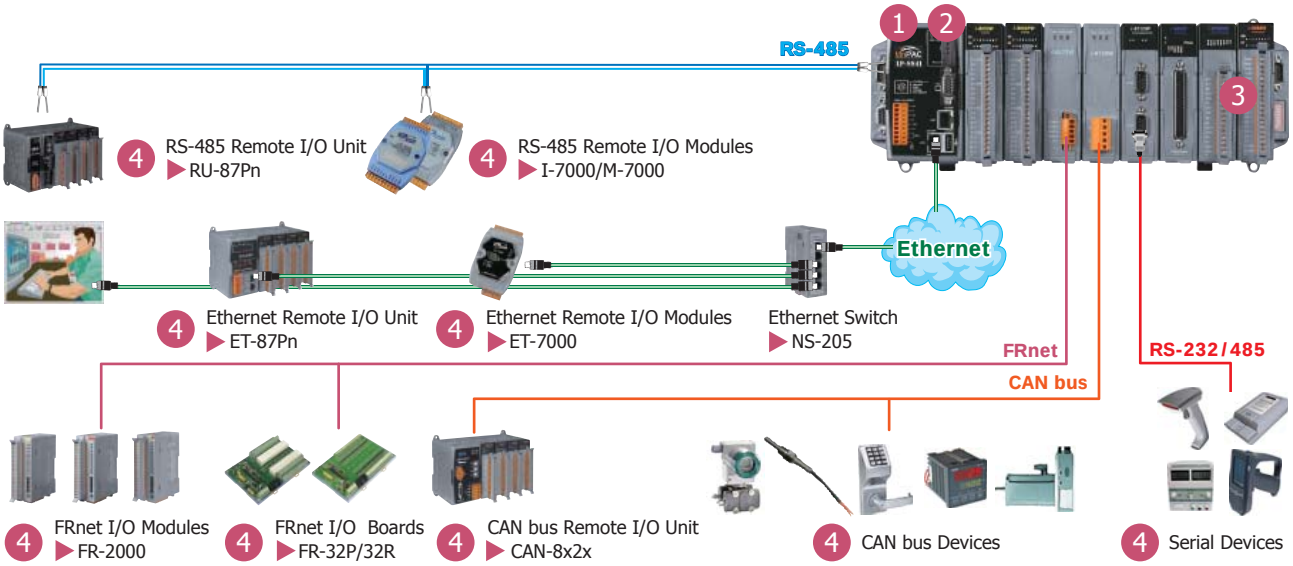
All LinPAC have Linux kernel 2.6 OS inside, most of the popular features in Linux are included, such as open source, stability. LinPAC supports for rich software & development solutions: LinPAC SDK, GNU C Language, GUI software, etc.

3 I/O Modules

I/O modules have two types, i.e., parallel bus and serial bus. The parallel bus type I/O modules (high profile I-8K series) are high speed ones used only in the PACs including XPAC, WinPAC, iPAC, ViewPAC, etc. And the serial bus type I/O modules (high profile I-87K series) are low speed ones used in both PACs including XPAC, WinPAC, iPAC, ViewPAC, etc., and I/O expansion units including RU-87Pn, ET-87Pn, USB-87Pn, etc.

4 Remote I/O Expansion

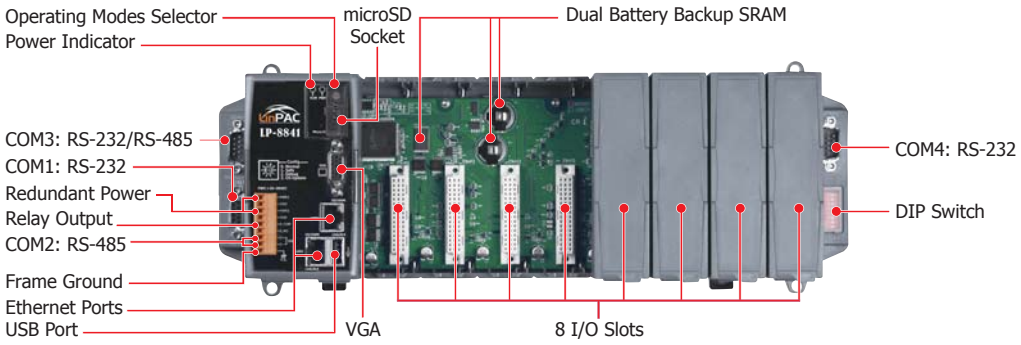
LinPAC uses built-in RS-485 and Ethernet ports to connect RS-485/Ethernet remote I/O units (RU-87Pn/ET-87Pn) or modules (I-7000/M-7000/ET-7000). In this configuration, LinPAC expands the I/O very easily.
Using CAN or FRnet communication module, LinPAC can connect to CAN bus devices, remote I/O units or FRnet I/O modules for deterministic control system.



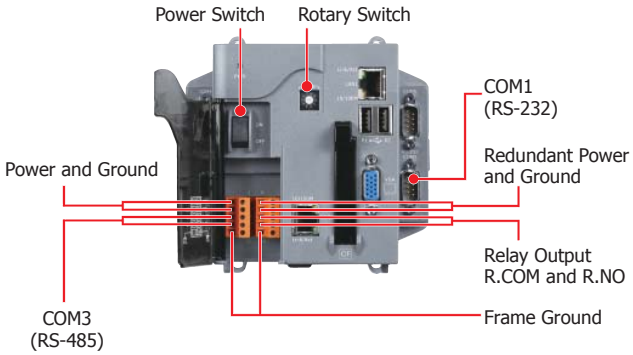
• Hardware

• Appearance

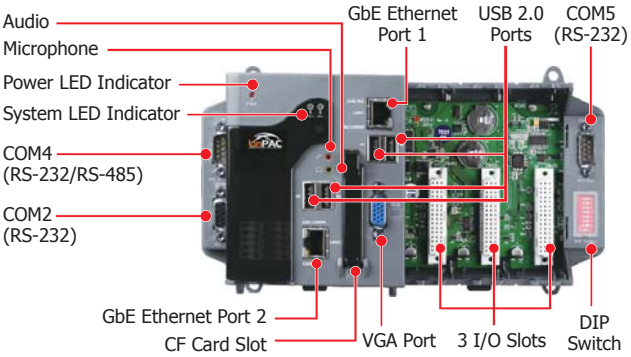
LP-8841



LP-8081



LP-8381-Atom



• Selection Guide

LP-8 X X X - XX

NO. of I/O Slot

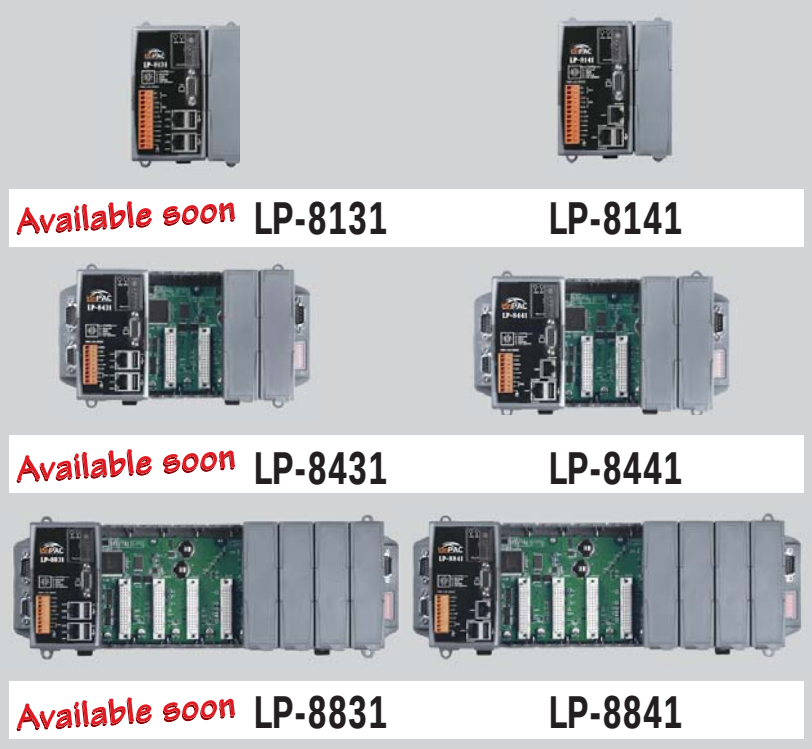
Hardware
3: PXA270 CPU & VGA 1024 x 768
4: PXA270 CPU & VGA 800 x 600
8: X86 CPU (LX800, Atom) & VGA 1024 x 768

Software
1: Standard

Language
EN: English

Standard LinPAC

Model Name	OS	Software	CPU	Flash	SDRAM	Ethernet	VGA Resolution	RS-232/ RS-485	I/O Slot	Audio Port
LP-8131	Linux kernel 2.6	None	PXA270, 520 MHz	128 MB	128 MB	2	1024 x 768	2	1	None
LP-8431								4	4	
LP-8831									8	
LP-8141	Linux kernel 2.6	None	PXA270, 520 MHz	48 MB	128 MB	2	800 x 600	2	1	None
LP-8441								4	4	
LP-8841									8	
LP-8081	Linux kernel 2.6	None	LX800, 500 MHz	4 GB	1 GB DDR SDRAM	2	1024 x 768	5	0	None
LP-8381								4	3	
LP-8781									7	
LP-8181-Atom	Linux kernel 2.6	None	Atom Z520, 1.33 GHz	8 GB	1 GB DDR2 SDRAM	2	1024 x 768	4	1	Yes
LP-8381-Atom									3	
LP-8781-Atom									7	



Features

- PXA270, 520 MHz CPU
- Linux kernel 2.6 Inside
- Embedded Service: Web Server, FTP Server, Telnet Server, SSH Server
- 1/4/8 Slots for High Profile I/O Modules
- Dual 10/100M Ethernet Ports
- 2/4 Serial Ports (RS-232/485)
- Redundant Power Inputs
- Operating Temperature: -25 ~ +75°C

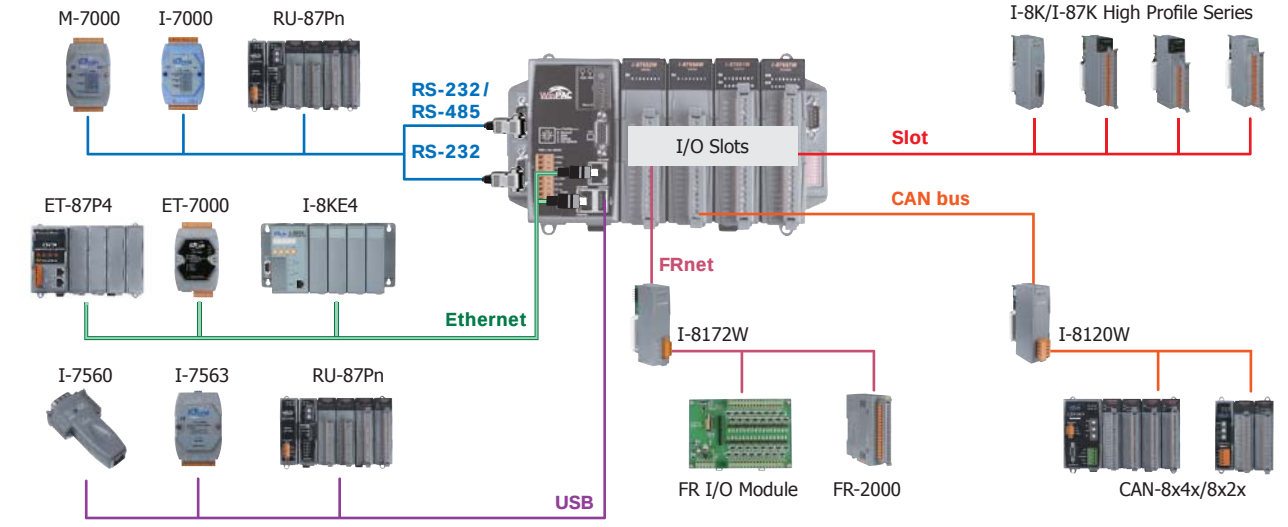
Introduction

LinPAC-8000 is the new generation Linux-based PAC (Programmable Automation Controller) from ICP DAS and is equipped with a PXA270 CPU (520 MHz) running a Linux kernel 2.6 operation system, multiple communication interfaces (VGA, USB, Ethernet and RS-232/485) and 1/4/8 slots for high performance parallel I/O modules (high profile I-8K series) and serial I/O modules (high profile I-87K series).

Main advantage of the LinPAC-8000 is its high quality control system, including its stably properties, open source and the standard LinPAC SDK for Windows and Linux using the GNU C language, GUI software. The main purpose of LinPAC-8000 is to allow the numerous enthusiastic Linux users to control their own embedded system easily within the Linux environment.

Applications

Rich I/O Expansion Ability



Specifications

Models	LP-8131	LP-8431	LP-8831	LP-8141	LP-8441	LP-8841
System Software						
OS	Linux kernel 2.6					
Embedded Service	Web Server, FTP Server, Telnet Server, SSH Server					
SDK Provided	Standard LinPAC SDK for Windows and Linux by GNU C language					
CPU Module						
CPU	PXA270, 520 MHz					
SDRAM	128 MB					
Dual Battery Backup SRAM	512 KB; data valid up to 5 years					
Flash	128 MB			48 MB		
EEPROM	16 KB					
Expansion Flash Memory	microSD socket with one 2 GB microSD card (support up to 16 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					
Programmable LED Indicator	1					
Rotary Switch	Yes (0 ~ 9)					
DIP Switch	-	Yes (8 bits)		-	Yes (8 bits)	
VGA & Communication Ports						
VGA: VGA	Yes			Yes		
VGA: Resolution	1024 x 768, 800 x 600, 640 x 480			800 x 600, 640 x 480		
Ethernet	RJ-45 x 2, 10/100 Base-TX (Auto-negotiating, Auto MDI/MDI-X, LED indicators)					
USB 1.1 (host)	2			1		
COM 1	RS-232 (RxD, TxD and GND); non-isolated					
COM 2	RS-485 (Data+, Data); 2500 V_{DC} isolated	RS-485 (Data+, Data-); 3000 V_{DC} isolated		RS-485 (Data+, Data); 2500 V_{DC} isolated	RS-485 (Data+, Data-); 3000 V_{DC} isolated	
COM 3	-	Yes		-	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		-	Yes	
	RS-232 (RxD, TxD, CTS, RTS, DSR, DTR, CD, RI and GND); non-isolated					
I/O Expansion Slots						
Slot Number	1	4	8	1	4	8
	Note: For High Profile I-8K and I-87K Modules Only					
Mechanical						
Dimensions (W x L x H)	91 mm x 132 mm x 52 mm: LP-8131, LP-8141 231 mm x 132 mm x 111 mm: LP-8431, LP-8441 355 mm x 132 mm x 111 mm: LP-8831, LP-8841					
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 V_{DC}					
Isolation	1 kV					
Redundant Power Inputs	Yes, with one power relay (1 A @ 24 V_{DC}) for alarm					
Capacity	8 W	30 W	30 W	8 W	30 W	30 W
Consumption	7.3 W	9.1 W	9.6 W	7.3 W	9.1 W	9.6 W

Ordering Information

LP-8131-EN	LP-8141-EN	Standard LinPAC-8000 with 1 I/O Slot (English Version of OS)
LP-8431-EN	LP-8441-EN	Standard LinPAC-8000 with 4 I/O Slots (English Version of OS)
LP-8831-EN	LP-8841-EN	Standard LinPAC-8000 with 8 I/O Slots (English Version of OS)

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)

LP-8081 LP-8181-Atom

LP-8381 LP-8381-Atom

LP-8781 LP-8781-Atom

Features

- LX800, 500 MHz CPU or Atom Z520, 1.33 GHz CPU
- Linux kernel 2.6 Inside
- Embedded Service: Web Server, Telnet Server, SSH Server
- 0/1/3/7 Slots for High Profile I/O Modules
- 2/4 USB and 1 VGA Ports
- Dual Ethernet Ports (10/100 M)
- 4/5 Serial Ports (RS-232/RS-485)
- Operating Temperature: -25 ~ +75°C

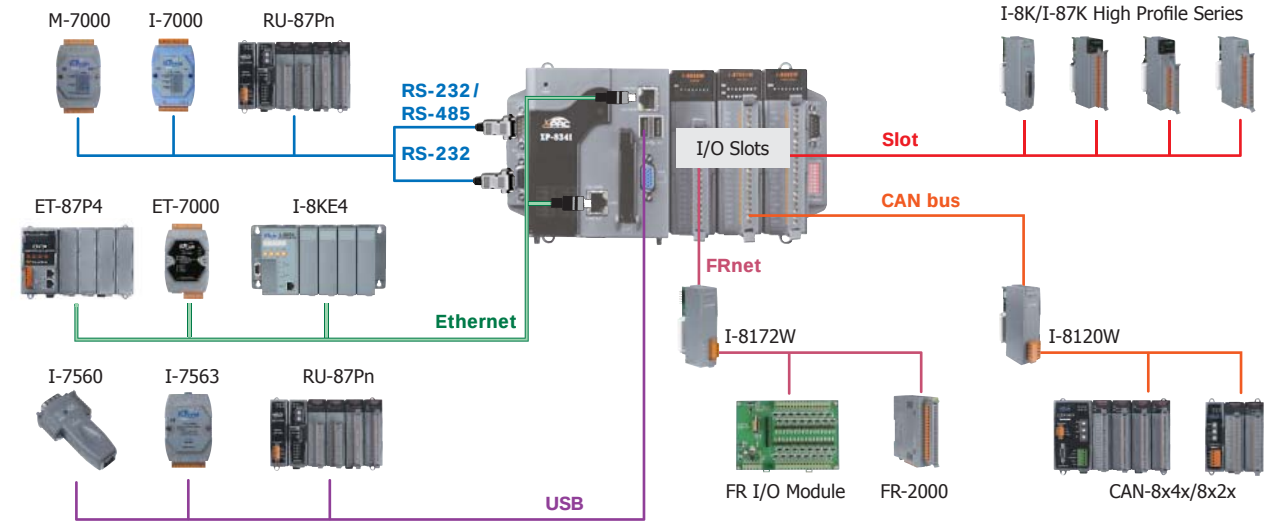
Introduction

LP-8x81-Atom series is the new generation Linux-based PAC of LP-8x81. It is equipped with an Intel Atom Z520 Series CPU at 1.33GHz, while LP-8x81 is equipped with a LX800 CPU at 500 MHz. They provide various connectivity (VGA, USB, Ethernet, RS-232/485) and 0/1/3/7 I/O slots for high performance parallel I/O modules (high profi le I-8K Series) and serial I/O modules (high profile I-87K series).

User's programs can be saved in external storage device, such as CF Card, USB device or RAM via Ethernet. LinPAC SDK is provided for users to develop LinPAC I/O applications rapidly and easily when I-7000/8000/87K series I/O modules are used in the LinPAC. Users can develop LinPAC applications using the GNU C Language. In the meanwhile, all kinds of servers and functions built-in make the LinPAC more powerful and users will be able to operate LinPAC to achieve their own project smoothly. With LP-8x81 Serial, users can achieve the redundancy function and it will make the whole control system safer.

Applications

Rich I/O Expansion Ability



Specifications

Models	LP-8081	LP-8381	LP-8781	LP-8181-Atom	LP-8381-Atom	LP-8781-Atom
System Software						
OS	Linux kernel 2.6.18			Linux kernel 2.6.33		
Embedded Service	Web Server, Telnet Server, SSH Server					
SDK Provided	Standard LinPAC SDK for Linux by GNU C language					
Multilanguage Support	No (Only for English)			Yes		
CPU Module						
CPU	LX800, 500 MHz			Atom Z520, 1.33 GHz		
System Memory	1 GB DDR SDRAM			1 GB DDR2 SDRAM		
Dual Battery Backup SRAM	512 KB; data valid up to 5 years					
Flash	4 GB as IDE Master			8 GB as IDE Master		
EEPROM	16 KB					
CF Card	8 GB (support up to 32 GB)					
RTC (Real Time Clock)	Provide second, minute, hour, date, day of week, month, yea					
Programmable LED Indicator	-			2		
64-bit Hardware Serial Number	Yes, for Software Copy Protection					
Dual Watchdog Timers	Yes					
Rotary Switch	Yes (0 ~ 9)					
DIP Switch	-	Yes (8 bits)				
Audio	-			Microphone-In and Earphone-Out		
VGA & Communication Ports						
VGA	Yes, (resolution: 1024 x 768, 800 x 600)					
Ethernet	RJ-45 x 2, 10/100 Base-TX (Auto-negotiating, Auto MDI/MDI-X, LED indicators)					
USB 2.0	2			4		
COM 1	RS-232 (RxD, TxD and GND); non-isolated	Internal communication with the high profile I-87K series modules in slots				
COM 2	RS-232 (RxD, TxD and GND); non-isolated					
COM 3	RS-485 (Data+, Data-) with internal self-tuner ASIC; 3000 V_{DC} isolated					
COM 4	RS-232/RS-485 (RxD, TxD, CTS, RTS and GND for RS-232, Data+ and Data- for RS-485); non-isolated					
COM 5	RS-232 (RxD, TxD, CTS, RTS, DSR, DTR, CD, RI and GND); non-isolated					
I/O Expansion Slots						
Slot Number	0	3	7	1	3	7
Mechanical						
Dimensions (W x L x H)	137 x 132 x 125 mm	231 x 132 x 111 mm	355 x 132 x 111 mm	169 x 132 x 125 mm	231 x 132 x 125 mm	355 x 132 x 125 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 V_{DC}					
Isolation	1 kV					
Redundant Power Inputs	Yes, with one power relay (1 A @ 24 V_{DC}) for alarm					
Capacity	15 W	35 W	35 W	25 W	35 W	35 W
Consumption	14.4 W	14.4 W	16.8 W	16.6 W	16.8 W	18 W

Ordering Information

LP-8081-EN CR	Standard LinPAC-8000 without I/O Slot (English Version of OS) (RoHS)
LP-8381-EN CR	Standard LinPAC-8000 with 3 I/O Slots (English Version of OS) (RoHS)
LP-8781-EN CR	Standard LinPAC-8000 with 7 I/O Slots (English Version of OS) (RoHS)
LP-8181-Atom CR	Standard LinPAC-8000-Atom with 1 I/O Slot (Multilingual Version of OS) (RoHS)
LP-8381-Atom CR	Standard LinPAC-8000-Atom with 3 I/O Slots (Multilingual Version of OS) (RoHS)
LP-8781-Atom CR	Standard LinPAC-8000-Atom with 7 I/O Slots (Multilingual Version of OS) (RoHS)

Accessories

NS-208 CR	8-Port Unmanaged Industrial 10/100 Base-TX Ethernet Switch (RoHS)
USB-2560 CR	4-Port Industrial USB 2.0 Hub (RoHS)
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)

2.4. iPAC-8000 Series

• Overview

The iPAC-8000 is a family of compact, modular, intelligent and rugged, distributed PAC designed for data acquisition and control in manufacturing, research and education.

The iPAC-8000 is a modular network-based PAC with the capability of connecting I/O either through its own dual backplane bus or alternatively through remote I/O units and remote I/O modules. The unit comprises a main control unit with a range of standard communication interfaces, and a dual backplane bus permitting I/O expansion.

The dual backplane bus is hybrid in nature providing the facility to connect either serial or parallel I/O modules. The parallel bus is used for high speed data transfer.

The unit can communicate using serial communications (RS-232, RS-485), Ethernet, CAN bus or FRnet. The Ethernet version of the product supports an integrated web server permitting Internet and Intranet applications.

The iPAC-8000 can be used as an intelligent distributed data acquisition front end connected to a host machine running a standard SCADA package, or alternatively. It can be programmed as an autonomous controller running an embedded software application. Significant non-volatile memory is available for data and program storage.

Main Components:

1 Main Control Unit (MCU)

The MCU is the power house of the iPAC-8000. Each MCU comprises a central processor module (CPM), a power supply, a four (4) or eight (8) slot backplane for either 4 or 8 Parallel I/O modules. The CPM is a powerful integrated processing engine comprising a CPU, RAM and ROM, and an option of communication interfaces including RS-485, Ethernet, FRnet and CAN bus.

2 I/O Modules

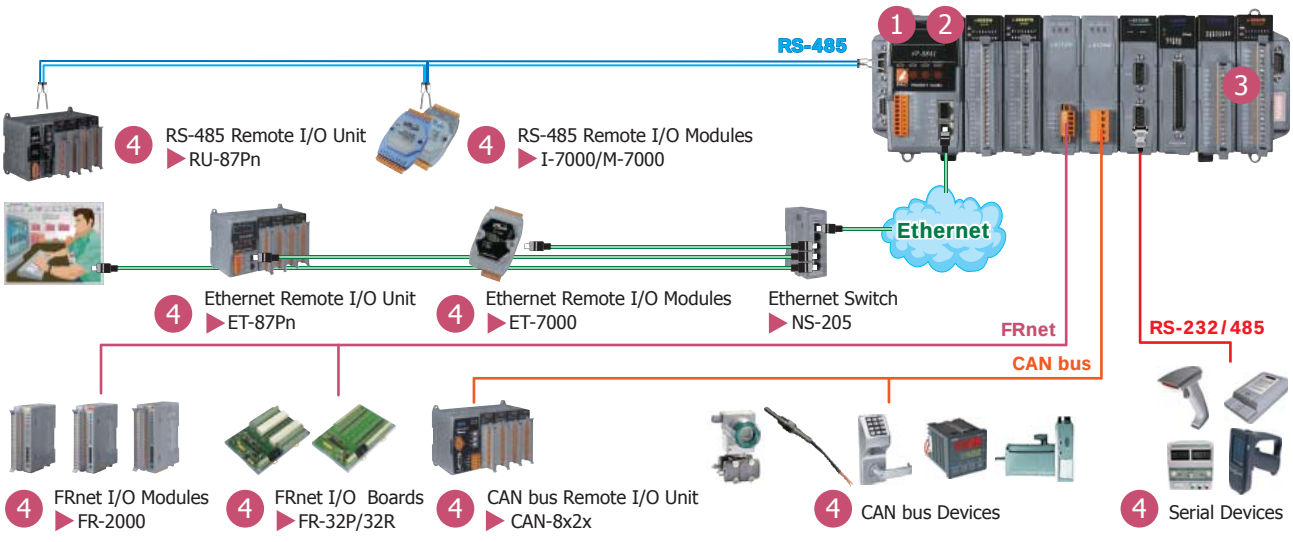
I/O modules have two types, i.e., parallel bus and serial bus. The parallel bus type I/O modules (high profile I-8K series) are high speed ones used only in the PACs including XPAC, WinPAC, iPAC, ViewPAC, etc. And the serial bus type I/O modules (high profile I-87K series) are low speed ones used in both PACs including XPAC, WinPAC, iPAC, ViewPAC, etc., and I/O expansion units including RU-87Pn, ET-87Pn, USB-87Pn, etc.

3 Embedded OS

All iPAC is equipped MiniOS7 embedded OS. It is developed by ICP DAS Co., ltd and compatible to DOS. MiniOS7 has more features than regular DOS in embedded applications, such as shorter boot time, built-in hardware diagnostic function, directly support I-8000 and I-7000 modules without library, and directly support Micro SD and Flash disk.

4 Remote I/O Expansion

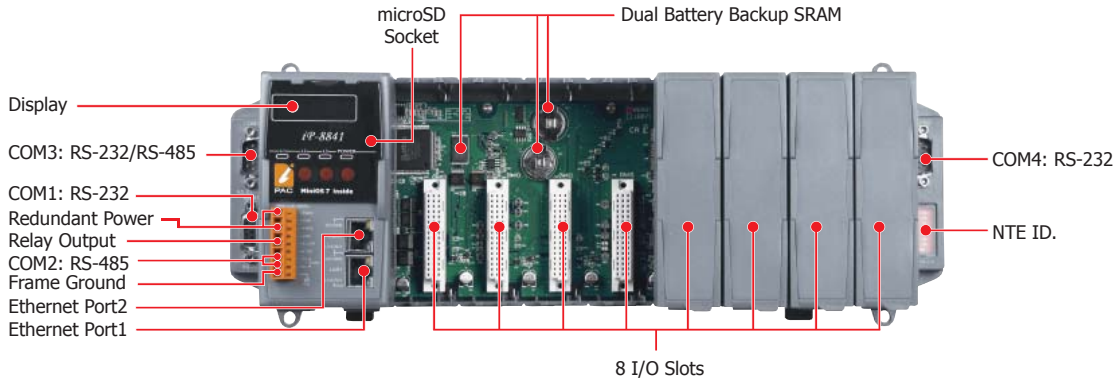
The iPAC-8000 uses built-in RS-485 and Ethernet ports to connect RS-485/Ethernet remote I/O units (Ru-87Pn/ET-87Pn) or modules (I-7000/M-7000/ET-7000). In this configuration, iPAC expands the I/O very easily. Using CAN or FRnet communication module, iPAC can connect CAN bus devices, remote I/O units or FRnet I/O modules for deterministic control system.



• Hardware

• Appearance

iP-8841/iP-8841-FD/iP-8847



• Selection Guide

iP-8 X X X - XX

NO. of I/O Slot

Hardware
1: Without Ethernet
3: Ethernet x 1
4: Ethernet x 2

Software
1: Standard
7: ISaGRAF

Flash Disk
FD: 256 MB Flash Disk

Standard iPAC

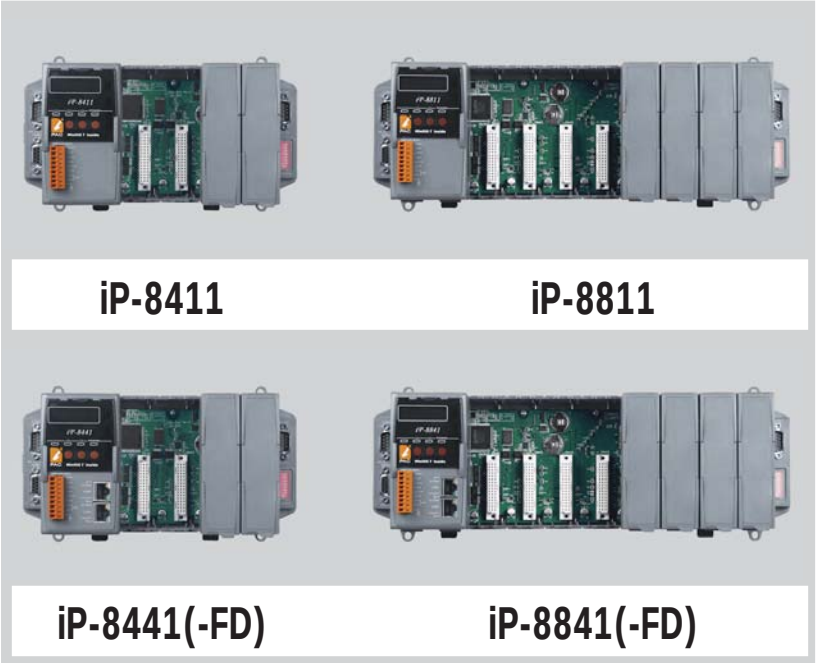
Model Name	Pre-installed Software	CPU	Flash	256 MB Flash Disk	SRAM	Ethernet Port	RS-232/RS-485	I/O Slot	Power Consumption
iP-8411	None	80 MHz	512 KB	-	512 KB	-	4	4	6.7 W
iP-8811								8	7.2 W
iP-8441					768 KB	2 (10/100 BaseTx)	4	4	6.7 W
iP-8841								8	7.2 W
iP-8441-FD				Yes				4	6.7 W
iP-8841-FD								8	7.2 W

The controller is equipped with a DOS-like OS, i.e. MiniOS7. Users can use C compilers to develop a program in 16 bit executable file (*.exe), then download it to the controller. There are many demo programs. For TCP/IP programming, ICP DAS provides a TCP/IP server template XServer which is a very powerful, easy-to-use and flexible tool saving 90% development time.

ISaGRAF Based iPAC

Model Name	Pre-installed Software	CPU	Flash	256 MB Flash Disk	SRAM	Ethernet Port	RS-232/RS-485	I/O Slot	Power Consumption
iP-8417	ISaGRAF	80 MHz	512 KB	-	512 KB	-	4	4	6.7 W
iP-8817								8	7.2 W
iP-8447					768 KB	2 (10/100 BaseTx)		4	6.7 W
iP-8847								8	7.2 W

The controller fully supports all five of the IEC61131-3 standard PLC languages:
1. Ladder diagram,
2. Function block diagram,
3. Sequential function chart,
4. Structured text,
5. Instruction List plus flow chart.
It supports Modbus protocol and can link to distributed I/O modules with Modbus or DCON protocol via the RS-232/485 or Ethernet.



Features

- 80186, 80 MHz CPU
- C Language Based and MiniOS7 Inside
- Compact and Rugged PAC
- 64-bit Hardware Serial Number
- 4/8 Slots for High Profile I/O Modules
- Dual 10/100M Ethernet Ports
- 4 Serial Ports (RS-232/485)
- Operating Temperature: -25 ~ +75°C

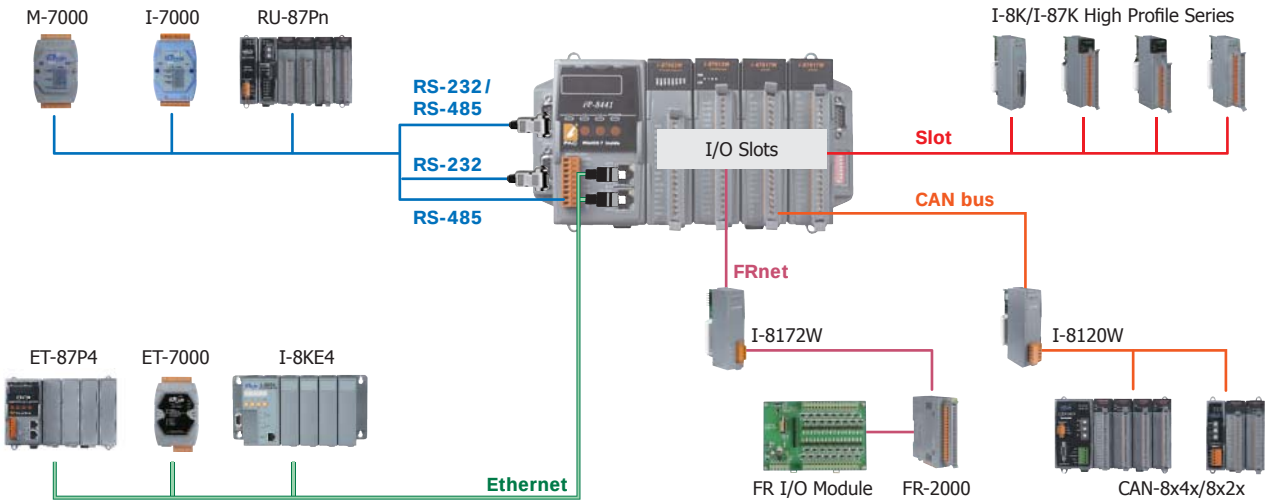
Introduction

The iPAC-8000 is the compact size PAC(Programmable Automation Controller). It supports various connectivity including Dual 10/100 Base-TX Ethernet ports, one RS-232/485 port, one RS-485 port and two RS-232 ports , and 4/8 slots for high performance Parallel I/O modules (high profile I-8K series) and Serial I/O modules (high profile I-87K series), etc.

The iPAC-8000 is designed for industrial monitoring, measurement and controlling. It has redundant power inputs with 1 kV isolation from noise and surges, and a wide range of operating temperature (-25 ~ +75°C). It can work in the harsh and rough environment.

Applications

Rich I/O Expansion Ability



Specifications

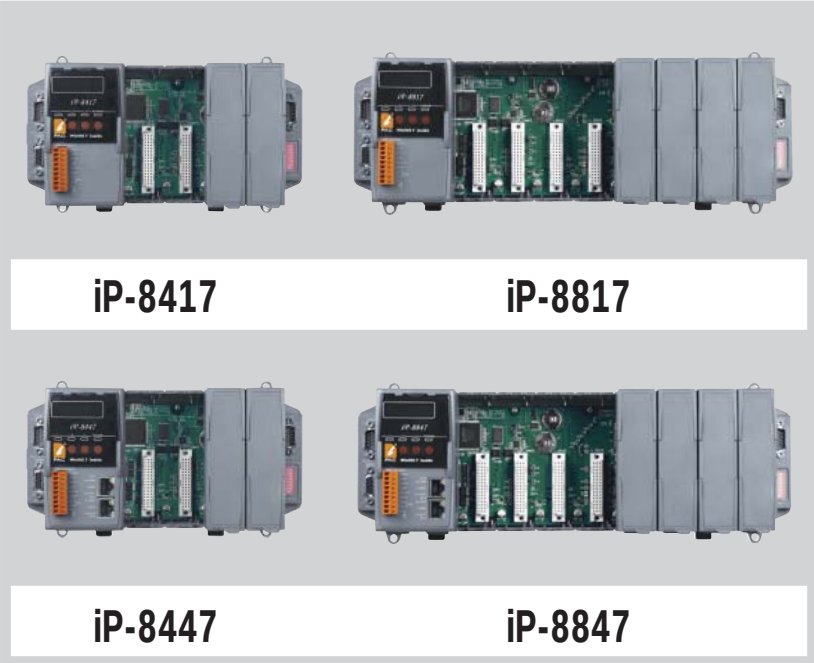
Models	iP-8411	iP-8811	iP-8441	iP-8841	iP-8441-FD	iP-8841-FD
System Software						
OS	MiniOS7 (DOS-like embedded operating system)					
Program Download Interface	RS-232 (COM1) or Ethernet					
Programming Language	C language					
Compilers to create.exe Files	TC++ 1.01 TC 2.01 BC++3.1 ~ 5.2x MSC 6.0 MSVC++ (before version 1.5.2)					
CPU Module						
CPU	80186, 80 MHz					
SRAM	512 KB		768 KB			
Flash	512 KB; with Write Protect Switch					
Expansion Flash Memory	microSD socket (can support 1/2 GB microSD)					
NAND Flash Disk	-				256 MB	
Dual Battery Backup SRAM	512 KB; data valid up to 5 years					
EEPROM	16 KB					
NVRAM	31 bytes (battery backup, data valid up to 5 years)					
RTC (Real Time Clock)	Provide second, minute, hour, date, day of week, month, year					
64-bit Hardware Serial Number	Yes, for Software Copy Protection					
Watchdog Timers	Yes (0.8 second)					
DIP Switch	Yes (8 bits)					
Communication Ports						
Ethernet	-		RJ-45 x 2, 10/100 Base-TX (Auto negotiating, Auto MDI/MDI-X, LED indicators)			
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; 3000 V_{DC} isolated					
COM 3	RS-232/RS-485 (RxD, TxD, CTS, RTS and GND for RS-232, Data+ and Data- for RS-485); non-isolated					
COM 4	RS-232 (RxD, TxD, CTS, RTS, DSR, DTR, CD, RI and GND); non-isolated					
SMMI						
LED Display	Yes, 5-Digit					
Programmable LED Indicators	3					
Push Buttons	4					
Buzzer	-		Yes			
I/O Expansion Slots						
Slot Number	4	8	4	8	4	8
	Note: For High Profile I-8K and I-87K Modules Only					
Data Bus	8/16 bits					
Address Bus Range	2 K for each slot					
Mechanical						
Dimensions (W x L x H)	231 x 132 x 111 mm	355 x 132 x 111 mm	231 x 132 x 111 mm	355 x 132 x 111 mm	231 x 132 x 111 mm	355 x 132 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 V_{DC}					
Isolation	1 kV					
Redundant Power Inputs	Yes, with one power relay (1 A @ 24 V_{DC}) for alarm					
Capacity	30 W	30 W	30 W	30 W	30 W	30 W
Consumption	6.7 W	7.2 W	6.7 W	7.2 W	6.7 W	7.2 W

Ordering Information

iP-8411 CR	Standard iPAC-8000 without Ethernet ports (RoHS)
iP-8811 CR	Standard iPAC-8000 without Ethernet ports (RoHS)
iP-8441 CR	Standard iPAC-8000 with 4 I/O Slots (RoHS)
iP-8841 CR	Standard iPAC-8000 with 8 I/O Slots (RoHS)
iP-8441-FD CR	Standard iPAC-8000 with 256 MB Flash (RoHS)
iP-8841-FD CR	Standard iPAC-8000 with 256 MB Flash (RoHS)

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-665	24 V_{DC}/2.7 A, 65 W Power Supply with DIN-Rail Mounting
I-7560 CR	USB to RS-232 Converter (RoHS)
3LMSD-2000 CR	2 GB microSD card (RoHS)



Features

- 80186, 80 MHz CPU
- ISaGRAF Ver.3 SoftLogic: Five IEC 61131-3 Standard Open PLC Languages + Flow Chart
- 512 KB Battery Backup SRAM to Retain Data
- 64-bit Hardware Serial Number
- 4/8 Hot-Swap Slots for I-87K High Profile I/O Modules
- Dual 10/100M Ethernet Ports (for iP-8447/8847)
- 4 Serial Ports (RS-232/485)
- Redundant Power Inputs
- Operating Temperature: -25 ~ +75°C

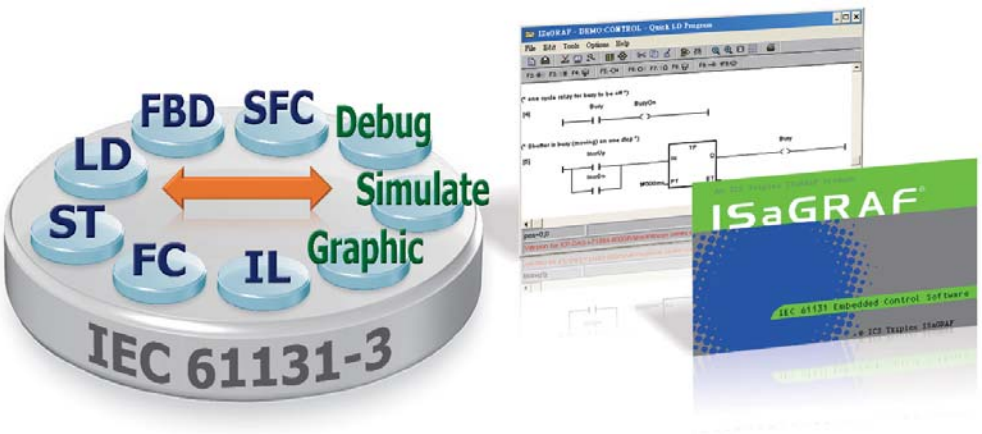
Introduction

iPAC-8xx7 Series (iP-8417/8817/8447/8847) is the ISaGRAF SoftLogic PAC of ICP DAS iPAC-8000 series. It is equipped an 80186, 80 MHz CPU running a MiniOS7 operating system, various connectivity (Dual 10/100 Base-TX Ethernet Ports for iP-8x47, one RS-232/485 port, one RS-485 port and two RS-232 ports) and 4/8 slots for high performance Parallel I/O modules (high profile I-8K series) and high performance Serial I/O modules (Hot-Swap high profile I-87K I/O modules). Users can also choose RS-485 Remote I/O modules (I-7000 series) or expansion units (RU-87Pn or I-87Kn) plugged with high profile I-87K serial I/O modules. Compared to I-8xx7, iPAC-8xx7 series is 2 ~ 4 times faster!

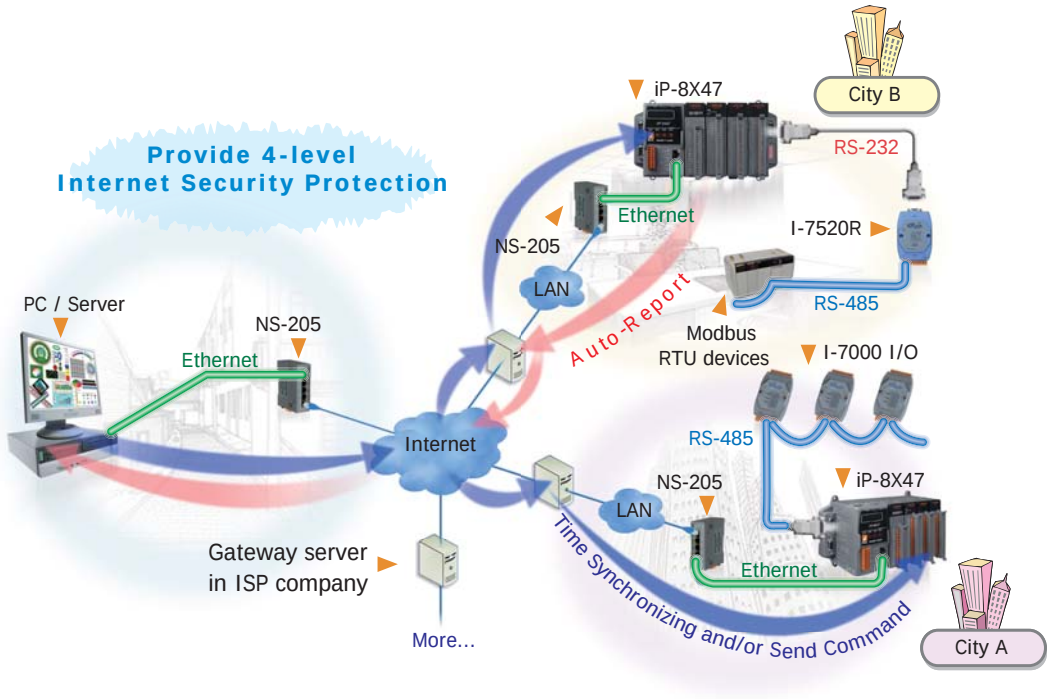
ISaGRAF Features

ISaGRAF is the most powerful SoftLogic package on the market. ISaGRAF is a PLC-like software and it supports IEC 61131-3 standard PLC programming languages (LD, FBD, SFC, ST, IL, FC), and can run the application generated by the workbench on any ISaGRAF PACs. The ISaGRAF workbench Ver. 3.x features.

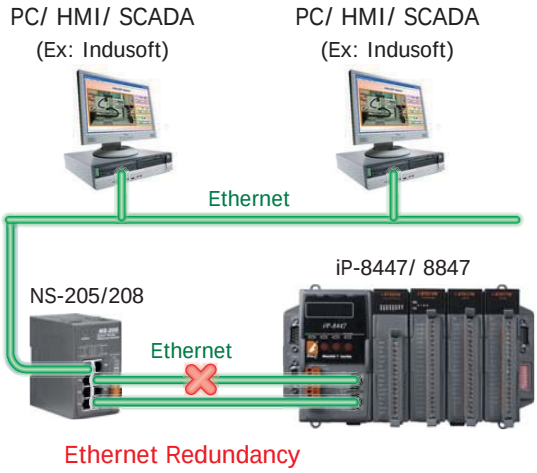
- IEC 61131-3 Standard Open PLC Programming Languages (LD, FBD, SFC, ST, IL, FC) + Flow Chart (FC)
- Auto-Scan I/O
- On-Line Debug/Control/Monitor, Off-Line Simulation
- Simple Graphic HMI



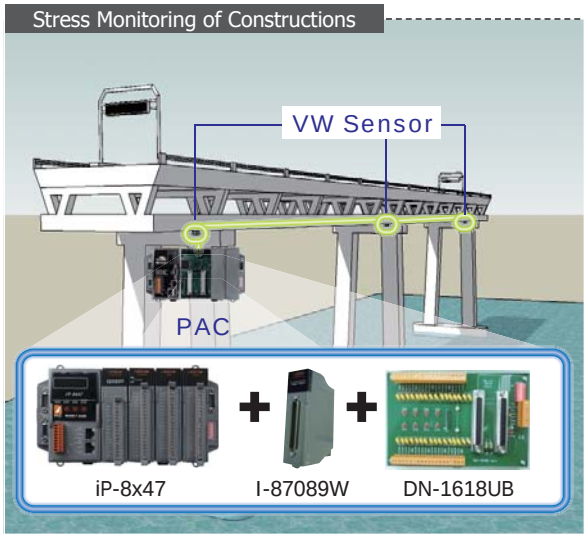
Cost-effective Auto-Report Data Acquisition/Control System



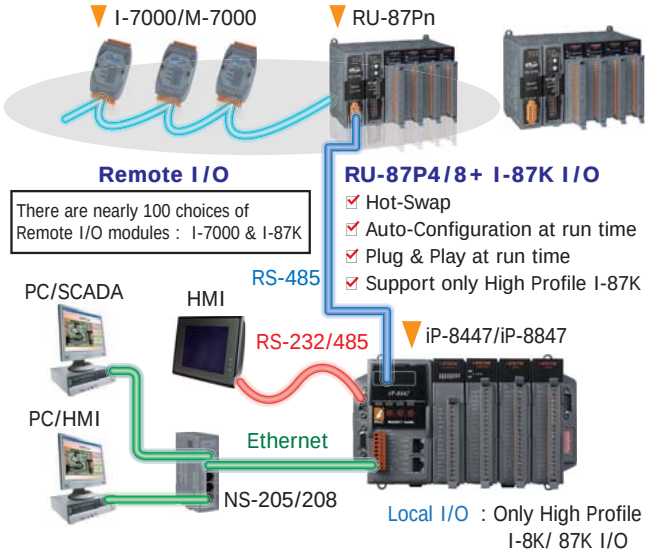
Ethernet Redundancy for HMI/PC/SCADA



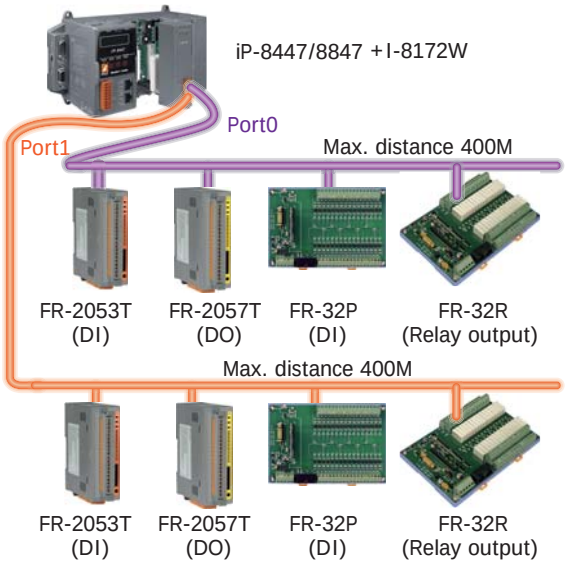
Stress Monitoring of Constructions



Local/Remote I/O Expansion & Multi-HMI



Fast FRnet Remote I/O



PAC Specifications

Models		iP-8417	iP-8817	iP-8447	iP-8847
System Software					
OS		MiniOS7 (DOS-like embedded operating system)			
Development Software					
ISaGRAF Software	ISaGRAF Version 3	IEC 61131-3 standard			
	Languages	LD, ST, FBD, SFC, IL & FC			
	Max. Code Size	64 KB			
	Scan Time	2 ~ 25 ms ms for normal program 10 ~ 125 ms (or more) for complex or large program			
CPU Module					
CPU		80186, 80 MHz			
SRAM		512 KB		768 KB	
Flash		512 KB; with Write Protect Switch			
microSD Expansion		Yes (but ISaGRAF doesn't support)			
Dual Battery Backup SRAM		512 KB; data valid up to 5 years (for retain variables)			
EEPROM		16 KB			
NVRAM		31 bytes (battery backup, data valid up to 5 years)			
RTC (Real Time Clock)		Provide second, minute, hour, date, day of week, month, year			
64-bit Hardware Serial Number		Yes, for Software Copy Protection			
Watchdog Timers		Yes (0.8 second)			
DIP Switch		Yes (8 bits)			
Communication Ports					
Ethernet		-		RJ-45 x 2, 10/100 Base-TX (Auto-negotiating, Auto MDI/MDI-X, LED indicators)	
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; 3000 V_{DC} isolated			
COM 3		RS-232/RS-485 (RxD, TxD, CTS, RTS and GND for RS-232, Data+ and Data- for RS-485); non-isolated			
COM 4		RS-232 (RxD, TxD, CTS, RTS, DSR, DTR, CD, RI and GND); non-isolated			
SMMI					
LED Display		Yes, 5-Digit			
Programmable LED Indicators		3			
Push Buttons		4			
Buzzer		-	-	Yes	
I/O Expansion Slots					
Slot Number		4	8	4	8
		Note: For High Profile I-8K and I-87K Modules Only			
Data Bus		8/16 bits			
Address Bus Range		2 K for each slot			
Mechanical					
Dimensions (W x L x H)		231 mm x 132 mm x 111 mm	355 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 V_{DC}			
Isolation		1 kV			
Redundant Power Inputs		Yes, with one power relay (1 A @ 24 V_{DC}) for alarm			
Capacity		30 W	30 W	30 W	30 W
Consumption		6.7 W	7.2 W	6.7 W	7.2 W

ISaGRAF Specifications

Protocols (some protocols need optional devices)		
NET ID		8 bits DIP switch to assign NET ID as 1 ~ 255
Modbus RTU/ASCII Master		Max. 2 COM Ports, COM1 ~ COM5 can support Modbus RTU Master or ASCII Master protocol to connect to other Modbus Slave devices. Max. Modbus_xxx Function Block amount for 2 ports: 128. (*)
Modbus RTU Slave		Max. 2 COM Ports, COM1 and one of (COM2, COM3) can support Modbus RTU Slave protocol for connecting ISaGRAF, PC/HMI/OPC Server & MMI panels.
Modbus TCP/IP Slave		2 Ethernet ports support Modbus TCP/IP Slave Protocol for connecting ISaGRAF & PC/HMI. (Max. 6 connections) (for iP-8x47)
Remote I/O		One of COM2 or COM3 or COM4 supports I-7000 I/O modules & (I-87Kn or RU-87Pn + I-87K High Profile I/O boards) as Remote I/O. Max. 64 Remote I/O module for one PAC
Fbus		Built-in COM3 Port to exchange data between ICP DAS's ISaGRAF PACs.
Ebus		To exchange data between ICP DAS's ISaGRAF Ethernet PACs via Ethernet port. (The LAN2: upper port ONLY) (for iP-8x47)
SMS: Short Message Service		One of COM4/5 can link to a GSM Modem to support SMS. User can request data/control the controller by cellular phone. (*) The controller can also send data & alarms to user's cellular phone. Optional GSM/GPRS modem: GTM-201-RS232 (850/900/1800/1900 GSM/GPRS External Modem)
User-Defined Protocol		COM1 ~ COM20 by serial communication function blocks (*)
Modem_Link		COM4 can connect a general Modem. Supports PC to remotely download & monitor the controller.
MMICON/LCD		One of COM3 or COM4 supports ICP DAS's MMICON. The MMICON is featured with a 240 x 64 dot LCD and a 4 x 4 Keyboard. User can use it to display picture, string, integer, float, and input a character, string, integer and float.
Redundant Bus7000		Two ISaGRAF PACs can link to remote I-7000 & I-87K High profile I/O modules at the same time. Only one controller is active to control these Remote I/Os. If one is dead, the other one will take over the control of Remote I/Os.
CAN/CANopen		COM1, 3, 4 or COM5 ~ COM12 can connect one I-7530 (converter: RS-232 to CAN) to support CAN/CANopen devices and sensors. One iP-8xx7 supports max. 3 RS-232 ports to connect max. 3 I-7530. (*) (FAQ-086)
FRnet I/O		Support max. 4 I-8172W FRnet Master cards to connect FRnet I/O modules (Max. 1024-ch. DI + 1024-ch. DO)
Send E-mail		Actively or passively sending E-mail via Ethernet port through internet. Max.10 receivers for each sending and can send E-mail with an attached file. (Max. file size is about 488 KB) (for iP-8x47)
FTP Client		Support FTP client to upload files in the PAC to a remote FTP server on PC. (FAQ-151)
Optional I/O Functions (Refer to ISaGRAF PAC I/O Selection Guide for I/O Module list)		
PWM Output	High Speed PWM Module	I-8088W, 8-ch PWM outputs, software support 1 Hz ~ 100 kHz (non-continuous), duty: 0.1 ~ 99.9%
	DO Module as PWM	8-ch max. for one controller. 500 Hz max. For Off=1 & On=1 ms Output Square Curve: Off: 1 ~ 32767 ms, On: 1 ~ 32767 ms. Optional DO Boards: I-8037W, 8041W, 8041AW, 8042W, 8050W, 8054W, 8055W, 8056W, 8057W, 8060W, 8063W, 8064W, 8068W, 8069W. (Relay Output boards cannot generate fast square wave)
Counters, Encoder, Frequency	Parallel DI Counter	8-ch. max. for 1 controller. Counter Val: 32-bit.; 500 Hz max. Min. ON & OFF width must >1 ms Optional DI boards: I-8040W, 8040PW, 8042W, 8046W, 8050W, 8051W, 8052W, 8053W, 8053PW, 8054W, 8055W, 8058W, 8063W.
	Serial DI Counter	Counter input: 100 Hz max. Counter value: 0 ~ 65535 (16-bit) Optional serial I-87K DI boards: I-87040W, 87046W, 87051W, 87052W, 87053W, 87053W-A5, 87054W, 87055W, 87058W, 87059W, 87063W.
	Remote DI Counter	All I-7000/I-87K DI modules support counters. 100 Hz max. value: 0 ~ 65535
	High Speed Counter	I-87082W: 100 kHz max. 32-bit; I-8084W: 250 kHz max. 32-bit
	Encoder	I-8093W : 3-axis Encoder Module, max. 1M Hz for quadrant input mode, max. 4M Hz for pulse/direction and cw/ccw input mode. (FAQ-112) I-8084W: 250 kHz max. , 4-ch encoder, can be Dir/Pulse, or Up/Down or A/B phase (Quad. mode); Not support Encoder Z-index. (FAQ-100)
	Frequency	I-87082W: 2-ch, 1 Hz ~ 100 kHz; I-87088W: 8-ch, 1 Hz ~ 100 kHz; I-8084W: 8-ch, 1 Hz ~ 250 kHz;
Motion	Motion Control	Can integrate with one I-8091W (2-axis) or two I-8091W (4-axis) to do motion control. Ethernet communication is also available when doing motion control.

*** Note: COM5 ~ COM20 are resided at the expansion boards if they are plugged on slot 0~7 of iP-8xx7.**
*** ISaGRAF FAQ: http://www.icpdas.com/faq/isagraf.htm**

Ordering Information

iP-8417 CR	ISaGRAF based iPAC-8000 with 4 I/O Slots (RoHS)
iP-8817 CR	ISaGRAF based iPAC-8000 with 8 I/O Slots (RoHS)
iP-8447 CR	ISaGRAF based iPAC-8000 with 4 I/O Slots (RoHS)
iP-8847 CR	ISaGRAF based iPAC-8000 with 8 I/O Slots (RoHS)

Accessories

ISaGRAF Development Software	
ISaGRAF-256-E	ISaGRAF Workbench Software Ver.3 (256 I/O Tags) with One Application Book (English version) and one USB Dongle
ISaGRAF-256-C	ISaGRAF Workbench Software Ver.3 (256 I/O Tags) with One Application Book (Chinese version) and one USB Dongle
ISaGRAF-32-E	ISaGRAF Workbench Software Ver.3 (32 I/O Tags) with One Application Book (English version) Note: No upgrade service from ISaGRAF-32 to ISaGRAF-256.
ISaGRAF-32-C	ISaGRAF Workbench Software Ver.3 (32 I/O Tags) with One Application Book (Chinese version) Note: No upgrade service from ISaGRAF-32 to ISaGRAF-256.
*** Using ISaGRAF-32 can control more than 32 I/O tags. Please refer to ISaGRAF User's Manual Ch. 3.4**	
Power Supply	
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-665	24 VDC/2.7 A, 65 W Power Supply with DIN-Rail Mounting
DP-1200 CR	24 VDC/5.0 A, 120 W Power Supply with DIN-Rail Mounting (RoHS)
Converter	
I-7560 CR	USB to RS-232 Converter (RoHS)