Compact PAC

2

2.1 XP-8000-Atom Series P2-1-1

- Overview - - -

2.1. 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 LX 800), it not only improves the CPU performance (5~6 times faster than AMD LX 800), 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

There are two types of I/O modules, Parallel and Serial. The Parallel I/O modules (I-8K high profile series) are high-speed modules and have to be installed in slots of the XP-8000-Atom. The Serial I/O modules (I-87K high profi les series) can be installed in slots or Expansion Units (RU-87Pn).

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.

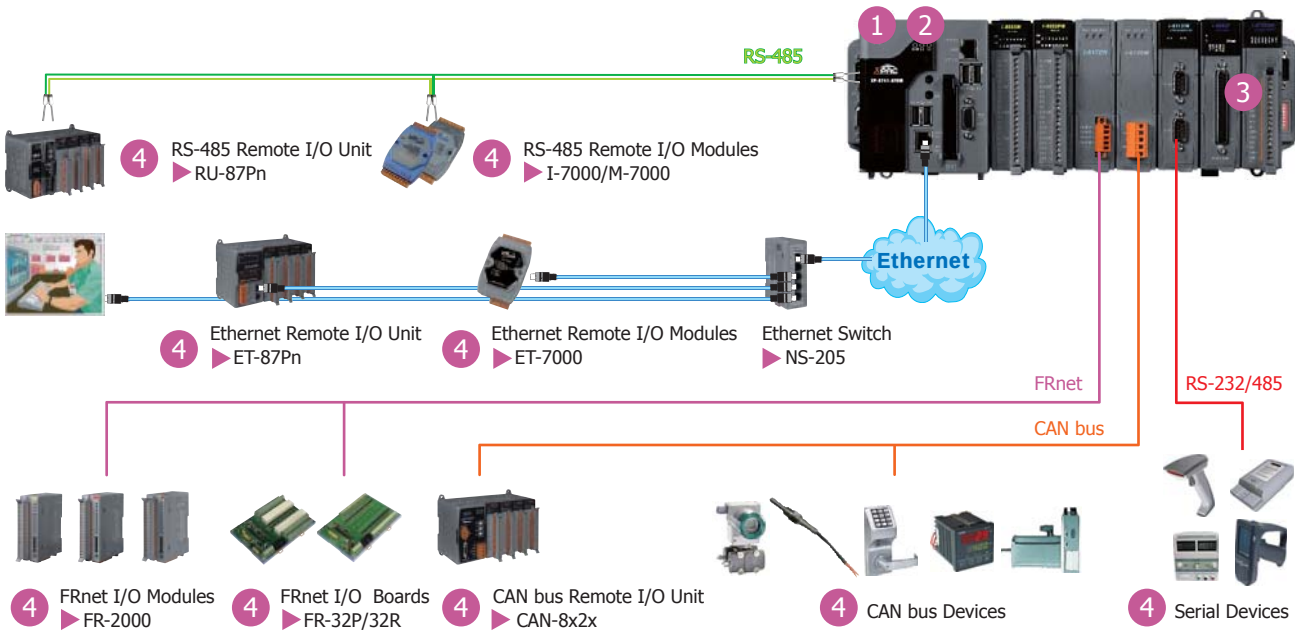
2 Embedded OS

• **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, the next generation of real-time OS used to quickly create Application that support a range of requirements. With Windows CE 6, users can use familiar tools and innovative technologies to develop software for applications. By the high performance and highly reliable Windows CE, users can push XP-8000-Atom to market quickly and efficiently. Windows CE6 operating system 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 XP-8000-Atom.



Selection Guide

XP-8 X X X -Atom

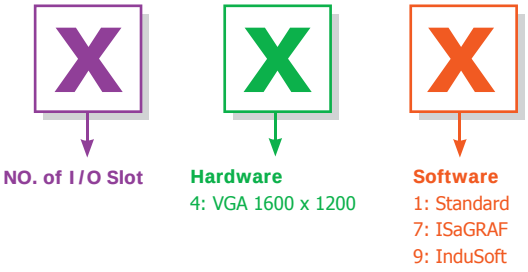
- **NO. of I/O Slot**
- **Hardware**
  4: VGA 1600 x 1200
- **Software**
  1: Standard

Standard XP-8000-Atom (Windows Embedded Standard 2009)

Model Name	OS	Pre-installed Software	CPU	Flash	DDR2 SDRAM	VGA Resolution	Ethernet Port	RS-232/ RS-485	I/O Slot	Page
XP-8041-Atom	XPE2009	None	Atom Z520 (1.33 GHz)	8 GB	1 GB	1600 x 1200	2	5	0	2-1-5
XP-8141-Atom								4	1	
XP-8341-Atom									3	
XP-8741-Atom									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



Standard XP-8000-Atom-CE6 (Windows CE .NET 6.0 Inside)

Model Name	OS	Pre-installed Software	CPU	Flash	DDR2 SDRAM	VGA Resolution	Ethernet Port	RS-232/ RS-485	I/O Slot	Page
XP-8041-Atom-CE6	CE 6.0	None	Atom Z510 (1.10 GHz)	1 GB	512 MB	1024 x 768	2	5	0	2-1-9
XP-8141-Atom-CE6								4	1	
XP-8341-Atom-CE6									3	
XP-8741-Atom-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 XP-8000-Atom-CE6 (Windows CE .NET 6.0 Inside)

Model Name	OS	Pre-installed Software	CPU	Flash	DDR2 SDRAM	VGA Resolution	Ethernet Port	RS-232/ RS-485	I/O Slot	Page
XP-8047-Atom-CE6	CE 6.0	ISaGRAF	Atom Z510 (1.10 GHz)	1 GB	512 MB	1024 x 768	2	5	0	-
XP-8147-Atom-CE6								4	1	
XP-8347-Atom-CE6									3	
XP-8747-Atom-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 XP-8000-Atom-CE6 (Windows CE .NET 6.0 Inside)

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

Highlight Information

- Windows Embedded Standard 2009
- SQL Server 2005 Express Edition
- Intel Atom Z520 CPU (1.33 GHz)
- Audio with Microphone-In and Earphone-Out
- VGA Port Output
- Support eLogger HMI
- High Performance PC Power, Open System
- Redundant Power Input
- Operating Temperature: -25 ~ +75 °C

Introduction

XP-8x41-Atom Series is the new generation Windows Embedded Standard 2009 based PACs of ICP DAS. It is equipped with an Intel Atom Z500 Series CPU, 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

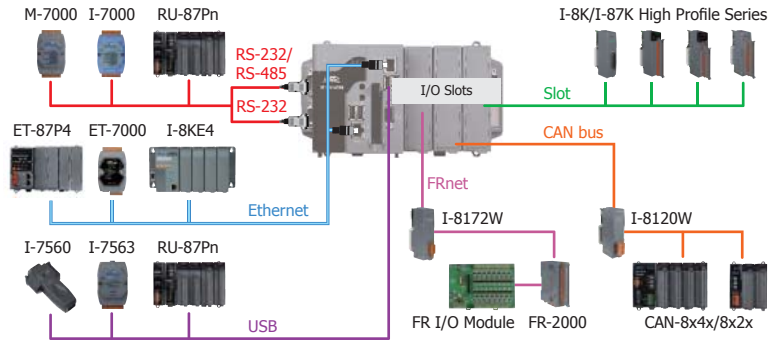
- Enhanced Write Filter (EWF): Protects disk against improper disk write operations.
- Same Win32 API: Makes developing applications just like Windows XP Professional developers do.

This makes almost every PC-based program can be easily ported to XPAC-Atom and effectively reduces the efforts of developing 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.

Applications

Rich I/O Expansion Ability



Features

Software

- Windows Embedded Standard 2009
- Internet Information Services
  - FTP server and web server
- ASP.NET
- SQL Server 2005 Express Edition
- .NET Framework 3.5
- Remote Desktop Connection
- Built-in OPC Server
- Rich Software Solutions
  - SDK for Microsoft Visual Studio.NET 2005/2008 and Visual Studio 6.0 Borland C++ Builder and Delphi

Hardware

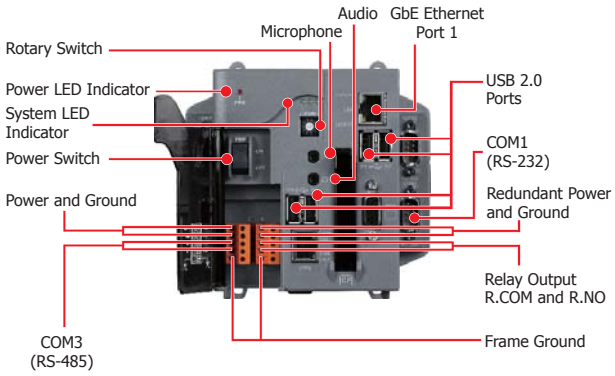
- Powerful CPU Module
  - Intel Atom Z520 CPU (1.33 GHz)
- Memory size:
  - DDR2 SDRAM (1 GB), Built-in Flash Disk (8 GB)
  - EEPROM (16 KB), CF Card (8 GB)
  - Dual Battery Backup SRAM (512 KB)
- VGA Port x 1, USB 2.0 Ports x 4
- Programmable LED indicator x 2
- Audio with Microphone-In and Earphone-Out
- 64-bit Hardware Serial Number
- Dual Watchdog Timers
- 4/5 Serial Ports (RS-232/RS-485)
- Dual Giga bit Ethernet Ports (10/100/1000M)
- Redundant Power Input
- DIN-Rail or Wall Mounting
- Operating Temperature: -25 ~ +75 °C

Specifications

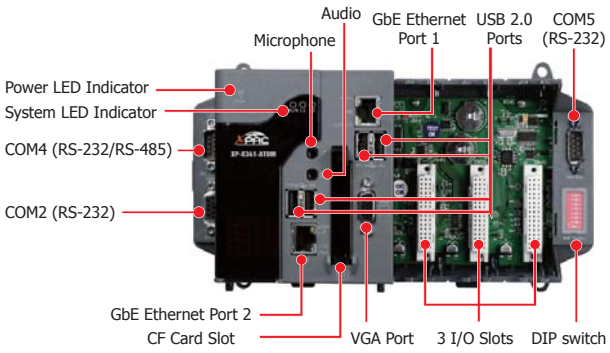
Models		XP-8041-Atom	XP-8141-Atom	XP-8341-Atom	XP-8741-Atom
System Software					
OS		Microsoft Windows Embedded Standard 2009			
.Net Compact Framework		3.5			
Embedded Service		FTP Server, Internet Information Service 5.1, ASP (Java Script, VB Script), SQL Server 2005 Express			
SDK Provided		Dll for VC, VB, Delphi, BCB, Visual Studio .NET 2005/2008			
Multilanguage Support		English, German, French, Spanish, Russian, Italian, Czech, Japanese, Simplified Chinese, Traditional Chinese			
CPU Module					
CPU		Intel Atom Z520 CPU (1.33 GHz)			
System Memory		1 GB DDR2 SDRAM			
Dual Battery Backup SRAM		512 KB (for 5 years data retain while power off)			
Flash		8 GB as IDE Master			
EEPROM		16 KB			
		Data Retention: 40 years; 1,000,000 erase/write cycles			
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			
Yes, for Software Copy Protection		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		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	D2+, D2-; self-tuner ASIC inside			
	Isolation	3000 V_{DC}			
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	1	3	7
Hot Swap * Will be available		-	For High Profile I-87K Modules Only		
Mechanical					
Dimensions (W x L x H)		137 mm x 132 mm x 125 mm	169 mm x 132 mm x 125 mm	231 mm x 132 mm x 125 mm	355 mm x 132 mm 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		3.6 A, 5 V supply to CPU and backplane, 25 W in total	3.7 A, 5 V supply to CPU and backplane, 1.3 A, 5 V supply to I/O expansion slots, 25 W in total	3.8 A, 5 V supply to CPU and backplane, 3.2 A, 5 V supply to I/O expansion slots, 35 W in total	4.0 A, 5 V supply to CPU and backplane, 3.0 A, 5 V supply to I/O expansion slots, 35 W in total
Consumption		16.3 W (0.68 A @ 24 V_{DC})	16.6 W (0.69 A @ 24 V_{DC})	16.8 W (0.7 A @ 24 V_{DC})	18 W (0.75 A @ 24 V_{DC})

Appearance

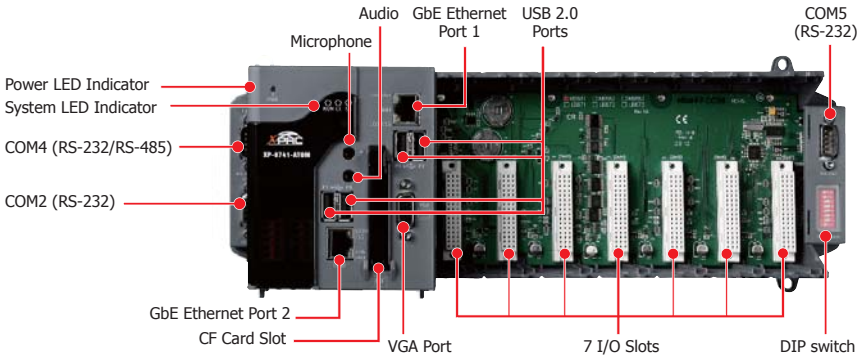
XP-8041-Atom



XP-8341-Atom

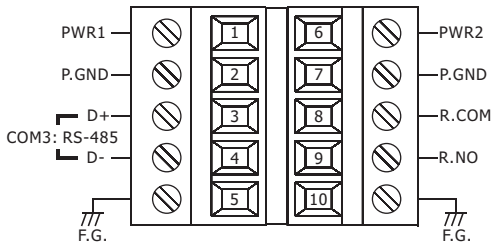


XP-8741-Atom

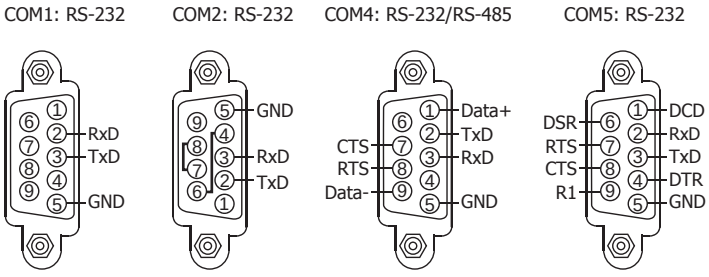


Pin Assignments

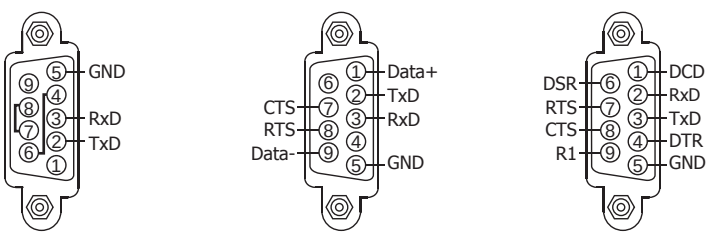
XP-8x41-Atom Terminal Block



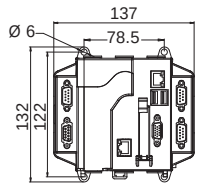
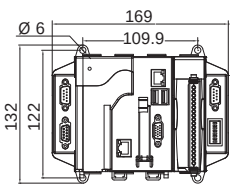
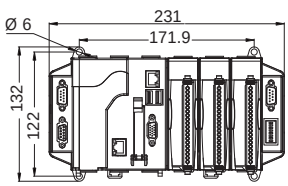
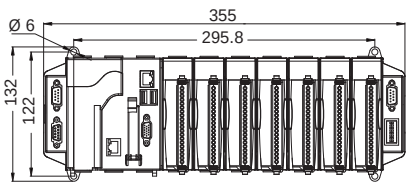
XP-8041-Atom COM Port



XP-8141-Atom/XP-8341-Atom/8741-Atom COM Port



Dimensions (Units: mm)

XP-8041-Atom	XP-8141-Atom	XP-8341-Atom	XP-8741-Atom
			
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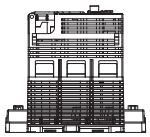
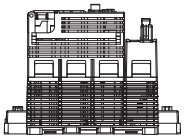
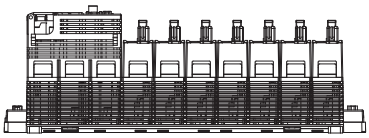
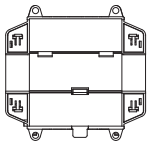
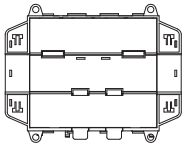
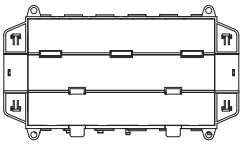
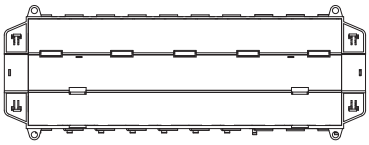
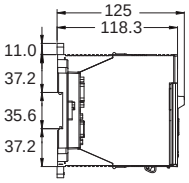
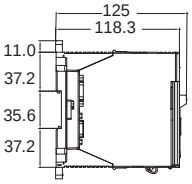
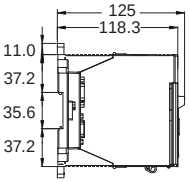
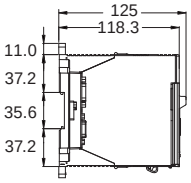
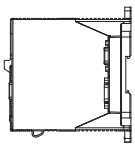
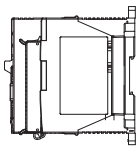
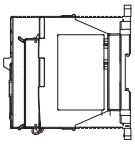
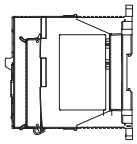
			
Bottom View	Bottom View	Bottom View	Bottom View
			
Rear View	Rear View	Rear View	Rear View
			
Left Side View	Left Side View	Left Side View	Left Side View
			
Right Side View	Right Side View	Right Side View	Right Side View

Ordering Information

XP-8041-Atom CR	Standard XP-8000-Atom without I/O Slot (Multilingual Version of OS) (RoHS)
XP-8141-Atom CR	Standard XP-8000-Atom with 1 I/O Slots (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)

Highlight Information

- Windows CE 6.0
- Hard Real-Time Capability
- Intel Atom Z510 CPU (1.1 GHz)
- Audio with Microphone-In and Earphone-Out
- VGA Port Output
- Support eLogger HMI
- High Performance PC Power, Open System
- Redundant Power Inputs
- Operating Temperature: -25 ~ +75 °C

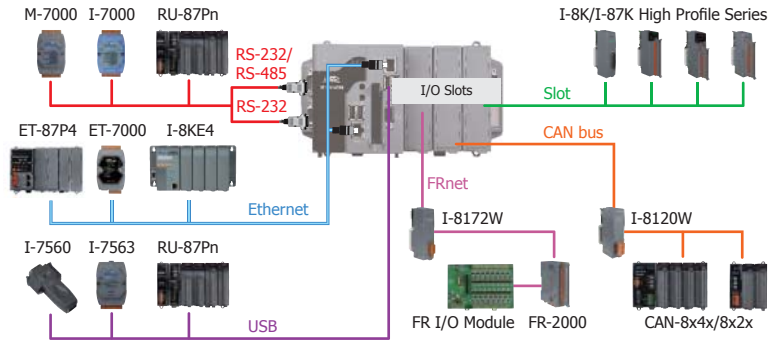
Introduction

XP-8x41-Atom-CE6 Series is the new generation Windows CE 6.0 based PACs of ICP DAS. It is equipped with an Intel Atom Z500 Series CPU, 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.

Applications

Rich I/O Expansion Ability



Features

Software

- Windows Compact Edition 6.0
- System Rescue Mechanism
- ASP
- SQL Compact Edition 3.5
- .NET Compact Framework 3.5
- Remote Display
- Built-In OPC Server (Quicker)
- InduSoft
  - ☐ HMI and SCADA development tool
- Rich Software Solutions
  - ☐ SDK for Microsoft Visual Studio.NET 2005/2008

Hardware

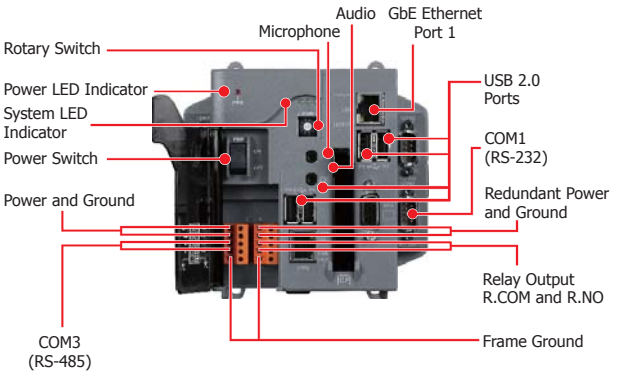
- Powerful CPU Module
  - ☐ Intel Atom Z510 CPU (1.1 GHz)
- Memory size:
  - ☐ DDR2 SDRAM (512 MB), Built-in Flash Disk (1 GB)
  - ☐ EEPROM (16 KB), CF Card (2 GB)
  - ☐ Dual Battery Backup SRAM (512 KB)
- VGA Port x 1, USB 2.0 Ports x 4
- Programmable LED indicator x 2
- Audio with Microphone-In and Earphone-Out
- 64-bit Hardware Serial Number
- Dual Watchdog Timers
- 4/5 Serial Ports (RS-232/RS-485)
- Dual Giga bit Ethernet Ports (10/100/1000M)
- Redundant Power Inputs
- DIN-Rail or Wall Mounting
- Operating Temperature: -25 ~ +75 °C

Specifications

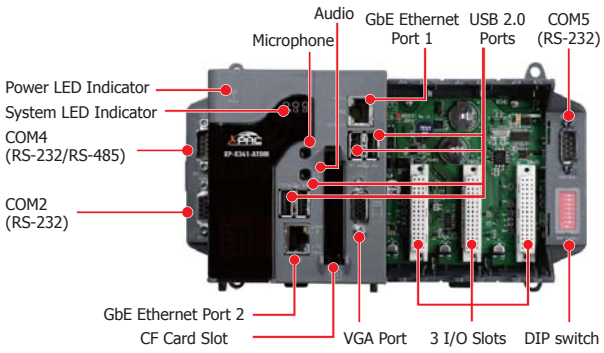
Models	XP-8041-Atom-CE6	XP-8141-Atom-CE6	XP-8341-Atom-CE6	XP-8741-Atom-CE6
System Software				
OS	Windows CE 6.0 core version			
.Net Compact Framework	3.5			
Embedded Service	FTP Server, ASP (Java Script, VB Script), SQL Compact Edition 3.5			
SDK Provided	Dll for Visual Studio .Net 2005/2008			
Multilanguage Support	English, German, French, Spanish, Russian, Italian, Japanese, Simplified Chinese, Traditional Chinese			
CPU Module				
CPU	Intel Atom Z510 CPU (1.1 GHz)			
System Memory	512 MB DDR2 SDRAM			
Dual Battery Backup SRAM	512 KB (for 5 years data retain while power off)			
Flash	1 GB as IDE Master			
EEPROM	16 KB			
	Data Retention: 40 years; 1,000,000 erase/write cycles			
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	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	D2+, D2-; self-tuner ASIC inside			
COM 3 Isolation	3000 V_{DC}			
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	1	3	7
Hot Swap * Will be available	-	For High Profile I-87K Modules Only		
Mechanical				
Dimensions (W x L x H)	137 mm x 132 mm x 125 mm	169 mm x 132 mm x 125 mm	231 mm x 132 mm x 125 mm	355 mm x 132 mm 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	3.6 A, 5 V supply to CPU and backplane, 25 W in total	3.7 A, 5 V supply to CPU and backplane, 1.3 A, 5 V supply to I/O expansion slots, 25 W in total	3.8 A, 5 V supply to CPU and backplane, 3.2 A, 5 V supply to I/O expansion slots, 35 W in total	4.0 A, 5 V supply to CPU and backplane, 3.0 A, 5 V supply to I/O expansion slots, 35 W in total
Consumption	16.3 W (0.68 A @ 24 V_{DC})	16.6 W (0.69 A @ 24 V_{DC})	16.8 W (0.7 A @ 24 V_{DC})	18 W (0.75 A @ 24 V_{DC})

Appearance

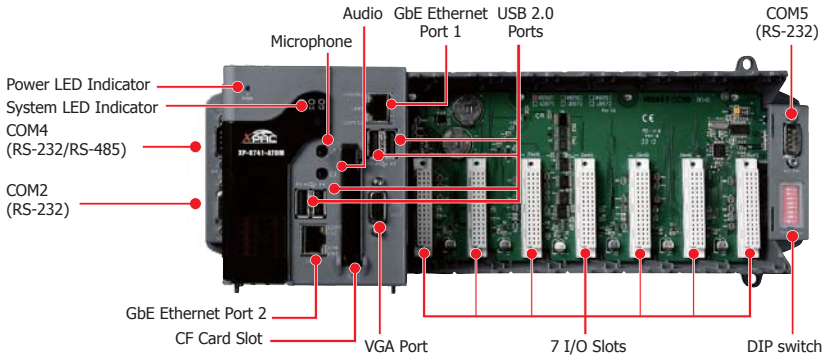
XP-8041-Atom-CE6



XP-8341-Atom-CE6

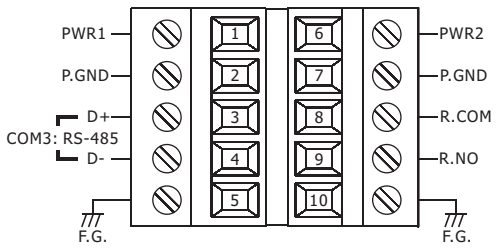


XP-8741-Atom-CE6

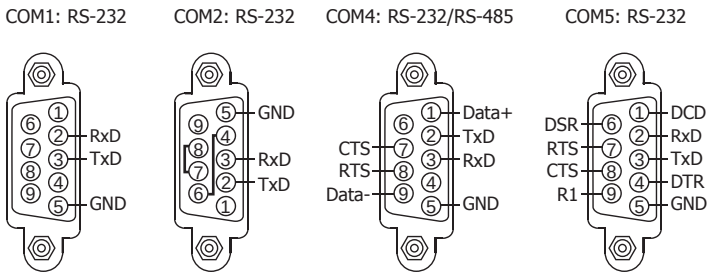


Pin Assignments

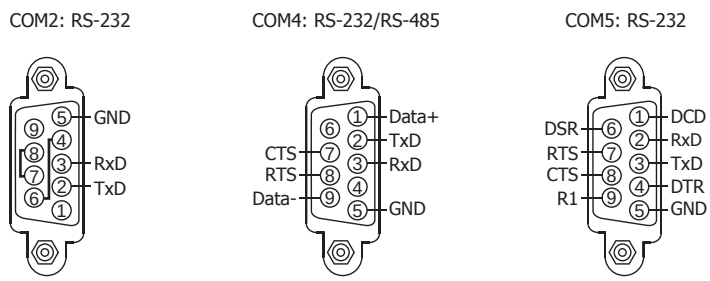
XP-8x41-Atom-CE6 Terminal Block



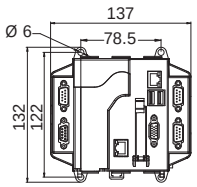
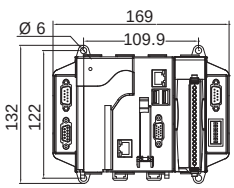
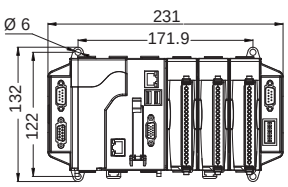
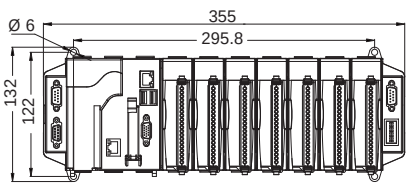
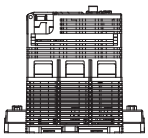
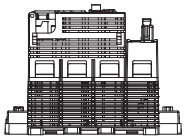
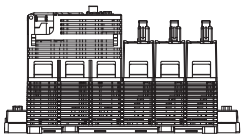
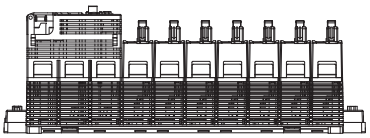
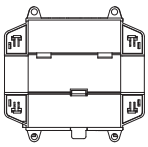
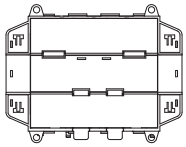
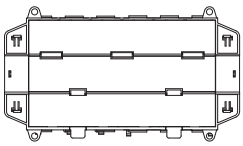
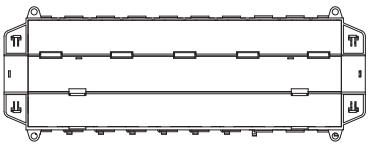
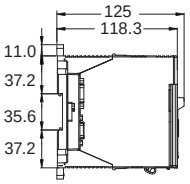
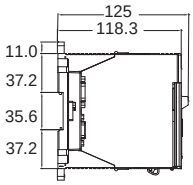
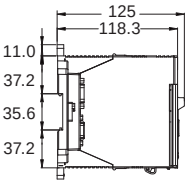
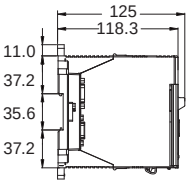
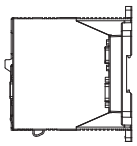
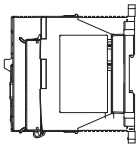
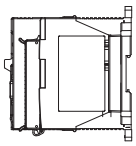
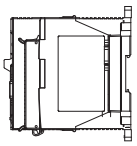
XP-8041-Atom-CE6 COM Port



XP-8141-Atom-CE6/XP-8341-Atom-CE6/8741-Atom-CE6 COM Port



Dimensions (Units: mm)

XP-8041-Atom-CE6	XP-8141-Atom-CE6	XP-8341-Atom-CE6	XP-8741-Atom-CE6
			
Front View	Front View	Front View	Front View
			
Bottom View	Bottom View	Bottom View	Bottom View
			
Rear View	Rear View	Rear View	Rear View
			
Left Side View	Left Side View	Left Side View	Left Side View
			
Right Side View	Right Side View	Right Side View	Right Side View

Ordering Information

XP-8041-Atom-CE6 CR	0 I/O slot 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 slot WinCE 6.0 Based Standard XPAC (OS: Multi-Language version) (RoHS)
XP-8741-Atom-CE6 CR	7 I/O slot WinCE 6.0 Based Standard XPAC (OS: Multi-Language version) (RoHS)
Note: Call for customized XPAC-8000-Atom-CE6	

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)

2.2. XP-8000 Series

• Overview

The XP-8000 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, PLC, the price/ performance of PAC is the best. Adding a module-PLC, the XP-8000 can be used for deterministic operation. Therefore XP-8000 can be widely used in Factory Automation, Building Automation, Machine Automation, Laboratory Automation, chemical industry, environmental monitoring, M2M…etc.

XP-8000 is the new generation PAC of ICP DAS. It is equipped a AMD LX 800 CPU (500 MHz) running a Windows Embedded Standard WES 2009 or Windows Embedded CE6/FreeDOS Operating System, various connectivity (VGA, USB, Ethernet, RS-232/RS-485) and 3/7 slots for high performance Parallel I/O modules Compared with the first generation WinCon-8000 of ICP DAS, it not only improves the CPU performance and upgrading OS (Windows Embedded Standard 2009), but also adds many reliability features, such as dual LAN, redundant power input, dual battery backup SRAM, etc.

XP-8000 supports Windows Embedded Standard WES 2009, 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 also supports SoftPLC such as ISaGRAF and K.W..

XP-8000 ≒ IPC+I/O Cards

Main Components:

1 Main Control Unit (MCU)

The MCU is the powerhouse of the XP-8000. Each MCU comprises a Central Processor Module (CPM), a power supply, and a 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, RS-232, CAN bus and FRnet.

3 I/O Modules

There are two types of I/O modules, Parallel and Serial. The Parallel I/O modules (I-8K high profile series) are high-speed modules and have to be installed in slots of the XP-8000. The Serial I/O modules (I-87K high profi les series) can be installed in slots or Expansion Units (RU-87Pn).

4 Remote I/O Expansion

XP-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, XP-8000 expands the I/O very easily.
Using CAN or FRnet communication module, XP-8000 can connect CAN bus devices, remote I/O units or FRnet I/O modules for deterministic control system.

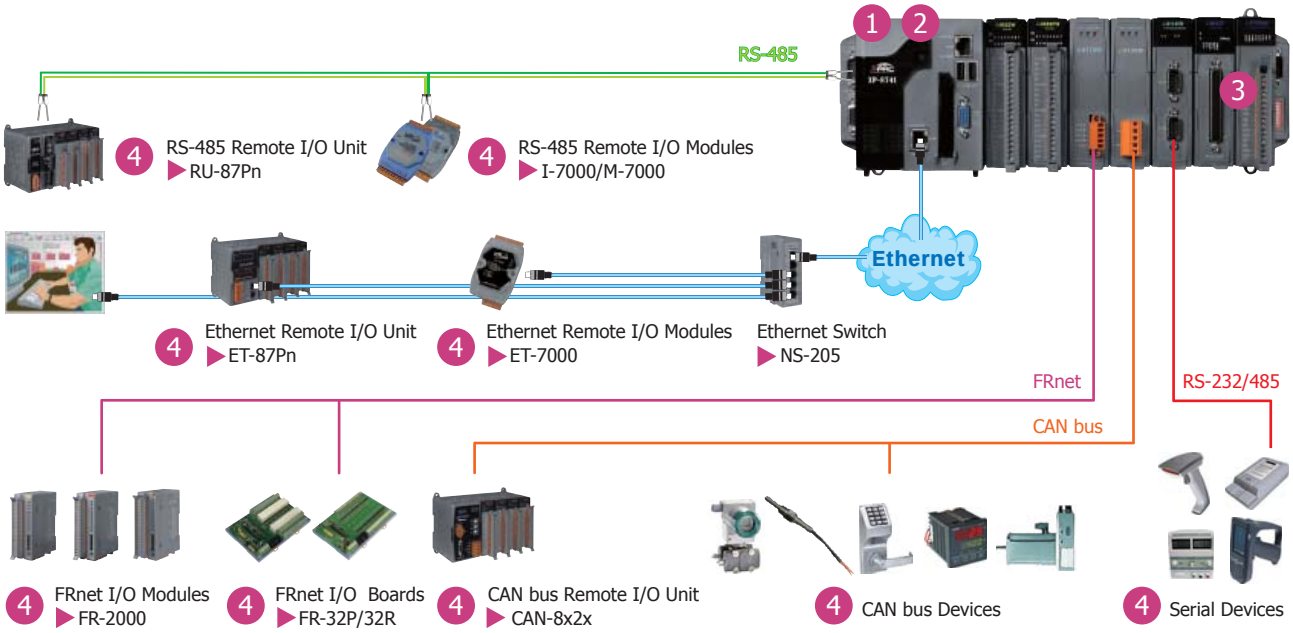
2 Embedded OS

- **Windows Embedded Standard WES 2009**

Windows Embedded Standard 2009 has the same Win32 API as Windows XP Professional, that is, almost every desktop program can be easily ported to Windows Embedded Standard 2009. This effectively reduces the efforts of developments and shortens time to market.

- **Windows CE6**

With Windows CE 6, users can use familiar tools and innovative technologies to develop software for applications. Windows CE6 operating system kernel architecture supports significantly more simultaneously running processes, from 32 up to 32,000 simultaneous processes, each of which run in a 2GB virtual memory address space. This allows developers to incorporate larger numbers of more complex applications into XP-8000 .



Selection Guide

XP-8 X X X - XX

- **NO. of I/O Slot**
- **Hardware**
  4: VGA 1600 x 1200
- **Software**
  1: Standard
- **Language**
  EN: Multilingual
  TC: Traditional Chinese

Standard XP-8000 (Windows Embedded Standard 2009)

Model Name	OS	Pre-installed Software	CPU	Flash	DDR SDRAM	VGA Resolution	Ethernet Port	RS-232/ RS-485	I/O Slot	Page
XP-8041	WES 2009	None	LX 800, 500 MHz	4 GB	1 GB	1600 x 1200	2	5	0	2-2-5
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

Standard XP-8000-CE6 (Windows CE .NET 6.0 Inside)

Model Name	OS	Pre-installed Software	CPU	Flash	DDR SDRAM	VGA Resolution	Ethernet Port	RS-232/ RS-485	I/O Slot	Page
XP-8041-CE6	CE 6.0	None	LX 800, 500 MHz	4 GB	512 MB	1024 x 768	2	5	0	2-2-9
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 XP-8000-CE6 (Windows CE .NET 6.0 Inside)

Model Name	OS	Pre-installed Software	CPU	Flash	DDR SDRAM	VGA Resolution	Ethernet Port	RS-232/ RS-485	I/O Slot	Page
XP-8047-CE6	CE 6.0	ISaGRAF	LX 800, 500 MHz	4 GB	512 MB	1024 x 768	2	5	0	2-2-13
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 XP-8000-CE6 (Windows CE .NET 6.0 Inside)

Model Name	OS	Pre-installed Software	CPU	Flash	DDR SDRAM	VGA Resolution	Ethernet Port	RS-232/ RS-485	I/O Slot	Page
XP-8049-CE6	CE 6.0	Indusoft	LX 800, 500 MHz	4 GB	512 MB	1024 x 768	2	5	0	2-2-19
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

Highlight Information

- Windows Embedded Standard 2009
- SQL Server 2005 Express Edition
- AMD LX 800 CPU (32-bit and 500 MHz)
- VGA Port Output
- Support eLogger HMI
- PC Power, Open System
- Redundant Power Input
- Operating Temperature: -25 ~ +75 °C

Introduction

XP-8x41-Atom Series is the new generation Windows Embedded Standard 2009 based PACs of XP-8x41 Series is the new generation Windows Embedded Standard 2009 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 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 and effectively reduces the efforts of developing 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.

Features

Software

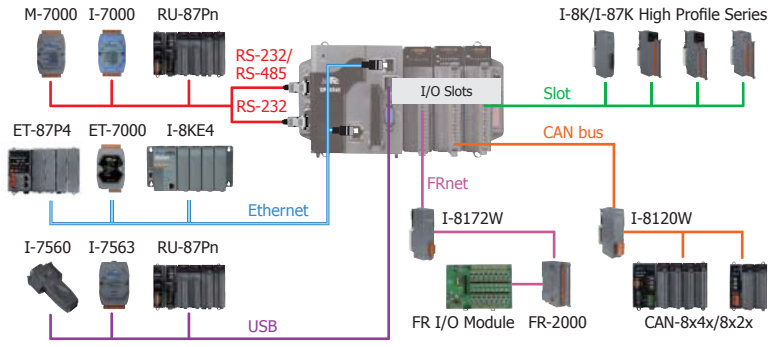
- Windows Embedded Standard 2009
- Internet Information Services
  - FTP server and web server
- ASP.NET
- SQL Server 2005 Express Edition
- .NET Framework 3.5
- Remote Desktop Connection
- Built-in OPC Server
- Rich Software Solutions
  - SDK for Microsoft Visual Studio.NET 2005/2008 and Visual Studio 6.0 Borland C++ Builder and Delphi

Hardware

- Powerful CPU Module
  - AMD LX 800 CPU (32-bit and 500 MHz)
- Memory size:
  - DDR SDRAM (1 GB), Built-in Flash Disk (4 GB)
  - EEPROM (16 KB), CF Card (8 GB)
  - Dual Battery Backup SRAM (512 KB)
- VGA Port x 1, USB 2.0 Ports x 2
- 64-bit Hardware Serial Number
- Dual Watchdog Timers
- 4/5 Serial Ports (RS-232/RS-485)
- Dual Ethernet Ports (10/100M)
- Redundant Power Input
- DIN-Rail or Wall Mounting
- Operating Temperature: -25 ~ +75 °C

Applications

Rich I/O Expansion Ability

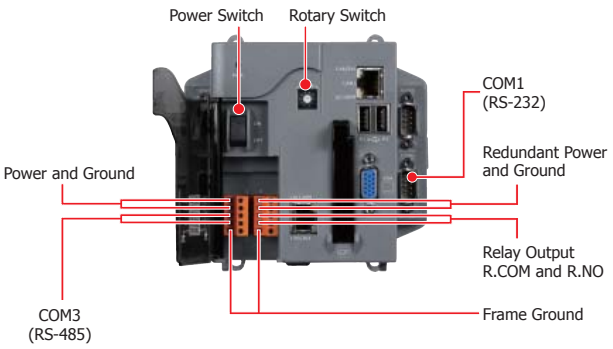


Specifications

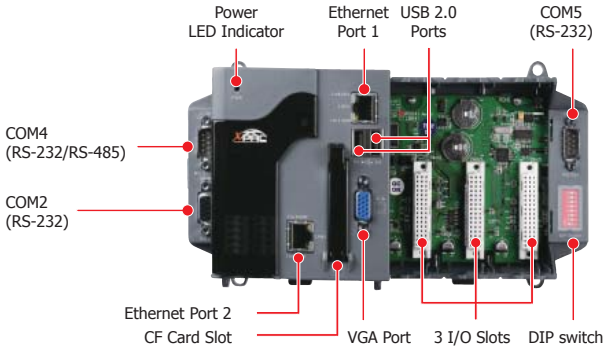
Models		XP-8041	XP-8341	XP-8741
System Software				
OS		Microsoft Windows Embedded Standard 2009		
.Net Compact Framework		3.5		
Embedded Service		FTP Server, Internet Information Service 5.1, ASP (Java Script, VB Script), SQL Server 2005 Express		
SDK Provided		Dll for VC, VB, Delphi, BCB, Visual Studio .NET 2005/2008		
Multilanguage Support		English, German, French, Spanish, Russian, Italian, Czech, Japanese, Simplified Chinese, Traditional Chinese		
CPU Module				
CPU		AMD LX 800 processor (32-bit and 500 MHz)		
System Memory		1 GB		
Dual Battery Backup SRAM		512 KB (for 5 years data retain while power off)		
Flash		4 GB as IDE Master		
EEPROM		16 KB		
		Data Retention: 40 years; 1,000,000 erase/write cycles		
CF Card		8 GB (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		
Rotary Switch		Yes (0 ~ 9)		
DIP Switch		-	Yes (8 bits)	
VGA & Communication Ports				
VGA		Yes, (resolution: 1600 x 1200, 1024 x 768, 800 x 600, 640 x 480)		
Ethernet		RJ-45 x 2, 10/100 Base-TX (Auto-negotiating, Auto MDI/MDI-X, LED indicators)		
USB 2.0		2		
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	D2+, D2-; self-tuner ASIC inside		
	Isolation	3000 VDC		
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
Hot Swap * Will be available		-	For High Profile I-87K Modules Only	
Mechanical				
Dimensions (W x L x H)		137 mm x 132 mm x 125 mm	231 mm x 132 mm x 125 mm	355 mm x 132 mm 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 VDC		
Isolation		1 kV		
Redundant Power Inputs		Yes, with one power relay (1 A @ 24 VDC) for alarm		
Capacity		1.8 A, 5 V supply to CPU and backplane, 15 W in total	1.8 A, 5 V supply to CPU and backplane, 5.2 A, 5 V supply to I/O expansion slots, 35 W in total	2.0 A, 5 V supply to CPU and backplane, 5.0 A, 5 V supply to I/O expansion slots, 35 W in total
Consumption		14.4 W (0.6 A @ 24 VDC)	14.4 W (0.6 A @ 24 VDC)	16.8 W (0.7 A @ 24 VDC)

Appearance

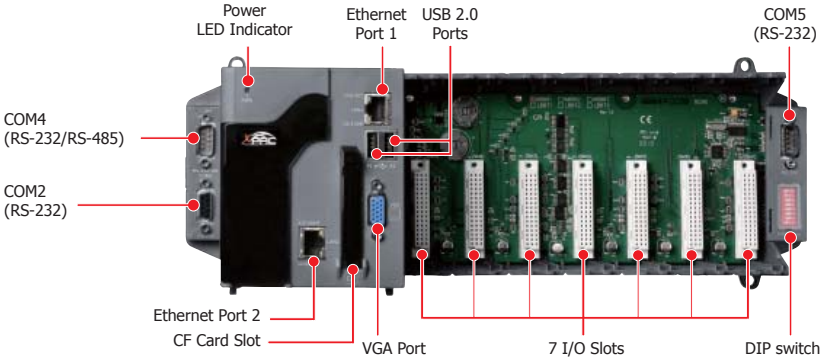
XP-8041



XP-8341

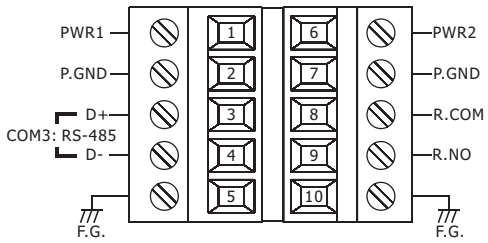


XP-8741

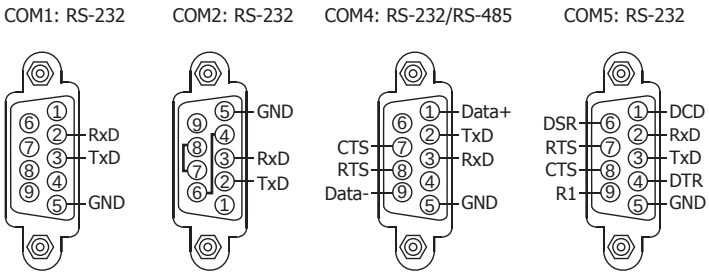


Pin Assignments

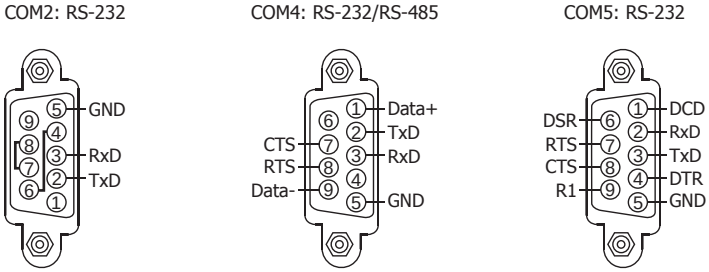
XP-8x41 Terminal Block



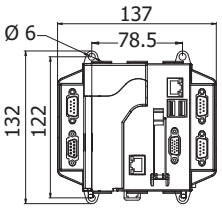
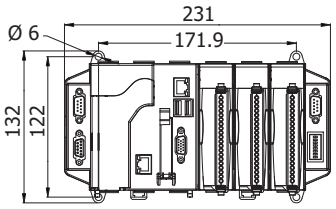
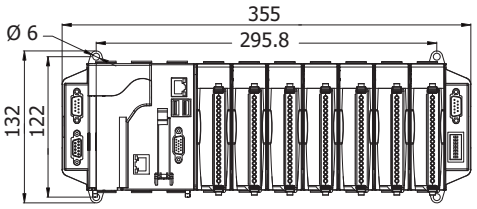
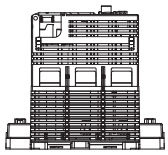
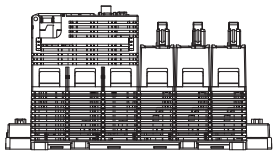
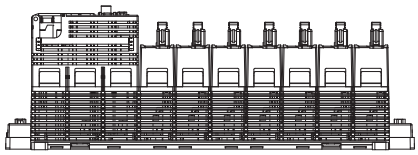
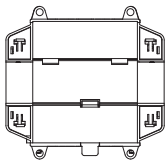
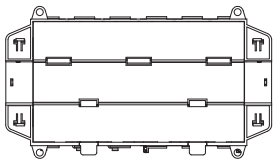
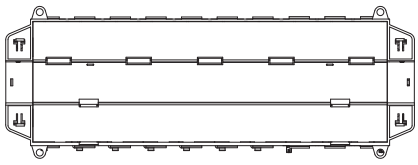
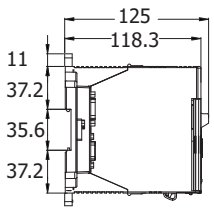
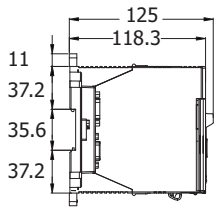
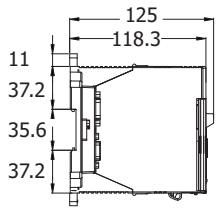
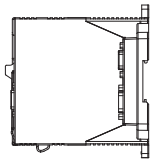
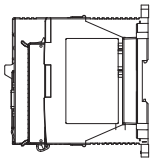
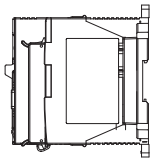
XP-8041 COM Port



XP-8341/8741 COM Port



Dimensions (Units: mm)

XP-8041	XP-8341	XP-8741
		
Front View	Front View	Front View
		
Bottom View	Bottom View	Bottom View
		
Rear View	Rear View	Rear View
		
Left Side View	Left Side View	Left Side View
		
Right Side View	Right Side View	Right Side View

Ordering Information

XP-8041-EN CR	Standard XP-8000 without I/O Slot (Multilingual Version of OS) (RoHS)
XP-8341-EN CR	Standard XP-8000 with 3 I/O Slots (Multilingual Version of OS) (RoHS)
XP-8741-EN CR	Standard XP-8000 with 7 I/O Slots (Multilingual Version of OS) (RoHS)
XP-8041-TC CR	Standard XP-8000 without I/O Slot (Traditional Chinese Version of OS) (RoHS)
XP-8341-TC CR	Standard XP-8000 with 3 I/O Slots (Traditional Chinese Version of OS) (RoHS)
XP-8741-TC CR	Standard XP-8000 with 7 I/O Slots (Traditional Chinese Version of OS) (RoHS)

Accessories

DP-660	24 VDC/2.5 A, 60 W and 5 VDC/0.5 A, 2.5 W Power Supply with DIN-Rail Mounting
DP-1200 CR	24 VDC/5.0 A, 120 W Power Supply with DIN-Rail Mounting (RoHS)
MDR-60-24 CR	24 VDC/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)

Highlight Information

- Windows CE 6.0
- Hard Real-Time Capability
- SQL Compact Edition 3.5
- Support eLogger HMI
- VGA Port Output
- PC Power, Open System
- Redundant Power Input
- Operating Temperature: -25 ~ +75 °C

Introduction

XP-8x41-CE6 Series is the new generation Windows CE 6.0 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 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.

Features

Software

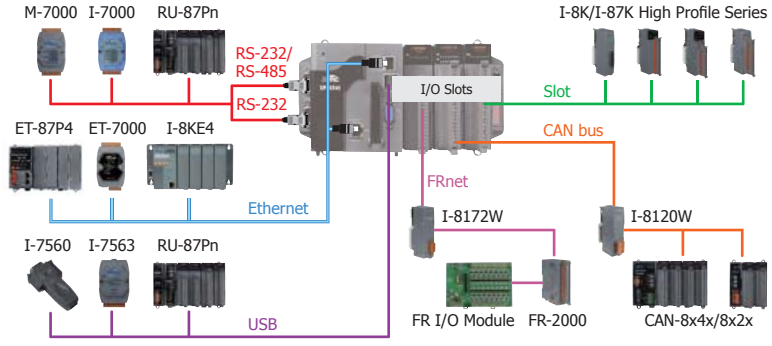
- Windows Compact Edition 6.0
- System Rescue Mechanism
- ASP (JavaScript & VBScript)
- SQL Compact Edition 3.5
- .NET Compact Framework 3.5
- Remote Display
- Built-In OPC Server (Quicker)
- InduSoft
  - HMI and SCADA development tool
- ISaGRAF
- Rich Software Solutions
  - SDK for Microsoft Visual Studio.NET 2005/2008

Hardware

- Powerful CPU module
- AMD LX 800 CPU (32-bit and 500 MHz)
- Memory size:
  - RAM (512 MB), Built-In Flash Disk (4 GB)
  - EEPROM (16 KB)
  - Dual Battery-Backup SRAM (512 KB)
  - CF Card (support up to 32 GB)
- VGA Port x 1, USB 2.0 Ports x 2
- 64-bit Hardware Serial Number
- Dual Watchdog Timers
- 4/5 Serial Ports (RS-232/RS-485)
- Dual Ethernet Ports (10/100M)
- Redundant Power Input
- Operating Temperature: -25 ~ +75 °C

Applications

Rich I/O Expansion Ability

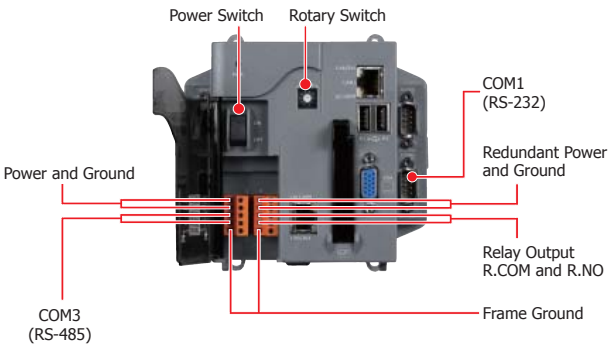


Specifications

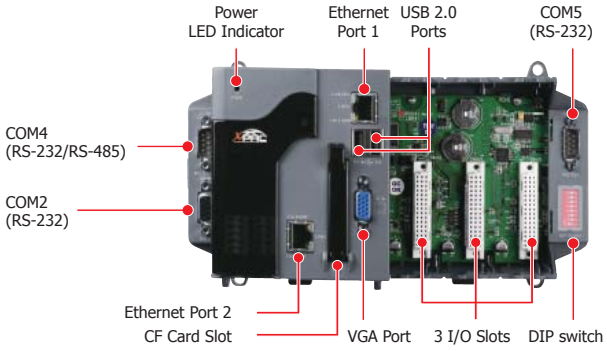
Models		XP-8041-CE6	XP-8341-CE6	XP-8741-CE6
System Software				
OS		Windows CE 6.0 core version		
.Net Compact Framework		3.5		
Embedded Service		FTP Server, ASP (Java Script, VB Script), SQL Compact Edition 3.5		
SDK Provided		Dll for Visual Studio .Net 2005/2008		
Multilanguage Support		English, German, French, Spanish, Russian, Italian, Japanese, Simplified Chinese, Traditional Chinese		
CPU Module				
CPU		AMD LX 800 processor (32-bit and 500 MHz)		
System Memory		512 MB DDR SDRAM		
Dual Battery Backup SRAM		512 KB (for 5 years data retain while power off)		
Flash		4 GB as IDE Master		
EEPROM		16 KB		
		Data Retention: 40 years; 1,000,000 erase/write cycles		
CF Card		1 GB (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		
Rotary Switch		Yes (0 ~ 9)		
DIP Switch		-	Yes (8 bits)	
VGA & Communication Ports				
VGA		Yes, (resolution: 1024 x 768, 800 x 600 , 640 x 480)		
Ethernet		RJ-45 x 2, 10/100 Base-TX (Auto-negotiating, Auto MDI/MDI-X, LED indicators)		
USB 2.0		2		
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	D2+, D2-; self-tuner ASIC inside		
	Isolation	3000 V_{DC}		
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
Hot Swap * Will be available		-	For High Profile I-87K Modules Only	
Mechanical				
Dimensions (W x L x H)		137 mm x 132 mm x 125 mm	231 mm x 132 mm x 125 mm	355 mm x 132 mm 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		1.8 A, 5 V supply to CPU and backplane, 15 W in total	1.8 A, 5 V supply to CPU and backplane, 5.2 A, 5 V supply to I/O expansion slots, 35 W in total	2.0 A, 5 V supply to CPU and backplane, 5.0 A, 5 V supply to I/O expansion slots, 35 W in total
Consumption		14.4 W (0.6 A @ 24 V_{DC})	14.4 W (0.6 A @ 24 V_{DC})	16.8 W (0.7 A @ 24 V_{DC})

Appearance

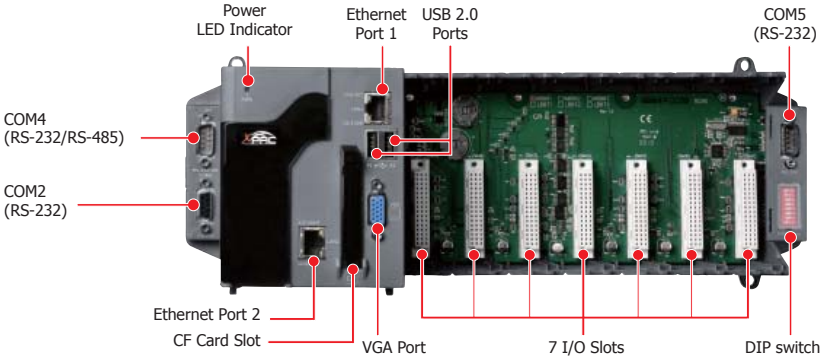
XP-8041-CE6



XP-8341-CE6

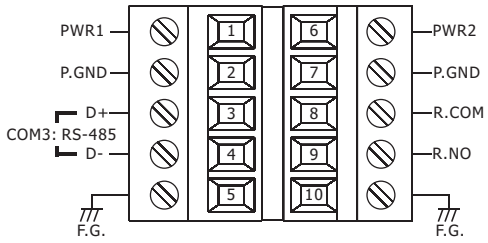


XP-8741-CE6



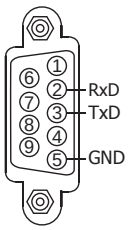
Pin Assignments

XP-8x41-CE6 Terminal Block

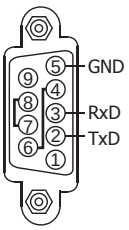


XP-8041-CE6 COM Port

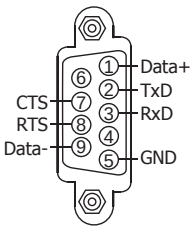
COM1: RS-232



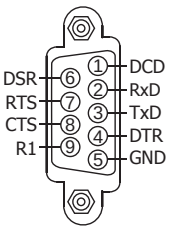
COM2: RS-232



COM4: RS-232/RS-485

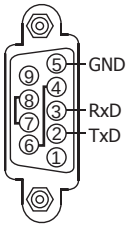


COM5: RS-232

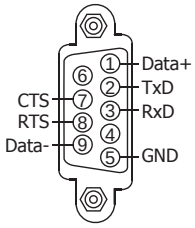


XP-8341-CE6/XP-8741-CE6 COM Port

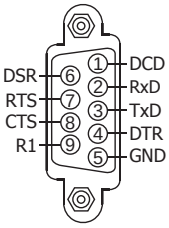
COM2: RS-232



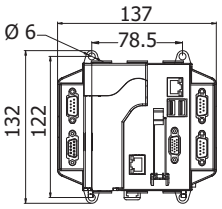
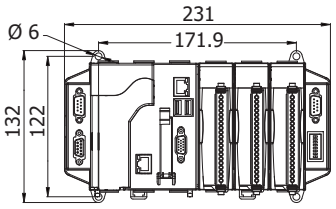
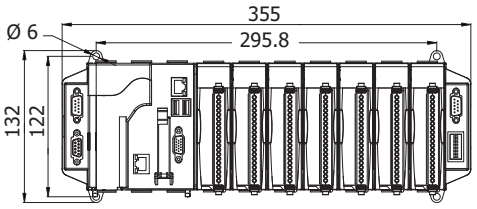
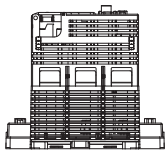
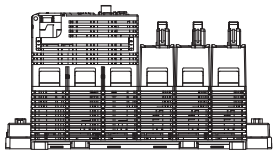
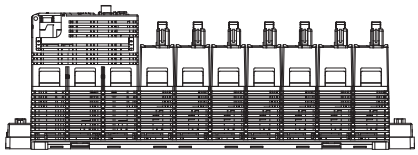
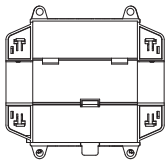
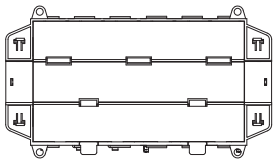
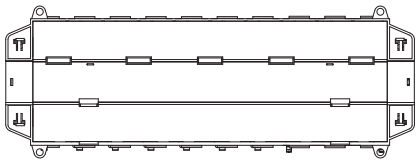
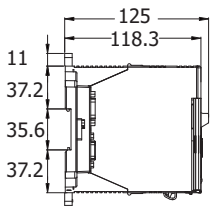
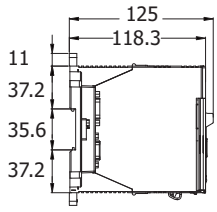
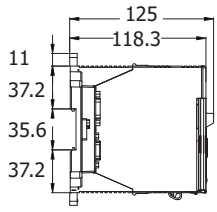
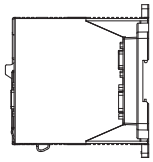
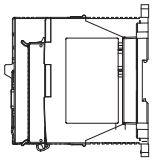
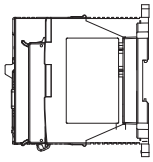
COM4: RS-232/RS-485



COM5: RS-232



Dimensions (Units: mm)

XP-8041-CE6	XP-8341-CE6	XP-8741-CE6
		
Front View	Front View	Front View
		
Bottom View	Bottom View	Bottom View
		
Rear View	Rear View	Rear View
		
Left Side View	Left Side View	Left Side View
		
Right Side View	Right Side View	Right Side View

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 slot WinCE 6.0 Based Standard XPAC (OS: Multi-Language version) (RoHS)
XP-8741-CE6 CR	7 I/O slot WinCE 6.0 Based Standard XPAC (OS: Multi-Language version) (RoHS)

Accessories

DP-660	24 VDC/2.5 A, 60 W and 5 VDC/0.5 A, 2.5 W Power Supply with DIN-Rail Mounting
DP-1200 CR	24 VDC/5.0 A, 120 W Power Supply with DIN-Rail Mounting (RoHS)
MDR-60-24 CR	24 VDC/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)

Highlight Information

- Windows CE 6.0
- Hard Real-Time Capability
- ISaGRAF Ver.3 SoftLogic Inside (IEC 61131-3)
- PLC Feel
- AMD LX 800 CPU (32-bit and 500MHz)
- VGA Port Output
- Simple graphic HMI
- Support eLogger HMI
- PC Power, Open System
- Redundant Power Input
- 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 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 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 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 eLogger HMI

Features

Software

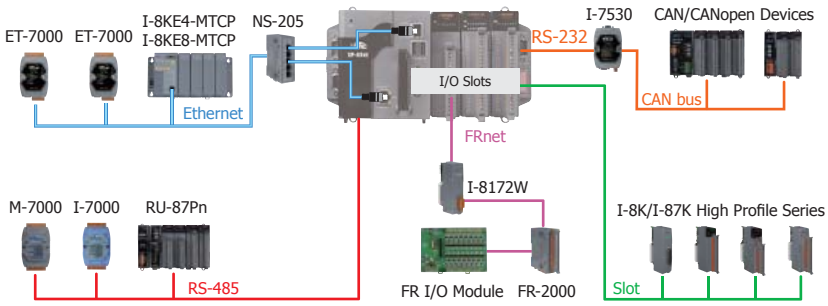
- Windows CE.NET 6.0 Operating System
- Development Softwre: ISaGRAF Ver.3
  - Running on Windows 95/98/NT/2000/XP/Vista/7
  - All-in-one design environment
  - Easy to integrating with HMI/SCADA/MMI
- Support Modbus Master & Slave Protocols
  - Modbus TCP Master (Max. 100 devices)
  - RTU, ASCII, RS-232/485/422 Master (Max. 33 ports)
  - Modbus RTU (RS-232/485/422) Slave (Max. 9 ports)
  - Modbus TCP/IP Slave (Max. 64 connections)
- Support GPS/ZigBee/Radio Wireless & SMS
- Support Data Exchange
- Support CAN/CANopen
- Support FRnet I/O (Via I-8172W)
- Support Data-Recorder & Data-Logger
- Support Motion Control & VW Solutions
- Support eLogger HMI

Hardware

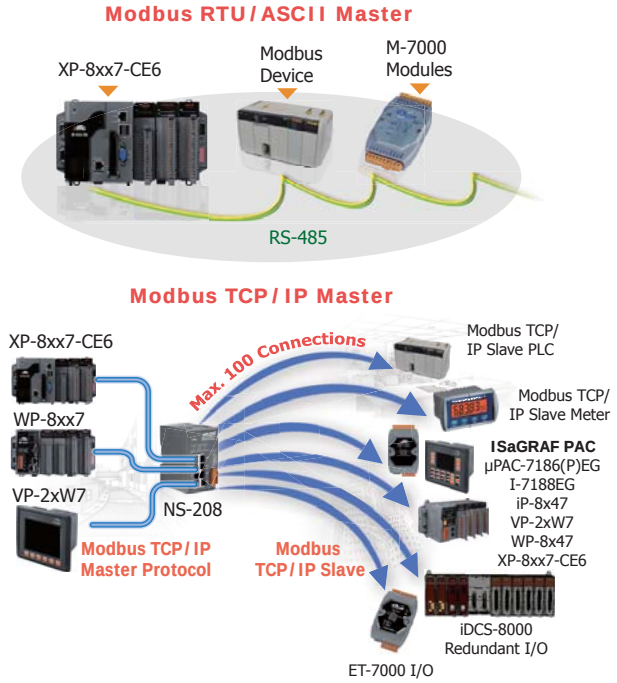
- Powerful CPU module
  AMD LX 800 CPU (32-bit and 500 MHz)
- Memory size:
  - RAM (512 MB), Built-In Flash Disk (4 GB)
  - EEPROM (16 KB)
  - Dual Battery-Backup SRAM (512 KB)
  - CF Card (1 GB, support up to 32 GB)
- VGA Port x 1, USB 2.0 Ports x 2
- 64-bit Hardware Serial Number
- Dual Watchdog Timers
- 4/5 Serial Ports (RS-232/RS-485)
- Dual Ethernet Ports (10/100M)
- Redundant Power Input
- Operating Temperature: -25 ~ +75 °C

Applications

Rich I/O Expansion Ability

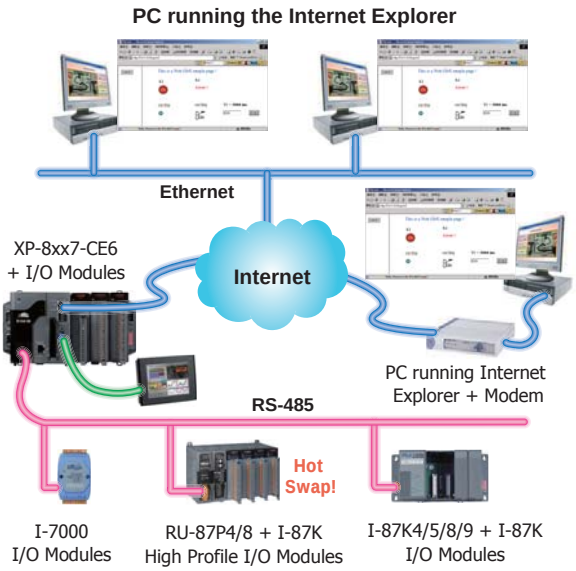


Modbus Master Ports



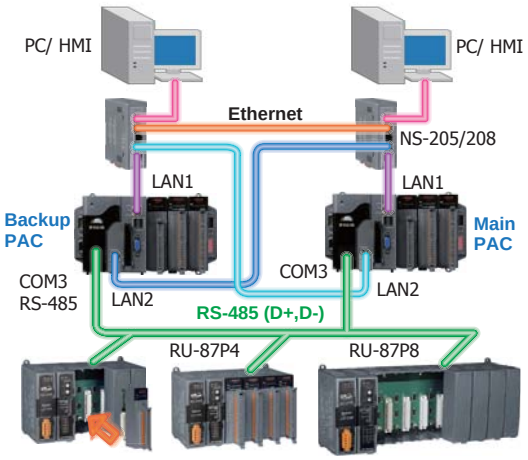
Multiple Web HMI

■ The XP-8xx7-CE6-PRO can run its own Internet Explorer to monitor itself, but the XP-8xx7-CE6 requires running Internet Explorer in PC to monitor it.



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

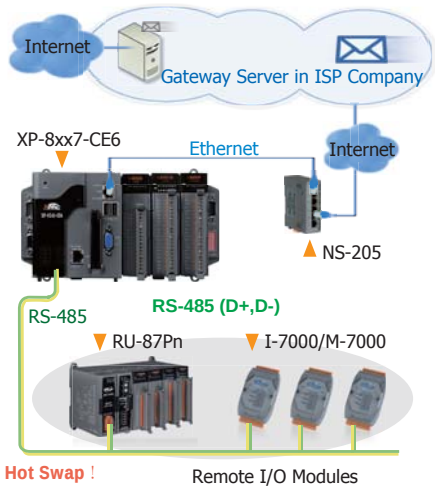
Hot-Swap Redundant System



Hot Swap !

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

Send Email with one Attached File



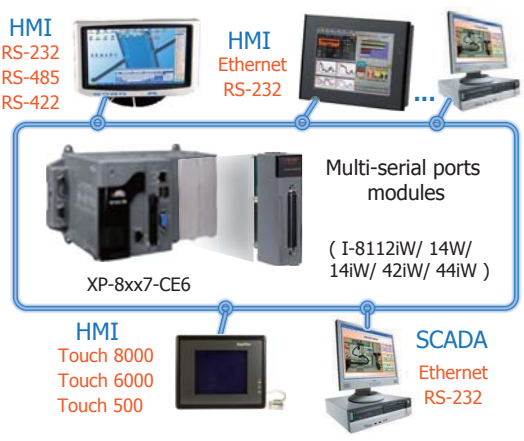
Hot Swap !

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

Modbus Slave : RTU / TCP

■ Modbus RTU (RS-232/485/422) Slave: max. 9 ports

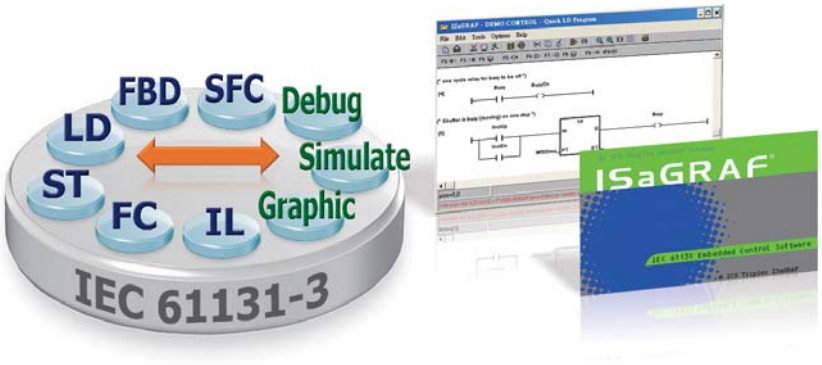
■ Modbus TCP/IP Slave: max. 64 connections



Specifications

Models		XP-8047-CE6	XP-8347-CE6	XP-8747-CE6
System Software				
OS		Windows CE 6.0 core version		
.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, Japanese, Simplified Chinese, Traditional Chinese		
Development Software				
ISaGRAF Software	ISaGRAF Ver.3	IEC 61131-3 standard.		
	Languages	LD, ST, FBD, SFC, IL & FC		
	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 The XP-8xx7-CE6-PRO can run its own Internet Explorer to monitor itself.		
Security		Web HMI supports three levels username and password protection. (high/middle/low)		
CPU Module				
CPU		AMD LX 800 processor (32-bit & 500 MHz) or compatible		
System Memory		512 MB DDR SDRAM		
Dual Battery Backup SRAM		512 KB (for 5 years data retain while power off)		
Flash		4 GB as IDE Master		
EEPROM		16 KB		
		Data Retention: 40 years; 1,000,000 erase/write cycles		
CF Card		1 GB (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		
Rotary Switch		Yes (0 ~ 9)		
DIP Switch		-	Yes (8 bits)	
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). Please use NS-205/NS-208 Industrial Ethernet Switch.		
USB 2.0		2		
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	D2+, D2-; self-tuner ASIC inside		
	Isolation	3000 V_{DC}		
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
Hot Swap * Will be available		-	For High Profile I-87K Modules Only	
Mechanical				
Dimensions (W x L x H)		137 mm x 132 mm x 125 mm	231 mm x 132 mm x 125 mm	355 mm x 132 mm 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		1.8 A, 5 V supply to CPU and backplane, 15 W in total	1.8 A, 5 V supply to CPU and backplane, 5.2 A, 5 V supply to I/O expansion slots, 35 W in total	2.0 A, 5 V supply to CPU and backplane, 5.0 A, 5 V supply to I/O expansion slots, 35 W in total
Consumption		14.4 W (0.6 A @ 24 V_{DC})	14.4 W (0.6 A @ 24 V_{DC})	16.8 W (0.7 A @ 24 V_{DC})

ISaGRAF Specifications

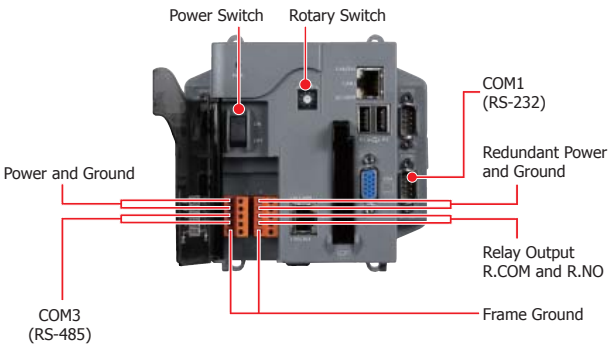


Protocols (some protocols need optional devices)		
Net ID		1 ~ 255, user-assigned by software
Modbus TCP/IP Master		Link to max. 100 devices that support Standard Modbus TCP/IP Slave protocol
Modbus RTU/ASCII Master		Max. 33 Ports : COM1 ~ 33 (To connect to other Modbus Slave devices). (*)
Modbus RTU 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.
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)
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. 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.
User-Defined Protocol		User can write his own protocol applied at COM1~COM5 & COM6~COM33(if multi-serial port boards are plugged in) 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.
New 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.
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. (*)
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... (Relay Output boards can not 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, 8048W, 8050W, 8051W, 8052W, 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, 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. I-8084W: 250 kHz max., 4-ch encoder, pulse/direction or up/down or A/B phase (Quad. mode). Not support Encoder Z-index.
	Frequency	I-87082W: 2-ch, 1 Hz ~ 100 kHz; I-8084W: 8-ch, 1 Hz ~ 250 kHz;
Motion	Motion Control	With one or serval I-8092F (2-axis) or I-8094F/I-8094 (4-axis)

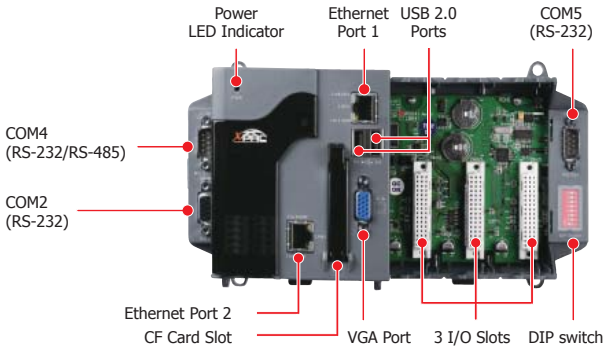
***Note: COM6 ~ COM33 are resided at the expansion boards if they are plugged on slot1~7 of XP-8xx7-CE6.**
XP-8347-CE6/8747-CE6's COM1 is for internal communication with I-87K modules in slots only.

Appearance

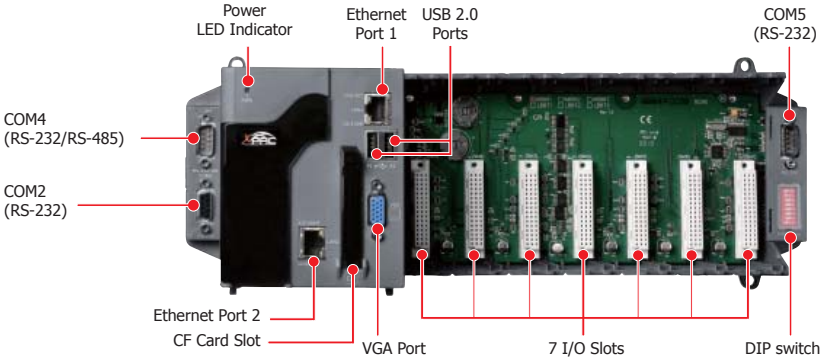
XP-8047-CE6



XP-8347-CE6

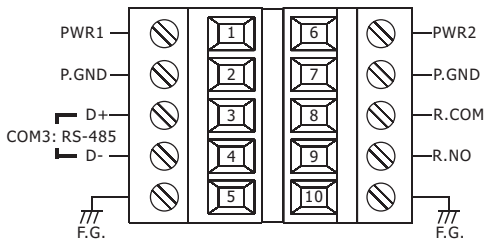


XP-8747-CE6

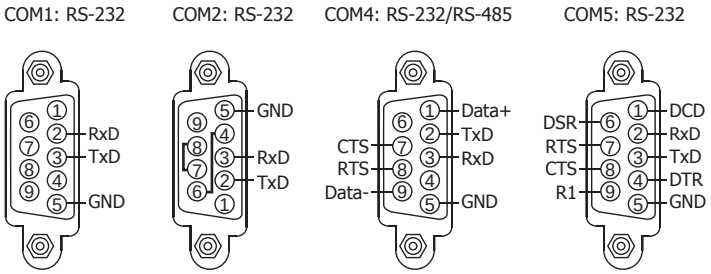


Pin Assignments

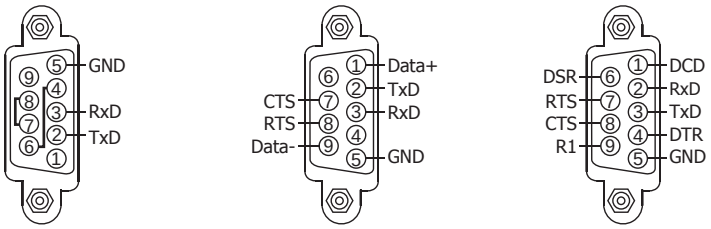
XP-8x47-CE6 Terminal Block



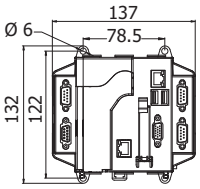
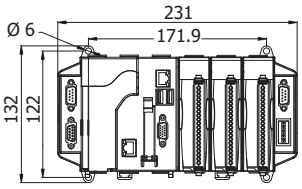
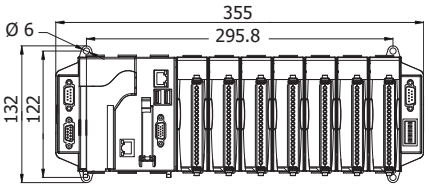
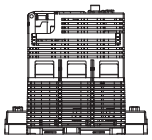
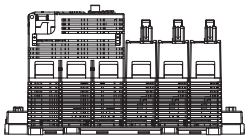
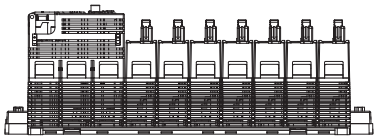
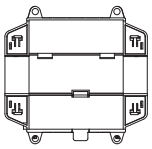
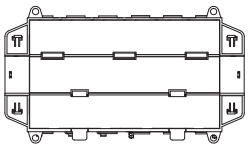
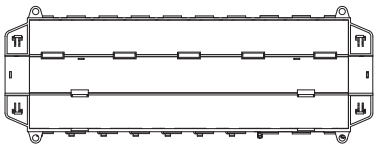
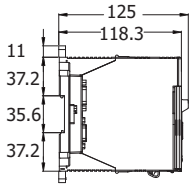
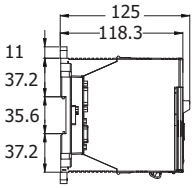
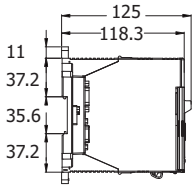
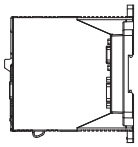
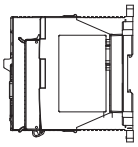
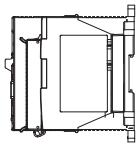
XP-8047-CE6/XP-8047-CE6 COM Port



XP-8347-CE6/XP-8747-CE6 COM Port



Dimensions (Units: mm)

XP-8047-CE6	XP-8347-CE6	XP-8747-CE6
		
Front View	Front View	Front View
		
Bottom View	Bottom View	Bottom View
		
Rear View	Rear View	Rear View
		
Left Side View	Left Side View	Left Side View
		
Right Side View	Right Side View	Right Side View

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)

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 VDC/2.5 A, 60 W and 5 VDC/0.5 A, 2.5 W Power Supply with DIN-Rail Mounting
DP-1200 CR	24 VDC/5.0 A, 120 W Power Supply with DIN-Rail Mounting (RoHS)
MDR-60-24 CR	24 VDC/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-8349-CE6

XP-8749-CE6

Highlight Information

- Windows CE 6.0
- Hard Real-Time Capability
- InduSoft Web Studio v6.1
- AMD LX 800 CPU (32-bit and 500 MHz)
- VGA Port Output
- PC Power, Open System
- Redundant Power Input
- Operating Temperature: -25 ~ +75 °C

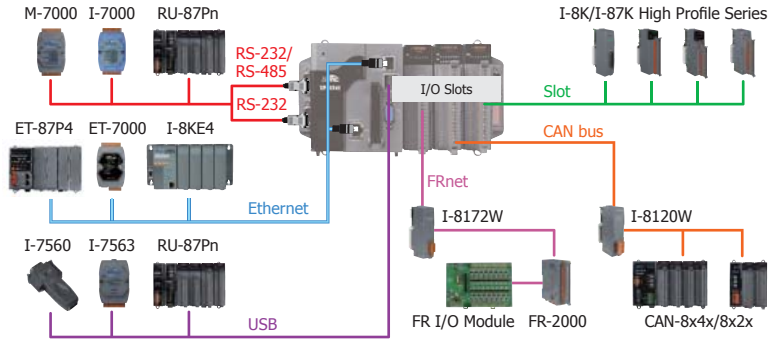
Introduction

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 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.

Applications

Rich I/O Expansion Ability



Features

Software

- Windows Embedded CE 6.0
- FTP Server, Web Server, ASP
- SQL Compact Edition 3.5
- .NET Framework 3.5
- Runtime InduSoft Web Studio v6.1
  - ☐ DCON Bundled Driver Provided
  - ☐ Support OPC/Modbus/OPC/DDE Protocol
  - ☐ Support Third-party SQL relational database
- Remote Display
- DCON Utility (with DCON_CE.exe run on the device)
- Built-in OPC Server

Hardware

- Powerful CPU Module
  - ☐ AMD LX 800 CPU (32-bit and 500 MHz)
- Memory Size
  - ☐ DDR SDRAM (512 MB), Built-in Flash Disk (4 GB)
  - ☐ EEPROM (16KB), Compact Flash Card (1 GB)
  - ☐ Dual Battery Backup SRAM (512 KB)
- VGA Port x 1, USB 2.0 Ports x 2
- 64-bit Hardware Serial Number
- Powerful CPU Module
- 4/5 Serial Ports (RS-232/RS-485)
- Dual Ethernet Ports (10/100M)
- Redundant Power Input
- Operating Temperature: -25 ~ +75 °C

Specifications

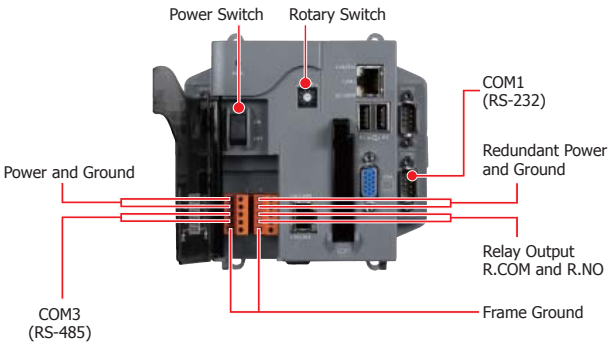
Models	XP-8049-CE6	XP-8349-CE6	XP-8749-CE6
System Software			
OS	Windows CE 6.0 core version		
.Net Compact Framework	3.5		
Embedded Service	FTP Server, ASP (Java Script, VB Script), SQL Compact Edition 3.5		
SDK Provided	Dll for Visual Studio .Net 2005/2008		
Multilanguage Support	English, German, French, Spanish, Russian, Italian, Japanese, 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	AMD LX 800 processor		
System Memory	512 MB DDR SDRAM		
Dual Battery Backup SRAM	512 KB (for 5 years data retain while power off)		
Flash	4 GB as IDE Master		
EEPROM	16 KB		
	Data Retention: 40 years; 1,000,000 erase/write cycles		
CF Card	1 GB (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		
Rotary Switch	Yes (0 ~ 9)		
DIP Switch	-	Yes (8 bits)	
VGA & Communication Ports			
VGA	Yes, (resolution: 1024 x 768, 800 x 600 , 640 x 480)		
Ethernet	RJ-45 x 2, 10/100 Base-TX (Auto-negotiating, Auto MDI/MDI-X, LED indicators)		
USB 2.0	2		
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	D2+, D2-; self-tuner ASIC inside		
COM 3 Isolation	3000 VDC		
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
Hot Swap * Will be available	-	For High Profile I-87K Modules Only	
Mechanical			
Dimensions (W x L x H)	137 mm x 132 mm x 125 mm	231 mm x 132 mm x 125 mm	355 mm x 132 mm 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 VDC		
Isolation	1 kV		
Redundant Power Inputs	Yes, with one power relay (1 A @ 24 VDC) for alarm		
Capacity	1.8 A, 5 V supply to CPU and backplane, 15 W in total	1.8 A, 5 V supply to CPU and backplane, 5.2 A, 5 V supply to I/O expansion slots, 35 W in total	2.0 A, 5 V supply to CPU and backplane, 5.0 A, 5 V supply to I/O expansion slots, 35 W in total
Consumption	14.4 W (0.6 A @ 24 VDC)	14.4 W (0.6 A @ 24 VDC)	16.8 W (0.7 A @ 24 VDC)

InduSoft Features

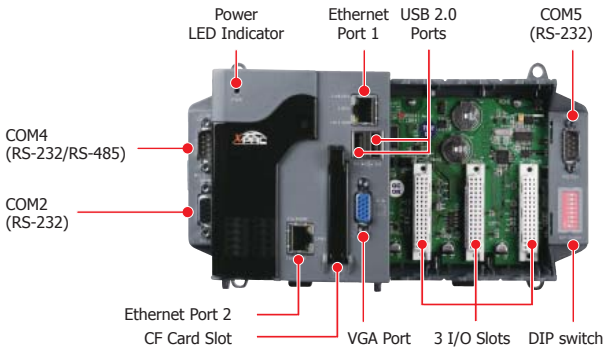
- Elegant Graphics
- Multi-Language
- Database (Access, Excel, SQL, Oracle…)
- Recipes and Reports
- Online and History Alarm / Event / Trend
- Various Communication Driver (DCON, Modbus, OPC, DDE, TCP/IP…)
- Remote Web Client Control & Security
- ActiveX (GSM / SHM / COM /WEB provided by ICP DAS)
-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

Appearance

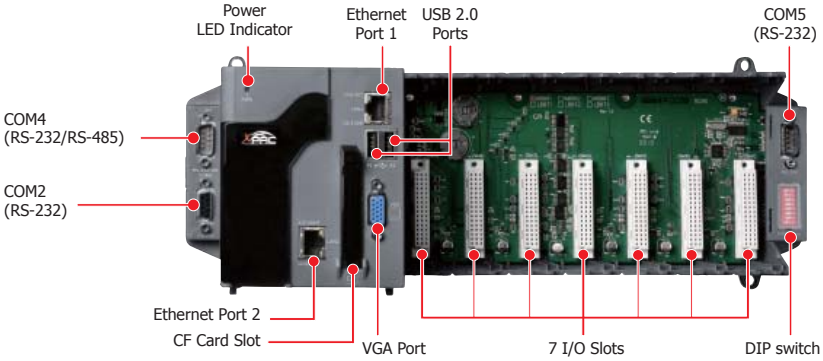
XP-8049-CE6



XP-8349-CE6

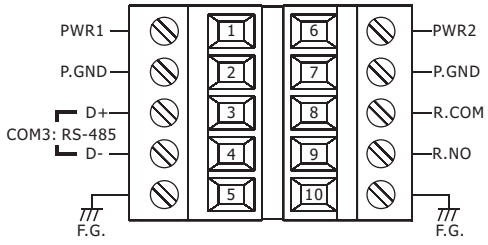


XP-8749-CE6

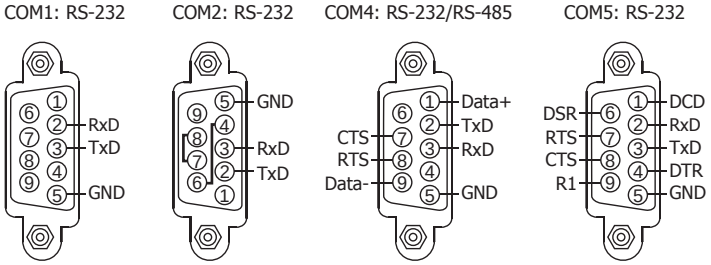


Pin Assignments

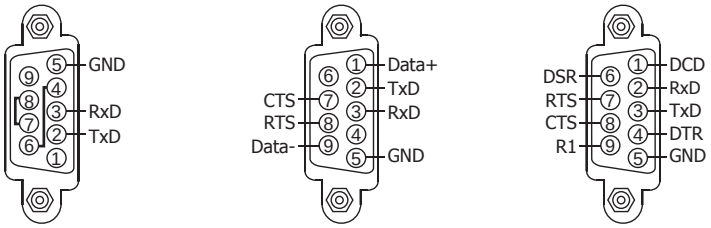
XP-8x49-CE6 Terminal Block



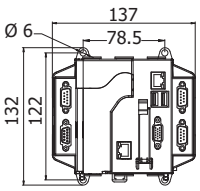
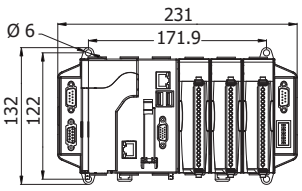
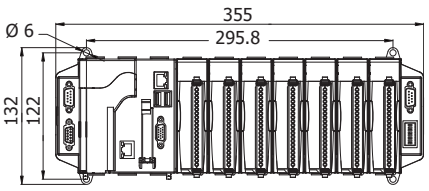
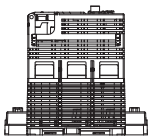
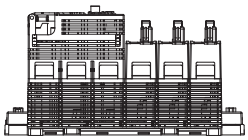
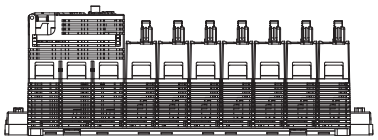
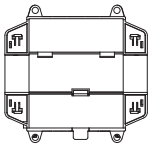
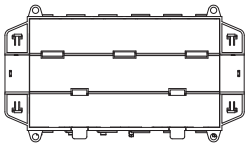
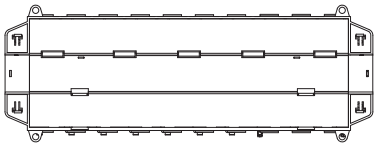
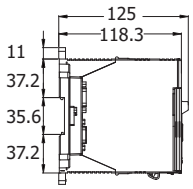
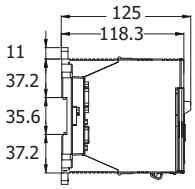
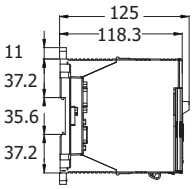
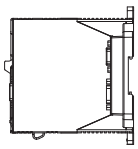
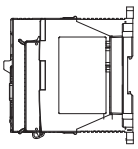
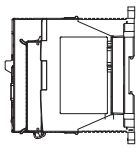
XP-8049-CE6 COM Port



XP-8349-CE6/8749-CE6 COM Port



Dimensions (Units: mm)

XP-8049-CE6	XP-8349-CE6	XP-8749-CE6
		
Front View	Front View	Front View
		
Bottom View	Bottom View	Bottom View
		
Rear View	Rear View	Rear View
		
Left Side View	Left Side View	Left Side View
		
Right Side View	Right Side View	Right Side View

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.	

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. WinPAC-8000 Series

• Overview

Microsoft Windows CE.net

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 input, 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

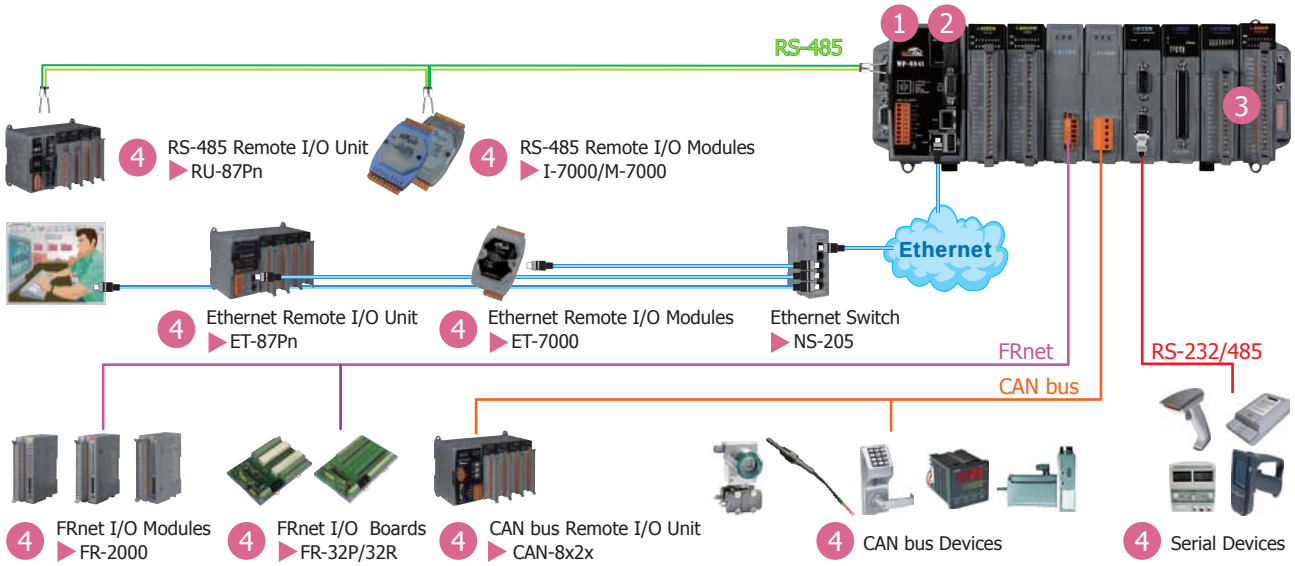
All WinPAC have Windows CE OS inside, and most of the popular features in MS software are included, such as FTP Server, HTTP Server, ASP (Java/VB script), SQL Server embedded 3.5 and compact .NET Framework 2.0. WinPAC supports rich software & development solutions: VB.Net 2005/2008, Visual C#.NET 2005/2008, eVC++ 4.0, ISaGRAF, InduSoft etc.

3 I/O Modules

There are two types of I/O modules, Parallel and Serial. The Parallel I/O modules (I-8K high profile series) are high-speed modules and have to be installed in slots of the WinPAC. The Serial I/O modules (I-87K high profile series) can be installed in slots or Expansion Units (RU-87Pn).

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

NO. of I/O Slot

Hardware
3: PXA270 CPU & VGA 1024 x 768
4: PXA270 CPU & VGA 800 x 600
5: PXA270 CPU & VGA 1024 x 768

Software
1: Standard
7: ISaGRAF
9: InduSoft

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	Page
WP-8131	CE 5.0	None	PXA270, 520 MHz	128 MB	128 MB	1024 x 768	2	2	1	microSD	-	2-3-3
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	-	2-3-3
WP-8441								4	4			
WP-8841									8			
WP-8051	CE 5.0	None	PXA270, 520 MHz	128 MB	128 MB	1024 x 768	2	5	0	CF	Yes	2-3-7
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

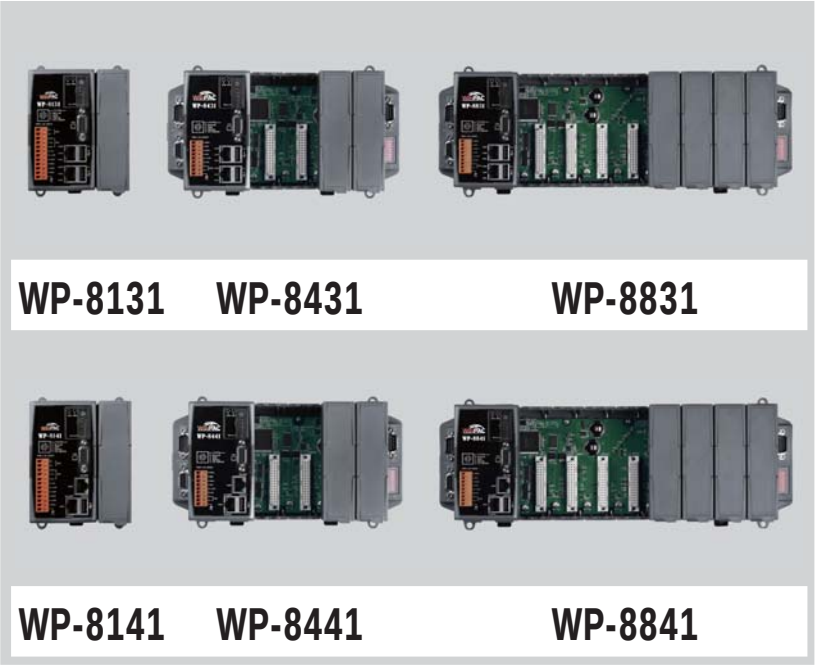
Model Name	OS	Pre-installed Software	CPU	Flash	SDRAM	VGA Resolution	USB	RS-232/RS-485	I/O Slot	Memory Expansion	Audio	Page
WP-8137	CE 5.0	ISaGRAF	PXA270, 520 MHz	128 MB	128 MB	1024 x 768	2	2	1	microSD	-	2-3-11
WP-8437								4	4			
WP-8837									8			
WP-8147	CE 5.0	ISaGRAF	PXA270, 520 MHz	96 MB	128 MB	800 x 600	1	2	1	microSD	-	2-3-11
WP-8447								4	4			
WP-8847									8			
WP-8057	CE 5.0	ISaGRAF	PXA270, 520 MHz	128 MB	128 MB	1024 x 768	2	5	0	CF	Yes	2-3-17
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	Page
WP-8139	CE 5.0	InduSoft	PXA270, 520 MHz	128 MB	128 MB	1024 x 768	2	2	1	microSD	-	2-3-23
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	-	2-3-23
WP-8449								4	4			
WP-8849									8			
WP-8059	CE 5.0	InduSoft	PXA270, 520 MHz	128 MB	128 MB	1024 x 768	2	5	0	CF	Yes	2-3-28
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)



Highlight Information

- Windows CE 5.0
- Hard Real-Time Capability
- Fast Boot Speed
- PXA270 CPU (32-bit & 520 MHz)
- VGA Port Output
- Support eLogger HMI
- Open System
- Redundant Power Input
- Operating Temperature: -25 ~ +75 °C

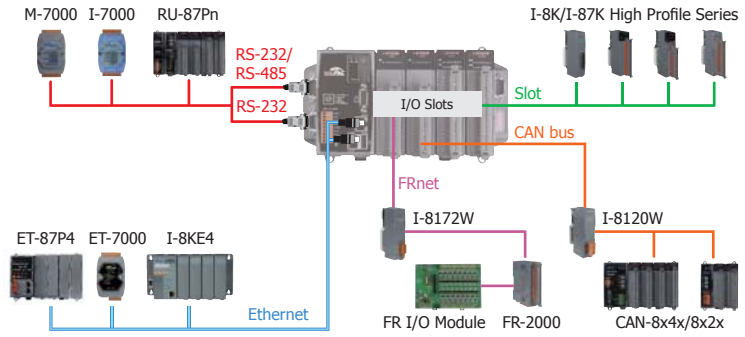
Introduction

WP-8x31 and WP-8x41 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 0/4/8 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 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.

Applications

Rich I/O Expansion Ability



Features

Software

- Windows CE.NET 5.0 Operating System
- Easy Remote Maintenance Via Ethernet
  - FTP server
  - VCEP software
- Built-in OPC Server: Quicker
  - An OPC Server & SCADA Software
  - Integrate Local/Remote I/O Modules Via RS-232/485 or Ethernet
  - Provide Library for eVC, C# or VB.NET
  - Support Modbus and DCON Protocols
- Development Software
  - Visual Studio.NET 2005/2008 and eVC
  - SDK/Demo Programs for C#, VB.NET & eVC
- Upgrade Applications Just Copy and Play

Hardware

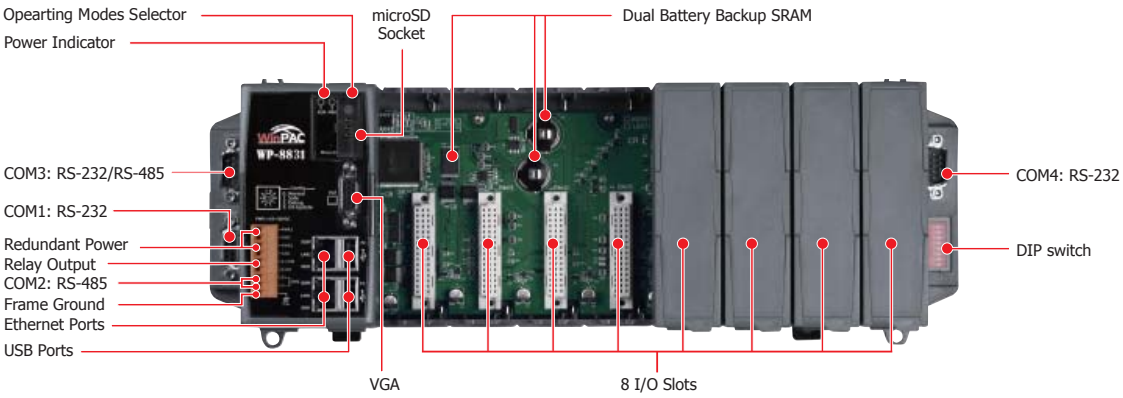
- Powerful CPU Module
- Built-in VGA Port: 640 x 480 ~ 1024 x 768 (for WP-8x31)
- Built-in VGA Port: 640 x 480 ~ 800 x 600 (for WP-8x41)
- 64-bit Hardware Serial Number
- Rich I/O Expansion Ability
- I/O Module Hot Swap Ability
  * Will be available
  (For High Profile I-87K Modules Only)
- Built-in 63 MB Flash Disk (for WP-8x31)
- Built-in 31 MB Flash Disk (for WP-8x41)
- Dual Watchdog Timers
- Dual Battery Backup SRAM (512 KB)
- Dual Ethernet Ports
- Redundant Power Input
- DIN-Rail or Wall Mounting
- Operating Temperature: -25 ~ +75 °C

Specifications

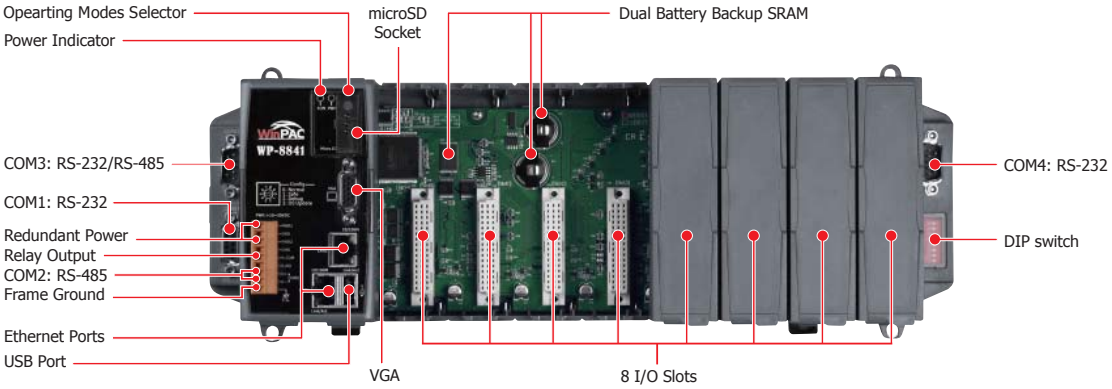
Models		WP-8131	WP-8141	WP-8431	WP-8441	WP-8831	WP-8841
System Software							
OS		Windows CE 5.0					
.Net Compact Framework		2.0					
Embedded Service		FTP server, Web server (supports VB script, JAVA script), Embedded SQL server					
SDK Provided		Dll for eVC, Dll for Visual Studio.Net 2005/2008					
Multilanguage Support		English, German, French, Spanish, Russian, Italian, Simplified Chinese, Traditional Chinese					
CPU Module							
CPU		PXA270 or compatible (32-bit and 520 MHz)					
SDRAM		128 MB					
Dual Battery Backup SRAM		512 KB (for 5 years data retain while power off)					
Flash	Total size	128 MB	96 MB	128 MB	96 MB	128 MB	96 MB
	OS image	64 MB		64 MB		64 MB	
	Built-in Flash disk	63 MB	31 MB	63 MB	31 MB	63 MB	31 MB
	Registry	1 MB		1 MB		1 MB	
EEPROM		16 KB					
		Data Retention: 40 years; 1,000,000 erase/write cycles					
microSD		microSD socket with one 2 GB microSD card (support 1 GB, 2 GB microSD card only)					
RTC (Real Time Clock)		Provide second, minute, hour, date, day of week, month, year					
64-bit Hardware Serial Number		Yes, for Software Copy Protection					
Dual Watchdog Timers		Yes					
Programmable LED Indicator		1					
Rotary Switch		Yes (0 ~ 9)					
DIP Switch		-		Yes (8 bits)			
VGA & Communication Ports							
VGA	Extra GPU	Yes	-	Yes	-	Yes	-
	Resolution	1024 x 768, 800 x 600, 640 x 480	800 x 600, 640 x 480	1024 x 768, 800 x 600, 640 x 480	800 x 600, 640 x 480	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, LED indicators)					
USB 1.1 (host)		2	1	2	1	2	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	D2+, D2-; self-tuner ASIC inside					
	Isolation	2500 V_{DC}		3000 V_{DC}			
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			
I/O Expansion Slots							
Slot Number		1		4		8	
		(For High Profile I-8K and I-87K Modules Only)					
Hot Swap * Will be available		For High Profile I-87K Modules Only					
Mechanical							
Dimensions (W x L x H)		95 mm x 132 mm x 111 mm		231 mm x 132 mm x 111 mm		355 mm x 132 mm x 111 mm	
Installation		DIN-Rail or Wall Mounting					
Environmental							
Operating Temperature		-25 ~ +75 °C					
Storage Temperature		-30 ~ +80 °C					
Ambient Relative Humidity		10 ~ 90% RH (non-condensing)					
Power							
Input Range		+10 ~ +30 V_{DC}					
Isolation		1 kV					
Redundant Power Inputs		Yes, with one power relay (1 A @ 24 V_{DC}) for alarm					
Capacity		1.0 A, 5 V supply to CPU and backplane, 0.6 A, 5 V supply to I/O expansion slots, 8 W in total		1.1 A, 5 V supply to CPU and backplane, 4.9 A, 5 V supply to I/O expansion slots, 30 W in total for WP-8441 25 W in total for WP-8431		1.2 A, 5 V supply to CPU and backplane, 4.8 A, 5 V supply to I/O expansion slots, 30 W in total for WP-8841 25 W in total for WP-8831	
Consumption		7.3 W (0.3 A @ 24 V_{DC})		9.1 W (0.38 A @ 24 V_{DC})		9.1 W (0.38 A @ 24 V_{DC})	

Appearance

WP-8831



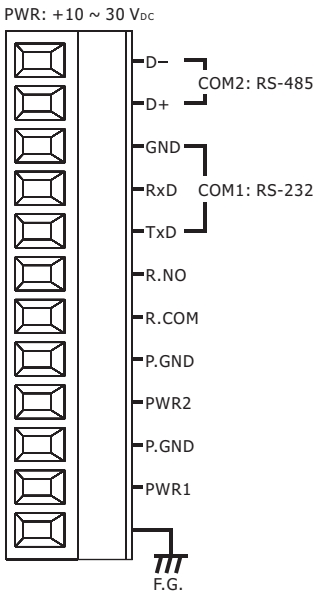
WP-8841



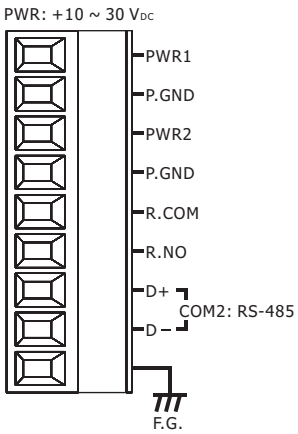
Pin Assignments

Terminal Block

WP-81x1

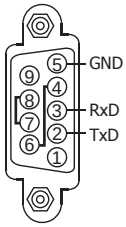


WP-84x1/88x1

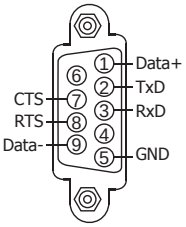


WP-84x1/88x1 COM Port

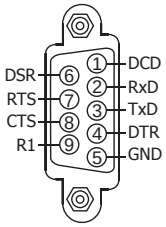
COM1: RS-232



COM3: RS-232/RS-485

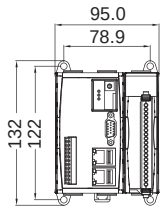


COM4: RS-232



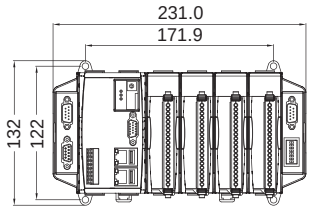
Dimensions (Units: mm)

WP-8131



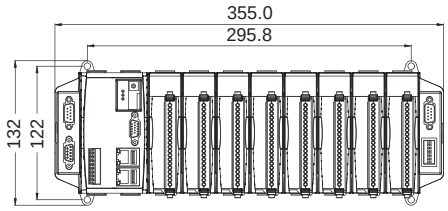
Front View

WP-8431



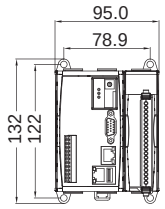
Front View

WP-8831



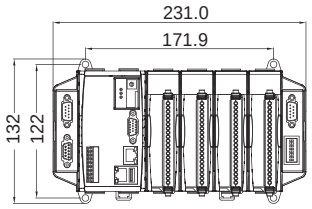
Front View

WP-8141



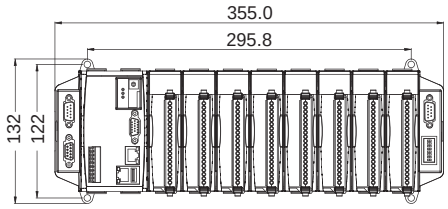
Front View

WP-8441



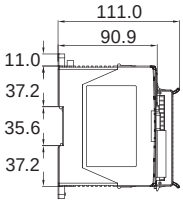
Front View

WP-8841



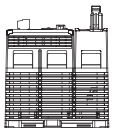
Front View

WP-8x31/8x41



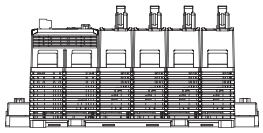
Left Side View

WP-81x1



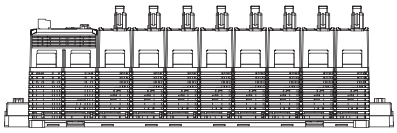
Bottom View

WP-84x1



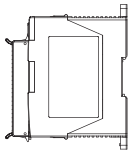
Bottom View

WP-88x1



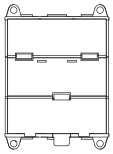
Bottom View

WP-8x31/8x41



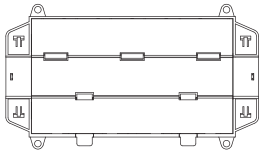
Right Side View

WP-81x1



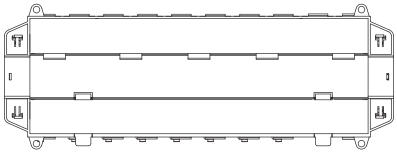
Rear View

WP-84x1



Rear View

WP-88x1



Rear View

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)

Accessories

DP-660	24 VDC/2.5 A, 60 W and 5 VDC/0.5 A, 2.5 W Power Supply with DIN-Rail Mounting
DP-1200 CR	24 VDC/5.0 A, 120 W Power Supply with DIN-Rail Mounting (RoHS)
MDR-60-24 CR	24 VDC/2.5 A, 60 W Power Supply with DIN-Rail Mounting (RoHS)

Highlight Information

- Windows CE 5.0
- Hard Real-Time Capability
- Fast Boot Speed
- PXA270 CPU (32-bit & 520 MHz)
- Audio with Microphone-In and Earphone-Out
- VGA Port Output
- Support eLogger HMI
- Open System
- Redundant Power Input
- Operating Temperature: -25 ~ +75 °C

Introduction

WP-8x51 Series is 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 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 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.

Features

Software

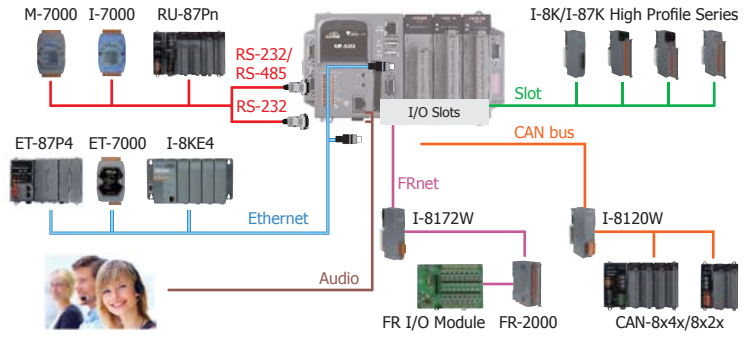
- Windows CE.NET 5.0 Operating System
- Easy Remote Maintenance Via Ethernet
  - FTP server
  - VCEP software
- Built-in OPC Server: Quicker
  - An OPC Server & SCADA Software
  - Integrate Local/Remote I/O Modules Via RS-232/485 or Ethernet
  - Provide Library for eVC, C# or VB.NET
  - Support Modbus and DCON Protocols
- Development Software
  - Visual Studio.NET 2005/2008 and eVC
  - SDK/Demo Programs for C#, VB.NET & eVC
- Upgrade Applications Just Copy and Play

Hardware

- Powerful CPU Module
- Built-in VGA Port: 640 x 480 ~ 1024 x 768
- 64-bit Hardware Serial Number
- Audio with Microphone-In and Earphone-Out
- Rich I/O Expansion Ability
- I/O Module Hot Swap Ability
  * Will be available
  (For High Profile I-87K Modules Only)
- Built-in 63 MB Flash Disk
- Dual Watchdog Timers
- Dual Battery Backup SRAM (512 KB)
- Dual Ethernet Ports
- Redundant Power Input
- DIN-Rail or Wall Mounting
- Operating Temperature: -25 ~ +75 °C

Applications

Rich I/O Expansion Ability

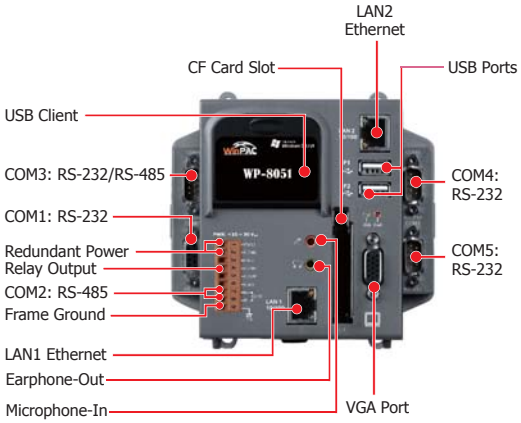


Specifications

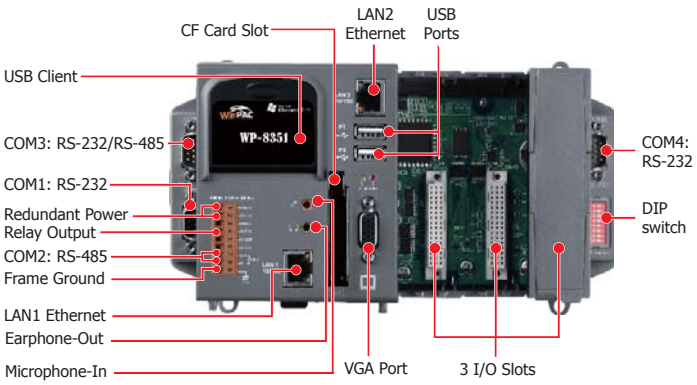
Models		WP-8051	WP-8351	WP-8751
System Software				
OS		Windows CE 5.0		
.Net Compact Framework		2.0		
Embedded Service		FTP server, Web server (supports VB script, JAVA script), Embedded SQL server		
SDK Provided		Dll for eVC, Dll for Visual Studio.Net 2005/2008		
Multilanguage Support		English, German, French, Spanish, Russian, Italian, Simplified Chinese, Traditional Chinese		
CPU Module				
CPU		PXA270 or compatible (32-bit and 520 MHz)		
SDRAM		128 MB		
Dual Battery Backup SRAM		512 KB (for 5 years data retain while power off)		
Flash	Total size	128 MB		
	OS image	64 MB		
	Built-in Flash disk	63 MB		
	Registry	1 MB		
EEPROM		16 KB		
		Data Retention: 40 years; 1,000,000 erase/write cycles		
Compact Flash		4 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)	
Audio		Microphone-In and Earphone-Out		
VGA & Communication Ports				
VGA	Extra GPU	Yes		
	Resolution	1024 x 768, 800 x 600, 640 x 480		
Ethernet		RJ-45 x 2, 10/100 Base-TX (Auto-negotiating, LED indicators)		
USB 1.1 (host)		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 (D2+, D2-); 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		
COM 5		RS-232 (RxD, TxD, and GND); non-isolated	-	
I/O Expansion Slots				
Slot Number		0	3	7
		(For High Profile I-8K and I-87K Modules Only)		
Hot Swap * Will be available		For High Profile I-87K Modules Only		
Mechanical				
Dimensions (W x L x H)		137 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		1.2 A, 5 V supply to CPU and backplane, 15 W in total	1.3 A, 5 V supply to CPU and backplane, 4.7 A, 5 V supply to I/O expansion slots, 30 W in total	1.4 A, 5 V supply to CPU and backplane, 4.6 A, 5 V supply to I/O expansion slots, 30 W in total
Consumption		8.4 W (0.35 A @ 24 V_{DC})	9.6 W (0.4 A @ 24 V_{DC})	10 W (0.42 A @ 24 V_{DC})

Appearance

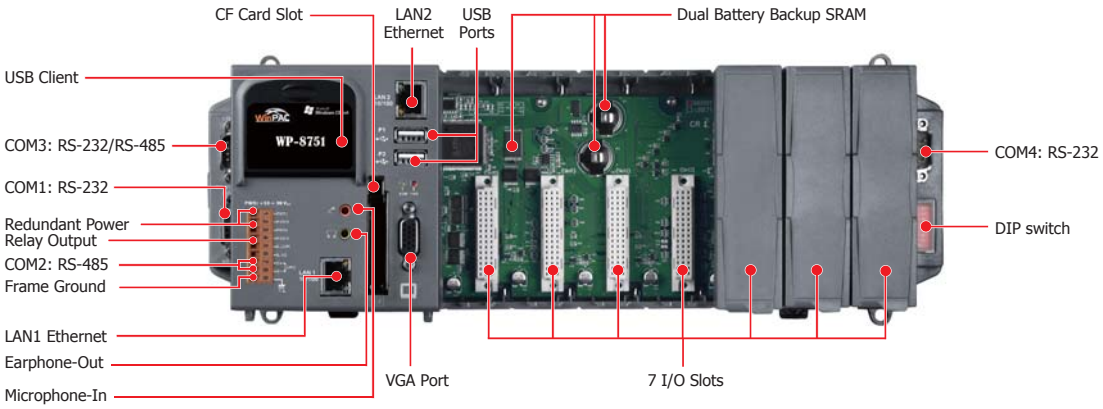
WP-8051



WP-8351

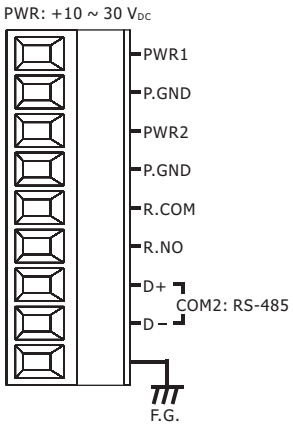


WP-8751

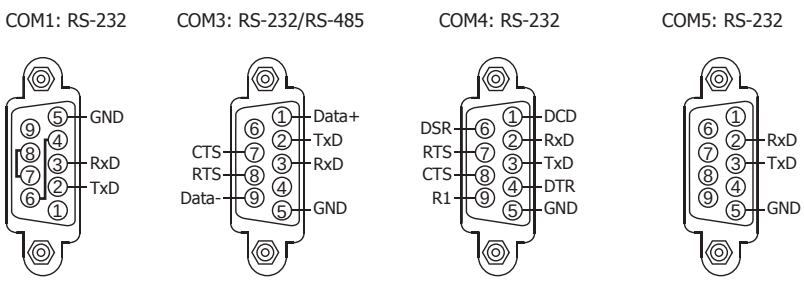


Pin Assignments

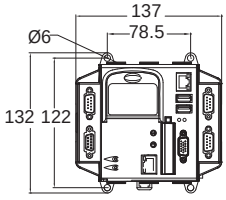
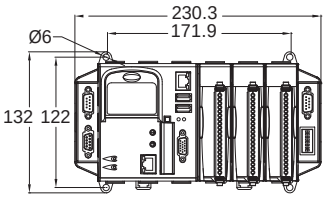
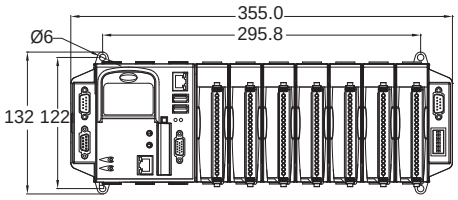
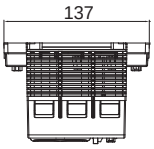
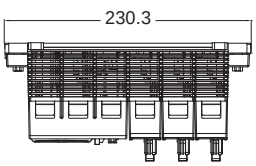
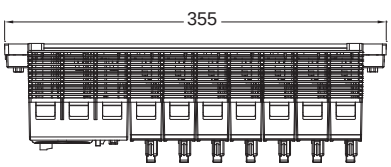
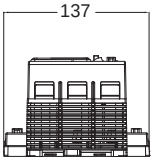
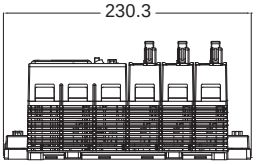
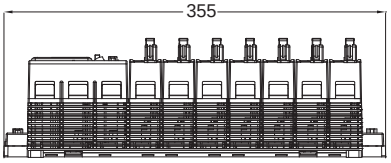
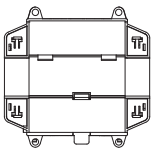
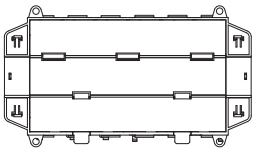
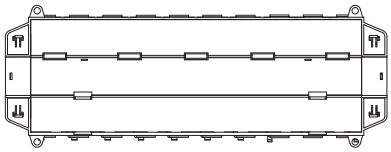
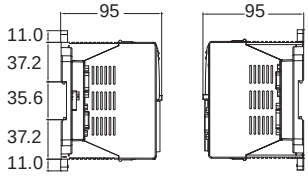
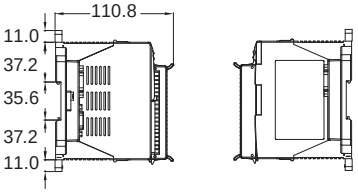
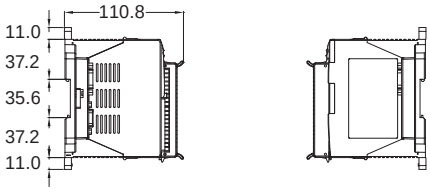
Terminal Block



COM Port



Dimensions (Units: mm)

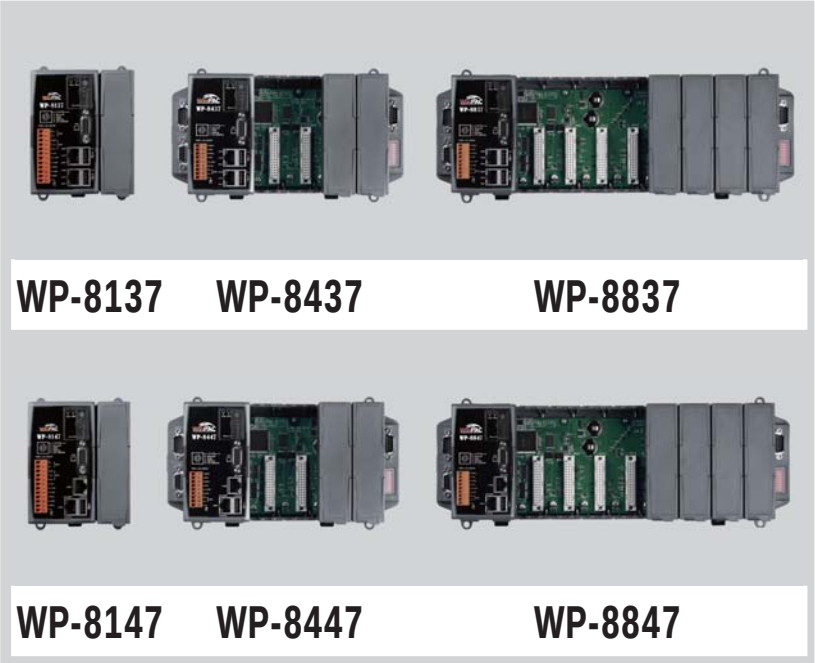
WP-8051	WP-8351	WP-8751
		
Front View	Front View	Front View
		
Top View	Top View	Top View
		
Bottom View	Bottom View	Bottom View
		
Rear View	Rear View	Rear View
		
Left Side View / Right Side View	Left Side View / Right Side View	Left Side View / Right Side View

Ordering Information

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 VDC/2.5 A, 60 W and 5 VDC/0.5 A, 2.5 W Power Supply with DIN-Rail Mounting
DP-1200 CR	24 VDC/5.0 A, 120 W Power Supply with DIN-Rail Mounting (RoHS)
MDR-60-24 CR	24 VDC/2.5 A, 60 W Power Supply with DIN-Rail Mounting (RoHS)



Highlight Information

- Windows CE 5.0
- Hard Real-Time Capability
- Fast Boot Speed
- ISaGRAF Ver.3 SoftLogic Inside (IEC 61131-3)
- PLC Feel
- PXA270 CPU (32-bit & 520 MHz)
- VGA Port Output
- Simple graphic HMI
- Support eLogger HMI
- Open System
- Redundant Power Input
- Operating Temperature: -25 ~ +75 °C

Introduction

WP-8x37 and WP-8x47 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 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 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 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 eLogger HMI

Features

Software

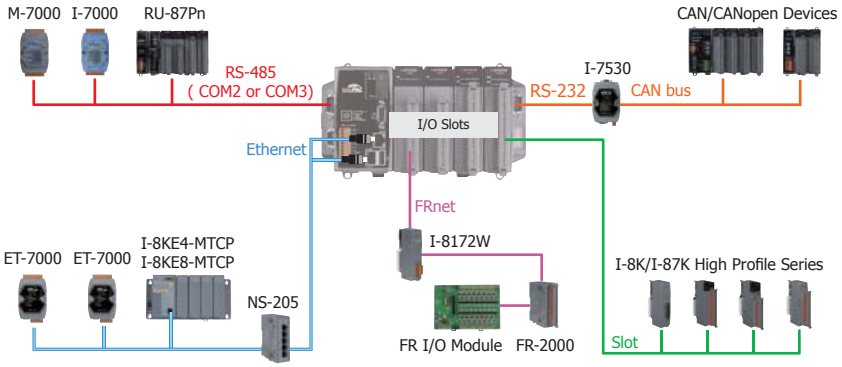
- Windows CE.NET 5.0 Operating System
- Development Softwre: ISaGRAF Ver.3
  - Windows 95/98/NT/2000/XP/Vista/7
  - All-in-one design environment
  - Easy to integrating with HMI/SCADA/MMI
- Support Modbus Master & Slave Protocols
  - Modbus TCP Master (Max. 100 devices)
  - Modbus RTU, ASCII, RS-232/485/422 Master (Max. 10 ports)
  - Modbus RTU (RS-232/485/422) Slave (Max. 5 ports)
  - Modbus TCP/IP Slave (Max. 32 connections)
- Support GPS/ZigBee/Radio Wireless & SMS
- Support Ebus/Fbus Data Exchange
- Support CAN/CANopen
- Support FRnet I/O (Via I-8172W)
- Support Data-Recorder & Data-Logger
- Support Motion Control & VW Solutions
- Support eLogger HMI

Hardware

- Powerful CPU Module
- Built-in VGA Port: 640 x 480 ~ 1024 x 768 (for WP-8x37)
- Built-in VGA Port: 640 x 480 ~ 800 x 600 (for WP-8x47)
- 64-bit Hardware Serial Number
- Rich I/O Expansion Ability
- High Profile I-87K I/O Modules Hot Swap Ability
- Built-in 2 USB Ports (for WP-8x37)
- Built-in 1 USB Ports (for WP-8x47)
- Built-in 128 MB Flash (for WP-8x37)
- Built-in 96 MB Flash (for WP-8x47)
- Dual Watchdog Timers
- Dual Battery-Backup SRAM (512 KB)
- Dual Ethernet Ports
- Redundant Power Input
- DIN-Rail or Wall Mounting
- Operating Temperature: -25 ~ +75 °C

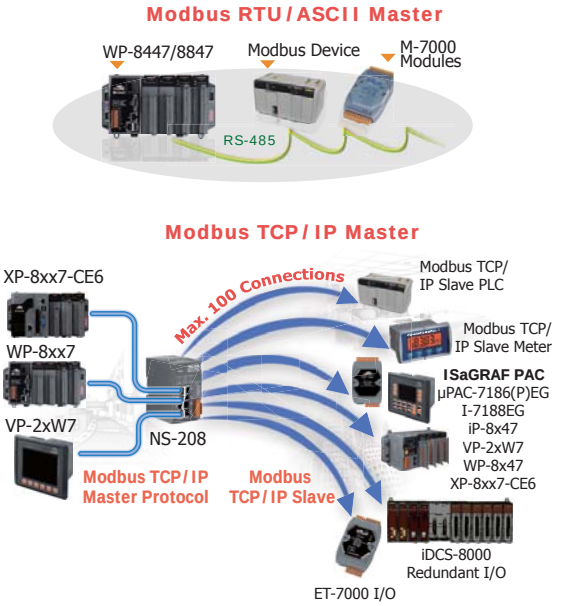
Applications

Rich I/O Expansion Ability

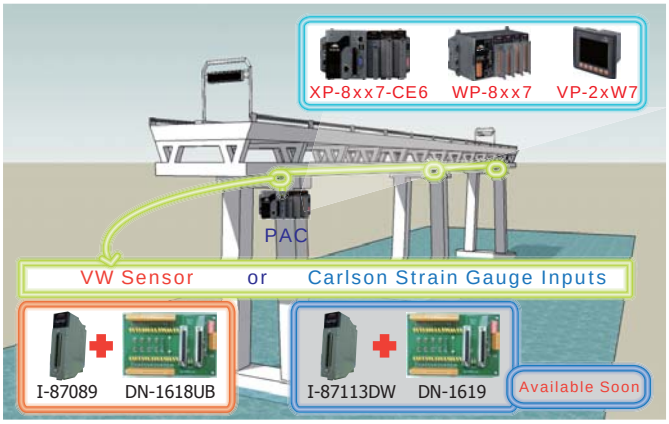


Soft-GRAF: Create A Colorful HMI in the ISaGRAF PAC

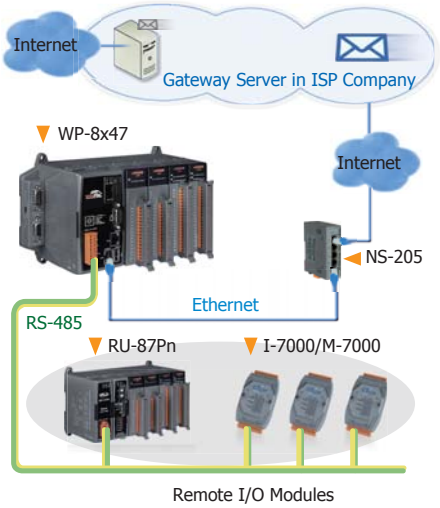
Modbus Master Ports



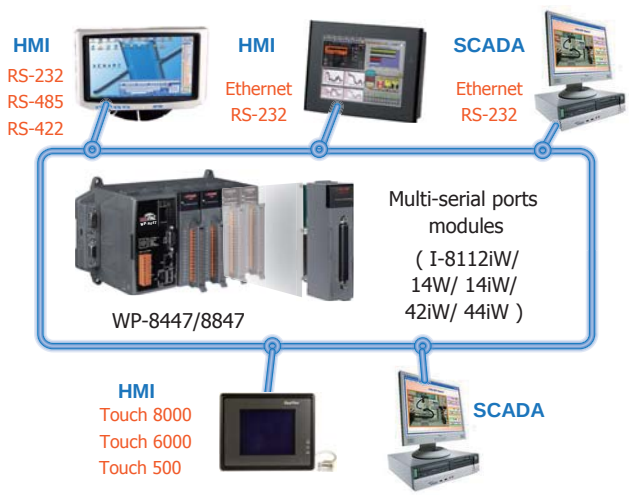
Stress Monitoring of Constructions



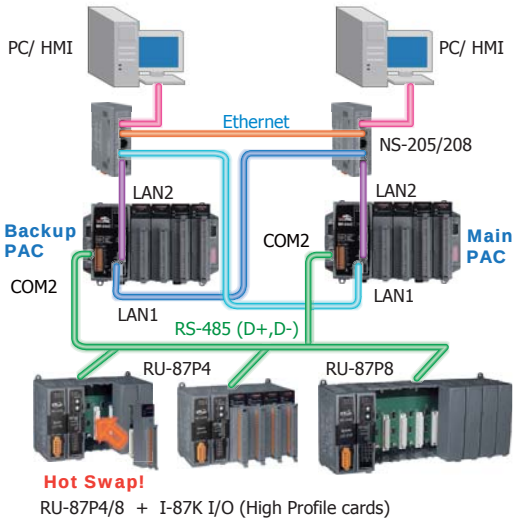
Send Email with one Attached File



Modbus RTU/TCP Slave Ports



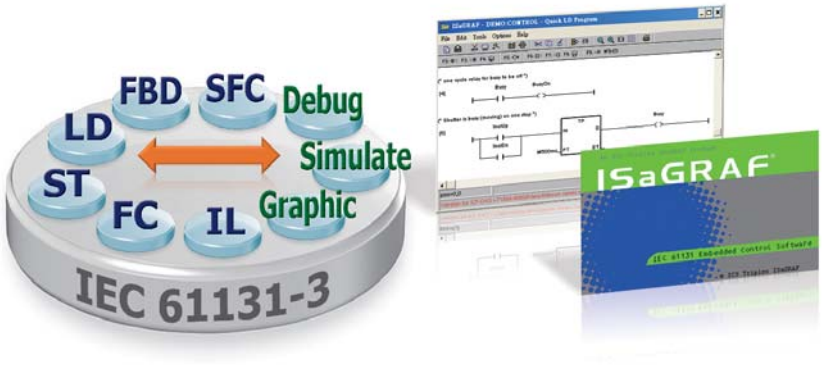
New Hot-Swap Redundant System



PAC Specifications

Models		WP-8137	WP-8147	WP-8437	WP-8447	WP-8837	WP-8847
System Software							
OS		Windows CE 5.0					
.Net Compact Framework		2.0					
Embedded Service		FTP server, Web server					
Multilanguage Support		English, German, French, Spanish, Russian, Italian, Simplified Chinese, Traditional Chinese					
Development Software							
ISaGRAF Software	ISaGRAF Ver.3	IEC 61131-3 standard.					
	Languages	LD, ST, FBD, SFC, IL & FC					
	Max. Code Size	1 MB					
	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 or compatible (32-bit and 520 MHz)					
SDRAM		128 MB					
Dual Battery Backup SRAM		512 KB (for 5 years data retain while power off)					
Flash	Total size	128 MB	96 MB	128 MB	96 MB	128 MB	96 MB
	OS image	64 MB		64 MB		64 MB	
	Built-in Flash disk	63 MB	31 MB	63 MB	31 MB	63 MB	31 MB
	Registry	1 MB		1 MB		1 MB	
EEPROM		16 KB					
		Data Retention: 40 years; 1,000,000 erase/write cycles					
microSD		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)			
VGA & Communication Ports							
VGA	Extra GPU	Yes	-	Yes	-	Yes	-
	Resolution	1024 x 768, 800 x 600, 640 x 480	800 x 600, 640 x 480	1024 x 768, 800 x 600, 640 x 480	800 x 600, 640 x 480	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, LED indicators)					
USB 1.1 (host)		2	1	2	1	2	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	D2+, D2-; self-tuner ASIC inside					
	Isolation	2500 V_{DC}		3000 V_{DC}			
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			
I/O Expansion Slots							
Slot Number		1		4		8	
		(For High Profile I-8K and I-87K Modules Only)					
Hot Swap * Will be available		For High Profile I-87K Modules Only					
Mechanical							
Dimensions (W x L x H)		95 mm x 132 mm x 111 mm		231 mm x 132 mm x 111 mm		355 mm x 132 mm x 111 mm	
Installation		DIN-Rail or Wall Mounting					
Environmental							
Operating Temperature		-25 ~ +75 °C					
Storage Temperature		-30 ~ +80 °C					
Ambient Relative Humidity		10 ~ 90% RH (non-condensing)					
Power							
Input Range		+10 ~ +30 V_{DC}					
Isolation		1 kV					
Redundant Power Inputs		Yes, with one power relay (1 A @ 24 V_{DC}) for alarm					
Capacity		1.0 A, 5 V supply to CPU and backplane, 0.6 A, 5 V supply to I/O expansion slots, 8 W in total		1.1 A, 5 V supply to CPU and backplane, 4.9 A, 5 V supply to I/O expansion slots, 30 W in total for WP-8447 25 W in total for WP-8437		1.2 A, 5 V supply to CPU and backplane, 4.8 A, 5 V supply to I/O expansion slots, 30 W in total for WP-8847 25 W in total for WP-8837	
Consumption		7.3 W (0.3 A @ 24 V_{DC})		9.1 W (0.38 A @ 24 V_{DC})		9.6 W (0.4 A @ 24 V_{DC})	

ISaGRAF Specifications

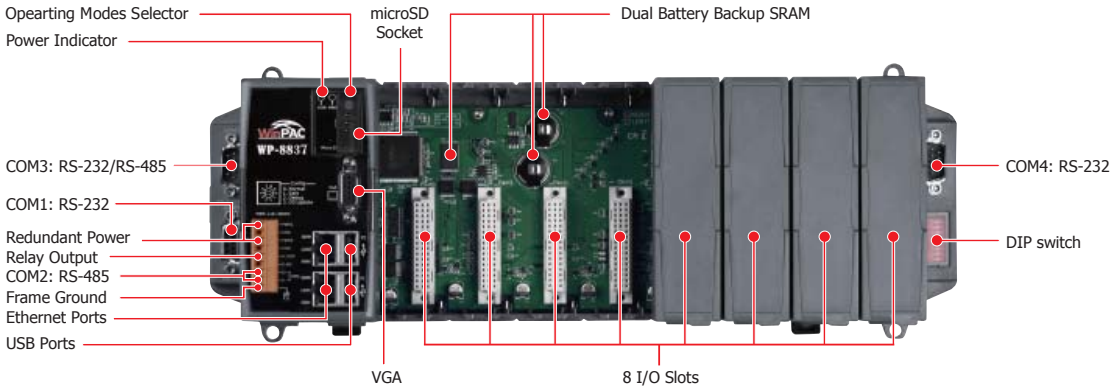


Protocols (some protocols need optional devices)		
NET ID		1~255, user-assigned by software
Modbus TCP/IP Master		Link to max. 100 devices that support Standard Modbus TCP/IP Slave protocol
Modbus RTU/ASCII Master		Max. 10 ports: COM1 ~ 14 (To connect to other Modbus Slave devices). Support Multi-ports. (*)
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. When one 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)
FRnet I/O		Max. 8 pcs. I-8172W boards in slot 0 ~ 7 to connect to FRnet I/O modules
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. (*)
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 (To send/receive message to/from PC/HMI or other devices.)
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.
New 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.
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. (*)
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... (Relay Output boards can not 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...
	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...
	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. 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.
	Frequency	I-87082W: 2-ch, 1 Hz ~ 100 kHz; I-8084W: 8-ch, 1 Hz ~ 250 kHz
Motion	Motion Control	With one I-8091W (2-axis) or two I-8091W (4-axis)

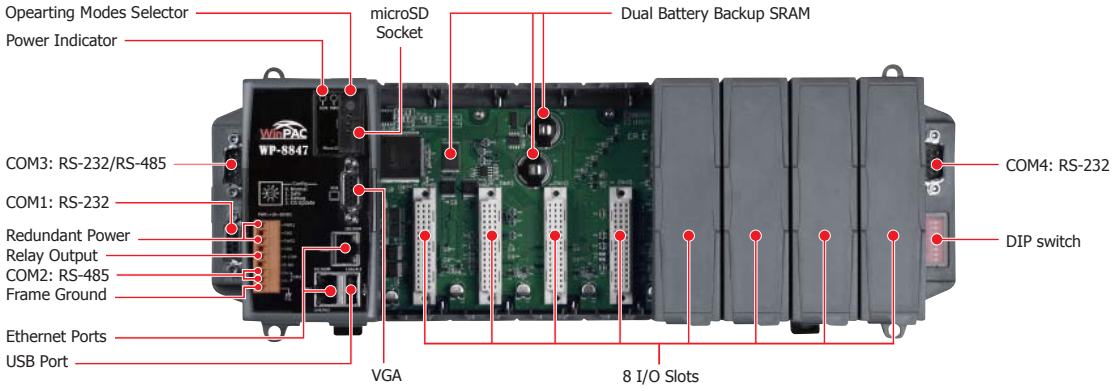
***Note: COM5 ~ COM14 are resided at the expansion boards if they are plugged on slot0~7 of WP-8xx7.**
WP-8137/8147 has no COM3 & COM4.

Appearance

WP-8837



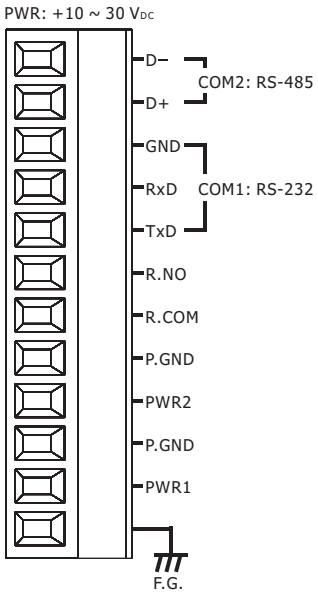
WP-8847



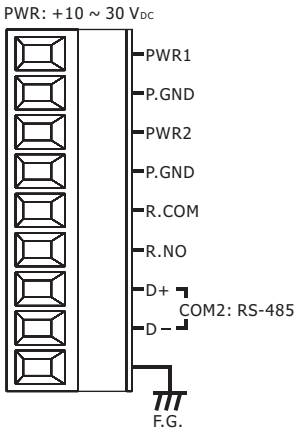
Pin Assignments

Terminal Block

WP-81x7

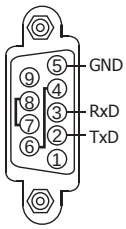


WP-84x1/88x7

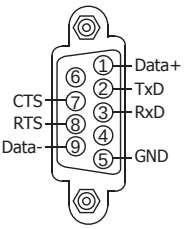


WP-84x7/88x7 COM Port

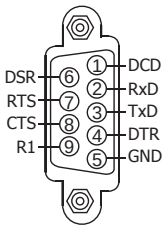
COM1: RS-232



COM3: RS-232/RS-485

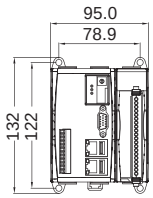


COM4: RS-232



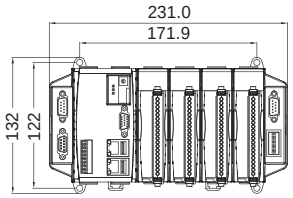
Dimensions (Units: mm)

WP-8137



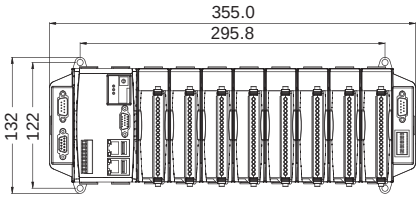
Front View

WP-8437



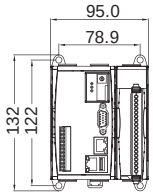
Front View

WP-8837



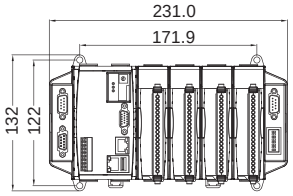
Front View

WP-8147



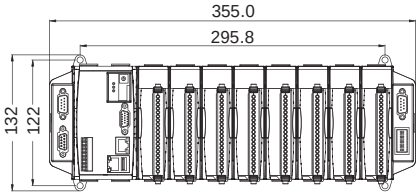
Front View

WP-8447



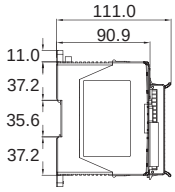
Front View

WP-8847



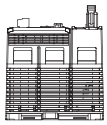
Front View

WP-8x37/8x47



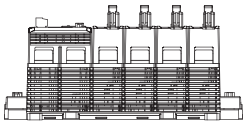
Left Side View

WP-81x7



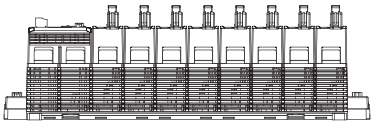
Bottom View

WP-84x7



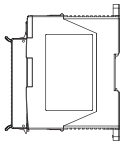
Bottom View

WP-88x7



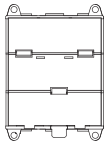
Bottom View

WP-8x37/8x47



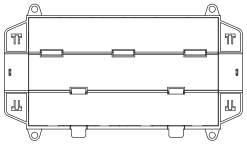
Right Side View

WP-81x7



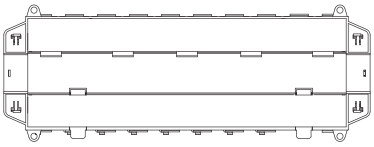
Rear View

WP-84x7



Rear View

WP-88x7



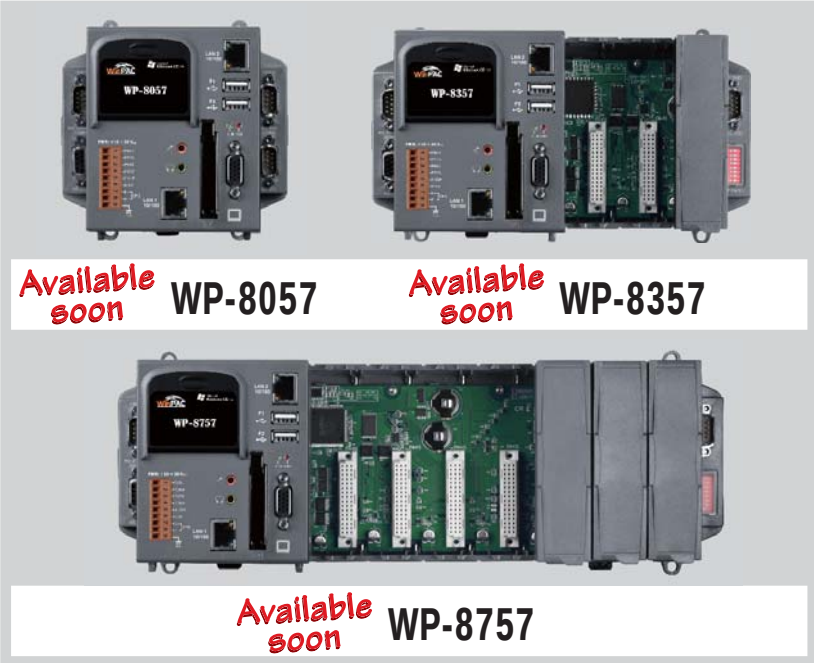
Rear View

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)

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 VDC/2.5 A, 60 W and 5 VDC/0.5 A, 2.5 W Power Supply with DIN-Rail Mounting
DP-1200 CR	24 VDC/5.0 A, 120 W Power Supply with DIN-Rail Mounting (RoHS)
MDR-60-24 CR	24 VDC/2.5 A, 60 W Power Supply with DIN-Rail Mounting (RoHS)



Highlight Information

- Windows CE 5.0
- Hard Real-Time Capability
- Fast Boot Speed
- ISaGRAF Ver.3 SoftLogic Inside (IEC 61131-3)
- PLC Feel
- PXA270 CPU (32-bit & 520 MHz)
- Audio with Microphone-In and Earphone-Out
- VGA Port Output
- Simple graphic HMI
- Support eLogger HMI
- Open System
- Redundant Power Input
- Operating Temperature: -25 ~ +75 °C

Introduction

WP-8x57 Series is 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 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 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 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 eLogger HMI

Features

Software

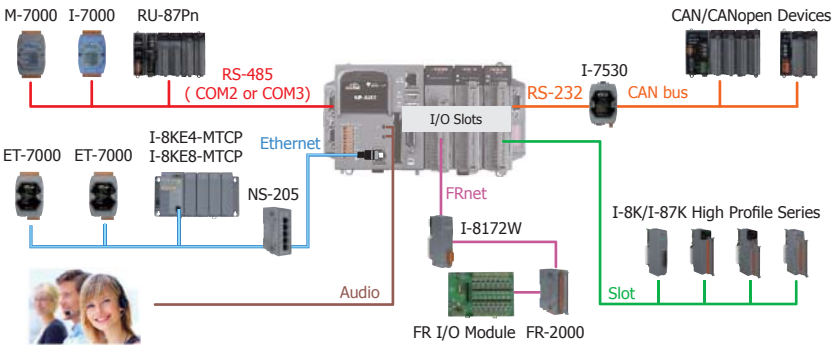
- Windows CE.NET 5.0 Operating System
- Development Softwre: ISaGRAF Ver.3
  - Windows 95/98/NT/2000/XP/Vista/7
  - All-in-one design environment
  - Easy to integrating with HMI/SCADA/MMI
- Support Modbus Master & Slave Protocols
  - Modbus TCP Master (Max. 100 devices)
  - Modbus RTU, ASCII, RS-232/485/422 Master (Max. 10 ports)
  - Modbus RTU (RS-232/485/422) Slave (Max. 5 ports)
  - Modbus TCP/IP Slave (Max. 32 connections)
- Support GPS/ZigBee/Radio Wireless & SMS
- Support Ebus/Fbus Data Exchange
- Support CAN/CANopen
- Support FRnet I/O (Via I-8172W)
- Support Data-Recorder & Data-Logger
- Support Motion Control & VW Solutions
- Support eLogger HMI

Hardware

- Powerful CPU Module
- Built-in VGA Port: 640 x 480 ~ 1024 x 768
- 64-bit Hardware Serial Number
- Audio with Microphone-In and Earphone-Out
- Rich I/O Expansion Ability
- High Profile I-87K I/O Modules Hot Swap Ability
- Built-in 2 USB Ports
- Built-in 128 MB Flash
- Dual Watchdog Timers
- Dual Battery-Backup SRAM (512 KB)
- Dual Ethernet Ports
- Redundant Power Input
- DIN-Rail or Wall Mounting
- Operating Temperature: -25 ~ +75 °C

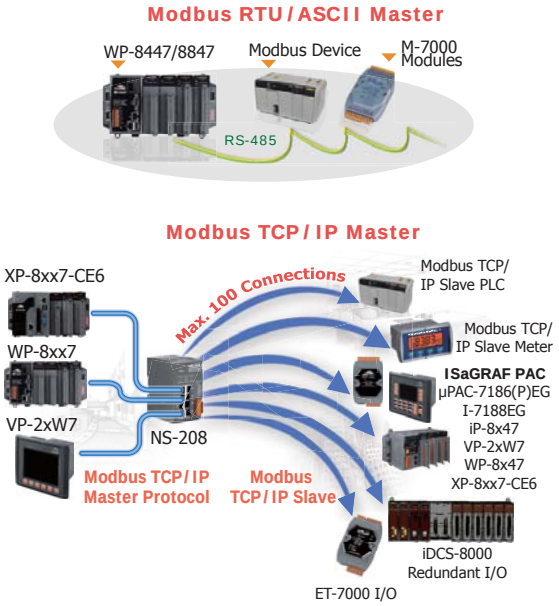
Applications

Rich I/O Expansion Ability

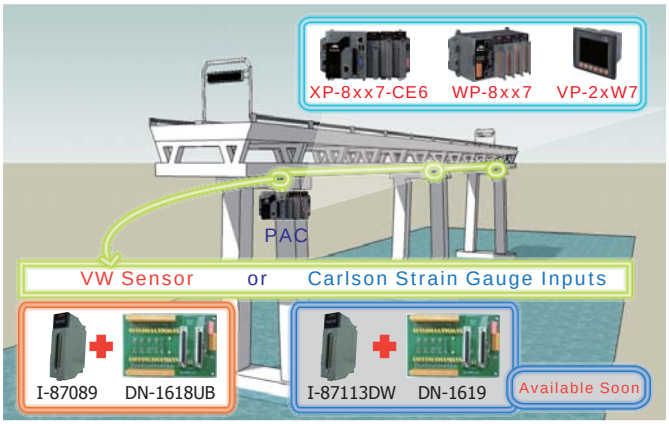


Soft-GRAF: Create A Colorful HMI in the ISaGRAF PAC

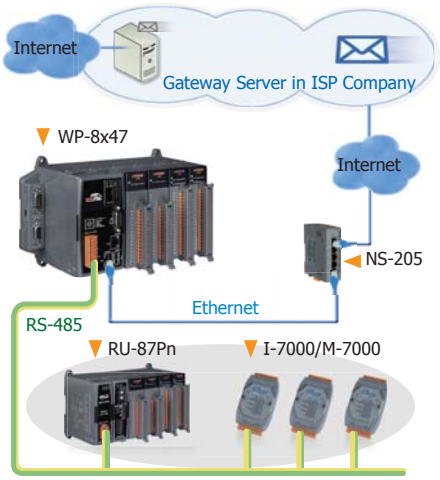
Modbus Master Ports



Stress Monitoring of Constructions

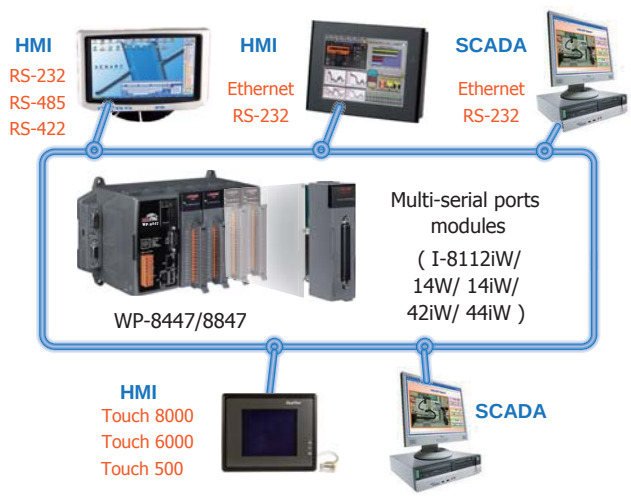


Send Email with one Attached File

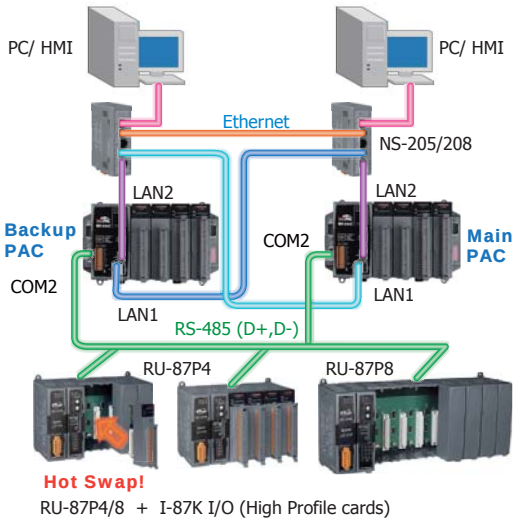


Remote I/O Modules

Modbus RTU/TCP Slave Ports



New Hot-Swap Redundant System

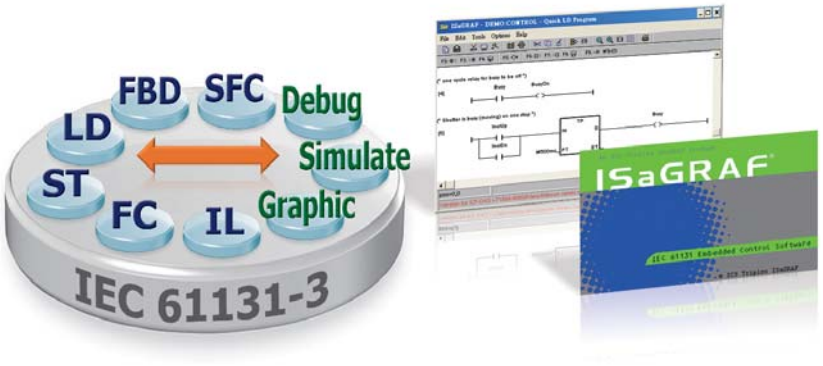


RU-87P4/8 + I-87K I/O (High Profile cards)

PAC Specifications

Models		WP-8057	WP-8357	WP-8757
System Software				
OS		Windows CE 5.0		
.Net Compact Framework		2.0		
Embedded Service		FTP server, Web server		
Multilanguage Support		English, German, French, Spanish, Russian, Italian, Simplified Chinese, Traditional Chinese		
Development Software				
ISaGRAF Software	ISaGRAF Ver.3	IEC 61131-3 standard.		
	Languages	LD, ST, FBD, SFC, IL & FC		
	Max. Code Size	1 MB		
	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 or compatible (32-bit and 520 MHz)		
SDRAM		128 MB		
Dual Battery Backup SRAM		512 KB (for 5 years data retain while power off)		
Flash	Total size	128 MB		
	OS image	64 MB		
	Built-in Flash disk	63 MB		
	Registry	1 MB		
EEPROM		16 KB		
		Data Retention: 40 years; 1,000,000 erase/write cycles		
Compact Flash		4 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)	
Audio		Microphone-In and Earphone-Out		
VGA & Communication Ports				
VGA	Extra GPU	Yes		
	Resolution	1024 x 768, 800 x 600, 640 x 480		
Ethernet		RJ-45 x 2, 10/100 Base-TX (Auto-negotiating, LED indicators)		
USB 1.1 (host)		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 (D2+, D2-); 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		
COM 5		RS-232 (RxD, TxD, and GND); non-isolated	-	
I/O Expansion Slots				
Slot Number		0	3	7
		(For High Profile I-8K and I-87K Modules Only)		
Hot Swap * Will be available		For High Profile I-87K Modules Only		
Mechanical				
Dimensions (W x L x H)		137 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		1.0 A, 5 V supply to CPU and backplane, 0.6 A, 5 V supply to I/O expansion slots, 8 W in total	1.1 A, 5 V supply to CPU and backplane, 4.9 A, 5 V supply to I/O expansion slots, 30 W in total	1.2 A, 5 V supply to CPU and backplane, 4.8 A, 5 V supply to I/O expansion slots, 30 W in total
Consumption		7.3 W (0.3 A @ 24 V_{DC})	9.1 W (0.38 A @ 24 V_{DC})	9.6 W (0.4 A @ 24 V_{DC})

ISaGRAF Specifications

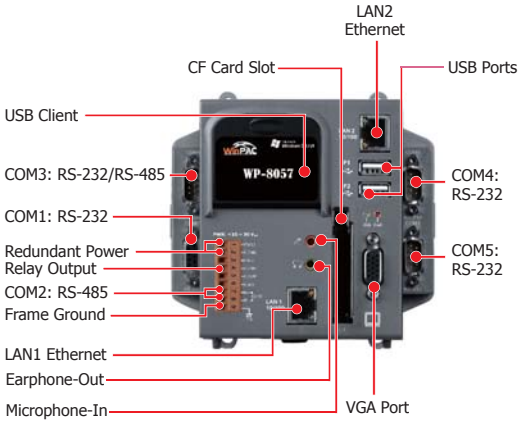


Protocols (some protocols need optional devices)		
NET ID		1~255, user-assigned by software
Modbus TCP/IP Master		Link to max. 100 devices that support Standard Modbus TCP/IP Slave protocol
Modbus RTU/ASCII Master		Max. 10 ports: COM1 ~ 14 (To connect to other Modbus Slave devices). Support Multi-ports. (*)
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. When one 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)
FRnet I/O		Max. 8 pcs. I-8172W boards in slot 0 ~ 7 to connect to FRnet I/O modules
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. (*)
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 (To send/receive message to/from PC/HMI or other devices.)
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.
New 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.
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. (*)
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... (Relay Output boards can not 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...
	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...
	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. 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.
	Frequency	I-87082W: 2-ch, 1 Hz ~ 100 kHz; I-8084W: 8-ch, 1 Hz ~ 250 kHz
Motion	Motion Control	With one I-8091W (2-axis) or two I-8091W (4-axis)

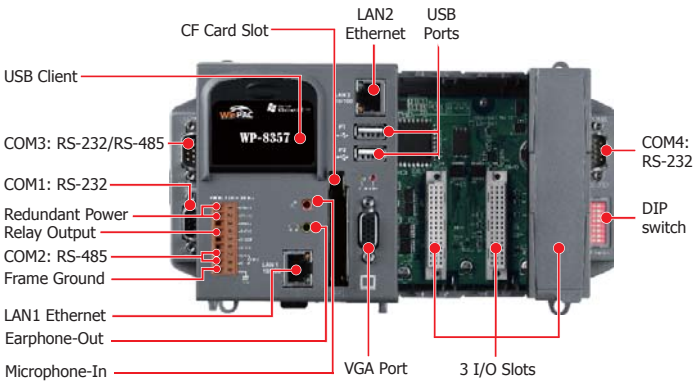
***Note: COM5 ~ COM14 are resided at the expansion boards if they are plugged on slot0~7 of WP-8xx7.**
WP-8137/8147 has no COM3 & COM4.

Appearance

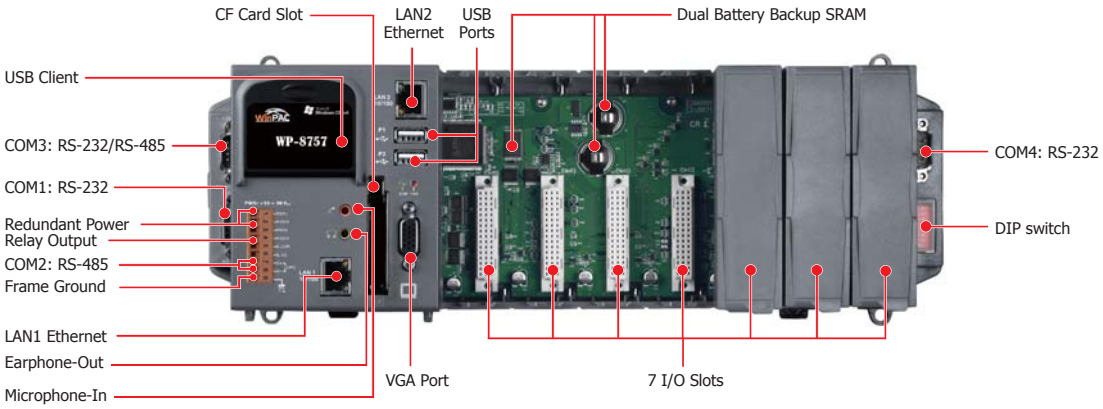
WP-8057



WP-8357

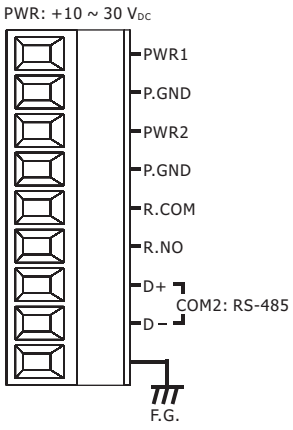


WP-8757



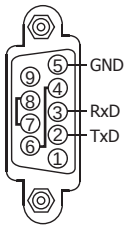
Pin Assignments

Terminal Block

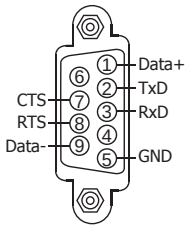


COM Port

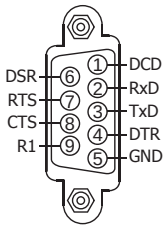
COM1: RS-232



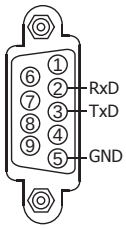
COM3: RS-232/RS-485



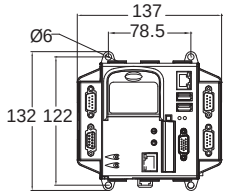
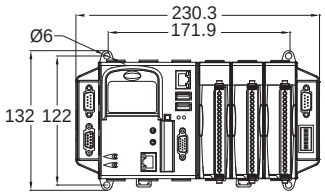
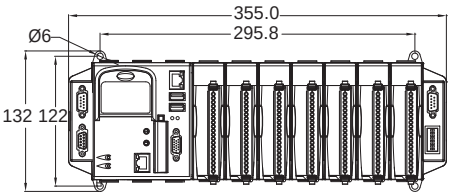
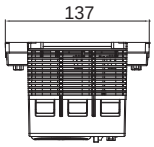
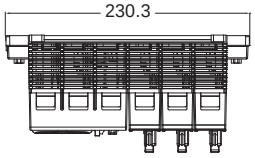
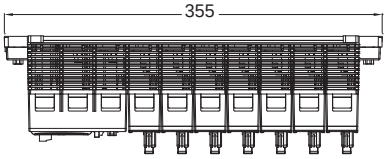
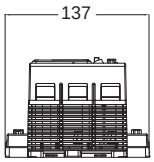
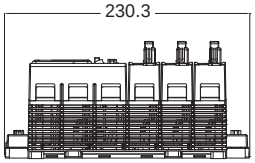
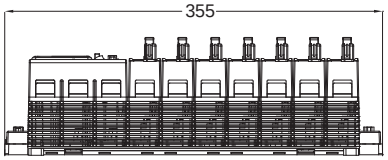
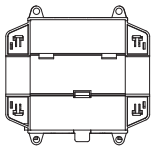
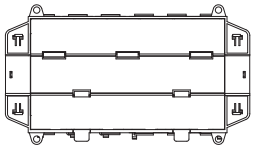
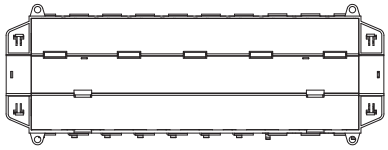
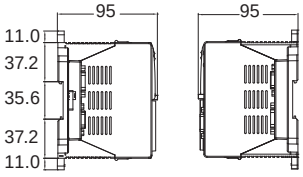
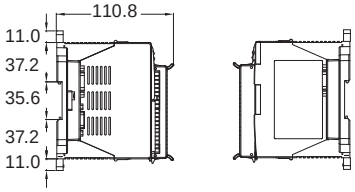
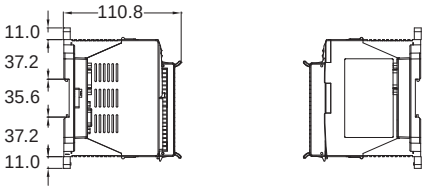
COM4: RS-232



COM5: RS-232



Dimensions (Units: mm)

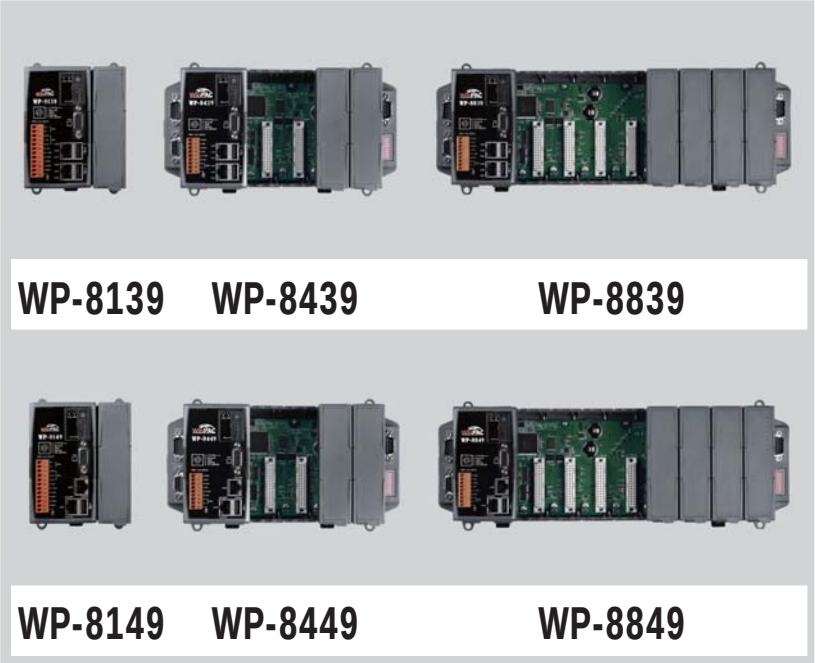
WP-8057	WP-8357	WP-8757
		
Front View	Front View	Front View
		
Top View	Top View	Top View
		
Bottom View	Bottom View	Bottom View
		
Rear View	Rear View	Rear View
		
Left Side View / Right Side View	Left Side View / Right Side View	Left Side View / Right Side View

Ordering Information

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 VDC/2.5 A, 60 W and 5 VDC/0.5 A, 2.5 W Power Supply with DIN-Rail Mounting
DP-1200 CR	24 VDC/5.0 A, 120 W Power Supply with DIN-Rail Mounting (RoHS)
MDR-60-24 CR	24 VDC/2.5 A, 60 W Power Supply with DIN-Rail Mounting (RoHS)



Highlight Information

- Windows CE 5.0
- Hard Real-Time Capability
- Fast Boot Speed
- InduSoft Web Studio v6.1
- PXA270 CPU (32-bit & 520 MHz)
- VGA Port Output
- Open System
- Redundant Power Input
- Operating Temperature: -25 ~ +75 °C

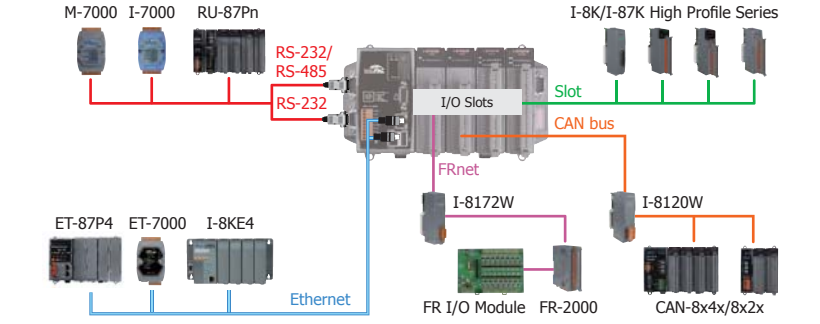
Introduction

WP-8x39 and WP-8x49 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 0/4/8 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 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.

Applications

Rich I/O Expansion Ability



Access Database Easily

- Supports third-party SQL relational databases such as SQL Server, MS Access, Excel, Oracle ...etc.
- Database connectivety from any platform supported by IWS or CEView, through the unique Studio Database Gateway.
- Supports Secondary Database in the modes "Redundancy" or "Store and Forward" to increase the reliability of the system and avoid loss of data.

SNMP Protocol Supported

- I/O Status of WinPAC can be gathered via Internet by polling or inform actively (trap) mode to remote SNMP manager station.
- WinPAC controller can be treated as a SNMP gateway to transfer the information including I/O and user-defined data to SNMP manager station.
- Integrating I/O and Network information in SNMP manager station.

Features

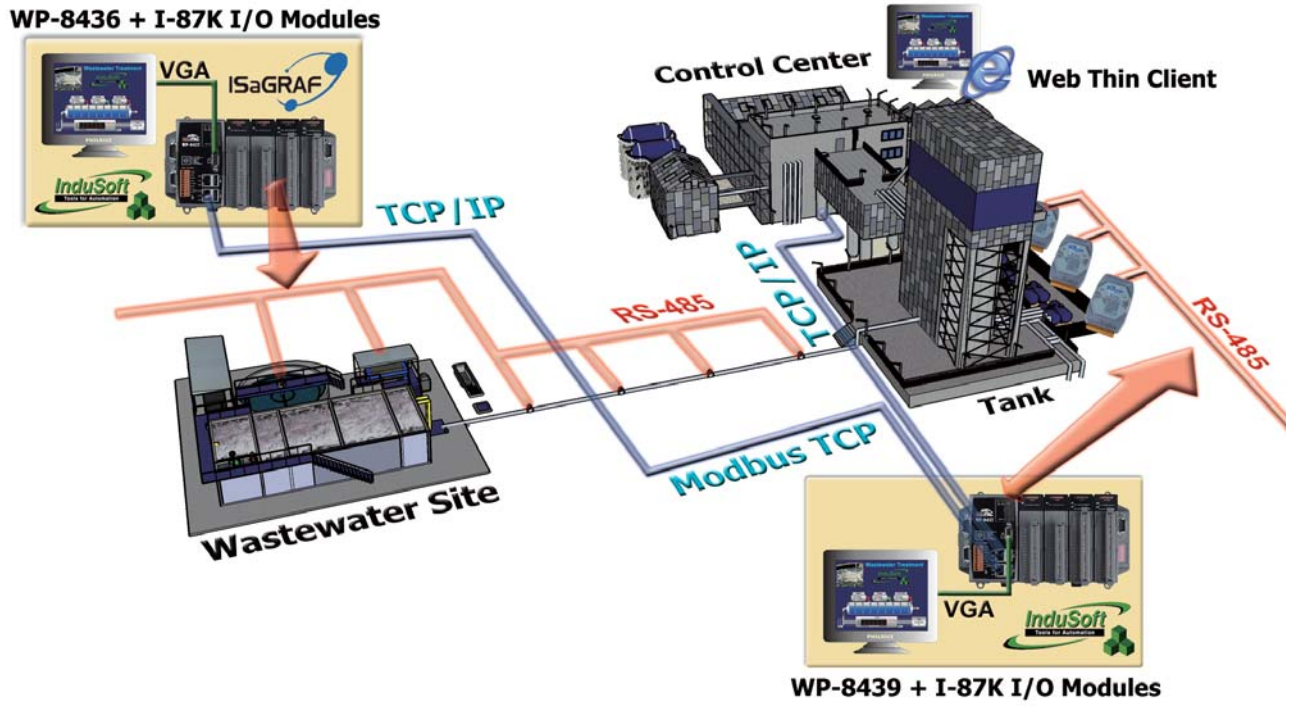
Software

- Windows CE.NET 5.0 Operating System
- Easy Remote Maintenance Via Ethernet
- Built-in OPC Server: Quicker
- Simply Copy and Play to Upgrade Applications
- Pre-installed Run-time InduSoft v6.1 SP3
  - ☐ Intuitive Scripting Language
  - ☐ Support Microsoft .NET, OPC, DDE, ODBC, XML
  - ☐ Support Modbus RTU/TCP Protocol
  - ☐ Full-Featured WinCE-based Run-time Environment
  - ☐ Dynamic Library of Symbols
  - ☐ ActiveX Container
  - ☐ Communication Driver of ICP DAS is Provided

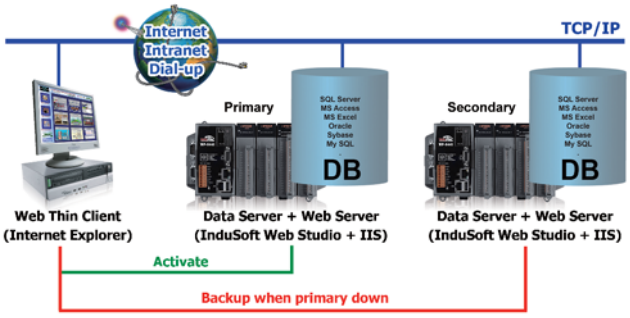
Hardware

- Powerful CPU Module
- Built-in VGA Port with Extra GPU
- 64-bit Hardware Serial Number
- Rich I/O Expansion Ability
- I/O Module Hot Swap Ability
  - * Will be available
  - (For High Profile I-87K Modules Only)
- Built-in 63 MB Flash Disk (for WP-8x39)
- Built-in 31 MB Flash Disk (for WP-8x49)
- Dual Watchdog Timers
- Dual Battery Backup SRAM (512 KB)
- Dual Ethernet Ports
- Dual USB Ports (for WP-8x39)
- Redundant Power Input
- DIN-Rail or Wall Mounting
- Operating Temperature: -25 ~ +75 °C

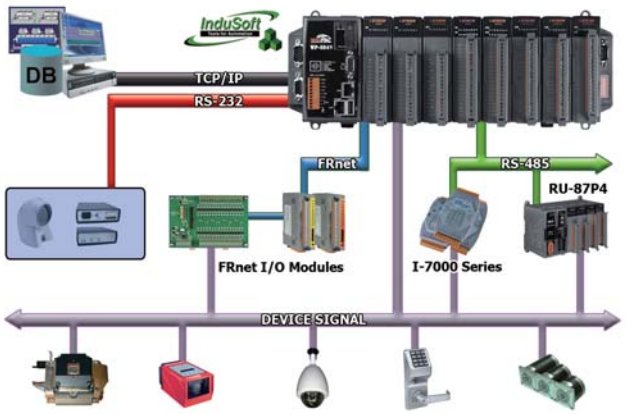
WP-8xx9 Total Solution



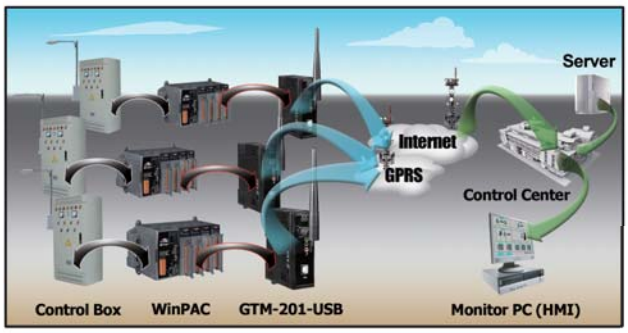
Database & Redundancy



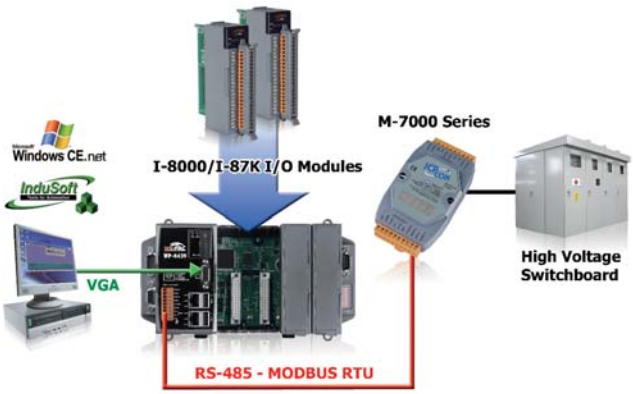
Variety of I/O supported



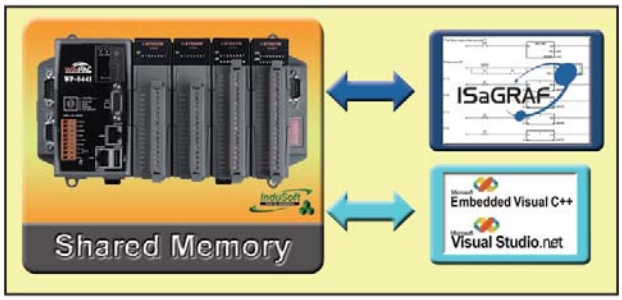
Street lamp monitor and control system



Variaty of communication drivers



Share data with 3rd. party application



Specifications

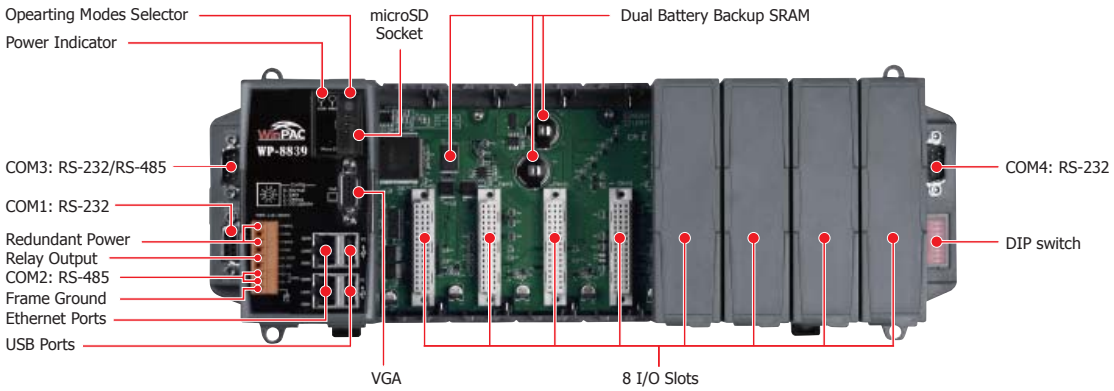
Models		WP-8139	WP-8149	WP-8439	WP-8449	WP-8839	WP-8849
System Software							
OS		Windows CE 5.0					
.Net Compact Framework		2.0					
Embedded Service		FTP server, Web server (supports VB script, JAVA script), Embedded SQL server					
Multilanguage Support		English, German, French, Spanish, Russian, Italian, 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 or compatible (32-bit and 520 MHz)					
SDRAM		128 MB					
Dual Battery Backup SRAM		512 KB (for 5 years data retain while power off)					
Flash	Total size	128 MB	96 MB	128 MB	96 MB	128 MB	96 MB
	OS image	64 MB					
	Built-in Flash disk	63 MB	31 MB	63 MB	31 MB	63 MB	31 MB
	Registry	1 MB					
EEPROM		16 KB					
		Data Retention: 40 years; 1,000,000 erase/write cycles					
microSD		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)			
LED, NET ID		1 programmable LED indicator. NET ID: From 1 ~ 255, set by software					
VGA & Communication Ports							
VGA	Extra GPU	Yes	-	Yes	-	Yes	-
	Resolution	1024 x 768, 800 x 600, 640 x 480	800 x 600, 640 x 480	1024 x 768, 800 x 600, 640 x 480	800 x 600, 640 x 480	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, LED indicators)					
USB 1.1 (host)		2	1	2	1	2	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	D2+, D2-; self-tuner ASIC inside					
	Isolation	2500 VDC		3000 VDC			
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			
I/O Expansion Slots							
Slot Number		1		4		8	
		(For High Profile I-8K and I-87K Modules Only)					
Hot Swap * Will be available		For High Profile I-87K Modules Only					
Mechanical							
Dimensions (W x L x H)		95 mm x 132 mm x 111 mm		231 mm x 132 mm x 111 mm		355 mm x 132 mm x 111 mm	
Installation		DIN-Rail or Wall Mounting					
Environmental							
Operating Temperature		-25 ~ +75 °C					
Storage Temperature		-30 ~ +80 °C					
Ambient Relative Humidity		10 ~ 90% RH (non-condensing)					
Power							
Input Range		+10 ~ +30 VDC					
Isolation		1 kV					
Redundant Power Inputs		Yes, with one power relay (1 A @ 24 VDC) for alarm					
Capacity		1.0 A, 5 V supply to CPU and backplane, 0.6 A, 5 V supply to I/O expansion slots, 8 W in total		1.1 A, 5 V supply to CPU and backplane, 4.9 A, 5 V supply to I/O expansion slots, 30 W in total for WP-8449 25 W in total for WP-8439		1.2 A, 5 V supply to CPU and backplane, 4.8 A, 5 V supply to I/O expansion slots, 30 W in total for WP-8849 25 W in total for WP-8839	
Consumption		7.3 W (0.3 A @ 24 VDC)		9.1 W (0.38 A @ 24 VDC)		9.6 W (0.4 A @ 24 VDC)	

InduSoft Features

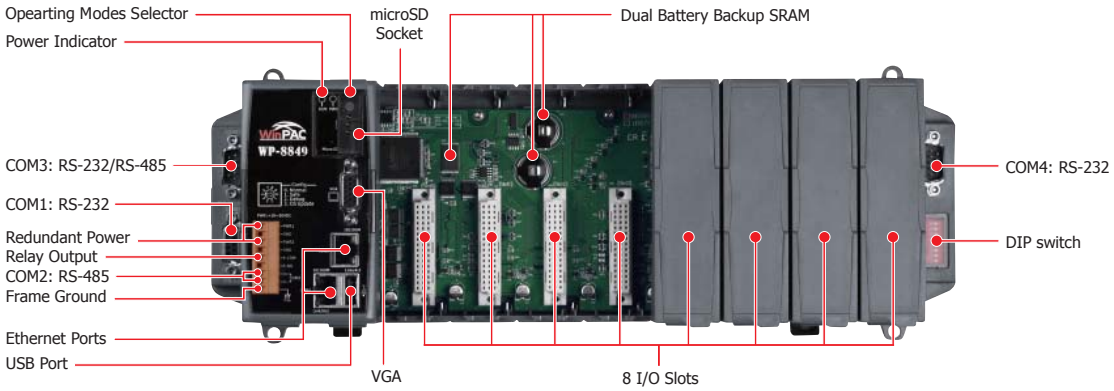
- Elegant Graphics
- Multi-Language
- Database (Access, Excel, SQL, Oracle…)
- Recipes and Reports
- Online and History Alarm / Event / Trend
- Various Communication Driver (DCON, Modbus, OPC, DDE, TCP/IP…)
- Remote Web Client Control & Security
- ActiveX (GSM / SHM / COM /WEB provided by ICP DAS)
-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

Appearance

WP-8839



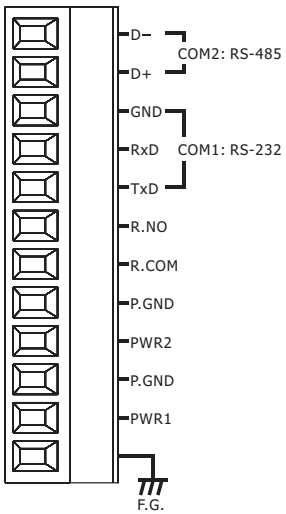
WP-8849



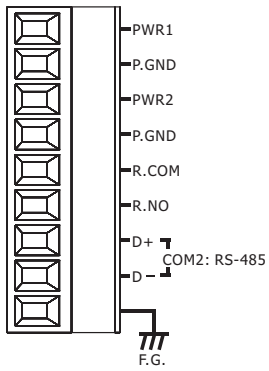
Pin Assignments

Terminal Block

WP-81x9

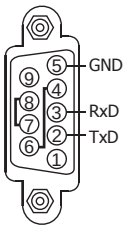


WP-84x9/88x9

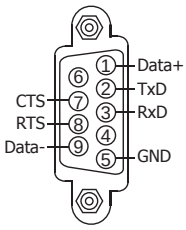


WP-84x9/88x9 COM Port

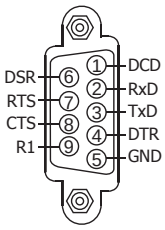
COM1: RS-232



COM3: RS-232/RS-485

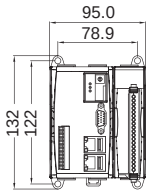


COM4: RS-232



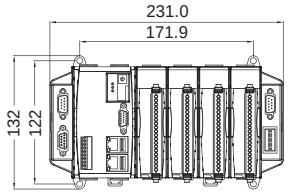
Dimensions (Units: mm)

WP-8139



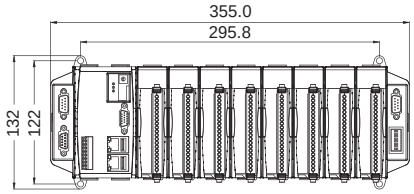
Front View

WP-8439



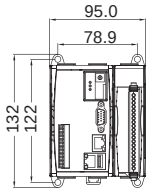
Front View

WP-8839



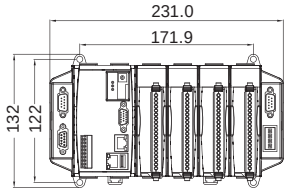
Front View

WP-8149



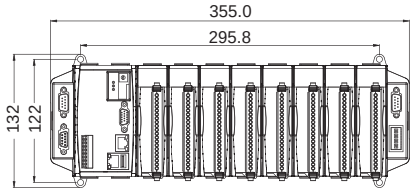
Front View

WP-8449



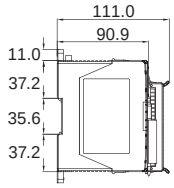
Front View

WP-8849



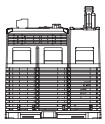
Front View

WP-8x39/8x49



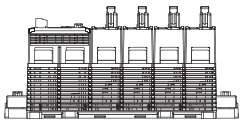
Left Side View

WP-81x9



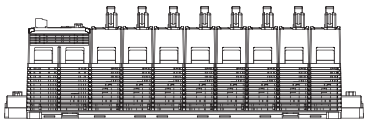
Bottom View

WP-84x9



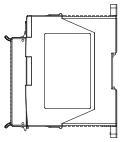
Bottom View

WP-88x9



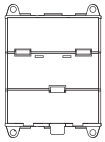
Bottom View

WP-8x39/8x49



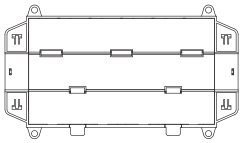
Right Side View

WP-81x9



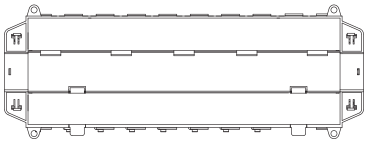
Rear View

WP-84x9



Rear View

WP-88x9



Rear View

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-8849-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)

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 VDC/2.5 A, 60 W and 5 VDC/0.5 A, 2.5 W Power Supply with DIN-Rail Mounting
DP-1200 CR	24 VDC/5.0 A, 120 W Power Supply with DIN-Rail Mounting (RoHS)
MDR-60-24 CR	24 VDC/2.5 A, 60 W Power Supply with DIN-Rail Mounting (RoHS)

Highlight Information

- Windows CE 5.0
- Hard Real-Time Capability
- Fast Boot Speed
- InduSoft Web Studio v6.1
- PXA270 CPU (32-bit & 520 MHz)
- Audio with Microphone-In and Earphone-Out
- VGA Port Output
- Open System
- Redundant Power Input
- Operating Temperature: -25 ~ +75 °C

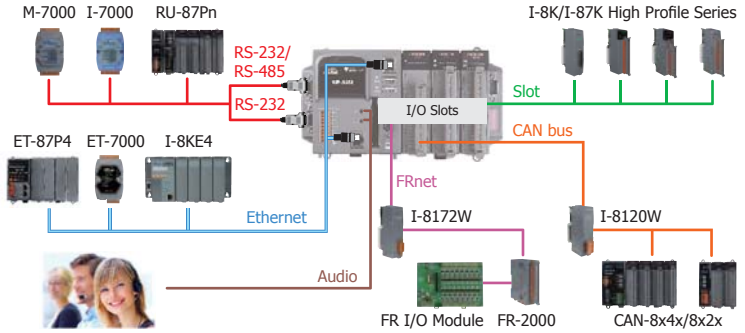
Introduction

WP-8x59 Series is 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 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 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 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.

Applications

Rich I/O Expansion Ability



Features

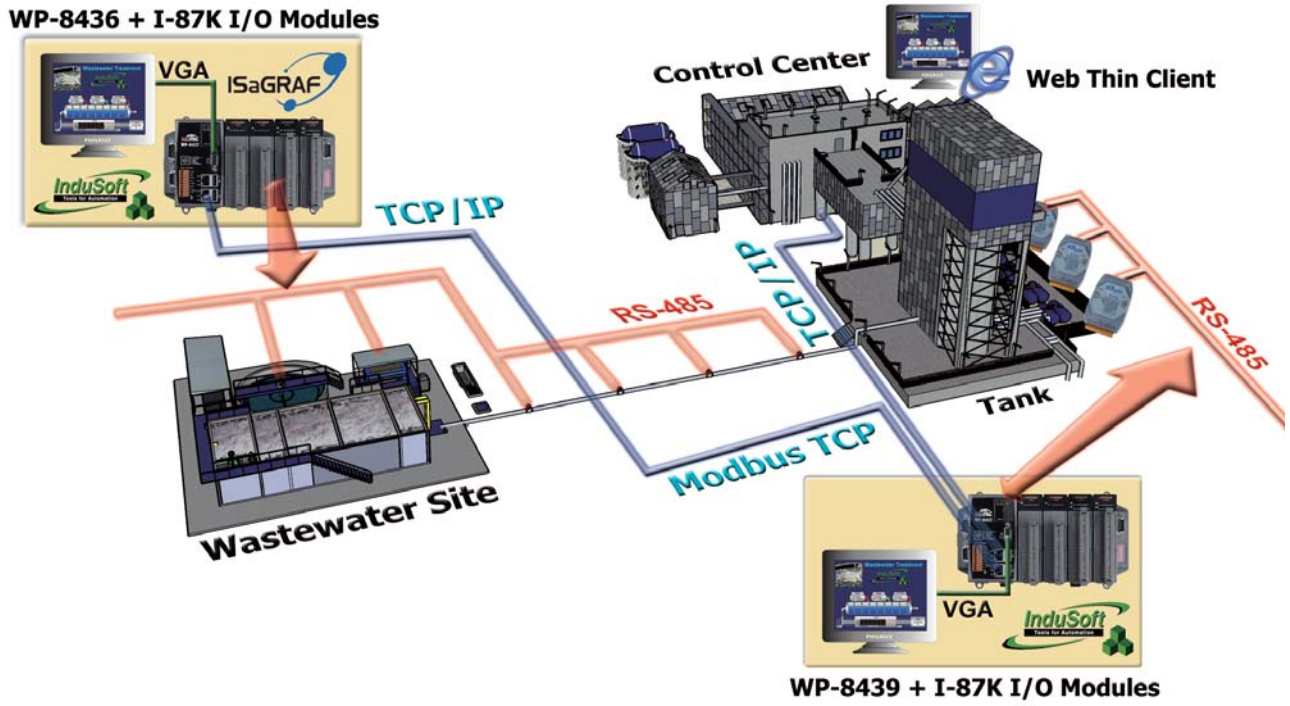
Software

- Windows CE.NET 5.0 Operating System
- Easy Remote Maintenance Via Ethernet
- Built-in OPC Server: Quicker
- Simply Copy and Play to Upgrade Applications
- Pre-installed Run-time InduSoft v6.1 SP3
  - ☐ Intuitive Scripting Language
  - ☐ Support Microsoft .NET, OPC, DDE, ODBC, XML
  - ☐ Support Modbus RTU/TCP Protocol
  - ☐ Full-Featured WinCE-based Run-time Environment
  - ☐ Dynamic Library of Symbols
  - ☐ ActiveX Container
  - ☐ Communication Driver of ICP DAS is Provided

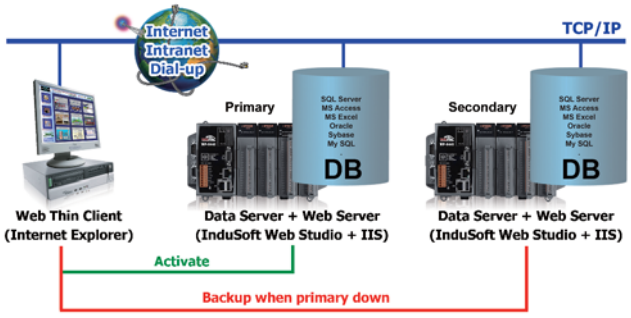
Hardware

- Powerful CPU Module
- Built-in VGA Port with Extra GPU
- 64-bit Hardware Serial Number
- Audio with Microphone-In and Earphone-Out
- Rich I/O Expansion Ability
- I/O Module Hot Swap Ability
  - * Will be available
  - (For High Profile I-87K Modules Only)
- Built-in 63 MB Flash Disk
- Dual Watchdog Timers
- Dual Battery Backup SRAM (512 KB)
- Dual Ethernet Ports
- Dual USB Ports
- Redundant Power Input
- DIN-Rail or Wall Mounting
- Operating Temperature: -25 ~ +75 °C

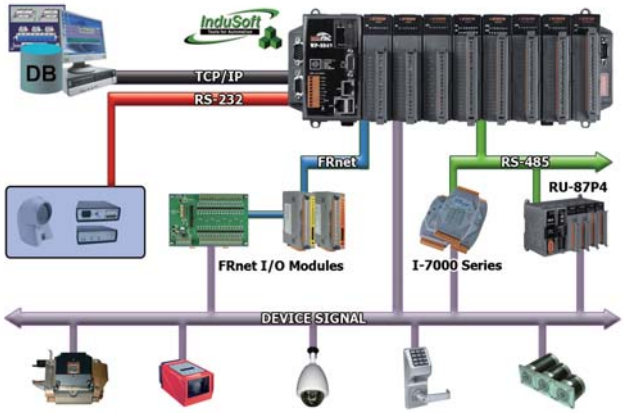
WP-8xx9 Total Solution



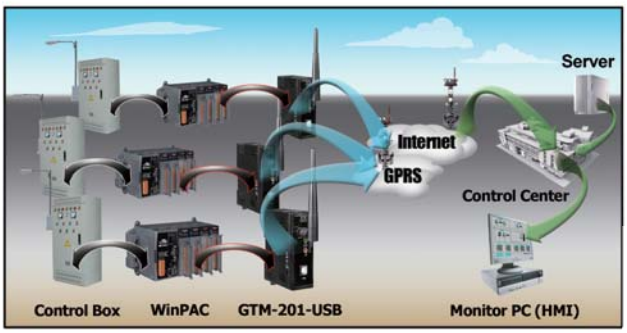
Database & Redundancy



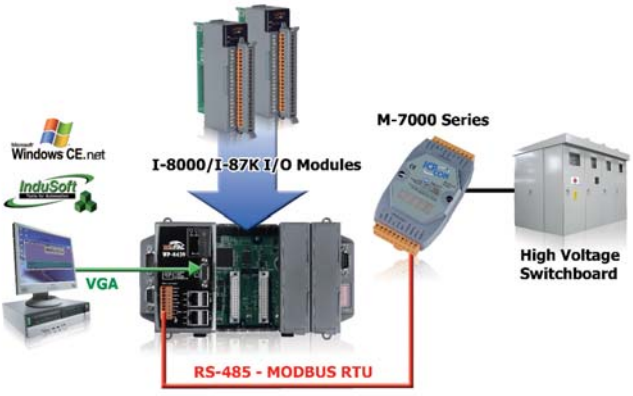
Variety of I/O supported



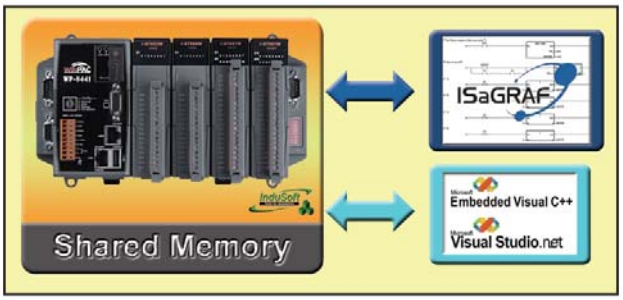
Street lamp monitor and control system



Variaty of communication drivers



Share data with 3rd. party application



Specifications

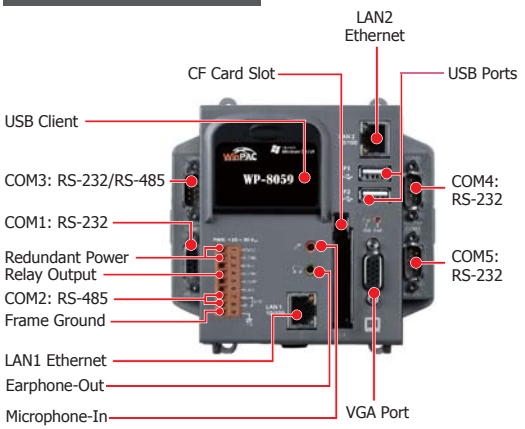
Models		WP-8059	WP-8359	WP-8759
System Software				
OS		Windows CE 5.0		
.Net Compact Framework		2.0		
Embedded Service		FTP server, Web server (supports VB script, JAVA script), Embedded SQL server		
Multilanguage Support		English, German, French, Spanish, Russian, Italian, Simplified Chinese, Traditional Chinese		
Development Software				
InduSoft Software		InduSoft Web Studio v6.1 Service Pack 6		
Others		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 or compatible (32-bit and 520 MHz)		
SDRAM		128 MB		
Dual Battery Backup SRAM		512 KB (for 5 years data retain while power off)		
Flash	Total size	128 MB		
	OS image	64 MB		
	Built-in Flash disk	63 MB		
	Registry	1 MB		
EEPROM		16 KB		
		Data Retention: 40 years; 1,000,000 erase/write cycles		
Compact Flash		4 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)	
LED, NET ID		1 programmable LED indicator. NET ID: From 1 ~ 255, set by software		
Audio		Microphone-In and Earphone-Out		
VGA & Communication Ports				
VGA	Extra GPU	Yes		
	Resolution	1024 x 768, 800 x 600, 640 x 480		
Ethernet		RJ-45 x 2, 10/100 Base-TX (Auto-negotiating, LED indicators)		
USB 1.1 (host)		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 (D2+, D2-); 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		
COM 5		RS-232 (RxD, TxD, and GND); non-isolated	-	
I/O Expansion Slots				
Slot Number		0	3	7
		(For High Profile I-8K and I-87K Modules Only)		
Hot Swap * Will be available		For High Profile I-87K Modules Only		
Mechanical				
Dimensions (W x L x H)		137 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		1.0 A, 5 V supply to CPU and backplane, 0.6 A, 5 V supply to I/O expansion slots, 8 W in total	1.1 A, 5 V supply to CPU and backplane, 4.9 A, 5 V supply to I/O expansion slots, 30 W in total	1.2 A, 5 V supply to CPU and backplane, 4.8 A, 5 V supply to I/O expansion slots, 30 W in total
Consumption		7.3 W (0.3 A @ 24 V_{DC})	9.1 W (0.38 A @ 24 V_{DC})	9.6 W (0.4 A @ 24 V_{DC})

InduSoft Features

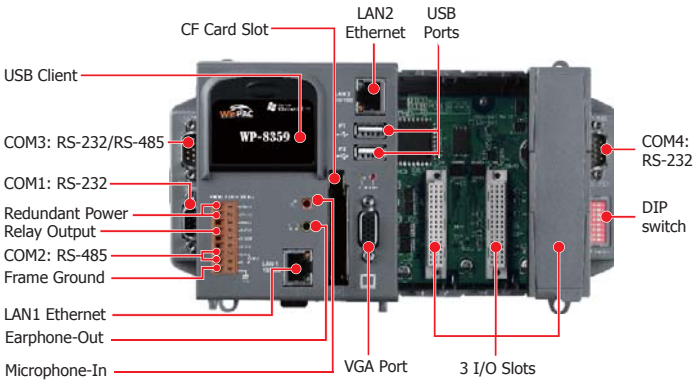
- Elegant Graphics
- Multi-Language
- Database (Access, Excel, SQL, Oracle…)
- Recipes and Reports
- Online and History Alarm / Event / Trend
- Various Communication Driver (DCON, Modbus, OPC, DDE, TCP/IP…)
- Remote Web Client Control & Security
- ActiveX (GSM / SHM / COM /WEB provided by ICP DAS)
-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

Appearance

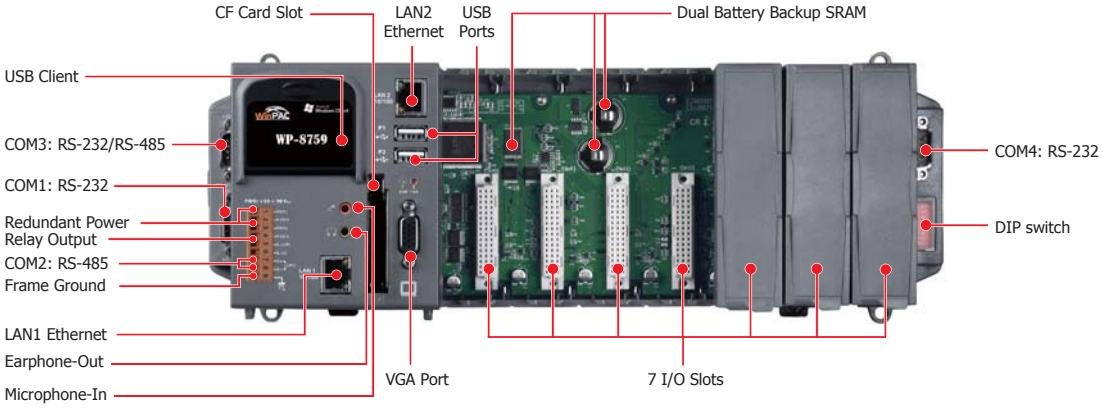
WP-8059



WP-8359

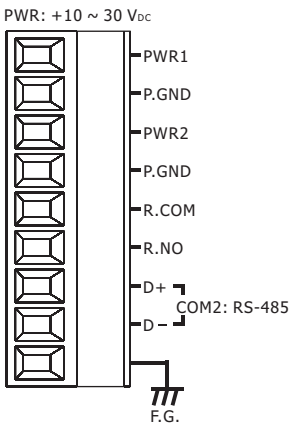


WP-8759

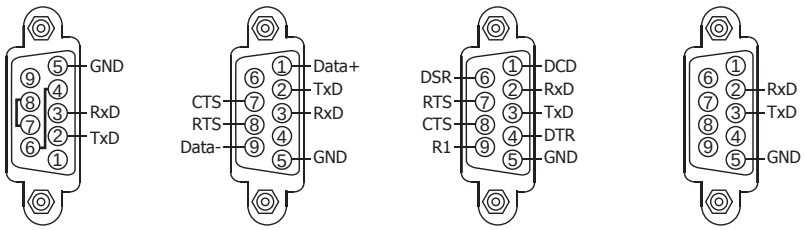


Pin Assignments

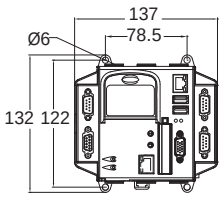
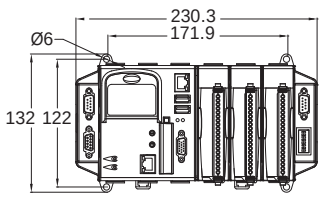
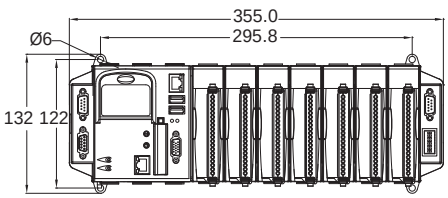
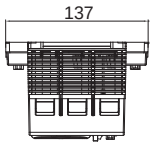
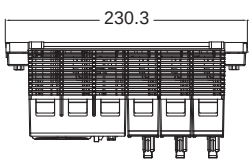
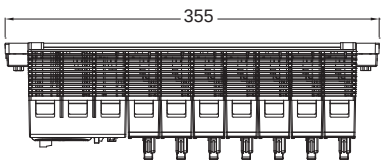
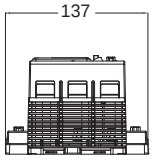
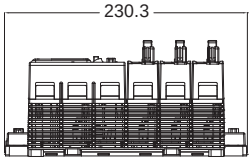
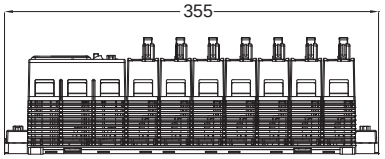
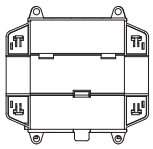
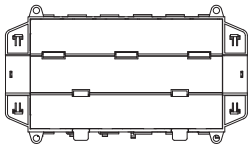
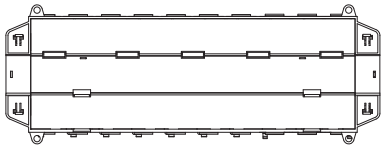
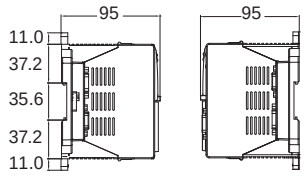
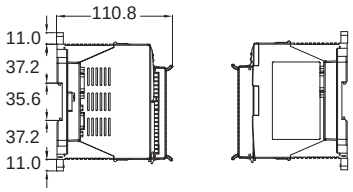
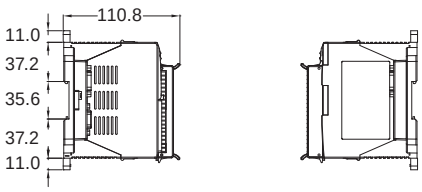
Terminal Block



COM Port



Dimensions (Units: mm)

WP-8059	WP-8359	WP-8759
		
Front View	Front View	Front View
		
Top View	Top View	Top View
		
Bottom View	Bottom View	Bottom View
		
Rear View	Rear View	Rear View
		
Left Side View / Right Side View	Left Side View / Right Side View	Left Side View / Right Side View

Ordering Information

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 VDC/2.5 A, 60 W and 5 VDC/0.5 A, 2.5 W Power Supply with DIN-Rail Mounting
DP-1200 CR	24 VDC/5.0 A, 120 W Power Supply with DIN-Rail Mounting (RoHS)
MDR-60-24 CR	24 VDC/2.5 A, 60 W Power Supply with DIN-Rail Mounting (RoHS)

2.4. LinPAC-8000 Series

• LinPAC-8000 Overview

The LinPAC-8000 is a second generation Linux-based PAC from ICP DAS and is equipped with a PXA270 CPU (520 MHz) or LX 800 CPU (500 MHz) 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 or 500 MHz) 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 input, 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

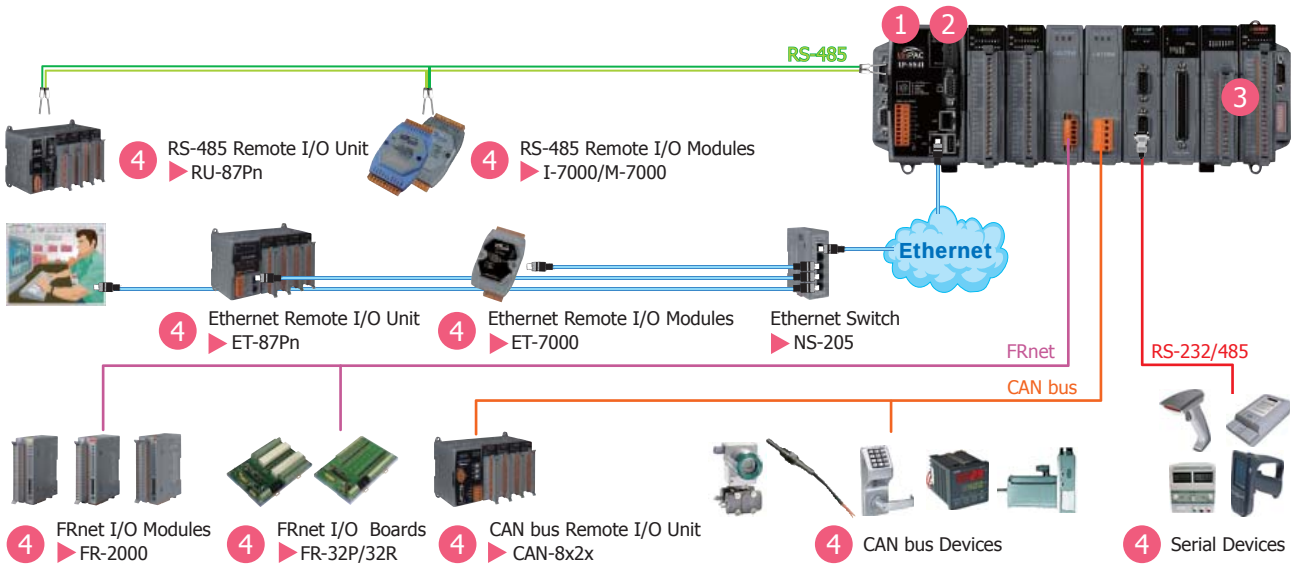
All LinPAC have Linux kernel 2.6 OS inside, most of the popular features in Linux are included, such as open source, stability and free of charge. LinPAC supports for rich software & development solutions: LinPAC SDK, GNU C Language, JAVA and GUI software, etc.

3 I/O Modules

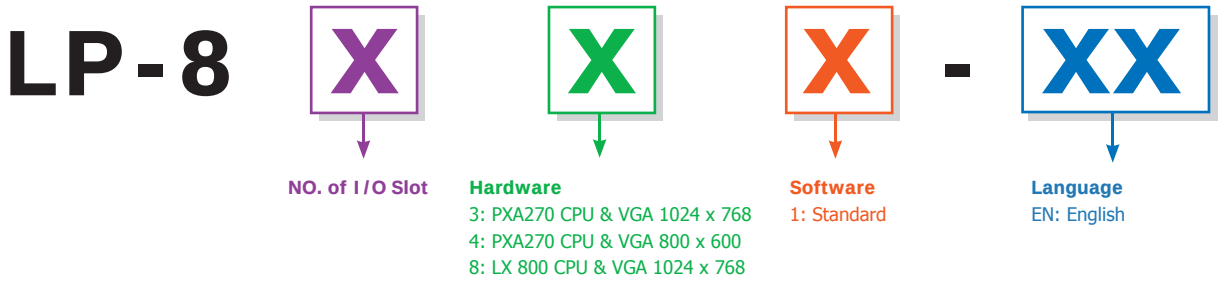
There are two types of I/O modules, Parallel and Serial. The Parallel I/O modules (high profile I-8K series) are high-speed modules and have to be installed in slots of the LinPAC. The Serial I/O modules (high profile I-87K series) can be installed in slots or Expansion Units (RU-87Pn).

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.



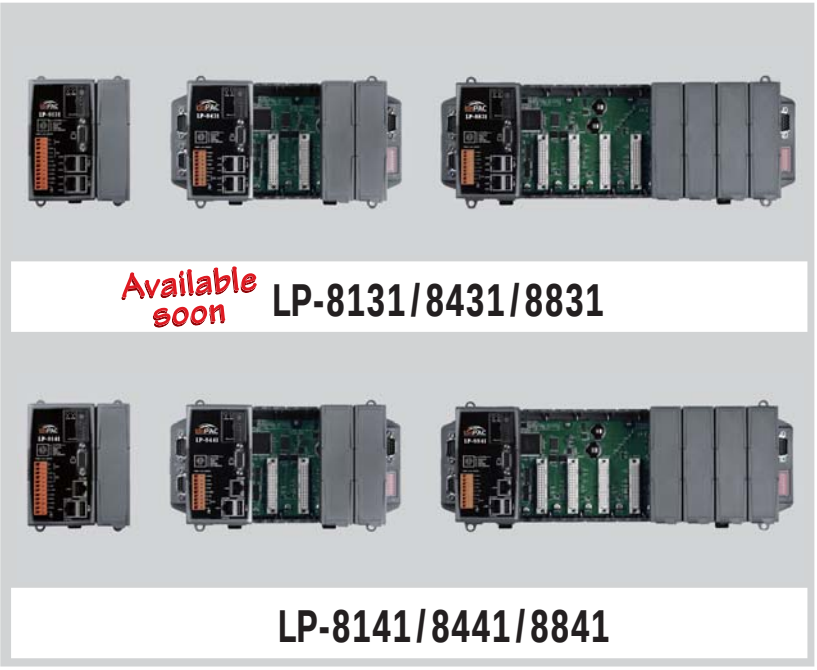
Selection Guide



Standard LinPAC

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

The controller supports following software development tools:
1. SDK for Linux environment
2. SDK for Windows environment



Highlight Information

- Linux kernel 2.6 Inside
- Embedded Service: Web Server, FTP Server, Telnet Server, SSH Server
- Power PXA270 CPU: 32-bit & 520 MHz
- 1/4/8 Slots for High Profile I/O Modules
- Dual 10/100M Ethernet Ports
- 2/4 Serial Ports (RS-232/485)
- Redundant Power Input
- Operating Temperature: -25 ~ +75 °C

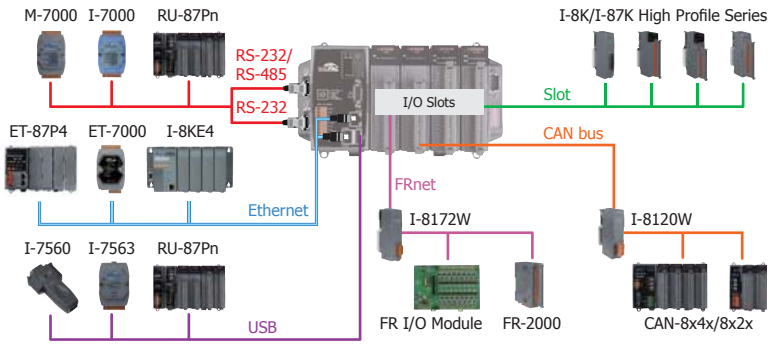
Introduction

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, JAVA and 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



Features

Software

- OS: Linux kernel 2.6:Open Sourse
- Development Environment
  - ☐ Provide LinPAC SDK for Windows and Linux Environment
  - ☐ Support for GNU C Language
  - ☐ Support for JAVA: JVM, JIOD (Java I/O Driver)
  - ☐ Support for GUI: Using GTK + Library
- Support for Server: Web, FTP, Telnet & SSH Server
- Supported Communication
  - ☐ Wireless, PPP over Modem, GPRS, Ethernet, Dual LAN
  - ☐ VxComm
  - ☐ Expansion Serial Ports
  - ☐ USB to Serial Converter
  - ☐ DCON and Modbus Protocols
  - ☐ Built-in Video Program support for USB WebCam
- Protocol: CAN Bus Network, Modbus TCP/RTU, SNMP
- Interpret: Perl, PHP
- Security: Firewall, NAT, VPN, Unique Serial Number

Hardware

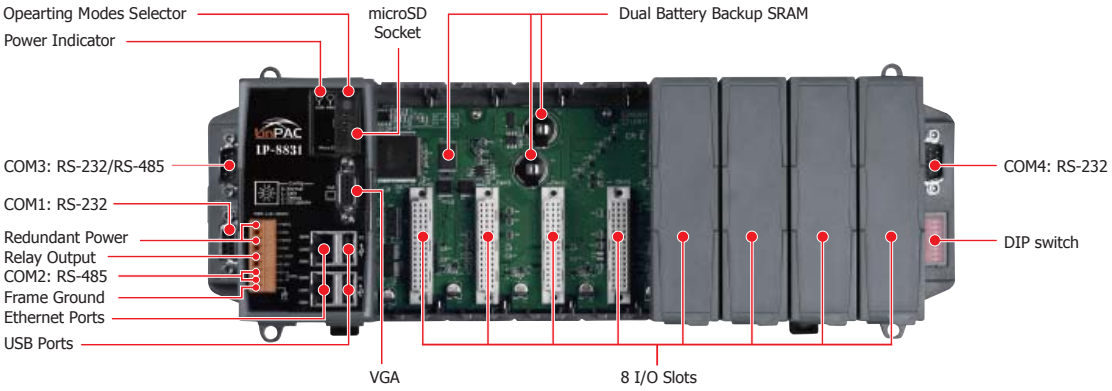
- Powerful CPU Module
- Built-in VGA Port: 640 x 480 ~ 1024 x 768 (for LP-8x31)
- Built-in VGA Port: 640 x 480 ~ 800 x 600 (for LP-8x41)
- 64-bit Hardware Serial Number
- Rich I/O Expansion Ability
- I/O Module Hot Swap Ability
  - * Will be available (For High Profile I-87K Modules Only)
- 128 MB SDRAM
- Dual Watchdog Timers
- Dual Battery Backup SRAM (512 KB)
- Dual Ethernet Ports
- Redundant Power Inputs
- DIN-Rail or Wall Mounting
- Operating Temperature: -25 ~ +75 °C

Specifications

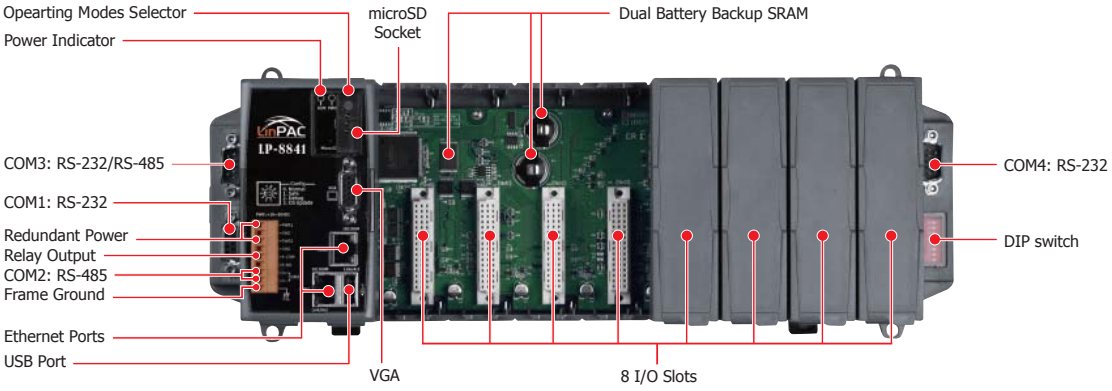
Models		LP-8131	LP-8141	LP-8431	LP-8441	LP-8831	LP-8841
System Software							
OS		Linux kernel 2.6					
Embedded Service		Web Server, FTP Server, Telnet Server, SSH Server					
SDK Provided		Standard LinPAC SDK for Windows and Linux by GNU C language					
CPU Module							
CPU		PXA270 or compatible (32-bit and 520 MHz)					
SDRAM		128 MB					
Dual Battery Backup SRAM		512 KB (for 5 years data retain while power off)					
Flash		128 MB	48 MB	128 MB	48 MB	128 MB	48 MB
EEPROM		16 KB					
		Data Retention: 40 years; 1,000,000 erase/write cycles					
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)			
VGA & Communication Ports							
VGA	VGA	Yes, with one extra GPU	Yes	Yes, with one extra GPU	Yes	Yes, with one extra GPU	Yes
	Resolution	1024 x 768, 800 x 600, 640 x 480	800 x 600, 640 x 480	1024 x 768, 800 x 600, 640 x 480	800 x 600, 640 x 480	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	2	1	2	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	D2+, D2-; self-tuner ASIC inside					
	Isolation	RS-485 (D2+, D2-); 2500 V_{DC}; isolated		3000 V_{DC}			
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			
I/O Expansion Slots							
Slot Number		1		4		8	
		(For High Profile I-8K and I-87K Modules Only)					
Hot Swap * Will be available		For High Profile I-87K Modules Only					
Mechanical							
Dimensions (W x L x H)		91 mm x 132 mm x 52 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		1.0 A, 5 V supply to CPU and backplane, 0.6 A, 5 V supply to I/O expansion slots, 8 W in total		1.1 A, 5 V supply to CPU and backplane, 4.9 A, 5 V supply to I/O expansion slots, 30 W in total		1.2 A, 5 V supply to CPU and backplane, 4.8 A, 5 V supply to I/O expansion slots, 30 W in total	
Consumption		7.3 W (0.3 A @ 24 V_{DC})		9.1 W (0.38 A @ 24 V_{DC})		9.6 W (0.4 A @ 24 V_{DC})	

Appearance

LP-8831



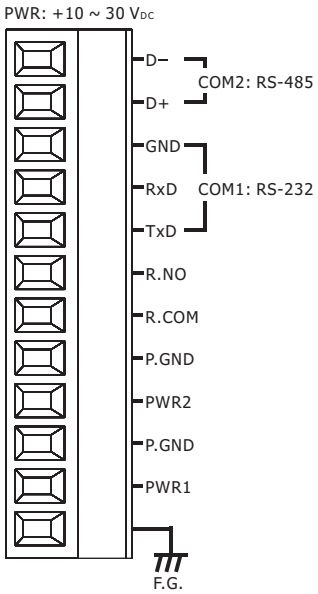
LP-8841



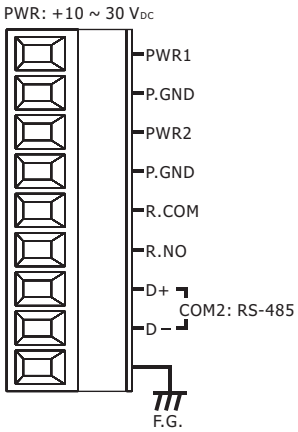
Pin Assignments

Terminal Block

LP-81x1

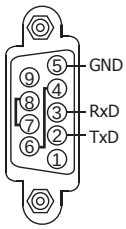


LP-84x1/88x1

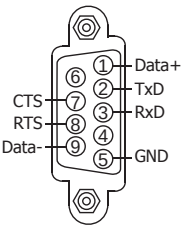


LP-84x1/88x1 COM Port

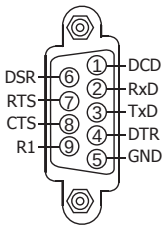
COM1: RS-232



COM3: RS-232/RS-485

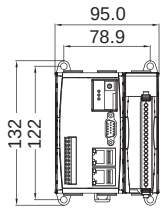


COM4: RS-232



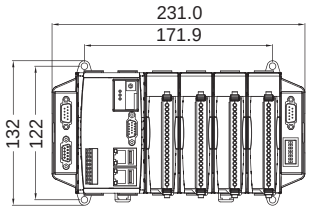
Dimensions (Units: mm)

LP-8131



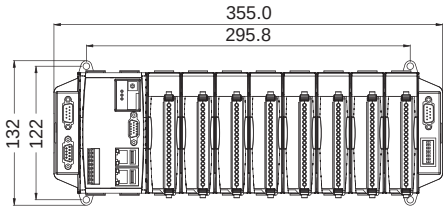
Front View

LP-8431



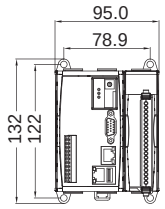
Front View

LP-8831



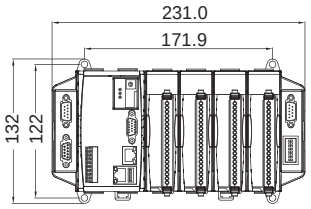
Front View

LP-8141



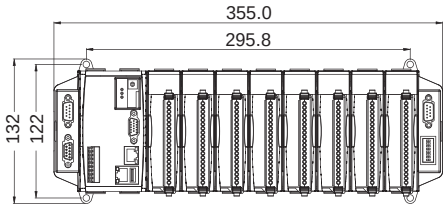
Front View

LP-8441



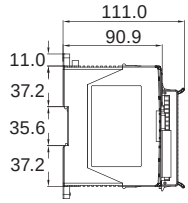
Front View

LP-8841



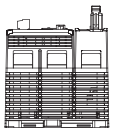
Front View

LP-8x31/8x41



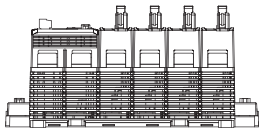
Left Side View

LP-81x1



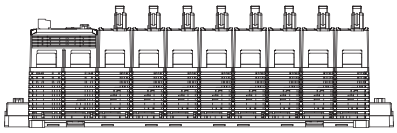
Bottom View

LP-84x1



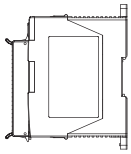
Bottom View

LP-88x1



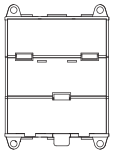
Bottom View

LP-8x31/8x41



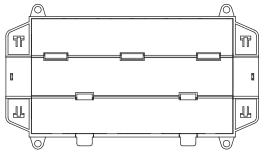
Right Side View

LP-81x1



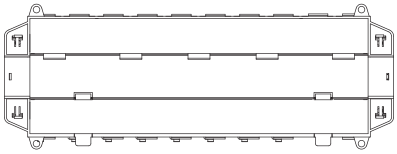
Rear View

LP-84x1



Rear View

LP-88x1



Rear View

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)

Highlight Information

- Linux kernel 2.6 Inside
- Embedded Service: Web Server, Telnet Server, SSH Server
- AMD LX 800 CPU (32-bit and 500 MHz)
- 1 GB DDR SDRAM, 4 GB Flash, 8 GB CF Card
- 0/3/7 Slots for High Profile I/O Modules
- Dual Ethernet Ports (10/100M)
- 4/5 Serial Ports (RS-232/RS-485)
- 2 USB & 1 VGA Ports
- 64 bits Hardware Serial Number
- Operating Temperature: -25 °C ~ +75 °C

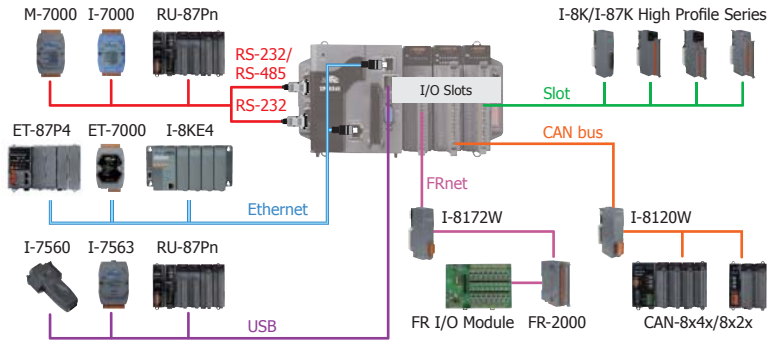
Introduction

LinPAC-8081/8381/8781 is the second generation Linux-based PAC (Programmable Automation Controller) from ICP DAS and is equipped with a LX 800 CPU (500 MHz) running a Linux kernel 2.6 operation system, multiple communication interfaces (VGA, USB, Ethernet and RS-232/485) and 0/3/7 slots for high performance parallel I/O modules (high profile 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



Features

Software

- OS: Linux kernel 2.6:Open Sourse
- Development Environment
  - Provide LinPAC SDK
  - Support for GNU C Language, GUI (Using GTK + Library)
- GUI Desktop:
  - X-Window + GNOME
- Support Server:
  - Web Server
  - Telnet Server
  - SSH Server
- Protocol: CAN Bus Network, Modbus TCP/RTU, SNMP
- Security: Unique Serial Number
- Interpret: Perl, PHP
- MySQL Database

Hardware

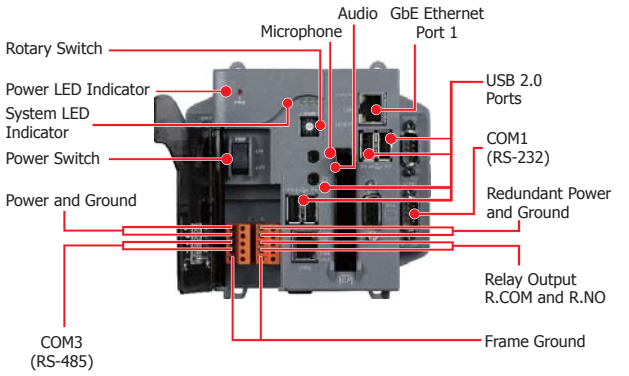
- Powerful CPU Module
  - AMD LX 800 CPU (32-bit and 500 MHz)
- Rich Memories
  - DDR SDRAM (1 GB), Built-in Flash Disk (4 GB)
  - EEPROM (16 KB), CF Card (8 GB)
  - Dual Battery Backup SRAM (512 KB)
- VGA Port x 1, USB 2.0 Ports x 2
- 64-bit Hardware Serial Number
- Dual Watchdog Timers
- 4/5 Serial Ports (RS-232/RS-485)
- Dual Ethernet Ports (10/100M)
- Redundant Power Inputs
- DIN-Rail or Wall Mounting
- Operating Temperature: -25 ~ +75 °C

Specifications

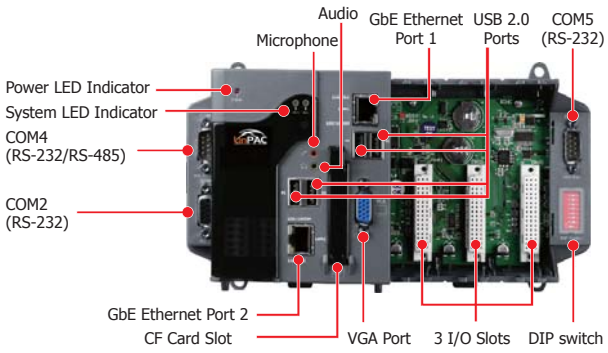
Models		LP-8081	LP-8381	LP-8781
System Software				
OS		Linux kernel 2.6		
Embedded Service		Web Server, Telnet Server, SSH Server		
SDK Provided		Standard LinPAC SDK for Linux by GNU C language		
CPU Module				
CPU		AMD LX 800 processor (32-bit and 500 MHz)		
System Memory		1 GB DDR SDRAM		
Dual Battery Backup SRAM		512 KB (for 5 years data retain while power off)		
Flash		4 GB as IDE Master		
EEPROM		16 KB		
		Data Retention: 40 years; 1,000,000 erase/write cycles		
CF Card		8 GB (support up to 32 GB)		
64-bit Hardware Serial Number		Yes, for Software Copy Protection		
Dual Watchdog Timers		Yes		
Rotary Switch		Yes (0 ~ 9)		
DIP Switch		-	Yes (8 bits)	
VGA & Communication Ports				
VGA		Yes, (resolution: 640 x 480 ~ 1024 x 768)		
Ethernet		RJ-45 x 2, 10/100 Base-TX (Auto-negotiating, Auto MDI/MDI-X, LED indicators)		
USB 2.0		2		
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	D2+, D2-; self-tuner ASIC inside		
	Isolation	3000 V_{DC}		
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
Hot Swap * Will be available		-	For High Profile I-87K Modules Only	
Mechanical				
Dimensions (W x L x H)		137 mm x 132 mm x 125 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		1.8 A, 5 V supply to CPU and backplane, 15 W in total	1.8 A, 5 V supply to CPU and backplane, 5.2 A, 5 V supply to I/O expansion slots, 35 W in total	2.0 A, 5 V supply to CPU and backplane, 5.0 A, 5 V supply to I/O expansion slots, 35 W in total
Consumption		14.4 W (0.6 A @ 24 V_{DC})	14.4 W (0.6 A @ 24 V_{DC})	16.8 W (0.7 A @ 24 V_{DC})

Appearance

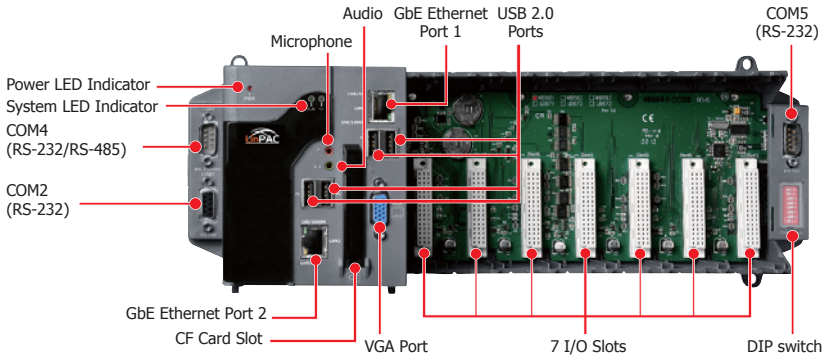
LP-8041



LP-8341

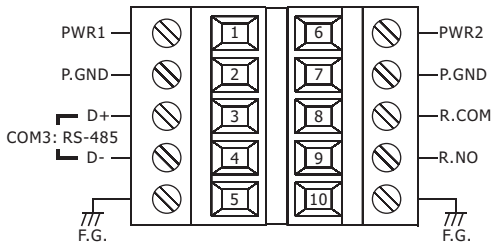


LP-8741



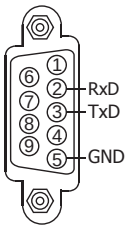
Pin Assignments

LP-8x41 Terminal Block

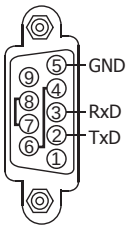


LP-8041 COM Port

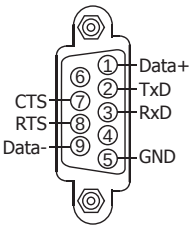
COM1: RS-232



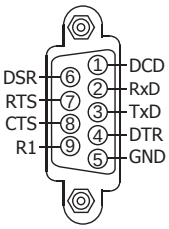
COM2: RS-232



COM4: RS-232/RS-485

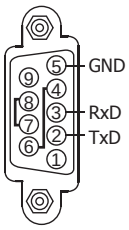


COM5: RS-232

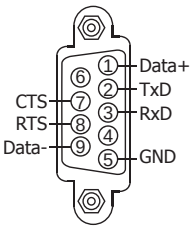


LP-8141/LP-8341/8741 COM Port

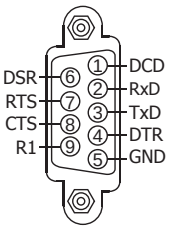
COM2: RS-232



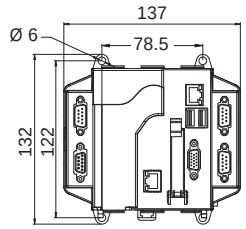
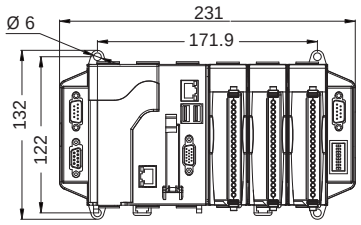
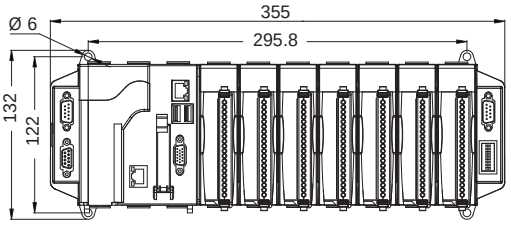
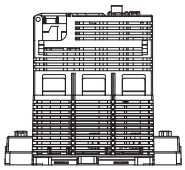
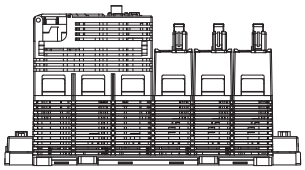
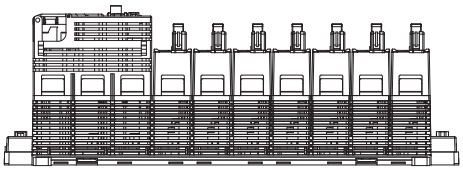
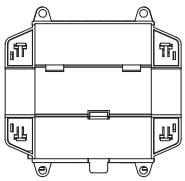
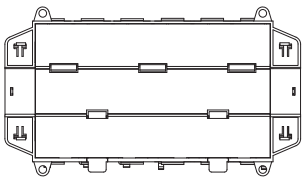
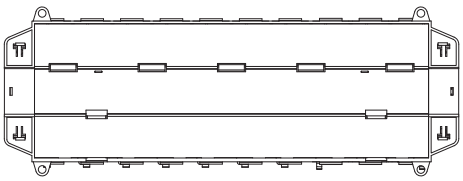
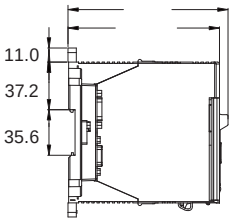
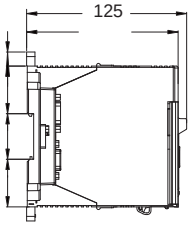
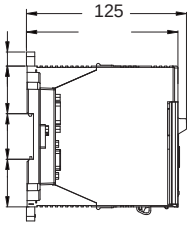
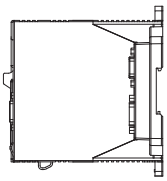
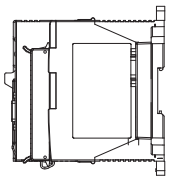
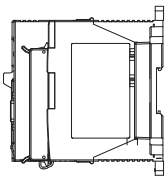
COM4: RS-232/RS-485



COM5: RS-232



Dimensions (Units: mm)

LP-8041	LP-8341	LP-8741
		
Front View	Front View	Front View
		
Bottom View	Bottom View	Bottom View
		
Rear View	Rear View	Rear View
		
Left Side View	Left Side View	Left Side View
		
Right Side View	Right Side View	Right Side View

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)

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 VDC/5.0 A, 120 W Power Supply with DIN-Rail Mounting (RoHS)
MDR-60-24 CR	24 VDC/2.5 A, 60 W Power Supply with DIN-Rail Mounting (RoHS)

2.5. 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.

This new exciting series offers a flexible, versatile, and economical solution to a wide range of applications from Data-Acquisition, process control, test & measurement, to energy & building management.

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

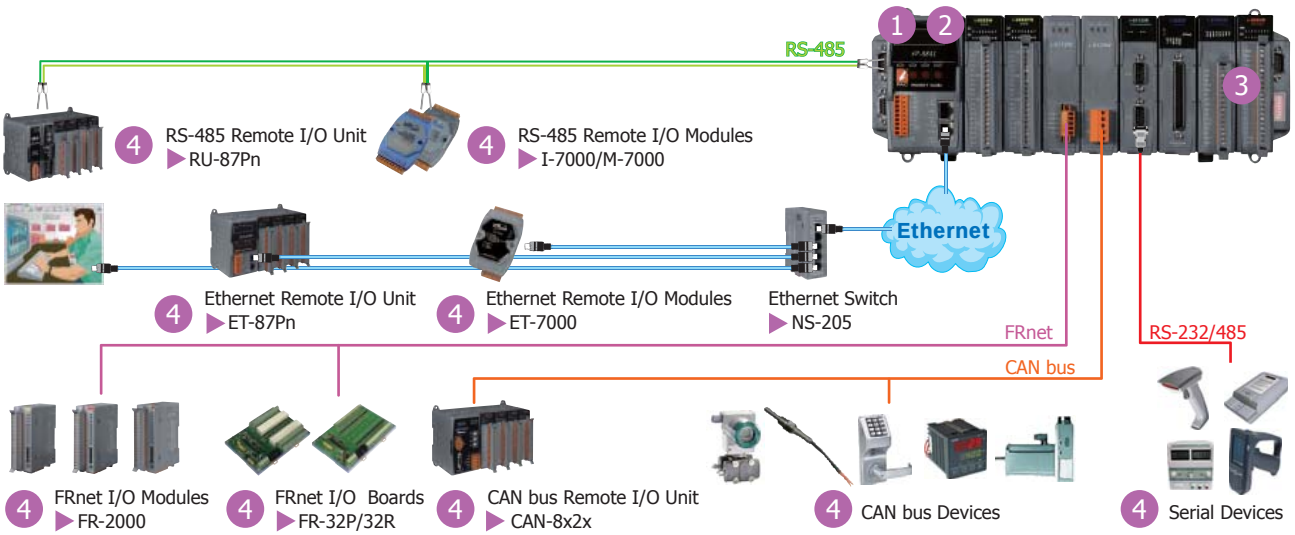
There are two types of I/O modules, Parallel and Serial. The Parallel I/O modules (I-8K high profile series) are high-speed modules and have to be installed in slots of the iPAC. The Serial I/O modules (I-87K high profile series) can be installed in slots or Expansion Units (RU-87Pn).

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.



Selection Guide

iP-8 X X X - XX

NO. of I/O Slot

Hardware
1: Without Ethernet
4: Ethernet x 2

Software
1: Standard
7: ISaGRAF

Flash Disk
FD: 64 MB Flash Disk

Standard iPAC

Model Name	OS	Pre-installed Software	CPU	Flash	64 MB Flash Disk	SRAM	Ethernet Port	RS-232/ RS-485	I/O Slot	Power Consumption	Page
iP-8411	MiniOS7	None	80 MHz	512 KB	-	512 KB	-	4	4	6.7 W	2-5-3
iP-8811									8	7.2 W	
iP-8441						768 KB	2 (10/100 BaseTx)		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	

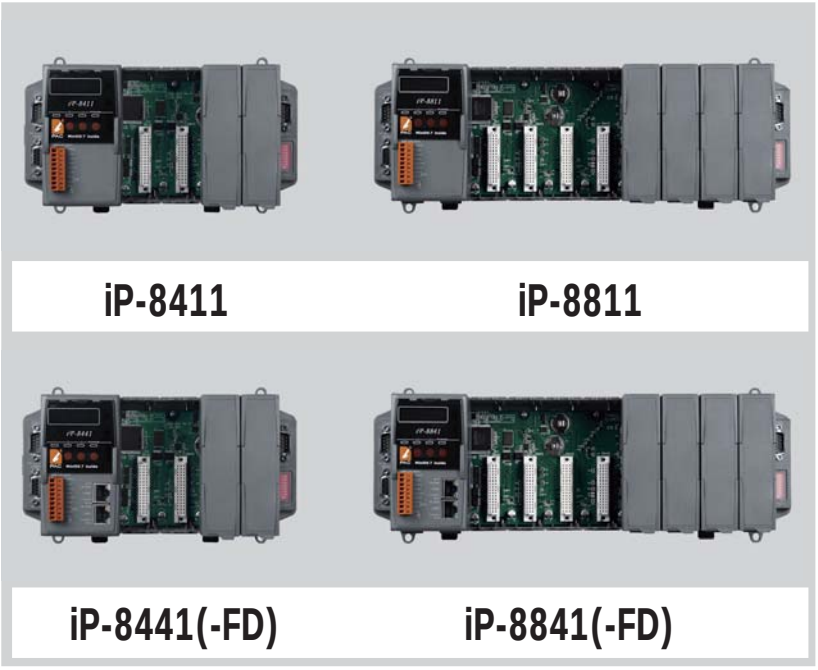
The controller is equipped with a DOS-like OS, i.e. MiniOS7. Users can use C compilers to develop a program in 16 bit executable file (*.exe), then download it to the controller. Two free-of-charge version compilers, i.e. Turbo C 2.0 and Turbo C++ 1.01, are available, the Turbo C++ 1.01 is recommended.

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	OS	Pre-installed Software	CPU	Flash	64 MB Flash Disk	SRAM	Ethernet Port	RS-232/ RS-485	I/O Slot	Power Consumption	Page
iP-8417	MiniOS7	ISaGRAF	80 MHz	512 KB	-	512 KB	-	4	4	6.7 W	2-5-7
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.



Highlight Information

- Compact and Rugged PAC
- 80186, 80 MHz CPU (16 bits)
- C Language Based and MiniOS7 Inside
- 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.

Features

Software

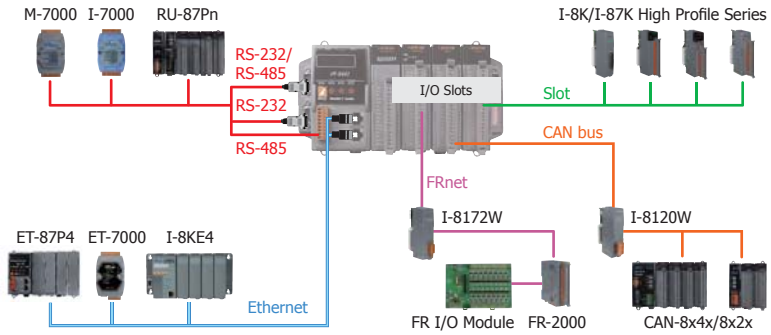
- MiniOS7 Embedded Operating System (DOS-like)
- Support VxComm Technique
- Redundant Ethernet Communication
- Xserver Development Template to Simplify TCP/IP Application
- Slave I/O Firmware Options (DCON or Modbus/TCP)
- Hardware Diagnostic Functions
- Load Files Via RS-232 or Ethernet
- SNMP slave library

Hardware

- 80186, 80 MHz CPU
- 64-bit Hardware Serial Number
- Dual Battery Backup SRAM (512 KB)
- Support I/O Module Hot Swap
- Rich I/O Expansion Ability
- Dual Ethernet Ports
- Redundant Power Inputs
- DIN-Rail or Wall Mounting
- Operating Temperature: -25 ~ +75 °C

Applications

Rich I/O Expansion Ability

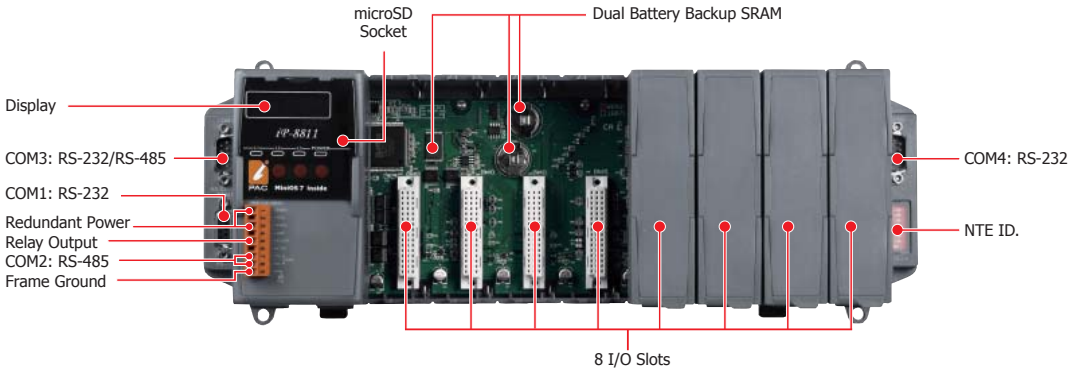


Specifications

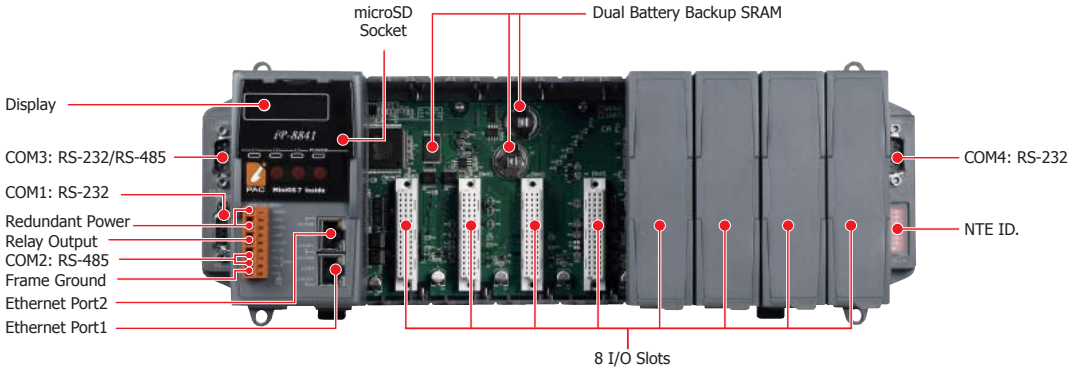
Models	iP-8411	iP-8441	iP-8441-FD	iP-8811	iP-8841	iP-8841-FD
System Software						
OS	MiniOS7 (DOS-like embedded operating system)					
Program Download Interface	RS-232 (COM1) or Ethernet					
Programming Language	C language					
Compilers to create.exe Files	TC++ 1.01 (Freeware) TC 2.01 (Freeware) BC++3.1 ~ 5.2x MSC 6.0 MSVC++ (before version 1.5.2)					
CPU Module						
CPU	80186 or compatible (16-bit and 80 MHz)					
SRAM	512 KB	768 KB		512 KB	768 KB	
Flash	512 KB (100,000 erase/write cycles) with Flash protection switch					
Expansion Flash Memory	microSD socket (can support 1/2 GB microSD)					
64 MB NAND Flash Disk	-	-	Yes	-	-	Yes
Dual Battery Backup SRAM	512 KB (for 5 years data retain while power off)					
EEPROM	16 KB					
	Data Retention: 40 years; 1,000,000 erase/write cycles					
NVRAM	31 bytes (battery backup, data valid up to 5 year					
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)					
NET ID	8-pin DIP switch to assign NET ID as 1 ~ 255					
Communication Ports						
Ethernet	-	RJ-45 x 2, 10/100 Base-TX (Auto negotiating, Auto MDI/MDI-X, LED indicators)		-	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	D2+, D2-; self-tuner ASIC inside					
COM 2 Isolation	3000 V_{DC}					
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						
5-Digit LED Display	Yes					
3-Programmable LED Indicators	Yes					
4-Push Buttons	Yes					
Buzzer	-	Yes	Yes	-	Yes	Yes
I/O Expansion Slots						
Slot Number	4			8		
	(For High Profile I-8K and I-87K Modules Only)					
Hot Swap * Will be available	For High Profile 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		
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	0.85 A, 5 V supply to CPU and backplane, 5.51 A, 5 V supply to I/O expansion slots, 30 W in total			0.9 A, 5 V supply to CPU and backplane, 5.1 A, 5 V supply to I/O expansion slots, 30 W in total		
Consumption	6.7 W (0.28 A @ 24 V_{DC})			7.2 W (0.3 A @ 24 V_{DC})		

Appearance

iP-8811

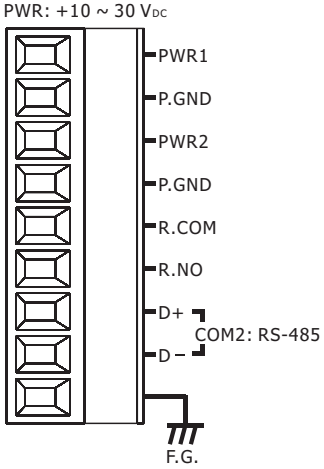


iP-8841/iP-8841-FD

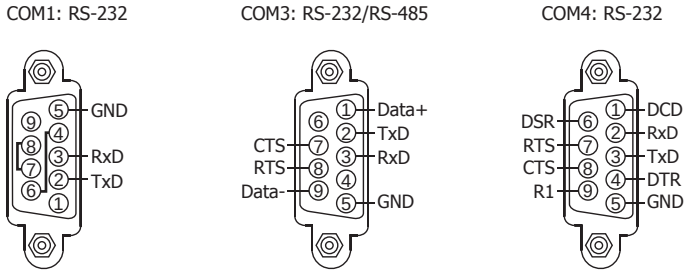


Pin Assignments

Terminal Block

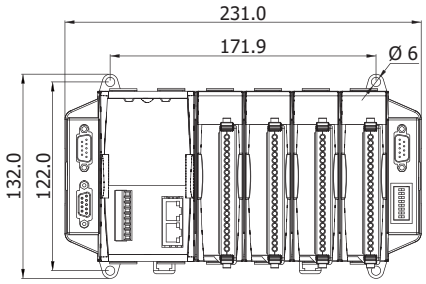


COM Port

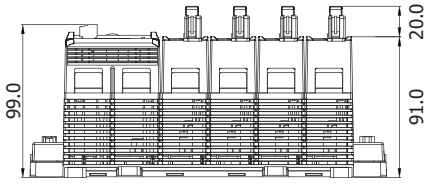


Dimensions (Units: mm)

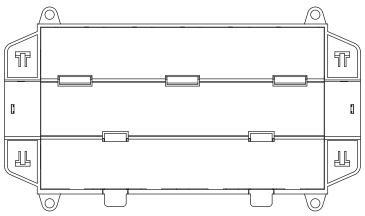
iP-8411/8441/8441-FD



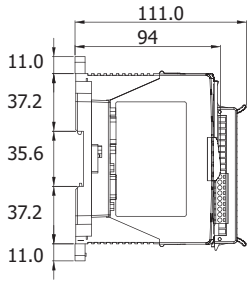
Front View



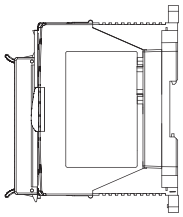
Bottom View



Rear View

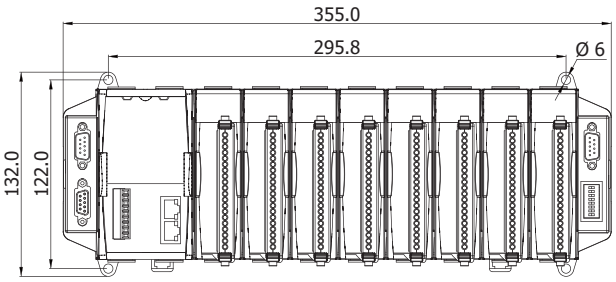


Left Side View

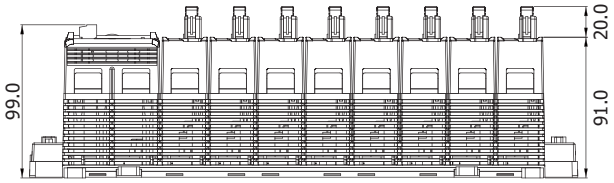


Right Side View

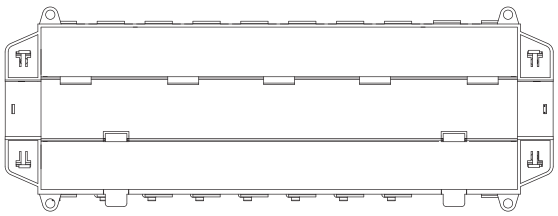
iP-8811/8841/8841-FD



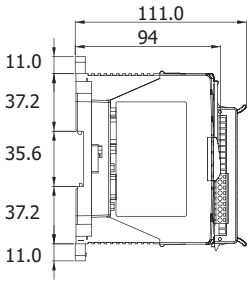
Front View



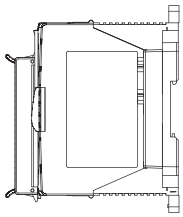
Bottom View



Rear View



Left Side View



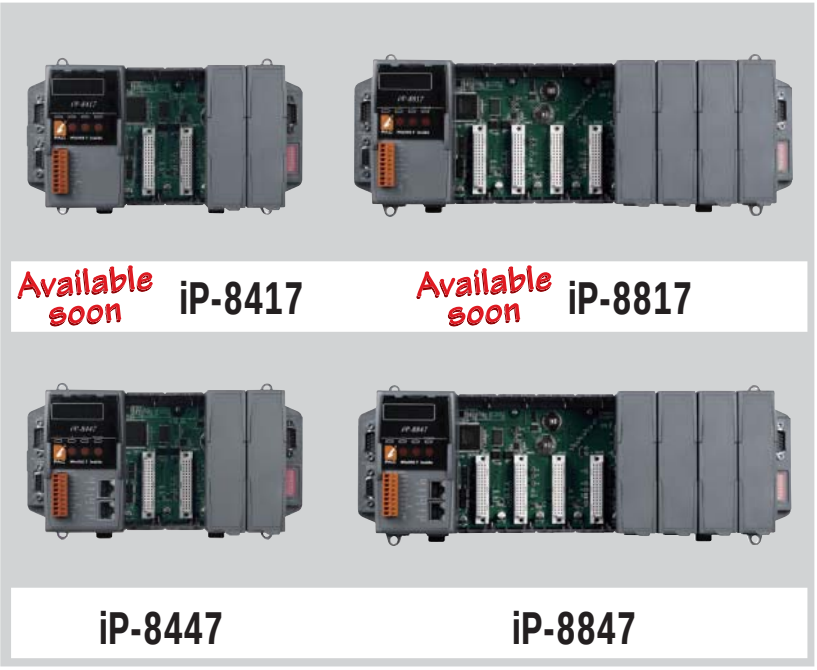
Right Side View

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 64 MB Flash (RoHS)
iP-8841-FD CR	Standard iPAC-8000 with 64 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
DP-1200 CR	24 V_{DC}/5.0 A, 120 W Power Supply with DIN-Rail Mounting (RoHS)
I-7560 CR	USB to RS-232 Converter (RoHS)
3LMSD-2000 CR	2 GB microSD card (RoHS)



Highlight Information

- ISaGRAF Ver.3 SoftLogic: Five IEC 61131-3 Standard Open PLC Languages + Flow Chart
- 80186, 80 MHz CPU (16 bits)
- 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

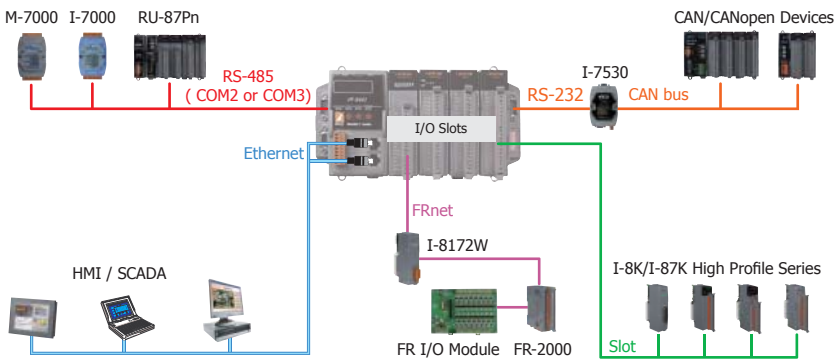
iPAC-8xx7 Series (iP-8417/8817/8447/8847) is the ISaGRAF SoftLogic PAC of ICP DAS iPAC-8000 series. It is equipped an 80186, 80 MHz CPU running a MiniOS7 operating system, various connectivity (Dual 10/100 Base-TX Ethernet Ports for iP-8x47, one RS-232/485 port, one RS-485 port and two RS-232 ports) 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!

The iPAC-8xx7 Series supports ISaGRAF Ver.3 Workbench:

- 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

Applications

Rich I/O Expansion Ability



Features

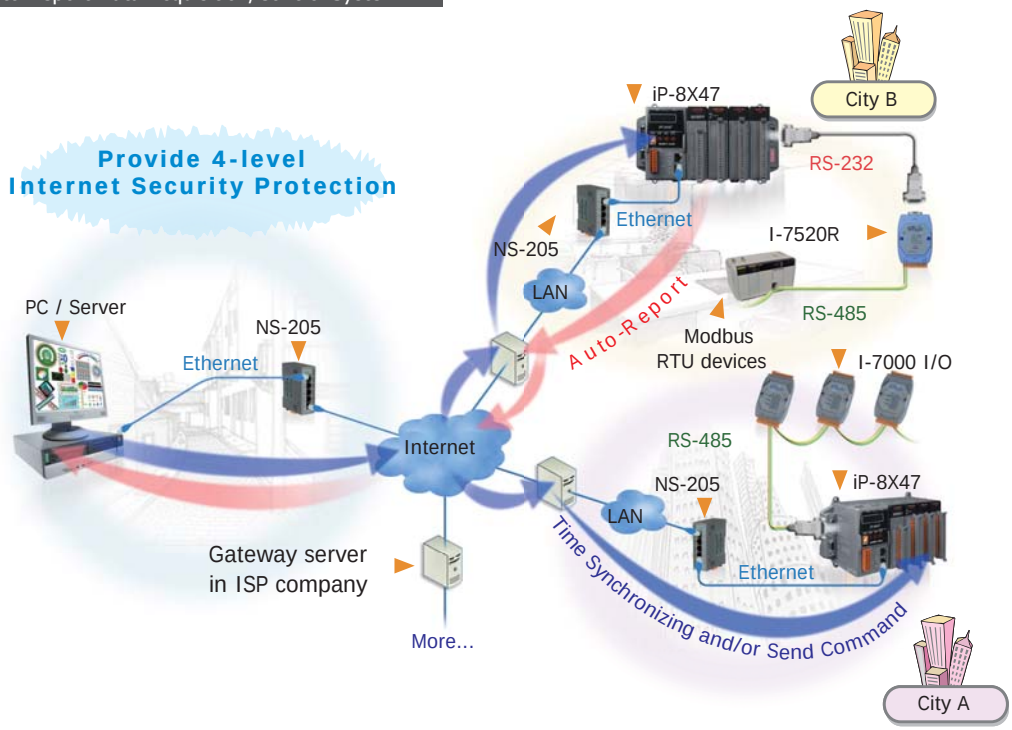
Software

- MiniOS7 Embedded Operating System (DOS-like)
- Development Software: ISaGRAF Ver.3
- Redundant Ethernet Communication (for iP-8x47)
- Support Modbus RTU/ASCII Master & Modbus RTU/TCP Slave
- Support Data Exchange
- Support CAN/CANopen
- Support FRnet I/O (via I-8172W)
- Support Motion Control
- Support Send Email with One File
- Support SMS: Short Message Service
- Support GPS, ZigBee & Radio Wireless communication
- Support Data-Recorder & Data-Logger
- Support Auto-report Acquisition Data & Control

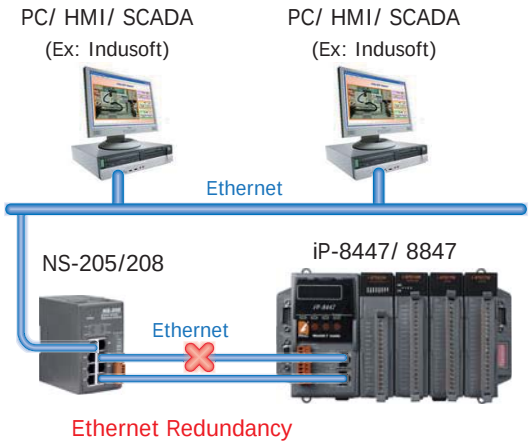
Hardware

- Powerful CPU Module: 80186, 80 MHz
- Large SRAM: 768 KB for iP-8x47
  SRAM: 512 for iP-8x17
- 512 KB FLASH Memory
- 16 KB EEPROM
- Support RTC
- Rich Communication Interface: RS-232/485, Ethernet
- 4/8 I/O Slots accept Parallel/Serial I/O board
- Hot-Swap High Profile I-87K I/O Ability
- Watchdog Timer Increase Reliability
- Dual Battery-Backup SRAM (512 KB)
- Dual Ethernet Ports (For iP-8x47)
- Redundant Power Inputs
- DIN-Rail or Wall Mounting
- Operating Temperature: -25 ~ +75 °C

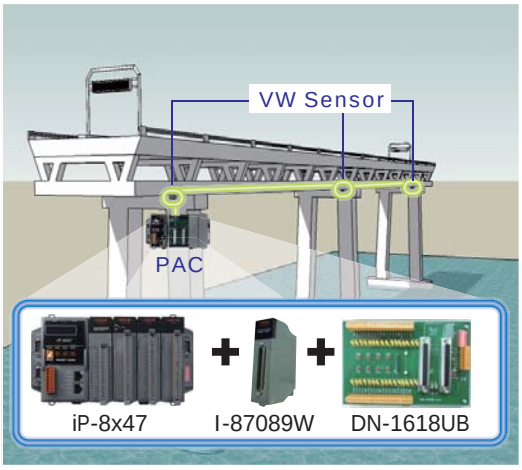
Cost-effective Auto-Report Data Acquisition/Control System



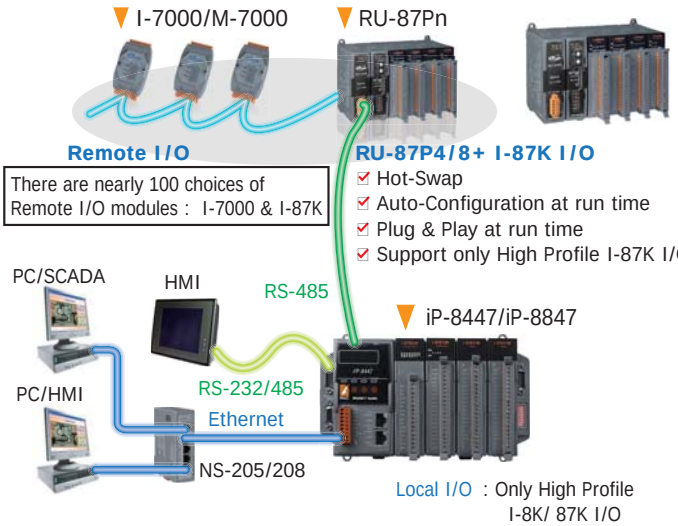
Ethernet Redundancy for HMI/PC/SCADA



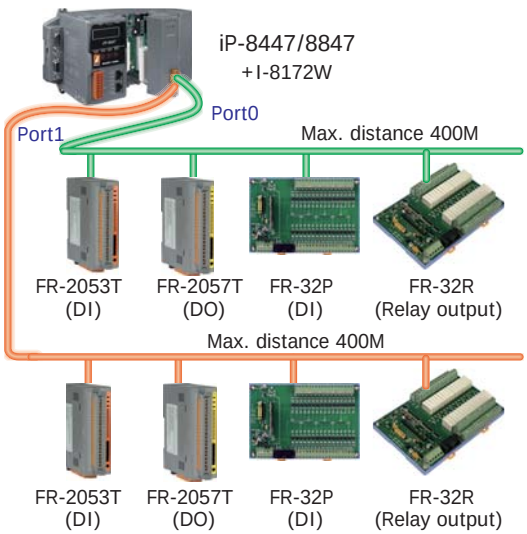
Stress Monitoring of Constructions



Local/Remote I/O Expansion & Multi-HMI



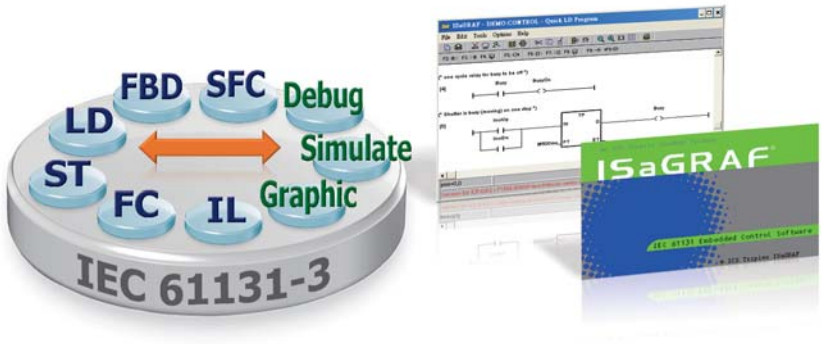
Fast FRnet Remote I/O



PAC Specifications

Models		iP-8417	iP-8447	iP-8817	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 or compatible (16-bit and 80 MHz)			
SRAM		768 KB			
Flash		512 KB (100,000 erase/write cycles) with Flash protection switch			
Expansion Flash Memory		microSD socket			
Dual Battery Backup SRAM		512 KB (for 5 years data retain while power off), support up to 1024 retain variables			
EEPROM		16 KB			
		Data Retention: 40 years; 1,000,000 erase/write cycles			
NVRAM		31 bytes (battery backup, data valid up to 5 year			
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)			
NET ID		8-pin DIP switch to assign NET ID as 1 ~ 255			
Communication Ports					
Ethernet		-	RJ-45 x 2, 10/100 Base-TX (Auto-negotiating, Auto MDI/ MDI-X, LED indicators)	-	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	D+, D-; self-tuner ASIC inside			
	Isolation	3000 VDC			
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					
5-Digit LED Display		Yes			
3-Programmable LED Indicators		Yes			
4-Push Buttons		Yes			
Buzzer		-	Yes	-	Yes
I/O Expansion Slots					
Slot Number		4		8	
		(For High Profile I-8K and I-87K Modules Only)			
Hot Swap * Will be available		For High Profile 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	
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		0.85 A, 5 V supply to CPU and backplane, 5.51 A, 5 V supply to I/O expansion slots, 30 W in total		0.9 A, 5 V supply to CPU and backplane, 5.1 A, 5 V supply to I/O expansion slots, 30 W in total	
Consumption		6.7 W (0.28 A @ 24 VDC)		7.2 W (0.3 A @ 24 VDC)	

ISaGRAF Specifications

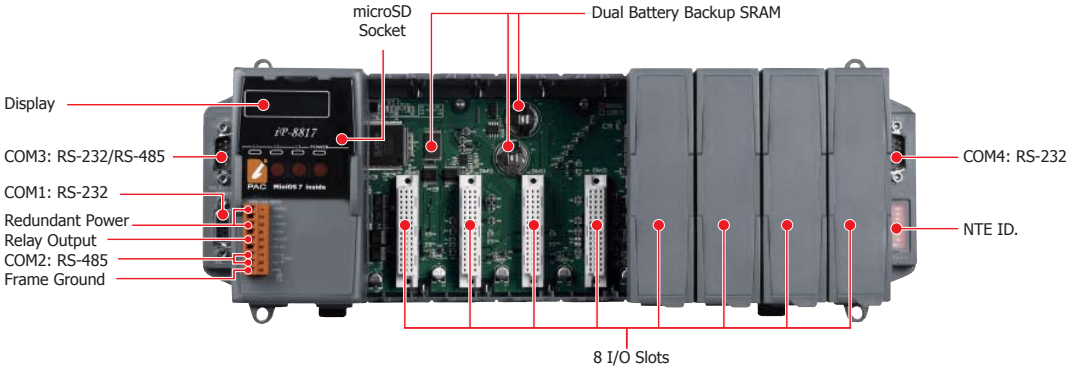


Protocols (some protocols need optional devices)		
Modbus RTU/ASCII Master		Max. 2 COM Ports, COM1 ~ COM5 can support Modbus RTU Master or ASCII Master protocol to connect to other Modbus Slave devices. Max. Modbus_xxx Function Block amount for 2 ports: 128. (*)
Modbus RTU Slave		Max. 2 COM Ports, COM1 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)
Remote I/O		One of COM2 or COM3 or COM4 supports I-7000 I/O modules & [(I-87Kn base or RU-87P1/2/4/8) + 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)
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-8x47 supports max. 3 RS-232 ports to connect max. 3 I-7530. (*)
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)
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-continous), 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 pulse)
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, 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-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. 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.
	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.

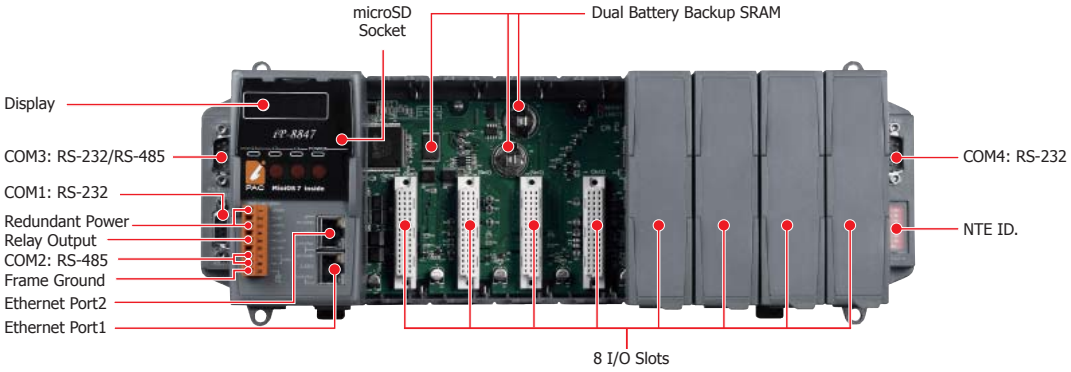
***Note: COM5 ~ COM20 are resided at the expansion boards if they are plugged on slot0~7 of iP-8xx7.**

Appearance

iP-8817

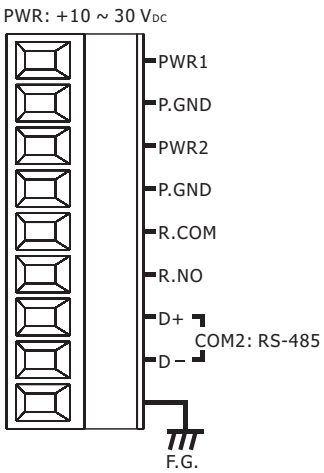


iP-8847

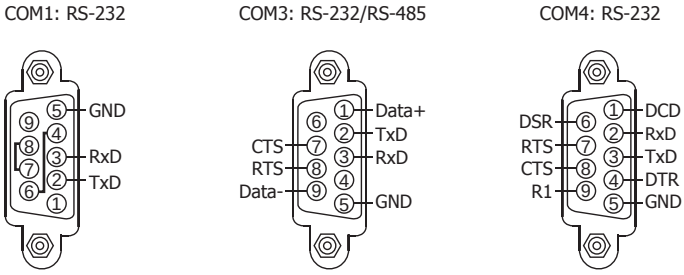


Pin Assignments

Terminal Block

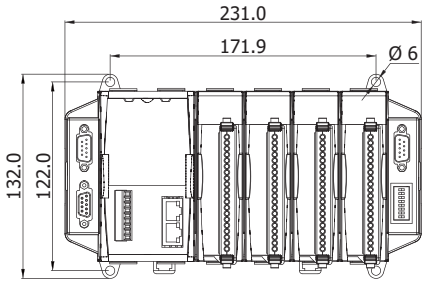


COM Port

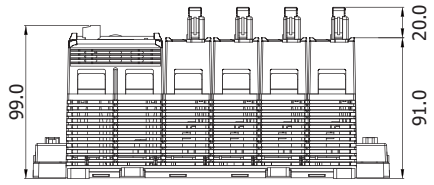


Dimensions (Units: mm)

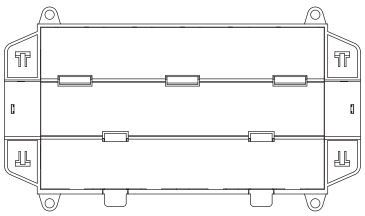
iP-8417/8447



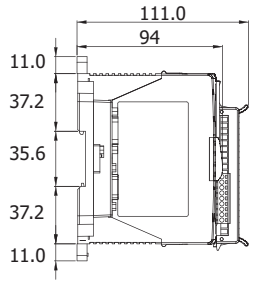
Front View



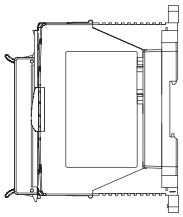
Bottom View



Rear View

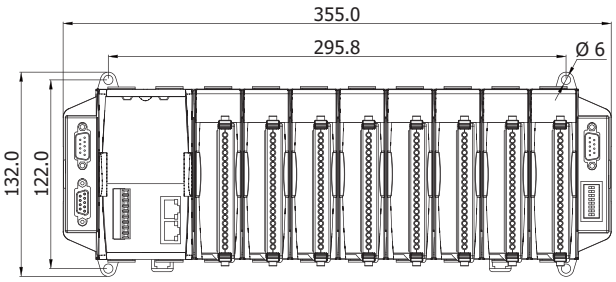


Left Side View

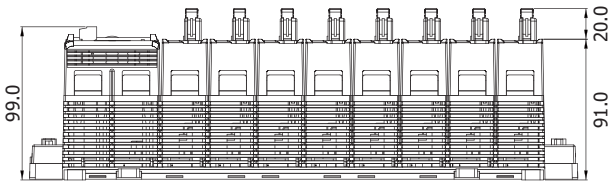


Right Side View

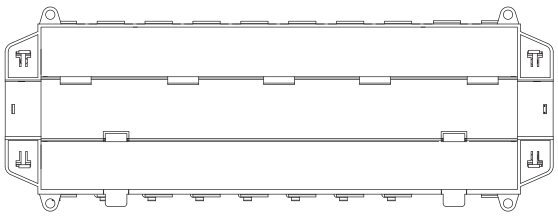
iP-8817/8847



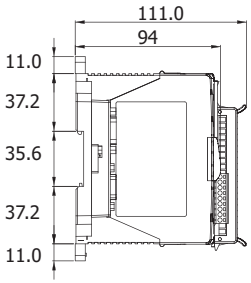
Front View



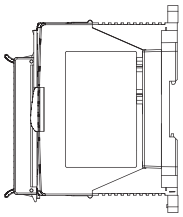
Bottom View



Rear View



Left Side View



Right Side View

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. (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-665	24 V_{DC}/2.7 A, 65 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)
Converter	
I-7560 CR	USB to RS-232 Converter (RoHS)