Compact PAC Products Catalog

ICP DAS Compact PACs 2011 Product Catalog

Vol. PAC 1.0.02 (2011.JAN.07)

Programmable Automation Controllers

Expansion Solutions

Industrial I/O Modules

2011 Product Catalog Vol. PAC 1.0.02 (2011.JAN.07)

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PAC Products

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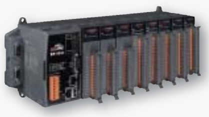

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Introduction

PAC: Programmable Automation Controller
PAC ≒ IPC+PLC

The PAC family of ICP DAS 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.

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

Our PAC family includes WinPAC, XPAC, LinPAC, iPAC, ViewPAC , Motion PAC and µPAC for different requirements in OS, CPU and development platform.

PAC family

WinPAC

XPAC

LinPAC

iPAC

ViewPAC

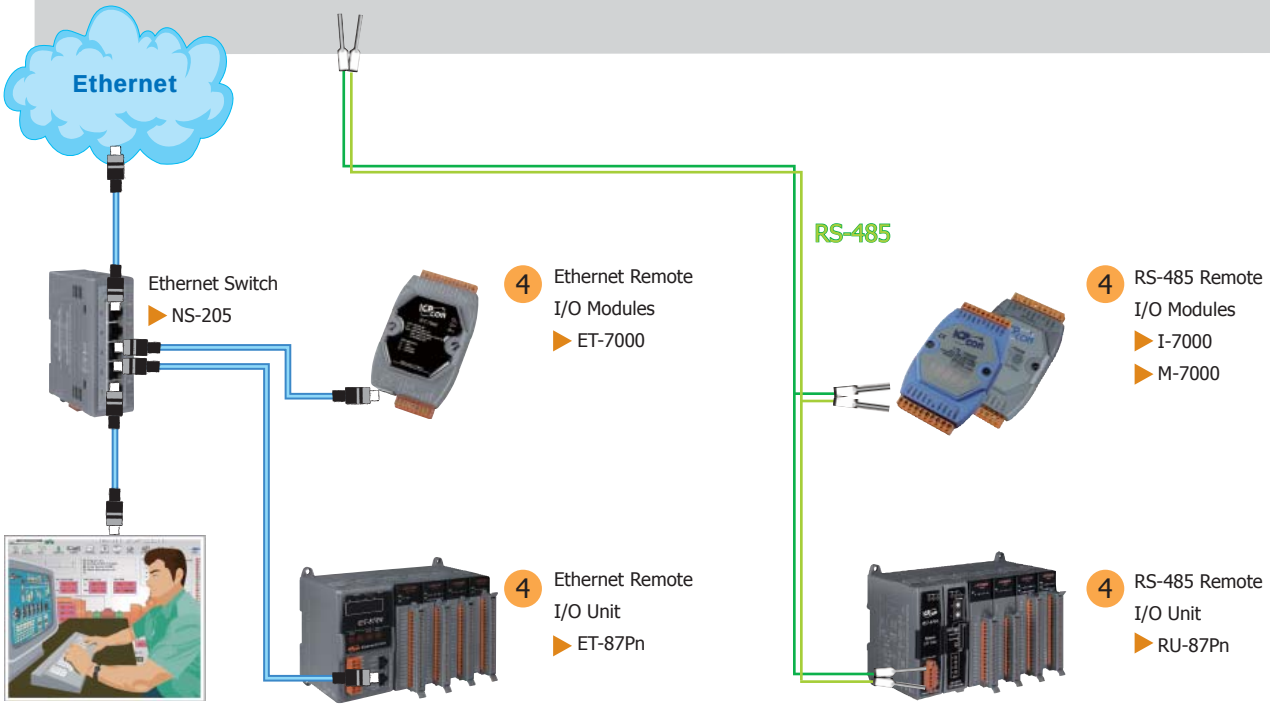
Four Basic Components of PAC

1 **Main Control Unit (MCU)**

2 **Embedded OS**
- WinPAC: WinCE 5.0
- XPAC:
  WES 2009
  WinCE 6.0
- LinPAC: Linux Kernel 2.6
- iPAC: MiniOS7
- ViewPAC: All of above

3 **I/O Modules**
- Parallel:
  I-8KW High speed
  High Profile I/O modules
- Serial :
  I-87KW Low speed
  High Profile I/O modules

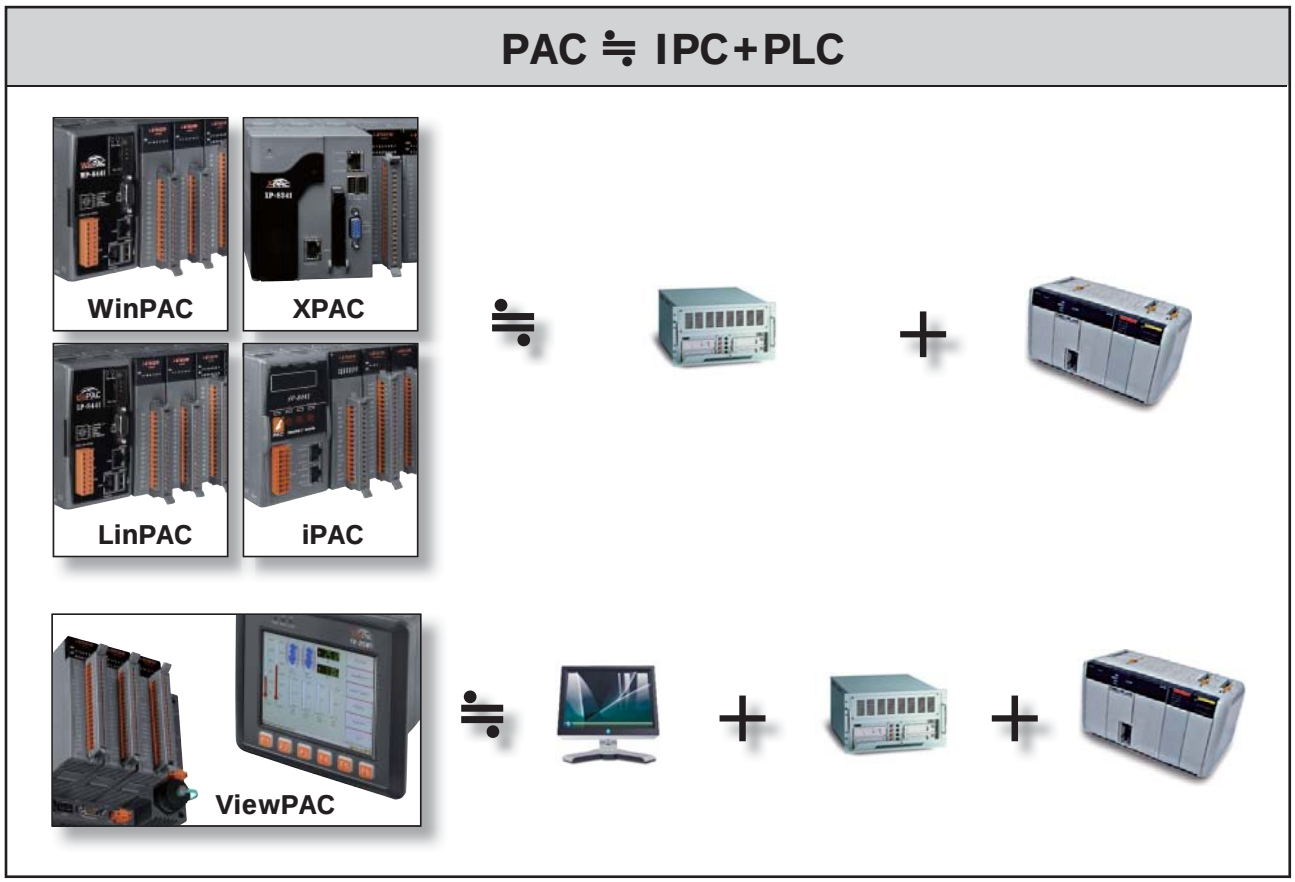
4 **Remote I/O Expansion**
- Remote I/O Modules
- Remote I/O Unit + I/O Modules



Features

1. General Description

The PAC family comprises a central processor (CPU), power supply, I/O bus, communication interfaces, front panel control facilities and connectors to plug in various I/O modules.



Key Features of the PAC

- Powerful embedded OS

PAC	Operating System
WinPAC	WinCE 5.0
XPAC	WES2009, WinCE 6.0
LinPAC	Linux kernel 2.6
iPAC	MiniOS7
ViewPAC	MiniOS7, WinCE 5.0, Android 1.6

- Various networking & communication
- Integrated display and control panel
- Comprehensive range of Software Support
- I/O Module can be auto-configurable:
  For both Serial (High profile I-87KW Series) and Parallel (High profile I-8K Series) I/O modules
- I/O Module can be hot-swap:
  For Serial I/O (High profile I-87KW Series)
- Support removable microSD, internal SRAM or Flash disk (for different PAC)

Advantages of the PAC

- PAC=IPC+PLC, buy one get more
- Intelligent management controller
- Cost effective
- best price/ performance
- Versatile I/O expansion
- More reliability (VS. IPC)
  Fan-less design
  Wide temperature range
  WinCE/Linux OS support
- Compact size (VS. IPC)
  Din-Rail support.
  PLC look-like
- More peripherals support (VS. PLC)
  Support Ethernet, USB, VGA
- Flexible programming support (VS. PLC)
  Support C/C++/C#, .Net, BASIC/VB,...etc.

PAC family

2. Powerful Communication and Networking

The PAC family is featured with the powerful communication and networking ability to connect with other PAC, devices, I/O modules and other systems through RS-232, RS-485, Ethernet, CAN/CANopen/ DeviceNet or FRnet bus etc. The PAC family also supports the GPRS/ GSM modules to expand the communication bus to wireless applications. In addition, the HART and PROFIBUS modules with PAC family can be applied in the high security environments.

RS-232/485 Ethernet CAN bus FRnet GPS/GSM PROFIBUS HART

The main control unit of PAC is equipped with RS-232/RS-485 communication interfaces. The PAC is easy to communicate with Serial remote I/O modules through RS-485 and PC/HMI through RS-232.

I-7000/M-7000

RU-87Pn

The PAC can plug in a CAN communication module I-8120W or I-87120W to control CAN Bus I/O devices or our remote I/O unit, such as CAN-8x2x, CAN-2000.

I-8120W

CAN-8x23

CAN-2000

RS-232/485 | **CAN bus**

Remote I/O

Ethernet | **FRnet**

ET-7000

ET-87Pn

The main control unit is designed for Internet/ Ethernet applications and supports the TCP/IP, Web-Server.

The TCP/IP library provides an easy way to connect these modules directly to the Internet through the Ethernet controller.

A built-in Web-server library provides directly link to a standard HTML browser, IE or Netscape.

I-8172W

FRnet I/O Module

FRnet Distributed I/O Module

FRnet is an innovative industrial field bus that has many special features, such as high-speed deterministic I/O control, real I/O synchronization capabilities, non-protocol communication, and easy programming.

Plugging a FRnet communication module (I-8172W), the PAC can link FRnet I/O modules to implement high-speed distributed I/O control.

GPRS/GSM

The PAC can plug a GSM/ GPRS communication module (I-8212W) or a GSM/GPRS/ GPS communication module (I-8213W) to access mobile network services. They expand the capability of PAC series into Machine to Machine, Mobile, Man communication applications.

I-8212W I-8213W

PROFIBUS

PROFIBUS (Process Field Bus) is a standard for field bus communication in automation technology. The PAC can become a PROFIBUS DP Slave Station by plugging in a PROFIBUS DP Slave communication.

HART

HART technology offers a reliable and long-term solution for plant operating. The PAC can plug a HART AI or AO module to communicate with HART devices.

3. Powerful Hardware Design

The PAC family of ICP DAS with powerful hardware design can operate in harsh, electrically noisy environments and provide faster & more professional performance. This has been achieved through attention to the following:

Built-in Dual Watchdog Timers

The integrated watchdog circuit will reset the CPU module if there is a failure in either the hardware or software.

Wide Operating Temperature

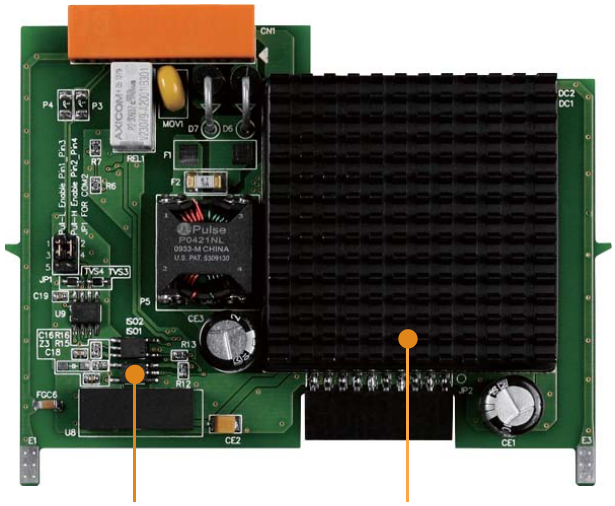
The PAC product is designed to operate over a very wide temperature range from -25 °C ~ +75 °C.

High performance integrated power supply

The built-in isolated power supply is rated to perform linearly up to full loading.

Input Protection circuitry

The protection circuitry on both the network and power supply protects the system from external signals such as main spikes and ambient electrical noise. In addition the central processing modules are isolated three ways from external signals. This is through I/O isolation of 3 kV, network isolation to 3 kV and power isolation to 1000 V.



Network isolation Power isolation

Easy-to-Install

The PAC family is easy-to-installed by either DIN-rail mounted or Rack mounting. Input signals can be connected to the unit with easy using plug in signal connectors.

Din-Rail

Rack Mount

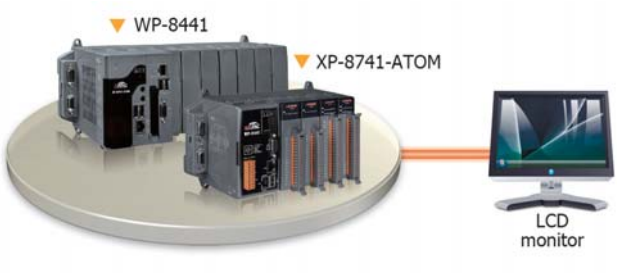
Support Flash, SRAM/SDRAM/DDR SDRAM, Battery-backup SRAM or microSD

PAC family provides various memory storages, such as Flash, SRAM/ SDRAM/DDR SDRAM, battery-backup SRAM disk or microSD.

VGA Port for high-end PAC

The high-end PAC provides a VGA port to connect to a regular LCD monitor.
This makes following major adventages

- ☐ flexible to choose different size of LCD monitors
- ☐ easy to design user interface
- ☐ no complex communication betwen the HMI and the PAC



Operating System

XP-8000-Atom-CE6

XP-8000-Atom

WinPAC

ViewPAC

Microsoft Windows Embedded Standard 2009

WES 2009

Advantages:
- Has same Win32 API as Windows XP Professional does.
- Enhanced Write Filter (WES) to protect the system disk (C:\) from write access and unpredictable power lost.

Features:
- FTP server
- HTTP server
- SQL express
- .NET framework 3.5
- Win32 APIs

Software development tools:
- Visual Studio 2005/2008
- VC++ 6.0
- VB 6.0
- Delphi
- BCB Builder
- and most development tools avalible on Windows XP

Note: ISaGRAF is not avalible on this platform.

Microsoft Windows CE.net

WinCE 5.0 / 6.0

Advantages:
- Hard real-time capability
- Small core size
- Short boot time
- Interrupt handling at a deeper level
- Achievable deterministic control
- Low cost

Features:
- FTP server
- HTTP server
- SQL server embedded
- .NET compact framework 2.0/3.5

Software development tools:
- Visual Studio 2005/2008
- ISaGARF (Soft PLC)
- InduSoft (SCADA)
- eLogger (HMI and data logger)

LinPAC

ViewPAC

iPAC

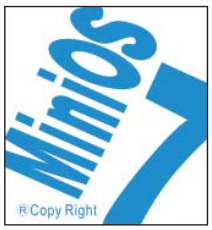
ViewPAC

Linux Kernel 2.6 / Android 1.6

Advantages:
- Stability
- Flexibility
- Low cost
- Free of charge
- Powerful software and development tools
- Open and standard programming environments

Features:
- Open source
- Small core size
- Support for XWindows
- Support for service: Web, FTP, Telnet and SSH server
- GNU Toolchain for Windows and Linux operating systems

Support programming:
- GNU C
- JAVA
- GUI



MiniOS7

Advantages:
- Stability
- short boot time period (<1 second)
- Less memory resource required
- Faster watchdog response time
- Free IDE development: MiniOS7 Studio

Features:
- DOS-like embedded OS
- Antivirus ability
- Internet connectivity
- Rich libraries & demo programs

Support Programming:
- C Language
- SoftPLC Logic (ISaGRAF)

Software

1. ISaGRAF (SoftPLC Solution)

ISaGRAF is a powerful SoftLogic package on the industrial market. **ISaGRAF Workbench** is a PLC-like development software running on Windows 95/98/NT/2000/XP/Vista/7 and its **ISaGRAF Runtime** application programs can run on any **ISaGRAF PAC**s such as WP-8xx7, VP-2xx7, XP-8xx7-CE6, iP-8xx7, µPAC-7186(P)EG etc. Using ISaGRAF PACs, the control/monitor systems can easily implement industrial level of real-time data acquisition and data/devices control via wiring or wireless network in various industries.

Application area: data acquisition system, distributed control system, factory and building automation, motor control, remote I/O system, wireless control system...

ISaGRAF Workbench Features:

- Support IEC 61131-3 Standard Open PLC Languages
  + Flow Chart (FC) :
    1. Quick Ladder (LD)
    2. Function Block Diagram (FBD)
    3. Sequential Function Chart (SFC)
    4. Structured Text (ST)
    5. Instruction List (IL)
    6. Flow Chart (FC)
- On-line debugging/control/monitor
- Off-line simulation
- On-line change (For WP-8xx7, VP-2xW7, XP-8xx7 only)
- Spotlight: Simple graphic HMI
- Auto-Scan I/O
- Lock & unlock I/O
- Uploading the program in the PAC

ISaGRAF Solution Features:

- Support eLogger HMI
  - A free HMI software on the WinPAC, XPAC and ViewPAC
  - Easy to design HMI + SoftLogic application
- Modbus Master Protocol
  - Modbus RTU, ASCII, RS-232/485/422 Master
  - Modbus TCP Master
  - For connecting other Modbus PLCs, meters, I/Os and devices
- Modbus Slave Protocol
  - Modbus RTU (RS-232/485/422) Slave
  - Modbus TCP/IP Slave
  - For connecting other PC/HMI/SCADA (Ex. InduSoft) and touch HMI (Ex. Touch-506T)
- Data-Recorder & Data-Logger
- Data Exchange
  - Ebus: Through Ethernet
  - Fbus: Through RS-485
  - PAC to PAC
- CAN/CANopen
  - Via I-7530 to connect CAN/CANopen devices
  - For connecting other CAN/CANopen meters, I/Os, devices
- FRnet I/O
- Motion Control
  - For controlling server motors (P-command)
- PAC can send e-mail to the internet
- SMS: Short Message Service: GSM modem
  - For reporting data and alarms to the operators
- Wireless Communication: GPS, ZigBee & Radio
- Auto-report Acquisition/Control Data
- Redundant Solution : Hot-swap/Ethernet
- Construction Stress Monitoring: VW sensor and Carlson strain gauge inputs solutions (Bridge/dam/building...)

Software Development: ISaGRAF V.S. C++ and VS.net 2008

Item	ISaGRAF Ver. 3.xx	C++	VS.net 2008
Programming	Easy	Hard	Middle hard
Debug	Easy	Hard	Middle hard
SoftLogic	Yes	No	No
Program I/O	Just connect and play	Hard coding	Hard coding
Communication	Already built-in Modbus TCP, Modbus RTU, Modbus ASCII, DCON, SMS, e-mail, TCP, UDP, ...	Hard coding	Hard coding

2. InduSoft (SCADA Solution)

Introduction :

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 embedded instrumentation and control 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. We provide the InduSoft bundled driver to integrate InduSoft software into ICP DAS products (IO Modules: I-7000, I-8000, I-87K ; PACs: WinPAC, WinPAC, XPAC) for SCADA system.

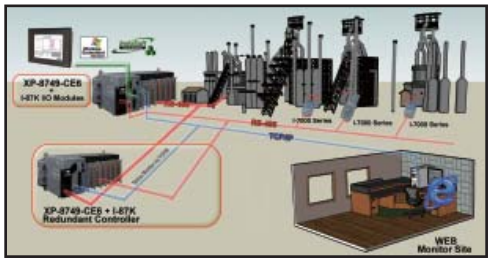
Integrated with ICP DAS PACs :

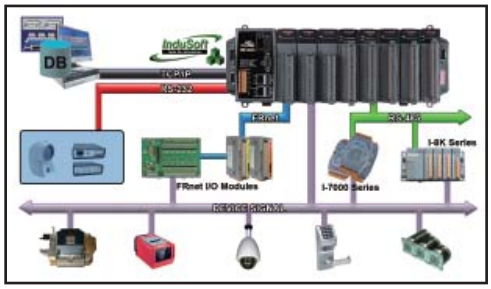
InduSoft has been integrated into ICP DAS various PACs including WinPAC, ViewPAC, XPAC and XPAC-CE6. The following is the advantages when using InduSoft with ICP DAS PACs.

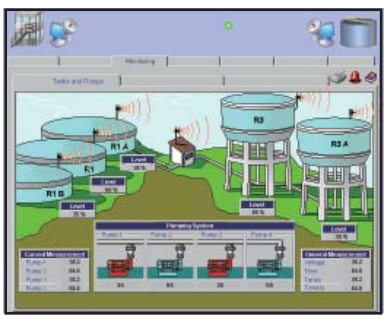
	Features
WinPAC	• Stable and high performance-to-price ratio small SCADA system • Rapidly and easily develop I/O integrated graphic supervisory control system
ViewPAC	• Provide integrated touch HMI/SCADA system solution • Suitable for spatial narrow and small machine control system
XPAC	• High performance and various Win32 API and Tool integrated SCADA system • Easily integrate third party software for multi-purpose application
XPAC-CE6	• Provide the best choice for high efficiency real time embedded system • Suitable for massive data acquisition and processing centralized system

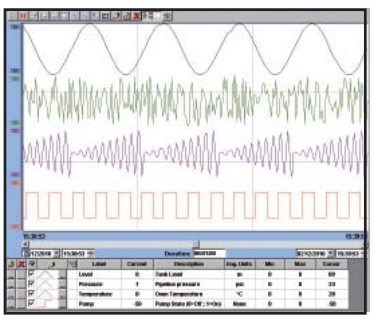
Features:

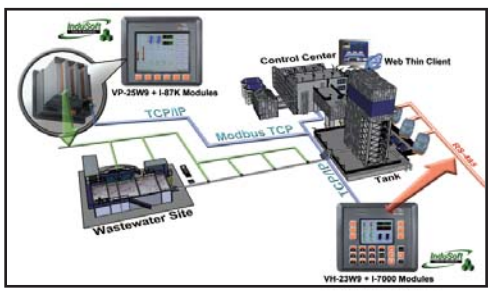
- Elegant Graphics
- Multi-Language
- Database (Access, Excel, SQL, Oracle…)
- Recipes and Reports
- Online and History Alarm / Trend
- Various Communication Driver
  (DCON, Modbus, OPC, DDE, TCP/IP…)
- Remote Web Client Control & Security
- ActiveX (GSM / SHM / COM /WEB provided by ICP DAS)
- System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



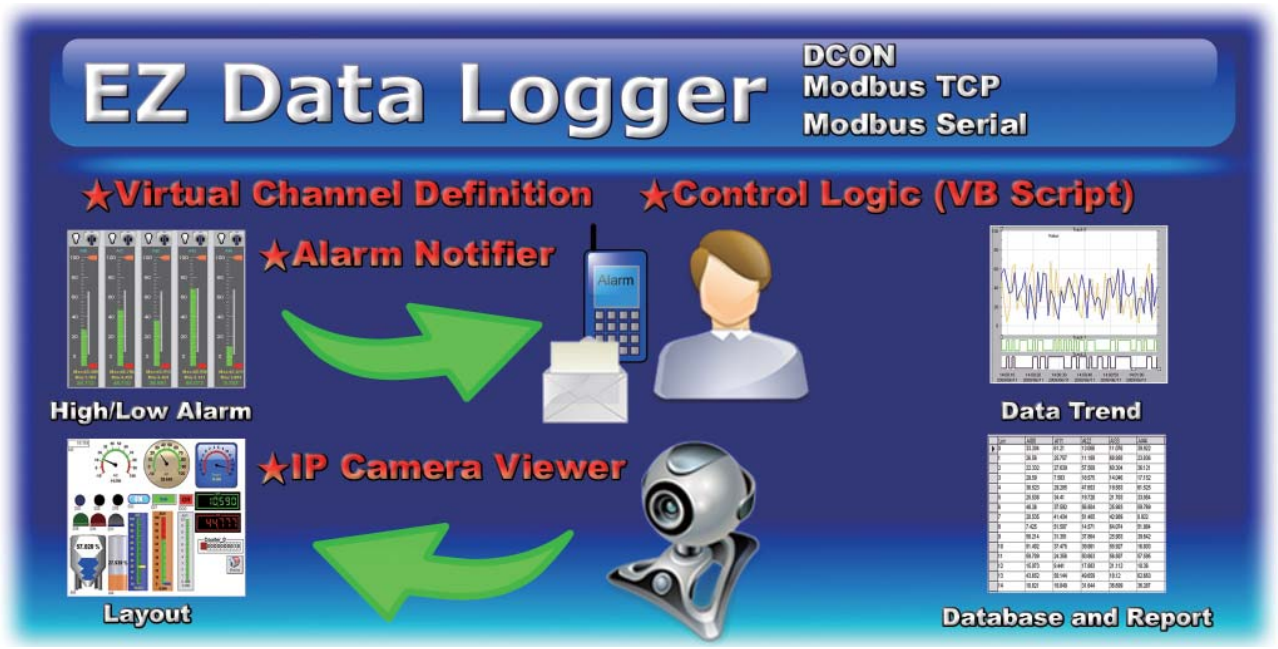








3. EZ Data Logger

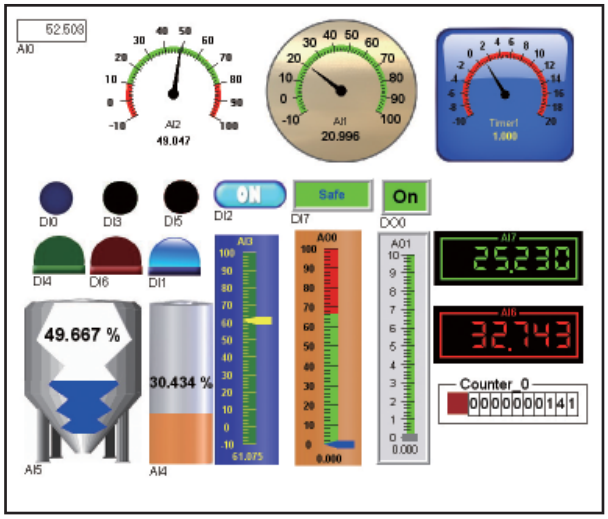


EZ Data Logger is the software that ICP DAS provides for users to easily build a SCADA system on Windows 2000/XP/Vista. It comes with two versions, "Lite" & "Professional". The Lite version is not only full-functioned but free to all ICP DAS users!

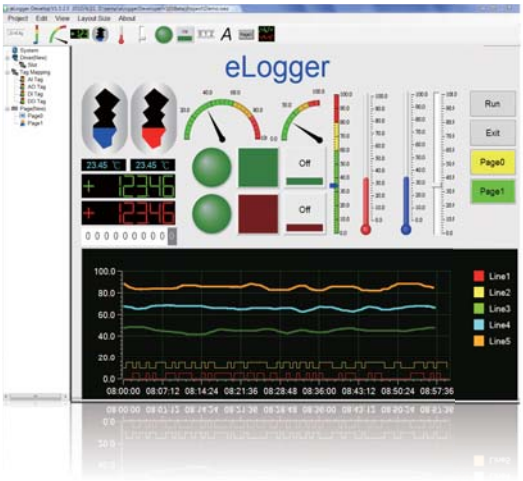
EZ Data Logger is a small data logger software. It can be applied to small remote I/O system. With its user-friendly interface, users can quickly and easily build a data logger software without any programming skill.

Features:

- Support DCON, Modbus RTU, Modbus ASCII, Modbus TCP protocols
- Support multiple COM Ports and TCP/IP connections
- Support Virtual Channel definition
- Support Control Logic (VB Script)
- Support Alarm Notifier (by sending SMS to cell phone or E-Mail)
- Flexible module configuration (different description and color)
- Flexible workgroup configuration
- Real time data trend (with zoom in and zoom out)
- Each trend line can store more than 86400 records.
- Provide Layout view
- Provide IP Camera Viewer
- Access database supported (can be exported to Excel file or CVS file)
- Provide Reporter to print trend line or data
- Provide High/Low alarm with audio warning
- Can search for DCON (I-7000/8000/87K) modules and Modbus (M-7000) serial modules
- Provide Value scaling
- All operations are done by click mouse and enter value.



4. eLogger



eLogger is an easy-to-use software to implement HMI and data logger on our Windows CE.NET 5.0/6.0 based PACs (XPAC, WinPAC and ViewPAC) for simple I/O monitoring and controlling systems. It can save your money and shorten time-to-market. eLogger can quickly and easily develop an application with flexible I/O configuration. The developing can be completed in just 5 simple steps:

Step 1: configuring I/O modules
Step 2: configuring data logger
Step 3: designing HMI layout pages,
Step 4: uploading the project to WinPAC/ViewPAC,
Step 5: running it.

In the simple steps, there is no need of software programming knowledge. And if you want to add more powerful functions, eLogger also provides a flexible "shared memory" interface to allow your VS.NET and ISaGRAF programs co-work with it. eLogger currently supports I-87K series I/O modules on local slots. In the future, it will support I-8K series I/O modules on local slots and remote I/O modules over RS-485, Ethernet with DCON and Modbus protocols. With the various I/O module series, you can find I/O modules to suit various configurations.

Features:

1. PAC Support:
   - Developer: Windows 2K,Windows XP, Windows Vista, Windows7
   - Run time target: Windows CE.NET 5.0/6.0 platform, such as XP-8x4x-CE6 series, WP-8x3x series, WP-8x4x series, VP-23W1, VP-25W1

2. I/O Module Support:
   - High speed local I/O (not avalible): I-8K series
   - Low speed local I/O: I-87K series
   - RS-485 remote I/O (not avalible): I-7000, M-7000, RU-87Pn, Modbus/RTU/ASCII devices
   - Ethernet remote I/O (not avalible): ET-7000, ET-87Pn, Modbus/TCP devices

3. Signal Type of I/O Modules:
   - DI, DO, AI, AO, counter, frequency, DI with latch function.

4. Communication (not avalible)
   - RS-485: DCON master, Modbus/RTU master, Modbus/ASCII master
   - Ethernet: DCON master, Modbus/TCP master

5. HMI
   - Elements: button, text box, linear gauge, angular gauge, LED numeral, LED indicator, tank, label, trend line.

6. Real Time Data Trend
   - Zoom in and zoom out
   - Max. of 5 trend lines in one page.

7. Value Scaling

8. Account Management

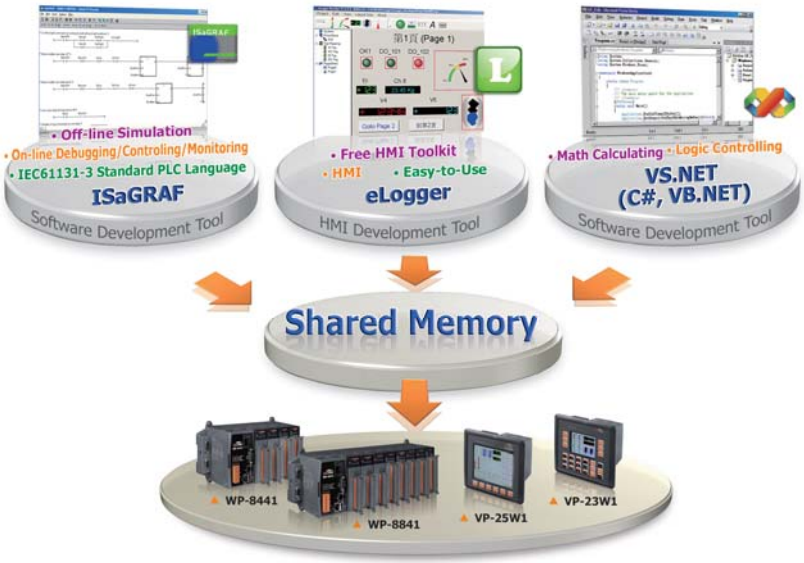
9. Remote Maintenance (not avalible)

10. Data Base
   - Local data base: SQL embedded.
   - Remote data base(not avalible): SQL 2005 on Windows platform.

11. Logic Control Programming

Via the " shared memory " , you can choose ISaGRAF or VS.Net to develop a logic control program and co-work with the elogger. Your programs can access the data of I/O module and exchange other temporary data through the "shared memory". You can focus on the logic control programming.

- ISaGRAF
  (IEC61131-3 standard PLC languages)
  (Refer to ISaGRAF FAQ-115)
- Visual Studio .NET (C#, VB.NET) for Window CE.NET 5.0/6.0

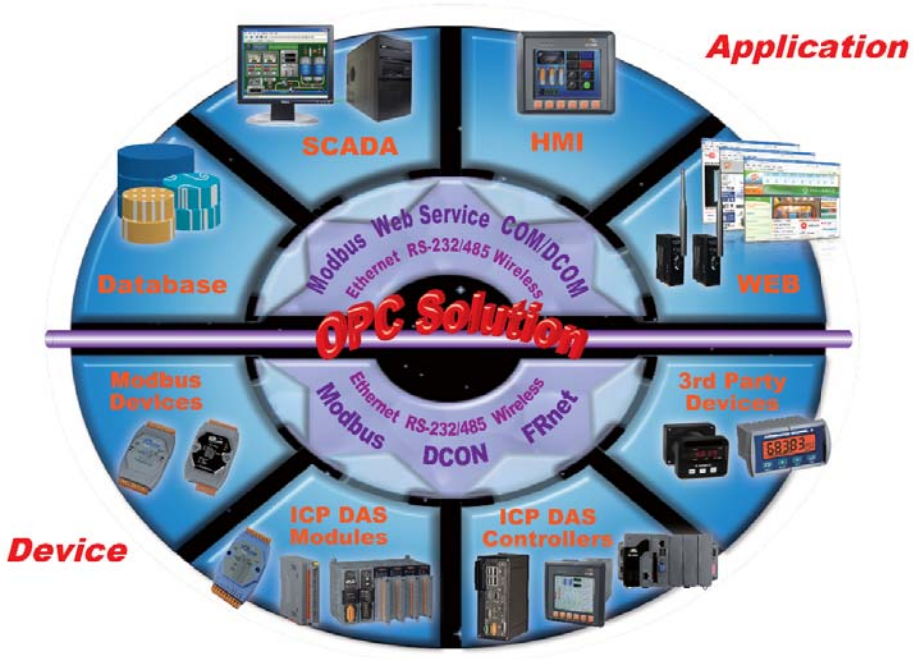


5. NAPOPC DA Server

NAPOPC DA Server is a **free** OPC DA Server **(The "OPC" stands for "OLE for Process Control" and the "DA" stands for " Data Access")** provided by ICP DAS running on WinPAC, ViewPAC, XPAC, WinCon and PC with Windows 95/98/ME/2000/NT/XP operating systems. **NAPOPC DA Server** provides many benefits to users such as reduce time through lower system integration costs, integrate easily with plug-and-play SCADA/HMI/Database, connect and interoperate easily to custom applications, access to data by anyone in the automation hierarchy, reduce troubleshooting and maintenance cost, write to devices synchronously and asynchronously (not possible before OPC).

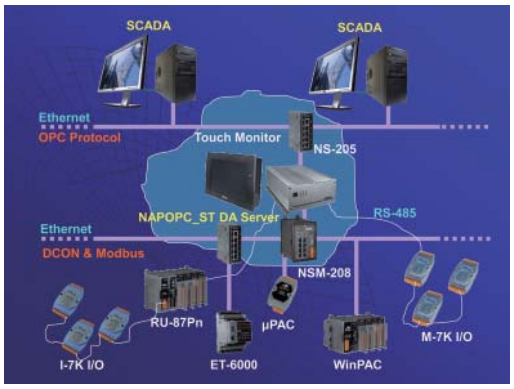
Using SCADA/HMI/Database software program, system contacts and obtains data from NAPOPC DA Server either on the same computer or on another computer. SCADA/HMI/Database makes a request and NAPOPC DA Server fulfills the request by gathering the data of ICP DAS modules and third-party devices to SCADA/HMI/Database.

For different OS of PAC products, ICP DAS provides several professional DA Servers, such as:
NAPOPC_ST DA Server : For Windows 95/98/ME/2000/NT/XP OS
NAPOPC_XPE DA Server : For Windows XP Embedded OS
NAPOPC_CE5 DA Server : For Windows CE 5.0 OS
NAPOPC_CE6 DA Server. : For Windows CE 6.0 OS



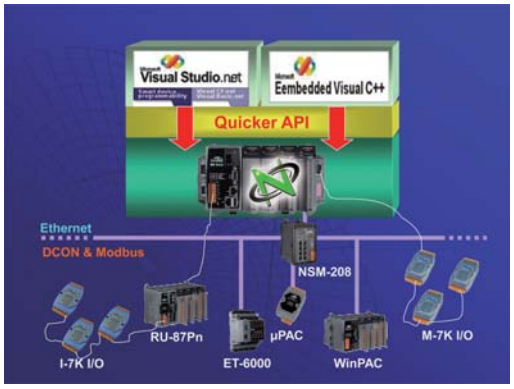
Features:

- Easy-to-use explorer-style user interface
- Multi-thread communication
- Auto search & Auto generate
- Support Modbus devices
- Provide "OPC to Modbus" service
- Support Host Watchdog
- Unique design:
  - Active data transmission mechanism
  - OPC Client can select the document in the DA Server during runtime
  - Open application programming interface



Support :

- ICP DAS I-7K/I-8K/I-87K I/O modules
- ICP DAS Ethernet I/O
- ICP DAS FRnet Remote I/O
- Support third party Modbus devices
- ICP DAS PACs which support Modbus protocol
- Compatible with most development platforms (Visual C++, Visual Studio .Net)
- Compatible with all local and remote OPC Client
  (Remote Accessing using DCOM technique)
- Compliant with OPC specification V2.0



Applications :

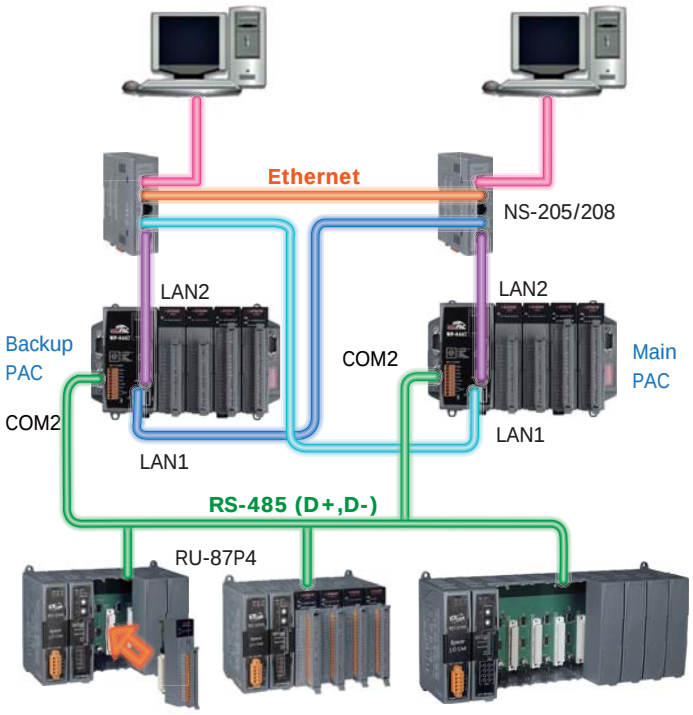
- Protocol Conversion Application
- VxComm Application
- Wireless I/O Application
- Active Server to Client Communication Application
- Direct Cross-Process I/O Access Application

Redundant System

1. Redundant PACs with RS-485 I/O

Features:

- Redundant PACs
- ISaGRAF based PAC
- Modbus/TCP protocol for connecting PCs and PACs
- Redundancy switchover time less than 0.5 second
- RS-485 network for connecting PACs and I/O modules
- Hot Swap and Auto Configuration I/O modules



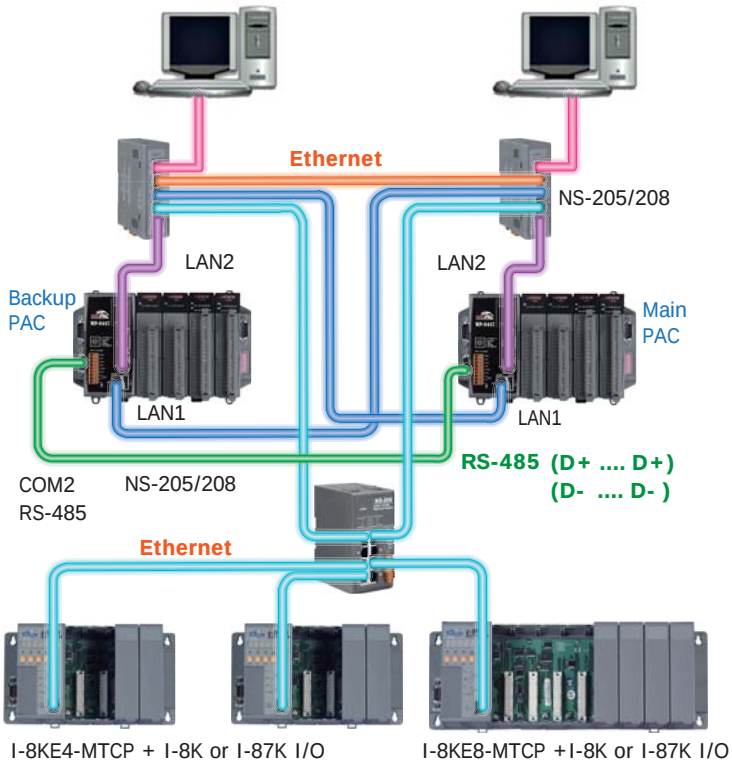
Hot Swap!

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

2. Redundant PACs with Ethernet I/O

Features:

- Redundant PACs
- ISaGRAF based PAC
- Modbus/TCP protocol for connecting PCs and PACs
- Redundancy switchover time less than 0.5 second
- Ethernet network for connecting PACs and I/O modules
- Hot Swap and Auto Configuration I/O modules



I-8KE4-MTCP + I-8K or I-87K I/O

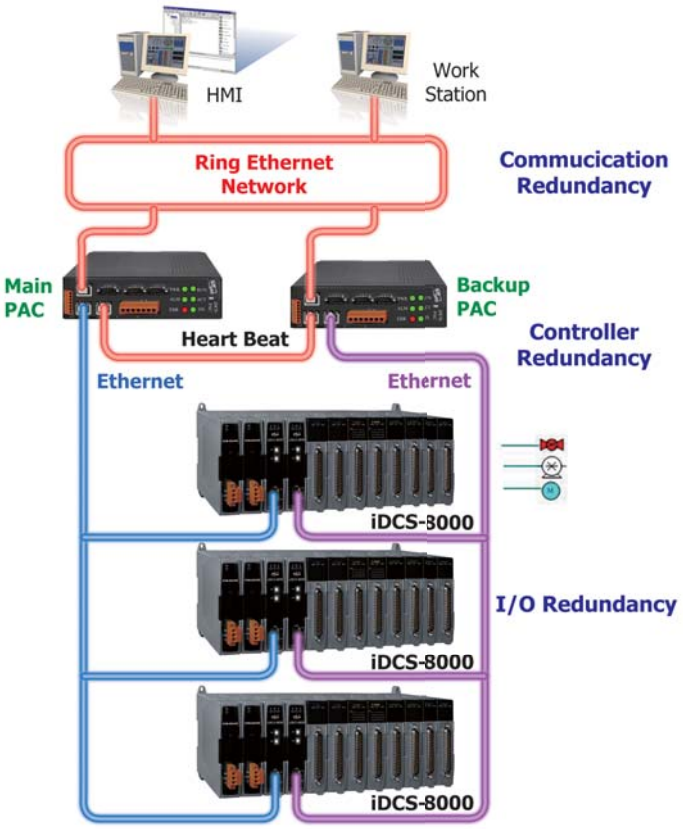
I-8KE8-MTCP +I-8K or I-87K I/O

Redundant System

3. Redundant PACs with DCS I/O

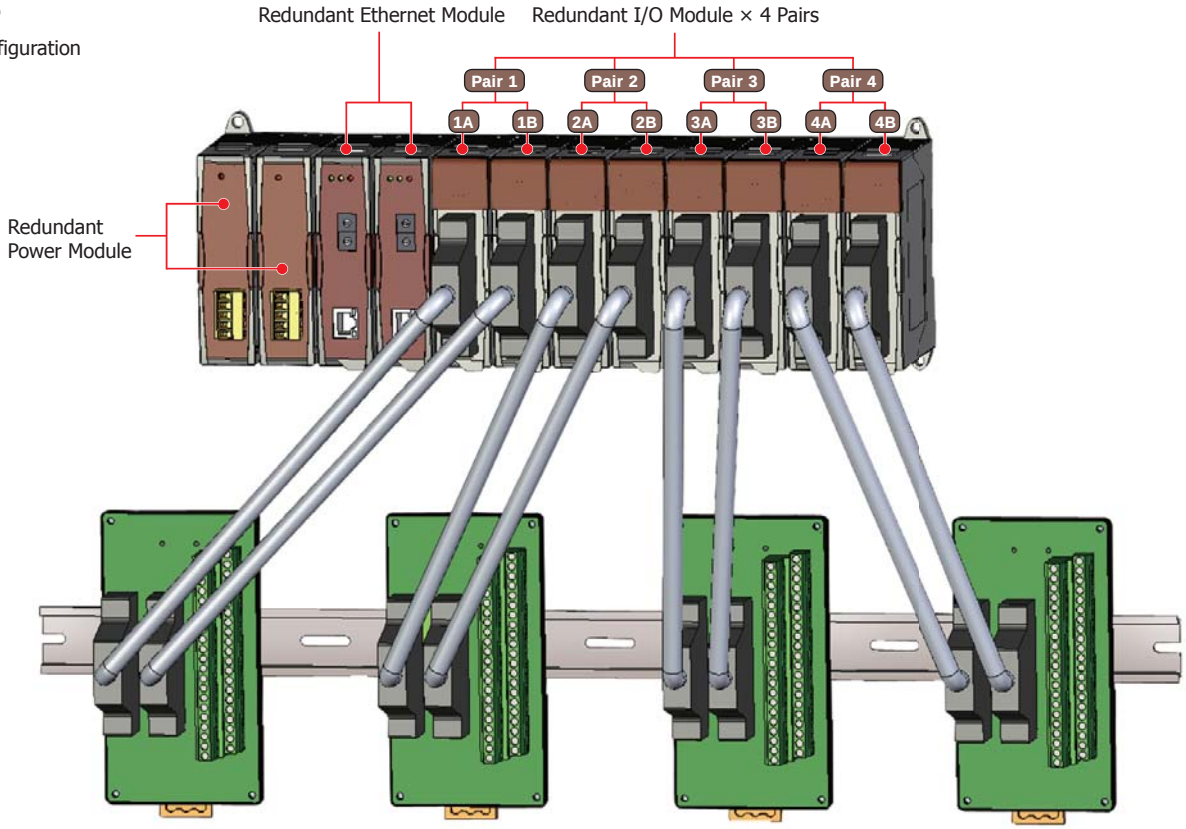
Features:

- Redundant PACs
- Redundant Ethernet network for connecting PACs and DCS I/O modules
- Redundant power supply for DCS I/O modules
- Redundant DCS I/O modules
- ISaGRAF based PAC
- Modbus/TCP protocol for connecting PCs and PACs
- Redundancy switchover time less than 0.5 second
- Ethernet network for connecting PACs and DCS I/O modules
- Hot Swap and Auto Configuration DCS I/O modules



iDCS-8000 Features:

- Redundant
- Hot Swap
- Auto Configuration



Compact PAC

2

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

- Overview - - - - P2-1-1
- Selection Guide - - - - P2-1-3
- Data Sheet - - - - P2-1-5

2.2 XP-8000 Series P2-2-1

- Overview - - - - P2-2-1
- Selection Guide - - - - P2-2-3
- Data Sheet - - - - P2-2-5

2.3 WP-8000 Series P2-3-1

- Overview - - - - P2-3-1
- Selection Guide - - - - P2-3-2
- Data Sheet - - - - P2-3-3

2.4 LP-8000 Series P2-4-1

- Overview - - - - P2-4-1
- Selection Guide - - - - P2-4-2
- Data Sheet - - - - P2-4-3

2.5 iP-8000 Series P2-5-1

- Overview - - - - P2-5-1
- Selection Guide - - - - P2-5-2
- Data Sheet - - - - P2-5-3

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.

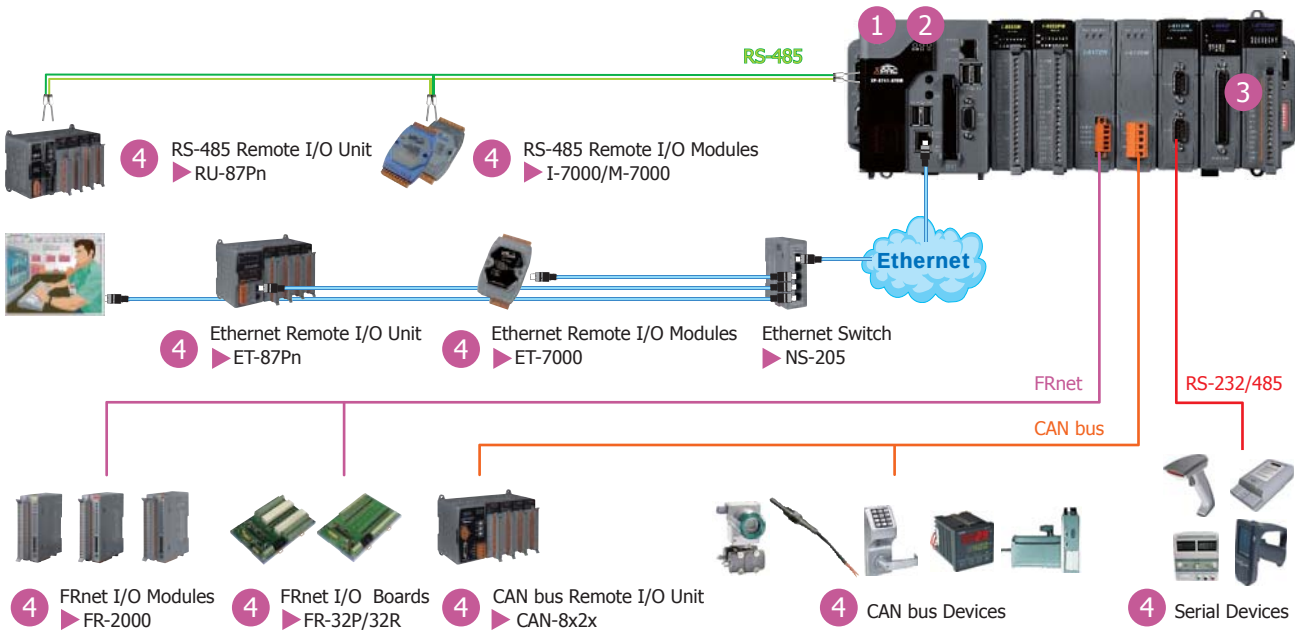
2 Embedded OS

• **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

NO. of I/O Slot

Hardware
4: VGA 1600 x 1200

Software
1: Standard
7: ISaGRAF
9: InduSoft

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

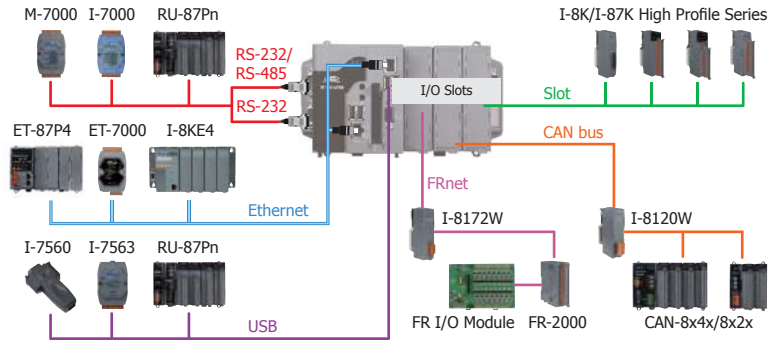
- Enhanced Write Filter (EWF): Protects disk against improper disk write operations.
- Same Win32 API: Makes developing applications just like Windows XP Professional developers do.

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

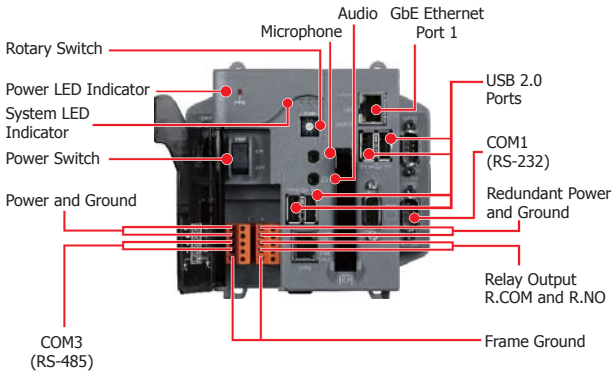
- Powerful CPU Module
  - Intel Atom Z520 CPU (1.33 GHz)
- Memory size:
  - DDR2 SDRAM (1 GB), Built-in Flash Disk (8 GB)
  - EEPROM (16 KB), CF Card (8 GB)
  - Dual Battery Backup SRAM (512 KB)
- VGA Port x 1, USB 2.0 Ports x 4
- Programmable LED indicator x 2
- Audio with Microphone-In and Earphone-Out
- 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

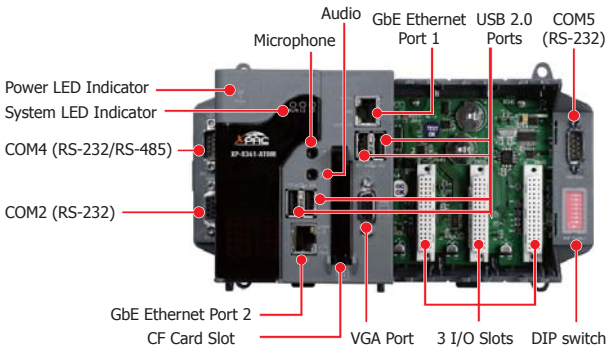
Models		XP-8041-Atom	XP-8141-Atom	XP-8341-Atom	XP-8741-Atom
System Software					
OS		Microsoft Windows Embedded Standard 2009			
.Net Compact Framework		3.5			
Embedded Service		FTP Server, Internet Information Service 5.1, ASP (Java Script, VB Script), SQL Server 2005 Express			
SDK Provided		Dll for 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

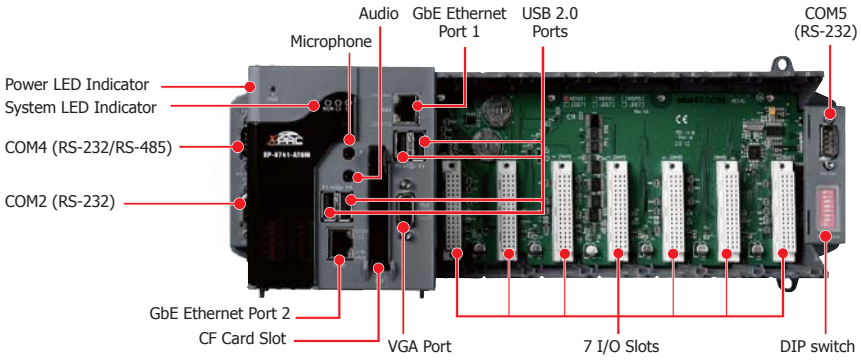
XP-8041-Atom



XP-8341-Atom

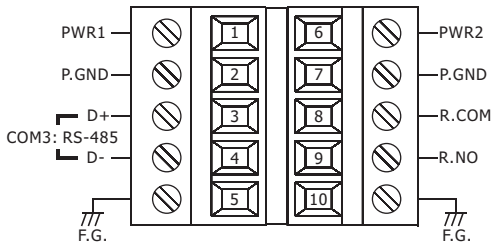


XP-8741-Atom

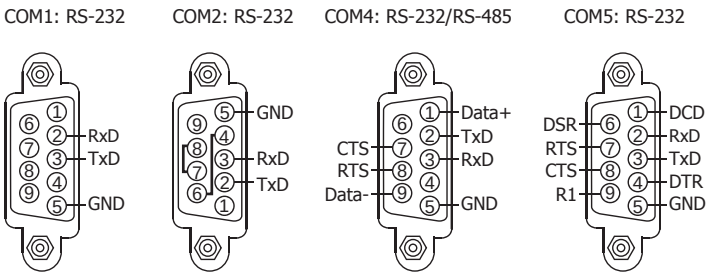


Pin Assignments

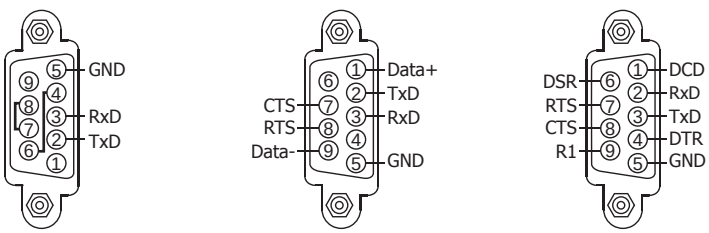
XP-8x41-Atom Terminal Block



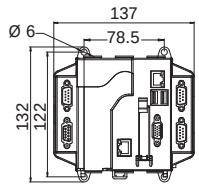
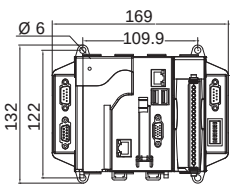
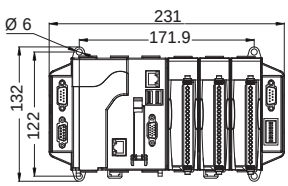
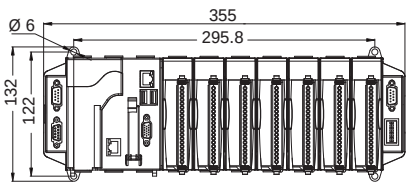
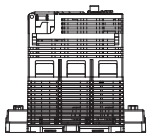
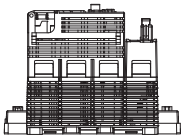
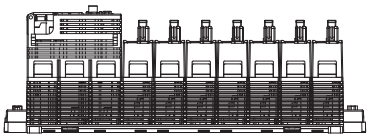
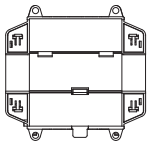
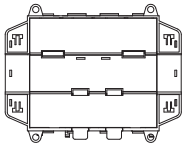
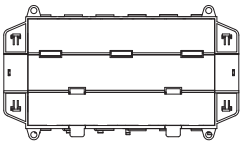
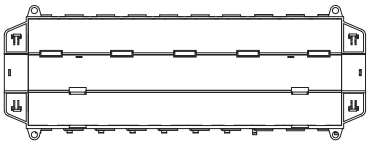
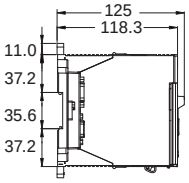
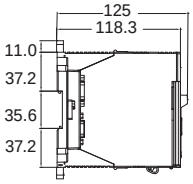
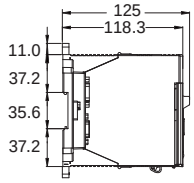
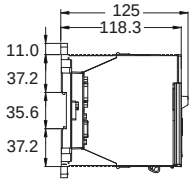
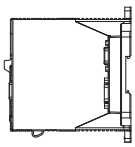
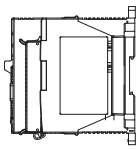
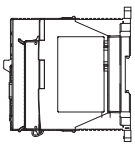
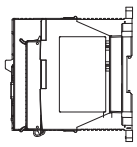
XP-8041-Atom COM Port



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
			
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 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

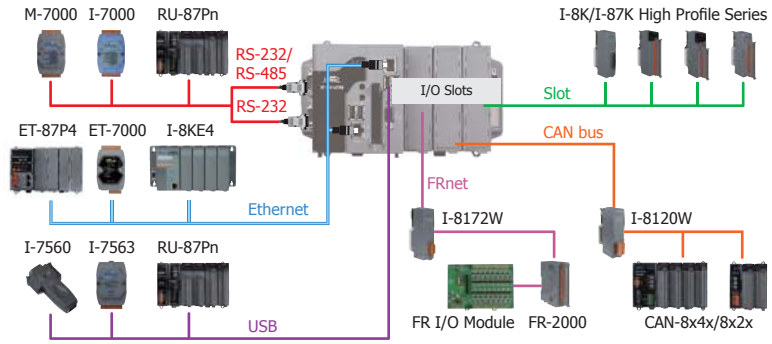
Introduction

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

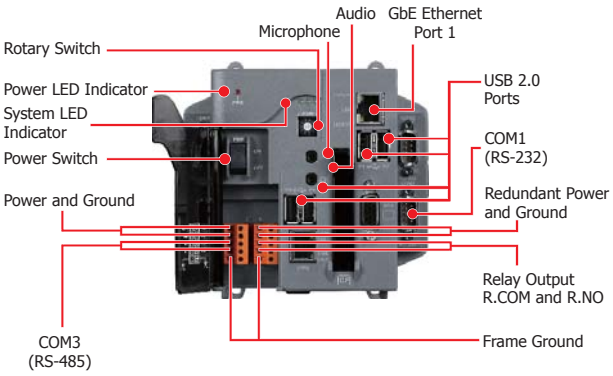
- Powerful CPU Module
  - ☐ Intel Atom Z510 CPU (1.1 GHz)
- Memory size:
  - ☐ DDR2 SDRAM (512 MB), Built-in Flash Disk (1 GB)
  - ☐ EEPROM (16 KB), CF Card (2 GB)
  - ☐ Dual Battery Backup SRAM (512 KB)
- VGA Port x 1, USB 2.0 Ports x 4
- Programmable LED indicator x 2
- Audio with Microphone-In and 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

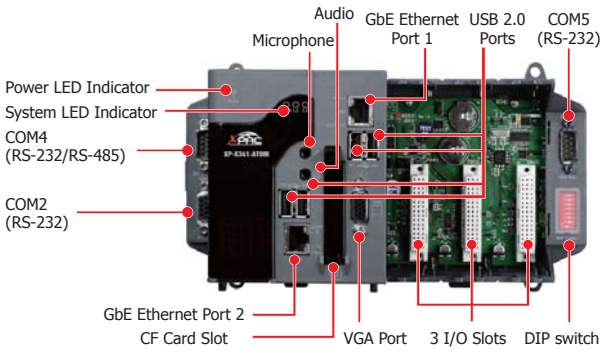
Models	XP-8041-Atom-CE6	XP-8141-Atom-CE6	XP-8341-Atom-CE6	XP-8741-Atom-CE6
System Software				
OS	Windows CE 6.0 core version			
.Net Compact Framework	3.5			
Embedded Service	FTP Server, ASP (Java Script, VB Script), SQL Compact Edition 3.5			
SDK Provided	Dll for Visual Studio .Net 2005/2008			
Multilanguage 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

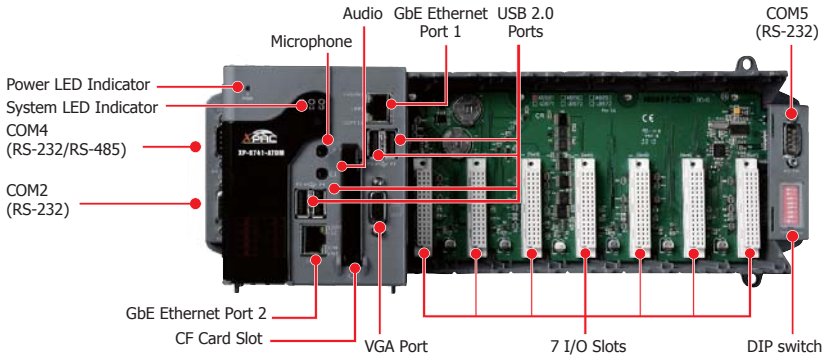
XP-8041-Atom-CE6



XP-8341-Atom-CE6

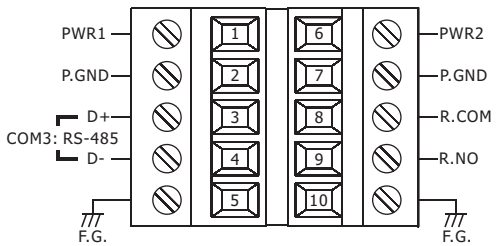


XP-8741-Atom-CE6

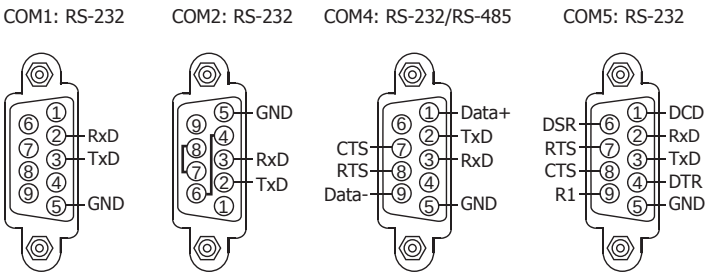


Pin Assignments

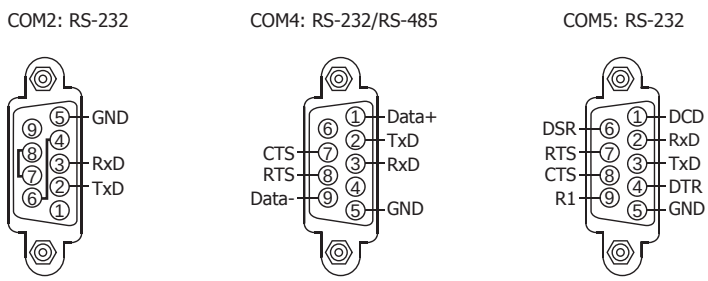
XP-8x41-Atom-CE6 Terminal Block



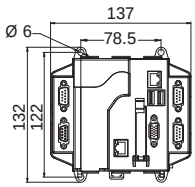
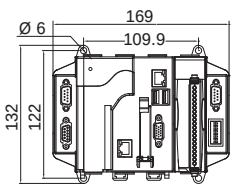
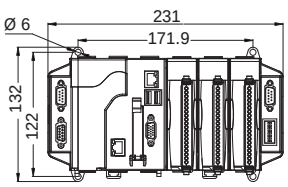
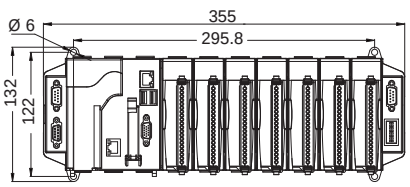
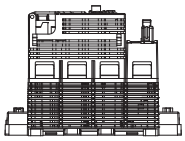
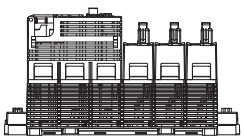
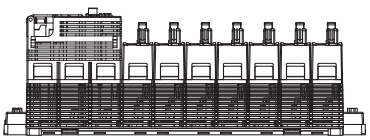
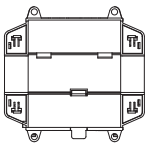
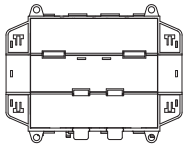
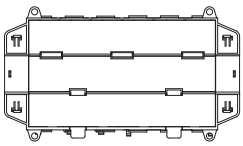
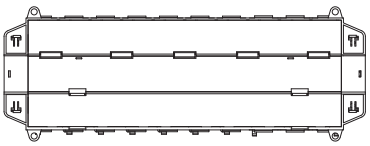
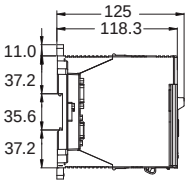
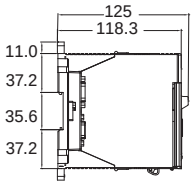
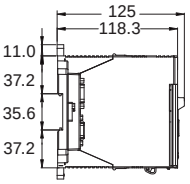
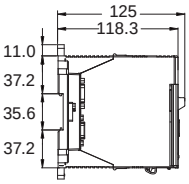
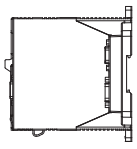
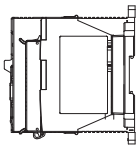
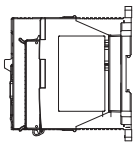
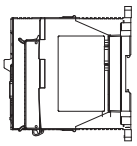
XP-8041-Atom-CE6 COM Port



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.

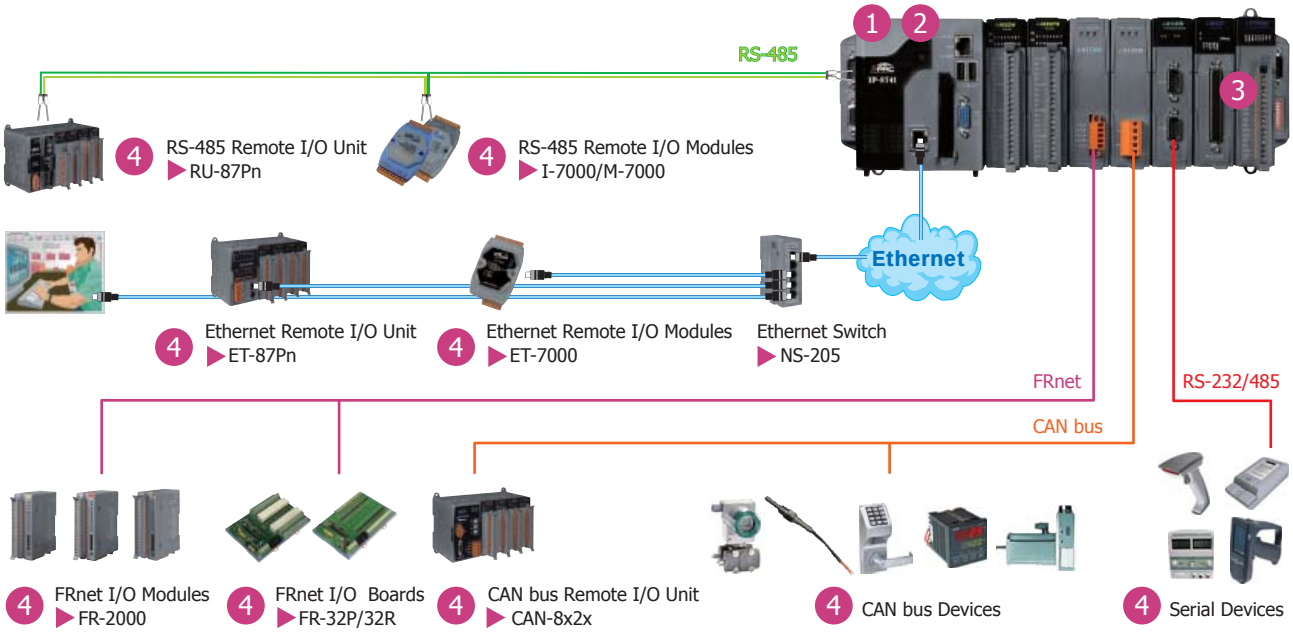
2 Embedded OS

- **Windows Embedded Standard WES 2009**

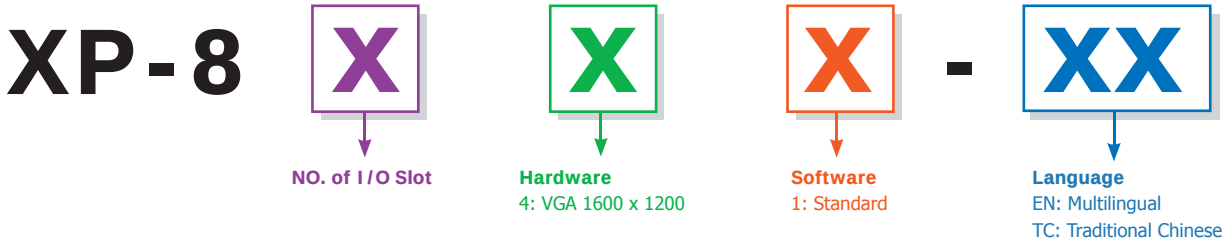
Windows Embedded Standard 2009 has the same Win32 API as Windows XP Professional, that is, almost every desktop program can be easily ported to Windows Embedded Standard 2009. This effectively reduces the efforts of developments and shortens time to market.

- **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



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

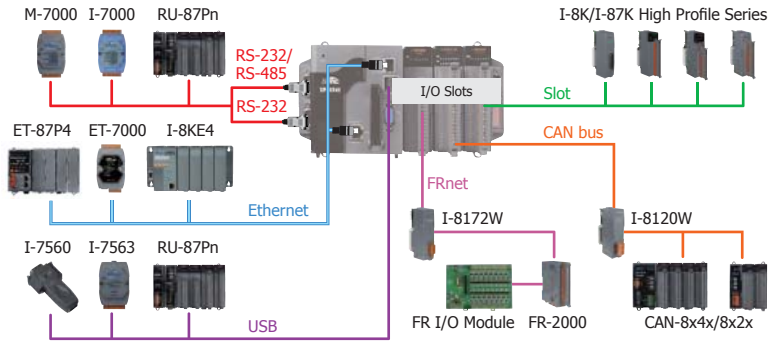
- Windows Embedded Standard 2009
- Internet Information Services
  - FTP server and web server
- ASP.NET
- SQL Server 2005 Express Edition
- .NET Framework 3.5
- Remote Desktop Connection
- Built-in OPC Server
- Rich Software Solutions
  - SDK for Microsoft Visual Studio.NET 2005/2008 and Visual Studio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

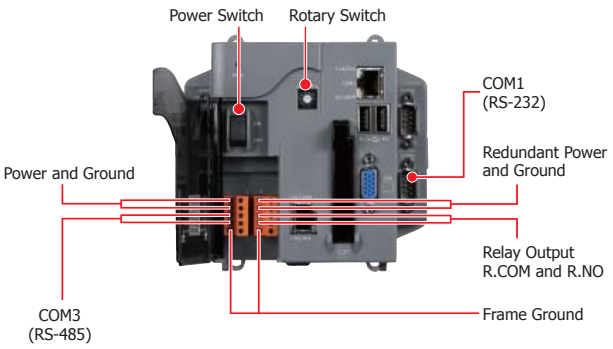


Specifications

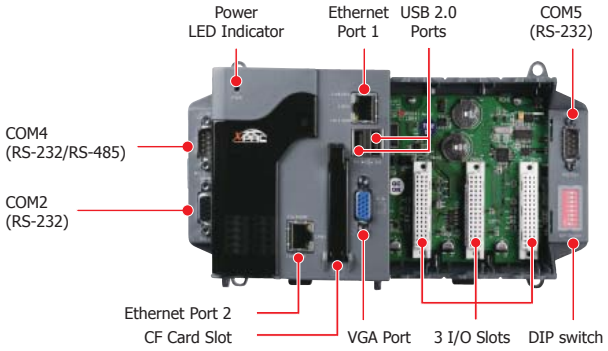
Models		XP-8041	XP-8341	XP-8741
System Software				
OS		Microsoft Windows Embedded Standard 2009		
.Net Compact Framework		3.5		
Embedded Service		FTP Server, Internet Information Service 5.1, ASP (Java Script, VB Script), SQL Server 2005 Express		
SDK Provided		Dll for VC, VB, Delphi, BCB, Visual Studio .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 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

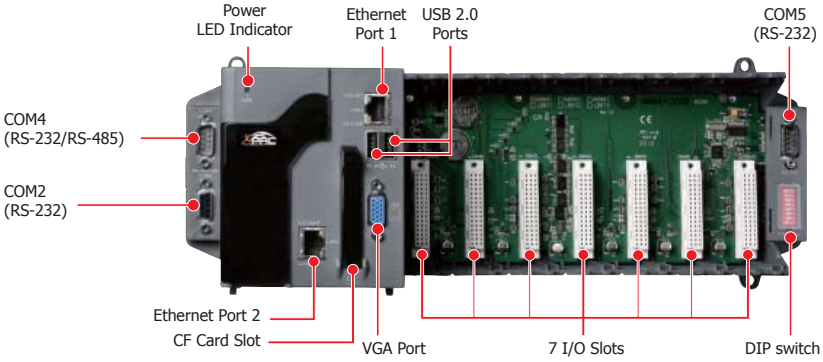
XP-8041



XP-8341

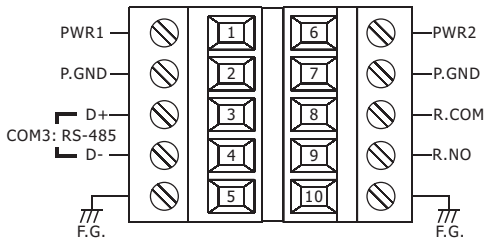


XP-8741



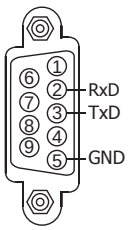
Pin Assignments

XP-8x41 Terminal Block

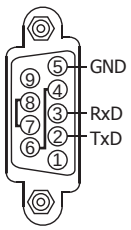


XP-8041 COM Port

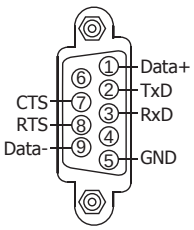
COM1: RS-232



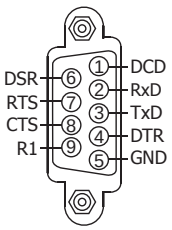
COM2: RS-232



COM4: RS-232/RS-485

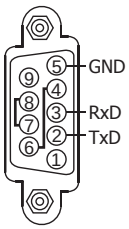


COM5: RS-232

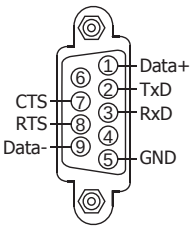


XP-8341/8741 COM Port

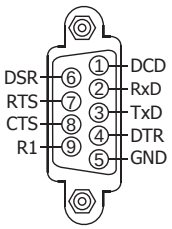
COM2: RS-232



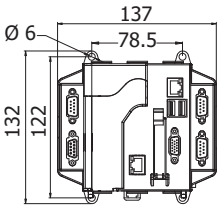
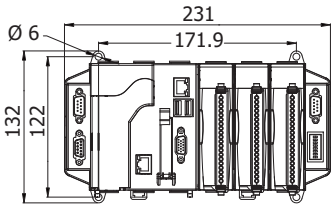
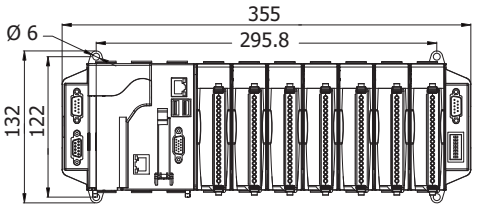
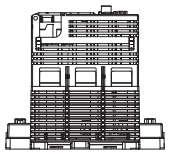
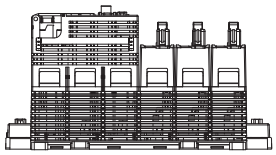
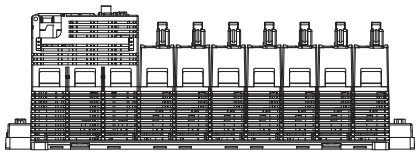
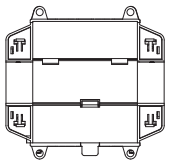
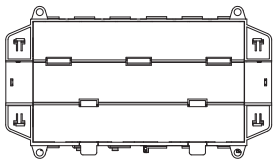
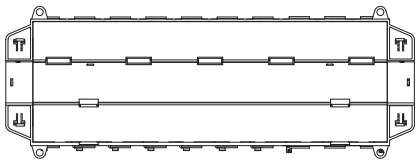
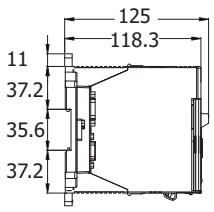
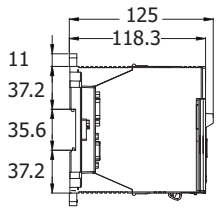
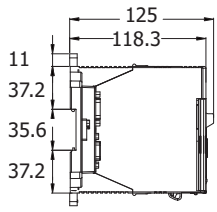
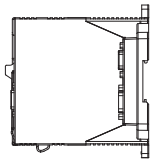
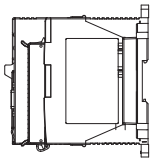
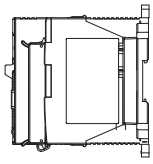
COM4: RS-232/RS-485



COM5: RS-232



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

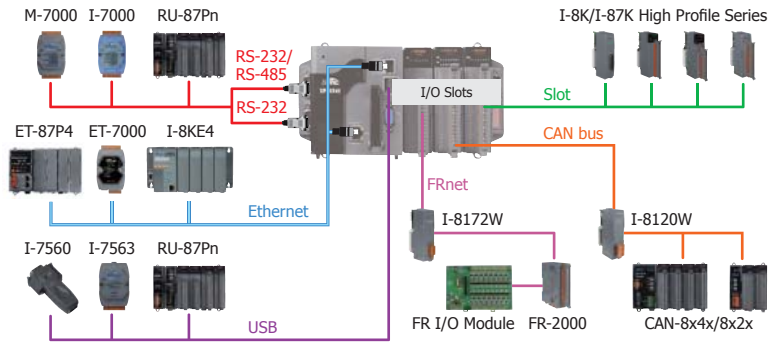
- Windows Compact Edition 6.0
- System Rescue Mechanism
- ASP (JavaScript & VBScript)
- SQL Compact Edition 3.5
- .NET Compact Framework 3.5
- Remote Display
- Built-In OPC Server (Quicker)
- InduSoft
  - HMI and SCADA development tool
- ISaGRAF
- Rich Software Solutions
  - SDK for Microsoft Visual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

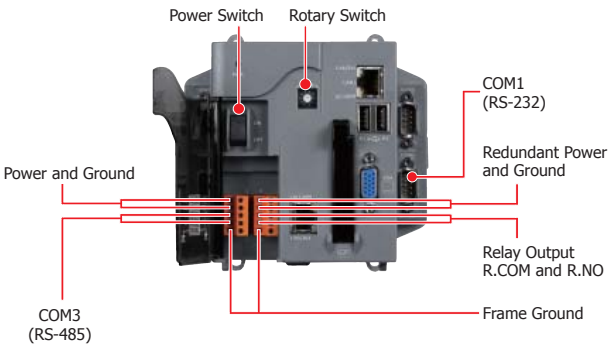


Specifications

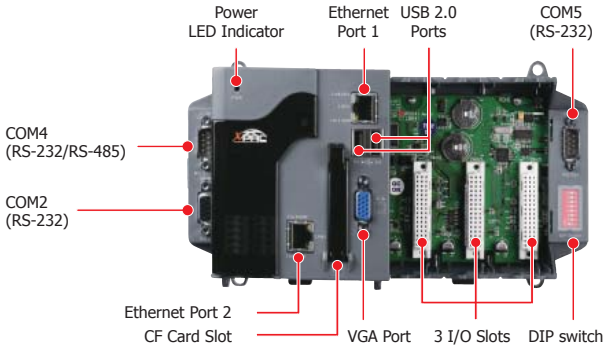
Models		XP-8041-CE6	XP-8341-CE6	XP-8741-CE6
System Software				
OS		Windows CE 6.0 core version		
.Net Compact Framework		3.5		
Embedded Service		FTP Server, ASP (Java Script, VB Script), SQL Compact Edition 3.5		
SDK Provided		Dll for Visual Studio .Net 2005/2008		
Multilanguage Support		English, German, 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

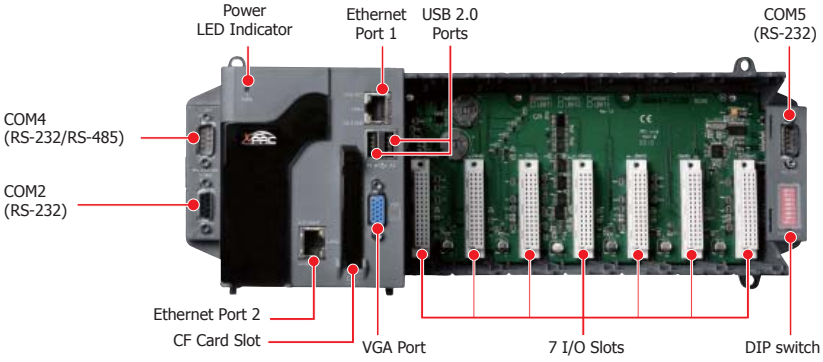
XP-8041-CE6



XP-8341-CE6

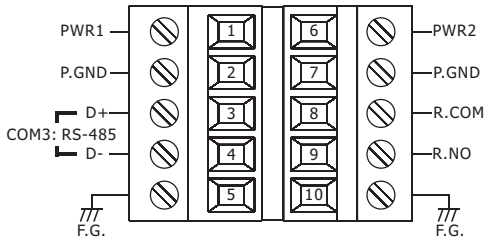


XP-8741-CE6



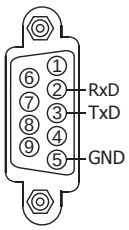
Pin Assignments

XP-8x41-CE6 Terminal Block

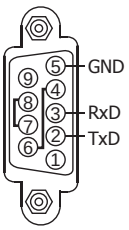


XP-8041-CE6 COM Port

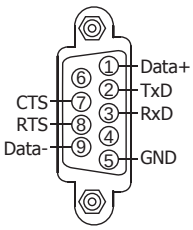
COM1: RS-232



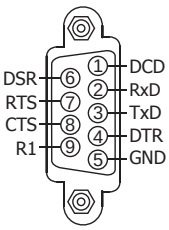
COM2: RS-232



COM4: RS-232/RS-485

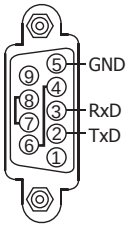


COM5: RS-232

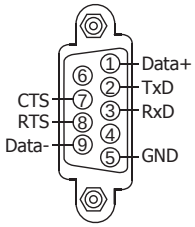


XP-8341-CE6/XP-8741-CE6 COM Port

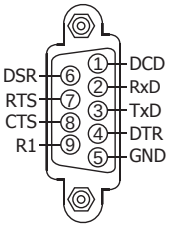
COM2: RS-232



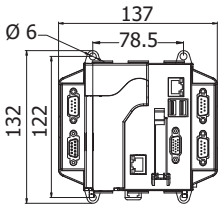
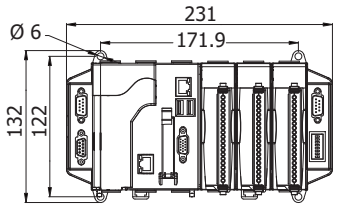
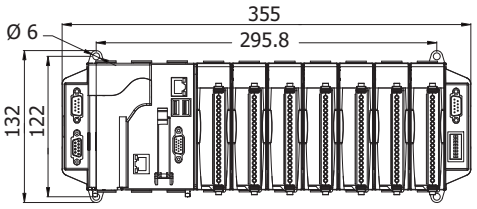
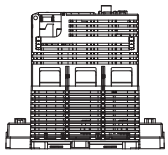
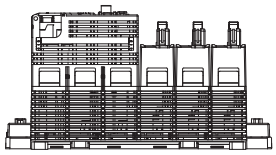
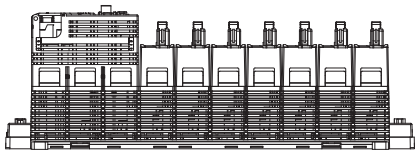
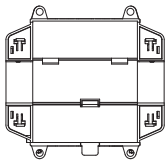
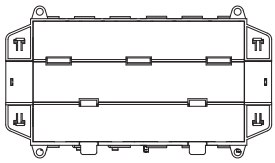
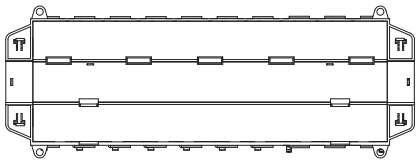
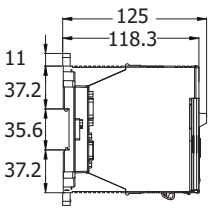
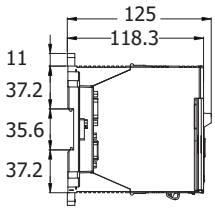
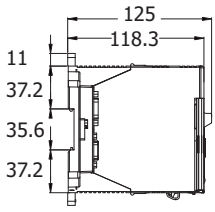
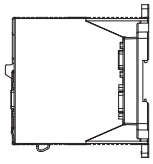
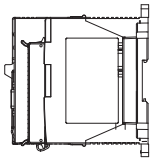
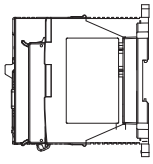
COM4: RS-232/RS-485



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

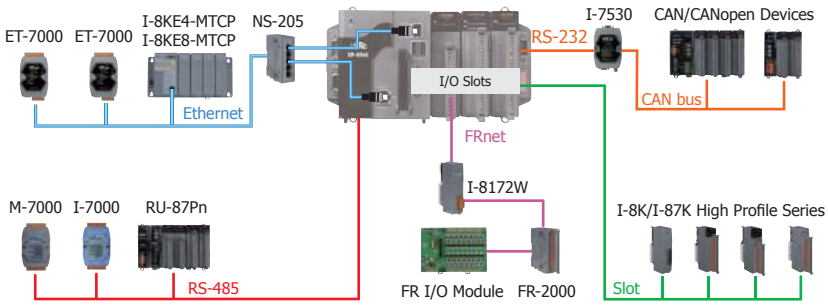
- Windows CE.NET 6.0 Operating System
- Development Softwre: ISaGRAF Ver.3
  - Running on Windows 95/98/NT/2000/XP/Vista/7
  - All-in-one design environment
  - Easy to integrating with HMI/SCADA/MMI
- Support Modbus Master & Slave Protocols
  - Modbus TCP Master (Max. 100 devices)
  - RTU, ASCII, RS-232/485/422 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

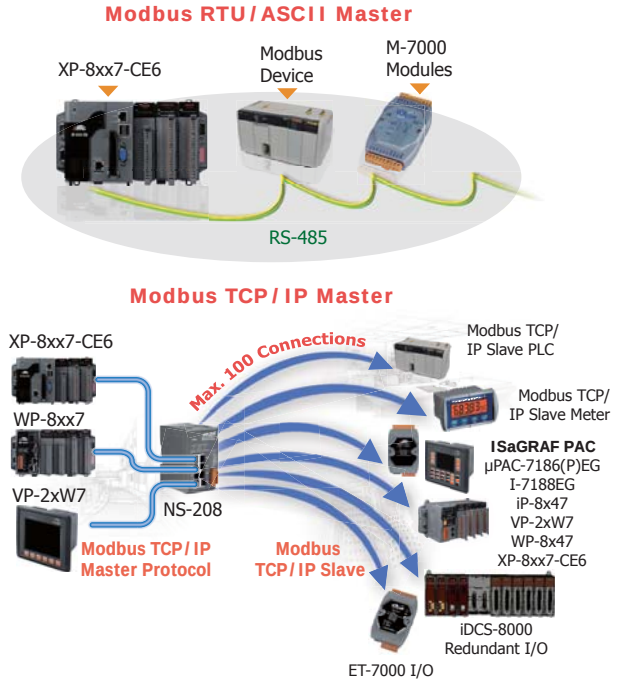
- Powerful CPU module
  AMD LX 800 CPU (32-bit and 500 MHz)
- Memory size:
  - RAM (512 MB), Built-In Flash Disk (4 GB)
  - EEPROM (16 KB)
  - Dual Battery-Backup SRAM (512 KB)
  - CF Card (1 GB, support up to 32 GB)
- VGA Port x 1, USB 2.0 Ports x 2
- 64-bit Hardware Serial Number
- Dual Watchdog Timers
- 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

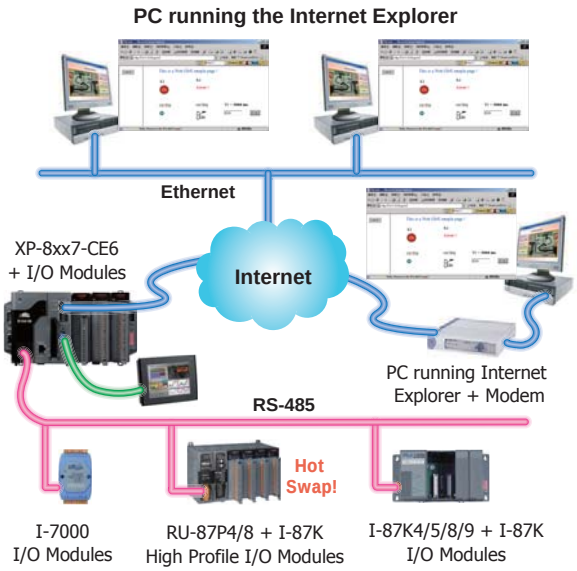


Modbus Master Ports



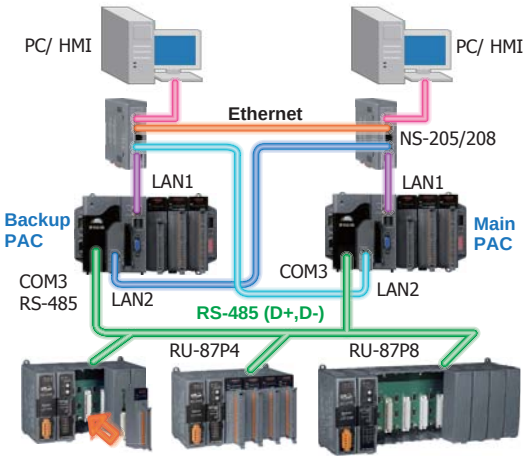
Multiple Web HMI

■ 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

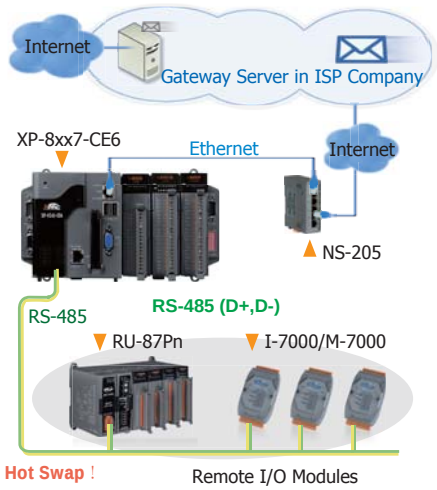
Hot-Swap Redundant System



Hot Swap !

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

Send Email with one Attached File



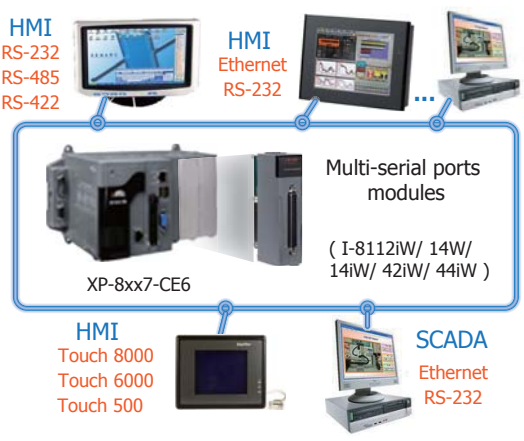
Hot Swap !

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

Modbus Slave : RTU / TCP

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

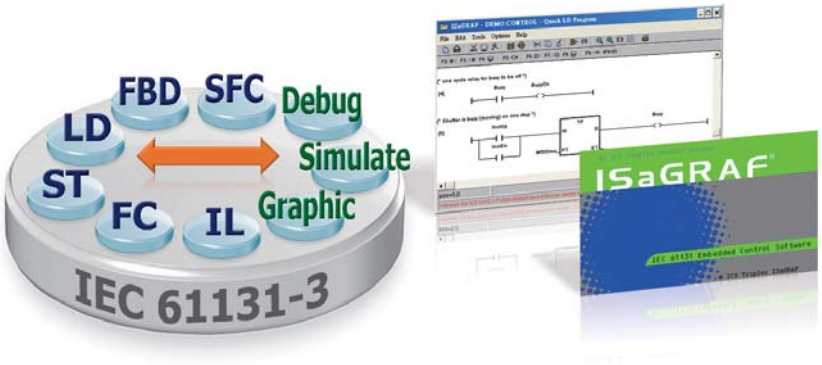
■ Modbus TCP/IP Slave: max. 64 connections



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

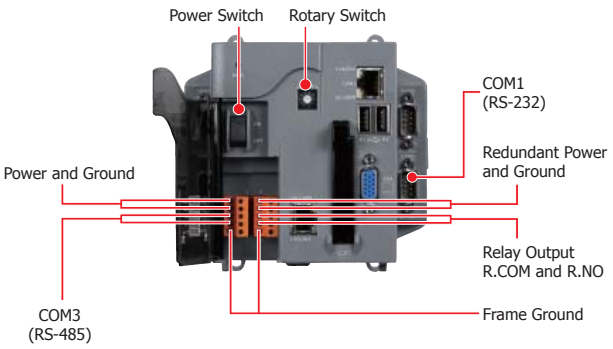


Protocols (some protocols need optional devices)		
Net ID		1 ~ 255, user-assigned by software
Modbus TCP/IP Master		Link to max. 100 devices that support Standard Modbus TCP/IP Slave protocol
Modbus RTU/ASCII Master		Max. 33 Ports : COM1 ~ 33 (To connect to other Modbus Slave devices). (*)
Modbus RTU 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)

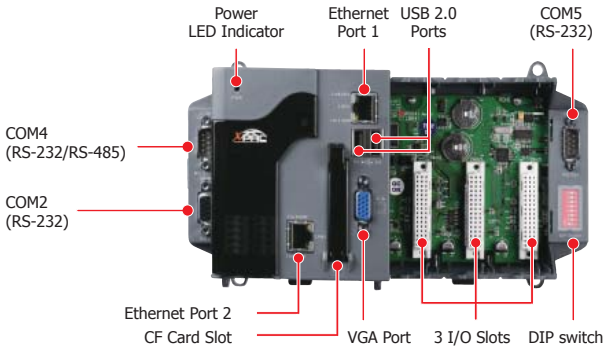
***Note: COM6 ~ COM33 are resided at the expansion boards if they are plugged on slot1~7 of XP-8xx7-CE6.**
XP-8347-CE6/8747-CE6's COM1 is for internal communication with I-87K modules in slots only.

Appearance

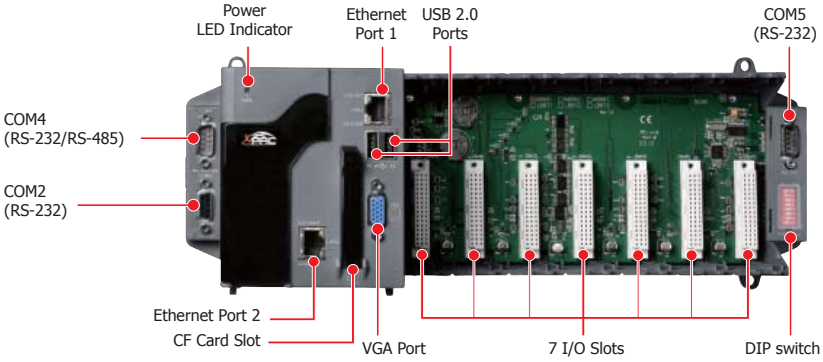
XP-8047-CE6



XP-8347-CE6

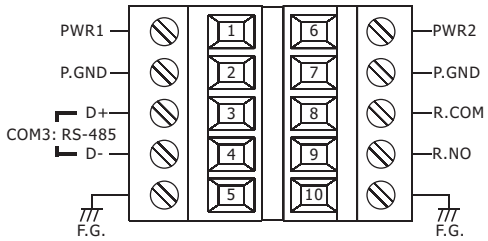


XP-8747-CE6

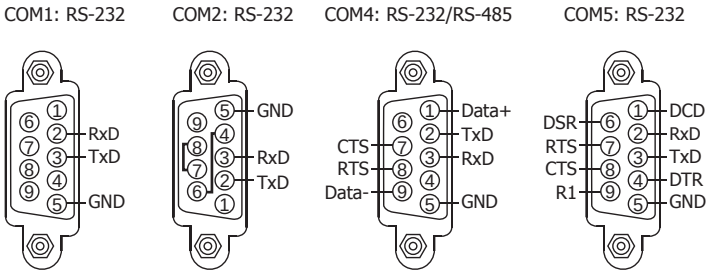


Pin Assignments

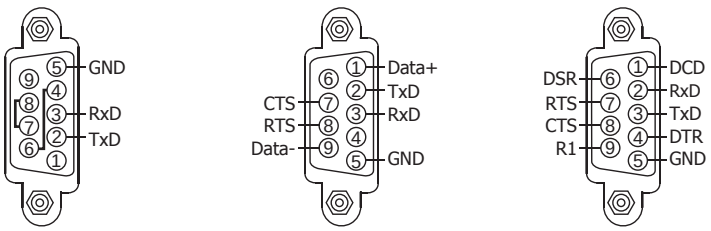
XP-8x47-CE6 Terminal Block



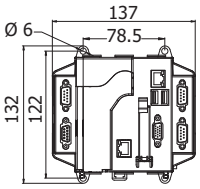
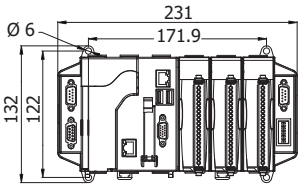
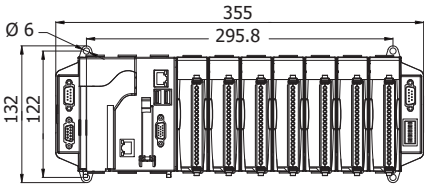
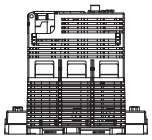
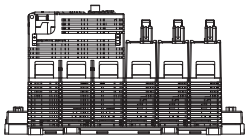
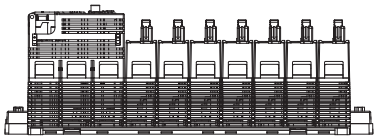
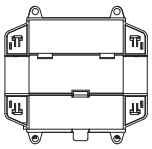
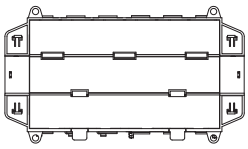
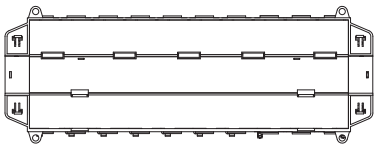
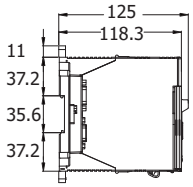
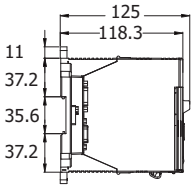
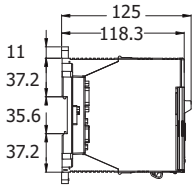
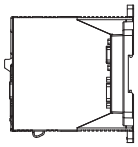
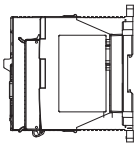
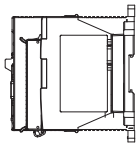
XP-8047-CE6/XP-8047-CE6 COM Port



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

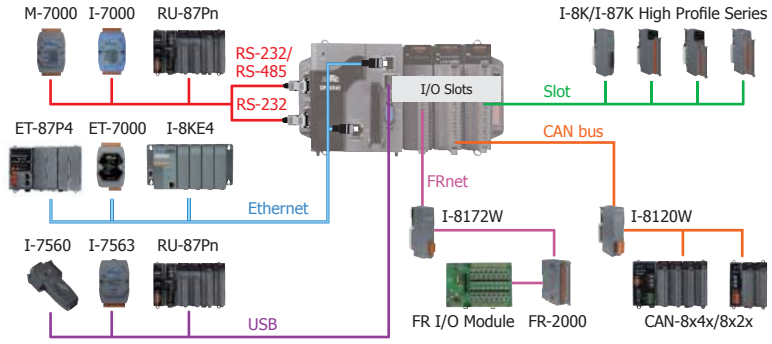
Introduction

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

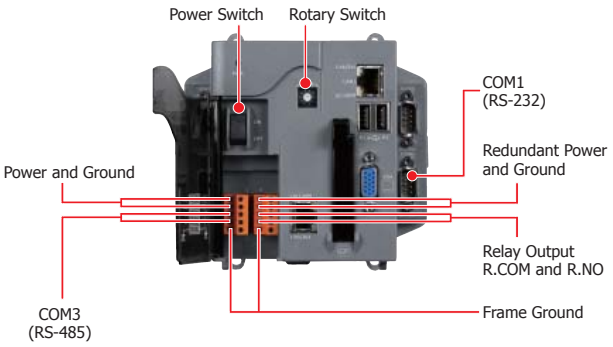
Models	XP-8049-CE6	XP-8349-CE6	XP-8749-CE6
System Software			
OS	Windows CE 6.0 core version		
.Net Compact Framework	3.5		
Embedded Service	FTP Server, ASP (Java Script, VB Script), SQL Compact Edition 3.5		
SDK Provided	Dll for Visual Studio .Net 2005/2008		
Multilanguage Support	English, German, French, 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

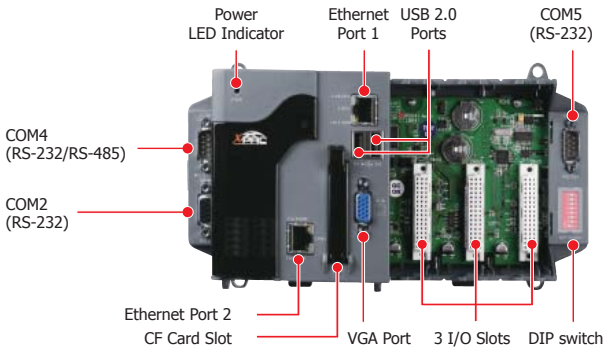
- Elegant Graphics
- Multi-Language
- Database (Access, Excel, SQL, Oracle…)
- Recipes and Reports
- Online and History Alarm / Event / Trend
- Various Communication Driver (DCON, Modbus, OPC, DDE, TCP/IP…)
- Remote Web Client Control & Security
- ActiveX (GSM / SHM / COM /WEB provided by ICP DAS)
-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

Appearance

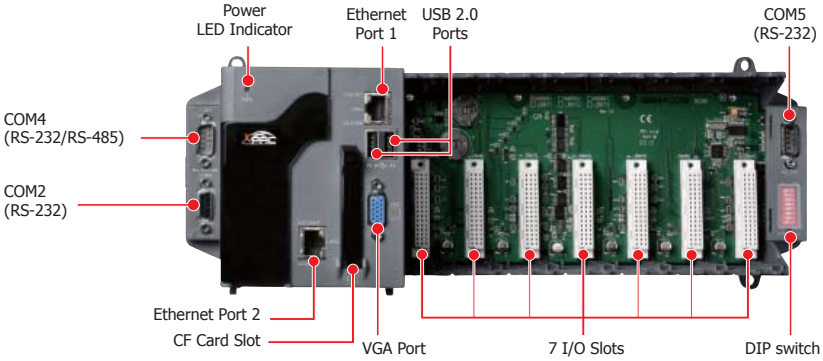
XP-8049-CE6



XP-8349-CE6

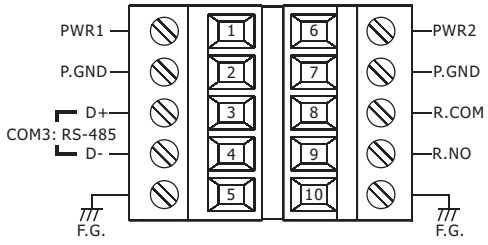


XP-8749-CE6

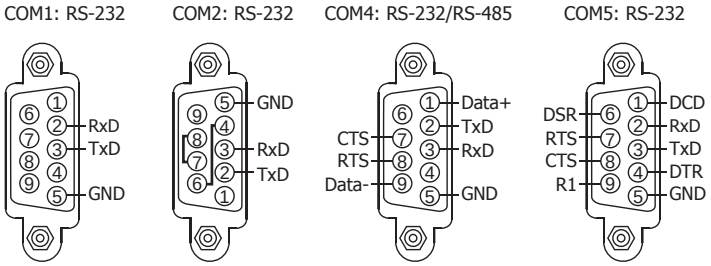


Pin Assignments

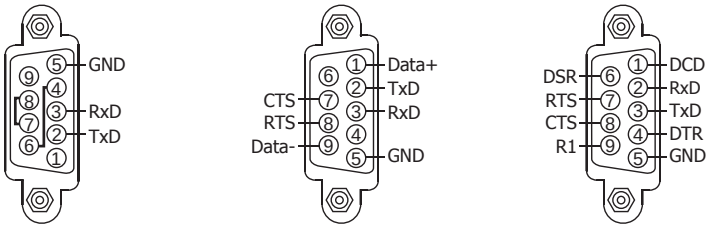
XP-8x49-CE6 Terminal Block



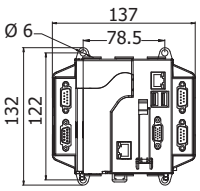
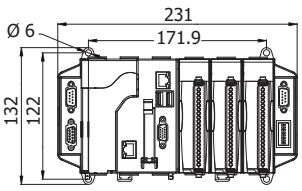
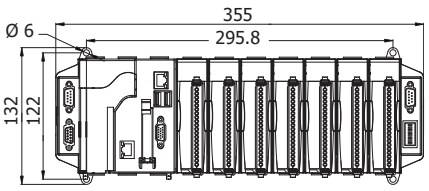
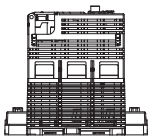
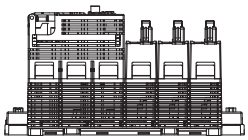
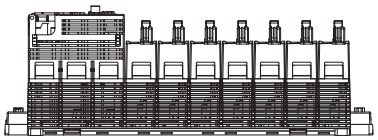
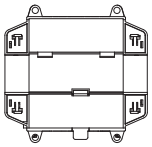
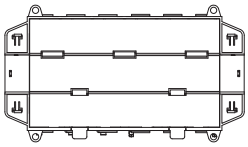
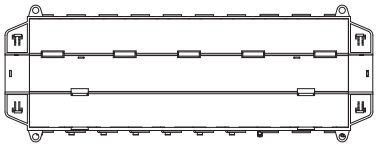
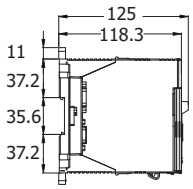
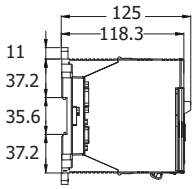
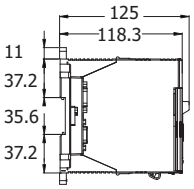
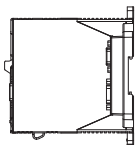
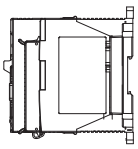
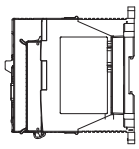
XP-8049-CE6 COM Port



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

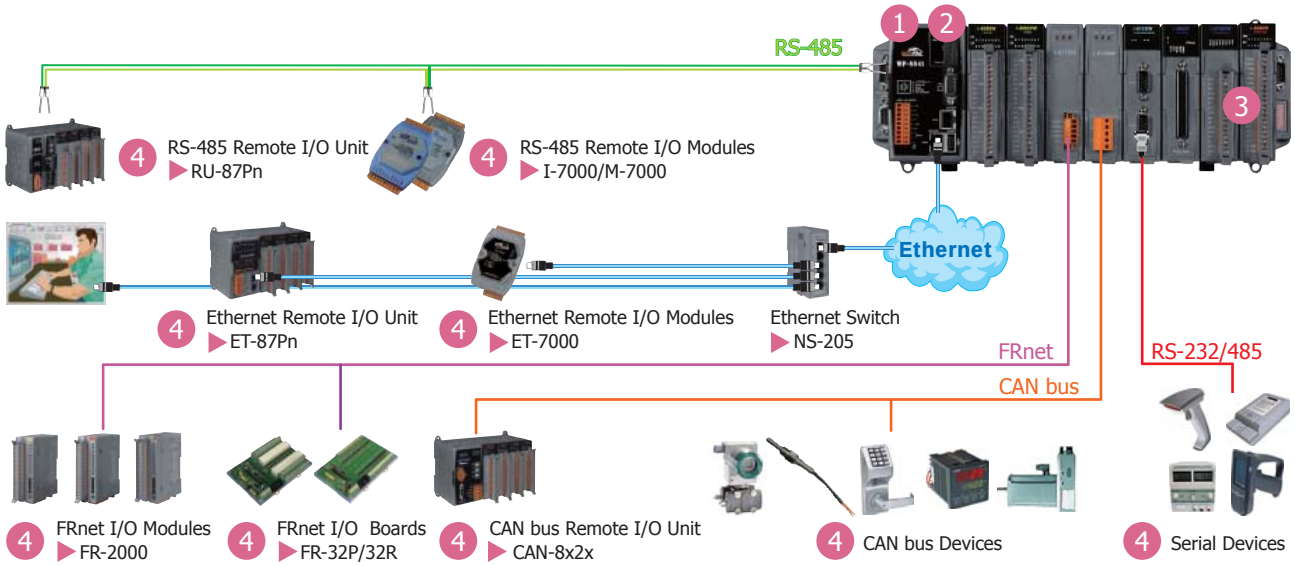
All WinPAC have Windows CE OS inside, and most of the popular features in MS software are included, such as FTP Server, HTTP Server, ASP (Java/VB script), SQL Server embedded 3.5 and compact .NET Framework 2.0. WinPAC supports rich software & development solutions: VB.Net 2005/2008, Visual C#.NET 2005/2008,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

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

Standard WinPAC

Model Name	OS	Pre-installed Software	CPU	Flash	SDRAM	VGA Resolution	USB	RS-232/RS-485	I/O Slot	Memory Expansion	Audio	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			

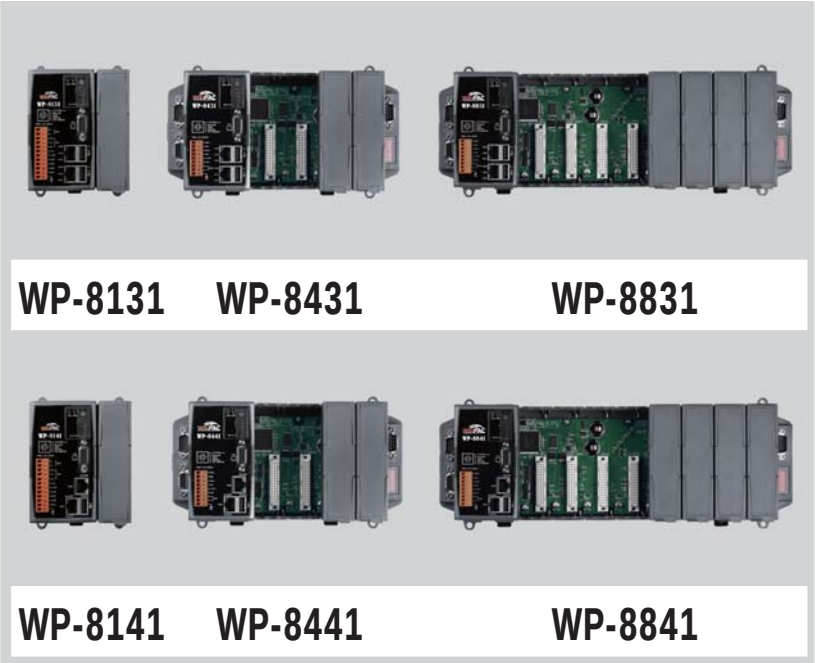
The controller fully supports all five of the IEC61131-3 standard PLC languages:
1. Ladder diagram
2. Function block diagram
3. Sequential function chart
4. Structured text
5. Instruction List plus flow chart

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

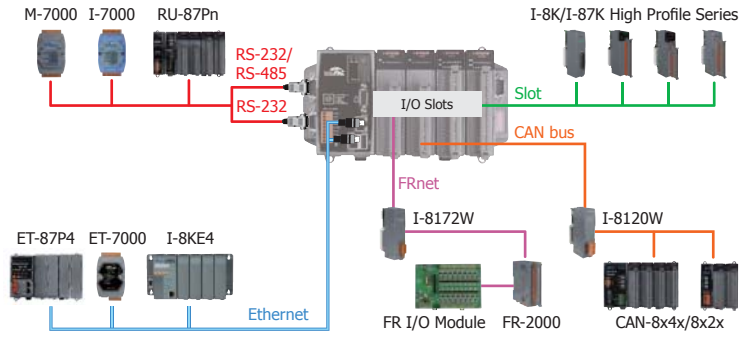
Introduction

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

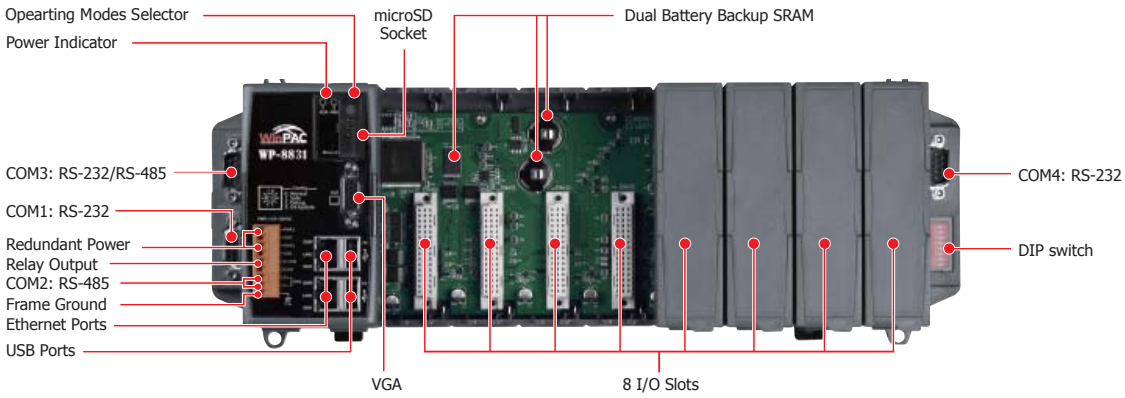
- Powerful CPU Module
- Built-in VGA Port: 640 x 480 ~ 1024 x 768 (for WP-8x31)
- Built-in VGA Port: 640 x 480 ~ 800 x 600 (for WP-8x41)
- 64-bit Hardware Serial Number
- Rich I/O Expansion Ability
- I/O Module Hot Swap Ability
  - * Will be available
  - (For High Profile I-87K Modules Only)
- Built-in 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

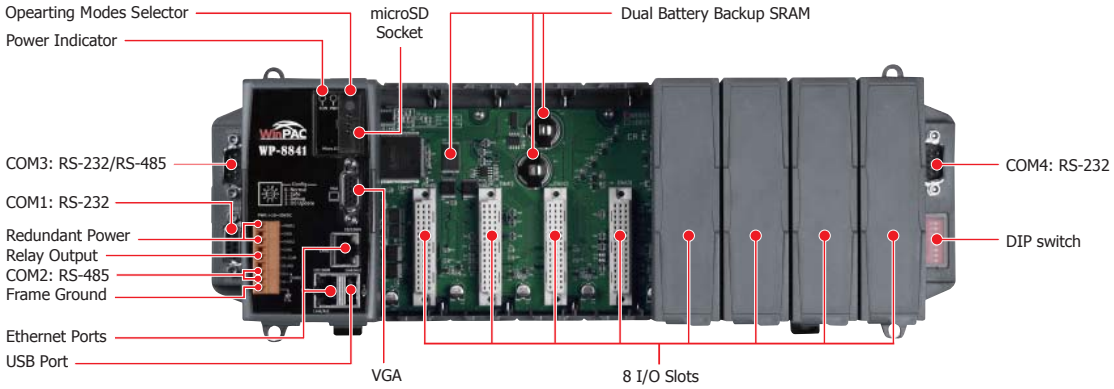
Models		WP-8131	WP-8141	WP-8431	WP-8441	WP-8831	WP-8841
System Software							
OS		Windows CE 5.0					
.Net Compact Framework		2.0					
Embedded Service		FTP server, Web server (supports VB script, JAVA script), Embedded SQL server					
SDK Provided		Dll for eVC, Dll for Visual Studio.Net 2005/2008					
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



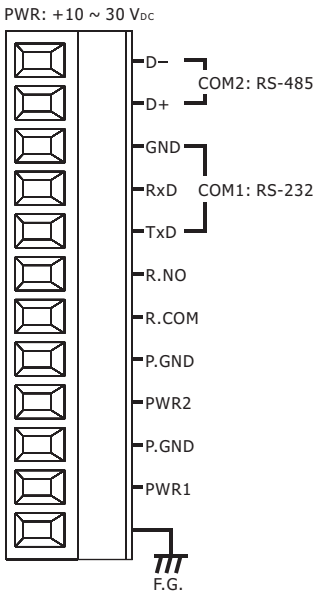
WP-8841



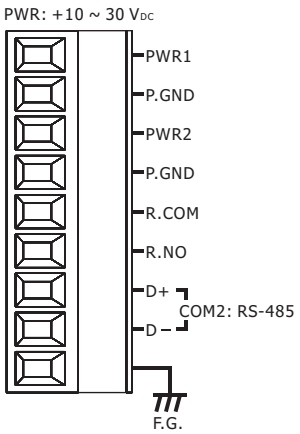
Pin Assignments

Terminal Block

WP-81x1

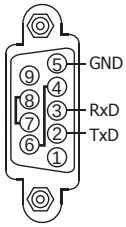


WP-84x1/88x1

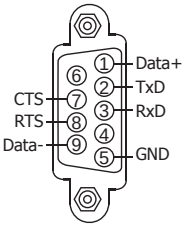


WP-84x1/88x1 COM Port

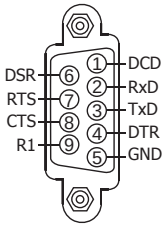
COM1: RS-232



COM3: RS-232/RS-485

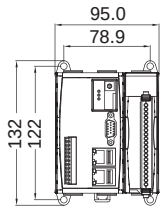


COM4: RS-232



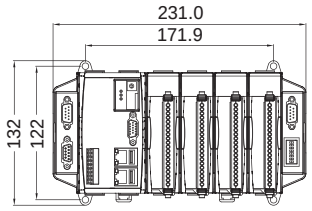
Dimensions (Units: mm)

WP-8131



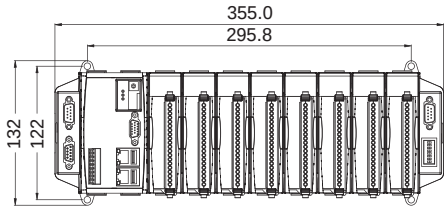
Front View

WP-8431



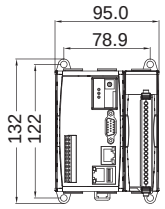
Front View

WP-8831



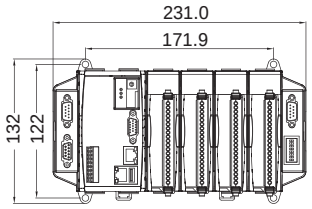
Front View

WP-8141



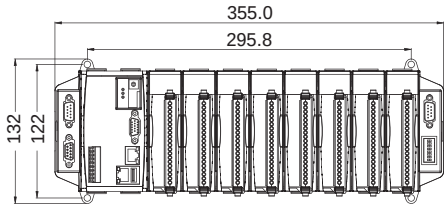
Front View

WP-8441



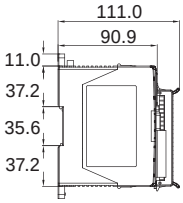
Front View

WP-8841



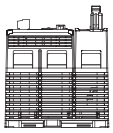
Front View

WP-8x31/8x41



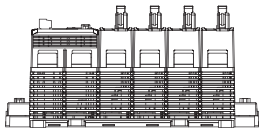
Left Side View

WP-81x1



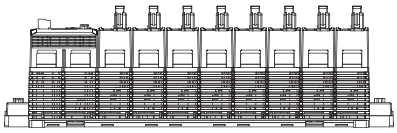
Bottom View

WP-84x1



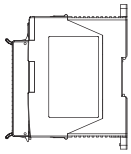
Bottom View

WP-88x1



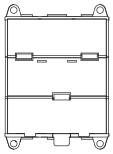
Bottom View

WP-8x31/8x41



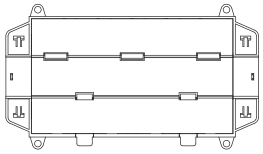
Right Side View

WP-81x1



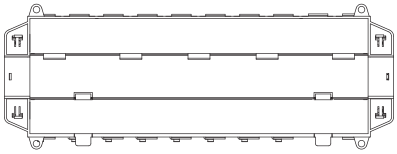
Rear View

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

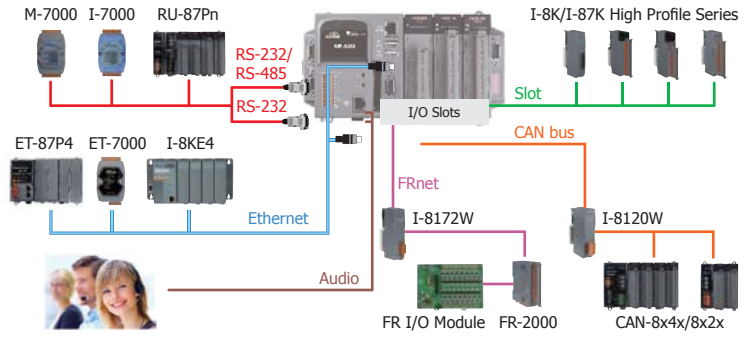
- Windows CE.NET 5.0 Operating System
- Easy Remote Maintenance Via Ethernet
  - FTP server
  - VCEP software
- Built-in OPC Server: Quicker
  - An OPC Server & SCADA Software
  - Integrate Local/Remote I/O Modules Via RS-232/485 or Ethernet
  - Provide Library for eVC, C# or VB.NET
  - Support Modbus 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

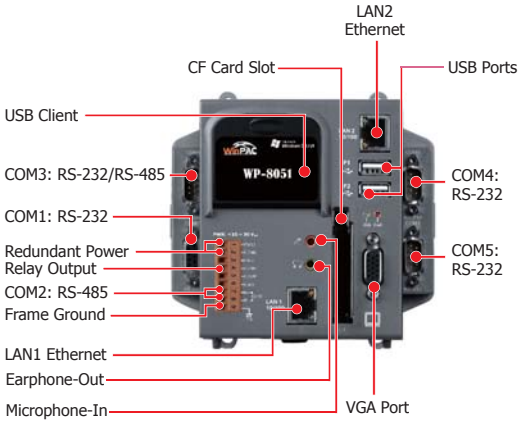


Specifications

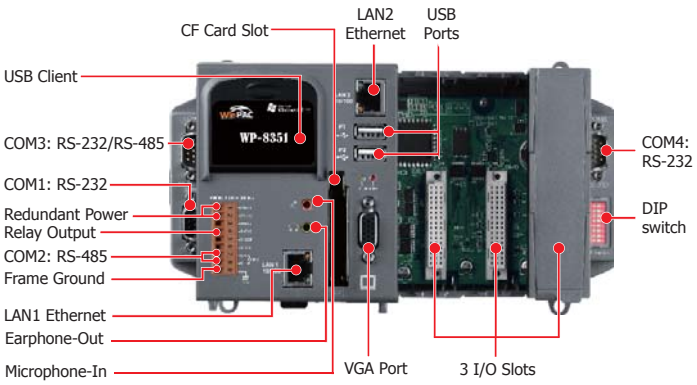
Models		WP-8051	WP-8351	WP-8751
System Software				
OS		Windows CE 5.0		
.Net Compact Framework		2.0		
Embedded Service		FTP server, Web server (supports VB script, JAVA script), Embedded SQL server		
SDK Provided		Dll for eVC, Dll for Visual Studio.Net 2005/2008		
Multilanguage Support		English, German, 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

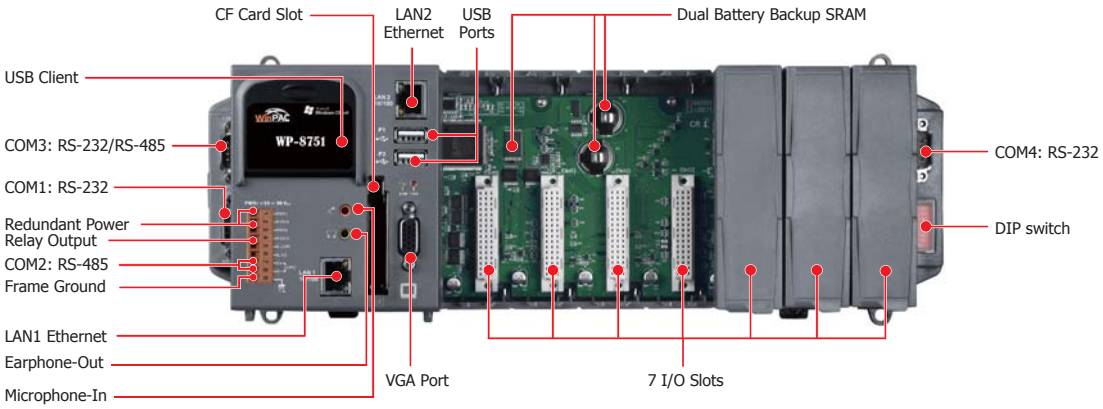
WP-8051



WP-8351

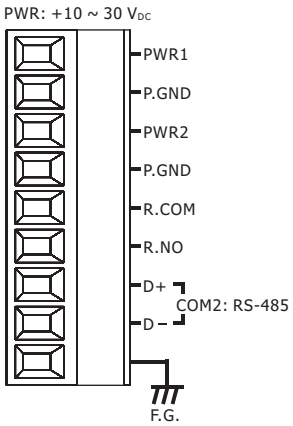


WP-8751



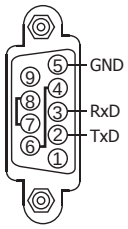
Pin Assignments

Terminal Block

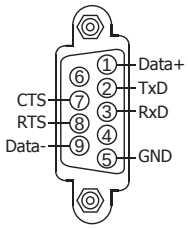


COM Port

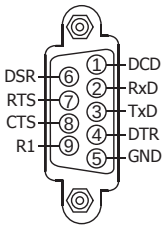
COM1: RS-232



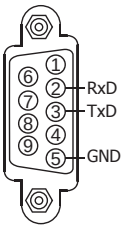
COM3: RS-232/RS-485



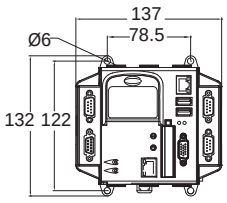
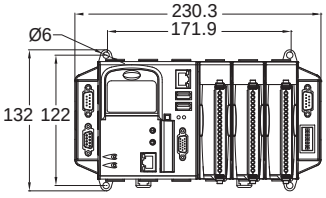
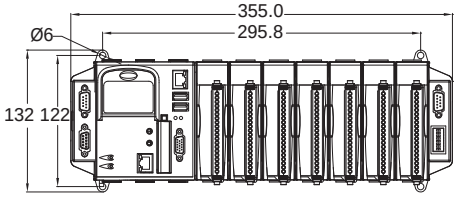
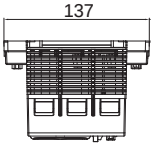
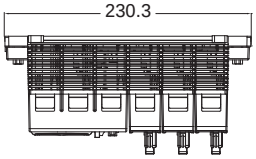
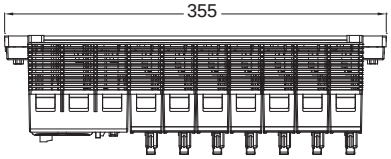
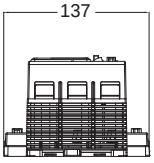
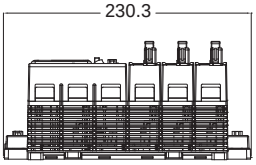
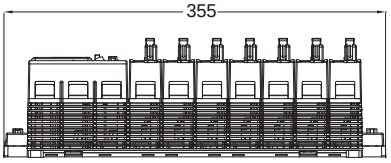
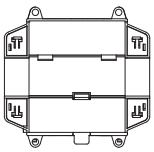
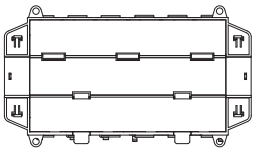
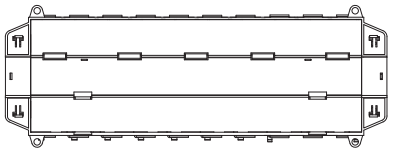
COM4: RS-232

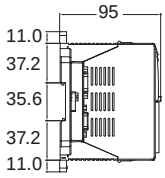
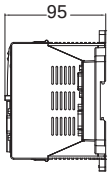
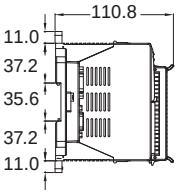
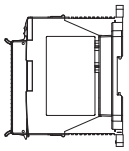
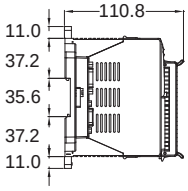
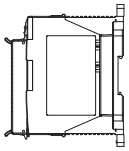


COM5: RS-232



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

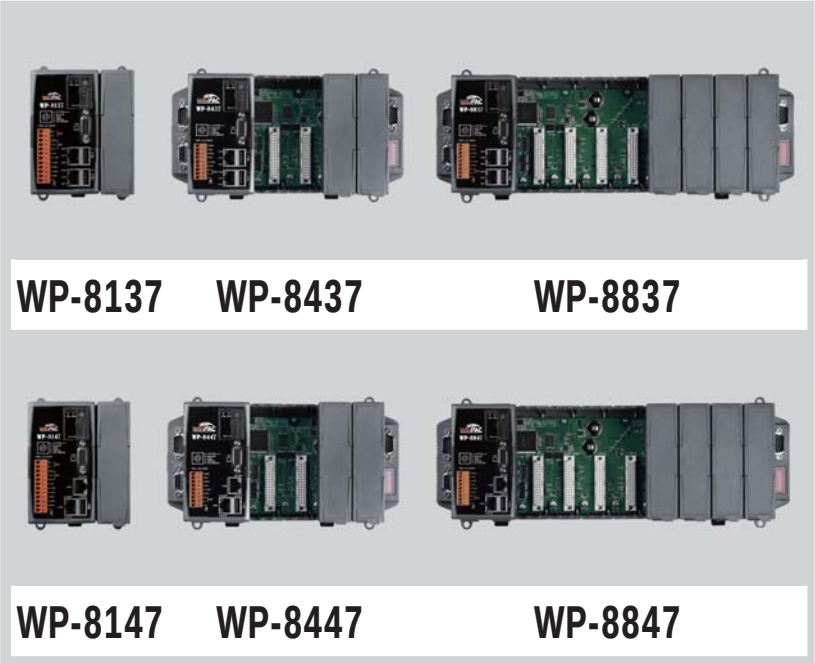
Left Side View	Right Side View	Left Side View	Right Side View	Left Side View	Right Side View
					

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

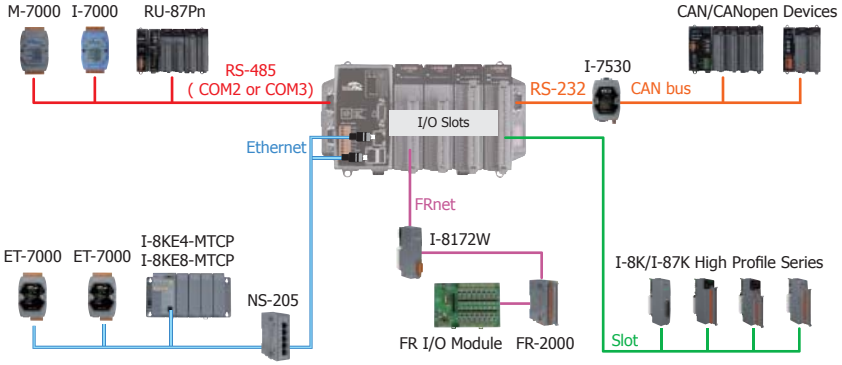
- Windows CE.NET 5.0 Operating System
- Development Softwre: ISaGRAF Ver.3
  - Windows 95/98/NT/2000/XP/Vista/7
  - All-in-one design environment
  - Easy to integrating with HMI/SCADA/MMI
- Support Modbus Master & Slave Protocols
  - Modbus TCP Master (Max. 100 devices)
  - Modbus RTU, ASCII, RS-232/485/422 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

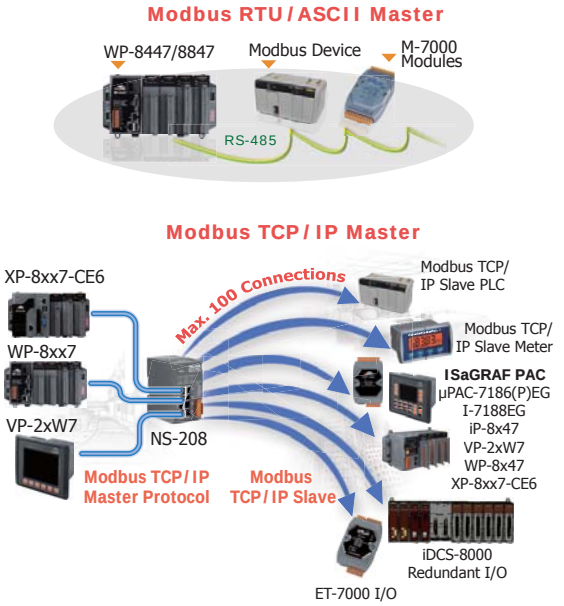
Applications

Rich I/O Expansion Ability

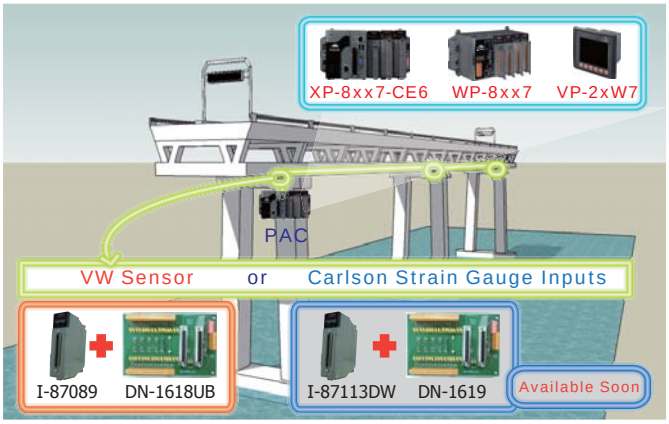


Soft-GRAF: Create A Colorful HMI in the ISaGRAF PAC

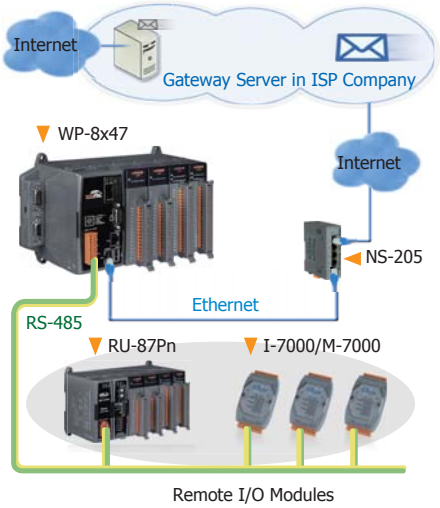
Modbus Master Ports



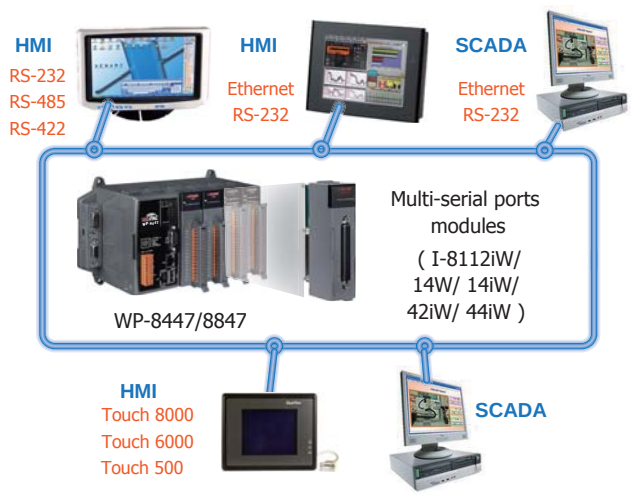
Stress Monitoring of Constructions



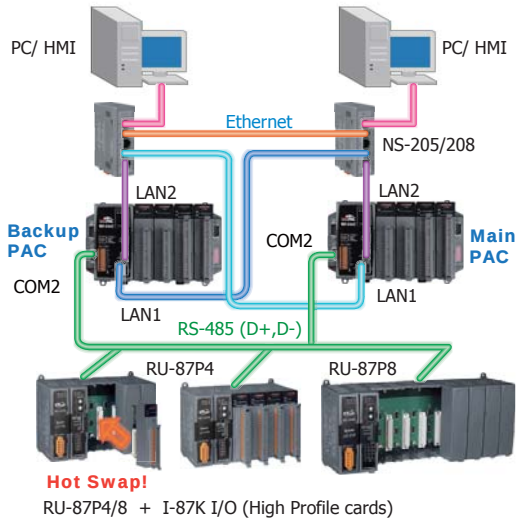
Send Email with one Attached File



Modbus RTU/TCP Slave Ports



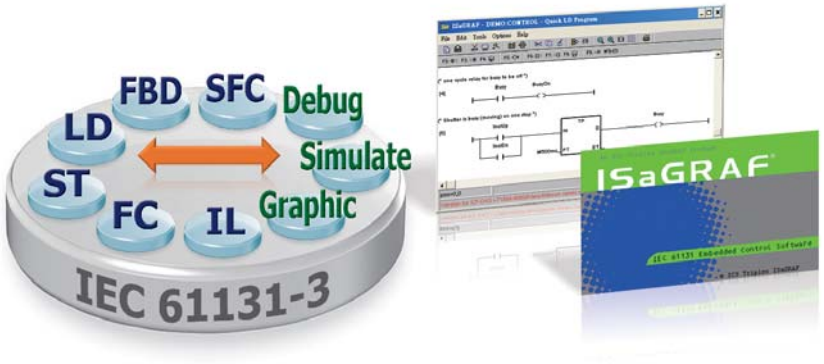
New Hot-Swap Redundant System



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

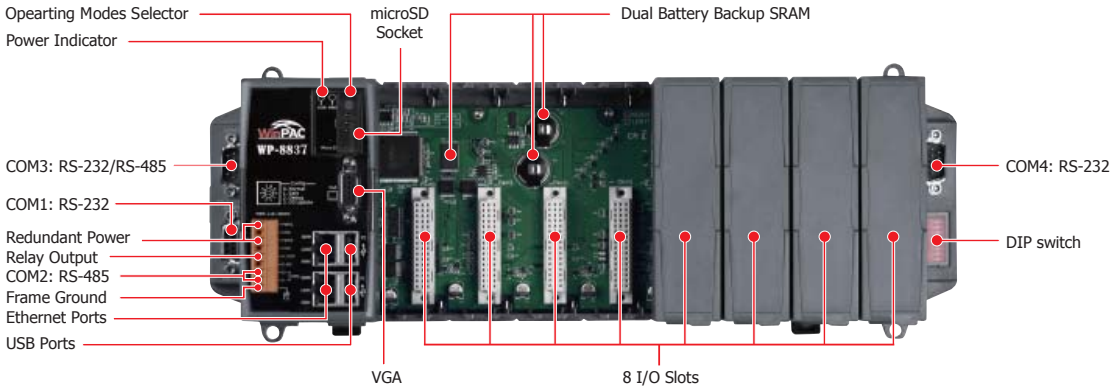


Protocols (some protocols need optional devices)		
NET ID		1~255, user-assigned by software
Modbus TCP/IP Master		Link to max. 100 devices that support Standard Modbus TCP/IP Slave protocol
Modbus RTU/ASCII Master		Max. 10 ports: COM1 ~ 14 (To connect to other Modbus Slave devices). Support Multi-ports. (*)
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)

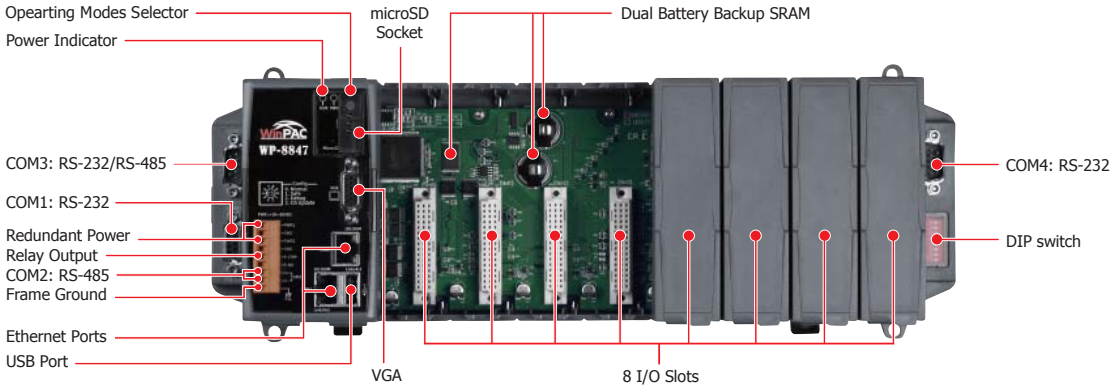
***Note: COM5 ~ COM14 are resided at the expansion boards if they are plugged on slot0~7 of WP-8xx7.**
WP-8137/8147 has no COM3 & COM4.

Appearance

WP-8837



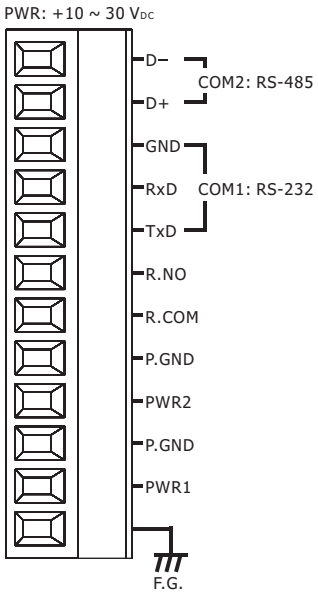
WP-8847



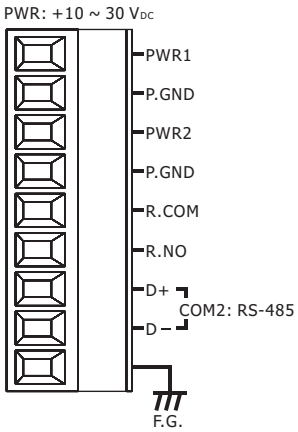
Pin Assignments

Terminal Block

WP-81x7

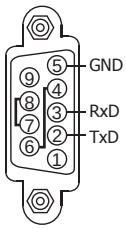


WP-84x1/88x7

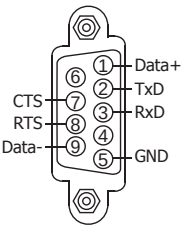


WP-84x7/88x7 COM Port

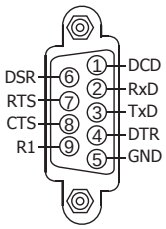
COM1: RS-232



COM3: RS-232/RS-485

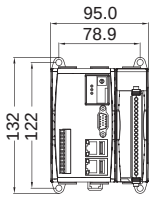


COM4: RS-232



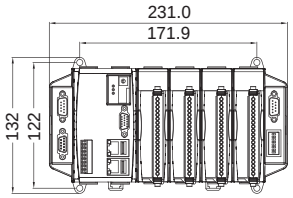
Dimensions (Units: mm)

WP-8137



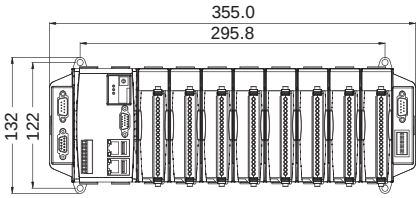
Front View

WP-8437



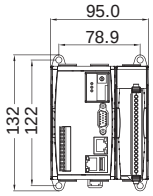
Front View

WP-8837



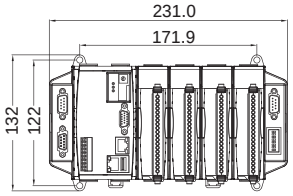
Front View

WP-8147



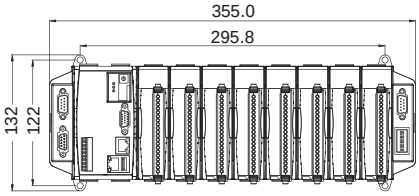
Front View

WP-8447



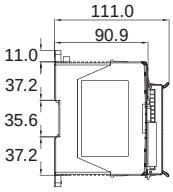
Front View

WP-8847



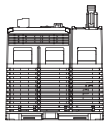
Front View

WP-8x37/8x47



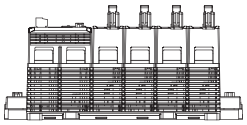
Left Side View

WP-81x7



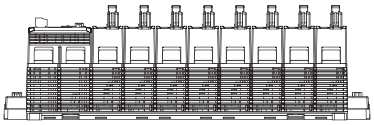
Bottom View

WP-84x7



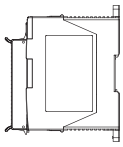
Bottom View

WP-88x7



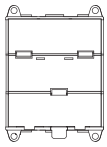
Bottom View

WP-8x37/8x47



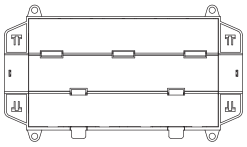
Right Side View

WP-81x7



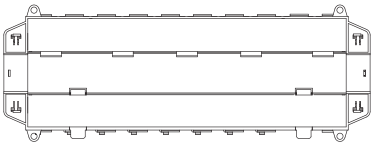
Rear View

WP-84x7



Rear View

WP-88x7



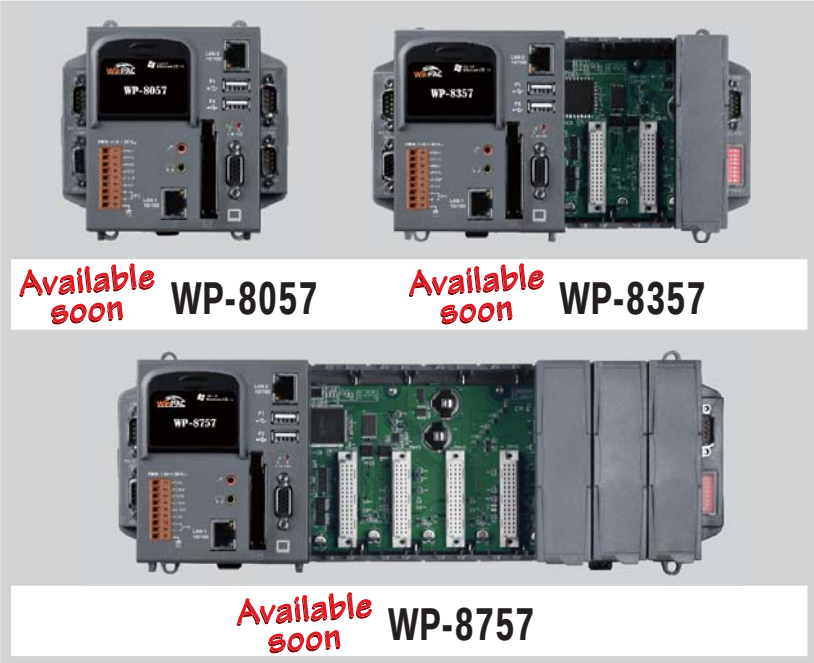
Rear View

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

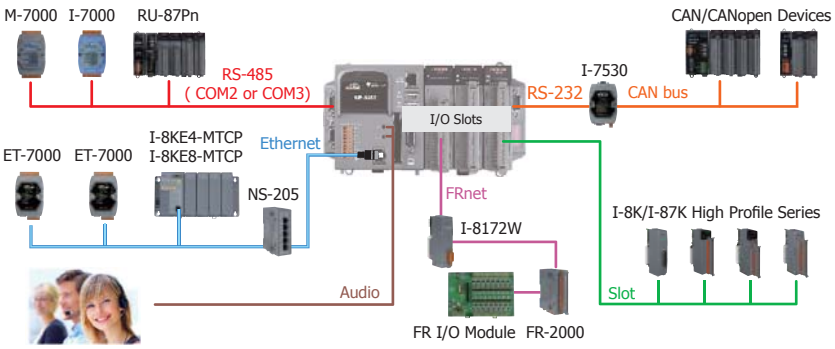
- Windows CE.NET 5.0 Operating System
- Development Softwre: ISaGRAF Ver.3
  - Windows 95/98/NT/2000/XP/Vista/7
  - All-in-one design environment
  - Easy to integrating with HMI/SCADA/MMI
- Support Modbus Master & Slave Protocols
  - Modbus TCP Master (Max. 100 devices)
  - Modbus RTU, ASCII, RS-232/485/422 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

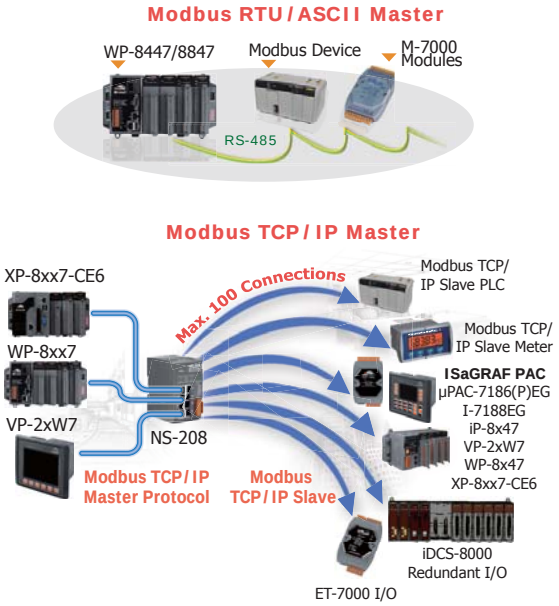
Applications

Rich I/O Expansion Ability

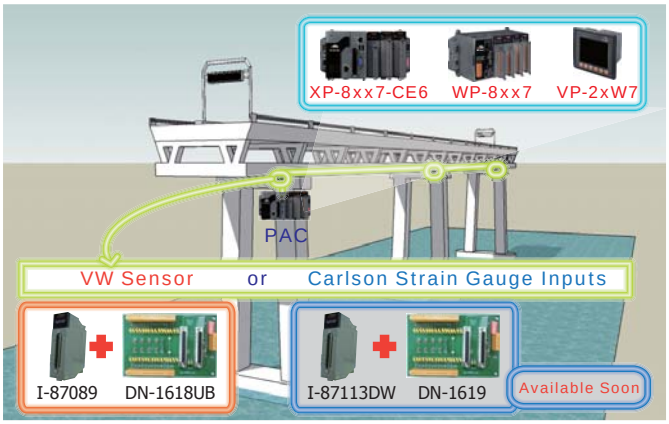


Soft-GRAF: Create A Colorful HMI in the ISaGRAF PAC

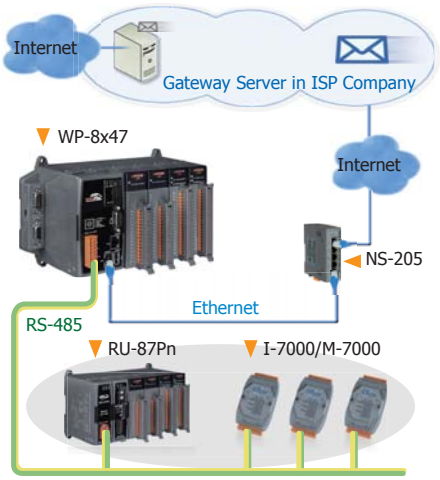
Modbus Master Ports



Stress Monitoring of Constructions

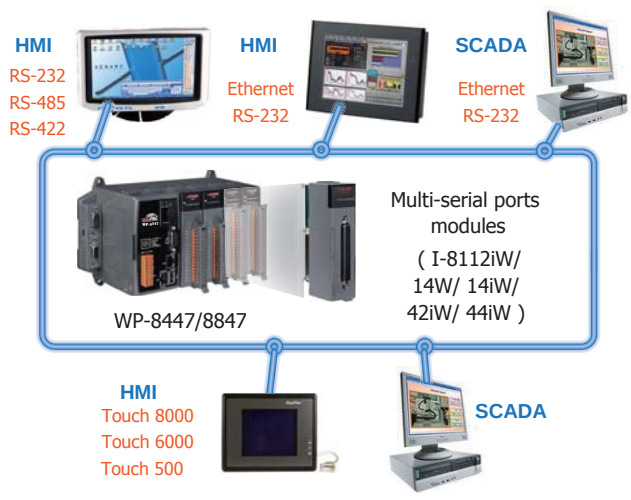


Send Email with one Attached File

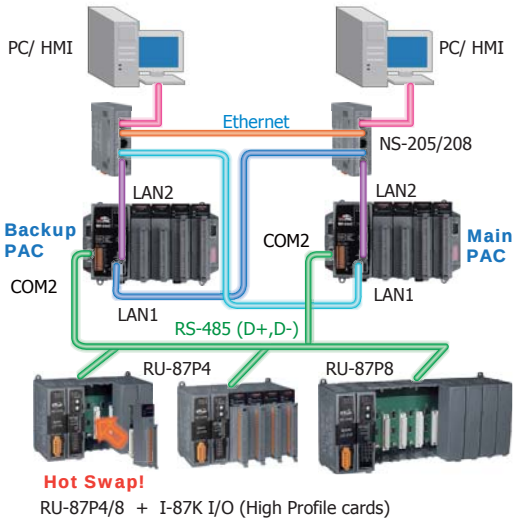


Remote I/O Modules

Modbus RTU/TCP Slave Ports



New Hot-Swap Redundant System

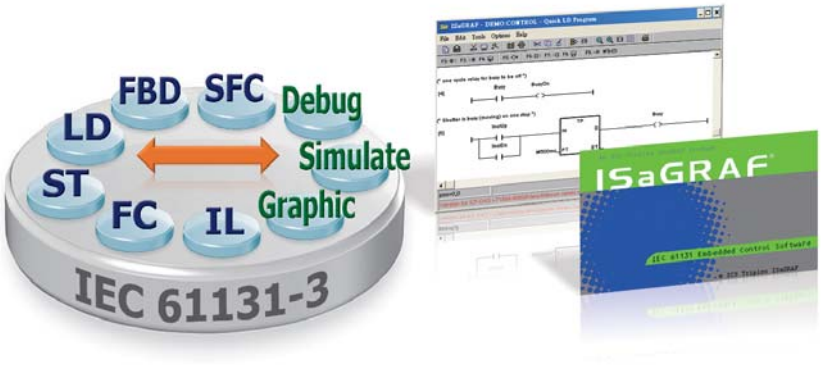


RU-87P4/8 + I-87K I/O (High Profile cards)

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

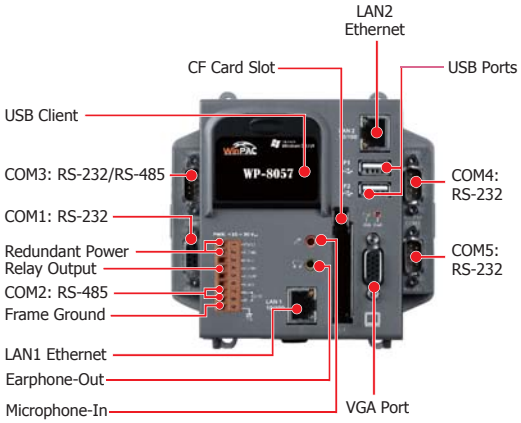


Protocols (some protocols need optional devices)		
NET ID		1~255, user-assigned by software
Modbus TCP/IP Master		Link to max. 100 devices that support Standard Modbus TCP/IP Slave protocol
Modbus RTU/ASCII Master		Max. 10 ports: COM1 ~ 14 (To connect to other Modbus Slave devices). Support Multi-ports. (*)
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)

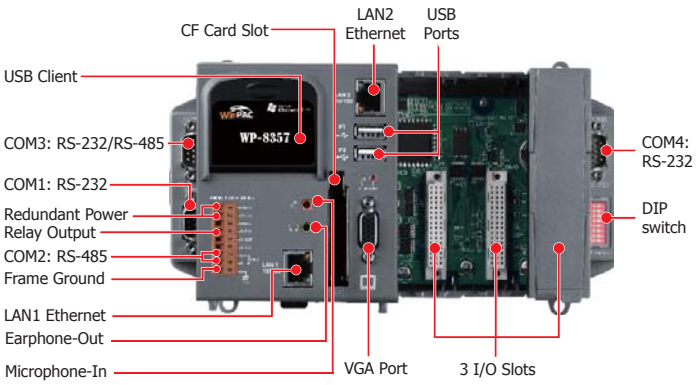
***Note: COM5 ~ COM14 are resided at the expansion boards if they are plugged on slot0~7 of WP-8xx7.**
WP-8137/8147 has no COM3 & COM4.

Appearance

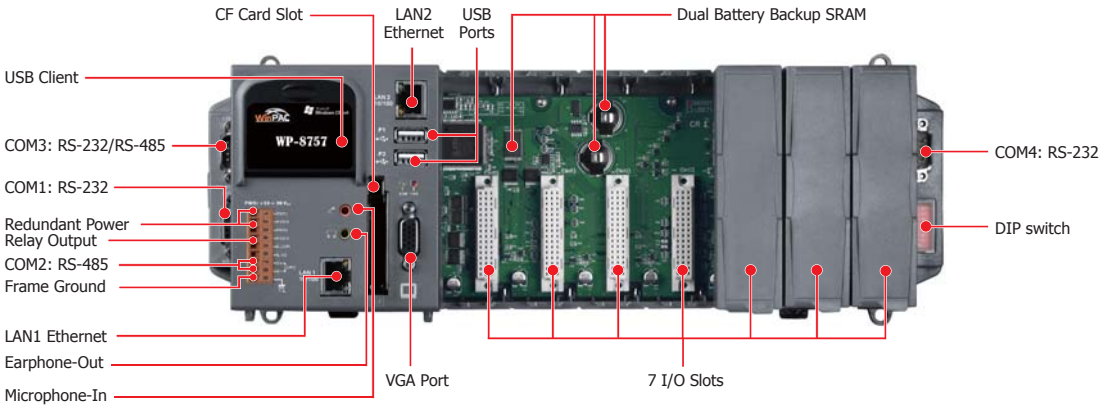
WP-8057



WP-8357

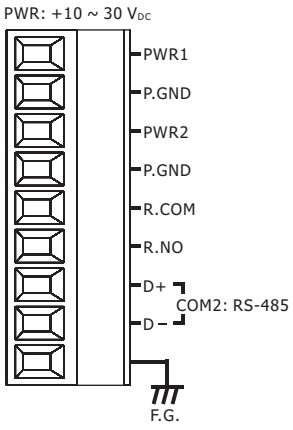


WP-8757



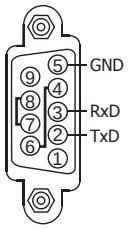
Pin Assignments

Terminal Block

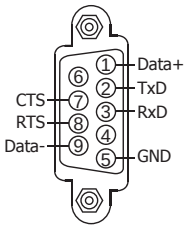


COM Port

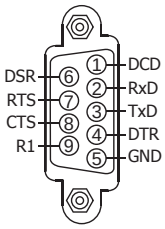
COM1: RS-232



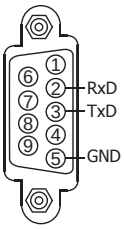
COM3: RS-232/RS-485



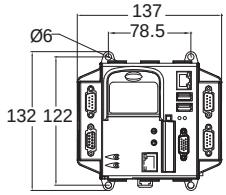
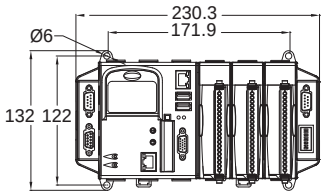
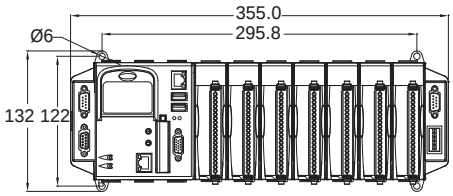
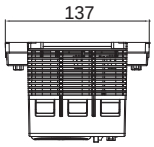
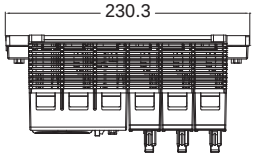
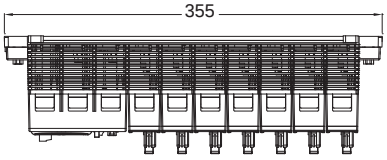
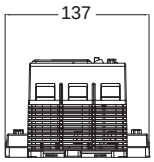
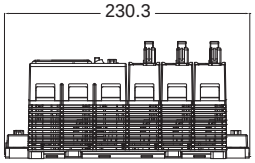
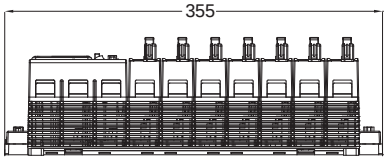
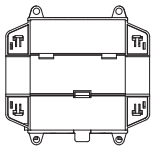
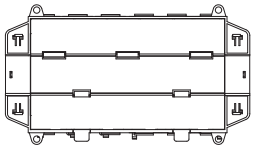
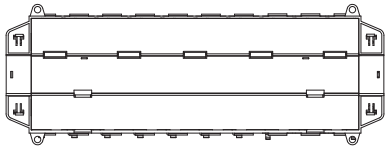
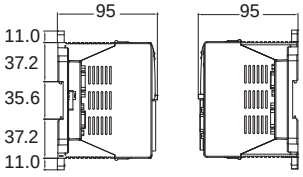
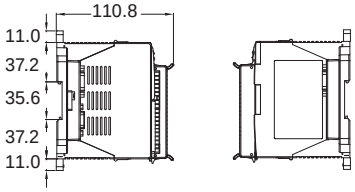
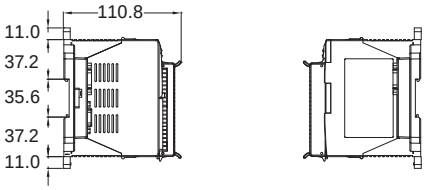
COM4: RS-232



COM5: RS-232



Dimensions (Units: mm)

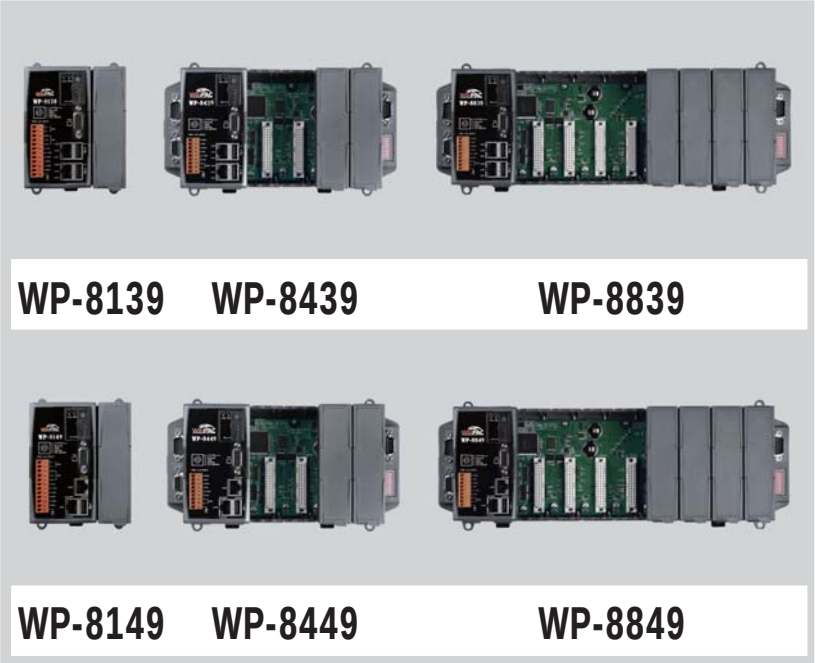
WP-8057	WP-8357	WP-8757
 Front View	 Front View	 Front View
 Top View	 Top View	 Top View
 Bottom View	 Bottom View	 Bottom View
 Rear View	 Rear View	 Rear View
 Left Side View / Right Side View	 Left Side View / Right Side View	 Left Side View / Right Side View

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

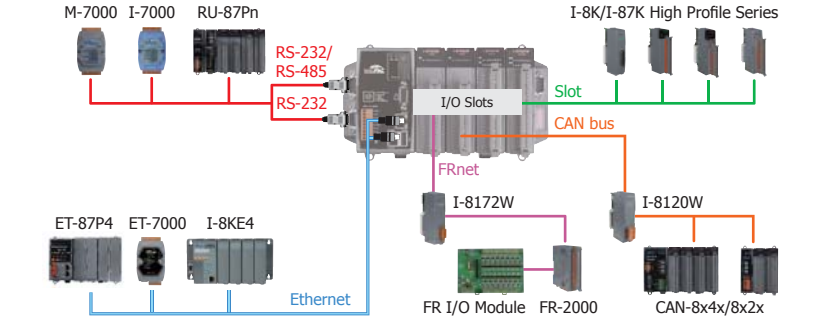
Introduction

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

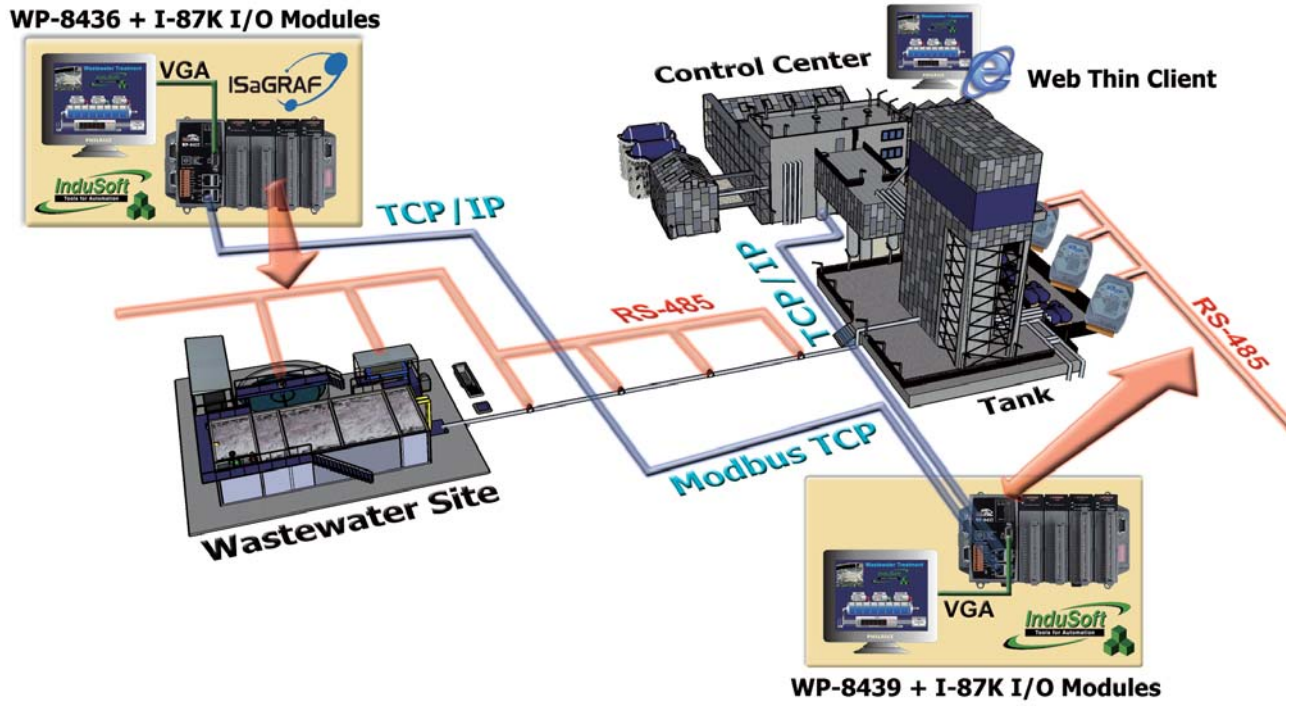
Software

- 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

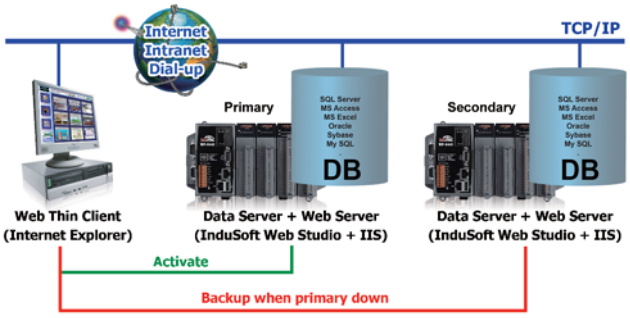
Hardware

- 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

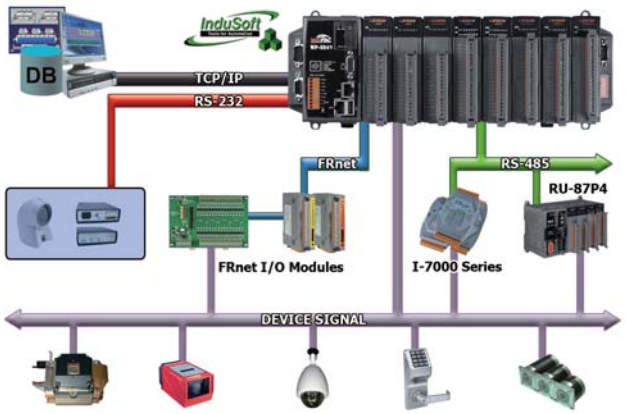
WP-8xx9 Total Solution



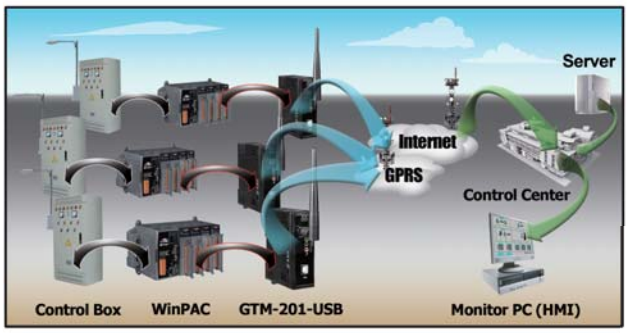
Database & Redundancy



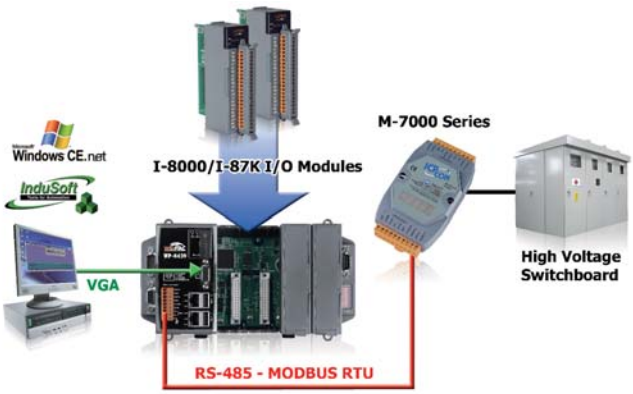
Variety of I/O supported



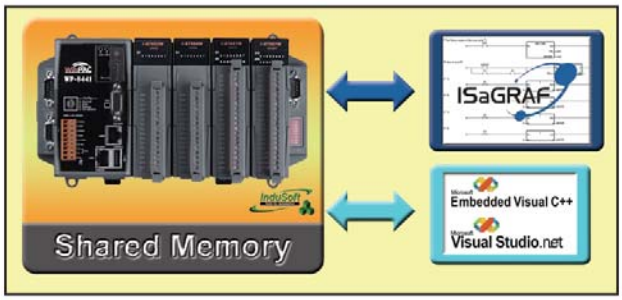
Street lamp monitor and control system



Variaty of communication drivers



Share data with 3rd. party application



Specifications

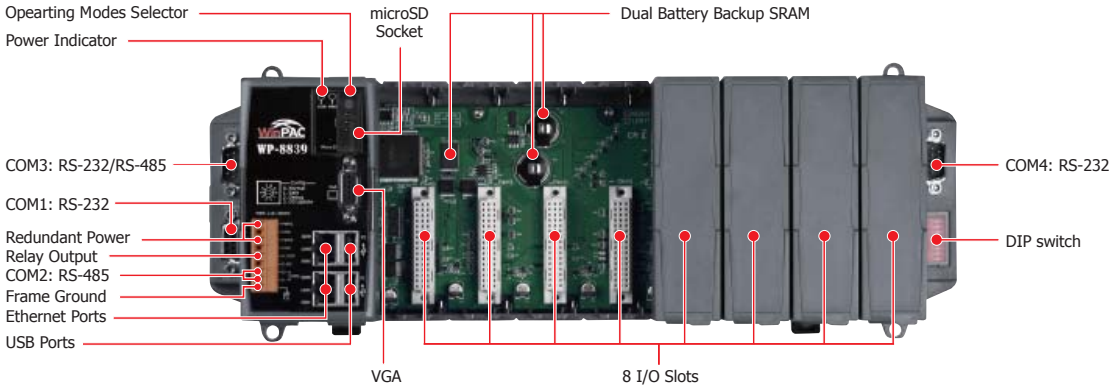
Models		WP-8139	WP-8149	WP-8439	WP-8449	WP-8839	WP-8849
System Software							
OS		Windows CE 5.0					
.Net Compact Framework		2.0					
Embedded Service		FTP server, Web server (supports VB script, JAVA script), Embedded SQL server					
Multilanguage Support		English, German, French, Spanish, Russian, 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

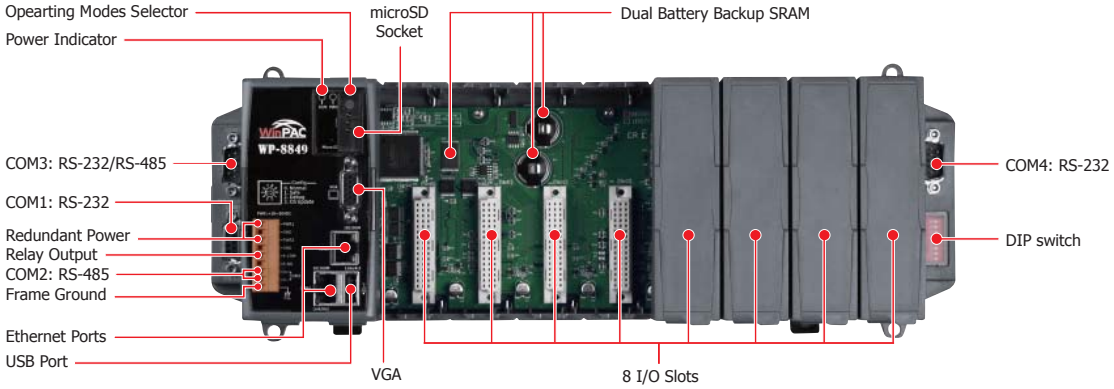
- Elegant Graphics
- Multi-Language
- Database (Access, Excel, SQL, Oracle…)
- Recipes and Reports
- Online and History Alarm / Event / Trend
- Various Communication Driver (DCON, Modbus, OPC, DDE, TCP/IP…)
- Remote Web Client Control & Security
- ActiveX (GSM / SHM / COM /WEB provided by ICP DAS)
-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

Appearance

WP-8839



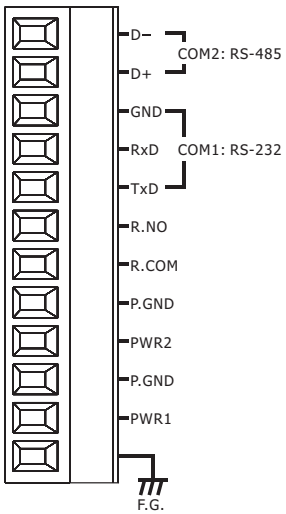
WP-8849



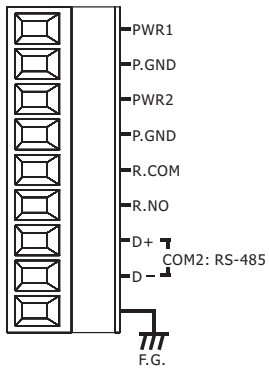
Pin Assignments

Terminal Block

WP-81x9

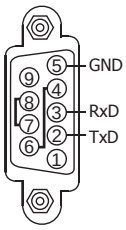


WP-84x9/88x9

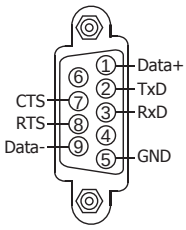


WP-84x9/88x9 COM Port

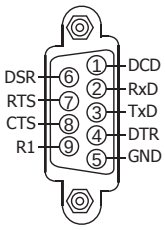
COM1: RS-232



COM3: RS-232/RS-485

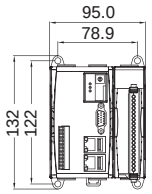


COM4: RS-232



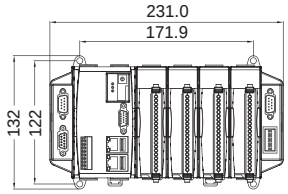
Dimensions (Units: mm)

WP-8139



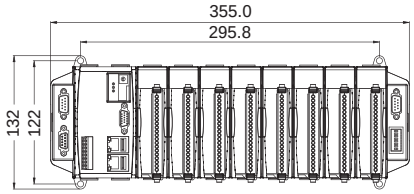
Front View

WP-8439



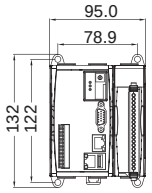
Front View

WP-8839



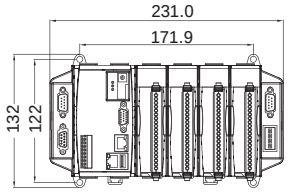
Front View

WP-8149



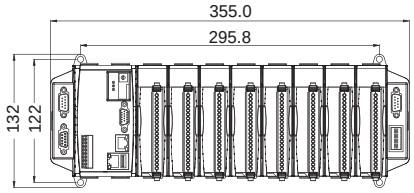
Front View

WP-8449



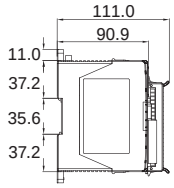
Front View

WP-8849



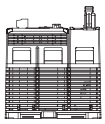
Front View

WP-8x39/8x49



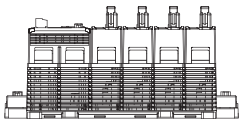
Left Side View

WP-81x9



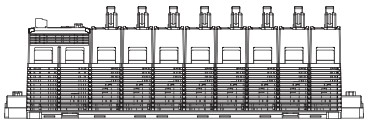
Bottom View

WP-84x9



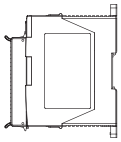
Bottom View

WP-88x9



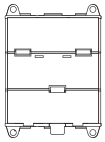
Bottom View

WP-8x39/8x49



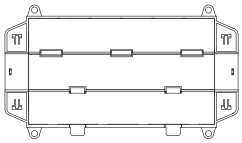
Right Side View

WP-81x9



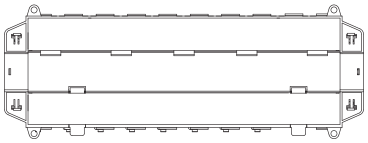
Rear View

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

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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.

Features

Software

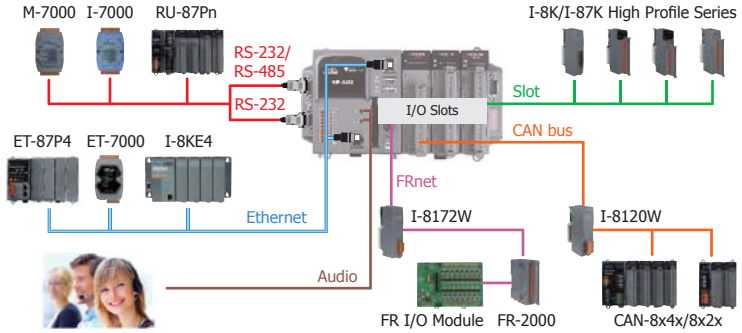
- Windows CE.NET 5.0 Operating System
- Easy Remote Maintenance Via Ethernet
- Built-in OPC Server: Quicker
- Simply Copy and Play to Upgrade Applications
- Pre-installed Run-time InduSoft v6.1 SP3
  - ☐ Intuitive Scripting Language
  - ☐ Support Microsoft .NET, OPC, DDE, ODBC, XML
  - ☐ Support Modbus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

Hardware

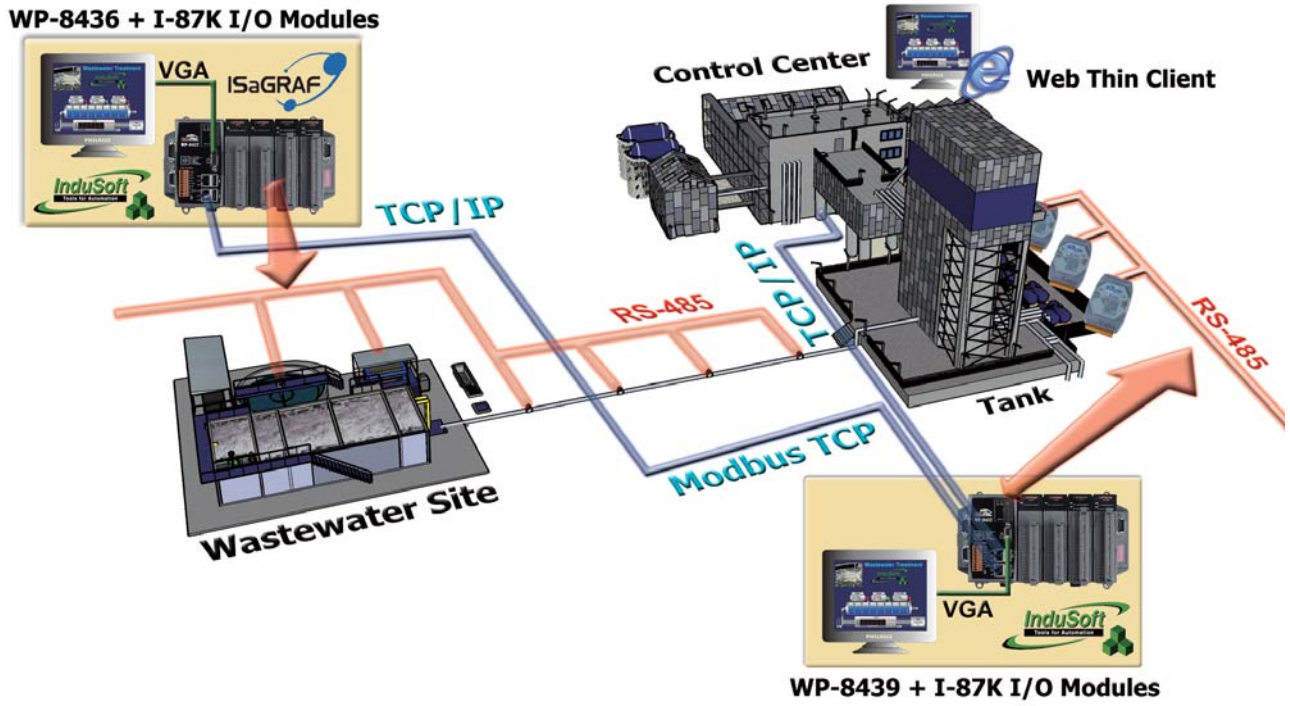
- Powerful CPU Module
- Built-in VGA Port with Extra GPU
- 64-bit Hardware Serial Number
- Audio with Microphone-In and Earphone-Out
- Rich I/O Expansion Ability
- I/O Module Hot Swap Ability
  - * Will be available
  - (For High Profile I-87K Modules Only)
- Built-in 63 MB Flash Disk
- Dual Watchdog 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

Applications

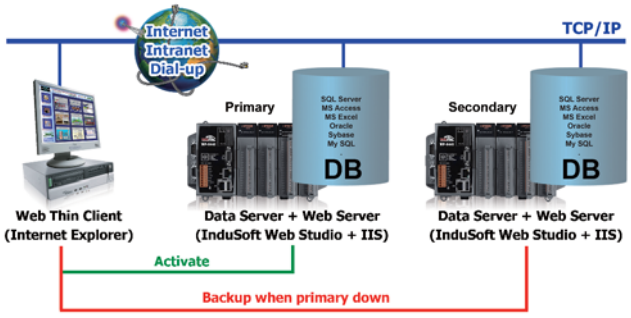
Rich I/O Expansion Ability



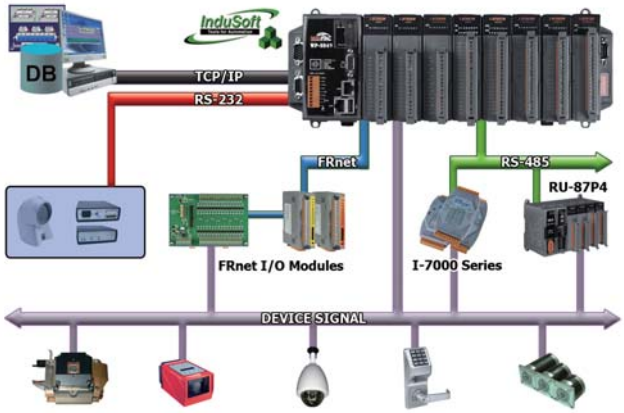
WP-8xx9 Total Solution



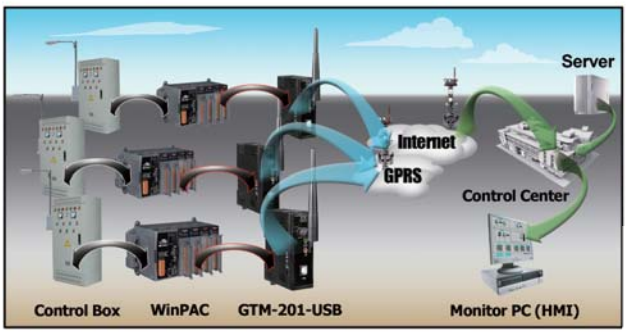
Database & Redundancy



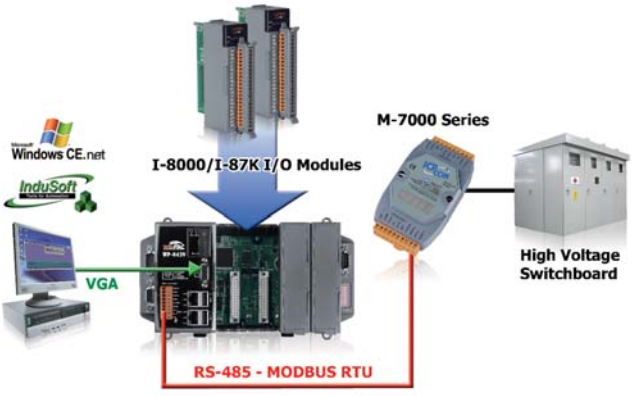
Variety of I/O supported



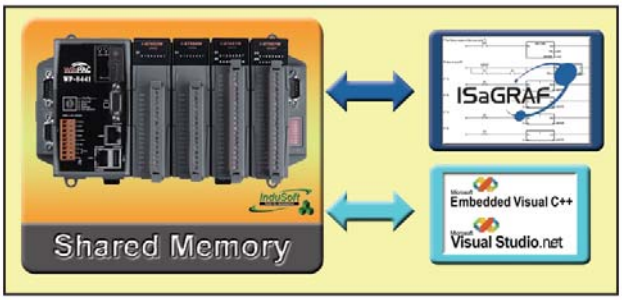
Street lamp monitor and control system



Variaty of communication drivers



Share data with 3rd. party application



Specifications

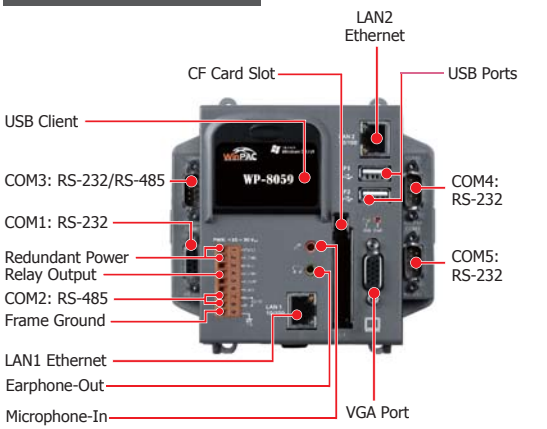
Models		WP-8059	WP-8359	WP-8759
System Software				
OS		Windows CE 5.0		
.Net Compact Framework		2.0		
Embedded Service		FTP server, Web server (supports VB script, JAVA script), Embedded SQL server		
Multilanguage Support		English, German, French, Spanish, Russian, Italian, Simplified Chinese, Traditional 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

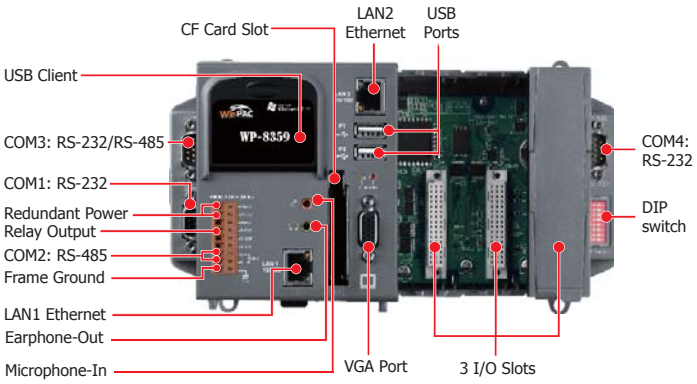
- Elegant Graphics
- Multi-Language
- Database (Access, Excel, SQL, Oracle…)
- Recipes and Reports
- Online and History Alarm / Event / Trend
- Various Communication Driver (DCON, Modbus, OPC, DDE, TCP/IP…)
- Remote Web Client Control & Security
- ActiveX (GSM / SHM / COM /WEB provided by ICP DAS)
-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

Appearance

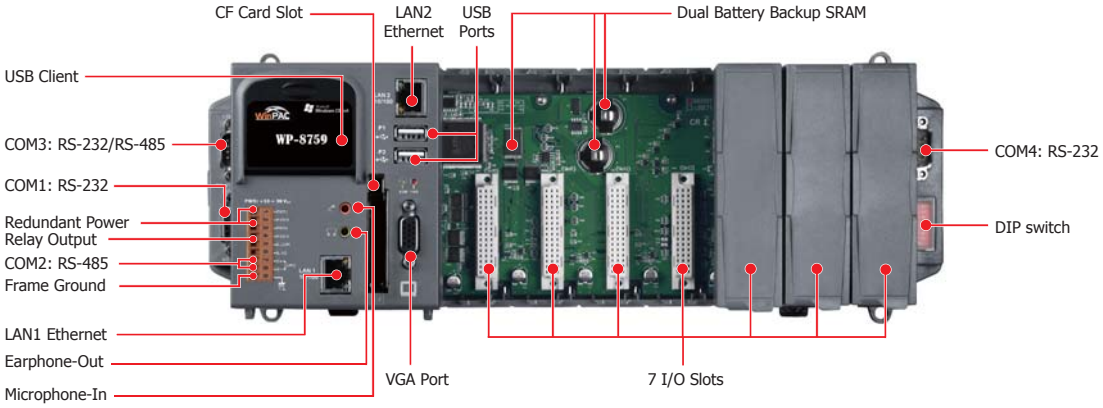
WP-8059



WP-8359

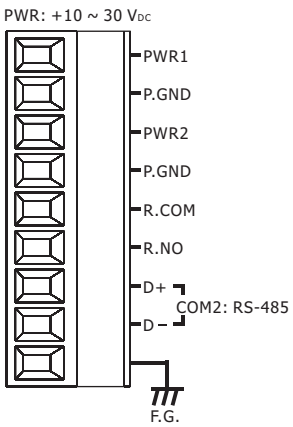


WP-8759

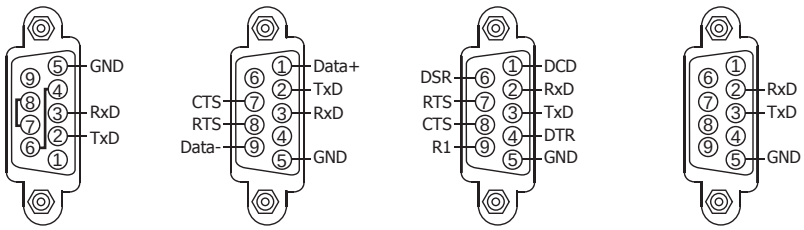


Pin Assignments

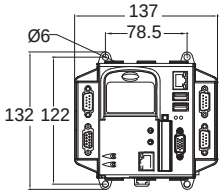
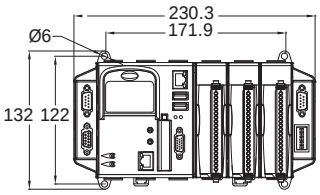
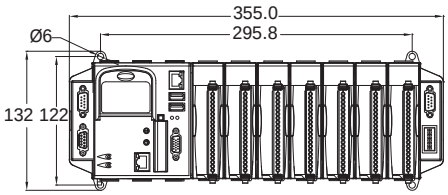
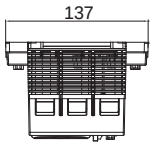
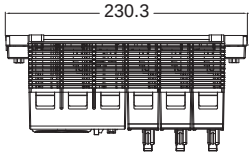
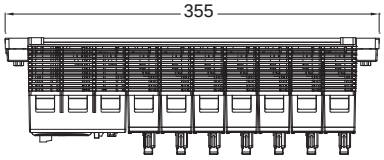
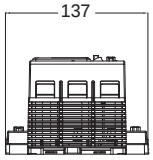
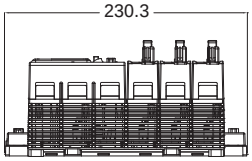
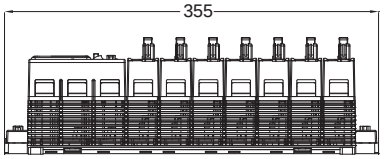
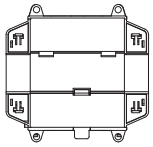
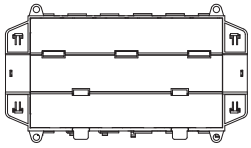
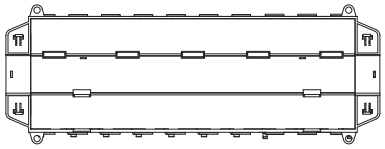
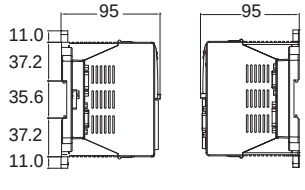
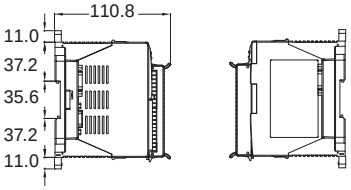
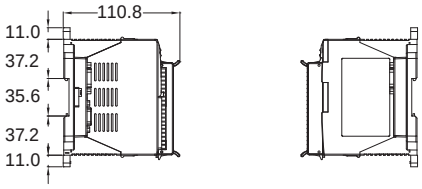
Terminal Block



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

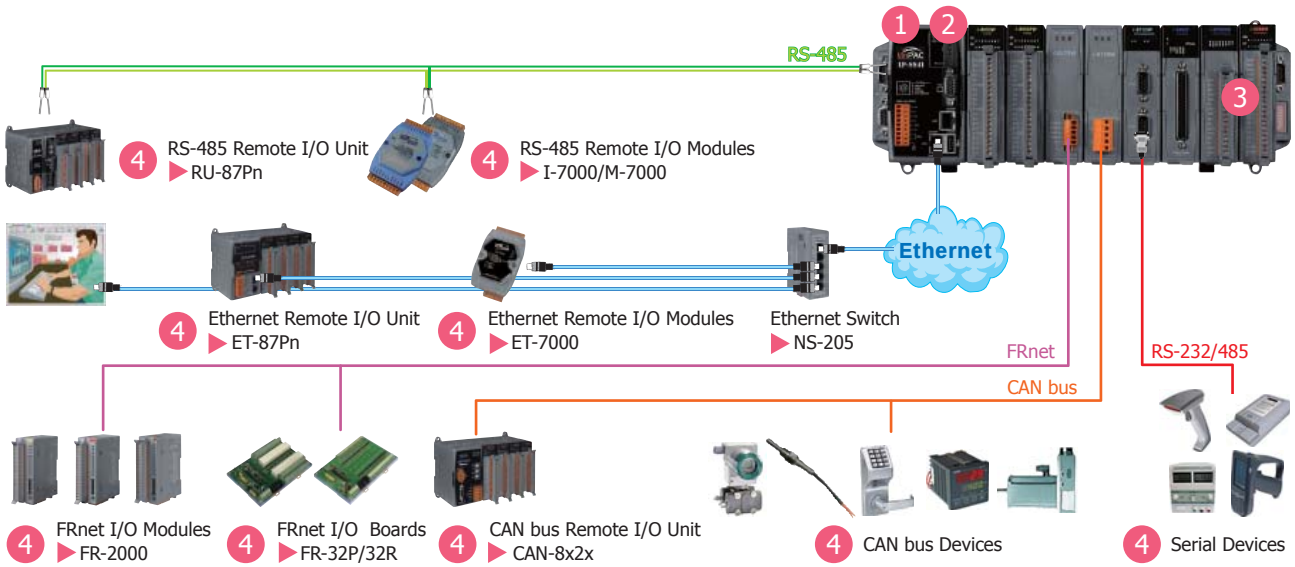
All LinPAC have Linux kernel 2.6 OS inside, most of the popular features in Linux are included, such as open source, stability and free of charge. LinPAC supports for rich software & development solutions: LinPAC SDK, GNU C Language, JAVA and GUI software, etc.

3 I/O Modules

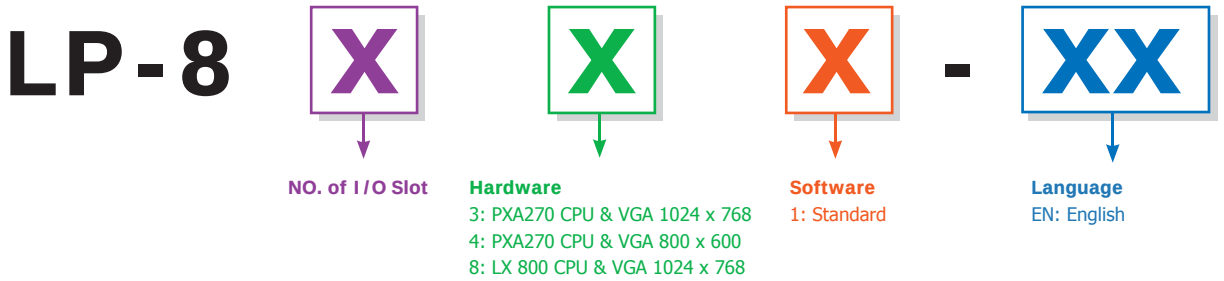
There are two types of I/O modules, Parallel and Serial. The Parallel I/O modules (high profile I-8K series) are high-speed modules and have to be installed in slots of the LinPAC. The Serial I/O modules (high profile I-87K series) can be installed in slots or Expansion Units (RU-87Pn).

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.



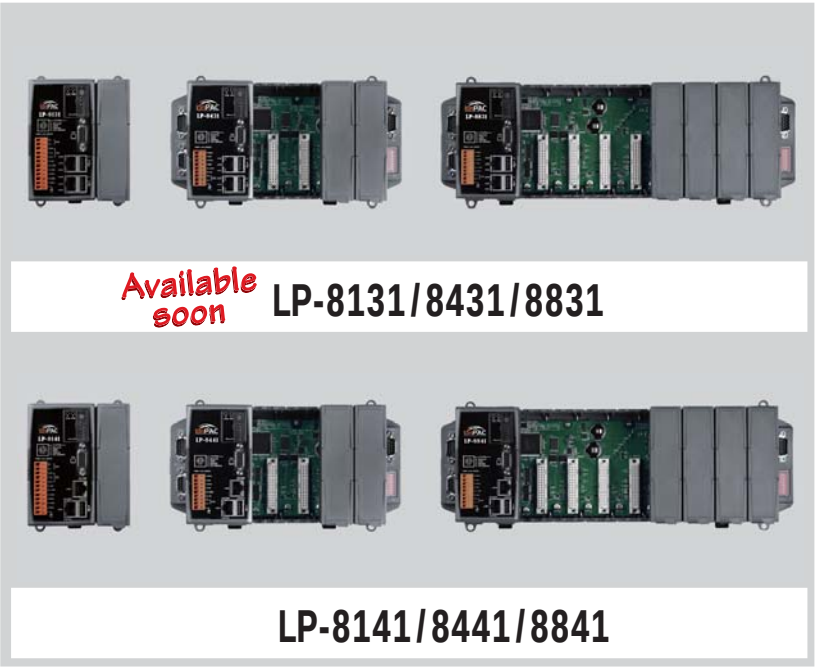
Selection Guide



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

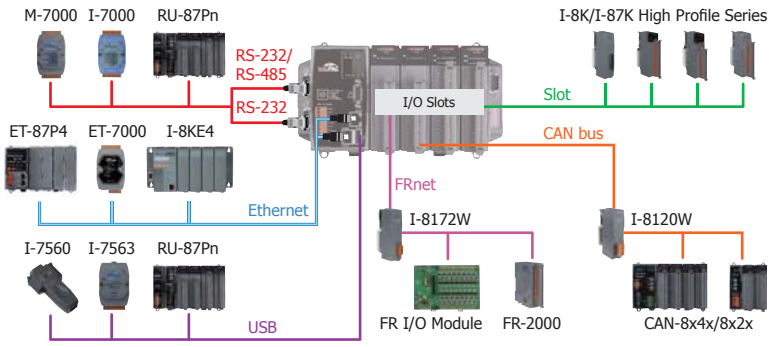
Introduction

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

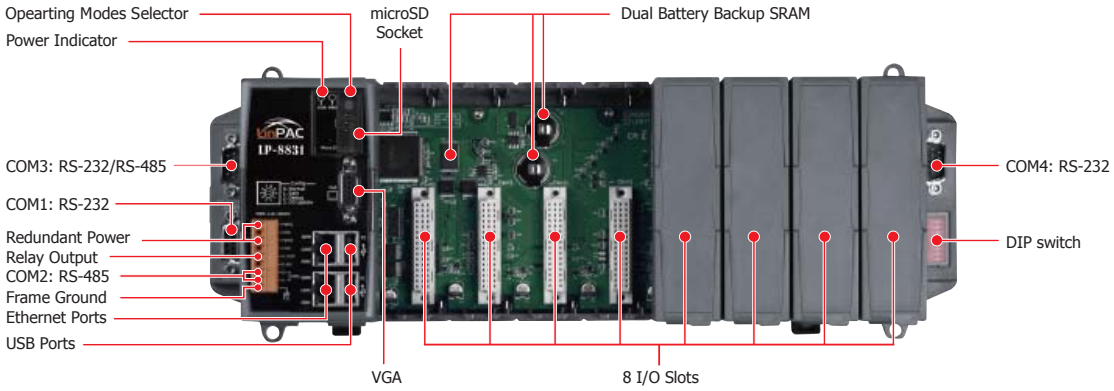
- Powerful CPU Module
- Built-in VGA Port: 640 x 480 ~ 1024 x 768 (for LP-8x31)
- Built-in VGA Port: 640 x 480 ~ 800 x 600 (for LP-8x41)
- 64-bit Hardware Serial Number
- Rich I/O Expansion Ability
- I/O Module Hot Swap Ability
  * Will be available
  (For High Profile I-87K Modules Only)
- 128 MB SDRAM
- 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

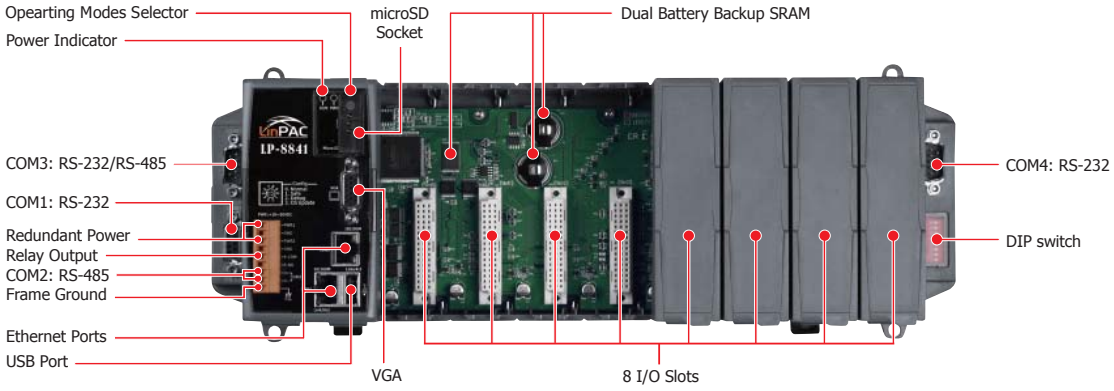
Models		LP-8131	LP-8141	LP-8431	LP-8441	LP-8831	LP-8841
System Software							
OS		Linux kernel 2.6					
Embedded Service		Web Server, FTP Server, Telnet Server, SSH Server					
SDK Provided		Standard LinPAC SDK for Windows and Linux by GNU C language					
CPU Module							
CPU		PXA270 or compatible (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



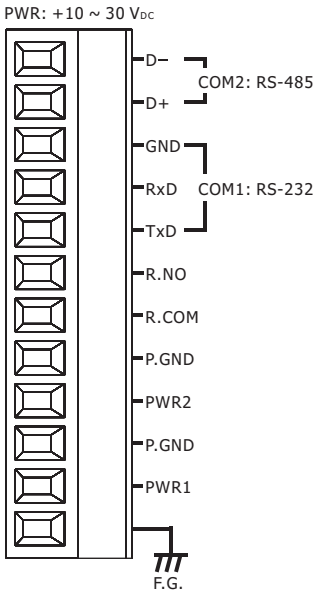
LP-8841



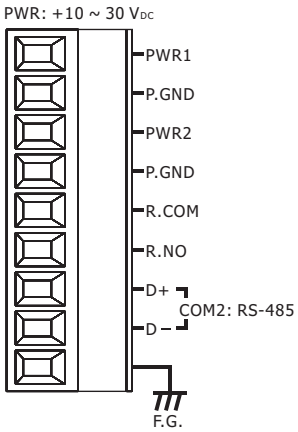
Pin Assignments

Terminal Block

LP-81x1

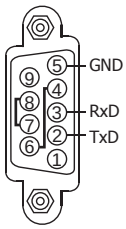


LP-84x1/88x1

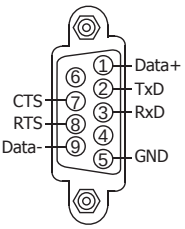


LP-84x1/88x1 COM Port

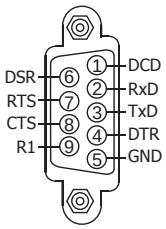
COM1: RS-232



COM3: RS-232/RS-485

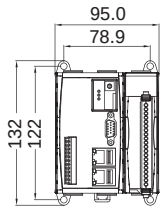


COM4: RS-232



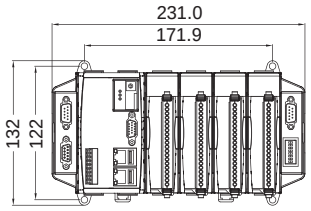
Dimensions (Units: mm)

LP-8131



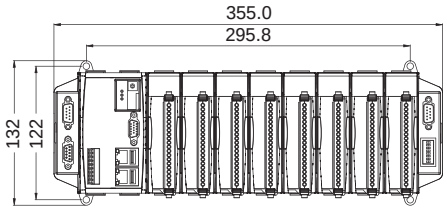
Front View

LP-8431



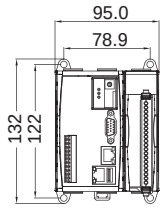
Front View

LP-8831



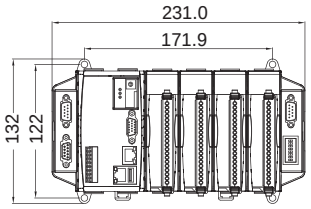
Front View

LP-8141



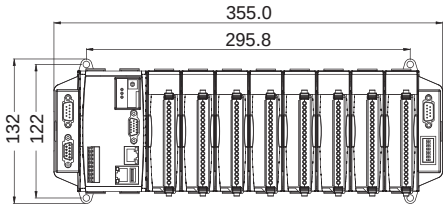
Front View

LP-8441



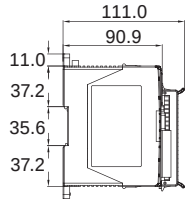
Front View

LP-8841



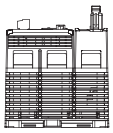
Front View

LP-8x31/8x41



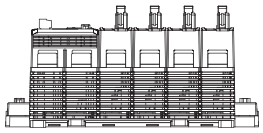
Left Side View

LP-81x1



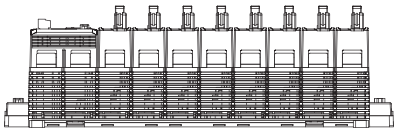
Bottom View

LP-84x1



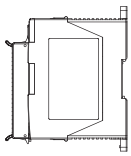
Bottom View

LP-88x1



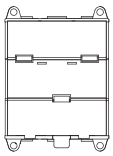
Bottom View

LP-8x31/8x41



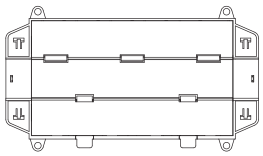
Right Side View

LP-81x1



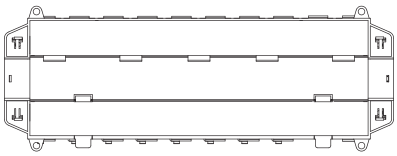
Rear View

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

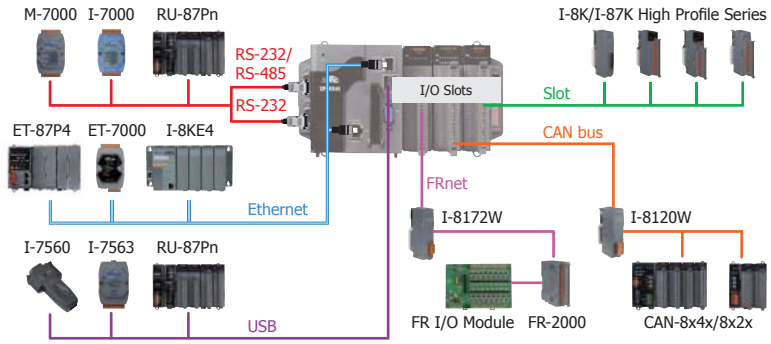
Introduction

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

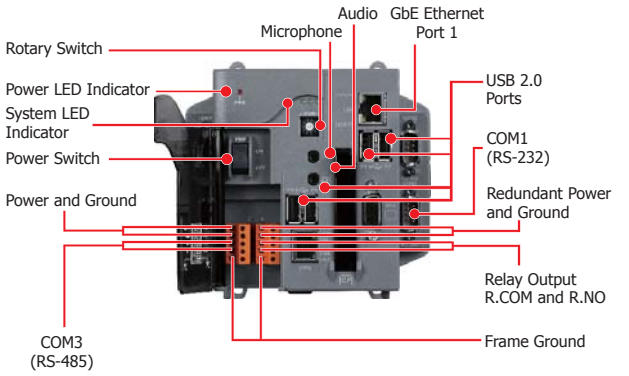
- Powerful CPU Module
  - ☐ AMD LX 800 CPU (32-bit and 500 MHz)
- Rich Memories
  - ☐ DDR SDRAM (1 GB), Built-in Flash Disk (4 GB)
  - ☐ EEPROM (16 KB), CF Card (8 GB)
  - ☐ Dual Battery Backup SRAM (512 KB)
- VGA Port x 1, USB 2.0 Ports x 2
- 64-bit Hardware Serial Number
- Dual Watchdog Timers
- 4/5 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

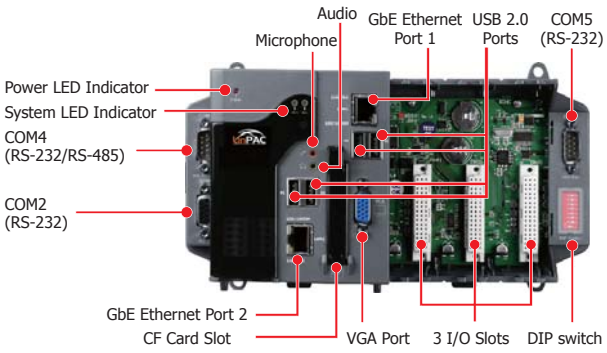
Models		LP-8081	LP-8381	LP-8781
System Software				
OS		Linux kernel 2.6		
Embedded Service		Web Server, Telnet Server, SSH Server		
SDK Provided		Standard LinPAC SDK for Linux by GNU C language		
CPU Module				
CPU		AMD LX 800 processor (32-bit and 500 MHz)		
System Memory		1 GB DDR SDRAM		
Dual Battery 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

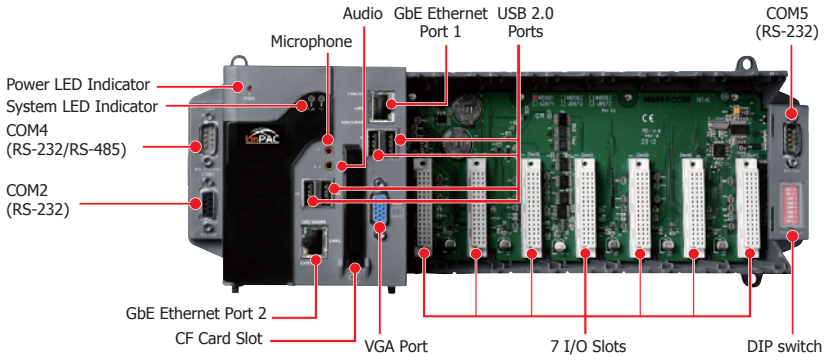
LP-8041



LP-8341

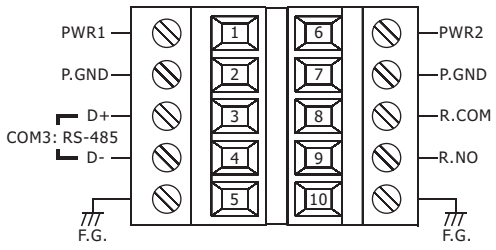


LP-8741

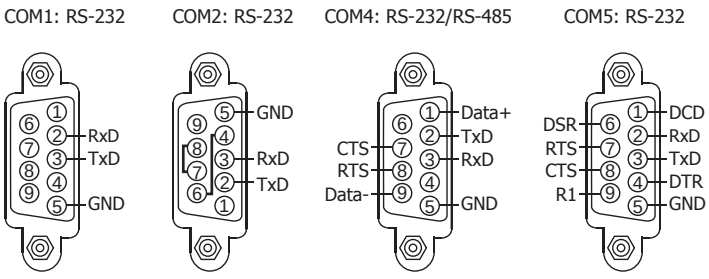


Pin Assignments

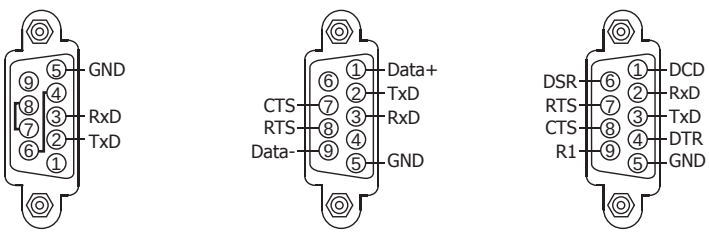
LP-8x41 Terminal Block



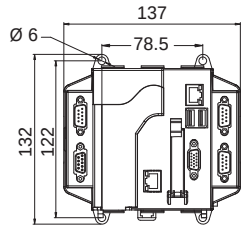
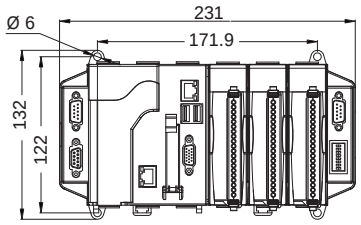
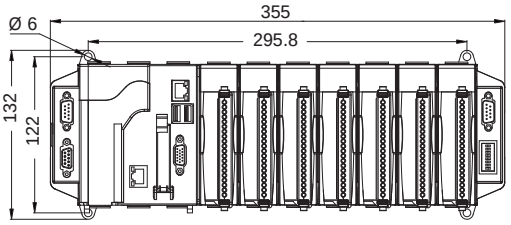
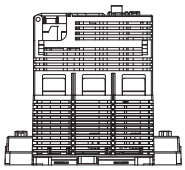
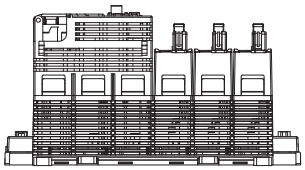
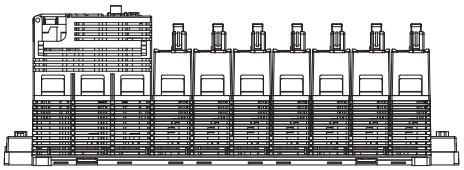
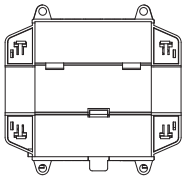
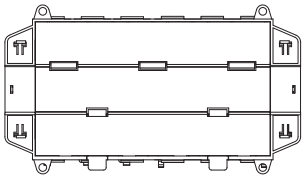
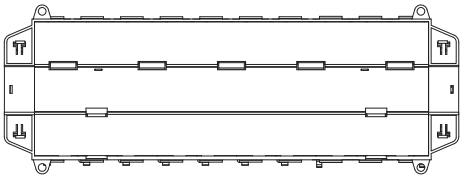
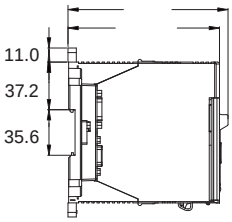
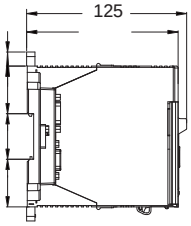
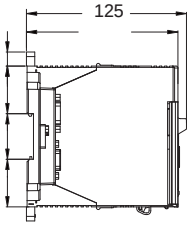
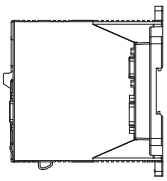
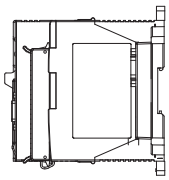
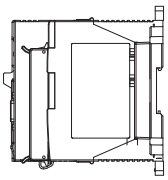
LP-8041 COM Port



LP-8141/LP-8341/8741 COM Port



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

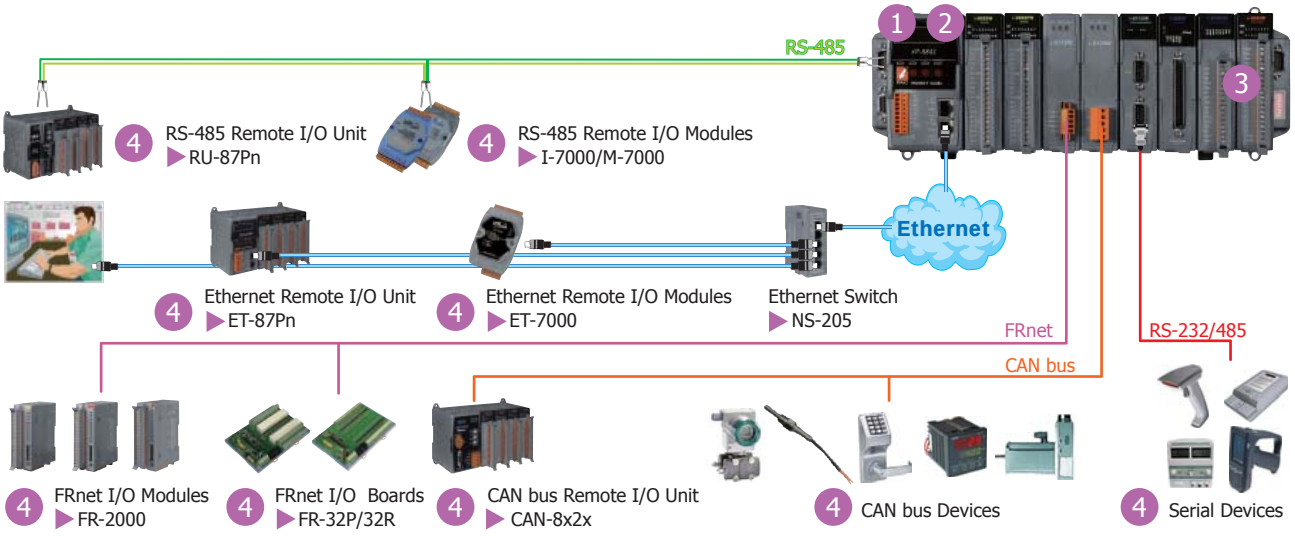
There are two types of I/O modules, Parallel and Serial. The Parallel I/O modules (I-8K high profile series) are high-speed modules and have to be installed in slots of the iPAC. The Serial I/O modules (I-87K high profile series) can be installed in slots or Expansion Units (RU-87Pn).

3 Embedded OS

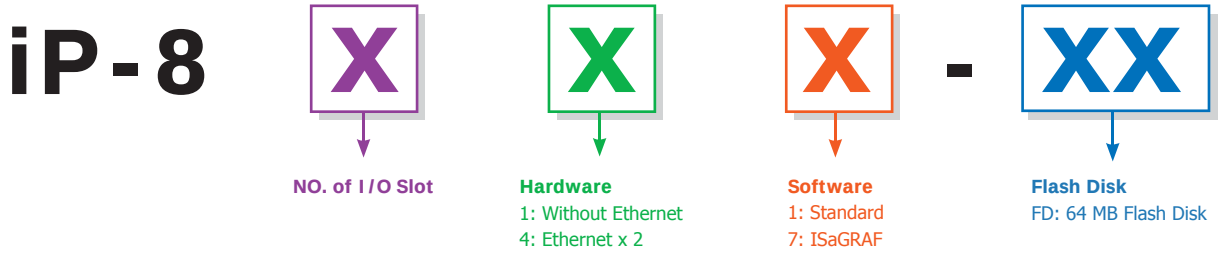
All iPAC is equipped MiniOS7 embedded OS. It is developed by ICP DAS Co., ltd and compatible to DOS. MiniOS7 has more features than regular DOS in embedded applications, such as shorter boot time, built-in hardware diagnostic function, directly support I-8000 and I-7000 modules without library, and directly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



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.

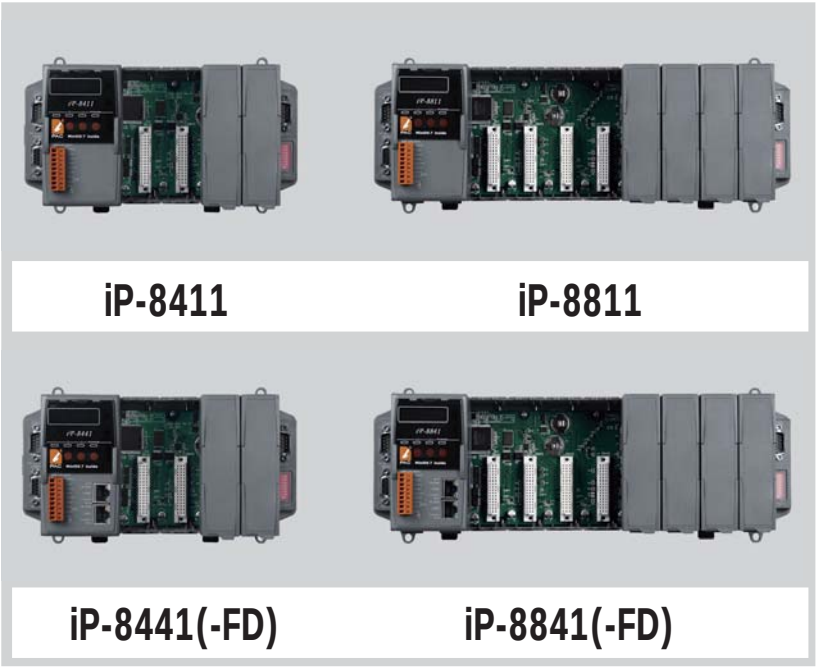
There are many demo programs. For TCP/IP programming, ICP DAS provides a TCP/IP server template XServer which is a very powerful, easy-to-use and flexible tool saving 90% development time.

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

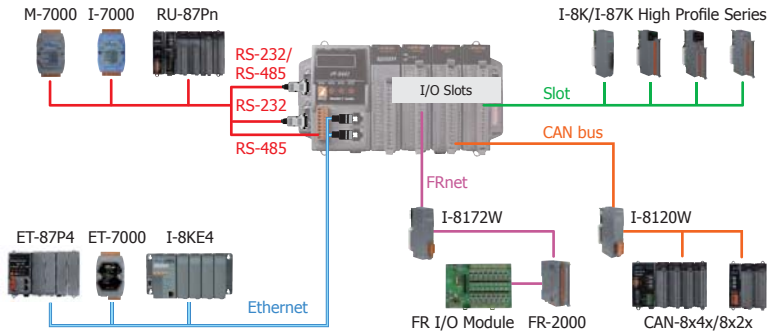
- MiniOS7 Embedded Operating System (DOS-like)
- Support VxComm Technique
- Redundant Ethernet Communication
- Xserver Development Template to Simplify TCP/IP Application
- Slave I/O Firmware Options (DCON or Modbus/TCP)
- Hardware Diagnostic Functions
- Load Files Via RS-232 or Ethernet
- SNMP slave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

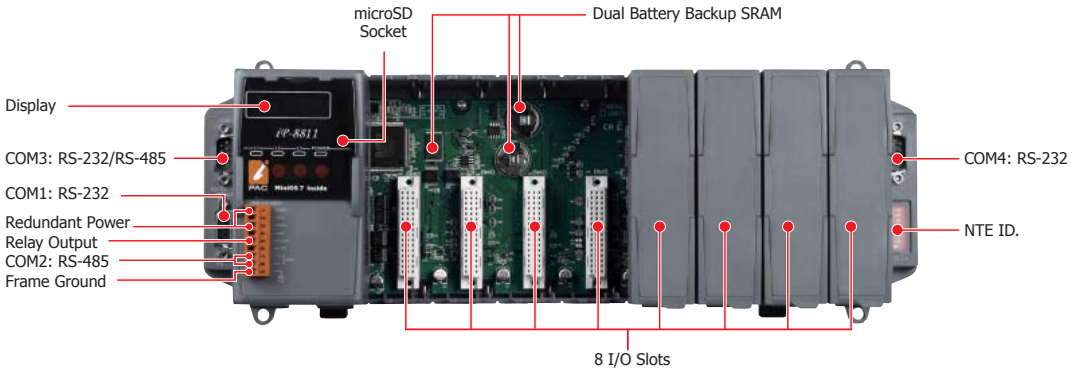


Specifications

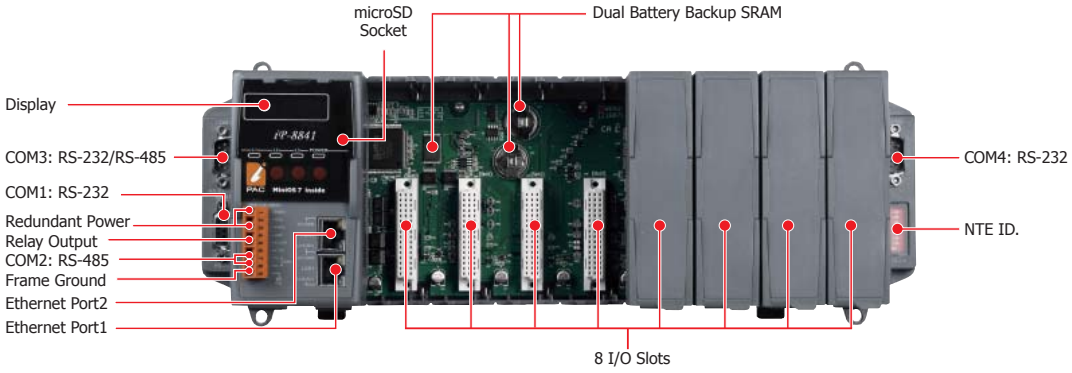
Models	iP-8411	iP-8441	iP-8441-FD	iP-8811	iP-8841	iP-8841-FD
System Software						
OS	MiniOS7 (DOS-like embedded operating system)					
Program Download Interface	RS-232 (COM1) or Ethernet					
Programming Language	C language					
Compilers to create.exe Files	TC++ 1.01 (Freeware) TC 2.01 (Freeware) 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

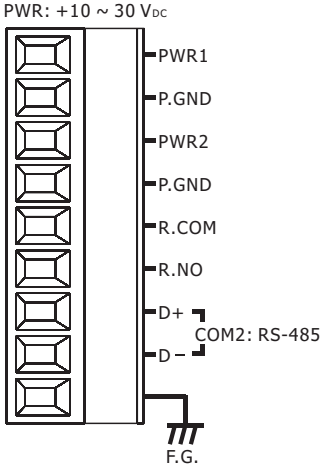


iP-8841/iP-8841-FD

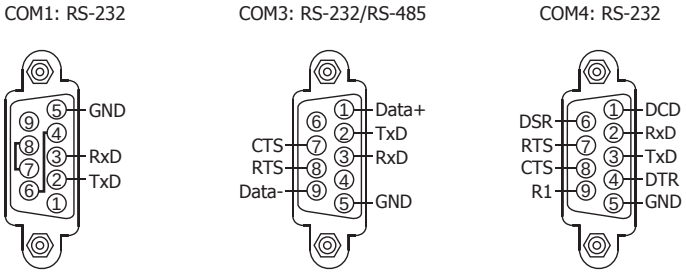


Pin Assignments

Terminal Block

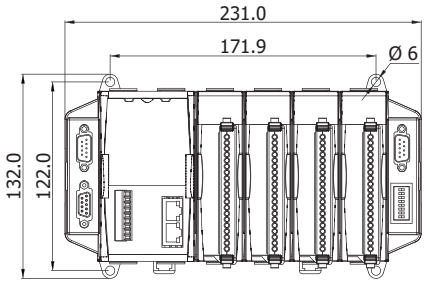


COM Port

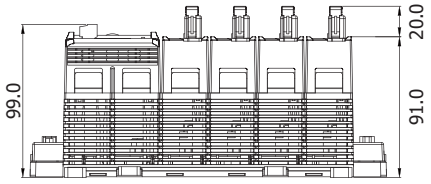


Dimensions (Units: mm)

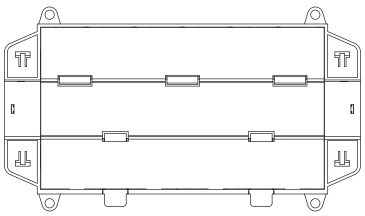
iP-8411/8441/8441-FD



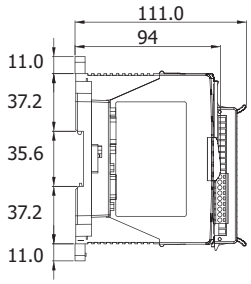
Front View



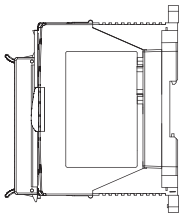
Bottom View



Rear View

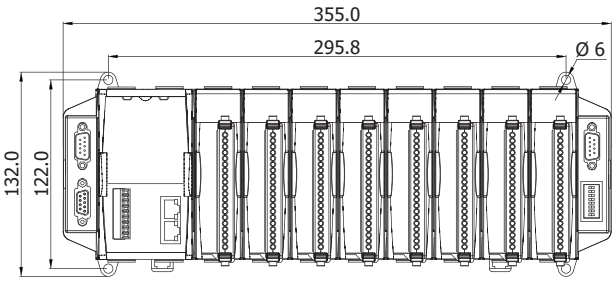


Left Side View

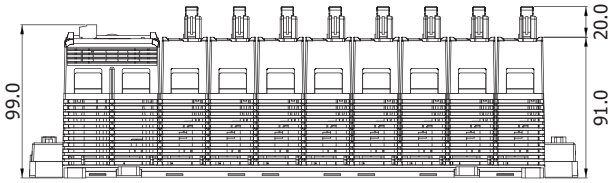


Right Side View

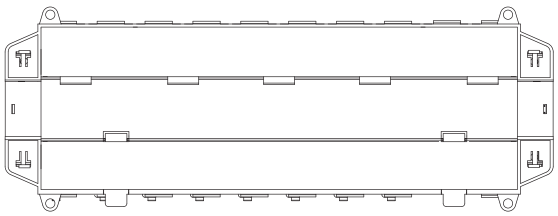
iP-8811/8841/8841-FD



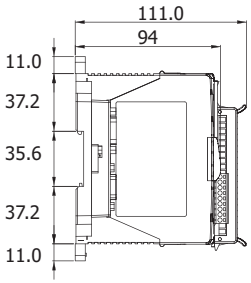
Front View



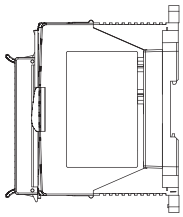
Bottom View



Rear View



Left Side View



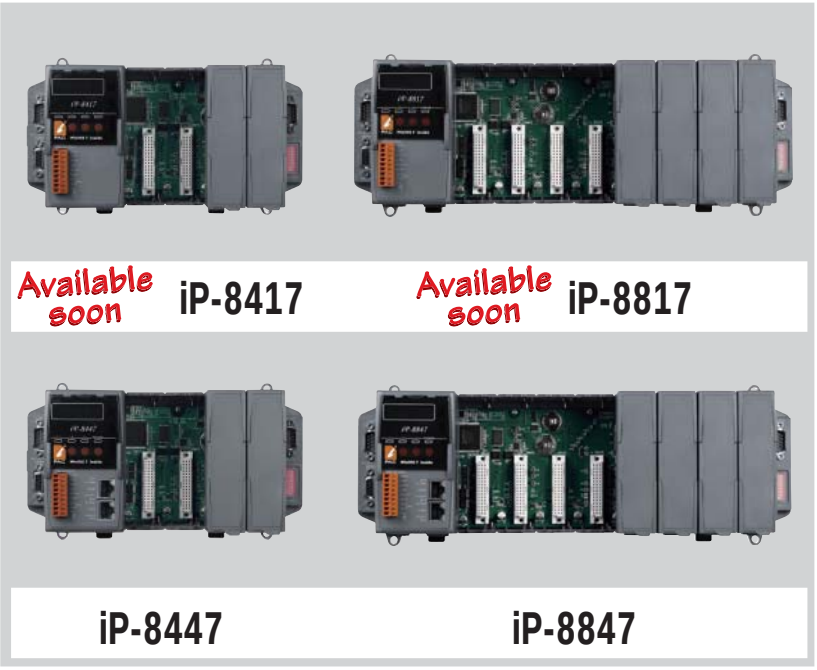
Right Side View

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

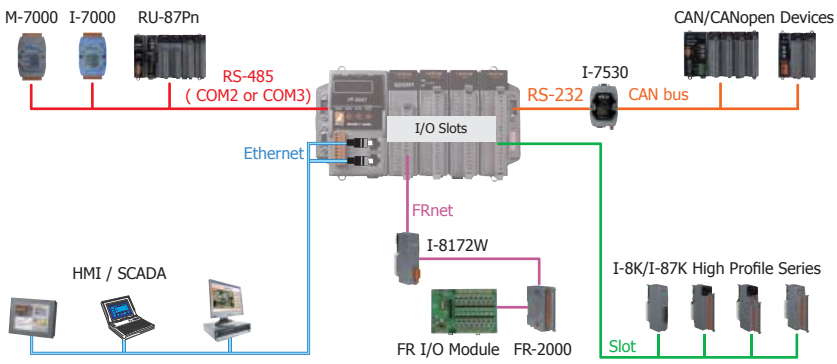
iPAC-8xx7 Series (iP-8417/8817/8447/8847) is the ISaGRAF SoftLogic PAC of ICP DAS iPAC-8000 series. It is equipped an 80186, 80 MHz CPU running a MiniOS7 operating system, various connectivity (Dual 10/100 Base-TX Ethernet Ports for iP-8x47, one RS-232/485 port, one RS-485 port and two RS-232 ports)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

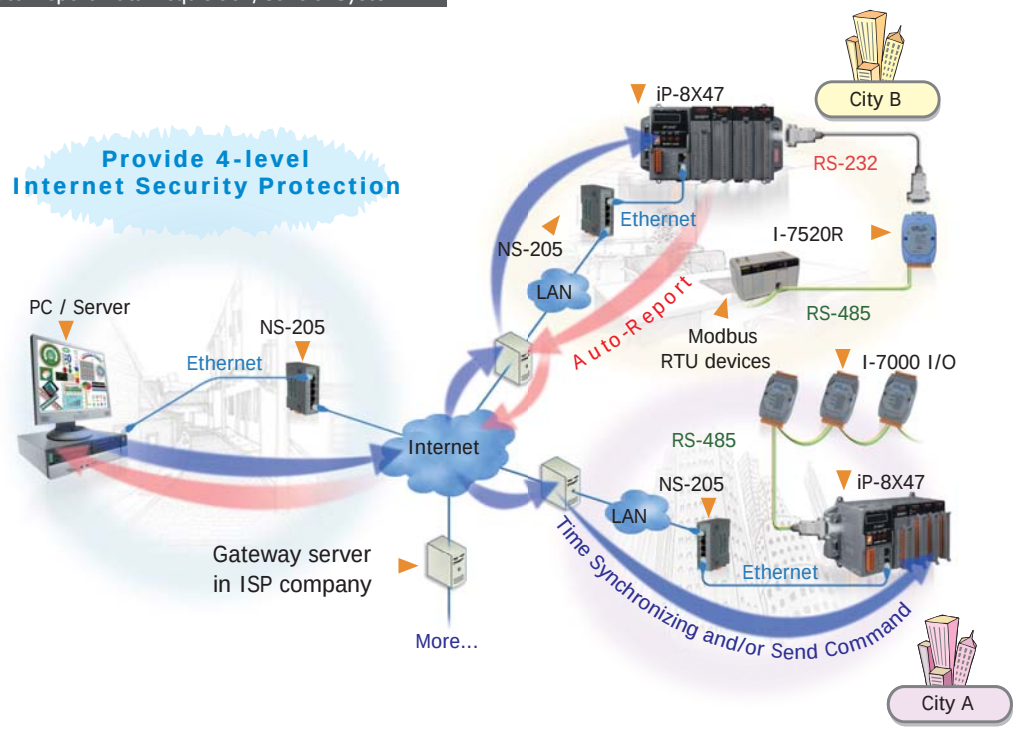
Software

- 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

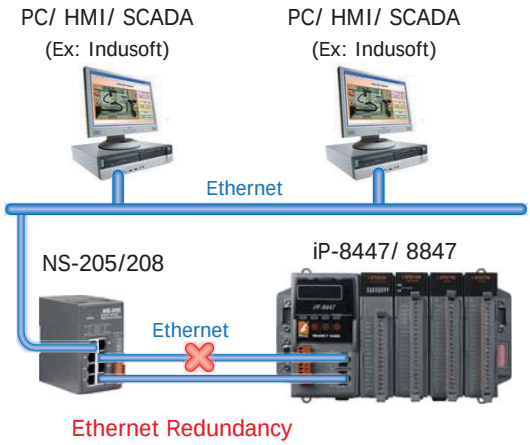
Hardware

- 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

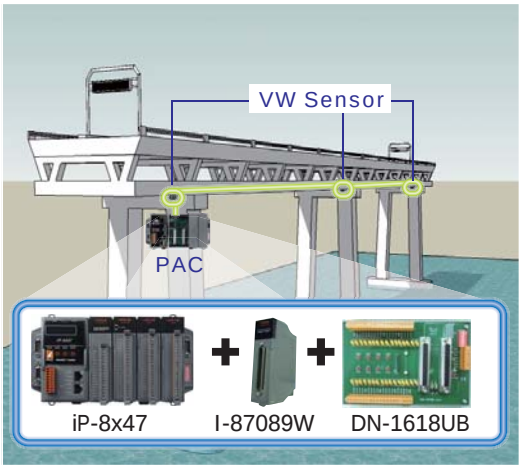
Cost-effective Auto-Report Data Acquisition/Control System



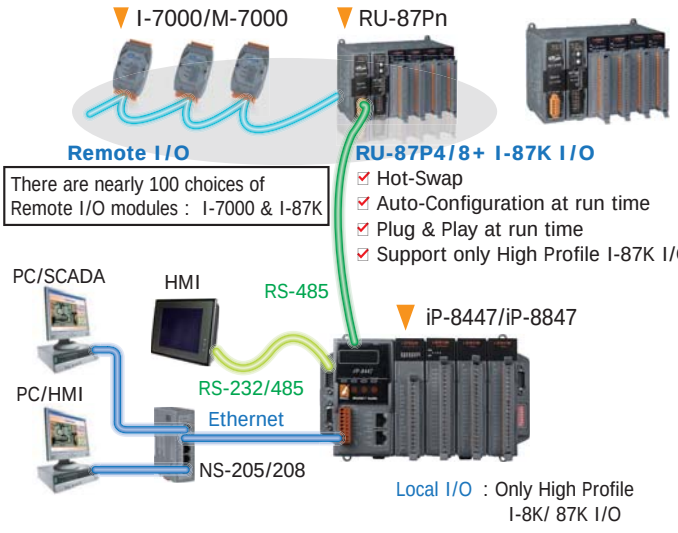
Ethernet Redundancy for HMI/PC/SCADA



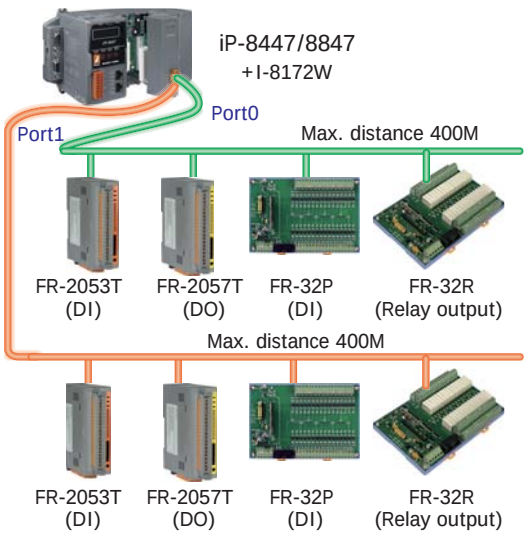
Stress Monitoring of Constructions



Local/Remote I/O Expansion & Multi-HMI



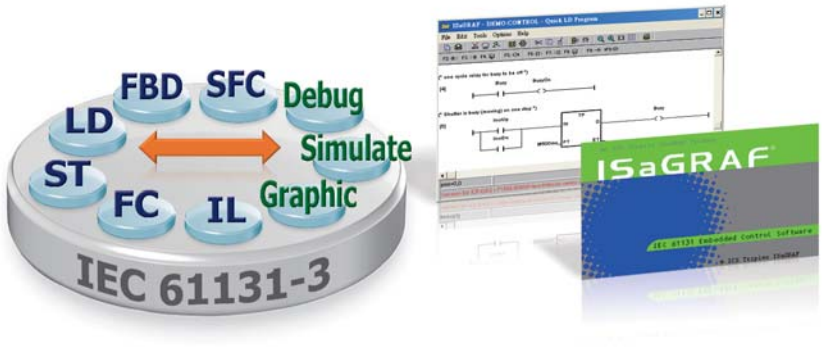
Fast FRnet Remote I/O



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

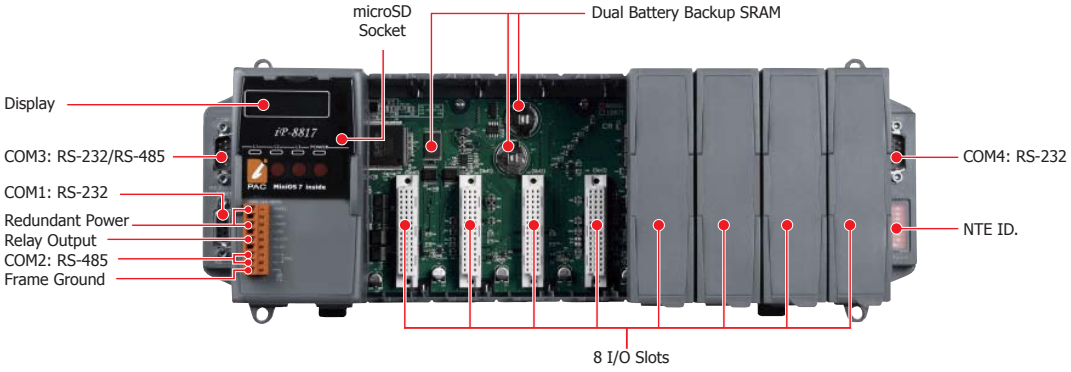


Protocols (some protocols need optional devices)		
Modbus RTU/ASCII Master		Max. 2 COM Ports, COM1 ~ COM5 can support Modbus RTU Master or ASCII Master protocol to connect to other Modbus Slave devices. Max. Modbus_xxx Function Block amount for 2 ports: 128. (*)
Modbus RTU Slave		Max. 2 COM Ports, COM1 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.

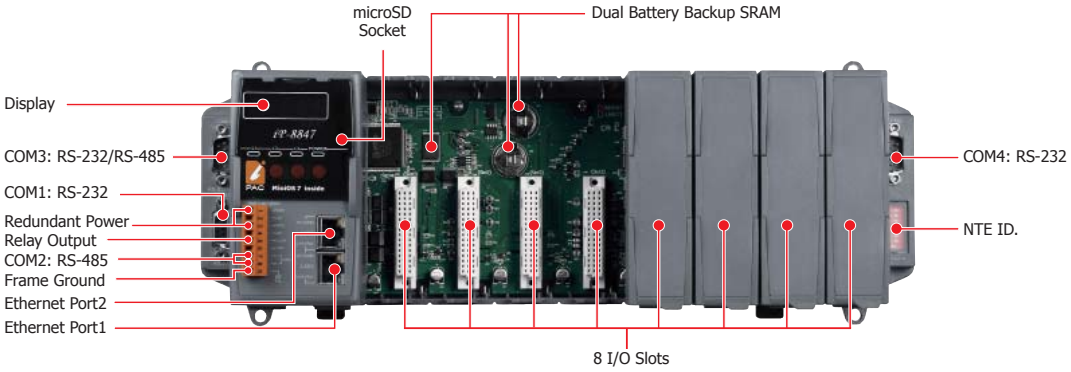
***Note: COM5 ~ COM20 are resided at the expansion boards if they are plugged on slot0~7 of iP-8xx7.**

Appearance

iP-8817

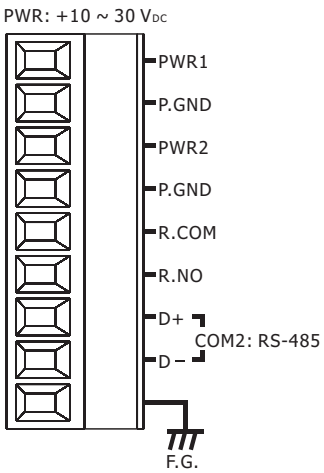


iP-8847

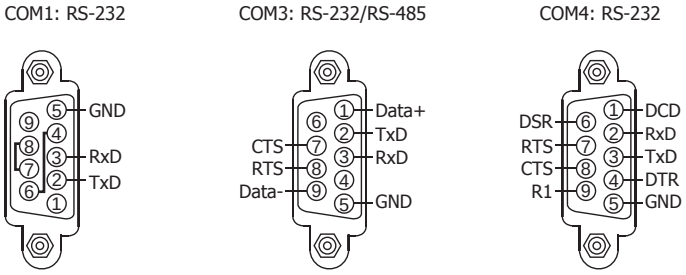


Pin Assignments

Terminal Block

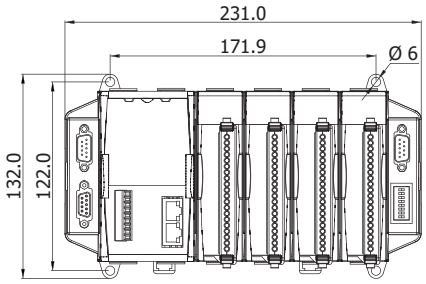


COM Port

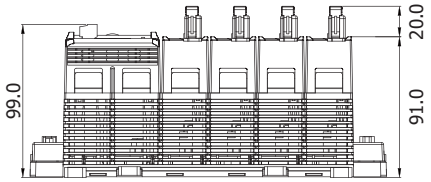


Dimensions (Units: mm)

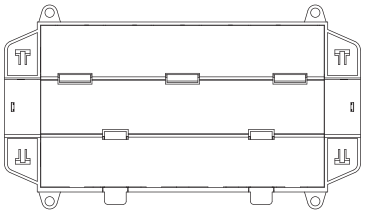
iP-8417/8447



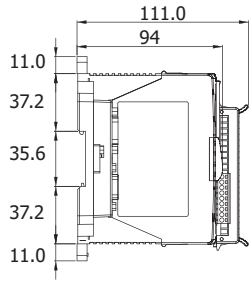
Front View



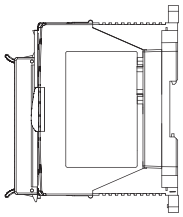
Bottom View



Rear View

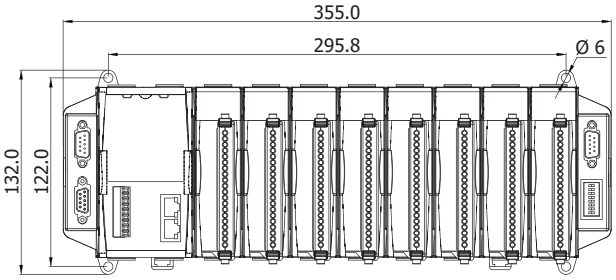


Left Side View

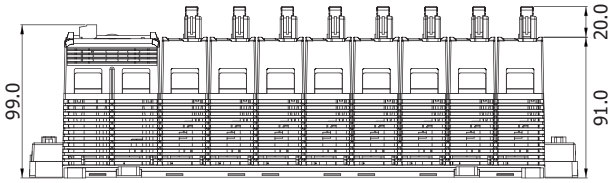


Right Side View

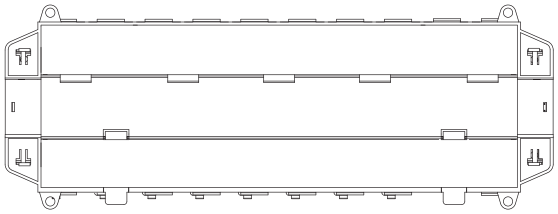
iP-8817/8847



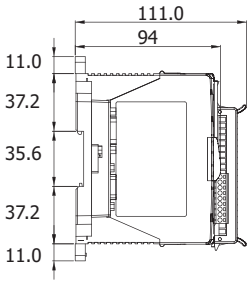
Front View



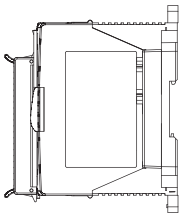
Bottom View



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)

ViewPAC

3

3.1 Overview P3-1-1

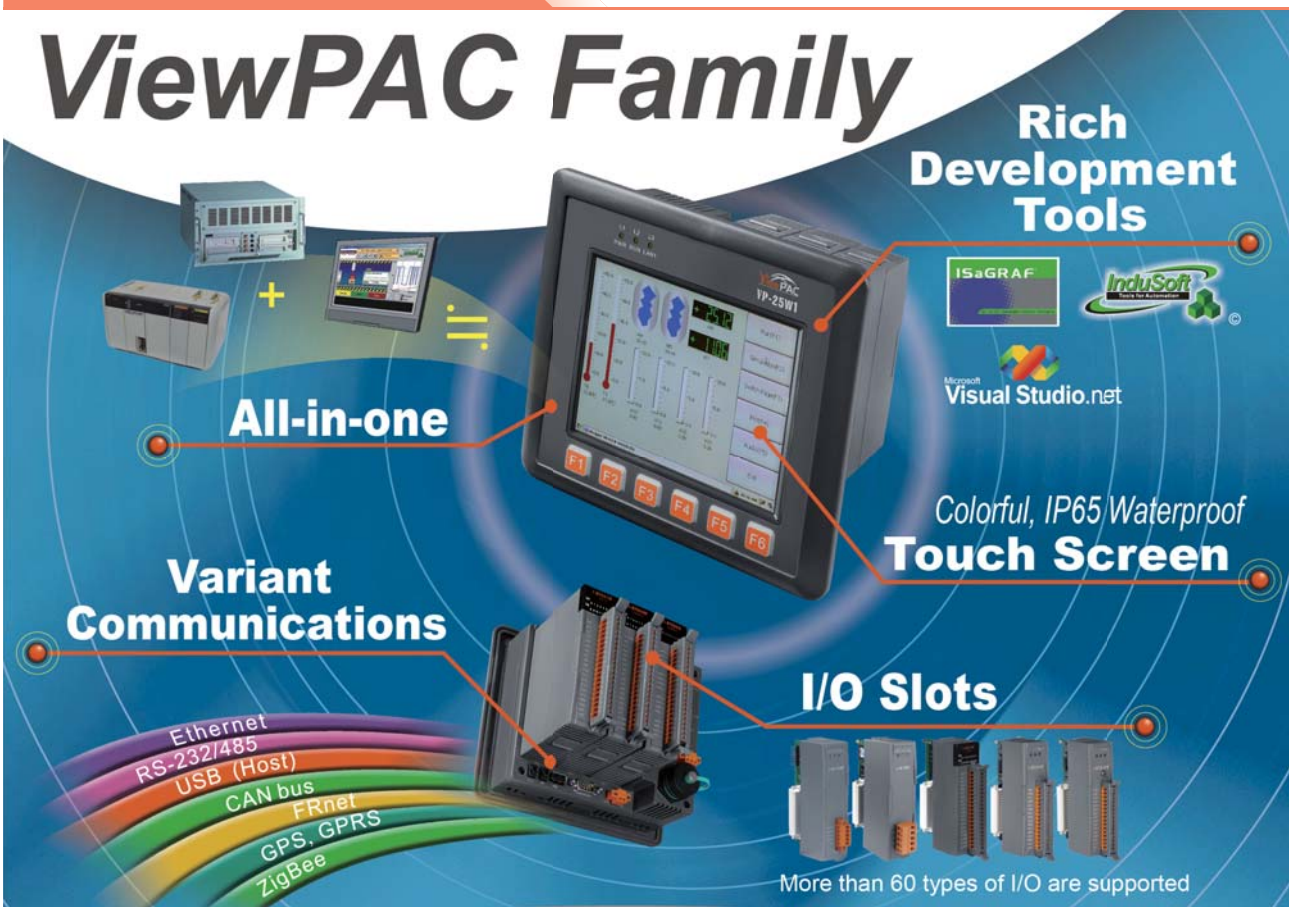
3.2 Selection Guide P3-2-1

3.3 ViewPAC-2000 Series P3-3-1

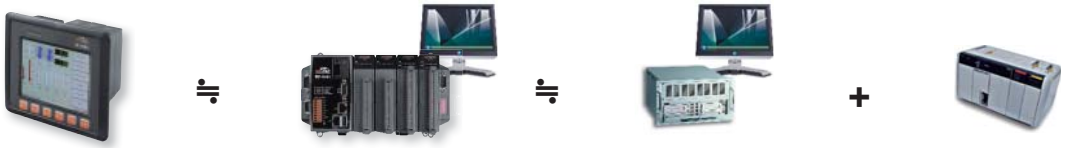
- VP-2111/VH-2110/VH-2111P/VH-2211/VH-2311 - - - - - - - - - - - - - - - - P3-3-1
- VP-2117/VH-2117P/VH-2217/VH-2317 - P3-3-5
- VP-23W1/VP-25W1/VH-23W1/VH-25W1 - P3-3-11
- VP-23W7/VP-25W7/VH-23W7/VH-25W7 - P3-3-15
- VP-23W9/VP-25W9/VH-23W9/VH-25W9 - P3-3-21
- VP-23A1/VP-25A1/VH-23A1/VH-25A1 - P3-3-26

3.1. ViewPAC-2000 Series

• Overview



ViewPAC is an innovation product of ICP DAS. It is a PAC which combines display, operation and control in one unit. ViewPAC provides perfect solutions to integrate HMI, data acquisition and control in one PAC. It subverts traditional image that HMIs and controllers are working separately and solves many communication problems between HMIs and controllers. In the PAC development history of ICP DAS, ViewPAC family sets a milestone.



ViewPAC ≒ **WinPAC / LinPAC / iPAC + Display** ≒ **IPC + Display** + **PLC**

ViewPAC family provides two CPU types (80186, PXA270), 3 OS solutions (WinCE 5.0, Linux, MiniOS7) and several software development toolkits (C, VS .NET, ISaGRAF, InduSoft) for chosen, and all of them are featured same stability and flexibility as ICP DAS's PAC family. This makes ViewPAC has a good potential to apply to factory automation, building automation, machine automation, manufacturing management, environment monitoring, etc. It subverts traditional architectures of "HMI + PLC" or "HMI + PAC", and let users has more and flexible options to configure their automation system.

• Features

1. Various CPU and OS for choosing

MiniOS7
80186 CPU
Vx-2x1x

- DOS-like
- Boot up in 0.4 ~ 0.8 second
- Built-in hardware diagnostic
- Standard version for C language programming
- ISaGRAF version for IEC 61131-3 programming

Android
PXA270 CPU
Vx-2xAx

- SDK for Linux and Windows environment
- Supports GNU C, JAVA, GUI programming
- Web server, FTP server, Telnet server, SSH server

WinCE
PXA270 CPU
Vx-2xWx

- Supports PC based software: eVC and VS .NET 2005/2008
- Web server, FTP server, Telnet server
- ISaGRAF version for IEC 61131-3 programming
- InduSoft version for SCADA solution

2. LCD Display & Rubber Keypad

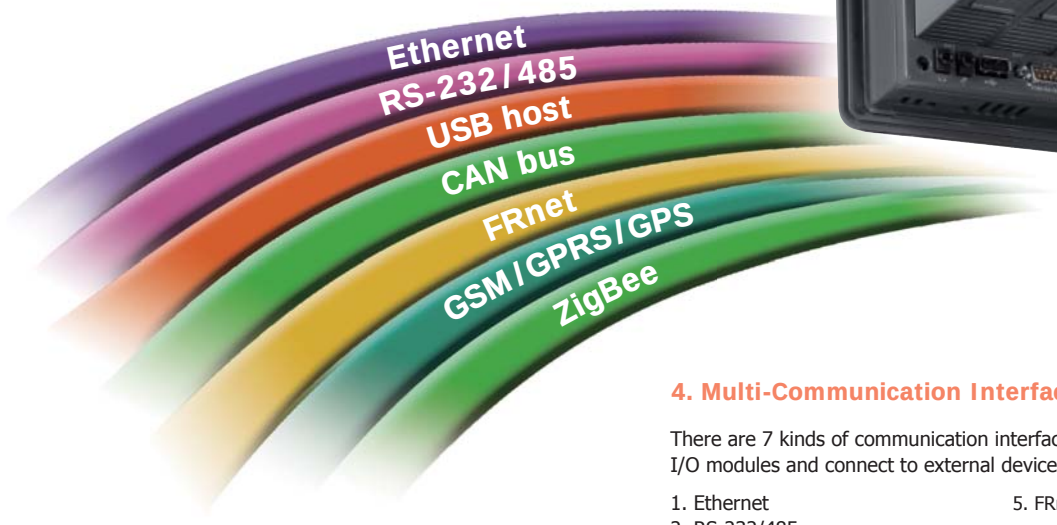
1. 128 x 64 dot matrix STN LCD
2. 3.5" TFT LCD
3. 5.7" TFT LCD with touch panel

The rubber keypad has following benefits:
1. Easy to dial
2. Long operation life up to 500k cycles
3. Mark of function keys are customizable



3. I/O Slots

The I/O slots support parallel bus type (high profile I-8K series) and serial bus type (high profile I-87K series) I/O modules. There are more than 60 kinds of module for AI, AO, DI, AO, counter input, frequency input, PWM output, motion control, memory, communication, etc.



4. Multi-Communication Interface

There are 7 kinds of communication interfaces to expand I/O modules and connect to external devices:

1. Ethernet
2. RS-232/485
3. USB host
4. CAN bus
5. FRnet
6. GSM/GPRS/GPS
7. ZigBee

5. Easy installation

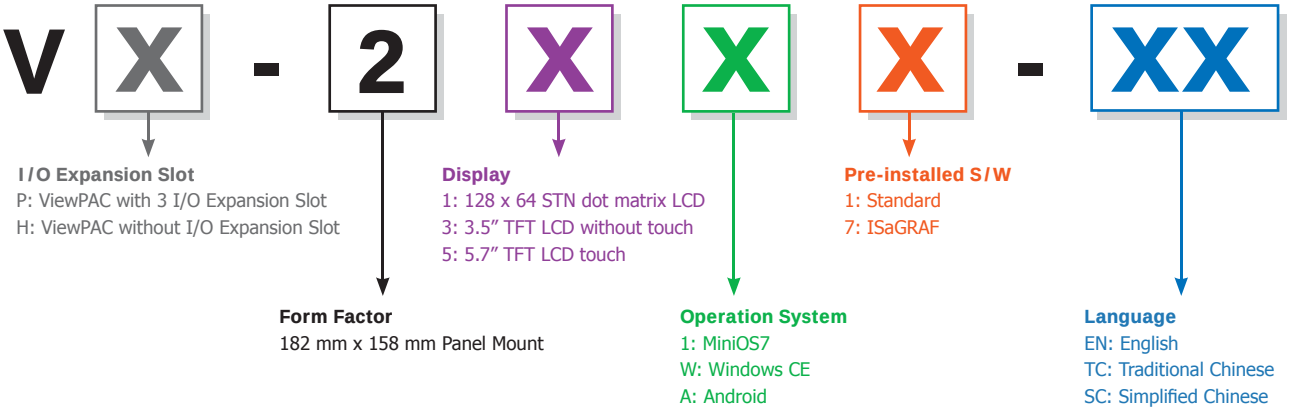

IP 66 Industrial Enclosure: I-3625-ENC


Panel Mounting-1


Panel Mounting-2


Panel Mounting-3

Selection Guide



MiniOS7 Inside

C Language Based ViewPAC

Model Name	Special Feature	OS	CPU	Flash	SRAM	Dual Battery Backup SRAM	Flash Disk	STN LCD Resolution	Ethernet Port	RS-232/ RS-485	I/O Slot	Page
VP-2111	-	MiniOS7	80 MHz	512 KB	768 KB	512 KB	64 MB	128 x 64	1	3	3	3-3-1
VH-2110	-	MiniOS7	80 MHz	512 KB	512 KB	-	-	128 x 64	1	3	-	3-3-1
VH-2111P					768 KB	512 KB	64 MB		2			
VH-2211	GPRS											
VH-2311	GPS & GPRS											

The ViewPAC, VP-211x and VH-211x series, has a 16-bit CPU, 128 x 64 resolution graphic display, silicon rubber keypad, communication ports of Ethernet, RS-232, RS-485 and 3 I/O expansion slot. It also equipped a DOS-like OS, MiniOS7. Users can use C compilers to create 16-bit executable files (*.exe) to develop a program then download it to the controller. The user can choose Turbo C 2.0 or Turbo C++ 1.0.1 to compile this application program and generate a execution file. This execution file can be download to VP-211X and VH-211x via RS-232 port or ethernet port. We recommend the user to use Turbo C++ 1.01.

There are many demo programs for reference. Beside that, for TCP/IP programming, we provide a TCP/IP server template that named XServer. It is very powerful, easy use and flexible tool that can save 90% developing time.

ISaGRAF Based ViewPAC

Model Name	Special Feature	OS	CPU	Flash	SRAM	Dual Battery Backup SRAM	Flash Disk	STN LCD Resolution	Ethernet Port	RS-232/ RS-485	I/O Slot	Page
VP-2117	-	MiniOS7	80 MHz	512 KB	768 KB	512 KB	64 MB	128 x 64	1	3	3	3-3-5
VH-2117P	-	MiniOS7	80 MHz	512 KB	768 KB		64 MB	128 x 64	2	3	-	3-3-5
VH-2217	GPRS											
VH-2317	GPS & GPRS											

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.

Windows CE .NET 5.0 Inside

Standard ViewPAC

Model Name	OS	Pre-Installed Software	CPU	Flash	SDRAM	Dual Battery Backup SRAM	TFT LCD (Resolution)	Ethernet Port	RS-232/ RS-485	USB	I/O Slot	Page
VP-23W1	CE 5.0	None	PXA270 520 MHz	96 MB	128 MB	512 KB	3.5" (320 x 240)	1	2	1	3	3-3-11
VP-25W1							5.7" (640 x 480)	2	3	2	-	3-3-11
VH-23W1	CE 5.0	None	PXA270 312 MHz	96 MB	128 MB	512 KB	3.5" (320 x 240)					
VH-25W1							5.7" (640 x 480)					

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 ViewPAC

Model Name	OS	Pre-Installed Software	CPU	Flash	SDRAM	Dual Battery Backup SRAM	TFT LCD (Resolution)	Ethernet Port	RS-232/ RS-485	USB	I/O Slot	Page
VP-23W7	CE 5.0	ISaGRAF	PXA270 520 MHz	96 MB	128 MB	512 KB	3.5" (320 x 240)	1	2	1	3	3-3-15
VP-25W7							5.7" (640 x 480)	2	3	2	-	3-3-15
VH-23W7	CE 5.0	ISaGRAF	PXA270 312 MHz	96 MB	128 MB	512 KB	3.5" (320 x 240)					
VH-25W7							5.7" (640 x 480)					

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 ViewPAC

Model Name	OS	Pre-Installed Software	CPU	Flash	SDRAM	Dual Battery Backup SRAM	TFT LCD (Resolution)	Ethernet Port	RS-232/ RS-485	USB	I/O Slot	Page
VP-23W9	CE 5.0	InduSoft	PXA270 520 MHz	96 MB	128 MB	512 KB	3.5" (320 x 240)	1	2	1	3	3-3-21
VP-25W9							5.7" (640 x 480)					
VH-23W9	CE 5.0	InduSoft	PXA270 312 MHz	96 MB	128 MB	512 KB	3.5" (320 x 240)	2	3	2	-	3-3-21
VH-25W9							5.7" (640 x 480)					

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

Android 1.6 Inside

Standard ViewPAC

Model Name	OS	Pre-Installed Software	CPU	Flash	SDRAM	Dual Battery Backup SRAM	TFT LCD (Resolution)	Ethernet Port	RS-232/ RS-485	USB	I/O Slot	Page
VP-23A1	Android 1.6	None	PXA270 520 MHz	96 MB	128 MB	512 KB	3.5" (320 x 240)	1	2	1	3	3-3-26
VP-25A1							5.7" (640 x 480)					
VH-23A1	Android 1.6	None	PXA270 312 MHz	96 MB	128 MB	512 KB	3.5" (320 x 240)	2	3	2	-	3-3-26
VH-25A1							5.7" (640 x 480)					

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

VP-2111

Available soon **VH-2110/2111P** **VH-2211/2311**

Highlight Information

- 3 I/O Slots Option (for VP-2000 Only)
- 80186, 80 MHz CPU (16 bits)
- C Language Based and MiniOS7 Inside
- IP65 Compliant Front Panel
- STN LCD with with English and Chinese Fonts
- Rubber Keypad with 24 Keys
- GPS option
- GSM/GPRS option
- Operating Temperature: -15 ~ +55 °C

Introduction

ViewPAC combines iPAC, graphic display and keypad in one unit. It is equipped with an 80186 CPU (16-bit and 80 MHz) running a MiniOS7 operating system, several communication interface (Ethernet, RS-232/485), 3 I/O slots, STN LCD and a rubber keypad.

Its operating system, MiniOS7, can boot up in a very short time (0.4 ~ 0.8 seconds). It has a built-in hardware diagnostic function, and supports the full range of functions required to access all high profile I-8K and I-87K series I/O modules, such as DI, DO, DI/DO, AI, AO, Counter/Frequency, motion control modules, etc.

Compared with traditional HMI + PLC solutions, ViewPAC reduces overall system cost, space and gives you all the best features of HMIs and PLCs.

Features

Software

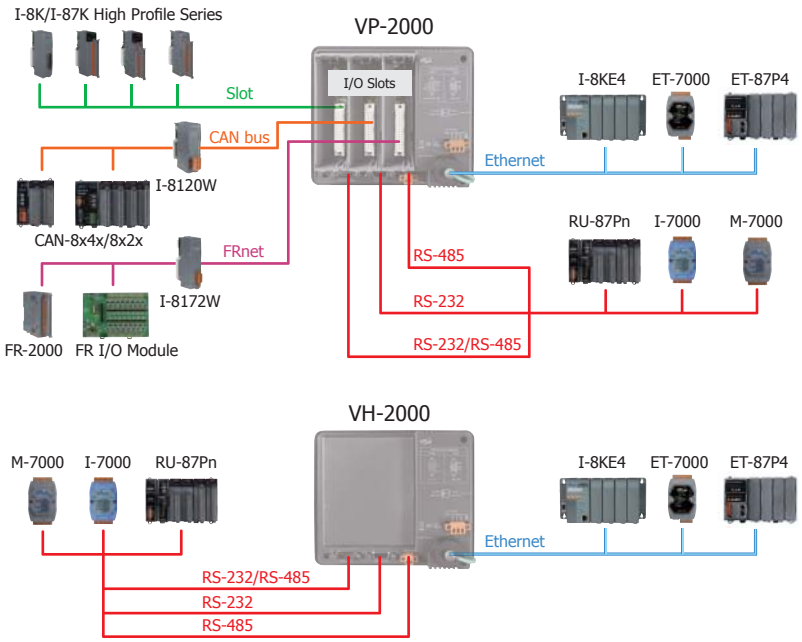
- MiniOS7 Embedded Operating System (DOS-like)
- C language Based Software Development Toolkit
- Modbus Library Provided
- Hardware Diagnostic Functions
- Load Files via RS-232 or Ethernet

Hardware

- 80186, 80 MHz CPU (16-bit)
- IP65 Compliant Front Panel
- STN LCD with English and Chinese Fonts
- Rubber Keypad with 24 Keys
- 3 I/O Slots Option (for VP-2000 Only)
- 64-bit Hardware Serial Number
- 64 MB NAND Flash for Data Storage
- Dual Battery Backup SRAM (512 KB)
- Rich I/O Expansion Ability
  - ☐ Ethernet
  - ☐ RS-232/422/485
  - ☐ FRnet
  - ☐ CAN bus
- GPS option
- GSM/GPRS option
- Operating Temperature: -15 ~ +55 °C

Applications

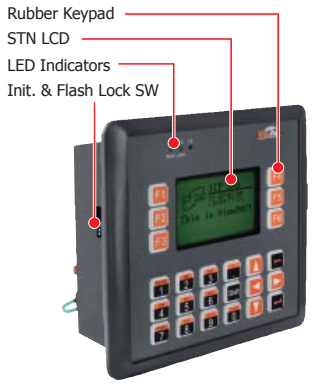
Rich I/O Expansion Ability



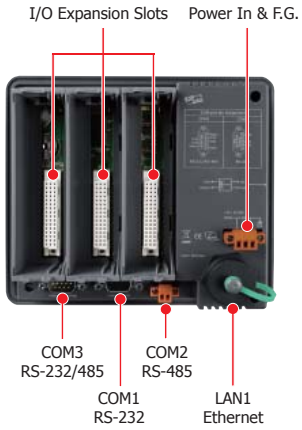
Models		VP-2111	VH-2110	VH-2111P	VH-2211	VH-2311
System Software						
OS		MiniOS7 (DOS-like embedded operating system)				
Program Download Interface		RS-232 (COM1) or Ethernet				
Programming Language		C language				
Compilers to create.exe Files		TC++ 1.01 (Freeware); TC 2.01 (Freeware); BC++ 3.1 ~ 5.2x; MSC 6.0; MSVC++ (before version 1.5.2)				
CPU Module						
CPU		80186 or compatible (16-bit and 80 MHz)				
SRAM		768 KB	512 KB	768 KB		
Dual Battery Backup SRAM		512 KB (for 5 years data retain while power off)	-	512 KB (for 5 years data retain while power off)		
Flash		512 KB (100,000 erase/write cycles)				
Flash Disk		64 MB NAND Flash (100,000 erase/write cycles)	-	64 MB NAND Flash (100,000 erase/write cycles)		
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)				
Communication Ports						
Ethernet		RJ-45 x 1, 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				
	Isolation	2500 VDC	-	2500 VDC		
COM 3		RRS-232/RS-485 (RxD, TxD, CTS, RTS and GND for RS-232, Data+ and Data- for RS-485); non-isolated	RS-232 (RxD, TxD, CTS, RTS and GND for RS-232); non-isolated	RS-232/RS-485 (RxD, TxD, CTS, RTS and GND for RS-232, Data+ and Data- for RS-485); non-isolated		
MMI (Man Machine Interface)						
LCD		STN, 128 x 64 Dot Matrix LCD				
Display Mode		Text + Graphics				
Text Font		English + Simplified Chinese/Traditional Chinese				
Rubber Keypad		24 keys				
Buzzer		Yes				
LED Indicators		3 Dual-Color LEDs (PWR, RUN, LAN1, L1, L2, L3; L1~L3 for User Programmable)	2 Dual-Color LEDs (RUN, LAN1, L1, L2; L1~L2 for User Programmable)			
I/O Expansion Slots						
Slot Number		3 (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	-			
GSM/GPRS						
Band		-			850/900/1800/1900 MHz	
GPRS Multi-slot		-			Class 10/8	
GPRS Mobile Station		-			Class B	
GPRS Class 10		-			Max. 85.6 kbps	
CSD		-			Up to 14.4 kbps	
Compliant to GSM phase 2/2+		-			Class 4 (2 W @ 850/900 MHz); Class 1(1W @ 1800/1900 MHz)	
Coding Schemes		-			CS 1, CS 2, CS 3, CS 4	
SMS		-			Text and PDU mode	
GPS						
Channels		-				16 channels all-in-view tracking
Sensitivity		-				-159 dBm
Acquisition Rate		-				Cold start: 42 seconds; warm start: 35 seconds; reacquisition rate: 0.1 second
Accuracy		-				Position: 25 m CEP (S/A off); Velocity: 0.1 second (S/A off); Time: ±1 ms
Protocol		-				NMEA
Mechanical						
Dimensions (W x H x D)		182 mm x 158 mm x 125 mm				
Installation		Panel Mounting				
Ingress Protection		Front panel: IP65				
Environmental						
Operating Temperature		-15 ~ +55 °C				
Storage Temperature		-30 ~ +80 °C				
Ambient Relative Humidity		10 ~ 90% RH (non-condensing)				
Power						
Input Range	PoE	-	-	IEEE 802.3af, class 3	-	
	Terminator Block	+10 ~ +30 VDC	+12 ~ +48 VDC	+18 ~ +55 VDC	+10 ~ +30 VDC	
Isolation		1 kV	-	1 kV		
Capacity		3 A, 5 V supply to I/O expansion slots	-			
Consumption		6 W (0.25 A @ 24 V)	3.6 W (0.15 A @ 24 V)	6 W (0.25 A @ 24 V)	9.6 W (0.4 A @ 24 V)	10.8 W (0.45 A @ 24 V)

Appearance

VP-2111/VH-2110/VH-2111P/VH-2211/VH-2311

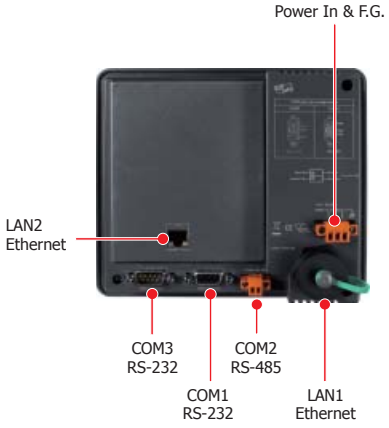


VP-2111



VH-2110

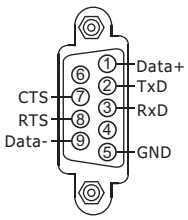
VH-2111P/VH-2211/VH-2311



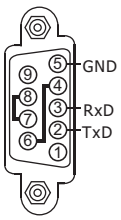
Pin Assignments

VP-2111/VH-2110/VH-2111P/VH-2211/VH-2311 COM Port

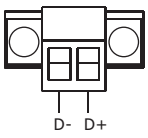
COM3: RS-232/RS-485



COM1: RS-232

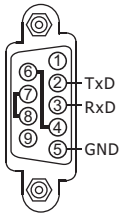


COM2: RS-485

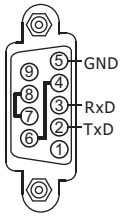


VH-2110 COM Port

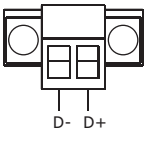
COM3: RS-232



COM1: RS-232

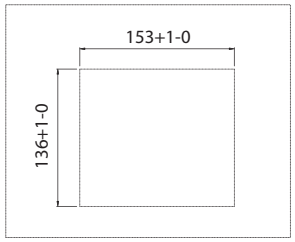


COM2: RS-485

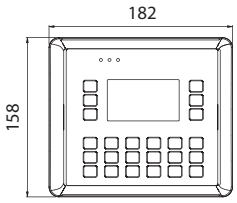


Dimensions (Units: mm)

VP/VH-2000 Series

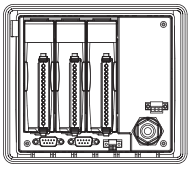


Recommended Panel Cut-Out

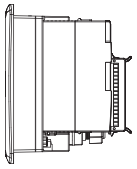


Front View

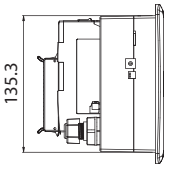
VP-2000



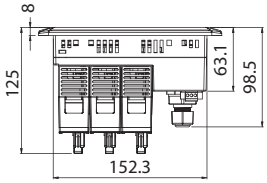
Rear View



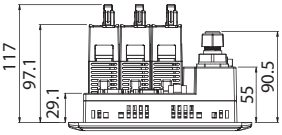
Left Side View



Right Side View

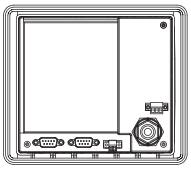


Top View

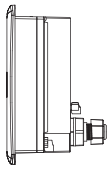


Bottom View

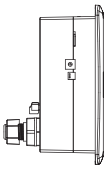
VH-2000



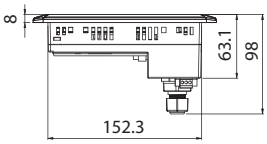
Rear View



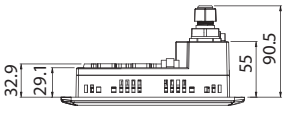
Left Side View



Right Side View



Top View



Bottom View

Ordering Information

VP-2111 CR	C Language Based ViewPAC with 3 I/O Slots (English + Simplified Chinese Font) (RoHS)
VP-2111-TC CR	C Language Based ViewPAC with 3 I/O Slots (English + Traditional Chinese Font) (RoHS)
VH-2110 CR	C Language Based ViewPAC without I/O Slot (English + Simplified Chinese Font) (RoHS)
VH-2110-TC CR	C Language Based ViewPAC without I/O Slot (English + Traditional Chinese Font) (RoHS)
VH-2111P CR	C Language Based ViewPAC without I/O Slot (English + Simplifiedl Chinese Font) (RoHS)
VH-2111P-TC CR	C Language Based ViewPAC without I/O Slot (English + Traditional Chinese Font) (RoHS)
VH-2211 CR	C Language Based ViewPAC without I/O Slot (English + Simplified Chinese Font) (RoHS)
VH-2211-TC CR	C Language Based ViewPAC without I/O Slot (English + Traditional Chinese Font) (RoHS)
VH-2311 CR	C Language Based ViewPAC without I/O Slot (English + Simplified Chinese Font) (RoHS)
VH-2311-TC CR	C Language Based ViewPAC without I/O Slot (English + Traditional Chinese Font) (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
MDR-60-24 CR	24 V_{DC}/2.5 A, 60 W Power Supply with DIN-Rail Mounting (RoHS)

VP-2117

Available soon **VH-2117P** **VH-2217/2317**

Highlight Information

- 3 I/O Slots Option (for VP-2000 Only)
- ISaGRAF Ver.3 SoftLogic Inside (IEC 61131-3)
- PLC Feel
- 80186, 80 MHz CPU (16 bits)
- IP65 Compliant Front Panel
- STN LCD with with English and Chinese Fonts
- Rubber Keypad with 24 Keys
- GPS option
- GSM/GPRS option
- Operating Temperature: -15 ~ +55 °C

Introduction

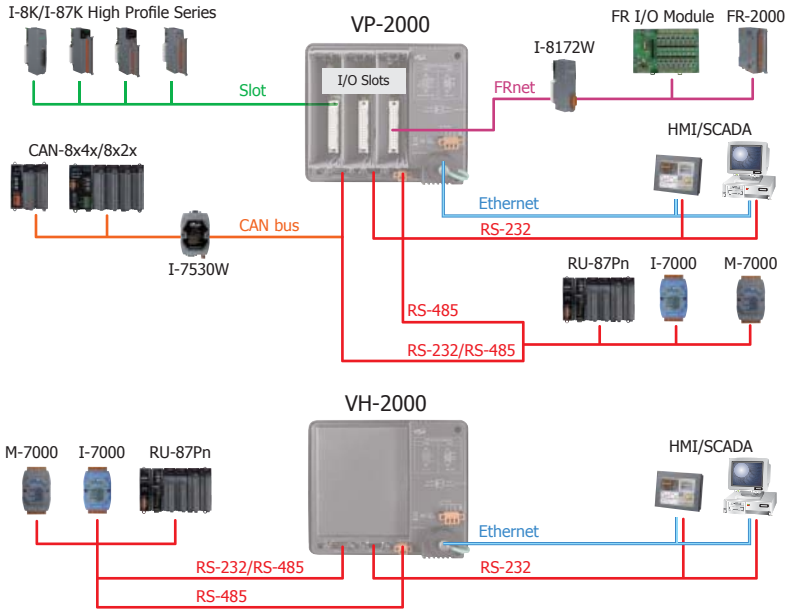
ViewPAC series is the ISaGRAF PAC with graphic display and keypad. It is equipped with an 80186 CPU (16-bit and 80 MHz) running a MiniOS7 operating system, a STN LCD, a rubber keypad, 3 or no I/O slots, and various connectivity including Ethernet and RS-232/485, etc.
Its operating system, MiniOS7, can boot up in a very short time (0.4 ~ 0.8 seconds). It has a built-in hardware diagnostic function, and supports the full range of functions required to access all high profile I-8K and I-87K series I/O modules, such as DI, DO, DI/DO, AI, AO, Counter/Frequency, motion control modules, etc. 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 with traditional HMI + PLC solutions, ViewPAC reduces overall system cost, space and gives you all the best features of HMIs and PLCs.

The ViewPAC VP-2117, VH-2117P 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

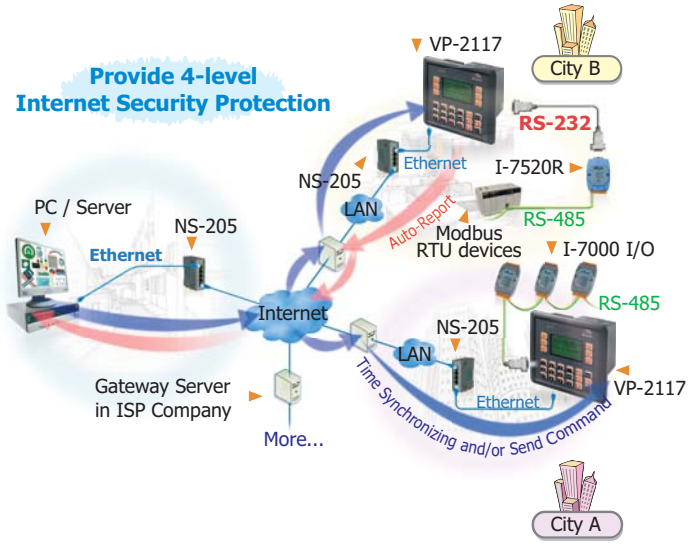
Software

- MiniOS7 Embedded Operating System (DOS-like)
- Development Software: ISaGRAF Ver.3
- Support Modbus RTU/ASCII Master & Modbus RTU/TCP Slave
- Support Data Exchange
- Support CAN/CANopen (Via I-7530W)
- Support FRnet I/O (Via I-8172W)
- Support Motion Control
- Support Send Email with One File
- Support GPS, ZigBee & Radio Wireless communication
- Support SMS : Short Message Service
- Support Data-Recorder & Data-Logger
- Support Auto-report Acquisition Data & Control
- Support Graphic and Keypad functions

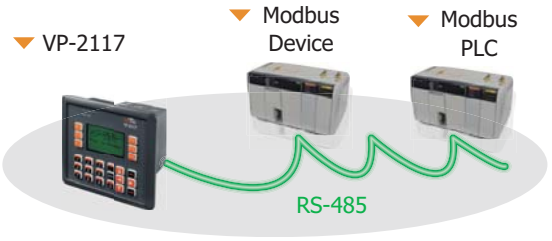
Hardware

- 80186, 80 MHz CPU (16-bit)
- IP65 Compliant Front Panel
- Large SRAM: 768 KB
- 512 KB FLASH Memory
- 16 KB EEPROM
- STN LCD with English and Chinese Fonts
- Rubber Keypad with 24 Keys
- 3 I/O Slots Option (for VP-2000 Only)
- 64-bit Hardware Serial Number
- 64 MB NAND Flash for Data Storage
- Dual Battery Backup SRAM (512 KB)
- Hot-Swap High Profile I-87K I/O Ability
- Watchdog Timer Increase Reliability
- Operating Temperature: -15 ~ +55 °C

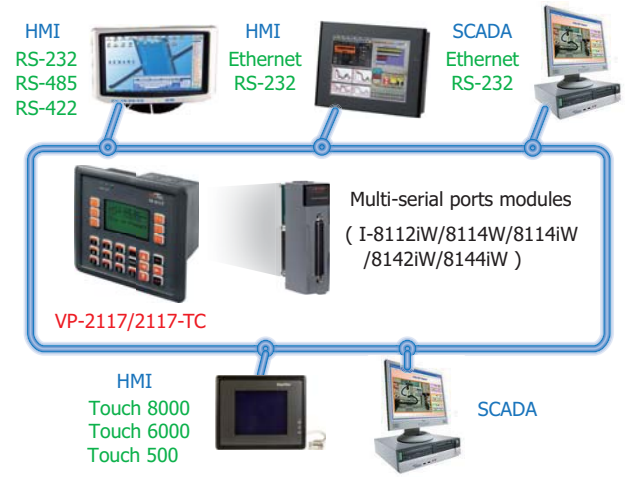
Cost-effective Auto-Report Data Acquisition/Control System



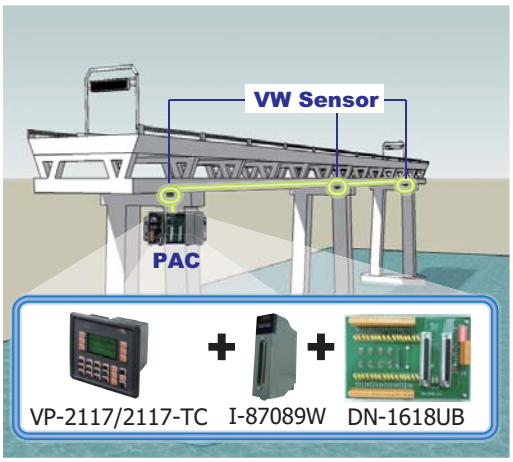
Modbus RTU/ASCII Master Ports



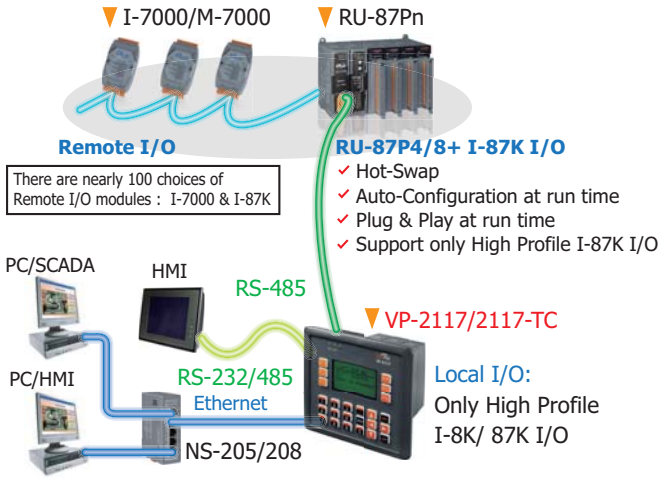
Modbus RTU/TCP Slave Ports



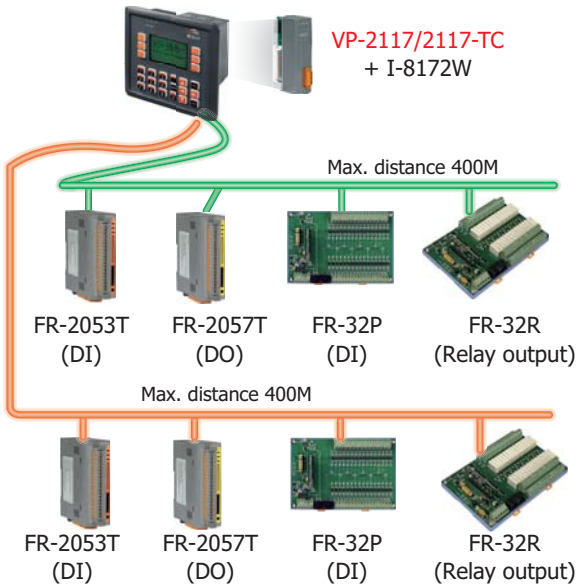
Stress Monitoring of Constructions



Local/Remote I/O Expansion & Multi-HMI



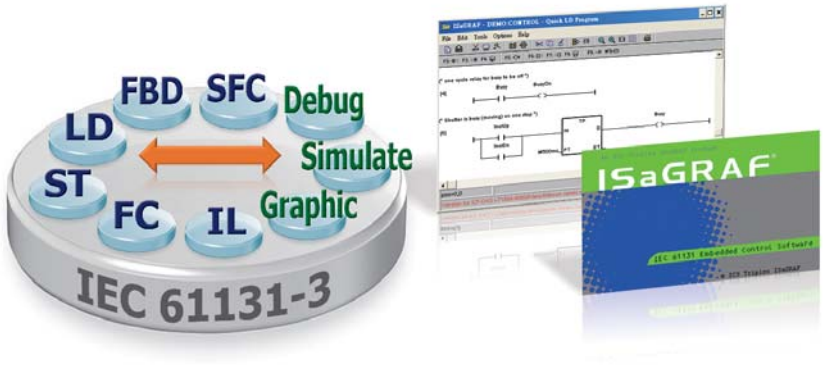
FRnet I/O Application



ViewPAC Specifications

Models		VP-2117	VH-2117P	VH-2217	VH-2317
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 for normal program 10 ~ 125 ms (or more) for complex or large program			
CPU Module					
CPU		80186, 80 MHz (16-bit) or compatible			
SRAM		768 KB			
Flash		512 KB (100,000 erase/write cycles)			
Flash Disk		64 MB NAND Flash (100,000 erase/write cycles)			
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)			
Communication Ports					
Ethernet		RJ-45 x 1, 10/100 Base-TX (Auto-negotiating, LED indicators)			
COM 1		RS-232 (to update firmware) (RxD, TxD and GND); Non-isolated			
COM 2	RS-485	D+, D- ; self-tuner ASIC inside			
	Isolation	2500 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			
MMI (Man Machine Interface)					
LCD		STN, 128 x 64 Dot Matrix LCD			
Display Mode		Text + Graphics			
Text Font		English + Simplified Chinese/Traditional Chinese			
Rubber Keypad		24 keys			
Buzzer		Yes			
LED Indicators		3 Dual-Color LEDs (PWR, RUN, LAN1, L1, L2, L3; L1~L3 for User Programmable)	2 Dual-Color LEDs (RUN, LAN1, L1, L2; L1~L2 for User Programmable)		
I/O Expansion Slots					
Slot Number		3 (For High Profile I-8K and I-87K Modules only)			
Hot Swap * Will be available		Yes (For High Profile I-87K Modules Only)			
GSM/GPRS					
Band		-		850/900/1800/1900 MHz	
GPRS Multi-slot		-		Class 10/8	
GPRS Mobile Station		-		Class B	
GPRS Class 10		-		Max. 85.6 kbps	
CSD		-		Up to 14.4 kbps	
Compliant to GSM phase 2/2+		-		Class 4 (2 W @ 850/900 MHz); Class 1(1W @ 1800/1900 MHz)	
Coding Schemes		-		CS 1, CS 2, CS 3, CS 4	
SMS		-		Text and PDU mode	
GPS					
Channels		-			16 channels all-in-view tracking
Sensitivity		-			-159 dBm
Acquisition Rate		-			Cold start: 42 seconds; warm start: 35 seconds; reacquisition rate: 0.1 second
Accuracy		-			Position: 25 m CEP (S/A off); Velocity: 0.1 second (S/A off); Time: ±1 ms
Protocol		-			NMEA
Mechanical					
Dimensions (W x L x H)		182 mm x 158 mm x 125 mm			
Installation		Panel Mounting			
Ingress Protection		Front panel: IP65			
Environmental					
Operating Temperature		-15 ~ +55 °C			
Storage Temperature		-30 ~ +80 °C			
Ambient Relative Humidity		10 ~ 90% RH (non-condensing)			
Power					
Input Range	PoE	-	IEEE 802.3af, class 3	-	
	Terminator Block	+10 ~ +30 V_{DC}	+18 ~ +55 V_{DC}	+10 ~ +30 V_{DC}	
Isolation		1 kV			
Capacity		3 A, 5 V supply to I/O expansion slots	-		
Consumption		6 W (0.25 A @ 24 V)	6 W (0.25 A @ 24 V)	9.6 W (0.4 A @ 24 V	10.8 W (0.45 A @ 24 V)

ISaGRAF Specifications

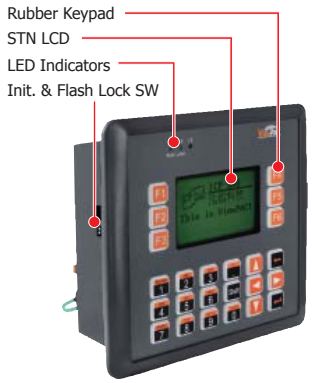


Protocols (some protocols need optional devices)		
NET ID		1 ~ 255, user-assigned by software
Modbus RTU/ASCII Master		Max. 2 COM Ports: COM1 ~ COM3 and COM5. (To connect to other Modbus Slave devices.) (*) Max. Modbus_xxx Function Block amount for 2 ports: 128.
Modbus RTU Slave		Max. 2 COM Ports, COM1 and one of COM2 or COM3. (For connecting ISaGRAF, PC/HMI/OPC Server & MMI panels.)
Modbus TCP/IP Slave		Max. 6 connections. For connecting ISaGRAF & PC/HMI.
Remote I/O		One of COM2 or COM3 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.
User-Defined Protocol		COM1 ~ COM3, COM5 ~ COM16 by serial communication function blocks (*)
SMS:Short Message Service		One of COM3 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. (*)
CAN/CANopen		COM1, 3 or COM5 ~ COM12 can connect one I-7530 (converter: RS-232 to CAN) to support CAN/CANopen devices and sensors. One VP-2117/2117-TC supports max. 3 RS-232 ports to connect max. 3 I-7530. (*)
FRnet I/O		Support Max. 3 I-8172W FRnet Master cards to connect FRnet I/O modules (Max. 768-ch. DI + 768-ch. DO)
Sending 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-continuous), duty: 0.1 ~ 99.9%
	DO Module as PWM	8-ch max. for one controller. 500 Hz max. For Off=1 & On=1 ms Output Square Curve: Off: 1 ~ 32767 ms, On: 1 ~ 32767 ms. Optional DO Boards: I-8037W, 8041W, 8041AW, 8042W, 8050W, 8054W, 8055W, 8056W, 8057W, 8060W, 8063W, 8064W, 8068W, 8069W (Relay Output boards cannot generate fast square wave)
Counters, Encoder, Frequency	Parallel DI Counter	8 ch. max. for 1 controller. Counter Val: 32-bit.; 500 Hz max. Min. ON & OFF width must >1ms 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, 0.1 Hz ~ 500 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.

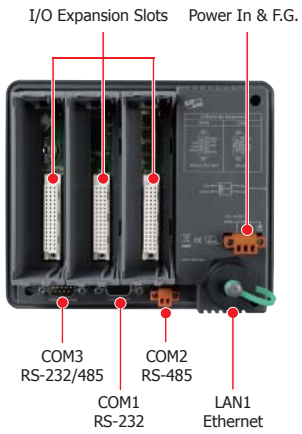
***Note: COM5 ~ COM16 are resided at the expansion boards if they are plugged on slot0~2 of VP-2117.**

Appearance

VH-2117P/VH-2217/VH-2317



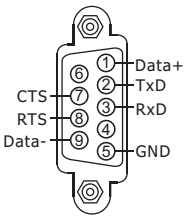
VP-2117



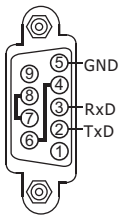
VH-2117P/VH-2217/VH-2317

Pin Assignments

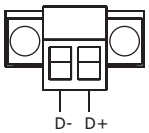
COM3: RS-232/RS-485



COM1: RS-232

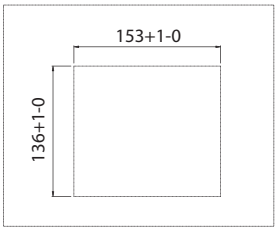


COM2: RS-485

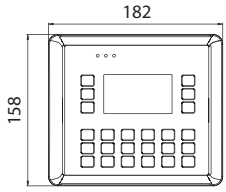


Dimensions (Units: mm)

VP/VH-2000 Series

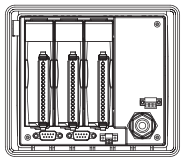


Recommended Panel Cut-Out

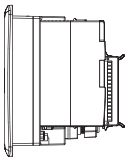


Front View

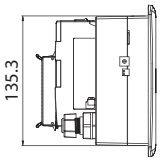
VP-2000



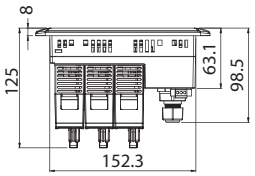
Rear View



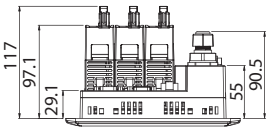
Left Side View



Right Side View

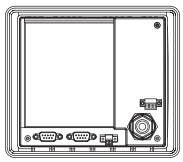


Top View

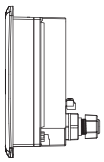


Bottom View

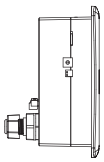
VH-2000



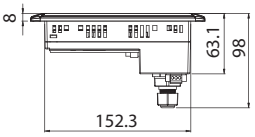
Rear View



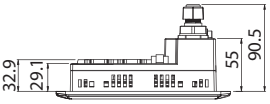
Left Side View



Right Side View



Top View



Bottom View

Ordering Information

VP-2117 CR	ISaGRAF based ViewPAC with with 3 I/O Slots (English + Simplified Chinese Font) (RoHS)
VP-2117-TC CR	ISaGRAF based ViewPAC with with 3 I/O Slots (English + Traditional Chinese Font) (RoHS)
VH-2117P CR	ISaGRAF based ViewPAC without I/O Slot (English + Simplified Chinese Font) (RoHS)
VH-2117P-TC CR	ISaGRAF based ViewPAC without I/O Slot (English + Traditional Chinese Font) (RoHS)
VH-2217 CR	ISaGRAF based ViewPAC without I/O Slot (English + Simplified Chinese Font) (RoHS)
VH-2217-TC CR	ISaGRAF based ViewPAC without I/O Slot (English + Traditional Chinese Font) (RoHS)
VH-2317-CR	ISaGRAF based ViewPAC without I/O Slot (English + Simplified Chinese Font) (RoHS)
VH-2317-TC CR	ISaGRAF based ViewPAC without I/O Slot (English + Traditional Chinese Font) (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)
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
MDR-60-24 CR	24 VDC/2.5 A, 60 W Power Supply with DIN-Rail Mounting (RoHS)

Highlight Information

- 3 I/O Slots Option (for VP-2000 Only)
- Windows CE 5.0
- Hard Real-Time Capability
- Fast Boot Speed
- PXA270 CPU (32-bit & 312/520 MHz)
- IP65 Compliant Front Panel
- 3.5"/5.7" TFT LCD and Rubber Keypad
- Support eLogger HMI
- Audio with Microphone-In and Earphone-Out
- Open System
- Operating Temperature: -20 ~ +70 °C

Introduction

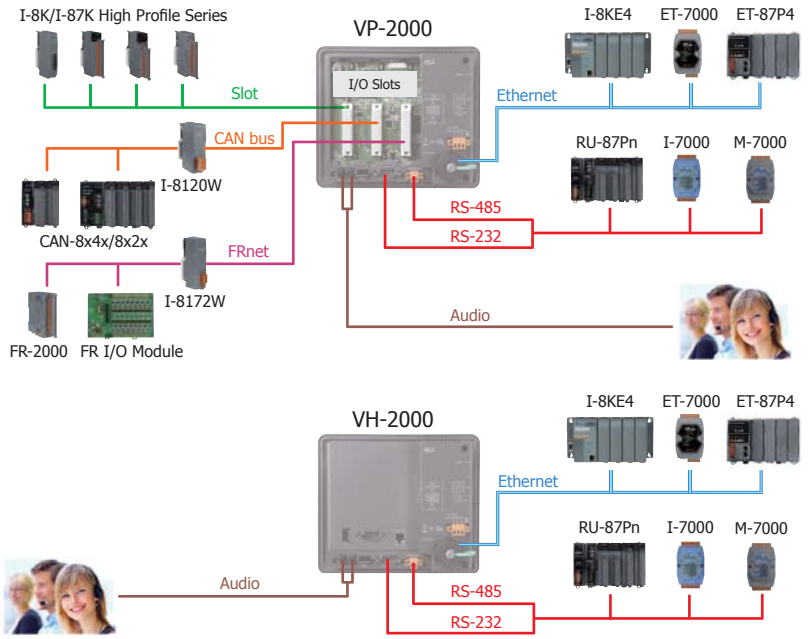
VP-23W1/25W1 and VH-23W1/25W1 are the new generation Windows CE 5.0 based PACs of ICP DAS. ViewPAC integrates WinPAC, color graphic display and keypad into one unit. It is equipped with a PXA270 CPU (520 MHz), various connectivity (USB, Ethernet, RS-232/485), 3 I/O slots, 3.5"/5.7" TFT LCD and a rubber keypad. The benefits of running Windows CE 5.0 on ViewPAC include hard real-time capability, small core size, fast boot speed, interrupt handling at a deeper level and achievable deterministic control. ViewPAC is also capable of running PC-based control software such as Visual Basic .NET, Visual C#,.... etc.

Compared with traditional IPC + PLC solutions, ViewPAC reduces overall system cost, space and gives you all the best features of IPC and PLC.

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 Inside
  - Easy Remote Maintenance Via Ethernet
    - ☐ FTP Server
    - ☐ VCEP Software
- Built-in OPC Server: Quicker
  - ☐ An OPC Server for SCADA Software
  - ☐ Integrates Local/Remote I/O Modules Via RS-232/485 or Ethernet
  - ☐ Provides Library for eVC, C# or VB .NET
  - ☐ Supports Modbus and DCON Protocols
- Development Software
  - ☐ Visual Studio .NET 2005/2008 and eVC
  - ☐ SDK/Demo Programs for C#, VB .NET & eVC

Hardware

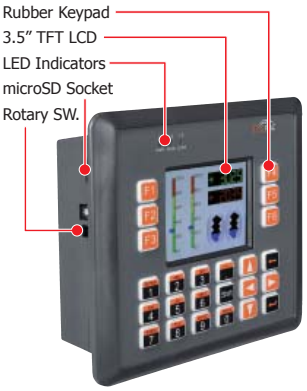
- PXA270 CPU (32-bit & 520 MHz)
- IP65 Compliant Front Panel
- 3.5"/5.7" TFT LCD (5.7" LCD is with Touch Panel)
- Rubber Keypad with 24/6 Keys
- Audio with Microphone-In and Earphone-Out
- 3 I/O Slots Option (for VP-2000 Only)
- 64-bit Hardware Serial Number
- Built-in Flash Disk (31 MB)
- Dual Battery Backup SRAM (512 KB)
- Rich I/O Expansion Ability
  - ☐ Ethernet
  - ☐ RS-232/422/485
  - ☐ FRnet
  - ☐ CAN bus
- Operating Temperature: -20 ~ +70 °C

Specifications

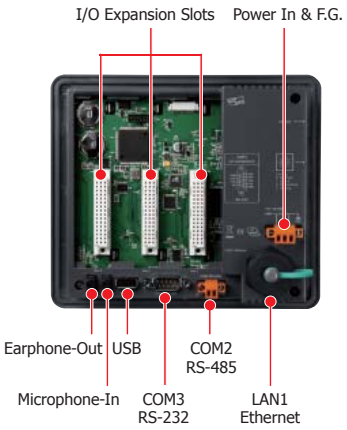
Models		VP-23W1	VP-25W1	VH-23W1	VH-25W1
System Software					
OS		Windows CE 5.0			
.Net Compact Framework		2.0			
Embedded Service		FTP server, Web server (supports VB script, JAVA script), Embedded SQL server			
SDK Provided		Dll for eVC, Dll for Visual Studio.Net 2005/2008			
Multilanguage Support		English, German, French, Spanish, Russian, Italian, Simplified Chinese, Traditional Chinese			
CPU Module					
CPU		PXA270 or compatible (32-bit and 520 MHz)		PXA270 or compatible (32-bit and 312 MHz)	
SDRAM		128 MB			
Dual Battery Backup SRAM		512 KB (for 5 years data retain while power off)			
Flash		96 MB (64 MB for OS image, 31 MB for built-in Flash disk, 1 MB for registry)			
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 (0.8 second)			
Rotary Switch		Yes (0 ~ 9)			
VGA & Communication Ports					
Ethernet		RJ-45 x 1, 10/100 Base-TX (Auto-negotiating, LED indicators)		RJ-45 x 2, 10/100 Base-TX (Auto-negotiating, LED indicators)	
USB 1.1 (host)		1		2	
USB 1.1 (client)		-		1	
COM 0		Internal communication with the high profile I-87K series modules in slots			
COM 1		-		RS-232 (RxD, TxD, CTS, RTS, DSR, DTR, CD, RI and GND); Non-isolated	
COM 2	RS-485	D2+, D2-; self-tuner ASIC inside			
	Isolation	2500 VDC			
COM 3		RS-232 (RxD, TxD, CTS, RTS, DSR, DTR, CD, RI and GND); Non-isolated			
MMI (Man Machine Interface)					
LCD		3.5" TFT (Resolution 320 x 240)	5.7" TFT (Resolution 640 x 480)	3.5" TFT (Resolution 320 x 240)	5.7" TFT (Resolution 640 x 480)
Touch Panel		-	Yes	-	Yes
Rubber Keypad		24 keys	6 Keys	24 keys	6 Keys
Audio		Microphone-In and Earphone-Out			
LED Indicators		3 Dual-Color LEDs (PWR, RUN, LAN1, L1, L2, L3; L1 ~ L3 for User Programmable)			
I/O Expansion Slots					
Slot Number		3		-	
		(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 H x D)		182 mm x 158 mm x 125 mm			
Installation		Panel Mounting			
Ingress Protection		Front panel: IP65			
Environmental					
Operating Temperature		-20 ~ +70 °C			
Storage Temperature		-30 ~ +80 °C			
Ambient Relative Humidity		10 ~ 90% RH (non-condensing)			
Power					
Input Range		+10 ~ +30 VDC			
Isolation		1 kV			
Capacity		2.5 A, 5 V supply to I/O expansion slots			
Consumption		7.2 W (0.3 A @ 24 VDC)			

Appearance

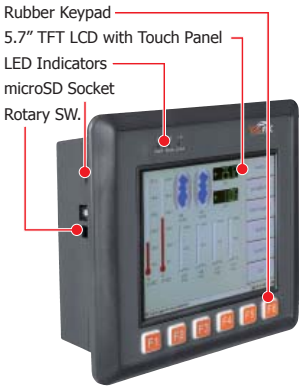
VP-23W1/VH-23W1



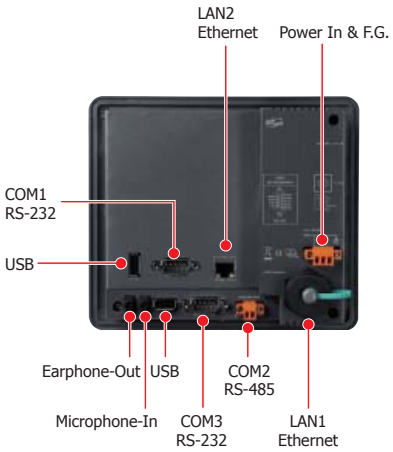
VP-23W1/25W1



VP-25W1/VH-25W1



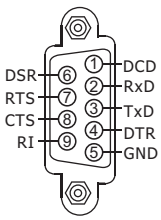
VH-23W1/25W1



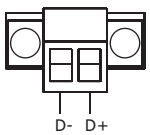
Pin Assignments

VP-23W1/25W1 COM Port

COM3: RS-232

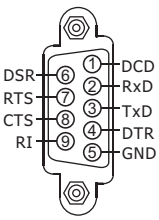


COM2: RS-485

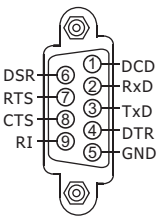


VH-23W1/25W1 COM Port

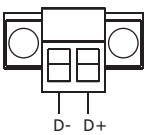
COM1: RS-232



COM3: RS-232

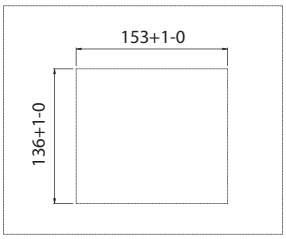


COM2: RS-485



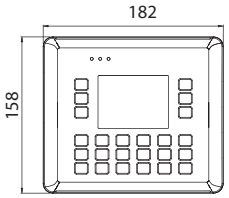
Dimensions (Units: mm)

VP-2000 Series



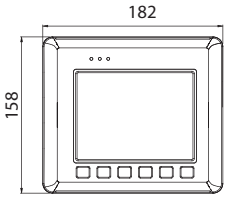
Recommended Panel Cut-Out

VP-23W1/VH-23W1



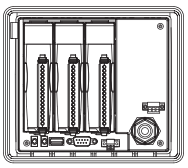
Front View

VP-25W1/VH-25W1

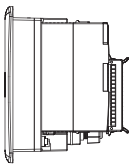


Front View

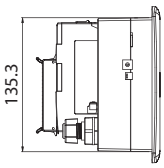
VP-2xW1



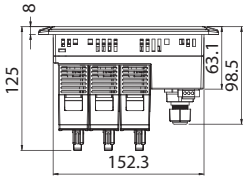
Rear View



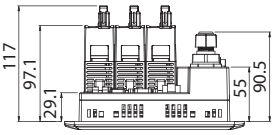
Left Side View



Right Side View

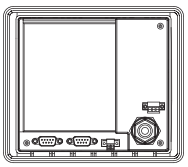


Top View

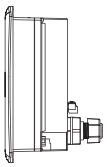


Bottom View

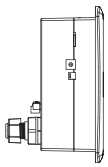
VH-2xW1



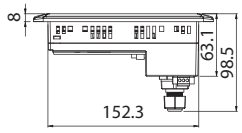
Rear View



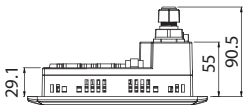
Left Side View



Right Side View



Top View



Bottom View

Ordering Information

VP-23W1-EN CR	Standard ViewPAC with 3.5" LCD and 3 I/O slots (Multilanguage Version of OS) (RoHS)
VP-25W1-EN CR	Standard ViewPAC with 5.7" LCD and 3 I/O slots (Multilanguage Version of OS) (RoHS)
VP-23W1-TC CR	Standard ViewPAC with 3.5" LCD and 3 I/O slots (Traditional Chinese of OS) (RoHS)
VP-25W1-TC CR	Standard ViewPAC with 5.7" LCD and 3 I/O slots (Traditional Chinese of OS) (RoHS)
VP-23W1-SC CR	Standard ViewPAC with 3.5" LCD and 3 I/O slots (Simplified Chinese of OS) (RoHS)
VP-25W1-SC CR	Standard ViewPAC with 5.7" LCD and 3 I/O slots (Simplified Chinese of OS) (RoHS)
VH-23W1 CR	Standard ViewPAC with 3.5" LCD (Multilanguage Version of OS) (RoHS)
VH-25W1 CR	Standard ViewPAC with 5.7" LCD (Multilanguage Version of OS) (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
MDR-60-24 CR	24 V_{DC}/2.5 A, 60 W Power Supply with DIN-Rail Mounting (RoHS)

VP-23W7 VP-25W7

Available soon VH-25W7 VH-25W7

Highlight Information

- 3 I/O Slots Option (for VP-2000 Only)
- 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 & 312/520 MHz)
- IP65 Compliant Front Panel
- 3.5"/5.7" TFT LCD and Rubber Keypad
- Simple Graphic HMI
- Support eLogger HMI
- Audio with Microphone-In and Earphone-Out
- Open System
- Operating Temperature: -20 ~ +70 °C

Introduction

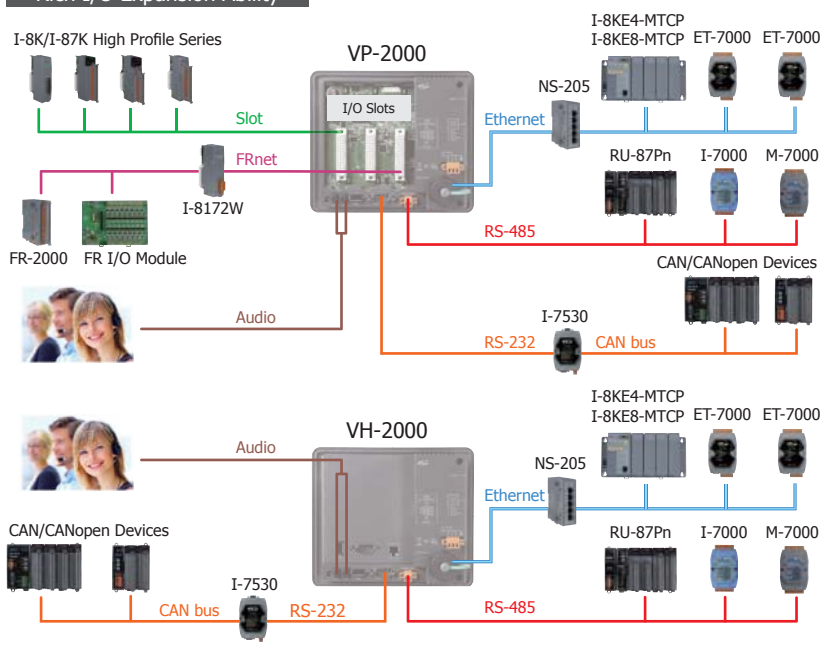
VP-23W7/25W7 and VH-23W7/25W7 are the new generation ISaGRAF based PACs of ICP DAS. ViewPAC integrates WinPAC, color graphic display and keypad into one unit. It is equipped with a PXA270 CPU (520 MHz), various connectivity (USB, Ethernet, RS-232/485), 3 I/O slots, 3.5"/5.7" TFT LCD and a rubber keypad. The benefits of running Windows CE 5.0 on ViewPAC include hard real-time capability, small core size, fast boot speed, interrupt handling at a deeper level and achievable deterministic control. ViewPAC is also capable of running ISaGRAF and PC-based control software such as Visual Basic .NET, Visual C#, ... etc.

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

Applications

Rich I/O Expansion Ability



Features

Software

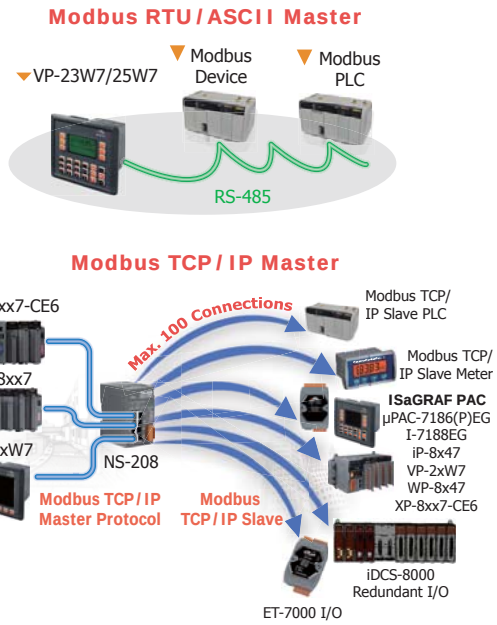
- Windows CE .NET 5.0 Operating System
- Development Softwre: ISaGRAF Ver.3
  - Windows 95/98/NT/2000/XP/Vista/7
  - All-in-one design Environment
  - Easy to integrating with HMI/SCADA/MMI
- Support Modbus Master Protocol
  - TCP/IP : Max. 100 devices
  - RTU, ASCII, RS-232/485/422 : Max. 10 ports
- Support Modbus Slave Protocol
  - TCP/IP : Max. 32 connections
  - RTU (RS-232/485/422) : Max. 5 ports
- Support Wireless Communication & SMS
- Support Ebus/Fbus Data Exchange
- Support CAN/CANopen (Via I-7530W)
- Support FRnet I/O (Via I-8172W)
- Support Data-Recorder & Data-Logger
- Support VM Solution
- Support Motion Control
- Support eLogger HMI

Hardware

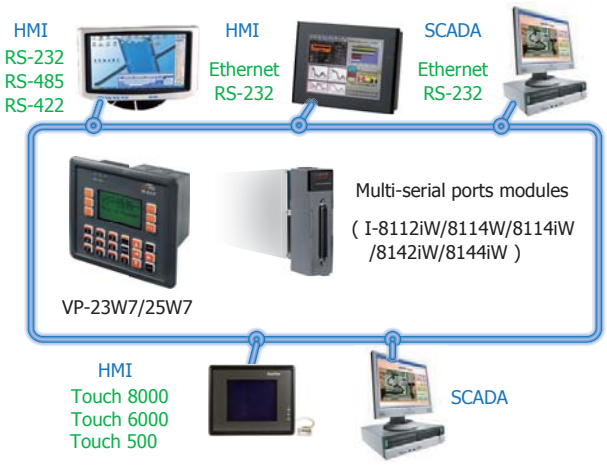
- PXA270 CPU (32-bit & 520 MHz)
- IP65 Compliant Front Panel
- 3.5"/5.7" TFT LCD (5.7" LCD is with Touch Panel)
  Rubber Keypad with 24/6 Keys
- Audio with Microphone-In and Earphone-Out
- 3 Slots for High Profile I/O Modules (VP Series)
- 64-bit Hardware Serial Number
- Built-in Flash Disk (31 MB)
- Dual Battery Backup SRAM (512 KB)
- Rich I/O Expansion Ability
  - Ethernet
  - RS-232/422/485
  - FRnet
  - CAN bus
- Operating Temperature: -20 ~ +70 °C

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

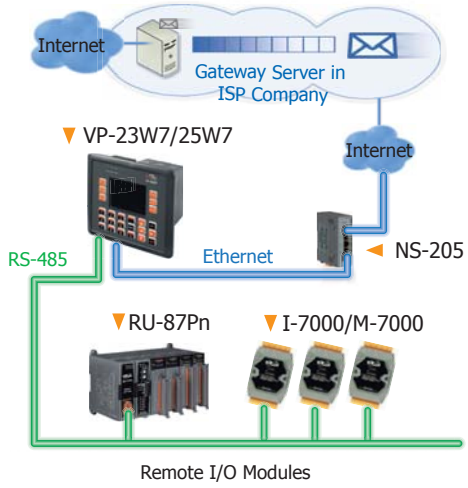
Modbus Master Ports



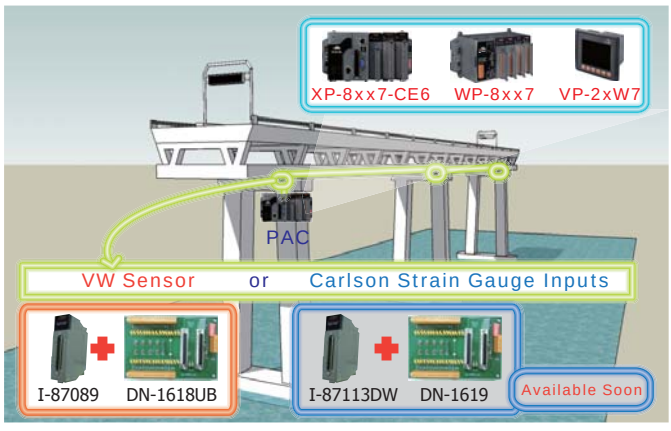
Modbus RTU/TCP Slave Ports



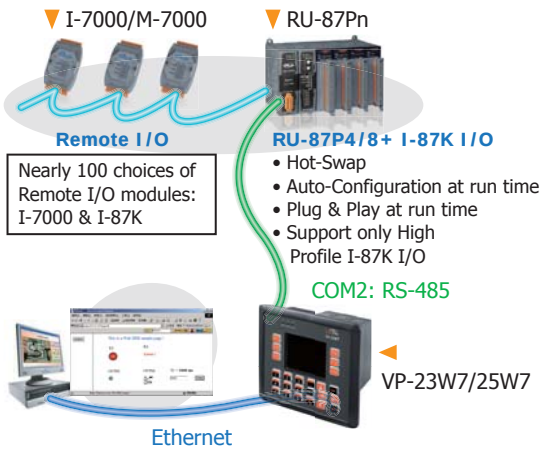
Send Email with one Attached File



Stress Monitoring of Constructions



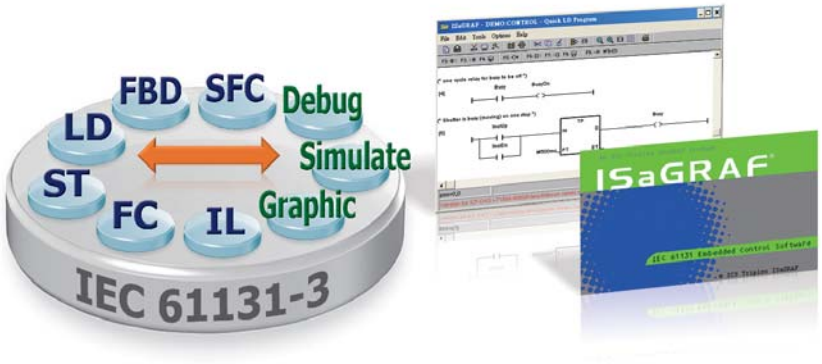
Remote I/O Application



ViewPAC Specifications

Models		VP-23W7	VP-25W7	VH-23W7	VH-25W7
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			
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 (or more)for complex or large program			
Non-ISaGRAF		Options: MS eVC++ 4.0 or VS .NET 2005/2008 (VB.NET, C# .NET)			
System Software					
Web HMI		PC running Internet Explorer can monitor/control PAC via Internet/modem			
Security		Support three-level username and password protection. (high/middle/low)			
CPU Module					
CPU		PXA270 or compatible (32-bit and 520 MHz)		PXA270 or compatible (32-bit and 312 MHz)	
SDRAM		128 MB			
Flash		96 MB (64 MB for OS image, 31 MB for built-in Flash disk, 1 MB for registry)			
Expansion Flash Memory		microSD socket with one 2 GB microSD card (support up to 16 GB microSDHC card)			
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)			
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 (0.8 second)			
Rotary Switch		Yes (0 ~ 9)			
Communication Interface					
Ethernet		RJ-45 x 1, 10/100 Base-TX (Auto-negotiating, LED indicators)		RJ-45 x 2, 10/100 Base-TX (Auto-negotiating, LED indicators)	
USB 1.1 (host)		1		2	
USB 1.1 (client)		-		1	
COM 0		Internal communication with the high profile I-87K series modules in slots			
COM 1		-		RS-232 (RxD, TxD, CTS, RTS, DSR, DTR, CD, RI and GND); Non-isolated	
COM 2	RS-485	D2+, D2-; self-tuner ASIC inside			
	Isolation	2500 V_{DC}			
COM 3		RS-232 (RxD, TxD, CTS, RTS, DSR, DTR, CD, RI and GND); Non-isolated			
MMI (Man Machine Interface)					
LCD		3.5" TFT (Resolution 320 x 240)	5.7" TFT (Resolution 640 x 480)	3.5" TFT (Resolution 320 x 240)	5.7" TFT (Resolution 640 x 480)
Touch Panel		-	Yes	-	Yes
Rubber Keypad		24 keys	6 Keys	24 keys	6 Keys
Audio		Microphone-In and Earphone-Out			
LED Indicators		3 Dual-Color LEDs (PWR, RUN, LAN1, L1, L2, L3; L1 ~ L3 for User Programmable)			
I/O Expansion Slots					
Slot Number		3		-	
		(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)		182 mm x 158 mm x 125 mm			
Installation		Panel Mounting			
Ingress Protection		Front panel: IP65			
Environmental					
Operating Temperature		-20 ~ +70 °C			
Storage Temperature		-30 ~ +80 °C			
Ambient Relative Humidity		10 ~ 90% RH (non-condensing)			
Power					
Input Range		+10 ~ +30 V_{DC}			
Isolation		1 kV			
Capacity		2.5 A, 5 V supply to I/O expansion slots			
Consumption		7.2 W (0.3 A @ 24 V_{DC})			

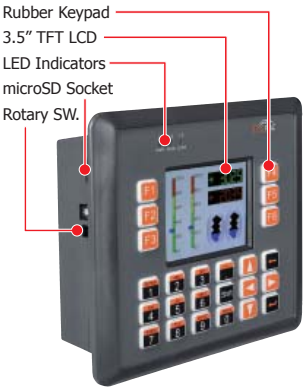
ISaGRAF Specifications



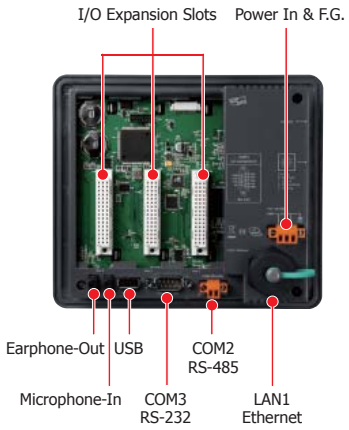
Protocols (some protocols need optional devices)		
NET ID		1 ~ 255, user-assigned by software
Modbus TCP/IP Master		Link to max. 100 devices that support Standard Modbus TCP/IP Slave protocol (FAQ-113)
Modbus RTU/ASCII Master		Max. 10 ports: COM2, 3 and COM5 ~ 14. (To connect to other Modbus Slave devices). Support Multi-port. (*)
Modbus RTU Slave		Max. 5 Ports: one of COM2/3, COM5 ~ 8. (For connecting ISaGRAF, PC/ HMI/ OPC Server & HMI panels.) (*)
Modbus TCP/IP Slave		Yes, up to 32 connections. (for connecting ISaGRAF & 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 or 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: COM2, 3, 5 ~ 14. Each port can connect up to 32 M-7000 Modules. (with optional I-7510 repeater connected can connect up to more than 32 M-7000 Modules) (*)
Modbus TCP/IP I/O		Support ICP DAS Ethernet I/O: I-8KE4-MTCP and I-8KE8-MTCP.
FRnet I/O		Max. 3 pcs. I-8172W boards in slot 0 to 2 to connect to FRnet I/O modules. Each I-8172W board can connect up to 256 DI plus 256 DO channels.
Send Email		Support functions to send email with one attached file via Ethernet port.
Ebus		To exchange data between ISaGRAF Ethernet PAC via Ethernet port. (LAN1 Port only)
SMS: Short Message Service		COM3 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		COM2, 3 and COM5 ~ COM14 by Serial communication function blocks (*)
MMICON/LCD		COM3 or COM5 supports ICP DAS's MMICON. (*)
UDP Server & UDP Client : Exchange Message & Auto-Report		LAN1 or the 2nd Ethernet (in optional I-8135W card) support UDP Server and UDP Client protocol to send/receive message to/ from PC/HMI or other devices. Ex: to automatically report data to InduSoft's RXTX driver.
TCP Client : Exchange Message & Auto-Report		LAN1 or the 2nd Ethernet (in optional I-8135W card) ca 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		Must enable the 2nd Ethernet port in the optional I-8135W card. This redundant system has setup two "Active IP" address point to the active VP-2xW7/2xW6 's LAN1 and 2nd Ethernet ports always. One or two 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 VP-2xW7/2xW6 is currently active. Moreover, the new redundant system can integrate with the RU-87P4 and RU-87P8 expansion unit plus the I-87K high-profile I/O cards to support the hot-swap application. If the I/O card is damaged, the maintenance person just takes one good-card with same model number to hot-swap the damaged one without stopping this redundant system. (FAQ-093)
CAN/CANopen		COM3 or COM5 ~ COM14 can connect one I-7530 (Converter: RS-232 to CAN) to support CAN/CANopen devices and sensors. One PAC 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 1 Hz~100 kHz (non-continuous), duty: 0.1~99.9%
	DO Moudle as PWM	8-ch. max. 250 Hz max. For Off=2 & On=2 ms. Output square curve: 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-8084W: 250 kHz max. 32 bit; I-87082W: 100 kHz max. 32 bit; I-87088W: 500 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-8084W: 8-ch, 1 Hz ~ 250 kHz; I-87082W: 2-ch, 1 Hz ~ 100 kHz; I-87088W: 8-ch, 0.1 Hz ~ 500 kHz;
Motion	Motion Control	one I-8091W (2-axis) or two I-8091W (4-axis) can do motion control. only one I-8091W can do X-Y dependent motion.
Port	Second Ethernet	VP-2xW7 / VP-2xW6 can add one optional I-8135W card in its slot 0 ~ 2 to expand the second Ethernet port.
***Note: COM5 ~ COM14 are resided at the expansion boards if they are plugged on slot0~2 of VP-2xW7.**		

Appearance

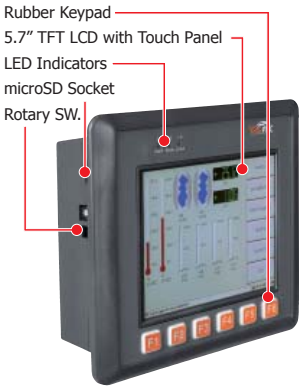
VP-23W7/VH-23W7



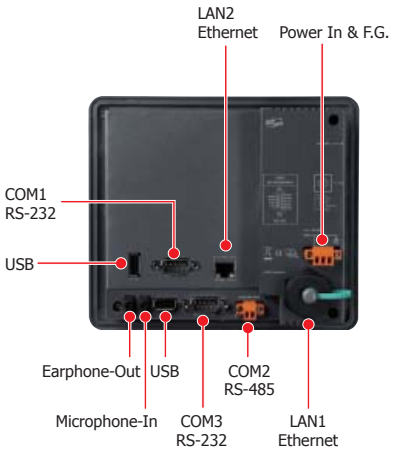
VP-23W7/25W7



VP-25W7/VH-25W7



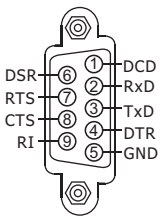
VH-23W7/25W7



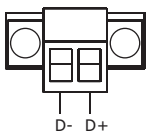
Pin Assignments

VP-23W7/25W7 COM Port

COM3: RS-232

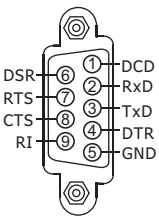


COM2: RS-485

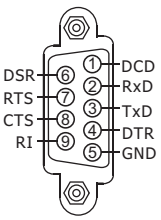


VH-23W7/25W7 COM Port

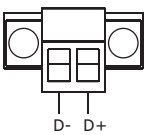
COM1: RS-232



COM3: RS-232

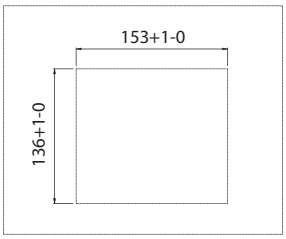


COM2: RS-485



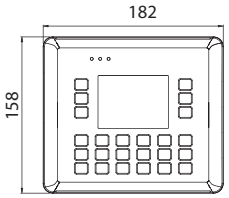
Dimensions (Units: mm)

VP-2000 Series



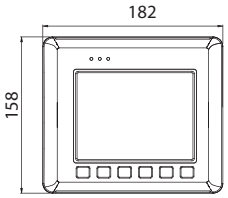
Recommended Panel Cut-Out

VP-23W7/VH-23W7



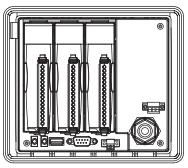
Front View

VP-25W7/VH-25W7

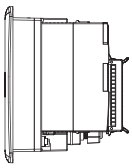


Front View

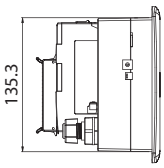
VP-2xW7



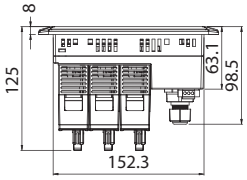
Rear View



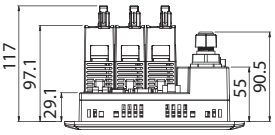
Left Side View



Right Side View

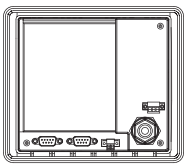


Top View

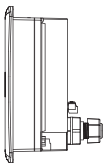


Bottom View

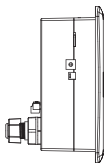
VH-2xW7



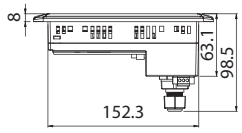
Rear View



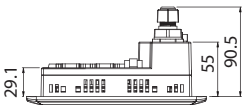
Left Side View



Right Side View



Top View



Bottom View

Ordering Information

VP-23W7-EN CR	ISaGRAF based ViewPAC with 3.5" LCD and 3 I/O slots (Multilanguage Version of OS) (RoHS)
VP-25W7-EN CR	ISaGRAF based ViewPAC with 5.7" LCD and 3 I/O slots (Multilanguage Version of OS) (RoHS)
VP-23W7-TC CR	ISaGRAF based ViewPAC with 3.5" LCD and 3 I/O slots (Traditional Chinese of OS) (RoHS)
VP-25W7-TC CR	ISaGRAF based ViewPAC with 5.7" LCD and 3 I/O slots (Traditional Chinese of OS) (RoHS)
VP-23W7-SC CR	ISaGRAF based ViewPAC with 3.5" LCD and 3 I/O slots (Simplified Chinese of OS) (RoHS)
VP-25W7-SC CR	ISaGRAF based ViewPAC with 5.7" LCD and 3 I/O slots (Simplified Chinese of OS) (RoHS)
VH-23W7 CR	ISaGRAF based ViewPAC with 3.5" LCD (Multilanguage Version of OS) (RoHS)
VH-25W7 CR	ISaGRAF based ViewPAC with 5.7" LCD (Multilanguage Version of OS) (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 VDC/2.5 A, 60 W and 5 VDC/0.5 A, 2.5 W Power Supply with DIN-Rail Mounting
MDR-60-24 CR	24 VDC/2.5 A, 60 W Power Supply with DIN-Rail Mounting (RoHS)

VP-23W9 VP-25W9

Available soon VH-23W9 VH-25W9

Highlight Information

- 3 I/O Slots Option (for VP-2000 Only)
- Windows CE 5.0
- Hard Real-Time Capability
- Fast Boot Speed
- InduSoft Web Studio v6.1
- PXA270 CPU (32-bit & 312/520 MHz)
- IP65 Compliant Front Panel
- 3.5"/5.7" TFT LCD and Rubber Keypad
- Audio with Microphone-In and Earphone-Out
- Open System
- Operating Temperature: -20 ~ +70 °C

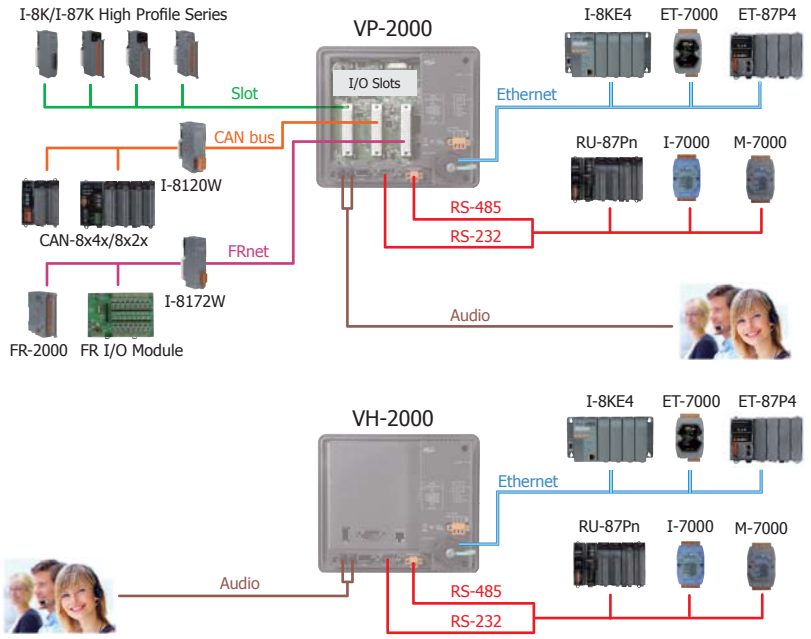
Introduction

VP-23W9/25W9 and VH-23W9/25W9 are the new generation InduSoft based PACs of ICP DAS. ViewPAC integrates WinPAC, color graphic display and keypad into one unit. It is equipped with a PXA270 CPU (520 MHz), various connectivity (USB, Ethernet, RS-232/485), 3 I/O slots, 3.5"/5.7" TFT LCD and a rubber keypad. The benefits of running Windows CE 5.0 on ViewPAC include hard real-time capability, small core size, fast boot speed, interrupt handling at a deeper level and achievable deterministic control. ViewPAC is also capable of running InduSoft and PC-based control software such as Visual Basic .NET, Visual C#, ... etc.

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

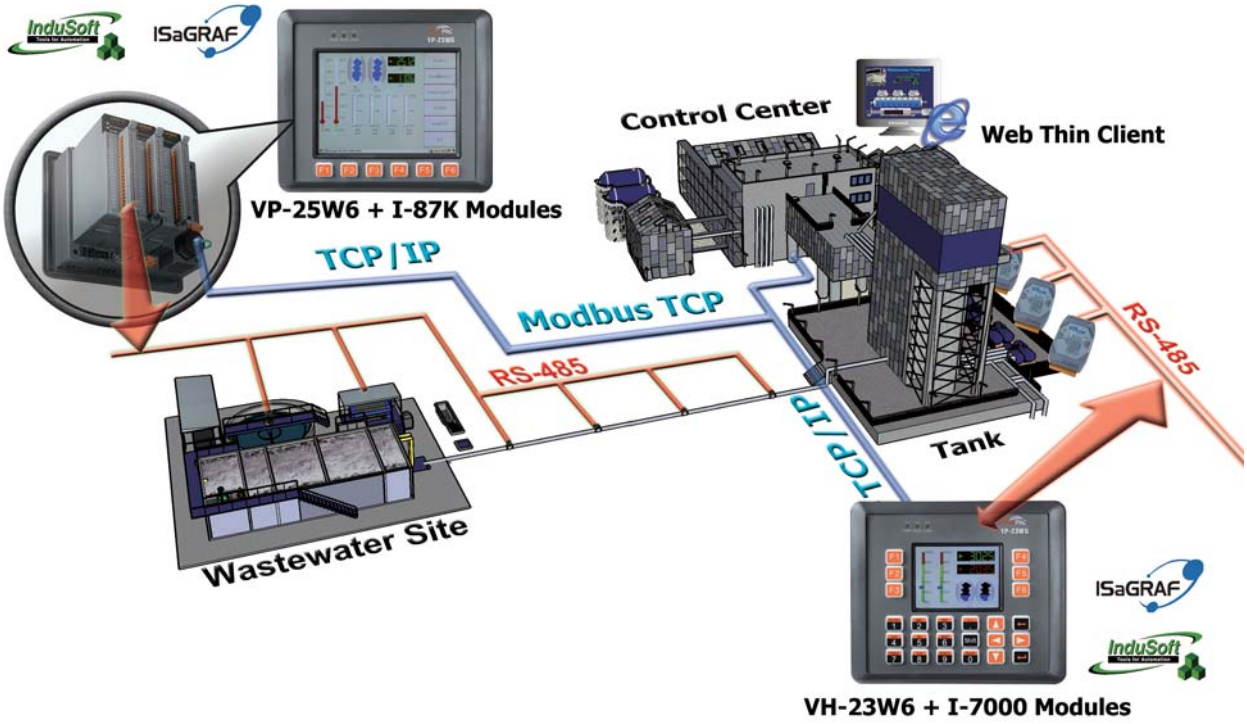
Software

- Windows CE .NET 5.0 Operating System
  - FTP Server
  - VCEP Software
  - Built-in OPC Server: Quicker
  - Provides Library for eVC, C# or VB .NET
- InduSoft Web Studio v6.1 Inside
  - Simple Steps to Create sophisticated interfaces
  - Full-Featured WinCE-based run-time environment
  - DCON Bundle Driver is Provided
  - Conform to Industry Standards: Modbus, OPC, DDE, SNMP.
  - Supports third-party SQL relational databases
  - Full-Featured Web Thin Client solution
  - GSM ActiveX object is provided
  - Multi-level security for applications
- Development Software
  - InduSoft Web Studio
  - Visual Studio .NET 2005/2008 and eVC

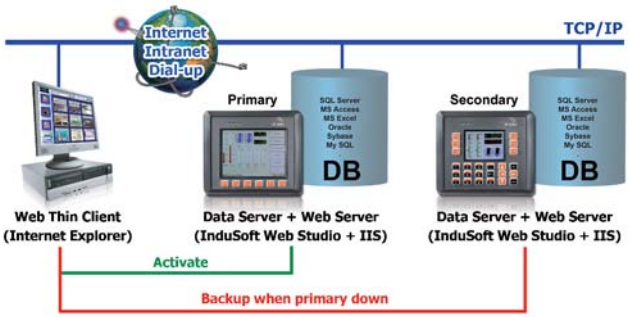
Hardware

- PXA270 CPU (32-bit & 520 MHz)
- IP65 Compliant Front Panel
- 3.5"/2.7" TFT LCD (5.7" LCD is with Touch Panel)
- Rubber Keypad with 24/6 Keys
- Audio with Microphone-In and Earphone-Out
- 3 Slots for High Profile I/O Modules (VP Series)
- 64-bit Hardware Serial Number
- Built-in Flash Disk (31 MB)
- Dual Battery Backup SRAM (512 KB)
- Rich I/O Expansion Ability
  - Ethernet
  - RS-232/422/485
  - FRnet
  - CAN Bus
- Operating Temperature: -20 ~ +70 °C

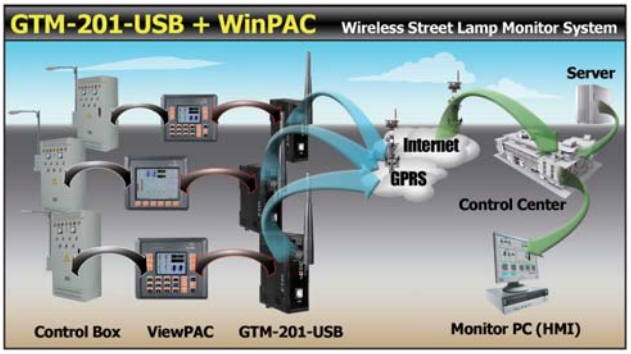
ViewPAC-2xW9 Total Solution



Redundant system

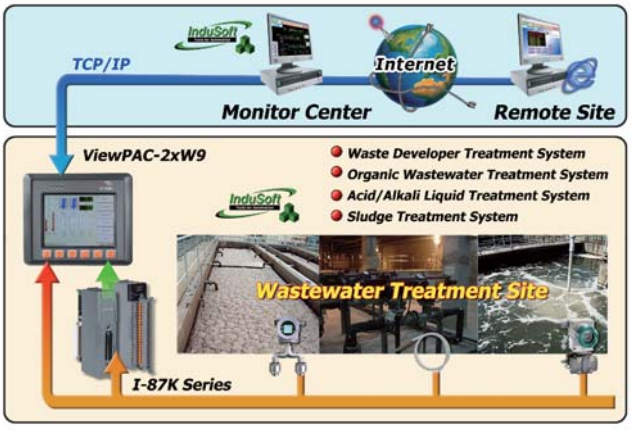


Street lamp monitor & control system

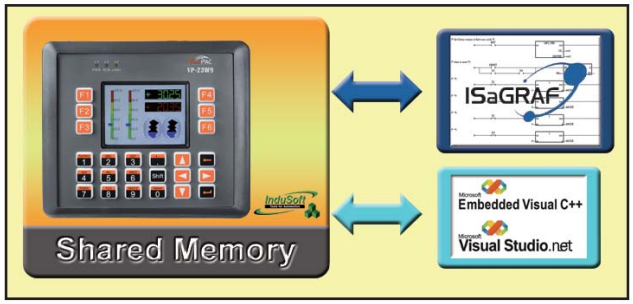


Database accessible

Wastewater treatment system



Share data with 3rd. party application



Specifications

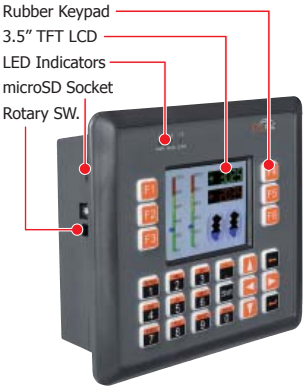
Models	VP-23W9	VP-25W9	VH-23W9	VH-25W9
System Software				
OS	Windows CE 5.0			
.Net Compact Framework	2.0			
Embedded Service	FTP server, Web server (supports VB script, JAVA script), Embedded SQL server			
SDK Provided	Dll for eVC, Dll for Visual Studio.Net 2005/2008			
Multilanguage Support	English, German, French, Spanish, Russian, Italian, Simplified Chinese, Traditional Chinese			
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 VP-2XW9 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)		PXA270 or compatible (32-bit and 312 MHz)	
SDRAM	128 MB			
Dual Battery Backup SRAM	512 KB (for 5 years data retain while power off)			
Flash	96 MB (64 MB for OS image, 31 MB for built-in Flash disk, 1 MB for registry)			
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 (0.8 second)			
Rotary Switch	Yes (0 ~ 9)			
VGA & Communication Ports				
Ethernet	RJ-45 x 1, 10/100 Base-TX (Auto-negotiating , LED indicators)		RJ-45 x 2, 10/100 Base-TX (Auto-negotiating, LED indicators)	
USB 1.1 (host)	1		2	
USB 1.1 (client)	-		1	
COM 0	Internal communication with the high profile I-87K series modules in slots			
COM 1	-		RS-232 (RxD, TxD, CTS, RTS, DSR, DTR, CD, RI and GND); Non-isolated	
COM 2 RS-485	D2+, D2-; self-tuner ASIC inside			
COM 2 Isolation	2500 V_{DC}			
COM 3	RS-232 (RxD, TxD, CTS, RTS, DSR, DTR, CD, RI and GND); Non-isolated			
MMI (Man Machine Interface)				
LCD	3.5" TFT (Resolution 320 x 240)	5.7" TFT (Resolution 640 x 480)	3.5" TFT (Resolution 320 x 240)	5.7" TFT (Resolution 640 x 480)
Touch Panel	-	Yes	-	Yes
Rubber Keypad	24 keys	6 Keys	24 keys	6 Keys
Audio	Microphone-In and Earphone-Out			
LED Indicators	3 Dual-Color LEDs (PWR, RUN, LAN1, L1, L2, L3; L1 ~ L3 for User Programmable)			
I/O Expansion Slots				
Slot Number	3		-	
	(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 H x D)	182 mm x 158 mm x 125 mm			
Installation	Panel Mounting			
Ingress Protection	Front panel: IP65			
Environmental				
Operating Temperature	-20 ~ +70 °C			
Storage Temperature	-30 ~ +80 °C			
Ambient Relative Humidity	10 ~ 90% RH (non-condensing)			
Power				
Input Range	+10 ~ +30 V_{DC}			
Isolation	1 kV			
Capacity	2.5 A, 5 V supply to I/O expansion slots			
Consumption	7.2 W (0.3 A @ 24 V_{DC})			

InduSoft Features

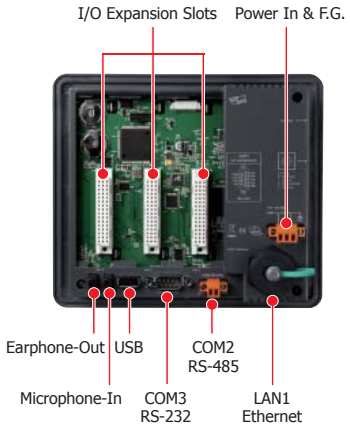
- Elegant Graphics
- Multi-Language
- Database (Access, Excel, SQL, Oracle…)
- Recipes and Reports
- Online and History Alarm / Event / Trend
- Various Communication Driver (DCON, Modbus, OPC, DDE, TCP/IP…)
- Remote Web Client Control & Security
- ActiveX (GSM / SHM / COM /WEB provided by ICP DAS)
-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

Appearance

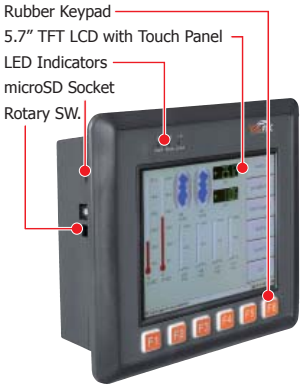
VP-23W9/VH-23W9



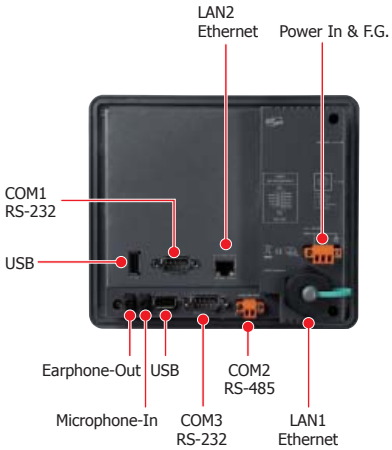
VP-23W9/25W9



VP-25W9/VH-25W9



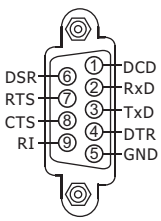
VH-23W9/25W9



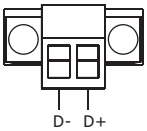
Pin Assignments

VP-23W9/25W9 COM Port

COM3: RS-232

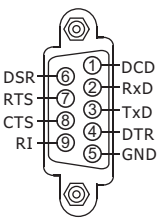


COM2: RS-485

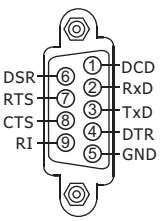


VH-23W9/25W9 COM Port

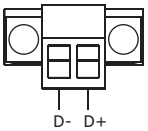
COM1: RS-232



COM3: RS-232

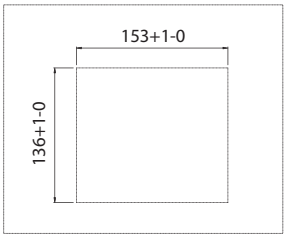


COM2: RS-485



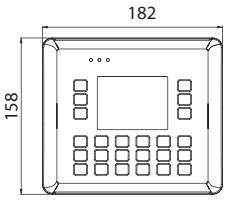
Dimensions (Units: mm)

VP-2000 Series



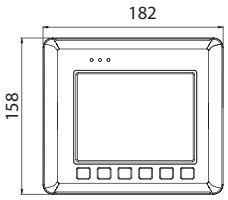
Recommended Panel Cut-Out

VP-23W9/VH-23W9



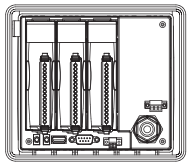
Front View

VP-25W9/VH-25W9

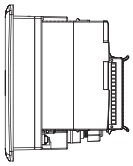


Front View

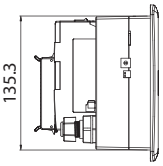
VP-2xW9



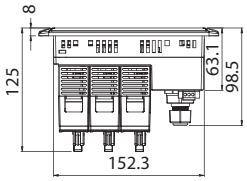
Rear View



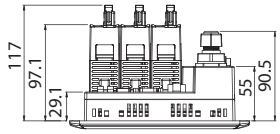
Left Side View



Right Side View

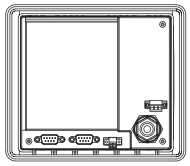


Top View

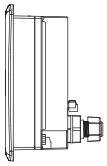


Bottom View

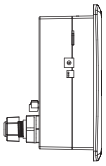
VH-2xW9



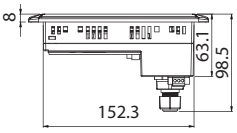
Rear View



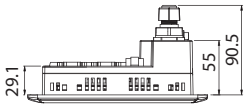
Left Side View



Right Side View



Top View



Bottom View

Ordering Information

VP-23W9-EN CR	InduSoft based ViewPAC with 3.5" LCD and 3 I/O slots (Multilanguage Version of OS) (RoHS)
VP-25W9-EN CR	InduSoft based ViewPAC with 5.7" LCD and 3 I/O slots (Multilanguage Version of OS) (RoHS)
VP-23W9-TC CR	InduSoft based ViewPAC with 3.5" LCD and 3 I/O slots (Traditional Chinese of OS) (RoHS)
VP-25W9-TC CR	InduSoft based ViewPAC with 5.7" LCD and 3 I/O slots (Traditional Chinese of OS) (RoHS)
VP-23W9-SC CR	InduSoft based ViewPAC with 3.5" LCD and 3 I/O slots (Simplified Chinese of OS) (RoHS)
VP-25W9-SC CR	InduSoft based ViewPAC with 5.7" LCD and 3 I/O slots (Simplified Chinese of OS) (RoHS)
VH-23W9 CR	InduSoft based ViewPAC with 3.5" LCD (Multilanguage Version of OS) (RoHS)
VH-25W9 CR	InduSoft based ViewPAC with 5.7" LCD (Multilanguageh Version of OS) (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 Development Software	
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
MDR-60-24 CR	24 VDC/2.5 A, 60 W Power Supply with DIN-Rail Mounting (RoHS)

Highlight Information

- 3 I/O Slots Option (for VP-2000 Only)
- Android 1.6 Inside
- PXA270 CPU (32-bit & 312/520 MHz)
- 128 MB SDRAM & 96 MB Flash
- IP65 Compliant Front Panel
- 3.5"/5.7" TFT LCD and Rubber Keypad
- Audio with Microphone-In and Earphone-Out
- Operating Temperature: -20 ~ +70 °C

Introduction

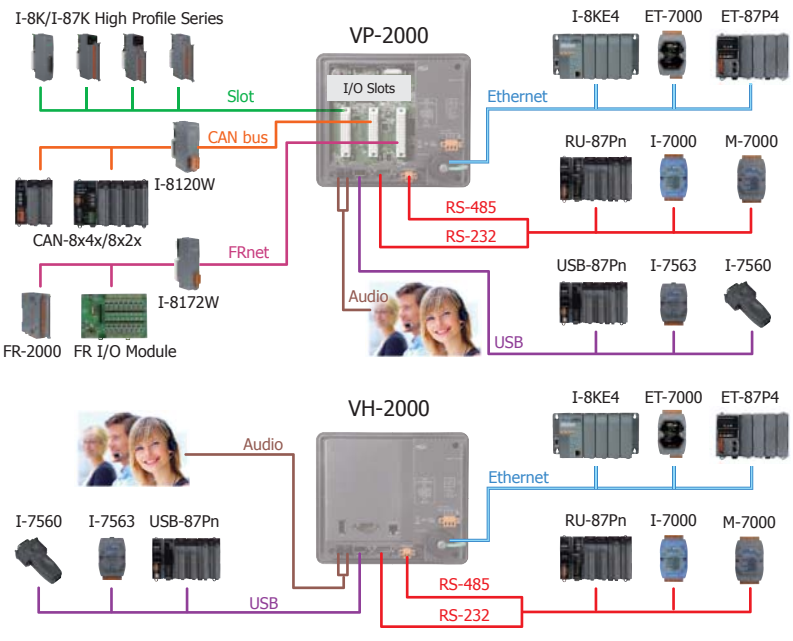
The ViewPAC combines LinPAC, a color graphic display and a keypad in one unit. It is equipped with a PXA270 CPU running the Android 1.6 operating system, multiple communication interfaces (USB, Ethernet, RS-232/485 and audio ports), 3 I/O slots, a 3.5"/5.7" TFT LCD and a rubber keypad.

The Android 1.6 operating system has many advantages, including stability, hard real-time capabilities, small core size, and multiple development environments (ViewPAC SDK for Linux and Windows environments using the GNU C language, Android I/O driver and GUI software), etc.

The ViewPAC is designed to provide convenient, flexible and simplified solutions for industrial and embedded applications. Compared with traditional IPC + PLC solutions, ViewPAC reduces overall system cost and space, and gives you all the best features of both IPC and PLC.

Applications

Rich I/O Expansion Ability



Features

Software

- Android 1.6 Inside
- Development Environment
  - ☐ Provide ViewPAC SDK for Windows and Linux Environment
  - ☐ Support for GNU C Language
  - ☐ Support for Android I/O Driver (Java I/O Driver)
  - ☐ Support for GUI: Using GTK + Library
- Supported Communication
  - ☐ Wireless LAN, PPP over Modem, GPRS, Ethernet, Dual LAN
  - ☐ Expansion Serial Ports
  - ☐ USB to Serial Converter
  - ☐ DCON and Modbus Protocols
- Security
  - ☐ Unique Serial Number, VPN

Hardware

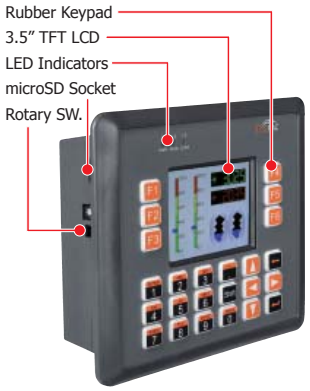
- PXA270 CPU (32-bit & 312 MHz) for VH-23/25A1
- PXA270 CPU (32-bit & 520 MHz) for VP-23/25A1
- IP65 Compliant Front Panel
- 3.5"/5.7" TFT LCD (5.7" LCD is with Touch Panel)
- Rubber Keypad with 24/6 Keys
- Audio with Microphone-In and Earphone-Out
- 3 Slots for High Profile I/O Modules
- 64-bit Hardware Serial Number
- Dual Battery Backup SRAM (512 KB)
- One or two 10/100M Ethernet Ports
- Rich I/O Expansion Ability
- Operating Temperature: -20 ~ +70 °C

Specifications

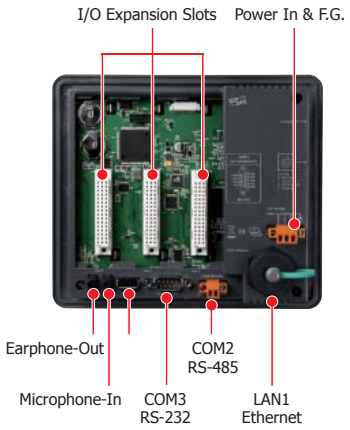
Models		VP-23A1	VP-25A1	VH-23A1	VH-25A1
System Software					
OS		Android 1.6			
SDK Provided		Standard ViewPAC SDK for Windows and Linux operating systems			
CPU Module					
CPU		PXA270 or compatible (32-bit and 520 MHz)		PXA270 or compatible (32-bit and 312 MHz)	
SDRAM		128 MB			
Flash		96 MB			
Expansion Flash Memory		microSD socket with one 2 GB microSD card (support up to 16 GB microSDHC card)			
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)			
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 (0.8 second)			
Rotary Switch		Yes (0 ~ 9)			
Communication Interface					
Ethernet		RJ-45 x 1, 10/100 Base-TX (Auto-negotiating, LED indicators)		RJ-45 x 2, 10/100 Base-TX (Auto-negotiating, LED indicators)	
USB 1.1 (host)		1		2	
COM 0		Internal communication with the high profile I-87K series modules in slots		-	
COM 1		-		RS-232 (RxD, TxD, CTS, RTS, DSR, DTR, CD, RI and GND); Non-isolated	
COM 2	RS-485	D2+, D2-; self-tuner ASIC inside			
	Isolation	2500 V_{DC}			
COM 3		RS-232 (RxD, TxD, CTS, RTS, DSR, DTR, CD, RI and GND); Non-isolated			
MMI (Man Machine Interface)					
LCD		3.5" TFT (Resolution 320 x 240)	5.7" TFT (Resolution 640 x 480)	3.5" TFT (Resolution 320 x 240)	5.7" TFT (Resolution 640 x 480)
Touch Panel		-	Yes	-	Yes
Rubber Keypad		24 keys	6 Keys	24 keys	6 Keys
Audio		Microphone-In and Earphone-Out			
LED Indicators		3 Dual-Color LEDs (PWR, RUN, LAN1, L1, L2, L3; L1 ~ L3 for User Programmable)			
I/O Expansion Slots					
Slot Number		3		-	
		(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)		182 mm x 158 mm x 125 mm			
Installation		Panel Mounting			
Ingress Protection		Front panel: IP65			
Environmental					
Operating Temperature		-20 ~ +70 °C			
Storage Temperature		-30 ~ +80 °C			
Ambient Relative Humidity		10 ~ 90% RH (non-condensing)			
Power					
Input Range		+10 ~ +30 V_{DC}			
Isolation		1 kV			
Capacity		2.5 A, 5 V supply to I/O expansion slots		-	
Consumption		7.2 W (0.3 A @ 24 V_{DC})			

Appearance

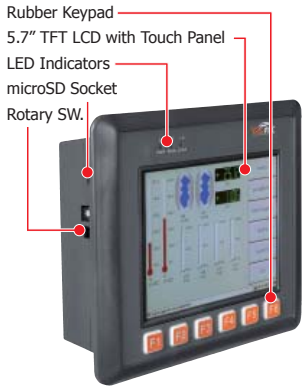
VP-23A1/VH-23A1



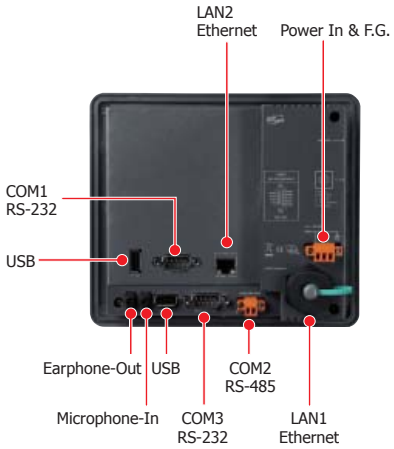
VP-23A1/25A1



VP-25A1/VH-25A1



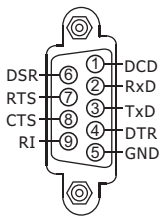
VH-23A1/25A1



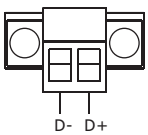
Pin Assignments

VP-23A1/25A1 COM Port

COM3: RS-232

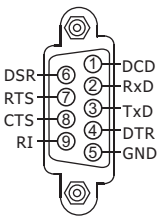


COM2: RS-485

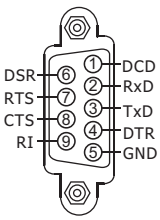


VH-23A1/25A1 COM Port

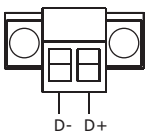
COM1: RS-232



COM3: RS-232

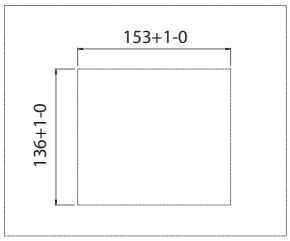


COM2: RS-485



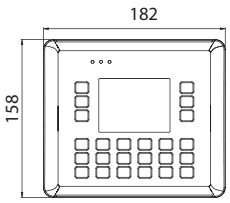
Dimensions (Units: mm)

VP-2000 Series



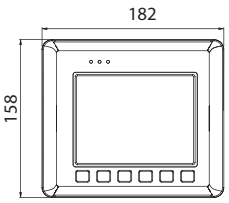
Recommended Panel Cut-Out

VP-23A1/VH-23A1



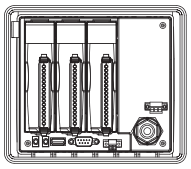
Front View

VP-25A1/VH-25A1

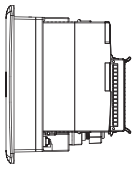


Front View

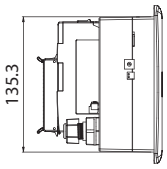
VP-2xA1



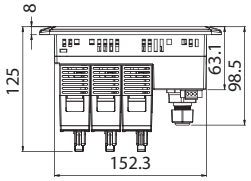
Rear View



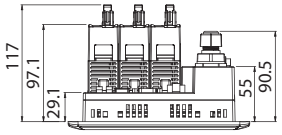
Left Side View



Right Side View

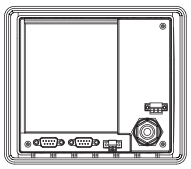


Top View

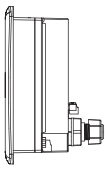


Bottom View

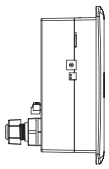
VH-2xA1



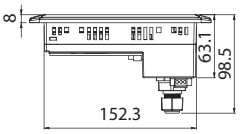
Rear View



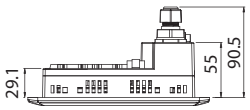
Left Side View



Right Side View



Top View



Bottom View

Ordering Information

VP-23A1-EN CR	Standard ViewPAC with 3.5" LCD and 3 I/O slots (English Version of OS) (RoHS)
VP-25A1-EN CR	Standard ViewPAC with 5.7" LCD and 3 I/O slots (English Version of OS) (RoHS)
VH-23A1-EN CR	Standard ViewPAC with 3.5" LCD (English Version of OS) (RoHS)
VH-25A1-EN CR	Standard ViewPAC with 5.7" LCD (English Version of OS) (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
MDR-60-24 CR	24 V_{DC}/2.5 A, 60 W Power Supply with DIN-Rail Mounting (RoHS)

MotionPAC

4

4.1 Overview P4-1-1

4.2 Software P4-2-1

4.3 MP-8000 Series P4-3-1

- MP-8343/8743 - P4-3-1
- MP-8353/8753 - P4-3-5

4.1. MP-8000 Overview

Overview

The MP-8000 is a motion programmable automation controller (MPAC) combining the functionality and openness of a PC with the reliability and simplicity of a programmable logic controller (PLC). The price-performance of the MPAC is unbeatable as compared with a PC, PLC, and DCS. The MP-8000 is designed for time critical and deterministic operations. Its field of application is unlimited: Factory automation, building automation, machine automation, laboratory automation, chemical industry, environmental monitoring, M2M, etc.

The MP-8000 is the new generation of programmable automation controller from ICP DAS. It is equipped with an AMD LX 800 CPU (500 MHz) or Atom Z500 serial, a Windows Embedded CE6 Operating System, various ports (VGA, USB, Ethernet, RS-232/ RS-485) and 3 or 7 slots for high performance parallel-type I/ O modules. Compared with the first generation of WinCon-8000 of ICP DAS, it not only improves the CPU performance but also has many additional reliability features, such as dual LAN, redundant power input, dual battery backup SRAM, etc.

MP-8000 ≒ IPC+I/O Cards

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. The MP-8000 also supports the EzProg-I software development package offered by ICPDAS.

Main Components:

1 Main Control Unit (MCU)

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

2 Embedded OS

Windows CE6

Windows CE 6 is the next generation of real-time OS offered by Microsoft. Windows CE 6 provides the software engineer with familiar tools and innovative technologies to reduce the development time of application software. The high performance and high reliability of the MP-8000 together with the Windows CE, makes the MP-8000 an ideal controller in the environment where time critical performance is required. Windows CE6 operating system kernel architecture supports up to 32,000 simultaneous processes, each of which runs in a 2GB virtual memory address space. This allows developers to incorporate larger number of complex applications into the MP-8000.

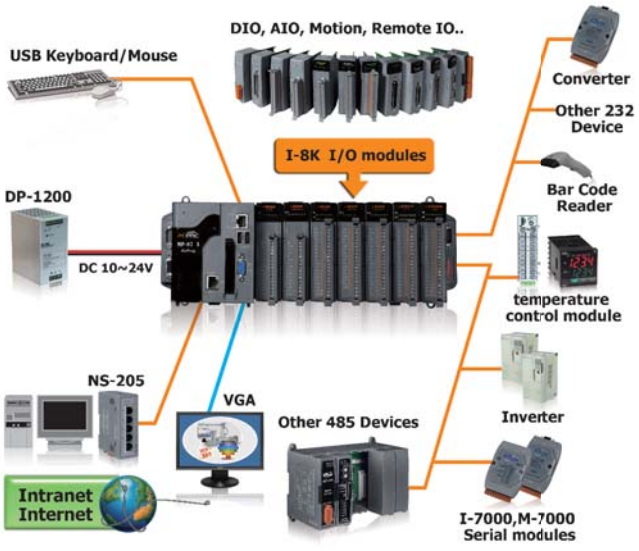
3 I/O Modules

There are two types of I/O modules: parallel and serial. The parallel modules (I-8K high profile series and motion series) are high-speed modules and have to be installed in the slots of the MP-8000. The serial I/O modules (I-87K high profiles series) can be installed in slots of the MP-8000 or expansion units (RU-87Pn).

4 Remote I/O Expansion

The MP-8000 has built-in RS-485 and Ethernet ports to connect to remote I/O units (RU-87Pn/ET-87Pn) or I/O modules (I-7000/M-7000/ET-7000). Installing CAN or FRnet communication modules, the MP-8000 can exchange data with CAN bus devices, remote I/O units or FRnet I/O modules for deterministic control system.

5 Software Development Resources



• Software

The PAC Automation Solution EzProg-I:

The EzProg-I is a total software solution for manufacturers or control system designers for system configuration, logic programming and HMI design. By using EzProg-I, engineers who are familiar with PLC systems can easily transfer their programming experience to ICP DAS's programmable automation control (PAC) solutions. The EzProg-I makes it much easier for customers to integrate PLCs and IT technologies into PAC.

The EzProg-I package contains many kinds of development tools and libraries, such as EzConfig, EzGo, EzMake, EzHMI, EzLib and EzCore. Based on these development resources, customers can directly configure and test the PAC channels and motion control modules without additional programming efforts. Moreover, the EzProg-I simplifies the I/O instruction and provides a PLC like I/O mapping table. It assists the system designers to develop and test the control system application.

Development Structure:

The EzProg-I structure is divided into three main parts:

1. Upper layer: EzHMI

EzHMI provides a number of ActiveX controls which allows the programmer to create a graphic interface on a WinCE system. The EzHMI object can be directly linked to an I/O mapping table which makes reading and writing of digital and analog I/O values very easy. The EzCore engine running in the background is responsible for updating the I/O table in real time.

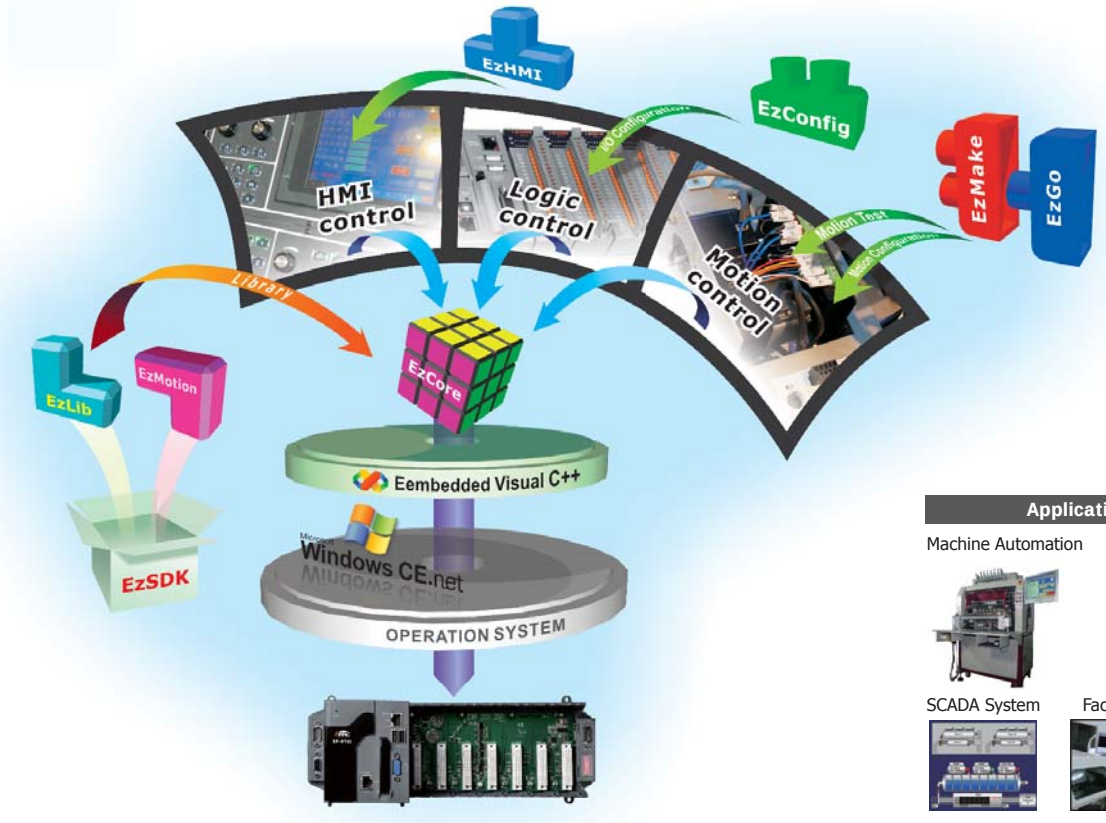
2. Intermediate layer: API

The EzProg-I provides common APIs for accessing different I/O modules types. In the past, each module type could only be accessed via its own APIs, therefore different APIs had to be called for communicating with different modules. Now, the EzProg-I solves this problem and unifies all APIs. No matter with what I/O module you like to exchange data, only one API needs to be called. The EzProg-I enables PLC like programming by providing APIs for accessing EzCore registers which consists of the I/O mapping table and non-hardware related tables.

3. Lower level: Logic control design

The control software provides three different design methods:

- 3.1 8 Users thread procedures:
  The user thread only executes once. User threads have a lower priority than the other routines.
- 3.2 8 Executive routines with fixed interval time:
  Like a PLC scan method, after the system starts, it will create a thread that execute the user defined routine in a fixed time interval (minimum 2ms).
- 3.3 Hardware interrupt routine:
  The EzProg-I processes DI signal interrupt and Motion interrupt to execute the code added to the interrupt service routine.



Applications

Machine Automation

SCADA System

Factory Automation

Other features of EzProg-I:

Public System Variable Type:	D (long), DW (Double WORD), W (Word), F (Float), B (Byte), M (Flag), S (Step), MSG (Message).
Retain Variable:	Most variable types have half retain variable blocks.
Timer Function:	Millisecond based timer.
Counter Function:	System counter (retain variable block is also available).
Multi-language Message:	Provide MLn file to edit UNICODE 1000 messages.

Tools Support Guide: EzConfig, EzGo, EzMake

Module \Tool	EzConfig	EzGo	EzMake
I-8092F-G	Yes (Note 1)	Yes	-
I-8094-G	-	Yes	-
I-8094F-G	Yes (Note 1)	Yes	-
I-8094A-G	-	Yes	Yes
I-8094H-G	-	Yes	Yes
I-8K Serial Modules	Yes	-	-
FRnet Remote Modules	Yes	-	-
Note 1: Only for FRnet			

The EzProg-I Tools

EzConfig

The EzConfig is an I/O configuration tool to configure and test digital I/O, analog I/O, FRnet remote I/O and virtual I/O (M/D/F/DB/C/T/MSG etc.) for the I-8000 series modules and virtual I/O used in the EzProg-I.

Functions of EzConfig:

- Auto scan of I/O modules
- Load and save configuration data
- Retain data management
- Generate AES code
- Set initial virtual value
- Edit note
- Read/Write XML file

EzGo

ICP DAS provides a motion testing tool named EzGo for i-8094, i-8094F, i-8094A, i-8094H and i-8092F modules used in PACs for machine automation.

EzMake

The EzMake, the tool provided by ICP DAS for building motion systems, is designed for i-8094A and i-8094H modules used in the PACs for machine automation. The EzMake is a Macro editor for writing and testing motion commands sequence for the i-8094A and i-8094H modules.

EzHMI

The EzProg-I also provides many useful HMI ActiveX components for manufacturers and control system designers. It allows the programmer to create a graphic interface on a WinCE system without any additional programming efforts. It greatly improves the software programming productivity.

- EzHMI for application
- Easy properties setting
- Easy GUI color setting
- Displays I/O register data
- Direct I/O register value setting
- UNICODE Multi-Language
- Auto alarm flashing
- Dynamic BMP images
- Support Windows text fonts

EzLib

EzLib is a collection of reusable software components and assists software developers to write application programs for the Window CE platform.

- Data format transformation
- Date time function
- File I/O function
- Context drawing library
- BMP file drawing library
- FTP connection library
- TCP/IP library
- Trend graph library

NEW **MP-8343**

NEW **MP-8743**

Highlight Information

- Windows CE 6.0
- Hard Real-Time Capability
- Fast Boot Speed
- SQL Compact Edition 3.5
- EzProg-I development tools
- AMD LX 800 CPU (32-bit and 500MHz)
- VGA Port Output
- PC Power, Open System
- Redundant Power Input
- Operating Temperature: -25 ~ +75 °C

Introduction

The MP-8x43 is the new generation programmable automation controller of ICPDAS. It is equipped with a Windows Embedded CE 6.0 operating system running on an AMD LX 800 CPU (500 MHz), has got a wide range of ports (VGA, USB, Ethernet, RS-232/RS-485) and 3 or 7 slots for high performance parallel I/O modules (high profile I-8K series) and serial-type I/O modules (high profile I-87K I/O modules). Windows Embedded CE 6.0 has many advantages including hard real-time capability, small core size, interrupt handling at a deeper level, achievable deterministic control and low cost. Windows Embedded CE6.0, compared with CE5.0, updates its virtual memory architecture to increase system robustness and security.

Features

Software

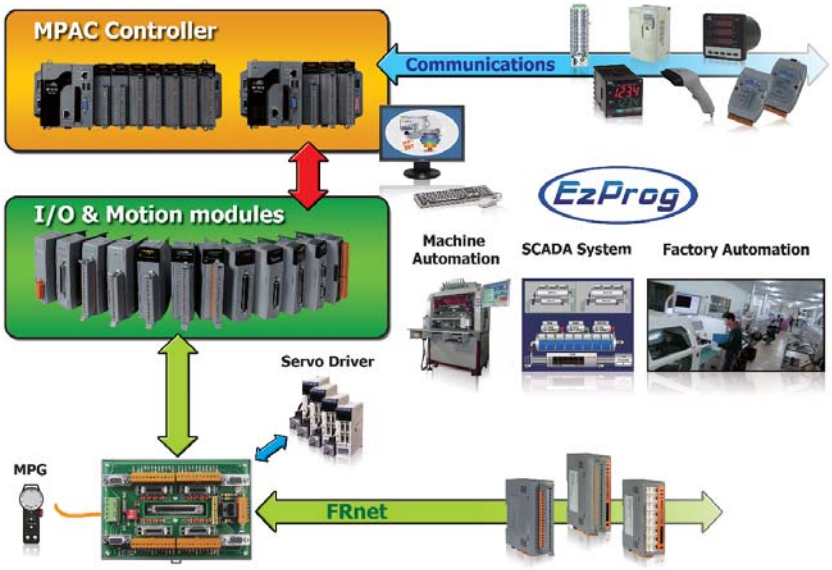
- Microsoft Visual Studio 2008 VC++
- EzProg-I development tools:
  - ☐ EzConfig
  - ☐ EzHMI
  - ☐ EzGo
  - ☐ EzMake
  - ☐ EzLIB
- Software protection and license management

Hardware

- AMD LX 800 CPU (32-bit and 500 MHz)
- Memory size: RAM (512 MB
- Built-In Flash Disk (4 GB)
- VGA Port x 1(Max 1600x1200)
- USB 2.0 Ports x 2
- 64-bit Hardware Serial Number
- Dual Watchdog Timers
- 5 Serial Ports (RS-232/RS-485)
- Dual Ethernet Ports (10/100M)
- Redundant Power Input
- Operating Range: -25 ~ +75 °C

Applications

Rich I/O Expansion Ability

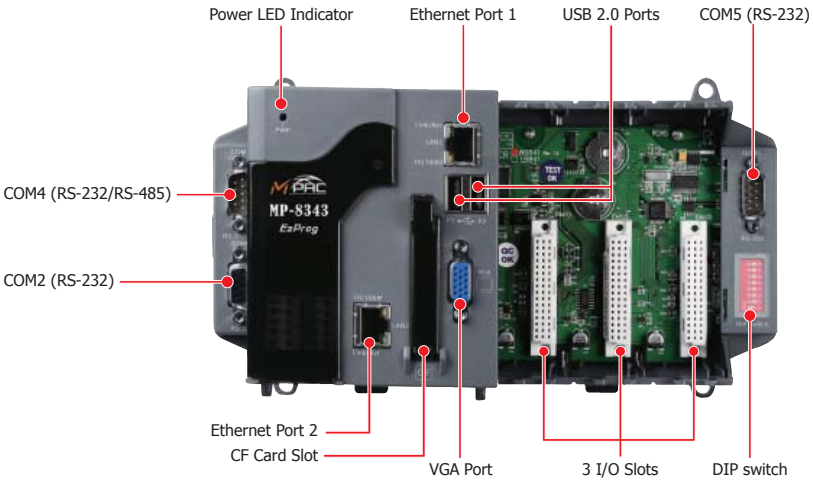


Specifications

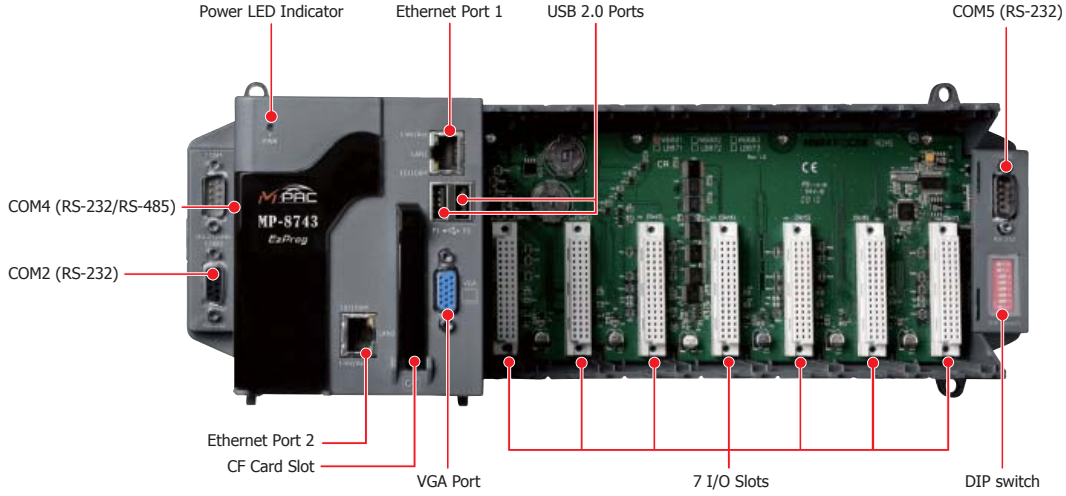
Models		MP-8343	MP-8743
System Software			
OS		Windows CE 6.0 core version	
.Net Compact Framework		3.5	
Embedded Service		FTP Server, ASP (Java Script, VB Script), SQL Compact Edition 3.5	
SDK Provided		Dll for Visual Studio .Net 2005/2008	
Multilanguage Support		English, German, French, Spanish, Russian, Italian, Japanese, Simplified Chinese, Traditional Chinese	
CPU Module			
CPU		AMD LX 800 processor	
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		Minimum 1 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: 1024 x 768, 800 x 600, 640 x480)	
Ethernet (Giga bit)		RJ-45 x 2, 10/100 Base-TX (Auto-negotiating, Auto MDI/MDI-X, LED indicators)	
USB 2.0		2	
COM 1		Internal communication with I-87K 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		3	7
Support modules type		High profile modules only	
Mechanical			
Dimensions (W x L x H)		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		1.8A, 5V supply to CPU and backplane, 5.2A, 5V supply to I/O expansion slots, total 35 W	2.0A, 5V supply to CPU and backplane, 5.0A, 5V supply to I/O expansion slots, total 35 W
Consumption		14.4 W (0.6 A @ 24 V_{DC})	16.8 W (0.7 A @ 24 V_{DC})

Appearance

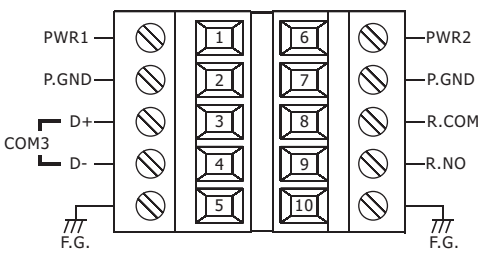
MP-8343



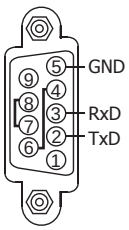
MP-8743



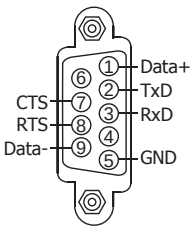
Pin Assignments



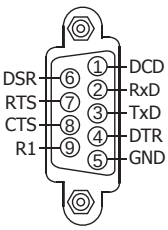
COM2: RS-232



COM4: RS-232/RS-485

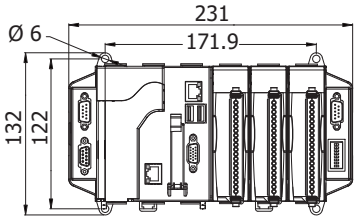


COM5: RS-232

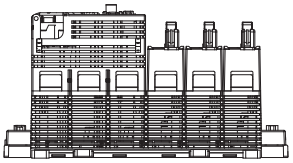


Dimensions (Units: mm)

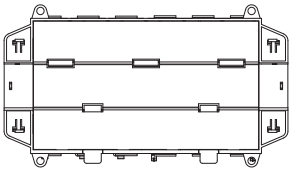
MP-8343



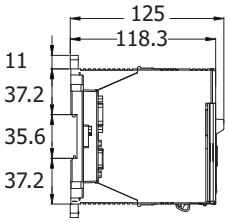
Front View



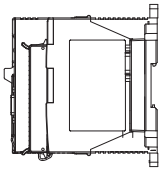
Bottom View



Rear View

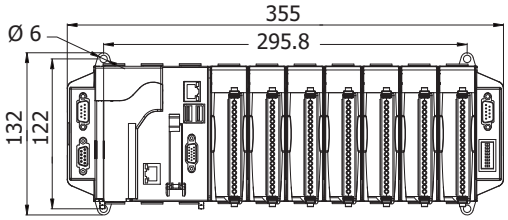


Left Side View

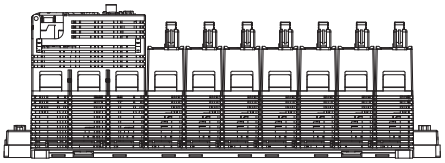


Right Side View

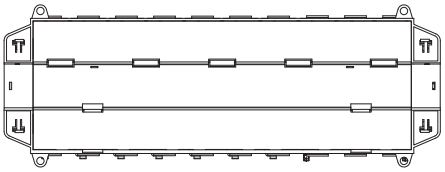
MP-8743



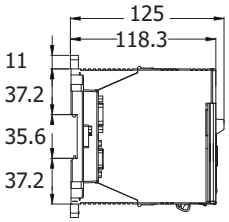
Front View



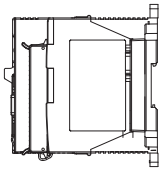
Bottom View



Rear View



Left Side View



Right Side View

Ordering Information

MP-8343 CR	Standard MP-8343 with 3 I/O Slots (Multilingual Version of OS) (RoHS)
MP-8743 CR	Standard MP-8743 with 7 I/O Slots (Multilingual Version of OS) (RoHS)

Accessories

USB-2020 CR	USB Audio Device (RoHS)
USB-2560 CR	4-Port Industrial USB 2.0 Hub (RoHS)
NS-208 CR	8-Port Unmanaged Industrial 10/100 Base-TX Ethernet Switch (RoHS)
MDR-20-24 CR	24 V_{DC}/1.0 A, 24 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)

Available soon **MP-8353**

Available soon **MP-8753**

Highlight Information

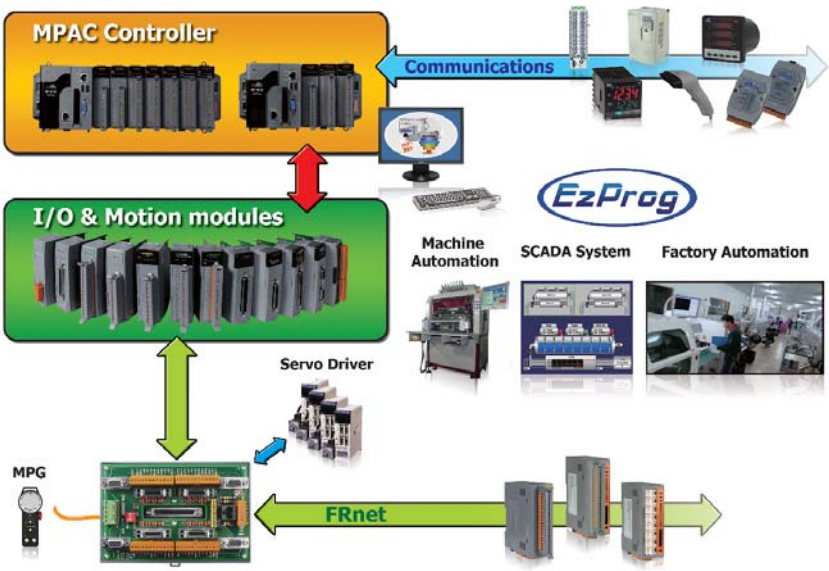
- Windows CE 6.0
- Hard Real-Time Capability
- Fast Boot Speed
- SQL Compact Edition 3.5
- EzProg-I development tools
- Intel Atom Z510 CPU (1.1 GHz)
- Audio with Microphone-In and Earphone-Out
- VGA Port Output
- High Performance PC Power, Open System
- Redundant Power Input
- Operating Temperature: -25 ~ +75 °C

Introduction

MP-8x53 is the new generation programmable automation controller of ICPDAS. It is equipped with a Windows Embedded CE 6.0 operating system running on an Intel Atom Z500 Series processor, has got a wide range of ports (VGA, USB, Ethernet, RS-232/RS-485) and 3 or 7 slots for high performance parallel I/O modules (high profile I-8K series) and serial-type I/O modules (high profile I-87K I/O modules). Windows Embedded CE 6.0 has many advantages including hard real-time capability, small core size, interrupt handling at a deeper level, achievable deterministic control and low cost. Windows Embedded CE6.0, compared with CE5.0, updates its virtual memory architecture to increase system robustness and security.

Applications

Rich I/O Expansion Ability



Features

Software

- Microsoft Visual Studio 2008 VC++
- EzProg-I development tools:
  - EzConfig
  - EzHMI
  - EzGo
  - EzMake
  - EzLIB
- Software protection and license management

Hardware

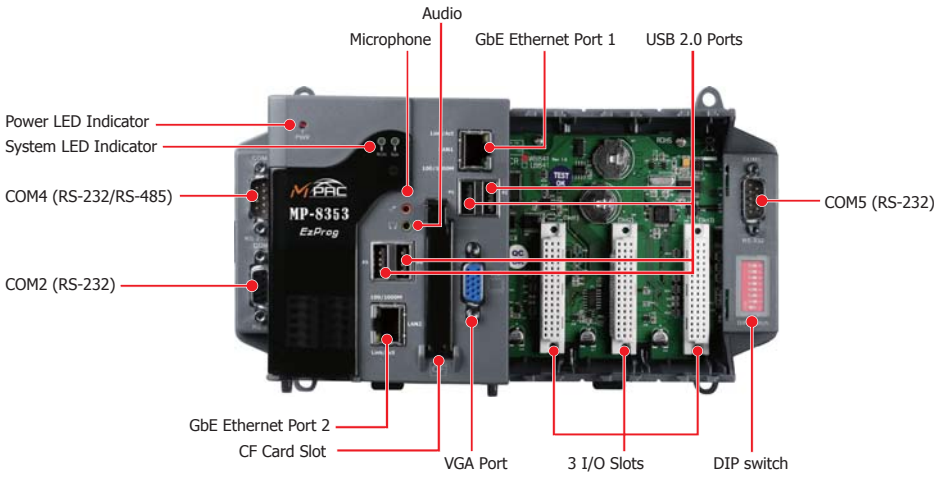
- Powerful CPU Module
  - Intel Atom Z510 CPU (1.1 GHz)
- Memory size:
  - DDR2 SDRAM (512 MB), Built-in Flash Disk (2 GB)
  - EEPROM (16 KB), CF Card (1 GB)
  - Dual Battery Backup SRAM (512 KB)
- VGA Port x 1, USB 2.0 Ports x 4
- Programmable LED indicator x 2
- Audio with Microphone-In and Earphone-Out
- 64-bit Hardware Serial Number
- Dual Watchdog Timers
- 4 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

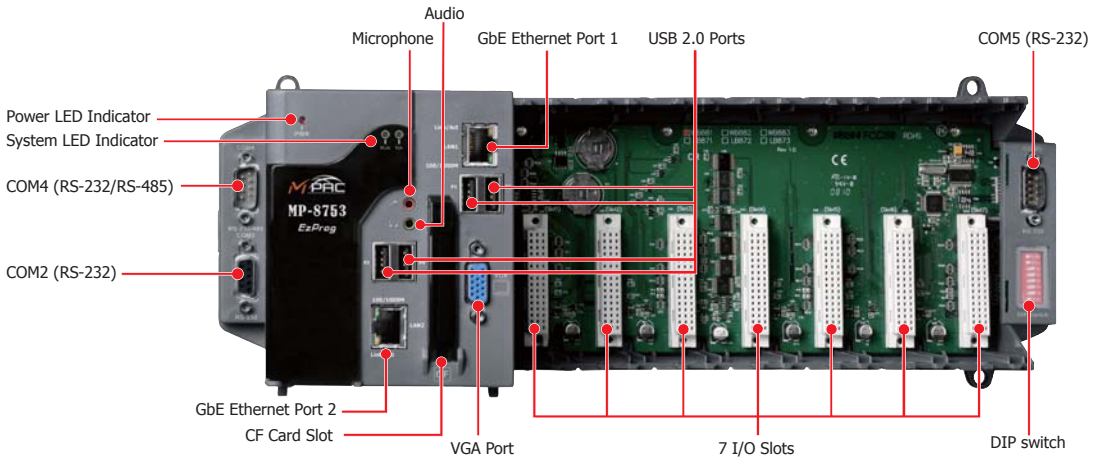
Models		MP-8353	MP-8753
System Software			
OS		Windows CE 6.0 core version	
.Net Compact Framework		3.5	
Embedded Service		FTP Server, ASP (Java Script, VB Script), SQL Compact Edition 3.5	
SDK Provided		Dll for Visual Studio .Net 2005/2008	
Multilanguage Support		English, German, French, Spanish, Russian, 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		2 GB as IDE Master	
EEPROM		16 KB	
		Data Retention: 40 years; 1,000,000 erase/write cycles	
CF Card		Minimum 1 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)	
Audio		Microphone-In and Earphone-Out	
VGA & Communication Ports			
VGA		Yes (resolution: 1024 x 768, 800 x 600, 640 x480)	
Ethernet (Giga bit)		RJ-45 x 2, 10/100/1000 Base-TX (Auto-negotiating, Auto MDI/MDI-X, LED indicators)	
USB 2.0		4	
COM 1		Internal communication with I-87K 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		3	7
Support modules type		High profile modules only	
Mechanical			
Dimensions (W x L x H)		231 mm x 132 mm x 125 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		1.8A, 5V supply to CPU and backplane, 5.2A, 5V supply to I/O expansion slots, total 35 W	2.0A, 5V supply to CPU and backplane, 5.0A, 5V supply to I/O expansion slots, total 35 W
Consumption		14.4 W (0.6 A @ 24 VDC)	16.8 W (0.7 A @ 24 VDC)

Appearance

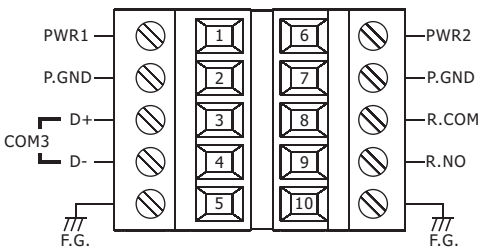
MP-8353



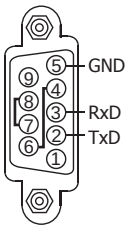
MP-8753



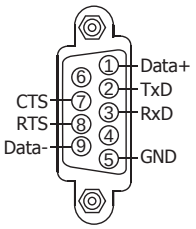
Pin Assignments



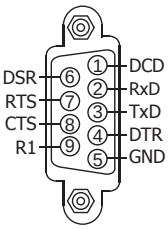
COM2: RS-232



COM4: RS-232/RS-485

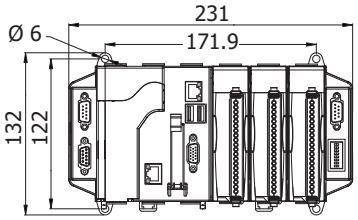


COM5: RS-232

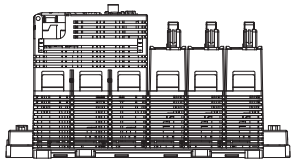


Dimensions (Units: mm)

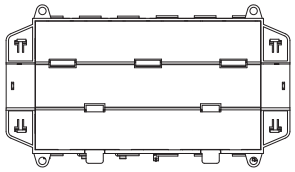
MP-8353



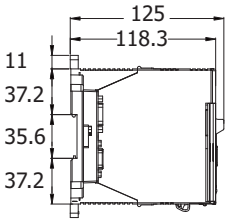
Front View



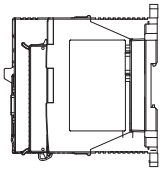
Bottom View



Rear View

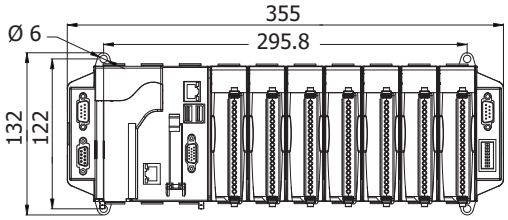


Left Side View

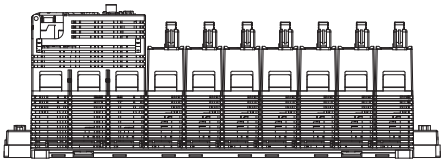


Right Side View

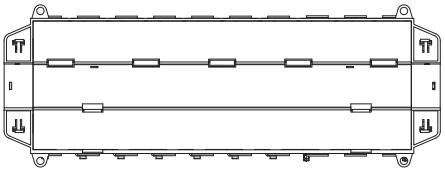
MP-8753



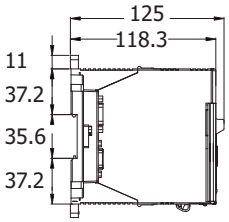
Front View



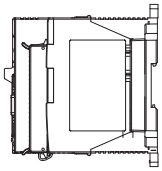
Bottom View



Rear View



Left Side View



Right Side View

Ordering Information

MP-8353 CR	Standard MP-8353-Atom with 3 I/O Slots (Multilingual Version of OS) (RoHS)
MP-8753 CR	Standard MP-8753-Atom with 7 I/O Slots (Multilingual Version of OS) (RoHS)

Accessories

USB-2020 CR	USB Audio Device (RoHS)
USB-2560 CR	4-Port Industrial USB 2.0 Hub (RoHS)
NS-208 CR	8-Port Unmanaged Industrial 10/100 Base-TX Ethernet Switch (RoHS)
MDR-20-24 CR	24 V_{DC}/1.0 A, 24 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)

I/O Expansion Units

5

5.1 I/O Expansion Units Overview P5-1-1

5.2 RS-485 I/O Expansion Unit P5-2-1

- RU-87P1/87P2/87P4/87P8 - P5-2-3

5.3 Ethernet I/O Expansion Unit P5-3-1

- ET-87P2/87P4/87P8 - P5-3-4

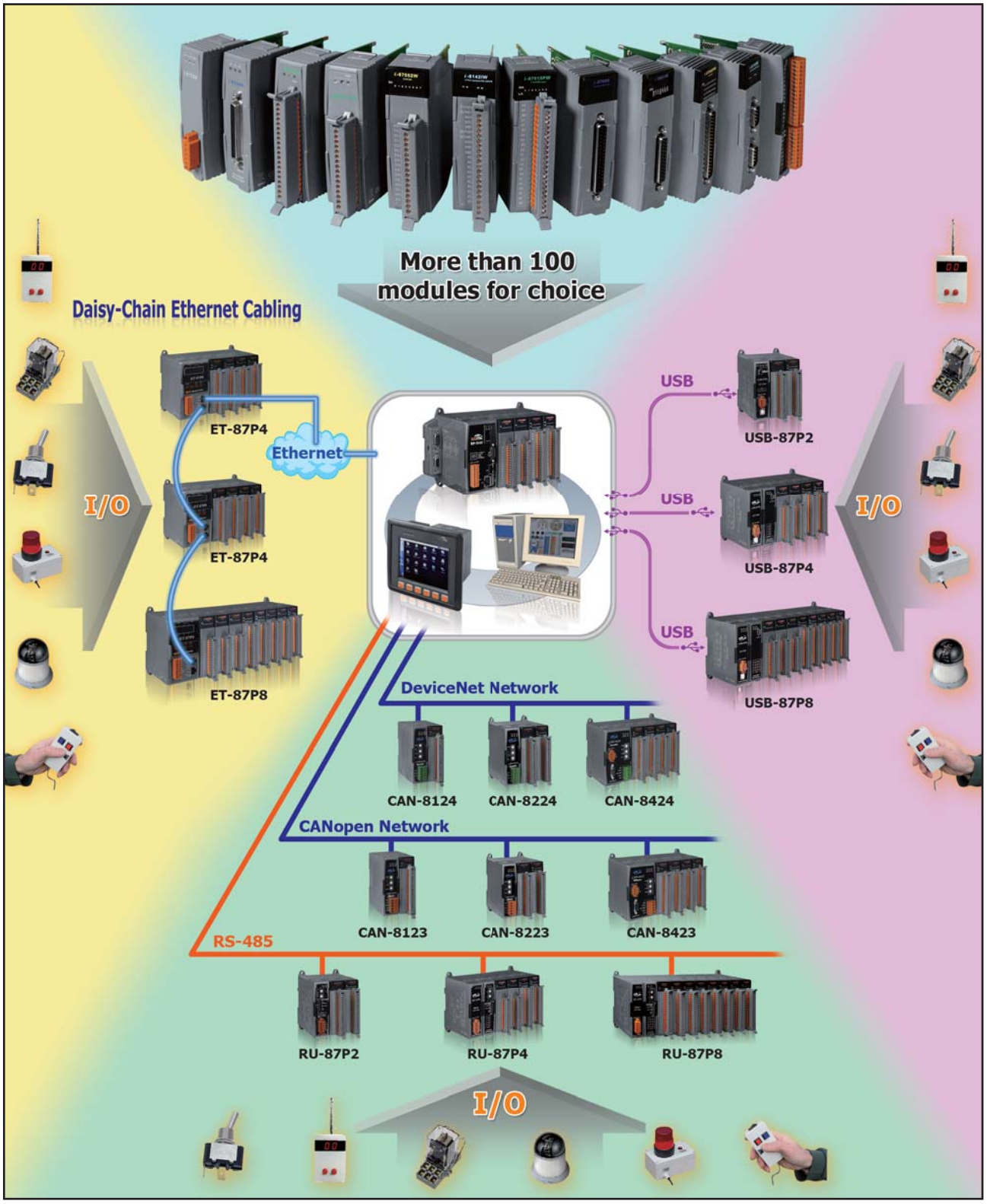
5.4 USB I/O Expansion Unit P5-4-1

- USB-87P1/87P2/87P4/87P8- P5-4-3

5.1. I/O Expansion Units Overview

• Overview

ICP DAS lunches a series of remote I/O unit for industrial monitoring and controlling applications. With the auto configuration and hot swap features, the unit can eliminate your nightmare of extensive labor on the set-up and maintenance of the automation system. The available I/O modules are also highly flexible and compatible for every kind of application to reduce your inventory of different types of I/O modules. Furthermore, there are various communication interface and protocols for choice in various remote I/O applications.

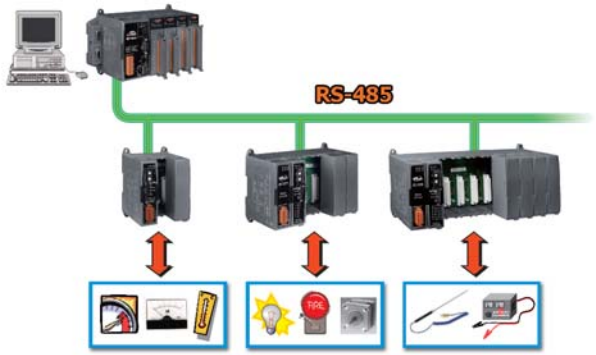


5.2. RS-485 I/O Expansion Unit

• RU-87Pn Introduction

The RU-87Pn series RS-485 remote I/O expansion unit is designed to acquire and control remote I/O through RS-485 connections. It comprises

- A CPU module with none-volatile memory to backup/restore I/O module configurations; LED indicators to diagnose the I/O module; and a RS-485 port for 1.2 Km long distance communication.
- A power module
- A backplane with a number of I/O slots for flexible I/O configuration.



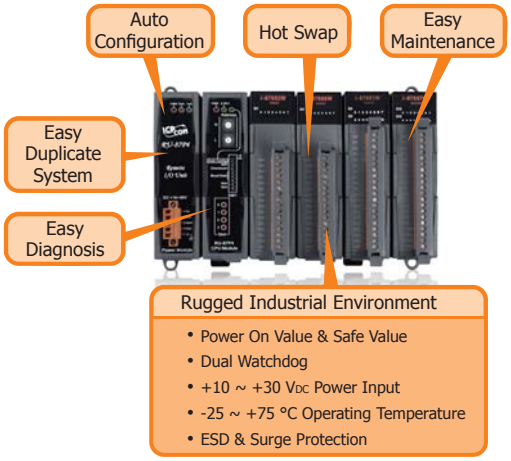
With its patent-pending technologies, namely auto configuration and hot swap, it saves lots of labor on the set up and maintenance of the automation systems. Reliable 3-piece construction enables users to hot swap modules during operation, without rewiring. All I/O module data are backed up in the non-volatile memory of the RU-87Pn. After hot-swapping a module, all settings are automatically loaded to recover.

Furthermore, with the RS-485 network communication interface and more than 30 I/O modules for choice, users can apply the unit to nearly any automation system.

• Features

1. Hot Swap

Reliable 3-piece construction enables users to hot swap modules during operation, without rewiring. All I/O module data are backed up in the non-volatile memory of the RU-87Pn. After hot-swapping a module, all settings are automatically loaded to recover.



2. Auto Configuration

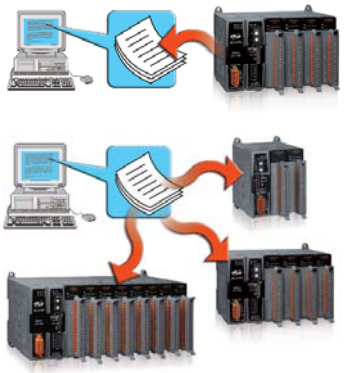
The I-87K I/O modules can be pre-configured and backed up in the non-volatile memory of the RU-87Pn. When the RU-87Pn is power on or plugged in, the RU-87Pn will automatically checks and restores these configurations to each I-87K I/O modules on it.

3. Easy Duplicate System

Using the DCON Utility, you can easily make a backup of the I-87K module configurations and write to another RU-87Pn. This design can easily and quickly duplicate many RU-87Pn.

4. Easy Maintenance and Diagnosis

The basic configurations (includes station number, baudrate) are set by the rotary and DIP switches. The operator can use only one screwdriver to set the RU-87Pn. And there are several LED status indicators to show whether I-87K modules are configured and work properly.



If one I-87K module fails, the operator just needs to replace it with one good I-87K module with the same item number. And then checks the LED indicators to know whether the replacement is performed correctly. The switch and LED design makes it easy for maintenance. There is no PC and Notebook needed.

5. Communication

- RS-485 industrial multi-drop network
  The RU-87Pn uses the industrial EIA RS-485 communication to transmit and receive data over long distance (1.2 Km).
- DCON protocol
  I-87K series I/O modules plugged in a RU-87Pn provides a simple command/response protocol (named DCON protocol) for communication. All command/response are in easy use ASCII format.

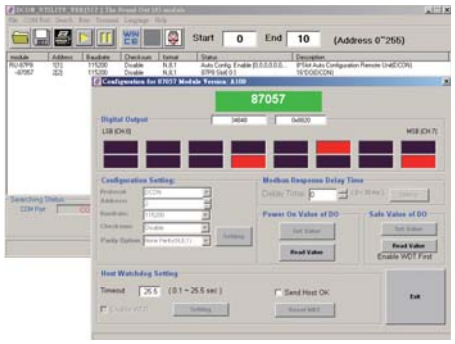
6. Rugged Industrial Environment

- Dual watchdog design
  The I-87K series I/O modules provides module watchdog and host watchdog. The module watchdog is a hardware watchdog; the host watchdog is a software watchdog. The module watchdog is designed to automatically reset the microprocessor when the module hangs. The host watchdog monitors the host controller (PC or PLC). The output of module can go to the safe value state when the host fails.
- Programmable Power On Value & Safe Value
  The DO and AO type I-87K I/O modules provide programmable Power On Value & Safe Value. When RU-87Pn is power on or plugged in, the DO or AO modules output preconfigured Power On Value. When host watchdog is acted, DO or AO modules output preconfigured Safe Value.
- Wide range power input (10 ~ 30 V_{DC})
- Wide range operating temperature (-25 ~ +75°C)

7. Fully Software Support

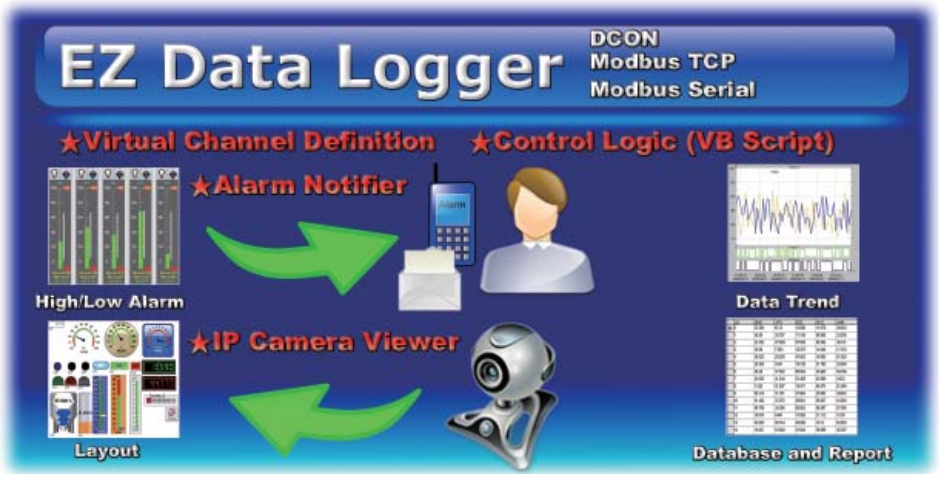
The free charge software utility and development kits include

- DCON Utility: for configuration



- OPC Servers:
  OPC is an industrial standard interface based on OLE technology. With the OPC server, I/O modules can be easily integrated to any software that has OPC client capability.

8. EZ Data Logger



EZ Data Logger is a small data logger software. It can be applied to small remote I/O system. With its user-friendly interface, users can quickly and easily build a data logger software without any programming skill.

9. Various Software Develop Toolkits

DLL, ActiveX, Labview driver, Indusoft driver, DasyLab driver, Linux driver

Highlight Information

- One RS-485 Port for Multi-Drop Topology
- Hot Swap Allowed
- Auto Configuration
- LED Indicators for Fault Detection
- Switches to Configure Communication
- DCON Protocol
- 1/2/4/8 I/O Slots for I-87K Modules
- Operating Temperature: -25 ~ +75 °C

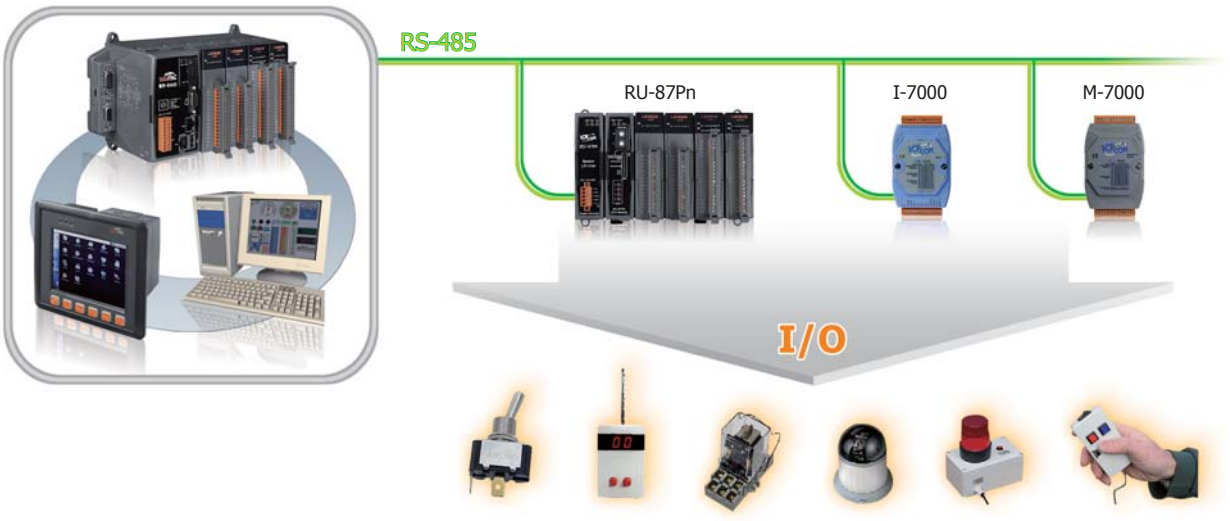
Introduction

RU-87Pn series is a remote intelligent I/O expansion unit to expand I-87K series I/O modules over the RS-485 for industrial monitoring and controlling applications.
RU-87Pn is designed to be used in harsh and noisy environment, so the hardware is manufactured with wide power input range (10 ~ 30 VDC), isolated power input and can operate under wide temperature (-25 ~ +75 °C). To simplify installation and maintenance of I/O modules, it provides many useful features, such as: hot swap allowed, auto configuration, LED indicators for fault detection, dual watchdog to keep alive, programmable power on and safe values for safety.

There are more than 30 I/O modules supported with the unit, including analog input/output, digital input/output, counter, frequency I/O modules. We provide various software development kits (SDK) and demos, such as DLL, ActiveX, Labview driver, InduSoft driver, Linux driver, OPC server, etc. The I-87K series I/O modules plugged in the RU-87Pn can be easily integrated into variant software system.

Applications

Rich I/O Expansion Ability

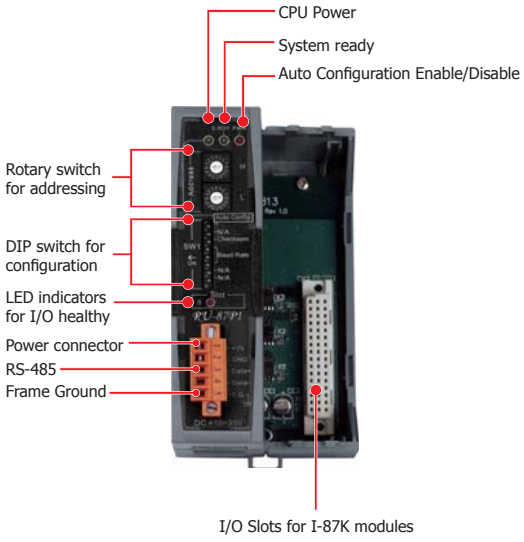


Specifications

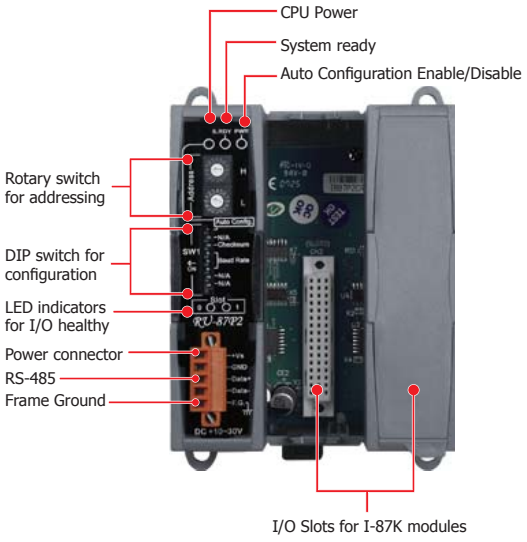
Models	RU-87P1	RU-87P2	RU-87P4	RU-87P8
Interface Type (RS-485)				
Baud Rate	115200 bps maximum			
Distance	1.2 km (4000 ft) maximum			
Isolation	3000 V_{DC}			
ESD Protection	+/-4 K Contact Discharge and +/-8 K Air Discharge			
Communication Protocol	DCON Protocol (ASCII Format)			
Switch				
Rotary Switch	x2, For RS-485 address			
DIP Switch	8-bit × 1, For auto configuration, check sum and baud rate			
LED Indicators				
Power	Yes			
System Ready	Yes			
Auto Configuration	Yes			
Slot Status	Yes			
I/O Expansion Slots				
Hot Swap	Yes			
Auto Configuration	Yes			
Support Module Type	High profile I-87K module only			
Slots Numbers	1	2	4	8
Mechanical				
Dimensions (W x L x H)	64 mm x 120 mm x 110 mm	95 mm x 132 mm x 111 mm	188 mm x 132 mm x 111 mm	312 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}			
Reverse Polarity Protection	Yes			
Isolation	1000 V_{DC}			
Frame Ground	Yes			
Consumption	1 W	1 W	2 W	2.4 W
Power Board Driving	5 W	8 W	30 W	30 W

Appearance

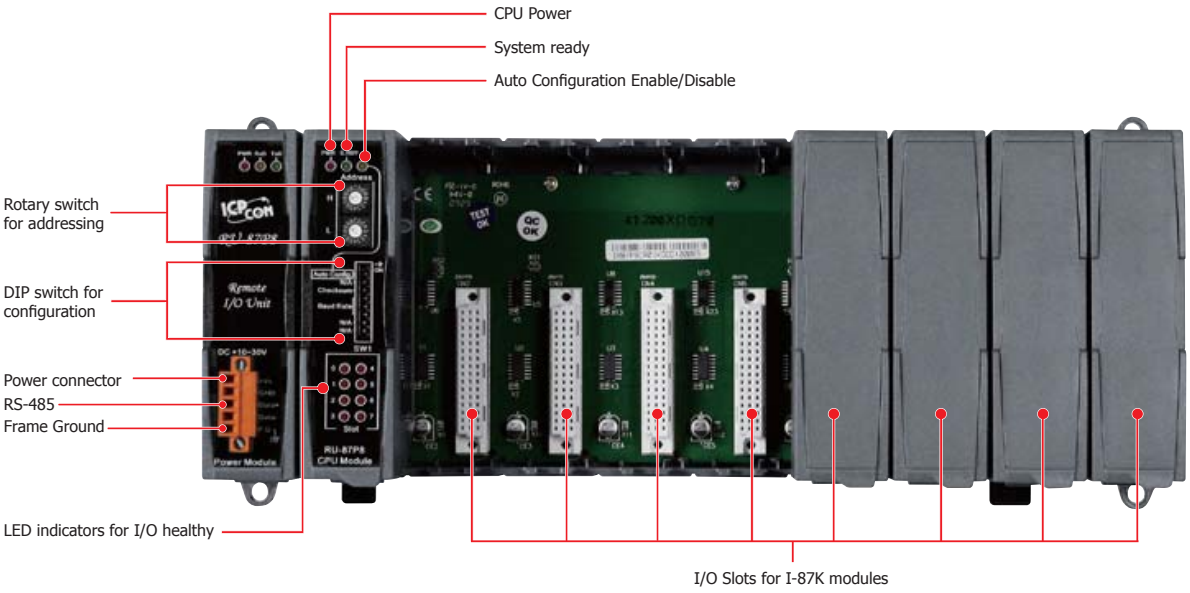
RU-87P1



RU-87P2



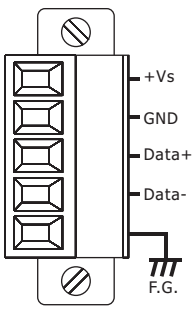
RU-87P8



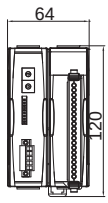
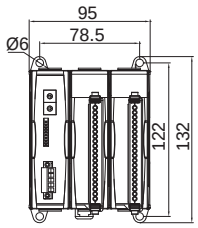
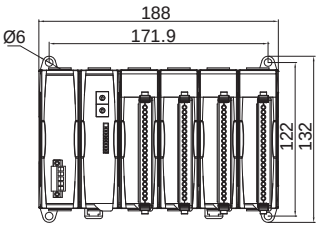
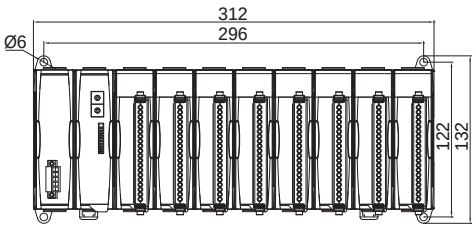
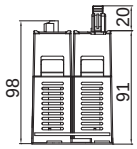
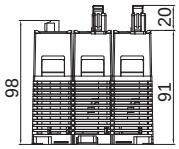
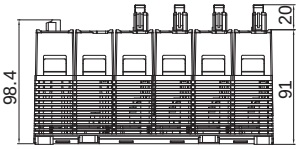
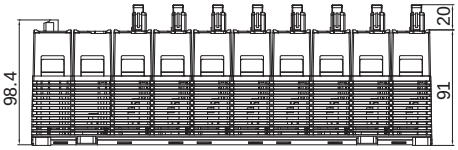
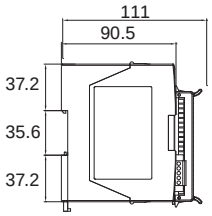
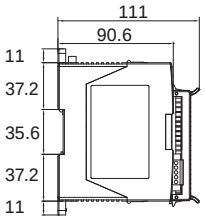
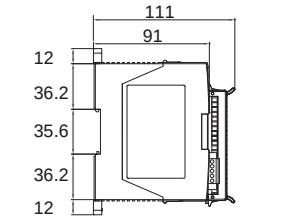
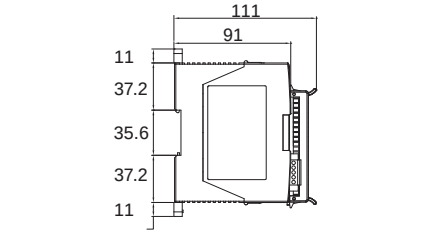
Pin Assignments

RU-87Px Terminal Block

PWR: +10 ~ 30 V_{DC}
RS-485



Dimensions (Units: mm)

RU-87P1	RU-87P2	RU-87P4	RU-87P8
			
Front View	Front View	Front View	Front View
			
Top View	Top View	Top View	Top View
			
Right Side View	Right Side View	Right Side View	Right Side View

Ordering Information

RU-87P1 CR	1 slot I/O Expansion Unit (RoHS)
RU-87P2 CR	2 slots I/O Expansion Unit (RoHS)
RU-87P4 CR	4 slots I/O Expansion Unit (RoHS)
RU-87P8 CR	8 slots I/O Expansion Unit (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)
MDR-20-24 CR	24 V_{DC}/1.0 A, 24 W Power Supply with DIN-Rail Mounting (RoHS)
I-7560 CR	USB to RS-232 Converter (RoHS)

5.3. Ethernet I/O Expansion Unit

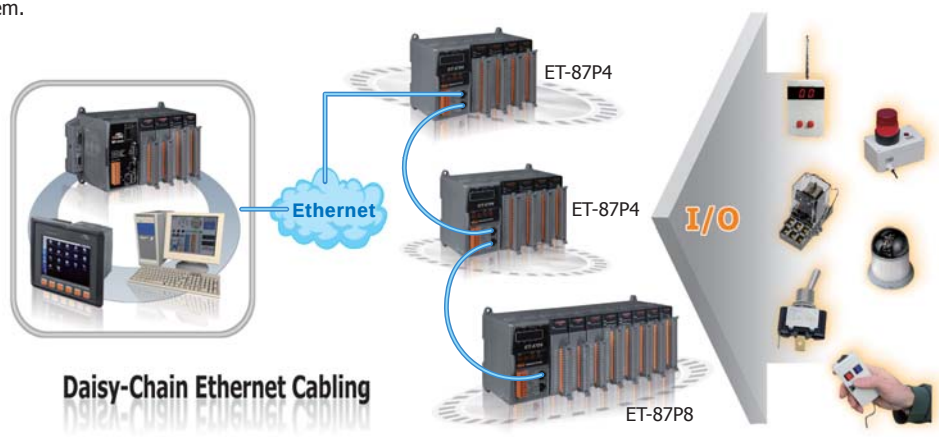
Introduction

The ET-87Pn series Ethernet remote I/O expansion unit is designed to acquire and control remote I/O through Ethernet connections. It comprises

- A CPU module with none-volatile memory to backup/restore I/O module configurations; LED indicators to diagnose the I/O module; and a two-port Ethernet switch for long distance communication.
- A power module
- A backplane with a number of I/O slots for flexible I/O configuration.

With its patent-pending technologies, namely auto configuration and hot swap, it saves lots of labor on the set up and maintenance of the automation systems. Reliable 3-piece construction enables users to hot swap modules during operation, without rewiring. All I/O module data are backed up in the non-volatile memory of the ET-87Pn. After hot-swapping a module, all settings are automatically loaded to recover.

Furthermore, with the Ethernet network communication interface and more than 30 I/O modules for choice, users can apply the unit to nearly any automation system.



Features

1. Hot Swap

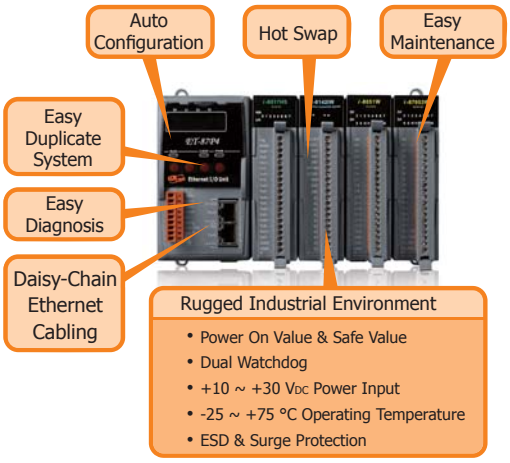
Reliable 3-piece construction enables users to hot swap modules during operation, without rewiring. All I/O module data are backed up in the non-volatile memory of the ET-87Pn. After hot-swapping a module, all settings are automatically loaded to recover.

2. Auto Configuration

The I-87K I/O modules can be pre-configured and backed up in the non-volatile memory of the RU-87Pn. When the ET-87Pn is power on or plugged in, the ET-87Pn will automatically checks and restores these configurations to each I-87K I/O modules on it.

3. Easy Duplicate System

Using the DCON Utility, you can easily make a backup of the I-87K module configurations and write to another RU-87Pn. This design can easily and quickly duplicate many ET-87Pn.



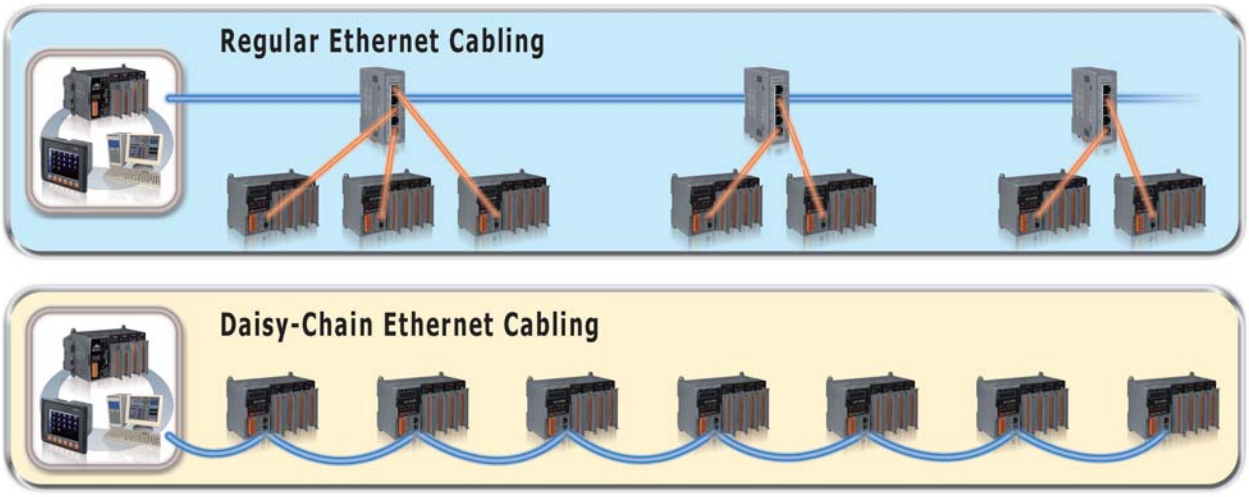
4. Easy Maintenance and Diagnosis

The basic configurations (includes IP settings) are set by the push buttons and 7-segment LED display. The operator can easily set the ET-87Pn. And there are several LED status indicators to show whether I-87K modules are configured and work properly.

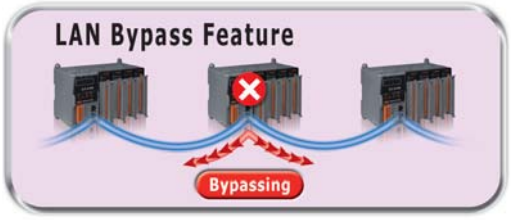
If one I-87K module fails, the operator just needs to replace it with one good I-87K module with the same item number. And then checks the LED indicators to know whether the replacement is performed correctly. The push buttons and LED display design makes it easy for maintenance. There is no PC and Notebook needed.

5. Communication

- Daisy-Chain Ethernet topology
  The ET-87Pn has a built-in two-port Ethernet switch to implement daisy-chain topology. The cabling is much easier and total costs of cable and switch are significantly reduced.



- LAN Bypass Feature
  LAN Bypass feature guarantees the Ethernet communication. It will automatically active to continue the network traffic when ET-87Pn looses its power.



- DCON protocol
  I-87K series I/O modules plugged in a ET-87Pn provide a simple command/response protocol (Called DCON protocol) for communication.
  All command/response are in easy used ASCII format.

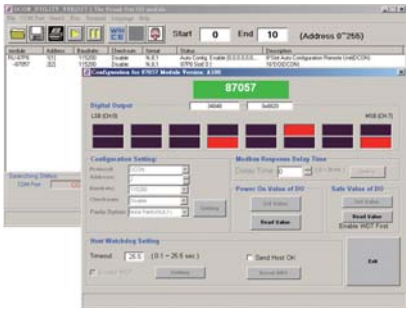
6. Rugged Industrial Environment

- Dual watchdog design
  The I-87K series I/O modules provides module watchdog and host watchdog. The module watchdog is a hardware watchdog; the host watchdog is a software watchdog. The module watchdog is designed to automatically reset the microprocessor when the module hangs. The host watchdog monitors the host controller (PC or PLC). The output of module can go to the safe value state when the host fails.
- Programmable Power On Value & Safe Value
  The DO and AO type I-87K I/O modules provide programmable Power On Value & Safe Value. When RU-87Pn is power on or plugged in, the DO or AO modules output preconfigured Power On Value. When host watchdog is acted, DO or AO modules output preconfigured Safe Value.
- Wide range power input (10 ~ 30 V_{DC})
- Wide range operating temperature (-25°C ~ +75°C)

7. Fully Software Support

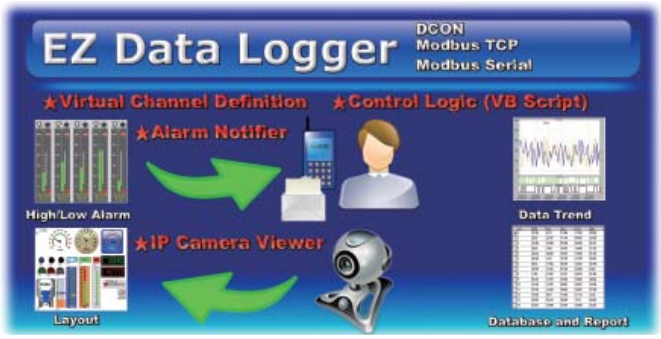
The free charge software utility and development kits include

- DCON Utility: for configuration
- OPC Servers:
  OPC is an industrial standard interface based on OLE technology.
  With the OPC server, I/O modules can be easily integrated to any software that has OPC client capability.



8. EZ Data Logger

EZ Data Logger is a small data logger software. It can be applied to small remote I/O system. With its user-friendly interface, users can quickly and easily build a data logger software without any programming skill.



9. Various Software Develop Toolkits

DLL, ActiveX, Labview driver, Indusoft driver, DasyLab driver, Linux driver

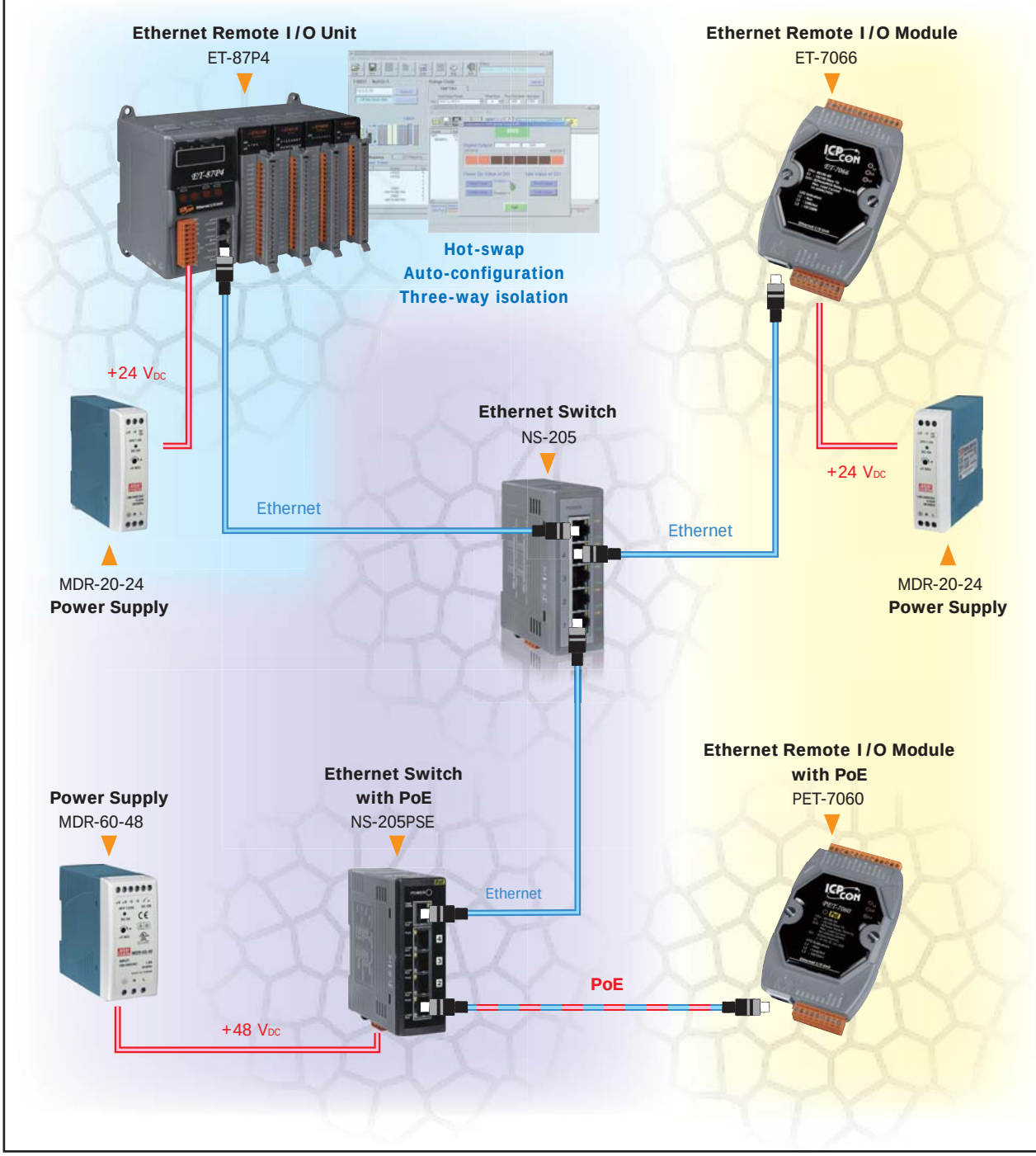
Ethernet Remote I/O unit & I/O Module

Ethernet Remote I/O Unit

The ET-87Pn series, Ethernet remote I/O unit, consists of a power supply, CPU module and a backplane with 4, 8 I/O expansion slots. The ET-87Pn unit supports DCON protocol and has a 10/100 Base-T port to connect to the main control unit directly or via Ethernet switch.

Ethernet Remote I/O Module

Both of ET-7000 series and PET-7000 series, Ethernet remote I/O module, support Modbus protocol. Those remote I/O modules are equipped with a 10/100 Base-T port, which link the remote I/O modules to the main control unit directly or via switch. PET-7000 series needs a PoE switch, such as NS-205PSE.



Highlight Information

- Two Ethernet Ports for Daisy-Chain Topology
- LAN Bypass Feature
- Hot Swap Allowed
- Auto Configuration
- LED Indicators for Fault Detection
- Push Buttons to Configure IP Address
- DCON Protocol
- 2/4/8 I/O Slots for I-87K Modules
- Operating Temperature: -25 ~ +75 °C

Introduction

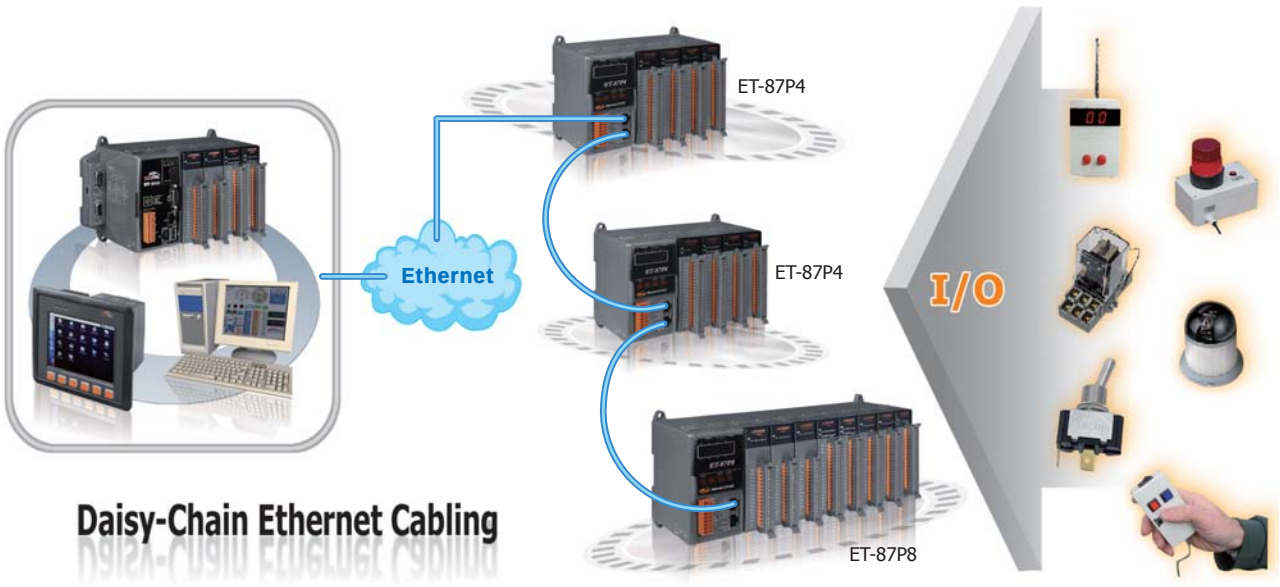
ET-87Pn series is a remote intelligent I/O expansion unit to expand I-87K series I/O modules over the Ethernet for industrial monitoring and controlling applications. It offers two Ethernet switch ports to form a daisy-chain topology. The daisy-chain feature allows ET-87Pn to connect in series to each other or other Ethernet devices. Uses can easily simplify the cabling and save installation space with the feature.

ET-87Pn is designed to be used in harsh and noisy environment, so the hardware is manufactured with wide power input range (10 ~ 30 VDC), isolated power input and can operate under wide temperature (-25 ~ +75 °C). To simplify installation and maintenance of I/O modules, it provides many useful features, such as: hot swap allowed, auto configuration, LED indicators for fault detection, dual watchdog to keep alive, programmable power on and safe values for safety.

There are more than 30 I/O modules supported with the unit, including analog input/output, digital input/output, counter, frequency I/O modules. We provide various software development kits (SDK) and demos, such as DLL, ActiveX, Labview driver, InduSoft driver, Linux driver, OPC server, etc. The I-87K series I/O modules plugged in the ET-87Pn can be easily integrated into variant software system.

Applications

Rich I/O Expansion Ability

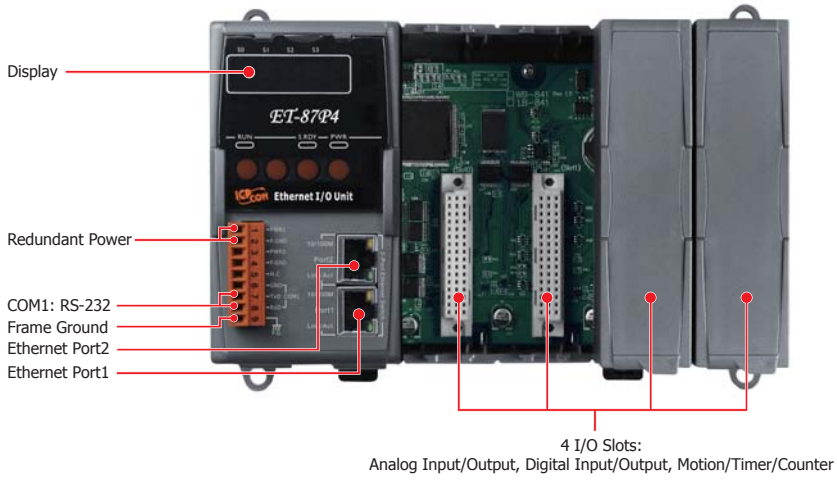


Specifications

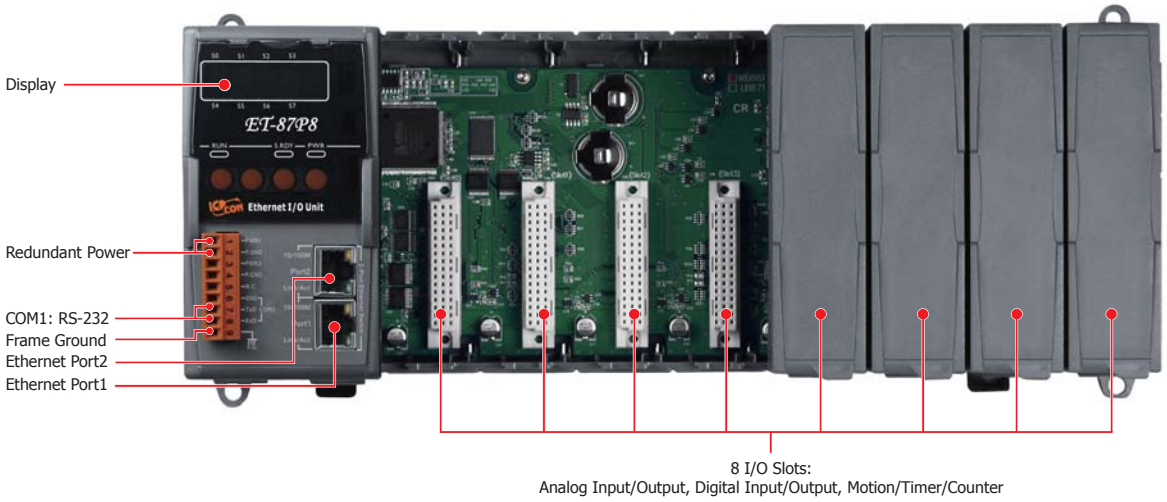
Models	ET-87P2	ET-87P4	ET-87P8
Interface Type: Ethernet			
Port	RJ-45 × 2 10/100Base-TX (Auto-negotiating, Auto MDI/MDI-X, LED indicators)		
Cabling	Daisy-Chain Ethernet Cabling		
Isolation	1500 V_{DC}		
ESD Protection	+/- 4 K Contact Discharge and +/- 8 K Air Discharge		
Communication Protocol	DCON Protocol (ASCII format)		
LED Display/Indicators			
Power	Yes		
System Ready	Yes		
Auto Configuration	Yes		
Slot Status	Yes		
IP Address	Yes (with push buttons to configure IP address)		
I/O Expansion Slots			
Hot Swap	Yes		
Auto Configuration	Yes		
Support Module Type	High profile I-87K module only		
Slots Numbers	2	4	8
Mechanical			
Dimensions (W x H x D)	126 mm x 132 mm x 111 mm	188 mm x 132 mm x 111 mm	312 mm x 132 mm x 111 mm
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}		
Redundant Input	Yes		
Reverse Polarity Protection	Yes		
Isolation	1000 V_{DC}		
Frame Ground	Yes		
Consumption	2 W	2 W	2.4 W
Power Board Driving	30 W		

Appearance

ET-87P4

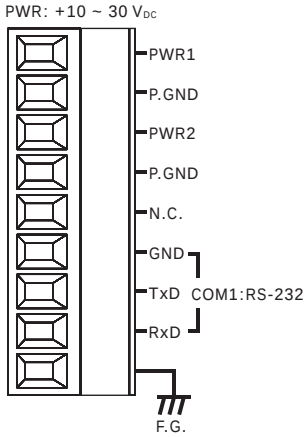


ET-87P8

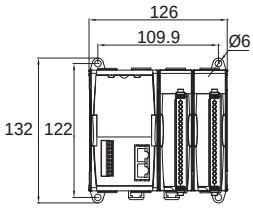
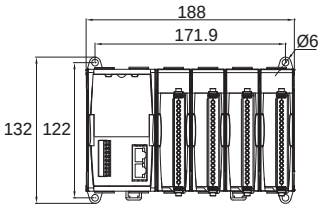
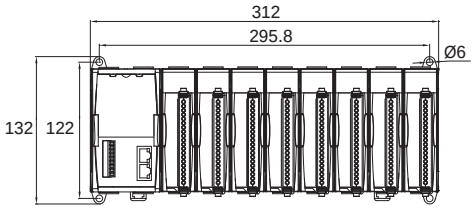
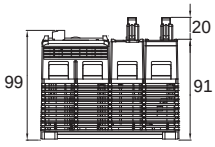
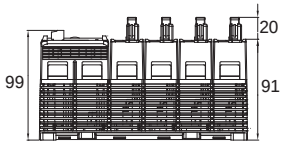
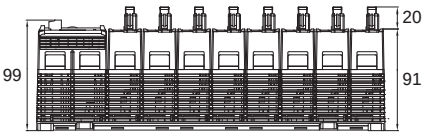
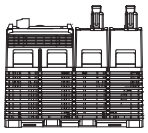
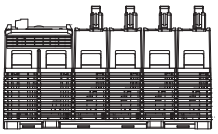
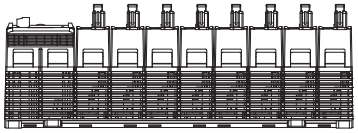
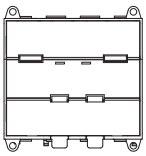
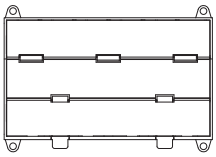
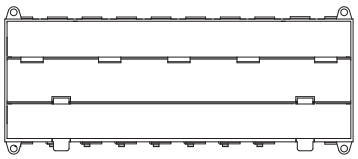
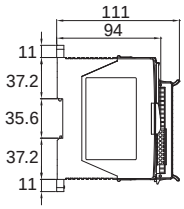
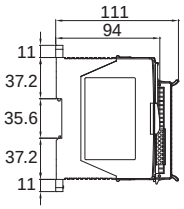
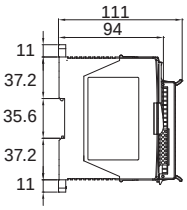
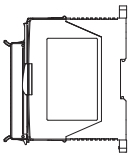
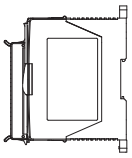
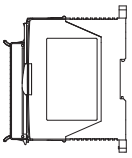


Pin Assignments

ET-87P2/ET-87P4/ET-87P8 Terminal Block



Dimensions (Units: mm)

ET-87P2	ET-87P4	ET-87P8
		
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	Left Side View	Left Side View
		
Right Side View	Right Side View	Right Side View

Ordering Information

ET-87P2 CR	2 slots I/O Expansion Unit
ET-87P4 CR	4 slots I/O Expansion Unit
ET-87P8 CR	8 slots I/O Expansion Unit

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)
MDR-20-24 CR	24 V_{DC}/1.0 A, 24 W Power Supply with DIN-Rail Mounting (RoHS)
I-7560 CR	USB to RS-232 Converter (RoHS)

5.4. USB I/O Expansion Unit

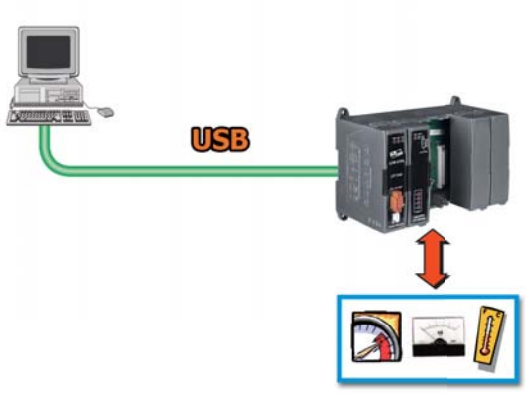
• Introduction

The USB-87Pn series USB I/O expansion unit is designed to acquire and control I/O through USB connections. It comprises

- A CPU module with none-volatile memory to backup/restore I/O module configurations; LED indicators to diagnose the I/O module; and a USB port for communication.
- A power module
- A backplane with a number of I/O slots for flexible I/O configuration.

With its patent-pending technologies, namely auto configuration and hot swap, it saves lots of labor on the set up and maintenance of the automation systems. Reliable 3-piece construction enables users to hot swap modules during operation, without rewiring. All I/O module data are backed up in the non-volatile memory of the USB-87Pn. After hot-swapping a module, all settings are automatically loaded to recover.

Furthermore, with the USB communication interface and more than 30 I/O modules for choice, users can apply the unit to nearly any automation system.



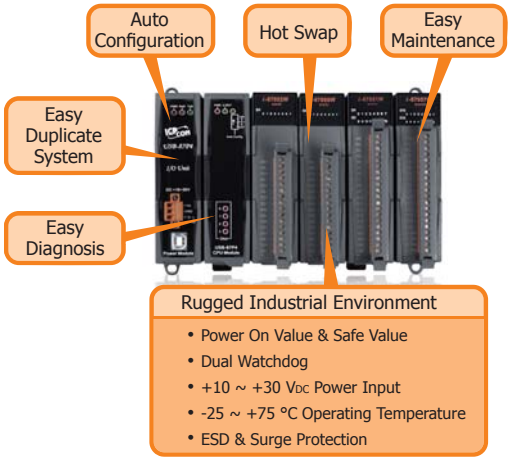
• Features

1. Hot Swap

Reliable 3-piece construction enables users to hot swap modules during operation, without rewiring. All I/O module data are backed up in the non-volatile memory of the USB-87Pn. After hot-swapping a module, all settings are automatically loaded to recover.

2. Auto Configuration

The I-87K I/O modules can be pre-configured and backed up in the non-volatile memory of the RU-87Pn. When the USB-87Pn is power on or plugged in, the USB-87Pn will automatically checks and restores these configurations to each I-87K I/O modules on it.



3. Easy Diagnosis System

Using the DCON Utility, you can easily make a backup of the I-87K module configurations and write to another USB-87Pn. This design can easily and quickly duplicate many USB-87Pn.

4. Easy Maintenance and Diagnosis

There are several LED status indicators to show whether I-87K modules are configured and work properly.

If one I-87K module fails, the operator just needs to replace it with one good I-87K module with the same item number. And then checks the LED indicators to know whether the replacement is performed correctly. The LED indicator design makes it easy for maintenance. There is no PC and Notebook needed.

5. Communication

- USB network
  The USB network connects the USB-87Pn to regular PC and notebook without any other media converter.

- DCON protocol
  I-87K series I/O modules plugged in a USB-87Pn provides a simple command/response protocol (named DCON protocol) for communication. All command/response are in easy use ASCII format.

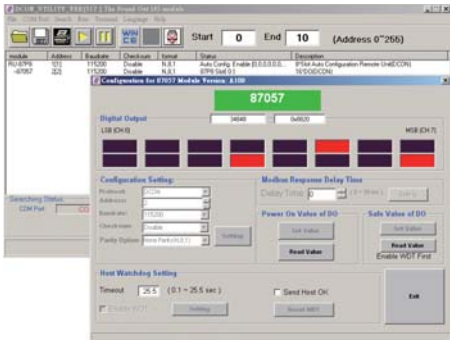
6. Rugged Industrial Environment

- Dual watchdog design
  The I-87K series I/O modules provides module watchdog and host watchdog. The module watchdog is a hardware watchdog; the host watchdog is a software watchdog. The module watchdog is designed to automatically reset the microprocessor when the module hangs. The host watchdog monitors the host controller (PC or PLC). The output of module can go to the safe value state when the host fails.
- Programmable Power On Value & Safe Value
  The DO and AO type I-87K I/O modules provide programmable Power On Value & Safe Value. When USB-87Pn is power on or plugged in, the DO or AO modules output preconfigured Power On Value. When host watchdog is acted, DO or AO modules output preconfigured Safe Value.
- Wide range power input (10 ~ 30 V_{DC})
- Wide range operating temperature (-25°C ~ +75°C)

7. Fully Software Support

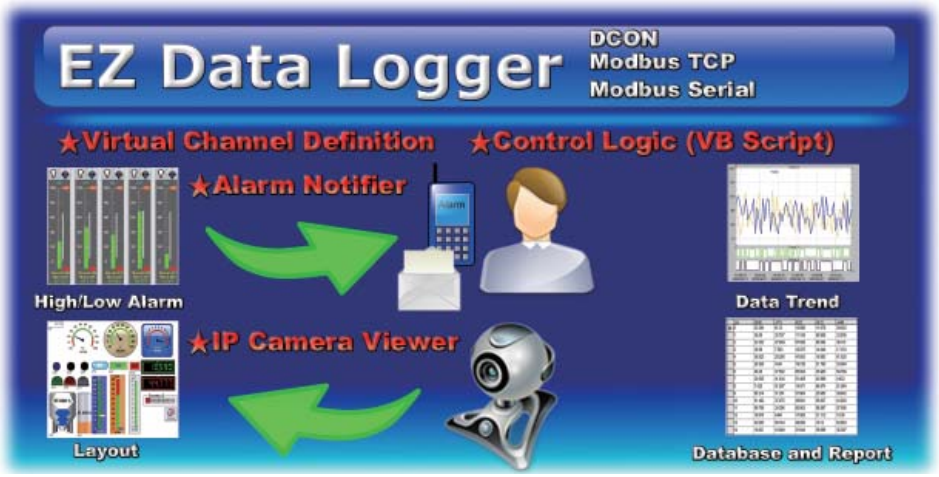
The free charge software utility and development kits include

- DCON Utility: for configuration



- OPC Servers:
  OPC is an industrial standard interface based on OLE technology. With the OPC server, I/O modules can be easily integrated to any software that has OPC client capability.

8. EZ Data Logger



EZ Data Logger is a small data logger software. It can be applied to small remote I/O system. With its user-friendly interface, users can quickly and easily build a data logger software without any programming skill.

9. Various Software Develop Toolkits

DLL, ActiveX, Labview driver, Indusoft driver, DasyLab driver, Linux driver

Highlight Information

- One USB Port
- Hot Swap Allowed
- Auto Configuration
- LED Indicators for Fault Detection
- DCON Protocol
- 1/2/4/8 I/O Slots for I-87K Modules
- Operating Temperature: -25 ~ +75 °C

Introduction

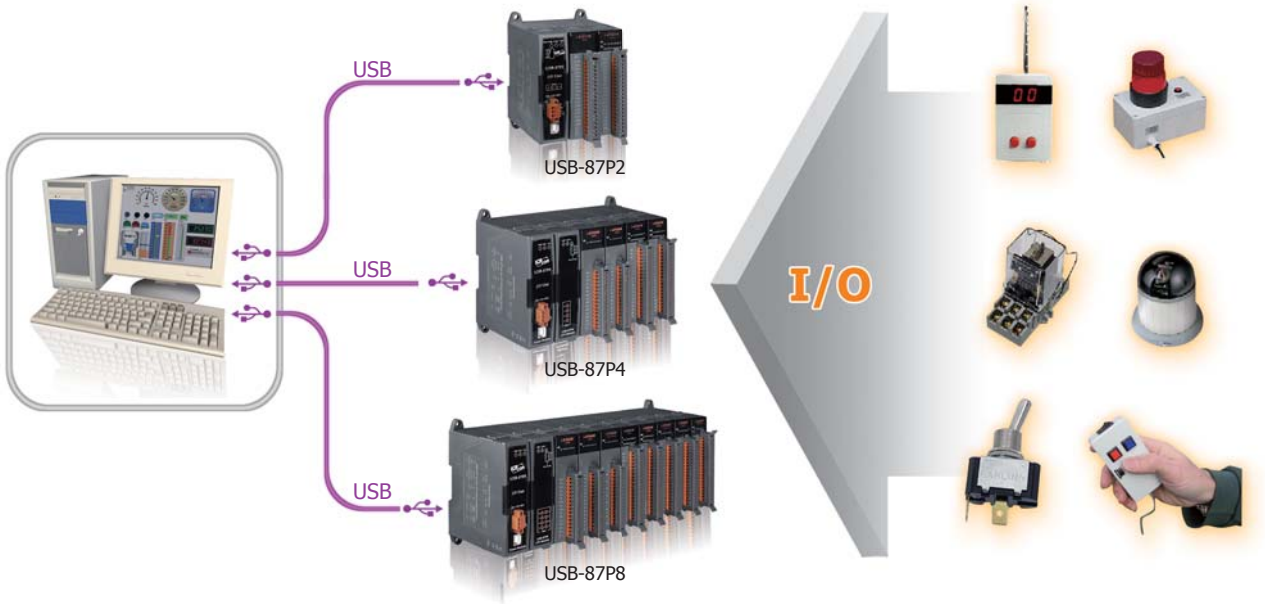
USB-87Pn series is an intelligent I/O expansion unit to expand I-87K series I/O modules over the USB for industrial monitoring and controlling applications.

USB-87Pn is designed to be used in harsh and noisy environment, so the hardware is manufactured with wide power input range (10 ~ 30 V_{DC}), isolated power input and can operate under wide temperature (-25 ~ +75 °C). To simplify installation and maintenance of I/O modules, it provides many useful features, such as: hot swap allowed, auto configuration, LED indicators for fault detection, dual watchdog to keep alive, programmable power on and safe values for safety.

There are more than 30 I/O modules supported with the unit, including analog input/output, digital input/output, counter, frequency I/O modules. We provide various software development kits (SDK) and demos, such as DLL, ActiveX, Labview driver, InduSoft driver, Linux driver, OPC server, etc. The I-87K series I/O modules plugged in the USB-87Pn can be easily integrated into variant software system.

Applications

Rich I/O Expansion Ability

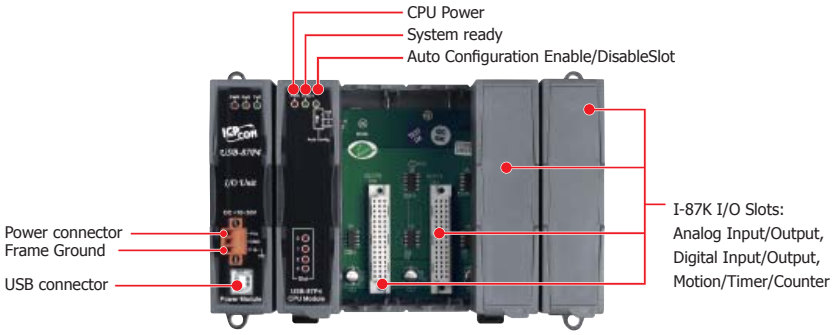


Specifications

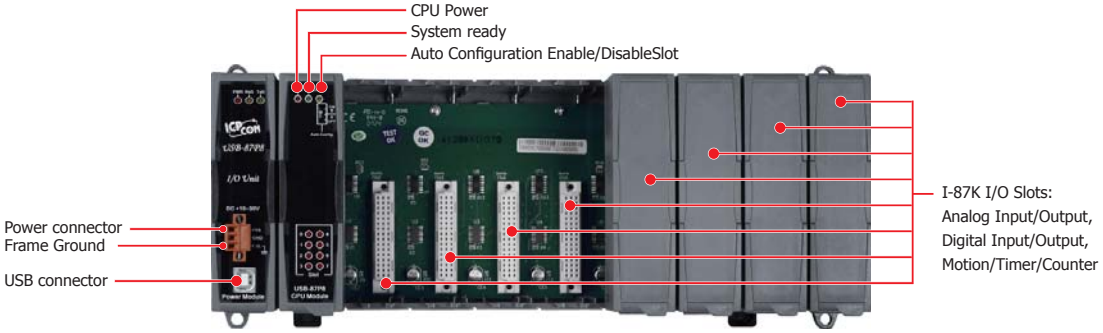
Models	USB-87P1	USB-87P2	USB-87P4	USB-87P8
Interface Type (Full speed with USB 1.1 specifications)				
Cable	USB type A connector			
Baud Rate	115200 bps Default			
Isolation	3000 V_{DC}			
ESD Protection	+/-4 K Contact Discharge and +/-8 K Air Discharge			
Communication Protocol	DCON Protocol (ASCII Format)			
Switch				
DIP Switch	8-bit × 1, For auto configuration			
LED Indicators				
Power	Yes			
System Ready	Yes			
Auto Configuration	Yes			
Slot Status	Yes			
I/O Expansion Slots				
Hot Swap	Yes			
Auto Configuration	Yes			
Support Module Type	High profile I-87K module only			
Slots Numbers	1	2	4	8
Mechanical				
Dimensions (W x L x H)	64 mm x 120 mm x 110 mm	95 mm x 132 mm x 111 mm	188 mm x 132 mm x 111 mm	312 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}			
Reverse Polarity Protection	Yes			
Isolation	1000 V_{DC}			
Frame Ground	Yes			
Consumption	1 W	1 W	2 W	2.4 W
Power Board Driving	5 W	8 W	30 W	

Appearance

USB-87P4



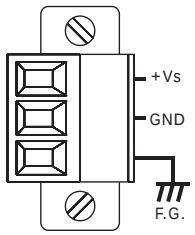
USB-87P8



Pin Assignments

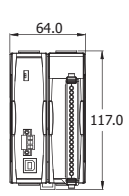
USB-87Px Terminal Block

+Vs: +10 ~ 30 VDC

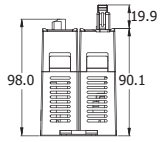


Dimensions (Units: mm)

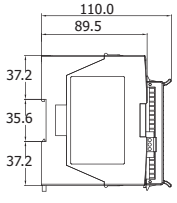
USB-87P1



Front View

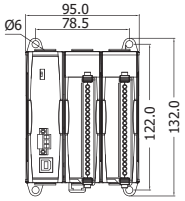


Top View

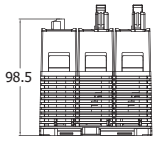


Right Side View

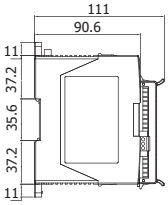
USB-87P2



Front View

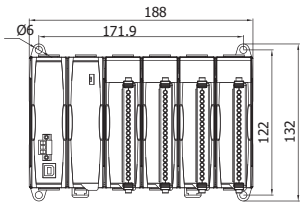


Top View

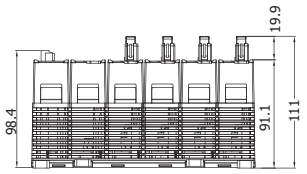


Right Side View

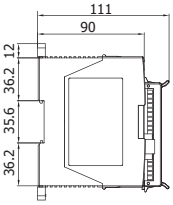
USB-87P4



Front View

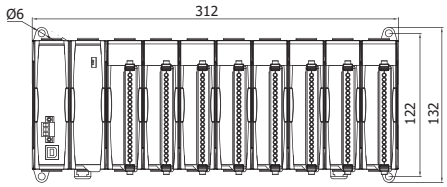


Top View

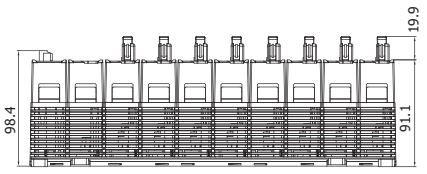


Right Side View

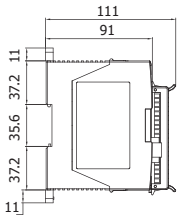
USB-87P8



Front View



Top View



Right Side View

Ordering Information

USB-87P1 CR	1 slot I/O Expansion Unit (RoHS)
USB-87P2 CR	2 slots I/O Expansion Unit (RoHS)
USB-87P4 CR	4 slots I/O Expansion Unit (RoHS)
USB-87P8 CR	8 slots I/O Expansion Unit (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-665	24 VDC/2.7 A, 65 W Power Supply with DIN-Rail Mounting
DP-1200 CR	24 VDC/5.0 A, 120 W Power Supply with DIN-Rail Mounting (RoHS)
MDR-20-24 CR	24 VDC/1.0 A, 24 W Power Supply with DIN-Rail Mounting (RoHS)
I-7560 CR	USB to RS-232 Converter (RoHS)

Industrial I/O Modules

6

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6.8	Serial Communication Modules (Parallel Bus)	P6-8-1
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6.1. I/O Modules

• Overview

There are two types of I/O modules, parallel and serial. Both type of the modules can be plugged into the slots of PAC series. But only the serial module can be used in remote I/O units, such as RU-87Pn and ET-87Pn. Up to now, over 100 I/O, communication and motion control modules are available. For the new generation PACs, only the high profile I-8KW and I-87KW I/O modules can be used.

1. Parallel I/O Modules (I-8KW Series) Includes

- High speed A/D: 100 k samples/second
- High speed D/A: 30 k (-10 ~ +10 V)
- High speed DI & DO: All Digital I/O modules provide visual indication of status via LED indicators
- High speed stepping/Servo motion control modules
- High speed encoder modules
- High performance Counter/Frequency modules
- High speed multi-channel RS-232/422/485 modules
- CAN bus communication modules
- FRnet communication modules

2. Serial I/O modules (I-87KW Series) Includes

- RTD Input modules
- Thermocouple Input modules
- Strain Gauge Input modules
- VW Input modules
- High resolution multi-channel Analog Input modules
- Isolated multi-channel D/A modules
- Digital Input and Digital Output modules with Latch and counter function
- Counter/Frequency modules

3. Comparison Table of I-8KW Series and I-87KW Series

Item	I-8KW Series	I-8KRW Series	I-87KW Series
Communication Interface	Parallel bus	Parallel bus	Serial bus
Protocol	-	-	DCON
DI with latched function	-	-	Y
DI with counter input	-	-	Y (100 Hz)
Power on value	-	Y	Y
Safe value	-	Y	Y
Programmable slew-rate for AO module	-	-	Y

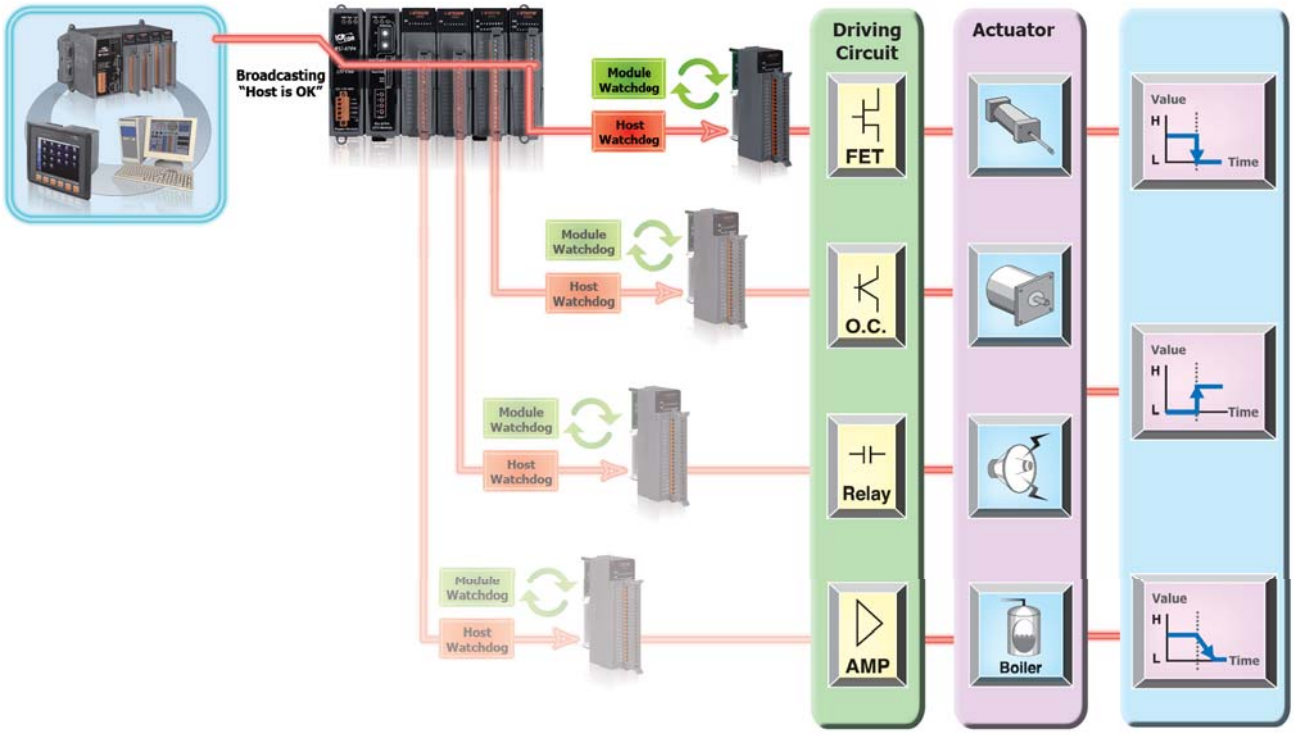
4. Supporting list of MCU (Main Control Unit) and I/O expansion unit:

Item	I-8K Series		I-87K Series	
	High Profile	Low Profile	High Profile	Low Profile
XPAC	Y	-	Y	-
WinPAC	Y	-	Y	-
LinPAC	Y	-	Y	-
iPAC	Y	-	Y	-
ViewPAC	Y	-	Y	-
RU-87P1/2/4/8	-	-	Y	-
USB-87P1/2/4/8	-	-	Y	-
ET-87P4/8	-	-	Y	-
I-8KE4/8	Y	Y	Y	Y
I-8KE4/8-MTCP	Y	Y	Y	Y
I-87K4/5/8/9	-	-	Y	Y

5. Hot features

Dual Watchdog Operation

The I-87K I/O modules include an internal Dual Watchdog. It is the combination of module watchdog and host watchdog. The module watchdog is a hardware watchdog designed to reset the micro-controller of the module when the module fails. This mechanism can keep the module work continuously without disruption. The host watchdog is a software watchdog that monitors the operating status of the host controller, such as PAC, PC... etc. When the host fails, the outputs of the module will be set to the safe values to prevent any erroneous operations. With Dual Watchdog, the control system is more reliable and stable.



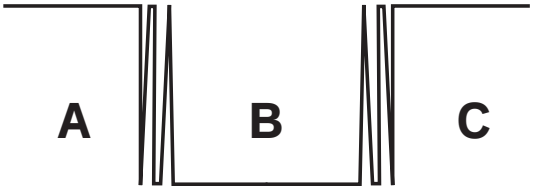
Power On Value and Safe Value of Digital / Analog Output

Besides setting by the set digital/analog output commands, the digital/analog outputs can be set under two other conditions. When the host watchdog is enabled and a host watchdog timeout occurs, the "safe value" is loaded into the digital/analog output ports. The set digital/analog output commands have no effect on the digital/analog output ports until the host watchdog timeout status is cleared. The host watchdog timeout status is saved in the EEPROM. The status is not changed even after power-on reset. It can be cleared only by the reset host watchdog timeout status command ~AA1. See Section A.2 for host watchdog details.

When the module is powered on and the host watchdog timeout status is cleared, the "power-on value" is loaded into the digital/analog output ports. If the host watchdog timeout status is not cleared on power-on, then the safe value is loaded into the digital/analog output ports. Both the safe value and power-on value are set by the ~AA5V command.

Latched Digital Input

The I-87K DIO modules provide commands to read the latched high digital input and latched low digital input status. Following is an example to show the usefulness of the latched digital input. When we want to read the key stroke of a key switch connected to the digital input channel of a module, the input signal of the key stroke is a pulse signal as shown in the following figure.



If we just use the read digital input status command to read the signal and we cannot send the command during the B period due to some reasons, then we will lose the key stroke information. However, with the read latched digital input command, we can still get the key stroke information even we are not able to send command in B period.

6.2. Analog Modules

• Selection Guide

Analog I/O Modules (Parallel Bus) Table 6-2-1

Models	I-8014W	I-8017HW	I-8017DW	I-8017HCW	I-8024W	I-8024DW
Pictures	NEW 		NEW 	NEW 		NEW 
Analog Input						
Channel	8/16	8/16			-	-
Wiring	Differential/ Single-ended	Differential/ Single-ended				
Range	±10 VDC, ±5 VDC, ±2.5 VDC, ±1.25 VDC -20 ~ +20 mA (Requires Optional External 125 Ω Resistor)	±10 VDC, ±5 VDC, ±2.5 VDC, ±-1.25 VDC ±20 mA (Requires Optional External 125 Ω Resistor)	±10 VDC, ±5 VDC, ±2.5 VDC, ±-1.25 VDC ±20 mA (Jumper Select)		-	-
Resolution	16-bit	14-bit			-	-
Accuracy	0.05% of FSR	±0.1% of FSR			-	-
Sampling Rate	Single Channel Polling Mode: 250 k S/s	Single Channel Polling Mode: 100 k S/s Single Channel Interrupt Mode: 50 k S/s 8 channel Scan Mode : 16 k S/s			-	-
Input Impedance	20 k, 200 k, 20 M (Jumper Select)	20 k, 200 k, 20 M (Jumper Select)			-	-
Over Voltage Protection	-45 ~ +60 VDC	±35 VDC			-	-
Analog Output						
Channel	-	-			4	
Range	-	-			±10 VDC, 0 ~ +20 mA	
Resolution	-	-			14-bit	
Accuracy	-	-			±0.1% of FSR for voltage output ; ±0.2% of FSR for current output	
Throughput	-	-				
Output Capacity	-	-			20 mA @ 10 VDC	
Power on Value	-	-			-	
Safe Value	-	-			-	
System						
Watchdog	-	-			-	
Isolation	2500 Vrms	2500 Vrms			3000 VDC	
Power Consumption	2.5 W	2 W			2 W	
Connector	Terminal Block	Terminal Block	D-Sub 37	Terminal Block	Terminal Block	D-Sub 37
Optional Accessories	-	-	DN-37-381-A	-	-	DN-37-381-A

I/O module with DN-37-381-A

• Selection Guide

Analog Input Modules (Serial Bus) Table 6-2-2

Models	I-87005W	I-87013W	I-87015W	I-87015PW
Pictures	NEW 			
Sensor Type	Precon ST-A3, Fenwell U, YSI L100, YSI L300, YSI L1000, YSI B2252, YSI B3000, YSI B5000, YSI B6000, YSI B10000, YSI H10000, YSI H30000, User-defined	Pt100, Pt1000, Cu50, Ni120	Pt100, Pt1000, Ni120, Cu50, Cu100, Cu1000	
Channel	8	4	7	
Wiring	2 Wires	2/3/4 Wires	2/3 Wire	
Resolution	16-bit	16-bit	16-bit	
Accuracy	±0.1% of FSR	±0.1% of FSR	±0.05% of FSR	
Sampling Rate	8 Hz (Total)	10 Hz (Total)	12 Hz (Total)	
Individual Channel Configurable	Yes	Yes	Yes	
3-wire RTD lead resistance elimination	-	Yes	-	Yes
Resistance Measurement	200 kΩ	3.2 kΩ	3.2 kΩ	
Open Wire Detection	Yes	Yes	Yes	
Over Voltage Protection	±120 V_{DC} /110 V_{AC}	±20 V_{DC}	±20 V_{DC}	±110 V_{DC}
4KV ESD Protection	Yes	Yes	Yes	
System				
Dual Watchdog	Yes	Yes	Yes	
Isolation	3000 V_{DC}	3000 V_{DC}	3000 V_{DC}	
Power Consumption	1 W	0.8 W	1 W	
Connector	Terminal Block	Terminal Block	Terminal Block	
Optional Accessories	-	-	-	-

■ **3-wire RTD lead resistance elimination**
With the feature, the line resistance of the RTD cable is eliminated regardless the length of the RTD cable for 3-wire RTD measurement.

• Selection Guide

Analog Input Modules (Serial Bus) Table 6-2-3

Models	I-87017W	I-87017DW	I-87017RW	I-87017W-A5	I-87017RCW	I-87017RCDW	I-87017RCDW-AI
Pictures		NEW 				Available soon 	Available soon 
Channel	8	8/16	8	8	8	16	16
Wiring	Differential	Differential/ Single-ended	Differential	Differential	Differential	Differential	Differential
Range	±10 VDC, ±5 VDC, ±1 VDC, ±500 mV, ±150 mV, ±20 mA (Requires Optional External 125 Ω Resistor)			±50 VDC, ±150 VDC	0 ~ +20 mA, +4 ~ +20 mA, ±20 mA (No External Restistor Reguired)	0 ~ +20 mA, +4 ~ +20 mA, ±20 mA (No External Restistor Reguired)	0 ~ +100 mA
Resolution	Normal Mode: 16-bit Fast Mode: 12-bit			Normal Mode: 16-bit Fast Mode: 12-bit	Normal Mode: 16-bit Fast Mode: 12-bit		
Accuracy	Normal Mode :±0.1% of FSR Fast Mode :±0.5% of FSR			Normal Mode: ±0.1% of FSR Fast Mode: ±0.25% of FSR	Normal Mode: ±.1% of FSR Fast Mode: ±0.5% of FSR		
Sampling Rate	Normal Mode: 10 Hz (Total) Fast Mode: 60 Hz (Total)			Normal Mode: 10 Hz (Total) Fast Mode: 50 Hz (Total)	Normal Mode: 10 Hz (Total) Fast Mode: 60 Hz (Total)		
Input Impedance	20 MΩ	20 MΩ	> 2 MΩ	290 KΩ	125 Ω		
Common Voltage Protection	-	-	-	-	200 VDC		
Individual Channel Configurable	-	Yes	-	-	-	Yes	Yes
Open Daughter Board Detection	-	Yes	-	-	-	Yes	Yes
Over Voltage Protection	±35 VDC	±35 VDC	240 Vrms	±200 VDC	-		
4KV ESD Protection	Yes	Yes	Yes	Yes	Yes		
System							
Dual Watchdog	Yes			Yes	Yes		
Isolation	3000 VDC			3000 VDC	3000 VDC		
Power Consumption	1.3 W			1.3 W	1.3 W		
Connector	Terminal Block	D-Sub 37	Terminal Block	Terminal Block	Terminal Block	D-Sub 37	D-Sub 37
Optional Accessories	-	DN-37-381-A	-	-	-	DN-37-381-A	DN-37-381-A

I/O module with DN-37-381-A

Introduction

A thermocouple is a temperature sensor which consists of two wires of different conductors.
Based on the Seebeck effect in thermoelectricity, the temperature difference results voltage difference on the two wires.
Thermocouples are widely used in scientific and industrial applications because they're generally accurate and can operate over wide range of temperature.

Thermocouple Type

Type	Range (°C)
J	-210 ~ +760
K	-270 ~ +1372
T	-270 ~ +400
E	-270 ~ +1000
R	0 ~ +1768
S	0 ~ +1768
B	0 ~ +1820
N	-270 ~ 1300
C	0 ~ 2320
L	-200 ~ +800
M	-200 ~ +100
L (DIN43710)	-200 ~ +900

Analog Input Modules (Serial Bus) — **Table 6-2-4**

Models	I-87018W	I-87018PW	I-87018RW	I-87018ZW	I-87019RW
Pictures		NEW 			
Sensor Type	±15 mV, ±50 mV, ±100 mV ±500 mV, ±1 VDC, ±2.5 VDC			±15 mV, ±50 mV, ±100 mV, ±500 mV, ±1 VDC, ±2.5 VDC	±15 mV, ±50 mV, ±100 mV, ±150 mV ±500 mV, ±1 VDC, ±2.5 VDC,±5VDC, ±10 VDC
	±20 mA (Requires Optional External 125 Ω Resistor)			±0 mA, 0 ~ 20 mA, 4 ~ 20 mA (Requires Optional External 125 Ω Resistor)	±20 mA (Jumper Selectable)
	Thermocouple (J, K, T, E. R. S, B, N, C, L, M, LDIN43710)			Thermocouple (J, K, T, E, R, S, B, N, C, L, M, LDIN43710)	Thermocouple (J, K, T, E. R. S, B, N, C, L, M, LDIN43710)
Channel	8			10	8
Wiring	Differential			Differential	Differential
Temperature outputs consistency	-	Yes	-	Yes	-
Stable tempereture output in the field	-	Yes	-	Yes	-
Resolution	16-bit			16-bit	16-bit
Accuracy	±0.1% of FSR			±0.1% of FSR	±0.1% of FSR
Sampling Rate	10 Hz (Total)			10 Hz (Total)	8 Hz (Total)
Input Impedance	>400 kΩ			>400 kΩ	Voltage Input: >2 MΩ, Current Input: 125 Ω
Individual Channel Configurable	-	Yes	-	Yes	Yes
Open Wire Detection	-	Yes	Yes	Yes	Yes
Over Voltage Protection	±35 VDC	240 Vrms	240 Vrms	240 Vrms	240 Vrms
4KV ESD Protection	Yes	Yes	Yes	Yes	Yes
System					
Dual Watchdog	Yes			Yes	Yes
Isolation	3000 VDC			3000 VDC	3000 VDC
Power Consumption	0.8 W			0.8 W	1.1 W
Connector	Terminal Block			DB25	Terminal Block
Optional Accessories	-	CN-1824	-	DB-1820/DN-1822	-

Special daughter board for thermocouple inputs features two benefits

- Temperature outputs consistency
- Stable tempereture output in the field

I-87018PW-G/S CR=
I-87018PW connects CN-1824 directly

I-87018ZW-G/S CR=
I-87018ZW connects DB-1820 directly

I-87018ZW-G/S2 CR=
I-87018ZW connects DN-1822 with CD-2518D kit

• Selection Guide

Analog Output Modules (Serial Bus) Table 6-2-5

Models	I-87024W	I-87024DW	I-87024CW	I-87028CW
Pictures		NEW 	Available soon 	NEW 
Channel	4		4	8
Wiring	Bipolar/Unipolar		Unipolar	
Range	0 ~ +5 VDC, ±5 VDC, 0 ~ +10 VDC, ±10 VDC, 0 ~ +20 mA, +4 ~ +20 mA		0 ~ +20 mA, +4 ~ +20 mA	
Resolution	14-bit		12-bit	
Accuracy	±0.1% of FSR		±0.1% of FSR	
DA Output Response Time	10 ms per channel		10 ms per channel	
Output Capacity	Voltage: 10 VDC @ 20 mA Current: External +24 VDC @ 1050 Ω		External +24 VDC @ 1050 Ω	
Channel to channel isolation	-		Yes, 1 kV	
Open Wire Detection	-	Yes	Yes	
Short Circuit Protection	Yes		Yes	
4KV ESD Protection	Yes		Yes	
Dual Watch dos	Yes		Yes	
Power on Value	Yes		Yes	
Safe Value	Yes		Yes	
System				
Dual Watchdog	Yes		Yes	
Isolation	3000 VDC		1000 VDC	
Power Consumption	2.8 W		0.9 W	1.4 W
Connector	Terminal Block	D-Sub 37	Terminal Block	
Optional Accessories	-	DN-37-381-A	-	

I/O module with DN-37-381-A

6.3. Digital Modules

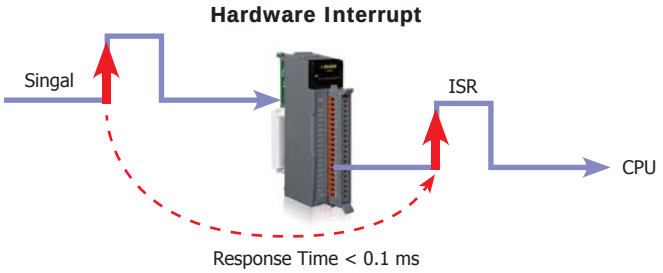
• Selection Guide

Digital Input Modules (Parallel Bus) Table 6-3-1

Models	I-8040W	I-8040PW	I-8046W	I-8048W	I-8051W	I-8052W	I-8053W	I-8053PW	I-8058W
Pictures				Note1 				NEW 	
Channel	32		16	8	16	8	16		8
Contact	Wet		Dry	Dry + Wet	Dry	Wet	Wet		Wet
Sink /Source (NPN /PNP)	Sink, Source		Source	Sink, Source	Source	Sink, Source	Sink, Source		Sink, Source
on Voltage Level	10 ~ 30 V_{DC}	19 ~ 30 V_{DC}	Close to GND.	Isolated: 4 ~ 30 V Non-Isolated TTL: 0.8 V max.	Close to GND.	10 ~ 30 V_{DC}	10 ~ 30 V_{DC}	19 ~ 30 V_{DC}	80 ~ 250 V_{AC}
off Voltage Level	4 V_{DC} max.	11 V_{DC} max.	Open	Isolated: 1 V_{DC} max. Non-Isolated TTL: 2 ~ 5 V_{DC}	Open	4 V_{DC} max.	4 V_{DC} max.	11 V_{DC} max.	30 V_{AC} max.
Low Pass Filter	-	Yes	-	-	-	-	-	Yes	-
Effective Distance for Dry Contact	-	-	500 m	100 m	100 m	-	-	-	-
System									
Watchdog	-		-	-	-	-	-		-
Isolation	3750 V_{rms}		3750 V_{rms}	1500 V_{rms}	-	5000 V_{rms}	3750 V_{rms}		5000 V_{rms}
Power Consumption	0.65 W	1 W	1.3 W	1.75 W	1.1 W	0.3 W	0.4 W	0.45 W	0.6 W
Connector	D-Sub 37		Terminal Block	Terminal Block	Terminal Block	Terminal Block	Terminal Block		Terminal Block
Optional Accessories	DN-37-381-A		-	-	-	-	-	-	-

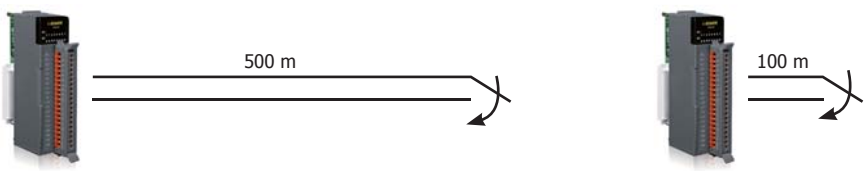
I/O module with DN-37-381-A

Note1. I-8048W supports hardware interrupt capturing. Each channel can be configured to capture either of rising edge or falling edge singal.



■ **Effective distance for dry contact of DI/DIO module**

In general, the effective distance for dry contact of DI module is 100m. With the enhanced circuit design, the distance can be extended up to 500m.



• Selection Guide

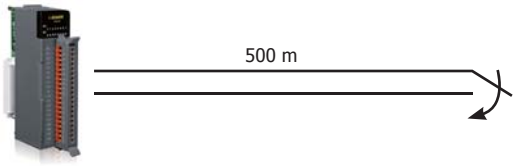
Digital Input Modules (Serial Bus) Table 6-3-2

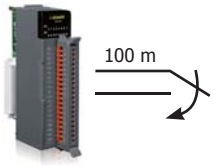
Models	I-87040W	I-87040PW	I-87040DW-A5	I-87046W	I-87051W	I-87052W	I-87053W	I-87053PW	I-87053W-A5	I-87058W	I-87059W
Pictures		NEW 						NEW 			
Channel	32			16	16	8	16			8	8
Type	Wet			Dry+Wet	Dry+Wet	Wet	Dry+Wet			Differential	Differential
Sink /Source (NPN /PNP)	Sink, Source			Source	Source	Sink, Source	Sink, Source			-	-
on Voltage Level	3.5 ~ 30 VDC	19 ~ 30 VDC	3.5 ~ 30 VDC	Dry Contact: Close to GND. Wet contact: 1 VDC max.	Dry Contact: Close to GND. Wet contact: 1 VDC max.	3.5 ~ 30 VDC	Dry Contact: Close to GND. Wet contact: 3.5 ~ 30 VDC	Dry Contact: Close to GND. Wet contact: 19 ~ 30 VDC	Dry Contact: Close to GND. Wet contact: 68 ~ 150 VDC	80 ~ 250 VAC	10 ~ 80 VAC
off Voltage Level	1 VDC max.	11 VDC max.	1 VDC max.	Dry Contact: Open Wet contact: 3.5 ~ 30 VDC	Dry Contact: Open Wet contact: 3.5 ~ 30 VDC	1 VDC max.	Dry Contact: Open Wet contact: 1 VDC max.	Dry Contact: Open Wet contact: 11 VDC max.	Dry Contact: Open Wet contact: 48 VDC max.	30 VAC max.	3 VAC max.
Counter (100 Hz, 16-bit)	Yes			Yes	Yes	Yes	Yes			Yes	Yes
Effective Distance for Dry Contact	-			500 m	100 m	-	500 m			-	-
4KV ESD Protection	Yes			Yes	Yes	Yes	Yes			Yes	Yes
Low Pass Filter	Yes			Yes	Yes	Yes	Yes			Yes	Yes
System											
Dual Watchdog	Yes			Yes	Yes	Yes	Yes			Yes	Yes
Isolation	3750 Vrms			-	-	5000 Vrms	3750 Vrms			5000 Vrms	3750 Vrms
Power Consumption	1.6 W			1 W	0.5 W	0.3 W	0.8 W	0.8 W	0.9 W	0.3 W	0.3 W
Connector	D-Sub 37			Terminal Block	Terminal Block	Terminal Block	Terminal Block			Terminal Block	Terminal Block
Optional Accessories	DN-37-381-A			-	-	-	-	-	-	-	-

I/O module with DN-37-381-A

■ **Effective distance for dry contact of DI/DIO module**

In general, the effective distance for dry contact of DI module is 100m. With the enhanced circuit design, the distance can be extended up to 500m.





• Selection Guide

Digital Output Modules (Parallel Bus) Table 6-3-3

Models	I-8037W	I-8041W	I-8041RW	I-8041AW	I-8056W	I-8057W	I-8057RW	I-8057PW	I-8060W	I-8064W	I-8068W	I-8069W	I-8069RW
Pictures			NEW 				Available soon 	NEW 					Available soon 
Channel	16	32			16				6	8	8	8	
Type	Open Collector	Open Collector			Open Collector				Power Relay			PhotoMOS Relay	
Sink /Source (NPN /PNP)	Source	Sink	Sink	Source	Sink				Form C	Form A	Form A x 4 Form C x 4	Form A	
Load Voltage	5~30 V_{DC}	5~30 V_{DC}			5~30 V_{DC}		5~50 V_{DC}						
Max. Load Current	100 mA/ channel	100 mA/channel			100 mA/channel		700 mA/channel		0.5 A @125 V_{AC} 0.25 A @250 V_{AC} 2A @30 V_{DC}	5 A @250 V_{AC} 5 A @30 V_{DC}	Form A : 5 A @250 V_{AC} 5 A @28 V_{DC} Form C : 5 A (NO) /3A (NC) @30 V_{DC} 5 A (NO) /3A (NC) @ 277 V_{AC}	60 V_{DC} /1.0 A	
Power on Value	-	-	Yes	-	-		Yes	-	-	-	-	-	Yes
Safe Value	-	-	Yes	-	-		Yes	-	-	-	-	-	Yes
System													
Watchdog	-	-	Yes	-	-								
Isolation	3750 Vrms	3750 Vrms			-	3750 Vrms	3750 Vrms		1500 Vrms	2000 Vrms	1500 Vrms	1500 Vrms	
Power Consumption	0.9 W	1.5 W			0.9 W	0.9 W	1.5 W		1 W	1.1 W	2.5 W	0.6 W	
Connector	Terminal Block	D-Sub 37			Terminal Block								
Optional Accessories	-	DN-8K32R, DN-37-381-A		DN-37-381-A	-	-	-		-	-	-	-	

I/O module with DN-8K32R

I/O module with DN-37-381-A

• Selection Guide

Digital Output Modules (Serial Bus) Table 6-3-4

Models	I-87041W	I-87057W	I-87057PW	I-87061W	I-87064W	I-87065W	I-87066W	I-87068W	I-87069W
Pictures			NEW 	NEW 					
Channel	32	16		16	8	8	8	8	8
Type	Open Collector	Open Collector		Power Relay		AC SSR	DC SSR	Power Relays	PhotoMOS Relay
Sink /Source (NPN /PNP)	Sink	Sink		Form A		Form A	Form A	Form A × 4 Form C × 4	Form A
Load Voltage	5 ~ 30 V_{DC}	5 ~ 30 V_{DC}	5 ~ 50 V_{DC}	Relay Contact: 0 ~ 250 V_{AC} 0 ~ 30 V_{DC}		24 ~ 265 V_{rms}	3 ~ 30 V_{DC}	Form A: 0 ~ 250 V_{AC} 0 ~ 28 V_{DC} Form C: 0 ~ 277 V_{AC} 0 ~ 30 V_{DC}	350 V max. at DC/AC
Max. Load Current	100 mA/ channel	100 mA/ channel	700 mA/ channel	5.0 A_{rms}		1.0 A_{rms}	1.0 A_{rms}	Form A: 8 A Form C: 3 A (NC) 5 A (NO)	0.13 A
Short Circuit Protection	-	-	Yes	-		-	-	-	-
4KV ESD Protection	Yes	Yes		Yes		Yes	Yes	Yes	Yes
Power on Value	Yes	Yes		Yes		Yes	Yes	Yes	Yes
Safe Value	Yes	Yes		Yes		Yes	Yes	Yes	Yes
System									
Dual Watchdog	Yes	Yes		Yes		Yes	Yes	Yes	Yes
Isolation	3750 V_{rms}	3750 V_{rms}		3000 V_{rms}	2000 V_{rms}	2500 V_{rms}	2500 V_{rms}	4000 V_{rms}	5000 V_{rms}
Power Consumption	0.7 W	1 W		1.7 W	1.5 W	0.6 W	0.6 W	2.5 W	0.5 W
Connector	D-Sub 37	Terminal Block		Terminal Block		Terminal Block	Terminal Block	Terminal Block	Terminal Block
Optional Accessories	DN-8K32R, DN-37-381-A	-		-	-	-	-	-	-

I/O module with DN-8K32R

I/O module with DN-37-381-A

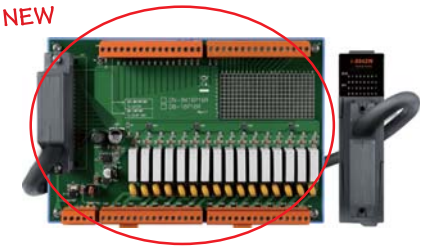
• Selection Guide

Digital Input & Output Modules (Parallel Bus) — **Table 6-3-5**

Models	I-8042W	I-8050W	I-8054W	I-8054RW	I-8055W	I-8063W
Pictures		Note1 		Available soon 		
Digital Input						
Channel	16	16	8		8	4
Type	Wet	Wet	Wet		Dry	Wet
Sink /Source (NPN /PNP)	Sink, Source	Sink	Sink, Source		Source	Sink, Source
on Voltage Level	10 ~ 30 VDC	10 ~ 30 VDC	10 ~ 50 VDC		Close to GND.	10 ~ 30 VDC
off Voltage Level	4 VDC max.	4 VDC max.	4 VDC max.		Open	4 VDC max.
Low Pass Filter	-	-	-	Yes	-	-
Effective Distance for Dry Contact	-	-	-	-	100 m	-
Digital Output						
Channel	16	16	8		8	4
Type	Open Collector	Open Collector	Open Collector		Open Collector	Power Relay
Sink /Source (NPN /PNP)	Sink	Sink	Sink		Sink	Form C
Load Voltage	5 ~ 30 VDC	5 ~ 30 VDC	5 ~ 50 VDC		5 ~ 30 VDC	5 A (NO)/3 A (NC) @ 30 VDC 5 A (NO)/3 A (NC) @ 277 VAC 5 A (NO)/3 A (NC) at 65°C
Max. Load Current	100 mA/channel	100 mA/channel	700 mA/channel		100 mA/channel	
Power on Value	-	-	-	Yes	-	-
Safe Value	-		-	Yes	-	-
System						
Watchdog	-	-	-		-	-
Isolation	3750 Vrms	3750 Vrms	3750 Vrms		-	3750 Vrms
Power Consumption	1.5 W	1 W	0.55 W		1 W	2 W
Connector	D-Sub 37	Terminal Block	Terminal Block		Terminal Block	Terminal Block
Optional Accessories	DN-37-381-A, DN-8K16P16R	-	-		-	-

I/O module with DN-37-381-A

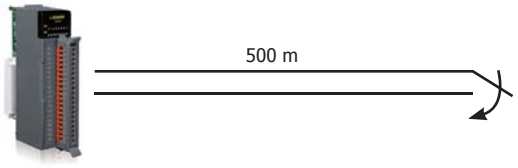
NEW

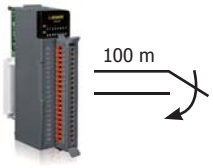


I/O module with DN-8K16P16R

■ **Effective distance for dry contact of DI / DIO module**

In general, the effective distance for dry contact of DI module is 100m. With the enhanced circuit design, the distance can be extended up to 500m.





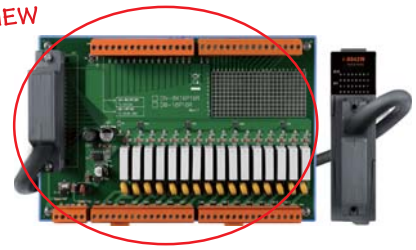
Note1. I-8050W is 16-ch universal digital I/O module. Each channel can be independently configured to be an input or an output channel by software setting.

• Selection Guide

Digital Input & Output Modules (Serial Bus) Table 6-3-6

Models	I-87042W	I-87054W	I-87055W	I-87063W
Pictures	NEW 			
Digital Input				
Channel	16	8	8	4
Contact	Wet	Wet	Dry+Wet	Wet
Sink /Source (NPN /PNP)	Sink, Source	Sink, Source	Sink	Sink, Source
on Voltage Level	+3.5 ~ +30 VDC	+3.5 ~ +50 VDC	Dry Contact: Close to GND. Wet contact: 1 VDC max.	+3.5 ~ +30 VDC
off Voltage Level	1 VDC max.	1 VDC max.	Dry Contact: Open Wet contact: +3.5 ~ +30 VDC	1 VDC max.
Counter (100 Hz, 16-bit)	Yes	Yes	Yes	Yes
Low Pass Filter	Yes	Yes	Yes	Yes
Effective Distance for Dry Contact	-	-	100 m	-
Digital Output				
Channel	16	8	8	4
Type	Open Collector	Open Collector	Open Collector	Power Relay
Sink /Source (NPN /PNP)	Sink	Sink	Sink	Form C
Load Voltage	+5 ~ +30 VDC	+5 ~ +50 VDC	+5 ~ +30 VDC	+5 ~ +24 VDC 0 ~ +250 VAC
Max. Load Current	100 mA/channel	700 mA/channel	100 mA/channel	5 A (NO)/3 A (NC) @ 30 VDC 5 A (NO)/3 A (NC) @ 277 VAC
Short Circuit Protection	-	Yes	-	-
4KV ESD Protection	Yes	Yes	Yes	Yes
Power on Value	Yes	Yes	Yes	Yes
Safe Value	Yes	Yes	Yes	Yes
System				
Dual Watchdog	Yes	Yes	Yes	Yes
Isolation	3750 Vrms	3750 Vrms	-	4000 Vrms
Power Consumption	1.5 W	0.7 W	0.6 W	1.5 W
Connector	D-Sub 37	Terminal Block	Terminal Block	Terminal Block
Optional Accessories	DN-37-381-A, DN-8K16P16R	-	-	-

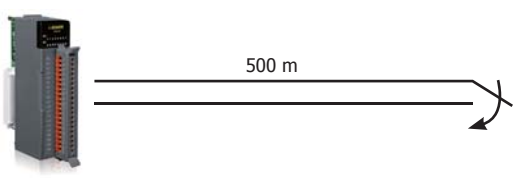
I/O module with DN-37-381-A

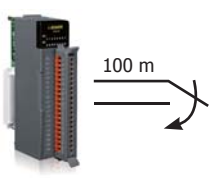
NEW 

I/O module with DN-8K16P16R

■ **Effective distance for dry contact of DI/DIO module**

In general, the effective distance for dry contact of DI module is 100m. With the enhanced circuit design, the distance can be extended up to 500m.





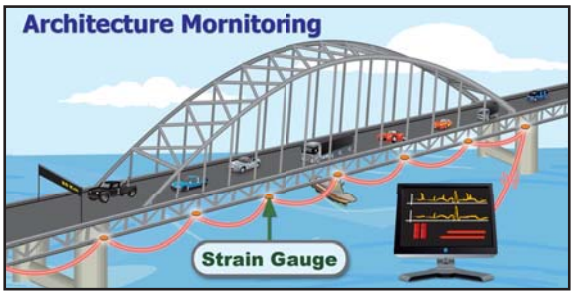
6.4. Multi Function/Strain Gauge Modules

• Selection Guide

Strain Gauge Introduction

A strain gauge is a resistive sensor. The measurement of strain is usually made using a Wheatstone bridge circuit with excitation voltage. The variation in strain can be calculated based on the measured voltage. The resistance of the gauge varies when the gauge is compressed or stretched. With the characteristic, it can be applied to measure stress or the growth of the crack or movement in buildings, foundations, and other structures to ensure the safety.

Applications

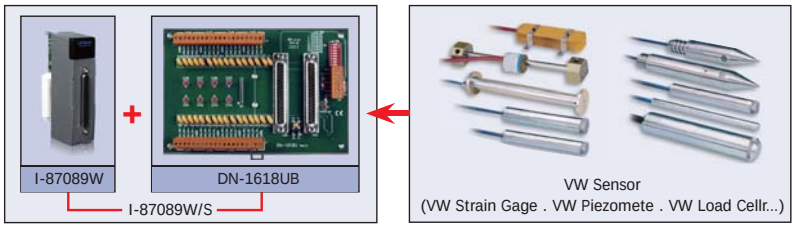


Multi-function Module (Parallel/Serial Bus)			
Models	I-87016W	I-87026PW	I-8026PW
Pictures	NEW 	Available soon 	Available soon 
Analog Input			
Channel	2	6	6
Range	±15 mV, ±50 mV, ±100 mV, ±500 mV, ±1 VDC, ±2.5 VDC, ±20 mA	±150 mV, ±500 mV, ±1 V, ±5 V, ±10 V, ±20 mA	±10 VDC, ±5 VDC, ±20 mA (Jumper Select)
Strain Gauge Type	Full-Bridge, Half-Bridge, Quarter-Bridge	-	-
Resolution	16-bit	16-bit	12-bit
Accuracy	±0.05% of FSR (Voltage), ±0.1% of FSR (Current)	±0.1% of FSR	±0.2% of FSR
Sampling Rate	10 Hz	10 Hz	35 kHz
Input Impedance	> 400 kΩ (Voltage), 125 Ω (Current)	2 MΩ (Voltage), 125 Ω (Current)	2M Ω
Over Voltage Protection	30 VDC	240 Vrms	-
Long Distance Strain Gauge Measurement	Yes	-	-
Individual Channel Configurable	Yes	Yes	Yes
Analog Output			
Channel	1	2	2
Range	0 ~ +10 VDC	±10 V, ±5 V, 0 ~ 10 V, 0 ~ 5 V, 0 ~ 20 mA, 4 ~ 20 mA	±10 VDC
Resolution	16-bit	12-bit	12-bit
Accuracy	±0.05% of FSR	±0.1% of FSR	±0.2% of FSR
Output Capacity	10 V @ 80 mA	10 V @ 20 mA	10 V @ 20 mA
Digital Input			
Channel	2	2	3
Contact	Wet	Wet	Wet
Sink /Source (NPN /PNP)	Sink	Sink	Sink, Source
on Voltage Level	3.5 ~ 50 VDC	3.5 ~ 50 VDC	10 ~ 30 VDC
off Voltage Level	1 VDC max.	1 VDC max.	4 VDC max.
Low Pass Filter	Yes	Yes	-
Digital Output			
Channel	2	2	3
Type	Open Collector	Open Collector	Open Collector
Sink /Source (NPN /PNP)	Sink	Sink	Sink
Load Voltage	5 ~ 50 VDC	5 ~ 50 VDC	5 ~ 30 VDC
Max. Load Current	700 mA/channel	700 mA/channel	100 mA/channel
System			
Dual Watchdog	Yes	Yes	-
Data Bus	Serial	Serial	Parallel
Isolation	3000 VDC	2500 VDC	2500 VDC
Power Consumption	2.5 W	2.5 W	3 W
Connector	Terminal Block	Terminal Block	Terminal Block
Optional Accessories	-	-	-

6.5. Vibrating Wire Input Modules

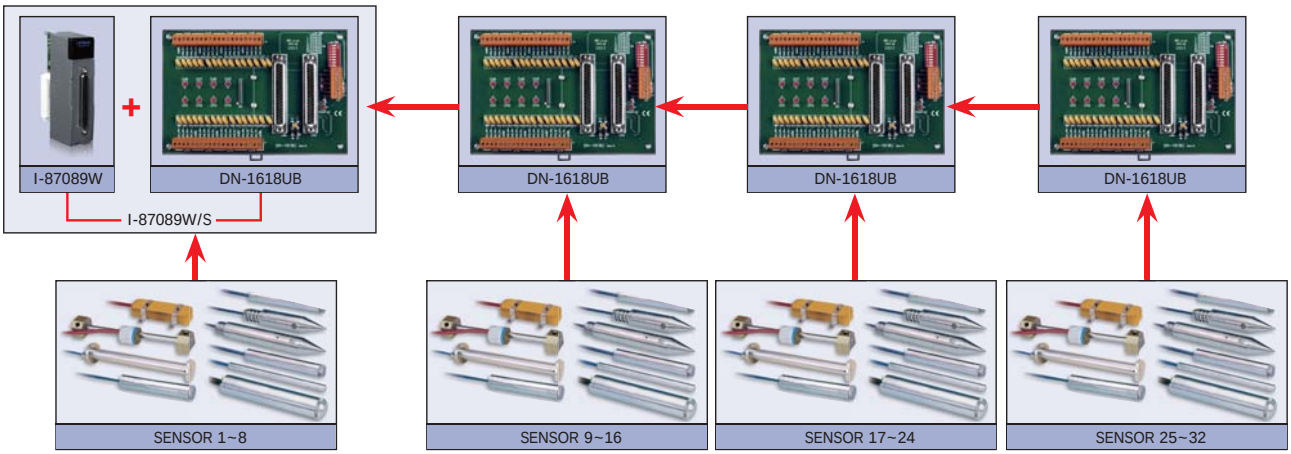
Introduction

The vibrating wire sensor has a wire which is initially plucked by a series of electrical magnetic forces from a coil. The conductive wire after plucking is vibrating in a magnetic field. The wire will disturb the field, and then the coil can pick up the induced voltage change. The signal is amplified and detected by a VW readout device, or called VW reader. After plucking, there is no other force acting on this wire. When the transient response dies out, the reader can read a stable resonant frequency. The resonant frequency is function of the tension of this wire.



Applications

The I-87089W/S can be extended to 32 channels by connecting 3 extra DN-1618UB.



VW Input Module	
Models	I-87089W/S
Pictures	NEW 
Vibrating Wire Input	
Channel	8
Input Type	Vibrating Wire Sensor (2 VW wire + 2 Temperature wire +1 shield wire)
Measurement Range	Wire: 450 ~ 6000 Hz
Excitation mode	Enhanced square wave
Resolution	Wire: 0.01Hz / Temperature: 0.01 °C
Accuracy	Wire: ±0.01 % of FSR / Temperature: ±0.1 % of FSR
Channel to channel isolation	Yes, 1 kV
System	
Dual Watchdog	Yes
Isolation	3000 V_{DC}
Power Consumption	3.6 W
Connector	D-Sub 37
Optional Accessories	DN-1618UB

6.6. Counter/Frequency/PWM Modules

Selection Guide

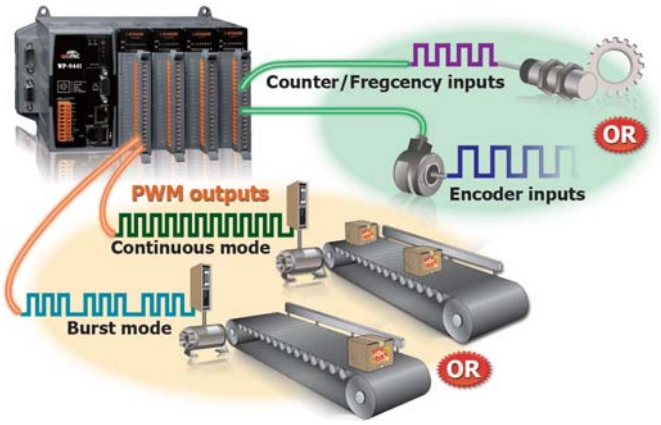
PWM Introduction

PWM (Pulse width modulation) is a powerful technique for controlling analog circuits. It uses digital outputs to generate a waveform with variant duty cycle and frequency to control analog circuits. I-8088W and I-87088W have 8 PWM output channels and 8 digital inputs. It can be used to develop powerful and cost effective analog control system.

PWM Features

- Automatic generation of PWM outputs by hardware, without software intervention.
- Software and hardware trigger mode for PWM output
- Individual and synchronous PWM output
- Burst mode PWM operation for standby
- DI channel can be configured as simple digital input channel or hardware trigger source of the PWM output.

Applications



Counter/Frequency/PWM Module (Parallel/Serial Bus)

Models	I-87082W	I-8084W	I-87084W	I-8088W	I-87088W
Pictures			NEW 	NEW 	Available soon 
Digital Input					
Channels	2	8		8	8
Type	Isolated or Non-isolated	Isolated or Non-isolated (Jumper Selectable)		Isolated	Isolated
on Voltage Level	3.5 ~ 30 VDC (isolated) 2.4 ~ 5 VDC (Non-isolated)	4.5 ~ 30 VDC (isolated) 2 ~ 5 VDC (Non-isolated)		5 ~ 30 VDC	2.4 ~ 5 VDC
off Voltage Level	1 VDC max. (isolated) 0~ 0.8 VDC (Non-isolated)	1 VDC max. (isolated) 0 ~ 0.8 VDC (Non-isolated)		0.8 VDC max.	0.8 VDC max.
Threshold Voltage	Programmable	Fixed		Fixed	Fixed
Counter	Up	Up/Down		-	Up
Max.Counts	32-bits (4,294,967,295)	32-bits (4,294,967,295)		-	32-bits (4,294,967,295)
Max. Counter Speed	100 kHz	250 kHz (isolated) 1 MHz (Non-isolated)		-	1 MHz
Digital Filter	2 ~ 65000 µs	1 ~ 32767 µs		-	-
Virtual Battery Backup for Counter Value	-	-	Yes	-	Yes
Max. Frequency	100 kHz	250 kHz		-	-
Frequency Accuracy	1Hz or 10Hz	±0.4% of Input Frequency		-	
Encoder	-	CW/CCW, Dir/Pulse, AB Phase		-	-
Digital Output					
Channels	2	-		8	
Type	Sink, Open Collector	-		Source, PWM	
Output Voltage	5 ~ 30 VDC	-		5 VDC	
Output Current	30 mA	-		1 mA	
Alarm Output	Yes	-		-	
PWM Frequency	-	-		1 ~ 500 kHz	
PWM Duty Cycle	-	-		0.1 ~ 99.9%	
PWM Mode	-	-		Burst, Continuous	
Burst Count	-	-		1 ~ 65535	
Trigger Start	-	-		Hardware, Software	
System					
Dual Watchdog	Yes	-	Yes	-	Yes
Data Bus	Seriial	Parallel	Seriial	Parallel	Seriial
Isolation	3750 Vrms	1000 Vrms	2000 VDC	3000 VDC	2500 Vrms
Power Consumption	0.5 W	0.6 W	0.6 W	1.8 W	1.8 W
Connector	Terminal Block	Terminal Block	Terminal Block	Terminal Block	Terminal Block
Optional Accessories	-	-	-	-	-

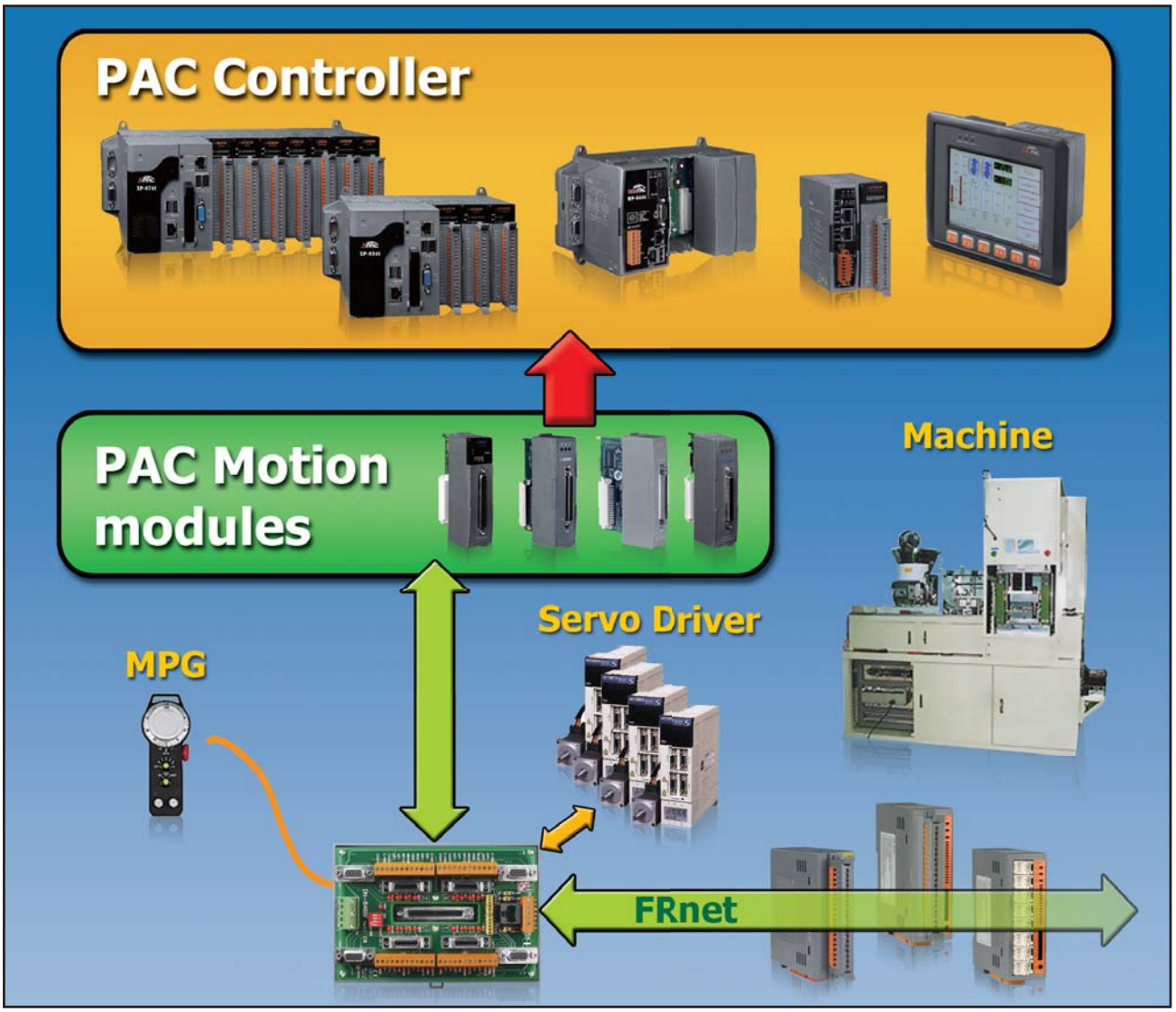
6.7. Motion Control Modules

Introduction

The i-8092/4/F/A/H is a 2/4-axis stepping/pulse-type servo motor control module that can be used on the ICPDAS PAC series controllers, and is suitable for general-purpose motion control application.This module contains a high-performance motion ASIC. Apart from a wide speed range, this intelligent motion controller also has a variety of motion control functions built in, such as 2/3(4 Axes only)- axis linear interpolation, 2-axis circular interpolation, T/S-curve acceleration/deceleration, various synchronous actions(4 Axes only), automatic homing(4 Axes only), and others. In addition, most of the motion control functions are performed with light load on the processor. While driving the motors, the motion status, and the other I/O status on the PAC modules, can still be monitored. As a result of the low CPU loading requirements, one or more motion modules may be used on a single PAC controller. ICPDAS has also provided a wide range of functions and examples to reduce the need for programming by users, making it a highly cost-effective solution for motion builders.

The i8092F/4F/4H modules have one port of FRnet. The FRnet port allows this module to expand its fast remote I/O easily. This two-wired FRnet can automatically scan its 128 DI and 128 DO with a period of 2.88 ms.

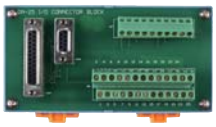
Applications



• Selection Guide

Motion Control Modules (Parallel Bus)								
Model Name	I-8090W	I-8091W	I-8092F	I-8093W	I-8094	I-8094F	I-8094A	I-8094H
Pictures				NEW 				
Encoder Input								
Axis	2	-	2	3	4			
Counter (bits)	16	-	32	32	32			
Speed (pps)	1 M	-	1 M	1 M	1 M			
Signal	CW/CCW, A/B, Pulse/Dir	-	CW/CCW, A/B	CW/CCW, A/B, Pulse/Dir	CW/CCW, A/B			
Command Pulse Output								
Axis	-	2	2	-	4			
Counter (bits)	-	32	32	-	32			
Speed (pps)	-	1 M	4 M	-	4 M			
Signal	-	CW/CCW, Pulse/Dir	CW/CCW, Pulse/Dir	-	CW/CCW, Pulse/Dir			
System								
Watchdog	-				-	-	-	-
Programmable CPU (MiniOS7 inside)	-				-	-	Yes	Yes
FRnet	-	-	Yes	-	-	Yes	-	Yes
Isolation	2500 Vrms				2500 Vrms			
Power Consumption	3.4 W	3.9 W	1.9 W	2 W	2 W	2.5 W	3 W	3.5 W
Optional Accessories	DN-25	DN-25	DN-8237	-	DN-8468	DN-8468	DN-8468	DN-8468

DN-25



DN-8237 Series List





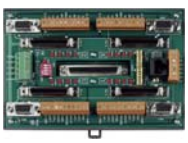
DN-8468 Series List

DN-8468GB

DN-8468GB is for general purpose usage

DN-8468MB

DN-8468MB is for Mitsubishi servo J2 Amplifier

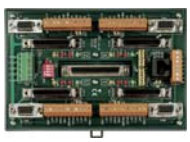


DN-8468PB

DN-8468PB is for Panasonic servo minas A Amplifier

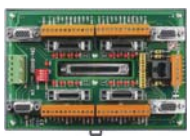
DN-8468YB

DN-8468YB is for Yaskawa servo Amplifier



DN-8468DB

DN-8468DB is for Delta ASDA A servo Amplifier



DN-8468FB

DN-8468FB is for FUJI FALDIC-W servo Amplifier

6.8. Serial Communication Modules (Parallel Bus)

• Selection Guide

RS-232/422/485 Communication Module (Parallel Bus)					
Model Name	I-8112iW	I-8114W	I-8114iW	I-8142iW	I-8144iW
Pictures					
Communication					
Interface	RS-232	RS-232	RS-232	RS-422/485	RS-422/485
Port	2	4	4	2	4
Max. Speed (K bps)	115.2				
Controller Chip	16C950				
System					
Hot Swap	-	-		-	
Isolation	2500 V_{rms}	-	2500 V_{rms}	2500 V_{rms}	
Power Consumption	1.5 W	1.25 W	1.75 W	1.5 W	1.75 W
Connector	D-Sub 9 x 2	D-Sub 37		Terminal Block	
Optional Accessories	CA-0915	CA-9-3705	CA-9-3705	-	-

CA-0915

CA-9-3705

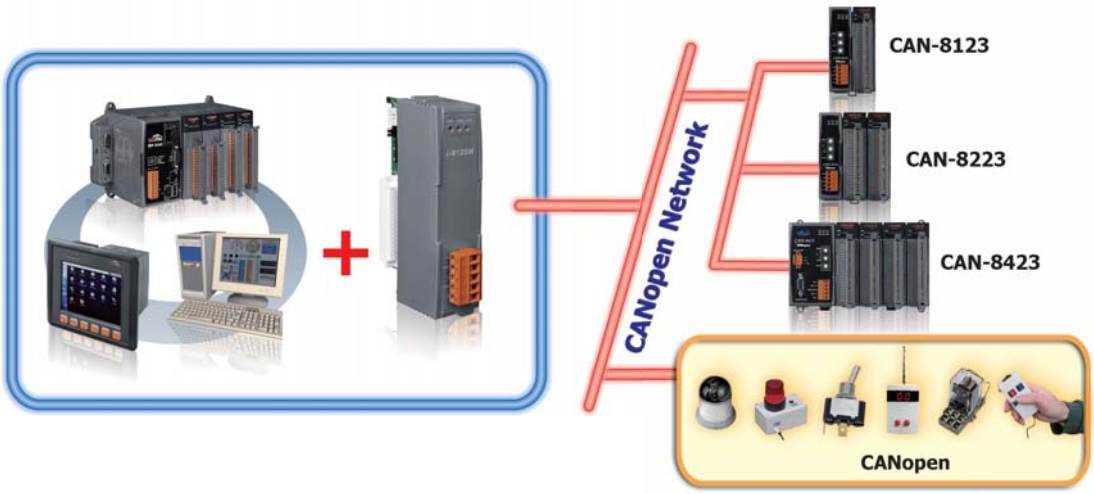
6.9. CAN/CANopen/DeviceNet Communication Modules (Parallel/Serial Bus)

Introduction

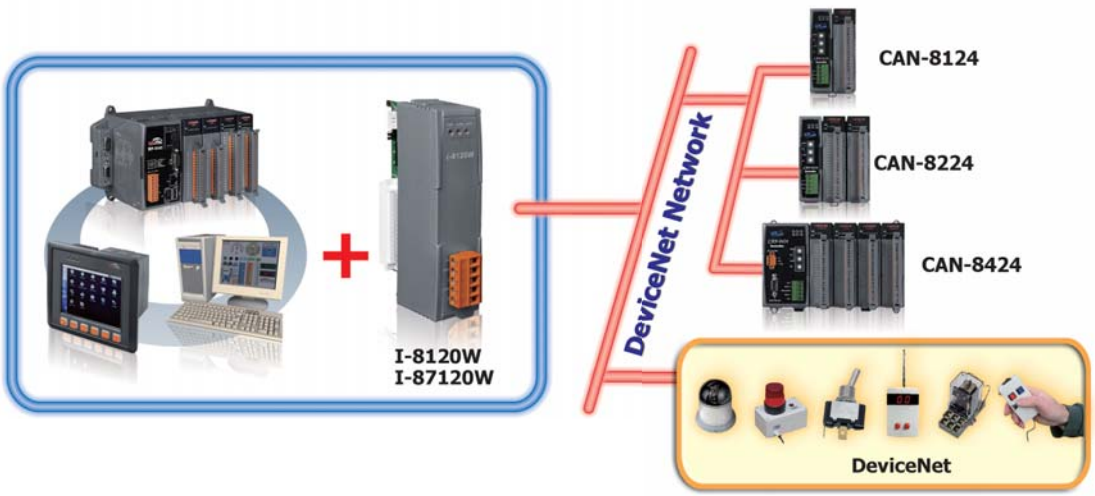
These CAN bus communication modules are the solutions to the various CAN application requirements in PAC family with rich CAN bus protocols. The I-8123W, I-87123W, I-8124W, and I-87124W separately support CANopen and DeviceNet master protocols. Users can apply them in PAC to connect to CANopen and DeviceNet devices to reach various CANopen/DeviceNet systems easily.
For the especial CAN bus applications, the I-8120W and I-87120W are designed for users to apply in PAC series. The default firmware of I-8120W and I-87120W provides the transmission and reception of CAN bus messages in PAC. In addition, users can design the specific firmware in these modules to reduce the loading of the PAC in C language.

CAN Bus Applications

CANopen Applications



DeviceNet Applications



• Selection Guide

CAN/CANopen/DeviceNet Communication Module (Parallel/Serial Bus)						
Model Name	I-8120W	I-87120W	I-8123W	I-87123W	I-8124W	I-87124W
Pictures						
Communication						
Interface	ISO 11898-2 CAN					
Port	1					
Terminator	120 Ω Selected By Jumper					
Max. Speed (K bps)	1000		1000		500	
Controller Chip	SJA1000T					
Transceiver Chip	82C250					
Protocol	CAN 2.0 A/2.0 B		CANopen		DeviceNet	
System						
Hot Swap	-	Yes	-	Yes	-	Yes
Data Communication	Parallel Interface	Serial Interface	Parallel Interface	Serial Interface	Parallel Interface	Serial Interface
User-defined Firmware	Yes		No		No	
Isolation	2500 V_{rms}					
Power Consumption	2 W					
Connector	5-pin Terminal Block					
Optional Accessories	CA-0904 Cable					

CA-0904

6.10. FRnet Communication Modules (Parallel Bus)

Introduction

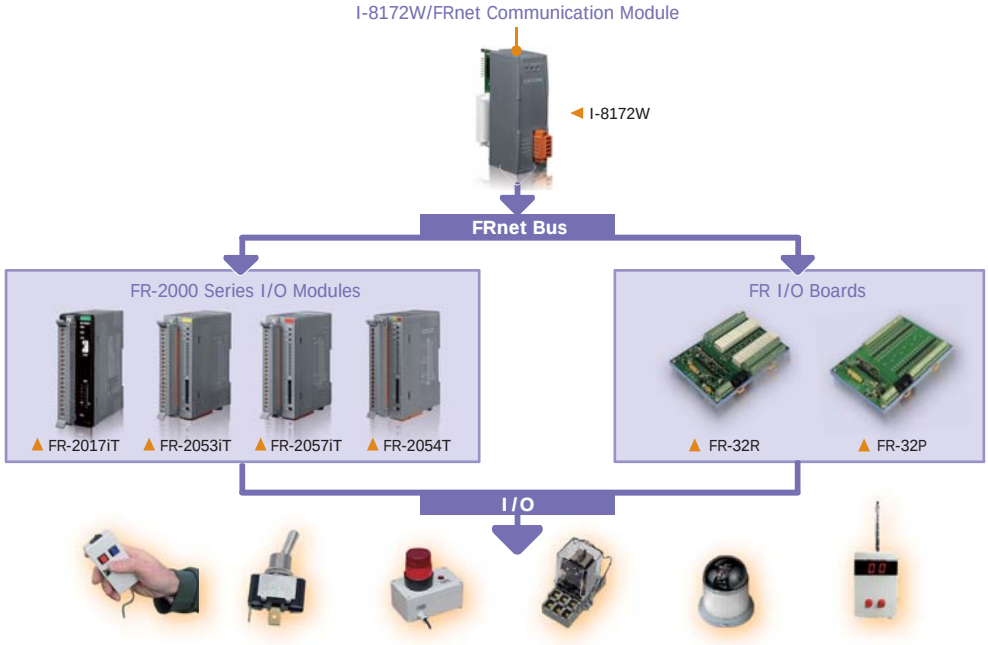
FRnet is an innovative industrial field bus. It uses twisted pair cable to be the transmission medium. Each FRnet port can link up to 128 DI and 128 DO channels. The whole I/O statuses are updated at a fixed cycle time (0.72 ms or 2.88 ms) no matter how many FRnet I/O modules are connected to the FRnet network. Further more, the update is done by hardware, there is no communication protocol is needed. Using FRnet, the user can easily and quickly implement high-speed distributed I/O control systems. Its key features are:

Features

- Easy connection: multi-drop networking with twisted pair cable
- Easy programming: memory mapping (no communication protocol needed)
- I/O expansion ability for each port: 8 SA nodes (for DI) and 8 RA nodes (for DO), each node addresses to 16 DI or DO channels
- Normally FRnet module provides two communication speeds. OEM customer can call manufacturer to design special FRnet module for long distance communication.

Speed	Baudrate	Max. Distance	Fixed Cycle Time
High Speed	1 Mbps	100 m	0.72 ms
Low Speed (Default)	250 kbps	400 m	2.88 ms

Applications



2-PORT FRnet module (Parallel Bus)	
Model Name	I-8172W
Pictures	
Communication	
Interface	FRnet
Port	2
Transfer distance	Max. 400 m for speed 250Kbps (Default); Max. 100 m for speed 1 Mbps
Transfer speed	2.88 ms for speed 250Kbps (Default) / 0.72 ms for speed 1 Mbps
Protocol	None (memory mapping)
I/O Expansion for Each Port	8 SA nodes (for DI) and 8 RA nodes (for DO); each node for DI or DO channels
networking	multi-drop networking with twiced paired cable
System	
Hot Swap	-
Intra-module Isolation, Field to Logic	3000 V_{DC}
Power Consumption	6 W
Optional Accessories	-

6.11. Ethernet Communication Modules (Parallel Bus)

Introduction

The I-8135W is a flexible and high performance five-port Ethernet switch module. It can be installed in PAC (XPAC, WinPAC, LinPAC, iPAC, ViewPAC, ...) and directly gets power from the backplane. An extra power adapter for an Ethernet switch is not needed any more.

I-8135W can work as either of the following modes:

Ethernet Switch:

I-8135W just gets power from backplane of the PAC. There is no extra software driver needed.

Ethernet Adapter:

I-8135W not only gets power from backplane of the PAC but also enables the Ethernet controller on the I-8135W to become an Ethernet adapter. This can let the PAC have one extra Ethernet port.
To be an Ethernet adapter, there must be a software driver installed in the OS.
Currently, only VP-23/25Wx (installed WinCE 5.0 and Android 1.6) can support the mode.

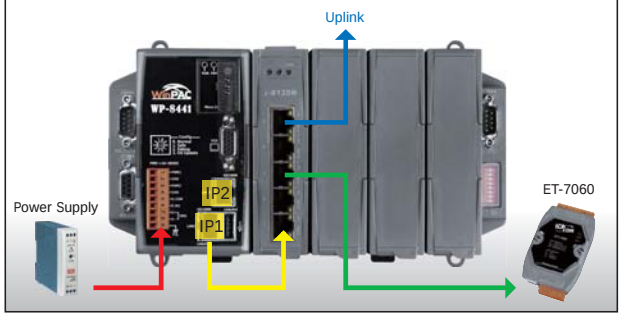
In your PAC solutions, if you want to expand Ethernet connection, I-8135W is good to replace regular Ethernet switchs to save installation space and power adapter.

Features

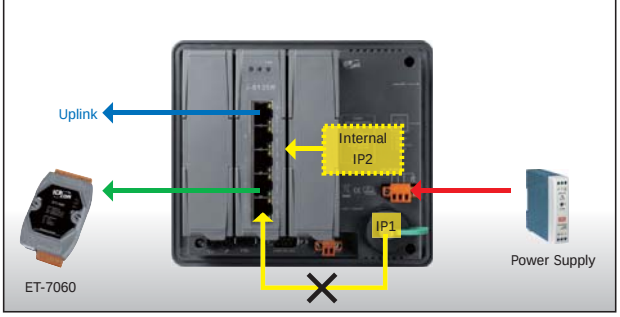
- 8-bit Ethernet Controller Inside
- 5-port RJ-45 Ethernet Switch
- Automatic MDI/MDI-X crossover for plug-and-play
- Each port supports both 10/100 Mbps speed auto negotiation
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- 3.2 Gbps high performance memory bandwidth
- Frame buffer memory: 512 Kbit

Applications

I-8135W (Ethernet Switch Mode) with WinPAC



I-8135W (Ethernet Adapter Mode) with ViewPAC



Ethernet Communication Module	
Model Name	I-8135W
Pictures	NEW 
Ethernet Adapter	10/100 Mbit Ethernet Controller connected to internal port of switch via MII interface
Ethernet Switch	5 External ports (to RJ-45)
Technology	
Standards	IEEE 802.3, 802.3u, 802.3x
Processing Type	Store & forward, wire speed switching
MAC Addresses	1024
Memory Bandwidth	3.2 Gbps
Frame Buffer Memory	512 Kbit
Flow Control	IEEE802.3x flow control, back pressure flow control
Operating Mode	
Ethernet Adapter	Directly supported by WinCE 5.0 and Android 1.5 (for VP-23/25W and VP-23/25A series)
Ethernet Switch	No external software required (for iP-8000, WP-8000, XP-8000, VP-23/25W and VP-23/25A series)
System	
Hot Swap	-
LED Indicators	1 LED as power indicator
	10 LEDs as speed and Link/Act indicators
Power Consumption	6 W

6.12. GPS/GSM/GPRS Modules

• Selection Guide

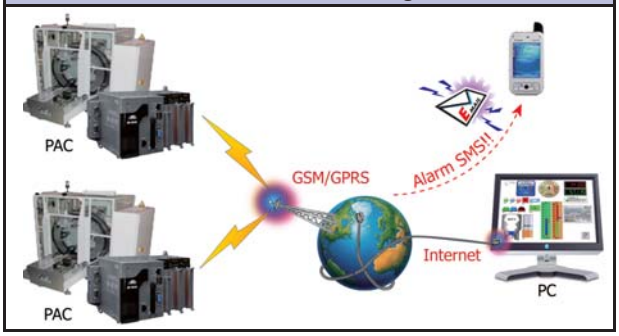
Introduction

The I-87211W/I-8212W/I-8213W modules are specially designed for GPS, GSM and GPRS applications in PAC series. They expand the capability of PAC series into Machine to Machine, Mobile, Man communication applications. Also, there are rich demos including IsaGraf, InduSoft and C language for users to integrate these modules into M2M applications. By applying these modules in PAC series, the remote control or monitoring can be implemented easily from any location.

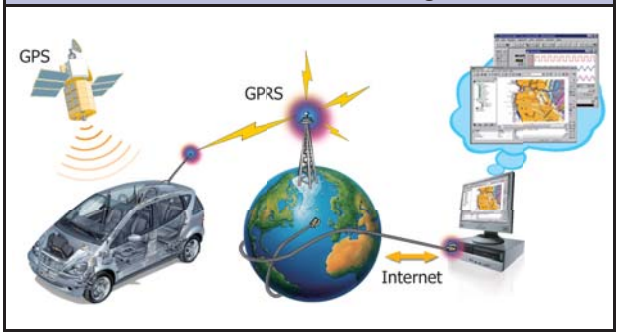
Applications

- Remote Machine management
- GPS Vehicle Tracking

Remote Machine Management



GPS Vehicle Tracking



Model Name		I-87211W	I-8212W	I-8213W
Pictures			NEW 	NEW 
Specifications				
Digital Output	Output Channel	2 (Sink)	-	-
	Output Type	Non-isolated Open Collector	-	-
	Output Current	100 mA	-	-
	Load Voltage	+5 ~ +30 VDC	-	-
GPS Receiver	Chip	MediaTek solution	-	MediaTek solution
	Frequency	L1 1575.42 MHz, C/A code	-	L1 1575.42 MHz, C/A code
	Support Channel	32	-	32
	Position Accuracy	Capable of SBAS (WAAS, EGNOS, MSAS)	-	Capable of SBAS (WAAS, EGNOS, MSAS)
	Max. Altitude	<18,000 m	-	<18,000 m
	Max. Velocity	<515 m/s	-	<515 m/s
	Acquisition Time	Cold Start (Open Sky)=42 s (typical)	-	Cold Start (Open Sky)=42 s (typical)
	Sensitivity	Tracking=Up to -158 dBm	-	Tracking=Up to -158 dBm
		Cold start=Up to -142 dBm	-	Cold start=Up to -142 dBm
	Protocol Support	NMEA 0183 version 3.01	-	NMEA 0183 version 3.01
GPS Output	1 PPS	Pulse per second output (Default 100 ms pulse/sec)	-	-
	RS-232 Interface	GPS information output	-	-
GSM/GPRS	Band	-	850/900/1800/1900 MHz	
	GPRS Multi-slot	-	Class 10/8	
	GPRS Mobile Station	-	Class B	
	GPRS Class 10	-	Max. 85.6 kbps	
	CSD	-	Up to 14.4 kbps	
	Compliant to GSM phase 2/2+	-	Class 4 (2W @ 850/900 MHz); Class 1(1W @ 1800/1900 MHz)	
	Colding Schemes	-	CS 1, CS 2, CS 3, CS 4	
	SMS	-	Text and PDU mode	
3G	Technology	-	GSM /GPRS /EDGE /UMITS /HSDPA /HSUPA will be avalible for **I-8212W-3GWA** and **I-8213W-3GWA**	

Accessories

7

7.1 Power Supplies & Battery Pack P7-1-1

7.2 Industrial Enclosures P7-2-1

7.3 Industrial USB Products P7-3-1

7.1. Power Supplies & Battery Pack

NEW

KA-52F
KA-52F-48

DIN-KA52F
DIN-KA52F-48

KA-52F/DIN-KA52F
KA52F-48/DIN-KA52F-48

Specifications

Models	KA-52F	DIN-KA52F	KA-52F-48	DIN-KA52F-48
Input				
Range	100 ~ 250 VAC			
Frequency	50 ~ 60 Hz			
Output				
Power	24 VDC/1.04 A max., 25 W		48 VDC/0.52 A max., 25 W	
Mechanical				
Dimensions (W x H x D, Units: mm)	54 x 93 x 36	68 x 107 x 50	54 x 93 x 36	68 x 107 x 50
Installation	No-mounting	DIN-Rail Mounting	No-mounting	DIN-Rail Mounting
Environmental				
Operating Temperature	0 ~ +50 °C			
Storage Temperature	-20 ~ +85 °C			

Ordering Information

KA-52F CR	24 VDC/1.04 A, 25 W Power Supply (RoHS)
DIN-KA52F CR	24 VDC/1.04 A, 25 W Power Supply with DIN-Rail Mounting (RoHS)
KA-52F-48 CR	48 VDC/0.52 A, 25 W Power Supply (RoHS)
DIN-KA52F-48 CR	48 VDC/0.52 A, 25 W Power Supply with DIN-Rail Mounting (RoHS)

NEW

GPSU06U-6

Specifications

Models	GPSU06U-6
Input	
Range	100 ~ 250 VAC
Frequency	50 Hz ~ 60 Hz
Output	
Power	24 VDC/0.25 A max., 6 W
Mechanical	
Dimensions (W x H x D)	32 mm x 66 mm x 68 mm
Installation	No-mounting
Environmental	
Operating Temperature	0 ~ +40 °C
Storage Temperature	-20 ~ +85 °C

Ordering Information

GPSU06U-6 CR	24 VDC/0.25 A, 6 W Power Supply (RoHS)

NEW

MDR-20-24 MDR-60-24/MDR-60-48

MDR-20-24
MDR-60-24
MDR-60-48

Specifications

Models	MDR-20-24	MDR-60-24	MDR-60-48
Input			
Range	100 ~ 250 VAC		
Frequency	50 ~ 60 Hz		
Output			
Power	24 VDC/1 A max., 24 W	24 VDC/2.5 A max., 60 W	48 VDC/1.25 A max., 60 W
Mechanical			
Dimensions (W x H x D)	22.5 mm x 90 mm x 100 mm	40 mm x 90 mm x 100 mm	40 mm x 90 mm x 100 mm
Installation	DIN-Rail Mounting		
Environmental			
Operating Temperature	-20 ~ +70 °C		
Storage Temperature	-20 ~ +85 °C		

Ordering Information

MDR-20-24 CR	24 VDC/1 A, 24 W Power Supply with DIN-Rail Mounting (RoHS)
MDR-60-24 CR	24 VDC/2.5 A, 60 W Power Supply with DIN-Rail Mounting (RoHS)
MDR-60-48 CR	48 VDC/1.25 A, 60 W Power Supply with DIN-Rail Mounting (RoHS)

DP-660 DP-1200

DP-660
DP-1200

Specifications

Models	DP-600	DP-1200
Input		
Range	100 ~ 250 VAC	
Frequency	50 ~ 60 Hz	
Output		
Power	24 VDC /2.5 A max., 60 W and 5 VDC /0.5 A max., 2.5 W	24 VDC /5.0 A max., 120 W
Mechanical		
Dimensions (W x H x D)	44 mm x 145 mm x 158 mm	65 mm x 111 mm x 125 mm
Installation	DIN-Rail Mounting	
Environmental		
Operating Temperature	0 ~ +50 °C	-10 ~ +70 °C
Storage Temperature	-20 ~ +85 °C	-25 ~ +85 °C

Ordering Information

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

NEW

BP-3400

Specifications

Models	BP-3400 (3450 mAh, Li-Polymer Battery)
Specifications	
Output Voltage	12 VDC
Output Current	Max. 3.5 A
Input	19 VDC/3.16 A AC adapter
Charge Time	Within 5 hours
Mechanical	
Casing	Plastic
Dimensions (W x H x D)	84 mm x 174 mm x 23 mm
Environmental	
Operating Temperature	-10 ~ +50 °C
Storage Temperature	-20 ~ +60 °C

Ordering Information

BP-3400 CR	3450 mAh, Li-Polymer Battery (RoHS)

7.2. Industrial Enclosures

I-950-ENC

I-951-ENC

I-950-ENC
I-951-ENC

RoHS

Specifications

Models	I-950-ENC	I-951-ENC
Includes		
Case Accessory		
2 x Polyamide cable glands		
4 x captive lid screws		
1 x DIN-rail (24cm)		
Mechanical		
Casing	Plastic	
Dimensions (W x H x D)	254 mm x 180 mm x 90 mm	254 mm x 180 mm x 111 mm
Environmental		
Temperature	0 ~ +50°C for Protection rating IP66	

Ordering Information

I-950-ENC CR	Industrial Enclosure (254 mm x 180 mm x 90 mm) (RoHS)
I-951-ENC CR	Industrial Enclosure (254 mm x 180 mm x 111 mm) (RoHS)

I-3625-ENC

RoHS

Specifications

Models	I-3625-ENC
Includes	
Case Accessory	
2 x Polyamide cable glands	
6 x captive lid screws	
1 x DIN-rail (24cm)	
Mechanical	
Casing	Plastic
Dimensions (W x H x D)	360 mm x 254 mm x 165 mm
Environmental	
Temperature	0 ~ +50°C for Protection rating IP66

Ordering Information

I-3625-ENC CR	Industrial Enclosure (RoHS)

7.3. Industrial USB Products

I-7560

Specifications

Models	I-7560 (USB to RS-232 Converter)
Interface	
USB	Compatibility: USB 1.1 and 2.0 standards
RS-232	TxD, RxD, RTS, CTS, DSR, DTR, DCD, RI and GND; non-isolated
Baud Rate	300 ~ 115200 bps
Driver	Windows 98/ME/2000/XP/Vista (32/64-bit)/7 (32/64-bit)/Linux
Mechanical	
Casing	Plastic (Flammability UL 94V-0)
Dimensions (W x H x D)	33 mm x 60 mm x 15 mm
Environmental	
Operating Temperature	-25 ~ +75 °C
Storage Temperature	-30 ~ +75 °C

Ordering Information

I-7560 CR	USB to RS-232 Converter (RoHS)

NEW

USB-2020

Specifications

Models	USB-2020 (USB Audio Device)
Interface	
Output Channels	Mono, Stereo (L + R)
Input Channels	Mono, Stereo (L + R)
Button	HID volume up, volume down and Mute
Input Voltage Range	+10 ~ +30 V_{DC}
Mechanical	
Casing	Plastic (Flammability UL 94V-0)
Dimensions (W x H x D)	33 mm x 107 mm x 78 mm
Installation	DIN-Rail
Environmental	
Operating Temperature	-25 ~ +75 °C
Storage Temperature	-40 ~ +85 °C

Ordering Information

USB-2020 CR	USB Audio Device (RoHS)

NEW

USB-2560

Specifications

Models	USB-2560 (4-Port Industrial USB 2.0 Hub)
Interface	
Ports	Upstream x 1 (Type B); Downstream x 4 (Type A)
Compatibility	Specification Rev. 2.0/1.1/1.0
Transfer Speed	480 Mbit/s-high speed mode
Input Voltage Range	+12 ~ +48 V_{DC}
Mechanical	
Casing	Plastic (Flammability UL 94V-0)
Dimensions (W x H x D)	33 mm x 107 mm x 78 mm
Installation	DIN-Rail
Environmental	
Operating Temperature	-0 ~ +70 °C
Storage Temperature	-20 ~ +80 °C

Ordering Information

USB-2560 CR	4-port Industrial USB 2.0 Hub (RoHS)
USB-2560/S CR	4-port Industrial USB 2.0 Hub (RoHS) with GPSU06U-6 (Power Supply)

MiniOS7 Based
µPAC-5000 Series
Windows CE 5.0 Based
WP-5000 Series
Linux 2.6 Based
LP-5000 Series

Ethernet/Internet
Embedded µPAC
µPAC-7186 Sreies

M2M Mini-PAC
G-4500 Series

RS-485 Remote I/O
I-7000 Series (DCON Protocol)
M-7000 Series (Modbus Protocol)

Ethernet Remote I/O
ET-7000 Series
PET-7000 Series

FRnet Remote I/O
FR-2000 Series

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