

# 5000 Series PAC



## 8.1. $\mu$ PAC-5000 Series

P8-1-1



- Overview - - - - - P8-1-1
- Selection Guide - - - - - P8-1-4
- Data Sheet - - - - - P8-1-6

## 8.2. WinPAC-5000 Series

P8-2-1



- Overview - - - - - P8-2-1
- Selection Guide - - - - - P8-2-3
- Data Sheet - - - - - P8-2-4

## 8.3. LinPAC-5000 Series

P8-3-1



Linux



- Overview - - - - - P8-3-1
- Selection Guide - - - - - P8-3-2
- Data Sheet - - - - - P8-3-3

## 8.4. I/O Expansion Boards

P8-4-1



- Overview - - - - - P8-4-1
- XV-Board/XW-Board - - - - - P8-4-1

# 8.1. μPAC-5000 Series

## • Overview

**μPAC-5000 Family**

**Rich Development Tools**

- ISaGRAF
- C

**5-Digit LED Display**

**Rich Development Tools**

**microSD**

**Various Communications**

- Ethernet
- RS-232/485
- CAN bus
- FRnet
- GPS, GPRS
- ZigBee

**Local I/O Expansion Board**

More than 10 I/O XW-board are supported

The μPAC-5000 Series is equipped a 80186 CPU running a MiniOS7 operating system, various connectivity (Ethernet, RS-232/485) and an I/O expansion bus.

The μPAC-5000 series is an enhanced version of μPAC-7186. Owing to the bigger and special form factor design, the μPAC-5000 can add an internal wireless module, such as 2G, 3G, ZigBee, Wi-Fi, GPS for different wireless application. The optional I/O expansion board, XW-board, is two times larger than the X-board of μPAC-7186 and provides high-protection I/O. With built-in micro SD, the μPAC-5000 can be used as a data logger.

## • Common Features

### 1. MiniOS7 Inside



**MiniOS7**  
**80186 CPU**  
**μPAC-5000 Series**

- DOS-like real-time OS
- 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

### 2. Local I/O and Communication Expansion Board

The μPAC 5000 series equip an I/O expansion bus to support one optional expansion board, called XW-Board. It can be used to implement various I/O functions such as DI, DO, A/D, D/A, Timer/Counter and various communication interface options, such as RS-232/422/485, CAN, FRnet, etc.



### 3. Remote I/O Module and Expansion Unit

With the built-in RS-485 and Ethernet ports, the 5000 series can connect RS-485/Ethernet remote I/O units (RU-87Pn/ET-87Pn) or modules (I-7000/M-7000/ET-7000). With an XW-Board, the 5000 series can have more communication ports or different interface to connect to other type of devices, for example, CANOpen devices, DeviceNet devices, or FRnet I/O modules.

### 4. Multiple Communication Interfaces

Several different types of communication interface are available that enable I/O modules to be expanded and connected to external devices:

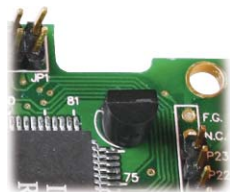
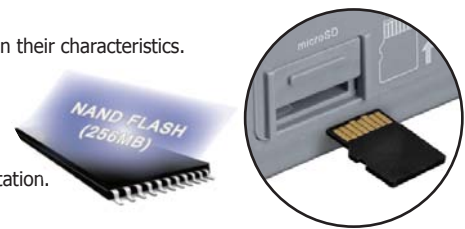
1. Ethernet
2. RS-232/485
3. CAN bus
4. FRnet
5. GPS
6. 2G/3G
7. ZigBee
8. Wi-Fi



### 5. Various Memory Storage Options

µPAC-5000 provides various memory storage options. Customers can choose the memory based on their characteristics.

- 16 KB EEPROM: to store not frequently changed parameters.
- microSD: to implement portable data logging applications.
- 256 MB NAND Flash Disk: rugged data storage to resist shock and vibration.
- 512 KB battery backup SRAM: to retain data while power lost for 5 years; no write cycle limitation.



### 6. Unique 64-bit Hardware Serial Number to Protect Your Program

A unique 64-bit serial number is assigned to each hardware device to protect your software against piracy.

### 7. Plastic and Metal Casing

The default case is plastic material. Metal casing is also offered to OEM version.



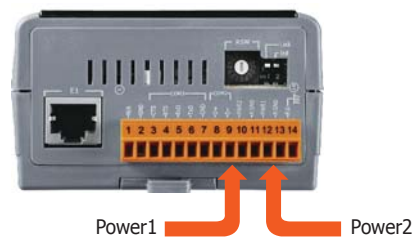
### 8. Highly Reliable Under Harsh Environment

Our µPACs operate in a wide range of temperature and humidity.

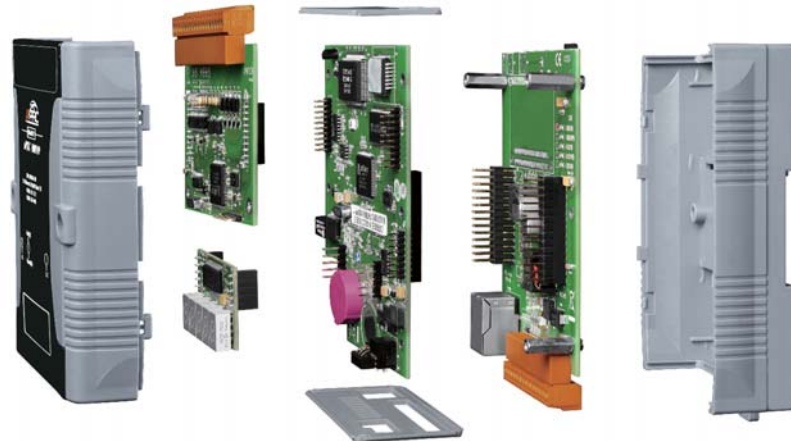
- Operating Temperature: -25 ~ +75°C
- Storage Temperature: -30 ~ +80°C
- Humidity 10 ~ 90% RH (non-condensing)



### 9. Redundant Power Inputs



• μPAC-5000 + XW-Board



• Common Specifications

Models	μPAC-5000 Series	μPAC-5000-FD Series	μPAC-5xx7 Series
<b>System Software</b>			
OS	MiniOS7 (DOS-like embedded operating system)		
<b>Development Software</b>			
	<b>C Language</b>		<b>ISaGRAF</b>
Download Interface	RS-232 (COM1) or Ethernet		ISaGRAF Version 3
Language	C language		Languages
Compilers	TC++ 1.01, TC 2.01, BC++3.1 ~ 5.2x, MSC 6.0, MSVC++ (before version 1.5.2)		Max. Code Size
			Scan Time
			IEC 61131-3 standard
			LD, ST, FBD, SFC, IL & FC
			Accepts max. 64 KB ISaGRAF code size (Appli.x8m must < 64 KB)
			2 ~ 25 ms for normal program; 10 ~ 125 ms (or more) for complex or large program
<b>CPU Module</b>			
CPU	80186, 80 MHz		
SRAM	512 KB		768 KB
Flash	512 KB		
microSD Expansion	Yes, can support 1 or 2 GB microSD		Yes (but ISaGRAF doesn't support)
NAND Flash Disk	-	256 MB	-
Battery Backup SRAM	-		512KB ; data valid up to 5 years (for retain variables)
EEPROM	16 KB		
NVRAM	31 Bytes (battery backup, data valid up to 10 years)		
RTC (Real Time Clock)	Provide second, minute, hour, date, day of week, month, year		
64-bit Hardware Serial Number	Yes, for Software Copy Protection		
Watchdog Timers	Yes (0.8 second)		
<b>Communication Ports</b>			
Ethernet	RJ-45 x 1, 10/100 Base-TX (Auto-negotiating, Auto MDI/MDI-X, LED indicators)		
COM 1	RS-232 (TxD, RxD, RTS, CTS, GND), non-isolated, Speed: 115200 bps max.		
COM 2	RS-485 (Data+, Data-) with internal self-tuner ASIC; non-isolated, Speed: 115200 bps max.		
<b>LED Indicator</b>			
Programmable LED Indicators	2		
LED Display	5-digit 7-segment LED display for (D) versions		
<b>Hardware Expansion</b>			
I/O Expansion Bus	Yes (for one XW-Board only)		
<b>Mechanical</b>			
Dimensions (W x H x D)	91 mm x 123 mm x 52 mm		
Installation	DIN-Rail Mounting		
<b>Environmental</b>			
Operating Temperature	-25 ~ +75°C		
Storage Temperature	-30 ~ +80°C		
Ambient Relative Humidity	10 ~ 90% RH (non-condensing)		
<b>Power</b>			
Input Range	+12 ~ +48 V <sub>oc</sub>		
Isolation	-		
Redundant Power Inputs	Yes		
Protection	Power reverse polarity protection		
Frame Ground	Yes (for ESD Protection)		
Power Consumption	2 W; 2.5 W for (D) version		

• Selection Guide

**μPAC-5** **X** **O** **X** **D** - **F** **D**

**Wireless Communication**  
 0: None  
 1: GPS  
 2: 2G (GPRS)  
 3: 3G (WCDMA)  
 5: Wi-Fi  
 8: ZigBee (Host, Coordinator)  
 9: ZigBee (Slave, Full Function Device)

**Software**  
 1: C language based  
 7: ISaGRAF

**Display or Casing**  
 D: LED Display  
 M: Metal Casing

**Memory**  
 FD: 256 MB Flash

C Language Based μPAC-5000

Model Name	CPU	Flash	SRAM	Memory Expansion	Ethernet	Wireless Communication	RS-232/RS-485
μPAC-5001(D)	80 MHz	512 KB	512 KB	microSD	10/100 BaseTX	-	1/1
μPAC-5001(D)-FD				microSD + 256 MB Flash			


C Language Based μPAC-5000 with GPS

Model Name	CPU	Flash	SRAM	Memory Expansion	Ethernet	Wireless Communication	RS-232/RS-485
μPAC-5101(D)	80 MHz	512 KB	512 KB	microSD	10/100 BaseTX	GPS	1/1

The Global Positioning System (GPS) is a space-based global navigation satellite system (GNSS) that provides reliable location and time information anytime and anywhere on the Earth when and where there is an unobstructed line of sight to four or more GPS satellites. The GPS is widely used for driving navigation, geographic monitoring, fleet management and cargo tracking, etc. We also can use GPS for industrial application according to its longitude and latitude value and UTC time.

GPS Specifications	
Channels	32 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

**Standard Antenna for GPS**



ANT-115-03	
Connector	SMA Male
Radiation	Directional
Band	1575.42 ±1.023MHz
Gain (dBi)	2 ~ 3
Cable Length	5 m
Installation	Magnetic mount base

C Language Based μPAC-5000 with ZigBee




Model Name	CPU	Flash	SRAM	Memory Expansion	Ethernet	Wireless Communication	RS-232/RS-485
μPAC-5801(D)	80 MHz	512 KB	512 KB	microSD	10/100 BaseTX	ZigBee (Host, Coordinator)	1/1
μPAC-5901(D)						ZigBee (Slave, Full Function Device)	

ZigBee is a specification based on the IEEE 802.15.4 standard for wireless personal area networks (WPANs). ZigBee operates in the ISM radio bands and its focus is to define a general purpose, inexpensive, self-organizing, mesh network that can be used for industrial control, embedded sensing, medical data collection, smoke and intruder warning, building automation, and home automation, etc.

ZigBee Specifications		
	ZigBee (Host, Coordinator)	ZigBee (Slave, Full Function Device)
RF channels	16	
Receive sensitivity	-102 dBm	
Data encryption	AES-CRT/AES-128	-
Transmit power	9 dBm	
Network topology support	Star, Mesh and Cluster Tree	
Antenna (2.4 GHz)	5 dBi Omni-Directional antenna	
Transmission range (LOS)	?? m	

**Standard Antenna for ZigBee and Wi-Fi**



ANT-124-05	
Connector	RP SMA Male
Radiation	Omni-Directional
Band	2.4 ~ 2.5 GHz
Gain (dBi)	5
Cable Length	20 cm

C Language Based μPAC-5000 with 2G (GPRS)/3G (WCDMA)

Model Name	CPU	Flash	SRAM	Memory Expansion	Ethernet	Wireless Communication	RS-232/RS-485
μPAC-5201(D)	80 MHz	512 KB	512 KB	microSD	10/100 BaseTX	<b>2G (GPRS)</b>	1/1
μPAC-5301(D)	80 MHz	512 KB	512 KB	microSD	10/100 BaseTX	<b>3G (WCDMA)</b>	1/1

The wireless 2G (GSM, GPRS) and 3G (WCDMA) are the public wireless telephone technologies. The wide range of remote control applications are enabled by 2G/3G services such as audio, SMS, GPRS and WCDMA. Additionally, these applications can manage a small, medium and large number of unmanned remote devices as well as mobile terminals using the 2G/3G telecom network. They are widely applied in various applications like hydrographic monitoring, intelligent power, flow meter report system and GPS car-tracking system anytime anywhere.

2G (GPRS) Specifications	
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

Optional Antenna for 2G and 3G		
	<b>ANT-421-01</b>	
	Connector	SMA Male
	Radiation	Omni-Directional
	Band	824 ~ 960 MHz 1710 ~ 2170 MHz
	Gain (dBi)	1.0 ±0.7 @ 830 MHz 0.5 ±0.7 @ 1730 MHz
	Cable Length	3 m
	Installation	Magnetic mount base

3G (WCDMA) Specifications	
Band	UMTS : 2100/1900/850 MHz
Data Transfer	UMTS / HSDPA / HSUPA Upload: Max. 5.76 Mbps; Download: Max. 7.2 Mbps

Standard Antenna for 2G and 3G		
	<b>ANT-421-02</b>	
	Connector	SMA Male
	Radiation	Omni-Directional
	Band	824 ~ 960 MHz 1710 ~ 2170 MHz
	Gain (dBi)	-0.9 ±0.7 @ 890 MHz +1.7 ±0.7 @ 1930 MHz
	Cable Length	14 cm

C Language Based μPAC-5000 with Wi-Fi

Model Name	CPU	Flash	SRAM	Memory Expansion	Ethernet	Wireless Communication	RS-232/RS-485
μPAC-5501(D)	80 MHz	512 KB	512 KB	microSD	10/100 BaseTX	<b>Wi-Fi (802.11 b/g)</b>	1/1

Wi-Fi (Wireless Local Area Network) links devices by wireless distribution method (spread-spectrum or OFDM radio), and generally provides a connection through an access point to the Ethernet network. The applications of Wi-Fi are getting more popular by mature technology. These Wi-Fi applications can reduce the troublesomely wiring works and have higher mobility than Ethernet network. Additionally, Wi-Fi technology allows users to move device within a local coverage area, and still be connected to the network. High-bandwidth allocation for wireless will make a relatively.

Wi-Fi Specifications	
Protocol	IEEE 802.11 b/g
Frequency Range	2.412GHz ~ 2.484GHz
Channel	13 channels
Security	WEP-64/ WEP-128/WPA-TKIP/WPA-AES
Receive sensitivity	-87 dBm (IEEE 802.11b) / -72 dBm (IEEE 802.11g)
Transmit Power	12 dBm (IEEE 802.11b) / 14 dBm (IEEE 802.11g)

Standard Antenna for ZigBee and Wi-Fi		
	<b>ANT-124-05</b>	
	Connector	RP SMA Male
	Radiation	Omni-Directional
	Band	2.4 ~ 2.5 GHz
	Gain (dBi)	5
	Cable Length	20 cm

ISaGRAF Based μPAC-5000

Model Name	CPU	Flash	SRAM	Memory Expansion	Ethernet	Wireless Communication	RS-232/RS-485
μPAC-5007(D)	80 MHz	512 KB	768 KB	microSD + 512 KB Battery Backup SRAM	10/100 BaseTX	-	1/1
μPAC-5107(D)						GPS	
μPAC-5207(D)						<b>2G (GPRS)</b>	
μPAC-5307(D)						<b>3G (WCDMA)</b>	
μPAC-5507(D)						<b>Wi-Fi (802.11 b/g)</b>	



### Features

- 80186, 80 MHz CPU
- MiniOS7 Inside
- C Language Programming
  - TCP/IP Library
  - Modbus Library
- Various Storage Media
  - 512 KB Flash
  - 16 KB EEPROM
  - microSD
  - 256 MB NAND Flash Disk
- Various Communication Interfaces
  - 10/100 Base-TX Ethernet
  - RS-232/485
- 64-bit Hardware Serial Number
- I/O Expansion Bus
- Redundant Power Inputs
- Operating Temperature: -25 ~ +75°C



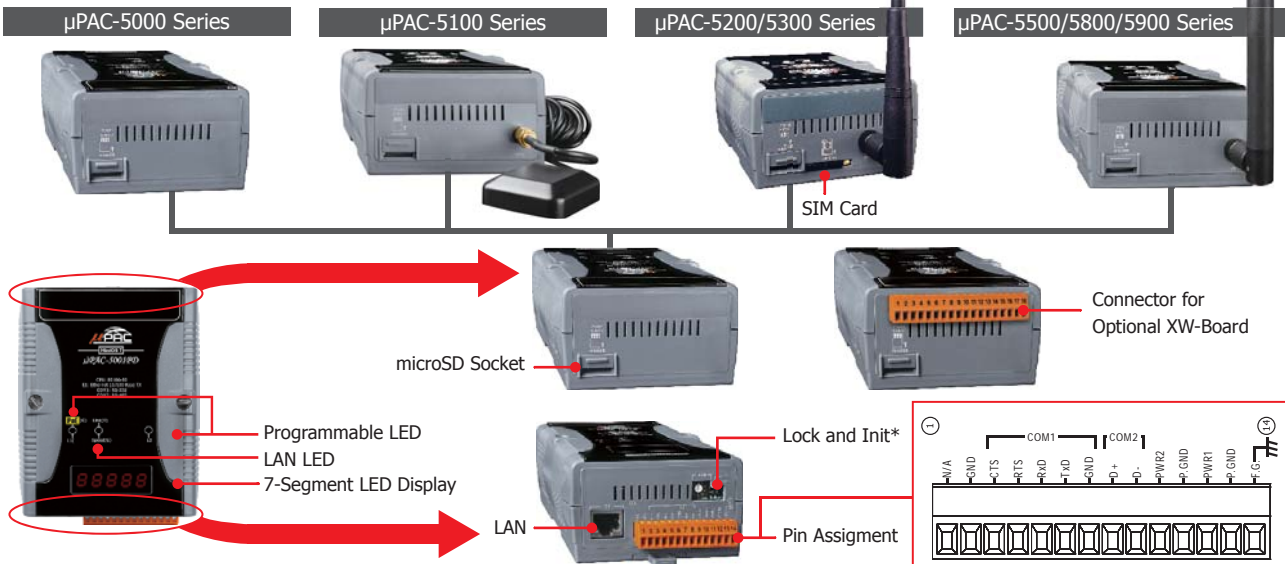
## C Language based μPAC-5000(D) Series

### Introduction

The μPAC-5XX1 series is an enhanced version of μPAC-7186EX. It provides C tool kits for C programmer. Owing to the bigger and special form factor design, the μPAC-5XX1 can add an internal wireless module, such as 2G, 3G, ZigBee, Wi-Fi, GPS for different wireless application. The optional I/O expansion board, XW-board, is two times larger than the X-board of μPAC-7186 and provides high-protection I/O. With built-in micro SD, the μPAC-5000 can be used as a data logger.

ICP DAS provides easy-to-use software development tool kits (Xserver, MiniOS7 framework, VxComm, them to easily integrate serial devices to have Ethernet/Internet communication ability and through the communicate with SCADA software (Indusoft, ISaGARF, DasyLab, Trace Mode, Citect, iFix, etc.).

Modbus libraries). Users can use standard Modbus protocol to



### Ordering Information

Ordering Information	
Models	Description
μPAC-5001(D)	μPAC-5000 with LAN
μPAC-5001(D)-FD	μPAC-5000 with LAN and 256 MB flash
μPAC-5101(D)	μPAC-5000 with LAN and GPS
μPAC-5201(D)	μPAC-5000 with LAN and 2G (GPRS)

Ordering Information	
Models	Description
μPAC-5301(D)	μPAC-5000 with LAN and 3G (WCDMA)
μPAC-5501(D)	μPAC-5000 with LAN and Wi-Fi (802.11 b/g)
μPAC-5801(D)	μPAC-5000 with LAN and ZigBee (Host, Coordinator)
μPAC-5901(D)	μPAC-5000 with LAN and ZigBee (Slave, Full Function Device)

Note: (D) means with 7-Segment LED Display.

### Option Accessories

NS-205 CR	Unmanaged Industrial 5-Port Ethernet Switch
MDR-20-24	24V/1A, 24 W Power Supply with DIN-Rail Mounting

DIN-KA52F	24V/1.04A, 25 W Power Supply with DIN-Rail Mounting
3LMSD-2000	2 GB microSD card



### Features

- 80186, 80 MHz CPU
- MiniOS7 Inside
- ISaGRAF Ver.3 SoftLogic: Five IEC 61131-3 Standard Open PLC Languages + Flow Chart
- Various Storage Media
  - 512 KB Flash
  - 16 KB EEPROM
  - 512 KB Battery Backup SRAM
- Various Communication Interface Options
  - 10/100 Base-TX Ethernet
  - RS-232/485
  - GPS
  - 2G (GPRS) / 3G (WCDMA)
  - Wi-Fi
- 64-bit Hardware Serial Number
- I/O Expansion Bus
- Redundant Power Inputs
- Operating Temperature: -25 ~ +75°C



## ISaGRAF based μPAC-5000(D) Series

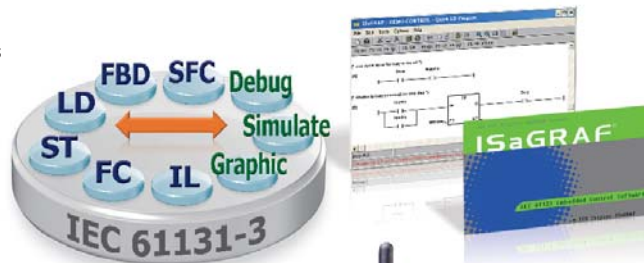
### Introduction

The μPAC-5XX7 series is an enhanced version of μPAC-7186EG. It provides ISaGRAF workbench for PLC user. Owing to the bigger and special form factor design, the μPAC-5XX7 can add an internal wireless module, such as 2G, 3G, ZigBee, Wi-Fi, GPS for different wireless application. The optional I/O expansion board, XW-board, is two times larger than the X-board of μPAC-7186 and provides high-protection I/O. With built-in micro SD, the μPAC-5000 can be used as a data logger.

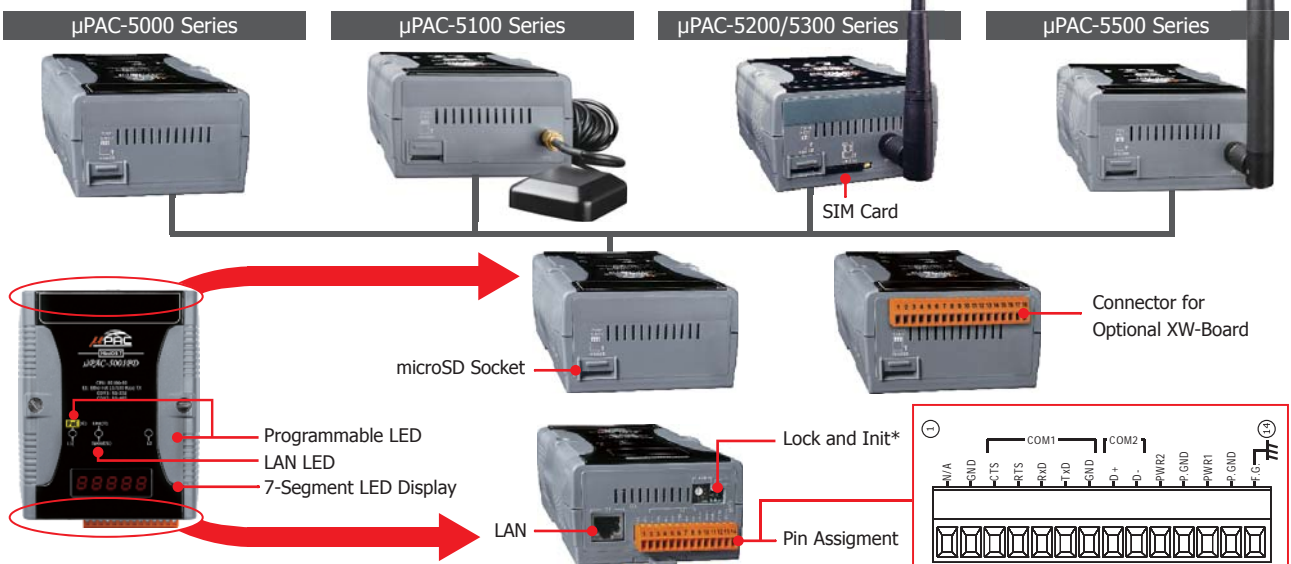
For hardware expansion, it also supports an I/O expansion bus. The I/O expansion bus can be used to implement various I/O functions such as DI, DO, A/D, D/A, Timer/Counter, UART, and other I/O functions. Nearly all kinds of I/O functions can be implemented by this bus. But the bus can support only one board. There are more than 10 boards available for μPAC-5x07 series, you can choose one of them to expand hardware features.

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

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



### Appearance





## ISaGRAF Specifications

Protocols (some protocols need optional devices)	
NET ID	User-assigned by software, 1 ~ 255
Modbus RTU/ASCII Master Protocol	Max. 2 COM Ports: COM1, COM2 and COM3 (*). (To connect to other Modbus Slave devices) Max. Modbus_XXX Function Block amount for 2 ports: 128.
Modbus RTU Slave Protocol	Max. 2 COM Ports, COM1 and one of (COM2, COM3) (*). For connecting ISaGRAF, PC/HMI/OPC Server & MMI panels.
Modbus TCP/IP Protocol	Max. 6 connections, Ethernet ports support Modbus TCP/IP Slave Protocol for connecting ISaGRAF & PC/HMI.
User-defined Protocol	COM1, COM2 & COM3 ~ COM8 (*) by serial communication function blocks.
Remote I/O	One of COM2 or COM3 (RS-485) (*) supports I-7000 I/O modules & (I-87Kn or RU-87Pn + I-87K High Profile I/O boards) as Remote I/O. Max. 64 I/O modules for one PAC.
Fbus	Built-in COM2 Port to exchange data between ICP DAS's ISaGRAF PACs.
Ebus	To exchange data between ICP DAS's ISaGRAF Ethernet PACs via Ethernet port.
Send Email	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)
SMS: Short Message Service	One of COM1 or COM3 or COM4 (RS-232) (*) can link to a GSM modem to support SMS. User can request data/control the controller by cellular phone. The controller can also send data & alarms to user's cellular phone. Optional GSM modem: GTM-201-RS232 (GSM/GPRS 850/900/1800/1900) Note: $\mu$ PAC-5207, 5307 has built-in GPRS, no external GSM/GPRS modem required.
Redundancy Solution	Two PACs plug with XW107 in slot0. One is Master, one is Slave. Master handles all inputs & outputs at run time. If Master is damaged (or power off), Slave will take over the control of Bus7000b. If Master is alive from damaged (or power up again), it takes the control of Bus7000b again. The change over time is about 5 seconds. Control data is exchanging via Ebus (if using a cross cable, no require any Ethernet Switch). All I/O should be RS-485 I/O except the status I/O in the slot 0: XW107.
CAN/CANopen	Use COM1 or COM3 ~ COM8 (*) to connect one I-7530 (RS-232 to CAN converter) to support CAN/CANopen devices and sensors. One PAC supports max. 3 RS-232 ports to connect max. 3 I-7530 modules. (FAQ - 086)
FTP Client	Support FTP client to upload files in the PAC to a remote FTP server on PC. (FAQ-151)
Optional I/O Functions	
PWM Output	
Pulse Width Modulation Output	All XW-Board series support PWM output. Max. 8 channels for one controller. 500 Hz max. for Off = 1 & On = 1 ms Output square wave: Off: 1 ~ 32767 ms, On: 1 ~ 32767 ms
Counters	
Parallel DI Counter	All XW-Board series support DI counter. Max. 8 channels for one controller. Counter value: 32-bit 500 Hz max. Min. ON & OFF width must > 1 ms
Remote DI Counter	All remote I-7000 & I-87K DI modules support counters. 100 Hz max. value: 0 ~ 65535
Remote High Speed Counter	Optional I-87082: 100 kHz max. ,32-bit
* Note: COM3 ~ COM8 are resided at the optional XW-Board series if it is plugged inside the $\mu$ PAC-5x07.	
* ISaGRAF FAQ: <a href="http://www.icpdas.com/faq/isagraf.htm">http://www.icpdas.com/faq/isagraf.htm</a>	

## Ordering Information

Models	Description
$\mu$ PAC-5007(D)	ISaGRAF based $\mu$ PAC-5000 with LAN
$\mu$ PAC-5107(D)	ISaGRAF based $\mu$ PAC-5000 with LAN and GPS
$\mu$ PAC-5207(D)	ISaGRAF based $\mu$ PAC-5000 with LAN and 2G (GPRS)
$\mu$ PAC-5307(D)	ISaGRAF based $\mu$ PAC-5000 with LAN and 3G (WCDMA)
$\mu$ PAC-5507(D)	ISaGRAF based $\mu$ PAC-5000 with LAN and Wi-Fi (802.11 b/g)

Note: (D) means with 7-Segment LED Display.

## Option Accessories

NS-205 CR	Unmanaged Industrial 5-Port Ethernet Switch
MDR-20-24	24V/1A, 24 W Power Supply with DIN-Rail Mounting
DIN-KA52F	24V/1.04A, 25 W Power Supply with DIN-Rail Mounting

## 8.2. WinPAC-5000 Series

### • Overview

**WinPAC-5000 Family**

**Rich Development Tools**

- ISaGRAF
- InduSoft
- Microsoft Visual Studio.net

**Windows CE.net**

**Audio In/Out**

**Various Communications**

- Ethernet
- RS-232/485
- USB host

**Local I/O Expansion Board**

More than 10 I/O XW-board are supported

The WP-5000 series is equipped an ARM CPU and running a windows CE.NET 5.0/7.0 operating system. Compared to  $\mu$ PAC-5000, WP-5141 series has a VGA port to support graphic display and no need HMI. WP-5231 series has an optional internal wireless module, such as GPS, 2G/3G, Wi-Fi, ZigBee, etc. Using Windows CE.NET 5.0/7.0, it is capable of running PC-based software, such as Visual Basic.NET, Visual C#, Embedded Visual C++, SCADA software, ISaGRAF, etc.

### • Features

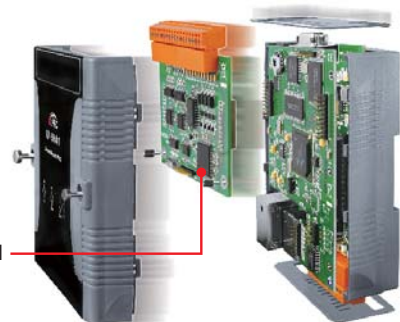
- Supports PC based software: eVC and VS .NET 2005/2008
  - Web server, FTP server, Telnet server
  - ISaGRAF version for IEC 61131-3 programming
  - InduSoft version for SCADA solution

The WinPAC-5000 series features hard real-time capability, small core size, fast boot speed, interrupt handling at a deeper level, achievable deterministic control and low cost. Using Windows CE.NET 5.0/7.0 gives it the ability to run PC-based control software such as Visual Basic.NET, Visual C#, Embedded Visual C++, SCADA software, SoftPLC ...etc.

#### 2. Local I/O and Communication Expansion Board

The optional I/O expansion board, XV-Board and XW-Board, provides high-protection I/O, such as DI, DO, A/D, D/A and various communication ports.

XV-Board or XW-Board



#### 3. Remote I/O Module and Expansion Unit

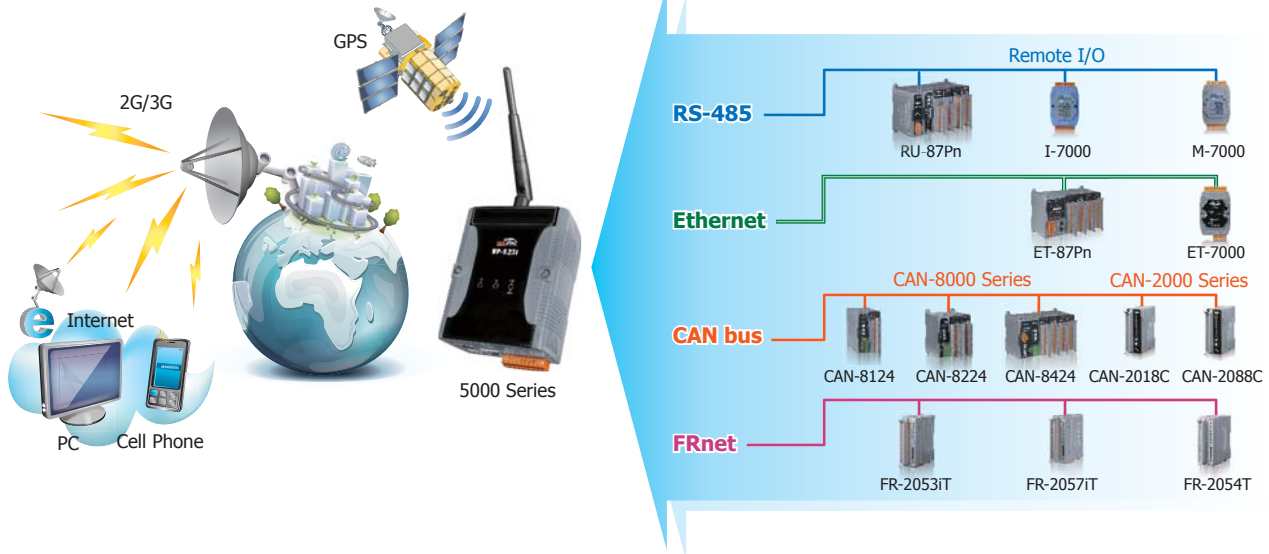
With the built-in RS-485 and Ethernet ports, the 5000 series can connect RS-485/Ethernet remote I/O units (RU-87Pn/ET-87Pn) or modules (I-7000/M-7000/ET-7000). With an XW-Board, the 5000 series can have more communication ports or different interface to connect to other type of devices, for example, CANopen devices, DeviceNet devices, or FRnet I/O modules.

### 4. Multiple Communication Interfaces

Several different types of communication interface are available that enable I/O modules to be expanded and connected to external devices:

1. Ethernet
2. RS-232/485
3. CAN bus
4. FRnet
5. GPS
6. 2G/3G
7. ZigBee
8. Wi-Fi

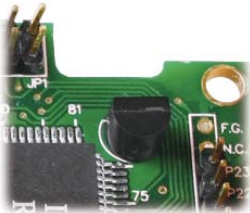
The internal wireless module options are available for WP-5231 series.



### 5. Various Memory Storage Options

WinPAC-5000 provides various memory storage options, such as EEPROM and microSD.

- 16 KB EEPROM: to store not frequently changed parameters.
- microSD/microSDHC: to save application program, image file, audio file and data.



### 6. Unique 64-bit Hardware Serial Number to Protect Your Program

A unique 64-bit serial number is assigned to each hardware device to protect your software against piracy.

### 7. Plastic and Metal Casing

The default case is plastic material. Metal casing is also offered to provide extra security.



Metal Casing



Plastic Casing

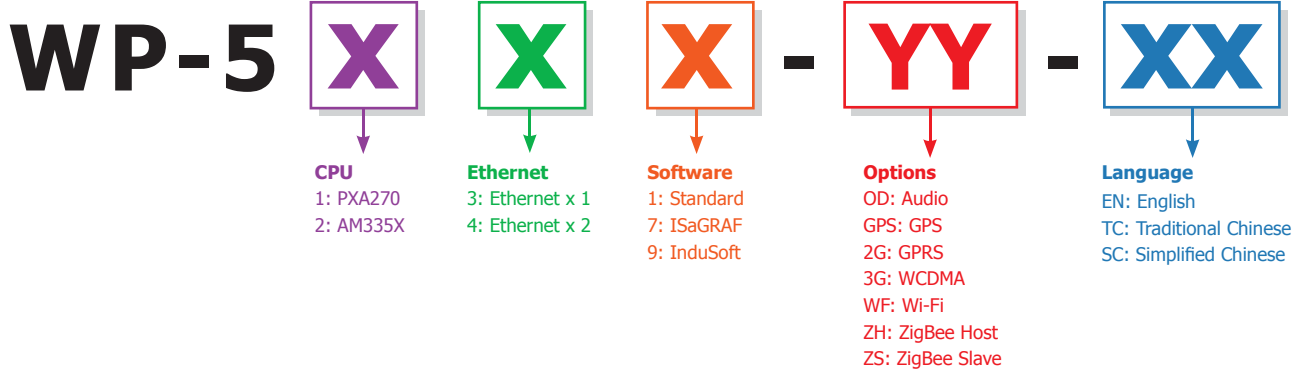
### 8. Highly Reliable Under Harsh Environmen

Our WinPAC operate in a wide range of temperature and humidity.

- Operating Temperature: -25 ~ +75°C
- Storage Temperature: -30 ~ +80°C
- Humidity 10 ~ 90% RH (non-condensing)



• Selection Guide



Standard WinPAC

Model Name	OS	Pre-installed Software	CPU	Flash	SDRAM	VGA Resolution	Ethernet	RS-232/RS-485	Wireless Module	I/O Expansion Bus	Audio Port
WP-5141	WinCE 5.0	-	PXA270, 520 MHz	64 MB	128 MB	800 x 600	2	2/1	-	XW-Board	-
WP-5141-OD											Yes
WP-5231	WinCE 7.0	-	AM335X, 720 MHz	256 MB	128 MB	-	1	1/2	Yes	XV-Board	-

ISaGRAF Based WinPAC

Model Name	OS	Pre-installed Software	CPU	Flash	SDRAM	VGA Resolution	Ethernet	RS-232/RS-485	Wireless Module	I/O Expansion Bus	Audio Port
WP-5147	WinCE 5.0	ISaGRAF	PXA270, 520 MHz	64 MB	128 MB	800 x 600	2	2/1	-	XW-Board	-
WP-5147-OD											Yes

InduSoft Based WinPAC

Model Name	OS	Pre-installed Software	CPU	Flash	SDRAM	VGA Resolution	Ethernet	RS-232/RS-485	Wireless Module	I/O Expansion Bus	Audio Port
WP-5149	WinCE 5.0	InduSoft	PXA270, 520 MHz	64 MB	128 MB	800 x 600	2	2/1	-	XW-Board	-
WP-5149-OD											Yes



### Features

- PXA270, 520 MHz CPU
- Windows CE.NET 5.0 Core
- Hard Real-Time Capability
- 64-bit Hardware Serial Number for Software Protection
- Audio with Microphone-In and Earphone-Out
- I/O Expansion Bus
- VGA Port Output
- Dual 10/100M Ethernet Ports
- 3 Serial Ports (RS-232/485)
- Operating Temperature: -25 ~ +75°C



### Introduction

The WP-51xx series is equipped a PXA270 CPU and running a windows CE.NET 5.0 operating system. Compared to μPAC-5000, it has a VGA port to support graphic display and no need HMI. Instead of internal wireless module, the user should use external wireless device through Ethernet or RS-232 for wireless communication. Using Windows CE.NET 5.0, it is capable of running PC-based software, such as Visual Basic.NET, Visual C#, Embedded Visual C++, SCADA software, ISaGRAF ...etc.

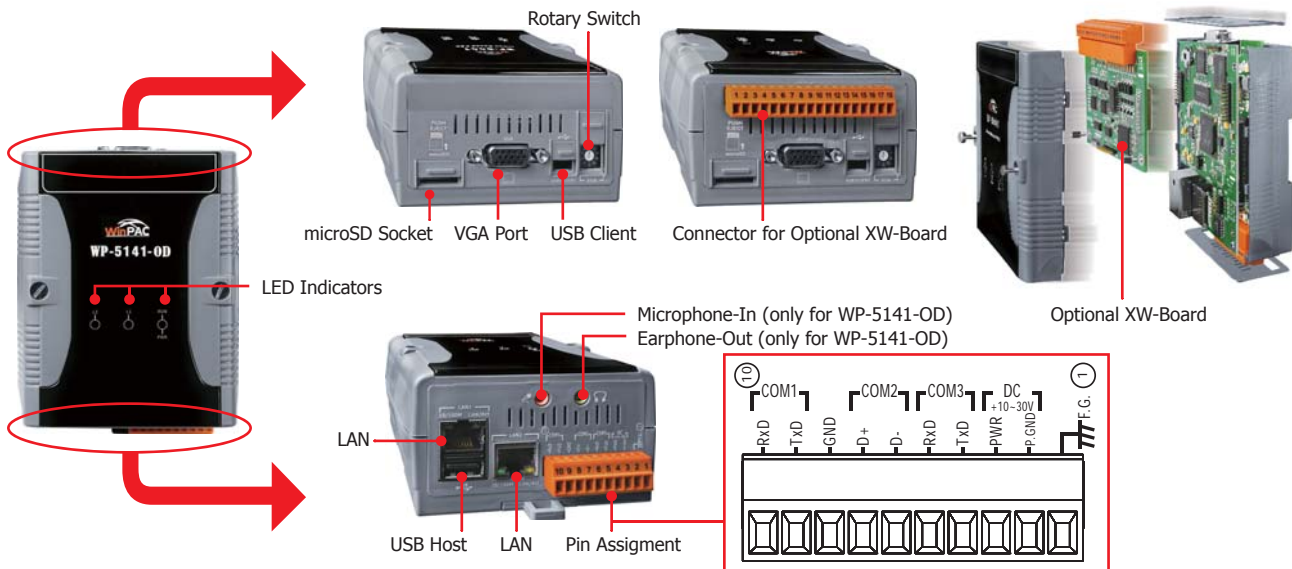
### Windows CE5



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

- ★ FTP Server
- ★ Web Server
- ★ SQL Compact Edition 3.5
- ★ .NET Compact Framework 3.5
- ★ Virtual CE Pro (VCEP)
- ★ OPC Server (NAPOPC\_CE5 DA Server)
- ★ Soft PLC solution: WP-8xx7, WP-5xx7 and VP-25W7 (ISaGRAF inside)
- ★ SCADA solution: WP-8xx9, WP-5xx9 and VP-25W9 (InduSoft inside)

### Appearance



8  
2  
5000 Series PAC

## Specifications

Models	WP-5141	WP-5141-OD
<b>System Software</b>		
OS	Windows CE 5.0 Core	
.Net Compact Framework	3.5	
Embedded Service	FTP server, Web server	
SDK Provided	DII for eVC, DII for Visual Studio.Net 2003/2005/2008	
Multilanguage Support	English, German, French, Spanish, Russian, Italian, Korean, Simplified Chinese, Traditional Chinese	
<b>CPU Module</b>		
CPU	PXA270, 520 MHz	
SDRAM	128 MB	
Flash	64 MB	
EEPROM	16 KB	
Expansion Flash Memory	microSD socket with one 2 GB microSD card (support up to 32 GB microSDHC card)	
RTC (Real Time Clock)	Provide second, minute, hour, date, day of week, month, year	
64-bit Hardware Serial Number	Yes, for Software Copy Protection	
Dual Watchdog Timers	Yes	
LED Indicators	1 LED for Power and Running 2 LEDs for user programmable	
Rotary Switch	Yes (0 ~ 9)	
<b>VGA &amp; Communication Ports</b>		
VGA	Yes 640 × 480 / 800 × 600	
Ethernet	RJ-45 x 2, 10/100 Base-TX (Auto-negotiating, Auto MDI/MDI-X, LED indicators)	
USB 1.1 (client)	1	
USB 1.1 (host)	1	
Audio	-	Microphone-In and Earphone-Out
COM 1	RS-232 (Rx/D, Tx/D and GND); Non-isolated	
COM 2	RS-485 (Data+, Data-); 2500 V <sub>DC</sub> isolated	
COM 3	RS-232 (Rx/D, Tx/D and GND); Non-isolated	
<b>I/O Expansion</b>		
I/O Expansion Bus	Yes, to mount one optional XW-Board.	
<b>Mechanical</b>		
Dimensions (W x L x H)	91 mm x 132 mm x 52 mm	
Installation	DIN-Rail Mounting	
<b>Environmental</b>		
Operating Temperature	-25 ~ +75°C	
Storage Temperature	-30 ~ +80°C	
Ambient Relative Humidity	10 ~ 90% RH (non-condensing)	
<b>Power</b>		
Input Range	+10 ~ +30 V <sub>DC</sub>	
Isolation	1 kV	
Consumption	4.8 W	6 W

## Ordering Information

<b>WP-5141-EN CR</b>	Standard WinPAC-5000 (English Version of OS) (RoHS)
<b>WP-5141-OD-EN CR</b>	Standard WinPAC-5000 with Audio (English Version of OS) (RoHS)
<b>WP-5141-TC CR</b>	Standard WinPAC-5000 (Traditional Chinese Version of OS) (RoHS)
<b>WP-5141-OD-TC CR</b>	Standard WinPAC-5000 with Audio (Traditional Chinese Version of OS) (RoHS)
<b>WP-5141-SC CR</b>	Standard WinPAC-5000 (Simplified Chinese Version of OS) (RoHS)
<b>WP-5141-OD-SC CR</b>	Standard WinPAC-5000 with Audio (Simplified Chinese Version of OS) (RoHS)

## Option Accessories

DP-660	24 V <sub>DC</sub> /2.5 A, 60 W and 5 V <sub>DC</sub> /0.5 A, 2.5 W Power Supply with DIN-Rail Mounting
DP-1200 CR	24 V <sub>DC</sub> /5.0 A, 120 W Power Supply with DIN-Rail Mounting (RoHS)
MDR-20-24 CR	24 V <sub>DC</sub> /1.0 A, 24 W Power Supply with DIN-Rail Mounting (RoHS)
MDR-60-24 CR	24 V <sub>DC</sub> /2.5 A, 60 W Power Supply with DIN-Rail Mounting (RoHS)
XW-Board	Add-on I/O Expansion Board



Available soon **WP-5231 Series**

### Features

- AM335X, 720 MHz CPU
- Windows CE.NET 7.0 Core
- Hard Real-Time Capability
- 64-bit Hardware Serial Number for Software Protection
- I/O Expansion Bus
- 10/100M Ethernet Ports
- Wireless Module Options
- 3 Serial Ports (RS-232/485)
- Operating Temperature: -25 ~ +75°C



### Introduction

The WP-5231 series is equipped a AM335X CPU (720 MHz) and running a windows CE.NET 7.0 operating system. Instead of external wireless module, the WP-5231 can add an internal wireless module, such as 2G, 3G, ZigBee, Wi-Fi, GPS for different wireless application. The optional I/O expansion board, XV-board, provides high-protection I/O. Using the built-in micro SD, the WP-5231 series can save application program, image file and data.

### Windows CE7



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

- ★ FTP Server
- ★ Web Server
- ★ SQL Compact Edition 3.5
- ★ .NET Compact Framework 3.5
- ★ Virtual CE Pro (VCEP)
- ★ OPC Server (NAOPC\_CE5 DA Server)

### Applications

WP-5231

WP-5231-GPS

WP-5231-2G/3G

WP-5231-WF/ZH/ZS

## Specifications

Models	WP-5231	WP-5231-GPS	WP-5231-2G	WP-5231-3G	WP-5231-WF	WP-5231-ZH	WP-5231-ZS
<b>System Software</b>							
OS	Windows CE 7.0 Core						
.Net Compact Framework	3.5						
Embedded Service	FTP server, Web server						
SDK Provided	DII for Visual Studio.Net 2003/2005/2008						
Multilanguage Support	English, German, French, Spanish, Russian, Italian, Korean, Simplified Chinese, Traditional Chinese						
<b>CPU Module</b>							
CPU	AM335X, 720 MHz						
DDR2 SDRAM	128 MB						
Flash	256 MB						
EEPROM	16 KB						
Expansion Flash Memory	microSD socket with one 2 GB microSD card (support up to 32 GB microSDHC card)						
RTC (Real Time Clock)	Provide second, minute, hour, date, day of week, month, year						
64-bit Hardware Serial Number	Yes, for Software Copy Protection						
Dual Watchdog Timers	Yes						
LED Indicators	1 LED for Power and Running; 2 LED for user defined						
Rotary Switch	Yes (0 ~ 9)						
<b>Communication Ports</b>							
Ethernet	RJ-45 x 1, 10/100 Based-TX ( Auto-negotiating, Auto MDI/MDI-X, LED indicators)						
USB 2.0 (host)	1						
Console	RS-232 (Rx, Tx and GND); Non-isolated, Reserved for OS						
COM 1	RS-485 (Data+, Data-); 2500 V <sub>DC</sub> isolated						
COM 2	RS-485 (Data+, Data-); Non-isolated						
COM 3	RS-232 (Rx, Tx and GND); Non-isolated						
Wireless Port	-	GPS	2G (GPRS)	3G (WCDMA)	Wi-Fi	ZigBee (Host, Coordinator)	ZigBee (Slave, Full FunctionDevice)
<b>I/O Expansion</b>							
I/O Expansion Bus	Yes, one optional XV-board						
<b>Mechanical</b>							
Dimensions (W x L x H)	91 mm x 132 mm x 52 mm						
Installation	DIN-Rail Mounting						
<b>Environmental</b>							
Operating Temperature	-25 ~ +75°C						
Storage Temperature	-30 ~ +80°C						
Ambient Relative Humidity	10 ~ 90% RH (non-condensing)						
<b>Power</b>							
Input Range	+10 ~ +30 V <sub>DC</sub>						
Consumption	4.8 W						

## Ordering Information

WP-5231-EN CR	PAC with WinCE 7.0 and one LAN port (English Version of OS) (RoHS)
WP-5231-GPS-EN CR	PAC with WinCE 7.0 and one LAN port and GPS module (English Version of OS) (RoHS)
WP-5231-2G-EN CR	PAC with WinCE 7.0 and one LAN port and 2G (GPRS) module (English Version of OS) (RoHS)
WP-5231-3G-EN CR	PAC with WinCE 7.0 and one LAN port and 3G (WCDMA) module (English Version of OS) (RoHS)
WP-5231-WF-EN CR	PAC with WinCE 7.0 and one LAN port and Wi-Fi (802.11 b/g) module (English Version of OS) (RoHS)
WP-5231-ZH-EN CR	PAC with WinCE 7.0 and one LAN port and ZigBee (Host, Coordinator) module (English Version of OS) (RoHS)
WP-5231-ZS-EN CR	PAC with WinCE 7.0 and one LAN port and ZigBee (Slave, Full Function Device) module (English Version of OS) (RoHS)

## Option Accessories

DP-660	24 V <sub>DC</sub> /2.5 A, 60 W and 5 V <sub>DC</sub> /0.5 A, 2.5 W Power Supply with DIN-Rail Mounting
DP-1200 CR	24 V <sub>DC</sub> /5.0 A, 120 W Power Supply with DIN-Rail Mounting (RoHS)
MDR-20-24 CR	24 V <sub>DC</sub> /1.0 A, 24 W Power Supply with DIN-Rail Mounting (RoHS)
MDR-60-24 CR	24 V <sub>DC</sub> /2.5 A, 60 W Power Supply with DIN-Rail Mounting (RoHS)
XV-Board	Add-on I/O Expansion Board





### Features

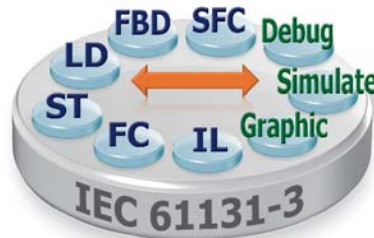
- PXA270, 520 MHz CPU
- Windows CE.NET 5.0 Core
- ISaGRAF Ver.3 SoftLogic Inside (IEC 61131-3)
- Support Soft-GRAF HMI
- Hard Real-Time Capability
- 64-bit Hardware Serial Number for Software Protection
- Audio with Microphone-In and Earphone-Out
- I/O Expansion Bus
- VGA Port Output
- Dual 10/100M Ethernet Ports
- 3 Serial Ports (RS-232/485)
- Operating Temperature: -25 ~ +75°C

## Introduction

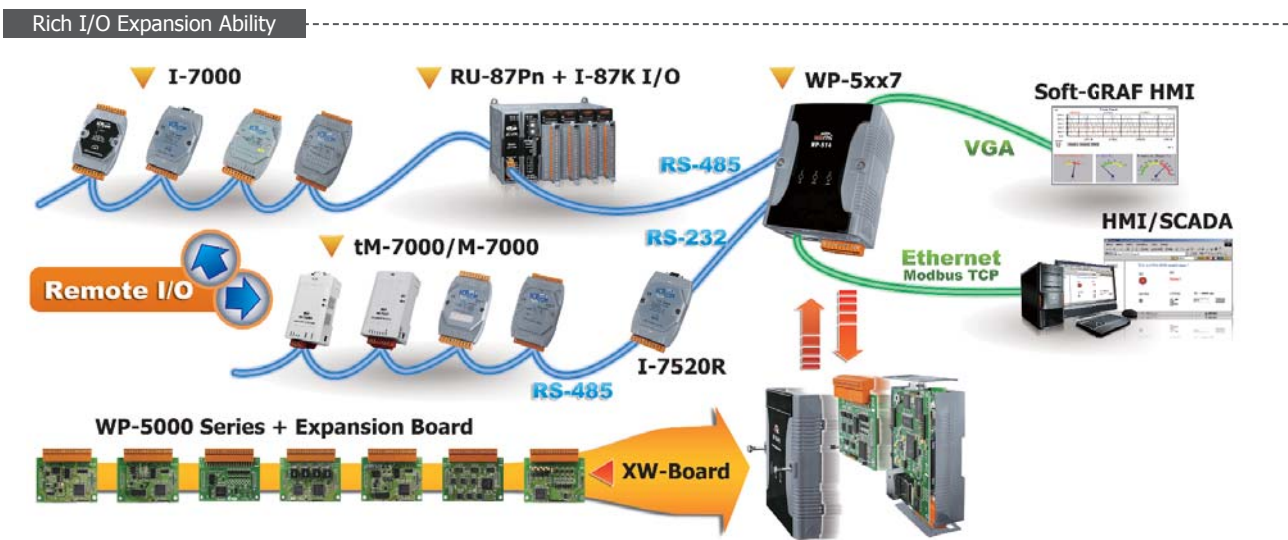
WP-5147 and WP-5147-OD Series are equipped a PXA270 CPU (520 MHz) running a Windows CE.NET 5.0 operating system, various connectivity (VGA, USB, Ethernet, RS-232/485) and I/O expansion bus for one XW-Board. The benefits of running Windows CE 5.0 on WinPAC features hard real-time capability, small core 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)
- On-Line Debug/Control/Monitor, Off-Line Simulation
- Simple Graphic HMI
- Support Soft-GRAF HMI



## Applications



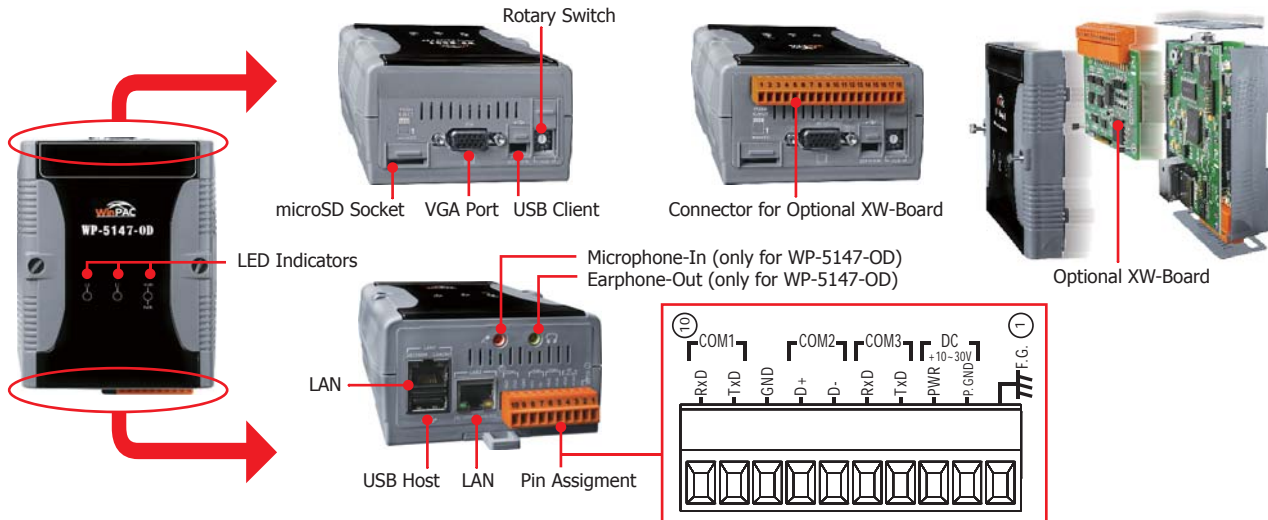
8  
2

5000 Series PAC

## Specifications

Models	WP-5147	WP-5147-OD
<b>System Software</b>		
OS	Windows CE 5.0 Core	
.Net Compact Framework	3.5	
Embedded Service	FTP server, Web server	
Multilanguage Support	English, German, French, Spanish, Russian, Italian, Korean, Simplified Chinese, Traditional Chinese	
<b>Development Software</b>		
ISaGRAF Software	ISaGRAF Ver.3	IEC 61131-3 standard.
	Languages	LD, ST, FBD, SFC, IL & FC; Support Soft-GRAF HMI: XP-8xx7-CE6, WP-8xx7, VP-2xxW7 and WP-5xx7 PAC
	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)	
<b>CPU Module</b>		
CPU	PXA270, 520 MHz	
SDRAM	128 MB	
Flash	64 MB	
EEPROM	16 KB	
Expansion Flash Memory	microSD socket with one 2 GB microSD card (support up to 32 GB microSDHC card)	
Battery Backup SRAM	Require one XW608, 512 KB (for retain variables)	
RTC (Real Time Clock)	Provide second, minute, hour, date, day of week, month, year	
64-bit Hardware Serial Number	Yes, for Software Copy Protection	
Dual Watchdog Timers	Yes	
LED Indicators	1 LED for Power and Running 2 LEDs for user programmable	
Rotary Switch	Yes (0 ~ 9)	
<b>VGA &amp; Communication Ports</b>		
VGA	Yes 640 × 480 / 800 × 600	
Ethernet	RJ-45 x 2, 10/100 Base-TX (Auto-negotiating, Auto MDI/MDI-X, LED indicators)	
USB 1.1 (client)	1	
USB 1.1 (host)	1	
Audio	-	Microphone-In and Earphone-Out
COM 1	RS-232 (Rx, Tx and GND); Non-isolated	
COM 2	RS-485 (Data+, Data-); 2500 V <sub>dc</sub> isolated	
COM 3	RS-232 (Rx, Tx and GND); Non-isolated	
<b>I/O Expansion</b>		
I/O Expansion Bus	Yes, to mount one optional XW-Board.	
<b>Mechanical</b>		
Dimensions (W x L x H)	91 mm x 132 mm x 52 mm	
Installation	DIN-Rail Mounting	
<b>Environmental</b>		
Operating Temperature	-25 ~ +75°C	
Storage Temperature	-30 ~ +80°C	
Ambient Relative Humidity	10 ~ 90% RH (non-condensing)	
<b>Power</b>		
Input Range	+10 ~ +30 V <sub>dc</sub>	
Isolation	1 kV	
Consumption	4.8 W	6 W

## Appearance



## 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	Support Multi-port. Max. 10 ports
Modbus RTU Slave	Max. 5 Ports
Modbus TCP/IP Slave	Ethernet LAN1 & LAN2 support total up to 32 connections. When one Ethernet port is broken, the other one can still connect to PC/HMI.
Web HMI Protocol	Ethernet Ports for connecting PC running Internet Explorer
I-7000 & I-87K RS-485 Remote I/O	COM2 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 can support M-7000 I/O. Each port can connect up to 32 M-7000 Modules.
Modbus TCP/IP I/O	LAN2 supports ICP DAS Ethernet I/O: I-8KE4-MTCP and I-8KE8-MTCP. If LAN2 is broken, it will switch to LAN1 automatically to continuously work. (LAN1 & LAN2's IP are requested set in the same IP domain) (FAQ-042)
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.
UDP Server & UDP Client : Exchange Message & Auto-Report	LAN1 or LAN2 supports UDP Server and UDP Client protocol to send/receive message to/from PC/HMI or other devices.
TCP Client : Exchange Message & Auto-Report	LAN1 or LAN2 supports TCP Client protocol 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.
Soft-GRAF HMI	Support the Soft-GRAF HMI. User can use the Soft-GRAF Studio on the PC to design the HMI screen and then download it to the PAC to display the HMI on the PAC. (FAQ-146)
SQL Client	Support SQL Client function to write data to (or read data from) Microsoft SQL Server (2000 SP3, 2005, 2008).
User-Defined Protocol	COM1 ~ COM3 and COM5 ~ COM12 (*) by Serial communication function blocks.
CAN/CANopen	COM1, COM3 and COM5 ~ COM12 (*) can connect one I-7530 (converter: RS-232 to CAN) to support CAN/CANopen devices and sensors. One WP-5xx7 supports max.10 RS-232 ports to connect max. 10 I-7530. (FAQ-086)
FTP Client	Support FTP client to upload files in the PAC to a remote FTP server on PC. (FAQ-151)
* Note: COM5 ~ COM12 are resided at the optional expansion XW-Board series if it is plugged inside the WP-5xx7.	
* ISaGRAF FAQ: <a href="http://www.icpdas.com/faq/isagraf.htm">http://www.icpdas.com/faq/isagraf.htm</a>	

## Ordering Information

WP-5147-EN CR	ISaGRAF based WinPAC-5000 (English Version of OS) (RoHS)
WP-5147-OD-EN CR	ISaGRAF based WinPAC-5000 with Audio (English Version of OS) (RoHS)
WP-5147-TC CR	ISaGRAF based WinPAC-5000 (Traditional Chinese Version of OS) (RoHS)
WP-5147-OD-TC CR	ISaGRAF based WinPAC-5000 with Audio (Traditional Chinese Version of OS) (RoHS)
WP-5147-SC CR	ISaGRAF based WinPAC-5000 (Simplified Chinese Version of OS) (RoHS)
WP-5147-OD-SC CR	ISaGRAF WinPAC-5000 with Audio (Simplified Chinese Version of OS) (RoHS)

## Option 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-20-24 CR	24 Vdc/1.0 A, 24 W Power Supply with DIN-Rail Mounting (RoHS)
MDR-60-24 CR	24 Vdc/2.5 A, 60 W Power Supply with DIN-Rail Mounting (RoHS)
XW-Board	Add-on I/O Expansion Board



### Features

- PXA270, 520 MHz CPU
- Windows CE.NET 5.0 Core
- InduSoft Web Studio v6.1
- Hard Real-Time Capability
- 64-bit Hardware Serial Number for Software Protection
- Audio with Microphone-In and Earphone-Out
- I/O Expansion Bus
- VGA Port Output
- Dual 10/100M Ethernet Ports
- 3 Serial Ports (RS-232/485)
- Operating Temperature: -25 ~ +75°C



### Introduction

WP-5149 and WP-5149-OD Series are equipped a PXA270 CPU (520 MHz) running a Windows CE.NET 5.0 operating system, various connectivity (VGA, USB, Ethernet, RS-232/485) and I/O expansion bus for one XW-Board.

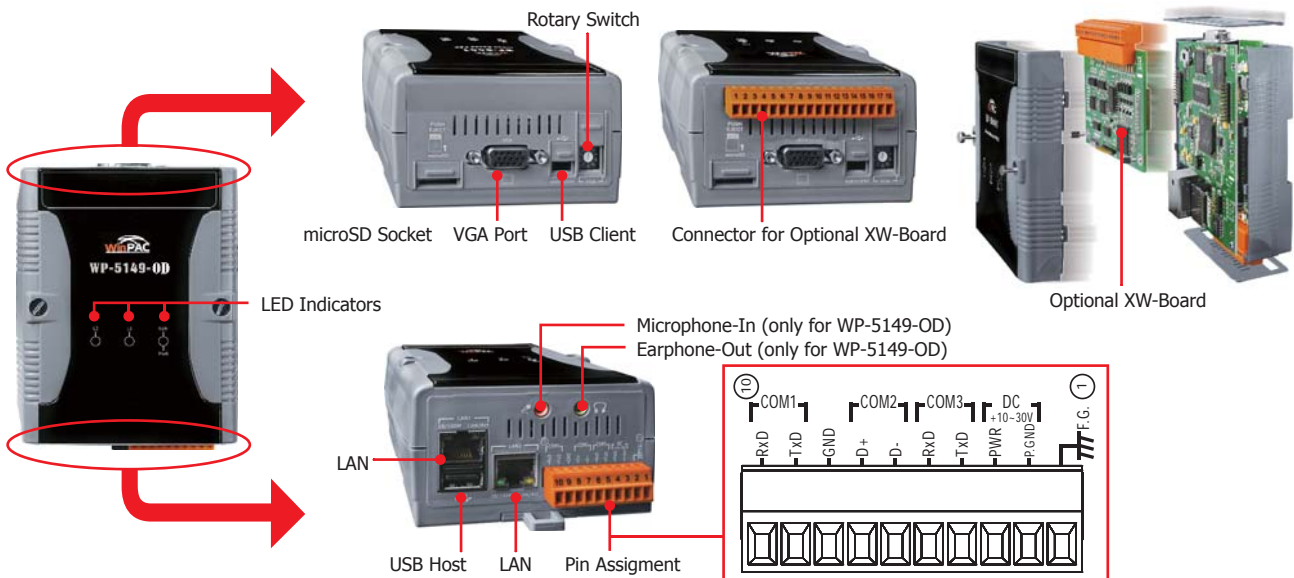
WP-5149 and WP-5149-OD are capable of running InduSoft Web Studio, InduSoft Web Studio is a powerful, integrated collection of automation tools that includes all the building blocks needed to develop modern Human Machine Interfaces (HMI), Supervisory Control and Data Acquisition (SCADA) systems, and 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.

### InduSoft Features

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



### Appearance



## Specifications

Models	WP-5149	WP-5149-OD
<b>System Software</b>		
OS	Windows CE 5.0 Core	
.Net Compact Framework	3.5	
Embedded Service	FTP server, Web server	
SDK Provided	DII for eVC, DII for Visual Studio.Net 2003/2005/2008	
Multilanguage Support	English, German, French, Spanish, Russian, Italian, Korean, Simplified Chinese, Traditional Chinese	
<b>CPU Module</b>		
CPU	PXA270, 520 MHz	
SDRAM	128 MB	
Flash	64 MB	
EEPROM	16 KB	
Expansion Flash Memory	microSD socket with one 2 GB microSD card (support up to 32 GB microSDHC card)	
RTC (Real Time Clock)	Provide second, minute, hour, date, day of week, month, year	
64-bit Hardware Serial Number	Yes, for Software Copy Protection	
Dual Watchdog Timers	Yes	
LED Indicators	1 LED for Power and Running 2 LEDs for user programmable	
Rotary Switch	Yes (0 ~ 9)	
<b>VGA &amp; Communication Ports</b>		
VGA	Yes 640 × 480 / 800 × 600	
Ethernet	RJ-45 x 2, 10/100 Base-TX (Auto-negotiating, Auto MDI/MDI-X, LED indicators)	
USB 1.1 (client)	1	
USB 1.1 (host)	1	
Audio	-	Microphone-In and Earphone-Out
COM 1	RS-232 (RxD, TxD and GND); Non-isolated	
COM 2	RS-485 (Data+, Data-); 2500 V <sub>dc</sub> isolated	
COM 3	RS-232 (RxD, TxD and GND); Non-isolated	
<b>I/O Expansion</b>		
I/O Expansion Bus	Yes, to mount one optional XW-Board.	
<b>Mechanical</b>		
Dimensions (W x L x H)	91 mm x 132 mm x 52 mm	
Installation	DIN-Rail Mounting	
<b>Environmental</b>		
Operating Temperature	-25 ~ +75°C	
Storage Temperature	-30 ~ +80°C	
Ambient Relative Humidity	10 ~ 90% RH (non-condensing)	
<b>Power</b>		
Input Range	+10 ~ +30 V <sub>dc</sub>	
Isolation	1 kV	
Consumption	4.8 W	6 W

## Ordering Information

WP-5149-EN CR	InduSoft based WinPAC-5000 (English Version of OS) (RoHS)
WP-5149-OD-EN CR	InduSoft based WinPAC-5000 with Audio (English Version of OS) (RoHS)
WP-5149-TC CR	InduSoft based WinPAC-5000 (Traditional Chinese Version of OS) (RoHS)
WP-5149-OD-TC CR	InduSoft based WinPAC-5000 with Audio (Traditional Chinese Version of OS) (RoHS)
WP-5149-SC CR	InduSoft based WinPAC-5000 (Simplified Chinese Version of OS) (RoHS)
WP-5149-OD-SC CR	InduSoft based WinPAC-5000 with Audio (Simplified Chinese Version of OS) (RoHS)

## Option Accessories

DP-660	24 V <sub>dc</sub> /2.5 A, 60 W and 5 V <sub>dc</sub> /0.5 A, 2.5 W Power Supply with DIN-Rail Mounting
DP-1200 CR	24 V <sub>dc</sub> /5.0 A, 120 W Power Supply with DIN-Rail Mounting (RoHS)
MDR-20-24 CR	24 V <sub>dc</sub> /1.0 A, 24 W Power Supply with DIN-Rail Mounting (RoHS)
MDR-60-24 CR	24 V <sub>dc</sub> /2.5 A, 60 W Power Supply with DIN-Rail Mounting (RoHS)
XW-Board	Add-on I/O Expansion Board

## 8.3. LinPAC-5000 Series

### • Overview

**LinPAC-5000 Family**

**Rich Development Tools**

- LinPAC SDK for Windows & Linux Environment
- Support for GNU C Language
- Support for JAVA: JVM, JIOD (Java I/O Driver)
- Support for GUI: Using GTK + Library

**Linux**

**Audio In/Out**

**Various Communications**

- Ethernet
- RS-232/485
- USB host

**microSD**

**Local I/O Expansion Board**

More than 10 I/O XW-board are supported

The LinPAC-5000 family is a palm-size PAC and is designed to provide fast, convenient, flexible and simplified solutions for industrial and embedded applications. It is equipped with an ARM CPU running a Linux kernel operating system, multiple communication interfaces (VGA, USB, Ethernet, RS-232/485 and audio ports) and powerful software including development tools.

### • Features

#### 1. Wide range of Development Support Tools



**Linux kernel 2.6**  
**ARM CPU**  
**LP-5000 Series**

- LinPAC SDK for Windows and Linux
- Support for GNU C Language
- Support for GUI: Using GTK + Library
- Support for DCON, Modbus and SNMP Protocols
- Support for USB to Serial Converter

#### 2. Local I/O and Communication Expansion Board

The LinPAC-5000 series is equipped with an I/O expansion bus to support one optional expansion board, called the XV-Board or XW-Board. It can be used to implement various I/O functions, such as DI, DO, A/D, D/A, Timer/Counter and various communication interfaces, such as RS-232/422/485, etc.

XV-Board or XW-Board



#### 3. Remote I/O Module

With the built-in RS-485 and Ethernet ports, the LinPAC-5000 series can connect to remote RS-485/Ethernet I/O units (RU-87Pn/ET-87Pn) or modules (I-7000/M-7000/ET-7000).

#### 4. Multiple Communication Interfaces

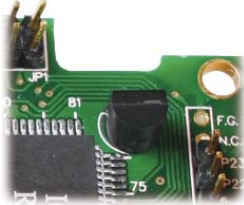
Several different types of communication interface are available that enable I/O modules to be expanded and connected to external devices:

- |               |             |             |
|---------------|-------------|-------------|
| 1. Ethernet   | 3. USB host | 5. GSM/GPRS |
| 2. RS-232/485 | 4. GPs      |             |

### 5. Various Memory Storage Options

LinPAC-5000 provides various memory storage options, such as EEPROM, Flash or microSD. Customers can choose the memory based on their characteristics.

- 16 KB EEPROM: to store not frequently changed parameters.
- microSD/microSDHC: to implement portable data logging applications.



### 6. Unique 64-bit Hardware Serial Number to Protect Your Program

A unique 64-bit serial number is assigned to each hardware device to protect your software against piracy.

### 7. Plastic and Metal Casing

The default case is plastic material. Metal casing is also offered to provide extra security.



### 8. Highly Reliable Under Harsh Environments

The LinPAC-5000 operates in a wide range of temperatures and humidity levels.

- Operating Temperature: -25 ~ +75°C
- Storage Temperature: -30 ~ +80°C
- Humidity 10 ~ 90% RH (non-condensing)



## • Selection Guide

**LP-5**    **X**    **X**    **X**    -    **YY**    -    **XX**

**CPU**  
1: PXA270  
2: AM335X

**Ethernet**  
3: Ethernet x 1  
4: Ethernet x 2

**Software**  
1: Standard

**Options**  
OD: Audio  
GPS: GPS  
2G: GPRS  
3G: WCDMA  
WF: Wi-Fi  
ZH: ZigBee Host  
ZS: ZigBee Slave

**Language**  
EN: English

### ✓ Standard LinPAC

Model Name	OS	Pre-installed Software	CPU	Flash	SDRAM	VGA Resolution	Ethernet	RS-232/RS-485	Wireless Module	I/O Expansion	Audio Port
LP-5131	Linux kernel 2.6.19	-	PXA270, 520 MHz	64 MB	128 MB	800 x 600	1	2/1	-	XW-Board	-
LP-5131-OD							Yes				
LP-5141							2				-
LP-5141-OD							Yes				
LP-5231	Linux kernel 2.6.30		AM335X, 720 MHz	256 MB		-	1	1/2	Yes	XV-Board	-

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



**LP-51xx Series**

**Features**

- PXA270, 520 MHz CPU
- Linux kernel 2.6.19 Inside
- Embedded Service: Web Server, FTP Server, Telnet Server, SSH Server
- 64 MB Flash, 128 MB SDRAM
- Built-in Ethernet, USB, RS-232, RS-485 Ports
- Built-in 800 × 600 VGA Port
- Built-in Audio with Microphone-In and Earphone-Out
- I/O Expansion Board Optional
- Operating Temperature: -25 ~ +75°C

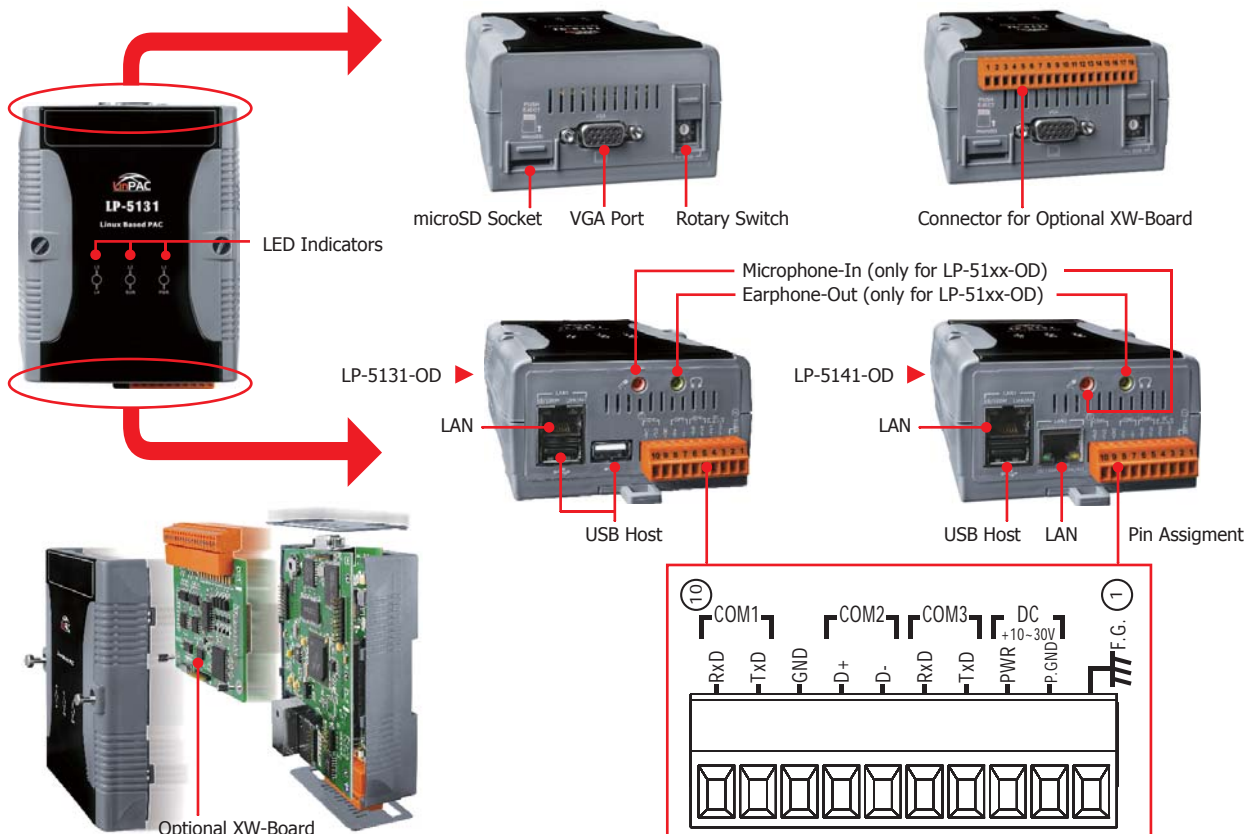


**Introduction**

The LP-51xx series is equipped with a PXA270 CPU (520 MHz) and running a Linux kernel 2.6.19 operating system, multiple communication interfaces, such as VGA, USB, Ethernet, RS-232/485 and audio ports. Further more, it also contains an optional I/O expansion board to implement various I/O functions, such as DI, DO, A/D, D/A, Timer/Counter, UART, flash memory, or battery backup SRAM, etc.

Main advantage of the LP-51xx series is its high quality control system, including its stability, small core size, optional I/O expansion board, support for Web services (Web/FTP/Telnet/SSH server), and multiple development environments (LinPAC SDK for Linux and Windows environment using the GNU C language, GUI software), etc., all of which give users the best features of both traditional PLCs and Linux capable PCs, meaning that it is one of the most powerful and flexible embedded control systems available.

**Appearance**





## Specifications

Models	LP-5131	LP-5131-OD	LP-5141	LP-5141-OD
<b>System Software</b>				
OS	Linux kernel 2.6.19			
Embedded Service	Web Server, FTP Server, Telnet Server, SSH Server			
SDK Provided	Standard LinPAC SDK for Windows and Linux by GNU C language			
<b>CPU Module</b>				
CPU	PXA270, 520 MHz			
SDRAM	128 MB			
NVRAM	31 Byte (Battery backup, data valid up to 10 years)			
Flash	64 MB			
EEPROM	16 KB			
Expansion Flash Memory	microSD socket with one 2 GB microSD card (support up to 32 GB microSDHC card)			
RTC (Real Time Clock)	Provide second, minute, hour, date, day of week, month, year			
64-bit Hardware Serial Number	Yes, for Software Copy Protection			
Dual Watchdog Timers	Yes			
LED Indicator	3 Dual-Color LEDs (PWR, RUN, L1 ~ L4; RUN, L1 ~ L4 for user programmable)			
Rotary Switch	Yes (0 ~ 9)			
<b>VGA &amp; Communication Ports</b>				
VGA	Yes 640 × 480 / 800 × 600			
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)	
USB 1.1 (host)	2		1	
Audio (Microphone-In and Earphone-Out)	-	Yes	-	Yes
COM 1	RS-232 (RxD, TxD and GND); Non-isolated			
COM 2	RS-485 (Data+, Data-); 2500 V <sub>oc</sub> isolated			
COM 3	RS-232 (RxD, TxD and GND); Non-isolated			
<b>I/O Expansion</b>				
I/O Expansion Bus	I/O expansion board optional			
<b>Mechanical</b>				
Dimensions (W x L x H)	91 mm x 132 mm x 52 mm			
Installation	DIN-Rail			
<b>Environmental</b>				
Operating Temperature	-25 ~ +75°C			
Storage Temperature	-30 ~ +80°C			
Ambient Relative Humidity	10 ~ 90% RH (non-condensing)			
<b>Power</b>				
Input Range	+10 ~ +30 V <sub>bc</sub>			
Isolation	1 kV			
Consumption	4.8 W	6 W	4.8 W	6 W

## Ordering Information

LP-5131-EN CR	PAC with Linux kernel 2.6.19 and one LAN port (English Version of OS) (RoHS)
LP-5131-OD-EN CR	PAC with Linux kernel 2.6.19 and one LAN port and Audio (English Version of OS) (RoHS)
LP-5141-EN CR	PAC with Linux kernel 2.6.19 and two LAN ports (English Version of OS) (RoHS)
LP-5141-OD-EN CR	PAC with Linux kernel 2.6.19 and two LAN ports and Audio (English Version of OS) (RoHS)

## Option Accessories

DP-660	24 V <sub>bc</sub> /2.5 A, 60 W and 5 V <sub>bc</sub> /0.5 A, 2.5 W Power Supply with DIN-Rail Mounting
DP-1200 CR	24 V <sub>bc</sub> /5.0 A, 120 W Power Supply with DIN-Rail Mounting (RoHS)
MDR-20-24 CR	24 V <sub>bc</sub> /1.0 A, 24 W Power Supply with DIN-Rail Mounting (RoHS)
MDR-60-24 CR	24 V <sub>bc</sub> /2.5 A, 60 W Power Supply with DIN-Rail Mounting (RoHS)
XW-Board	Add-on I/O Expansion Board



### Features

- AM335X, 720 MHz CPU
- Linux kernel 2.6.30 Inside
- Embedded Service: Web Server, FTP Server, Telnet Server, SSH Server
- 256 MB Flash, 128 MB SDRAM
- Built-in Ethernet, USB, RS-232, RS-485 Ports
- 64-bit Hardware Serial Number for Software Protection
- I/O Expansion Board Optional
- Wireless Module Options
- Operating Temperature: -25 ~ +75°C

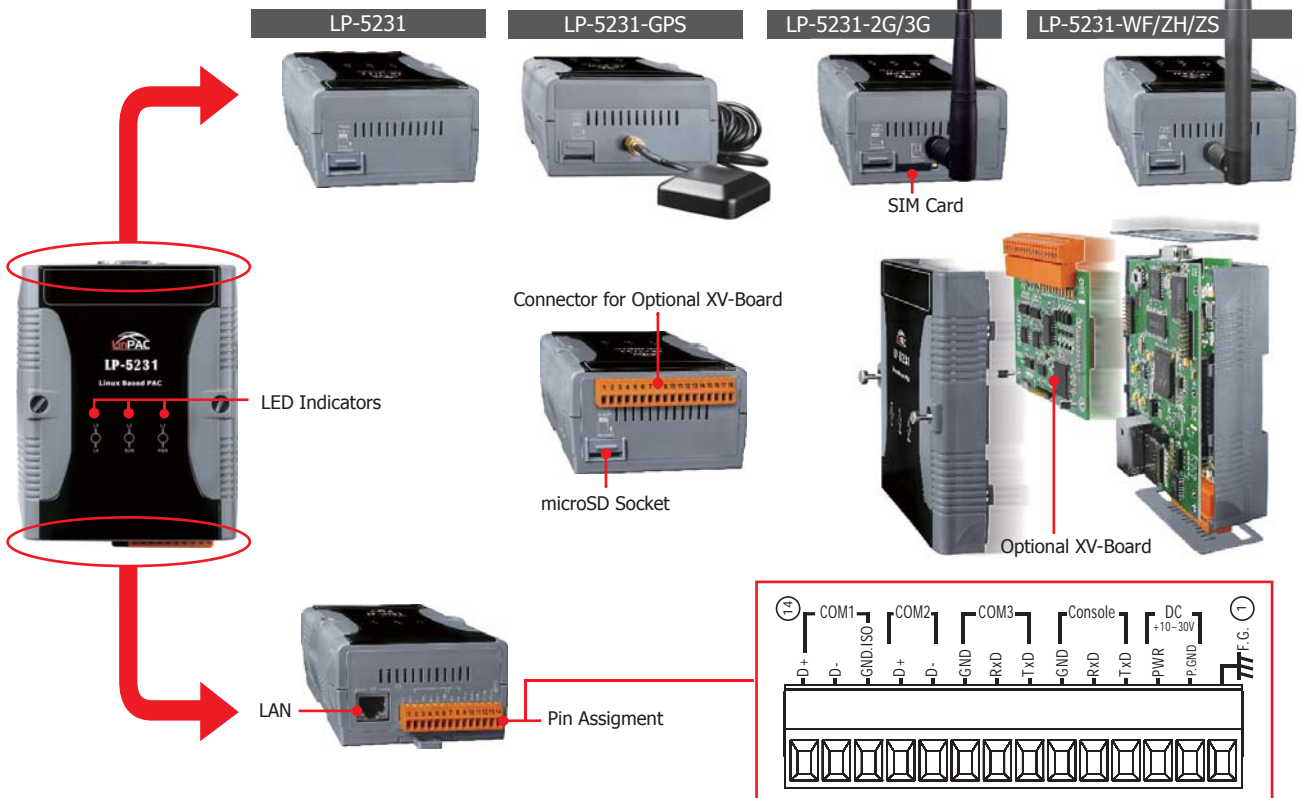


### Introduction

The LP-5231 series is equipped with a AM335X CPU (720 MHz) and running a Linux kernel 2.6.30 operating system, multiple communication interfaces, such as USB, Ethernet, RS-232/485 and optional internal wireless module. The internal wireless module option includes 2G, 3G, ZigBee, Wi-Fi, GPS for different wireless application. Further more, it also contains an optional I/O expansion board to implement various I/O functions, such as DI, DO, A/D, D/A.

Main advantage of the LP-5231 series is its high quality control system, including its stability, small core size, optional I/O expansion board, support for Web services (Web/FTP/Telnet/SSH server), and multiple development environments (LinPAC SDK for Linux and Windows environment using the GNU C language, GUI software), etc., all of which give users the best features of both traditional PLCs and Linux capable PCs, meaning that it is one of the most powerful and flexible embedded control systems available.

### Appearance



## Specifications

Models	LP-5231	LP-5231-GPS	LP-5231-2G	LP-5231-3G	LP-5231-WF	LP-5231-ZH	LP-5231-ZS
<b>System Software</b>							
OS	Linux kernel 2.6.30						
Embedded Service	Web Server, FTP Server, Telnet Server, SSH Server						
SDK Provided	Standard LinPAC SDK for Windows and Linux by GNU C language						
<b>CPU Module</b>							
CPU	AM335X, 720 MHz						
DDR2 SDRAM	128 MB						
Flash	256 MB						
EEPROM	16 KB						
Expansion Flash Memory	microSD socket with one 2 GB microSD card (support up to 32 GB microSDHC card)						
RTC (Real Time Clock)	Provide second, minute, hour, date, day of week, month, year						
64-bit Hardware Serial Number	Yes, for Software Copy Protection						
Dual Watchdog Timers	Yes						
LED Indicators	1 LED for Power and Running; 2 LED for user defined						
<b>Communication Ports</b>							
Ethernet	RJ-45 x 1, 10/100 Based-TX ( Auto-negotiating, Auto MDI/MDI-X, LED indicators)						
USB 2.0 (host)	1						
Console	RS-232 (RxD, TxD and GND); Non-isolated, Reserved for OS						
COM 1	RS-485 (Data+, Data-); 2500 V <sub>oc</sub> isolated						
COM 2	RS-485 (Data+, Data-); Non-isolated						
COM 3	RS-232 (RxD, TxD and GND); Non-isolated						
Wireless Port	-	GPS	2G (GPRS)	3G (WCDMA)	Wi-Fi	ZigBee (Host, Coordinator)	ZigBee (Slave, Full FunctionDevice)
<b>I/O Expansion</b>							
I/O Expansion Bus	Yes, one optional XV-board						
<b>Mechanical</b>							
Dimensions (W x L x H)	91 mm x 132 mm x 52 mm						
Installation	DIN-Rail Mounting						
<b>Environmental</b>							
Operating Temperature	-25 ~ +75°C						
Storage Temperature	-30 ~ +80°C						
Ambient Relative Humidity	10 ~ 90% RH (non-condensing)						
<b>Power</b>							
Input Range	+10 ~ +30 V <sub>oc</sub>						
Consumption	4.8 W						

## Ordering Information

LP-5231-EN CR	PAC with Linux kernel 2.6.30 and one LAN port (English Version of OS) (RoHS)
LP-5231-GPS-EN CR	PAC with Linux kernel 2.6.30 and one LAN port and GPS module (English Version of OS) (RoHS)
LP-5231-2G-EN CR	PAC with Linux kernel 2.6.30 and one LAN port and 2G (GPRS) module (English Version of OS) (RoHS)
LP-5231-3G-EN CR	PAC with Linux kernel 2.6.30 and one LAN port and 3G (WCDMA) module (English Version of OS) (RoHS)
LP-5231-WF-EN CR	PAC with Linux kernel 2.6.30 and one LAN port and Wi-Fi (802.11 b/g) module (English Version of OS) (RoHS)
LP-5231-ZH-EN CR	PAC with Linux kernel 2.6.30 and one LAN port and ZigBee (Host, Coordinator) module (English Version of OS) (RoHS)
LP-5231-ZS-EN CR	PAC with Linux kernel 2.6.30 and one LAN port and ZigBee (Slave, Full Function Device) module (English Version of OS) (RoHS)

## Option Accessories

DP-660	24 V <sub>oc</sub> /2.5 A, 60 W and 5 V <sub>oc</sub> /0.5 A, 2.5 W Power Supply with DIN-Rail Mounting
DP-1200 CR	24 V <sub>oc</sub> /5.0 A, 120 W Power Supply with DIN-Rail Mounting (RoHS)
MDR-20-24 CR	24 V <sub>oc</sub> /1.0 A, 24 W Power Supply with DIN-Rail Mounting (RoHS)
MDR-60-24 CR	24 V <sub>oc</sub> /2.5 A, 60 W Power Supply with DIN-Rail Mounting (RoHS)
XV-Board	Add-on I/O Expansion Board

## 8.4. I/O Expansion Boards

### Overview






One PAC can only plug only one XV-Board or XW-Board.




	XV-Board	XW-Board
PAC Supported	WP-50xx, LP-50xx	uPAC-5000, WP-51xx, LP-51xx
Bus Type	Serial	Parallel
Bus Speed	Slow	Fast
DIO Board	Yes	Yes
Multifunction Board (AI+AO+DIO)	Yes	Yes
RS-232/485 Board	-	Yes






### Relay output Board

Models	XV116	
Pictures	<p>Available soon</p>	
<b>Relay Output</b>		
Channel	6	
Type	Form A (SPST N.O.)	
Operating Voltage Range	250 Vac or 30 Vdc	
Max. Load Current	Relay 0 ~ 1: 2 A Relay 2 ~ 5: 4 A	
Operating Time	Relay 0 ~ 1: 4 ms Max. Relay 2 ~ 5: 5 ms Max.	
Release Time	Relay 0 ~ 1: 6 ms Max. Relay 2 ~ 5: 1 ms Max.	
Mechanical Life	Relay 0 ~ 1: 100 x 10 <sup>6</sup> cycles Relay 2 ~ 5: 30 x 10 <sup>6</sup> cycles	
On-Resistance	-	
Off-State Leakage Current	-	
Intra-module Isolation, Field to Logic	3750 Vdc	
<b>Digital Input</b>		
Channel	5	
Contact	Wet	
Sink/Source (NPN/PNP)	Sink/Source	
Wet Contact	On Voltage Level	+10 Vdc ~ 50 Vdc
	Off Voltage Level	+4 Vdc Max.
Input Impedance	10 KΩ	
Overvoltage Protection	60 Vdc	
Intra-module Isolation, Field to Logic	3750 Vdc	
<b>Power Requirements</b>		
Consumption	1W	

DIO Board					
Models	XV107i	XV107Ai	XV110i	XV111i	XV111Ai
Pictures					
<b>Digital Input</b>					
Channel	8	8	16		
Contact	Wet	Wet	Dry+Wet		
Sink/Source (NPN/PNP)	Source	Sink	Sink/Source		
Wet Contact	On Voltage Level	+10 V <sub>DC</sub> ~ +50 V <sub>DC</sub>			
	Off Voltage Level	+4 V <sub>DC</sub> Max.			
Dry Contact	On Voltage Level	-	Close to GND		
	Off Voltage Level	-	Open		
Counters	Max. Count	65535 (16-bit)			
	Max. Input Frequency	100 Hz			
	Min. Pulse Width	5 ms			
Input Impedance		10 K $\Omega$			
Overvoltage Protection		70 V <sub>DC</sub>			
Intra-module Isolation, Field to Logic		3750 V <sub>DC</sub>			
<b>Digital Output</b>					
Channel	8		-	16	
Type	Open Collector	Open Emitter	-	Open Collector	Open Emitter
Sink/Source (NPN/PNP)	Sink	Source	-	Sink	Source
Load Voltage	+3.5 V <sub>DC</sub> ~ 50 V <sub>DC</sub>	+10 V <sub>DC</sub> ~ 40 V <sub>DC</sub>	-	+3.5 V <sub>DC</sub> ~ 50 V <sub>DC</sub>	+10 V <sub>DC</sub> ~ 40 V <sub>DC</sub>
Max. Load Current	700 mA/channel		-	600 mA/channel	
Overload Protection	1.4 A		-	1.4 A	
Intra-module Isolation, Field to Logic	3750 V <sub>DC</sub>		-	3750 V <sub>DC</sub>	
<b>Power Requirements</b>					
Consumption	0.2 W		0.6 W	0.3 W	

DIO Board			
Models	XW107	XW107i	XW110i
Pictures			
<b>Digital Input</b>			
Channel	8	8	16
Contact	Dry	Wet	Dry + Wet
Sink/Source (NPN/PNP)	Source	Sink/Source (Jumper setting)	Sink/Source
Wet Contact	On Voltage Level	-	+10 V <sub>DC</sub> ~ +50 V <sub>DC</sub>
	Off Voltage Level	-	+4 V <sub>DC</sub> Max.
Dry Contact	On Voltage Level	Close to GND	Close to GND
	Off Voltage Level	Open	Open
Input Impedance	-	10 K $\Omega$	10 K $\Omega$
Overvoltage Protection	30 V <sub>DC</sub>	60 V <sub>DC</sub>	60 V <sub>DC</sub> for Wet Contact
Intra-module Isolation, Field to Logic	-	3750 V <sub>rms</sub>	3750 V <sub>rms</sub>
<b>Digital Output</b>			
Channel	8		
Type	Open Collector		
Sink/Source (NPN/PNP)	Sink		
Load Voltage	+10 V <sub>DC</sub> ~ 40 V <sub>DC</sub>		
Max. Load Current	200 mA/channel		
Overload Protection	1.4 A		
Intra-module Isolation, Field to Logic	-	3750 V <sub>rms</sub>	
<b>Power Requirements</b>			
Consumption	0.2 W	0.4 W	0.6 W

Multifunction Board				
Models	XV304i	XV308i	XV310i	XV305i
Pictures				
<b>Analog Input</b>				
Channel	6	8	4	8
Wiring	Single-Ended			Differential
Sensor Type	+/- 1 V, +/- 2.5 V, +/- 5 V, +/- 10 V, 0 ~ 20 mA, 4 ~ 20 mA, +/-20 mA ( Jumper selectable )			<b>Thermistor</b> Precon ST-A3, Fenwell U, YSI L100, YSI L300, YSI L1000, YSI B2252, YSI B3000, YSI B5000, SI B6000, YSI B10000, YSI H10000, YSI H30000, User-defined
Resolution	Normal Mode	14-bit		16-bit
	Fast Mode	12-bit		
Sampling Rate	Normal Mode	10 Hz		8 Hz
	Fast Mode	200 Hz		
Input Impedance	10 MΩ			-
Overvoltage Protection	120 V <sub>DC</sub>			
Overcurrent Protection	1000 mA			
Isolation	2500 V <sub>DC</sub>			
<b>Analog Output</b>				
Channel	1		2	
Range	0 ~ 10 V <sub>DC</sub> , 0 ~ 20 mA, 4 ~ 20 mA, ( Jumper selectable )	-	0 ~ 10 V <sub>DC</sub> , 0 ~ 20 mA, 4 ~ 20 mA, ( Jumper selectable )	-
Resolution	12-bit		12-bit	
Output Capacity	20 mA		10 mA	
Isolation	2500 V <sub>DC</sub>		2500 V <sub>DC</sub>	
<b>Digital Input</b>				
Channel	4			
Contact	Dry			
Sink/Source (NPN/PNP)	Source			
Wet Contact	On Voltage Level	Close to GND		
	Off Voltage Level	Open		
Overload Protection	30 V <sub>DC</sub>			
<b>Digital Output</b>				
Channel	4	4	4	8
Type	Open Collector			
Sink/Source (NPN/PNP)	Sink			
Load Voltage	+10 V <sub>DC</sub> ~ +50 V <sub>DC</sub>			
Max. Load Current	700 mA/Channel			
Overload Protection	1.4 A			
<b>Power Requirements</b>				
Consumption	1 W			

Multifunction Board			
Models	XW304	XW310	XW310C
Pictures			
<b>Analog Input</b>			
Channel	6	4	4/8
Wiring	Single-Ended	Differential	Differential/Single-Ended
Range	+/- 5 V, 0 ~ +5 V	+/- 10 V	0 ~ 20 mA
Resolution	12-bit		
Sampling Rate	4 KHz		
Input Impedance	1 MΩ		125 Ω
Over voltage Protection	+/- 30 V <sub>DC</sub>		
Isolation	non-isolated		
<b>Analog Output</b>			
Channel	1	2	2
Range	+/- 5 V	+/- 10 V	0 ~ 20 mA
Resolution	12-bit		
Output Capacity	20 mA	20 mA	20 mA
Isolation	non-isolated		
<b>Digital Input</b>			
Channel	4	3	3
Contact	Dry		
Dry Contact	On Voltage Level	Close to GND	
	Off Voltage Level	Open	
Overvoltage Protection	30 V <sub>DC</sub>		
<b>Digital Output</b>			
Channel	4	3	3
Type	Open Collector		
Sink/Source (NPN/PNP)	Sink		
Load Voltage	+10 V <sub>DC</sub> ~ 40 V <sub>DC</sub>		
Max. Load Current	200 mA/channel at 25°C		
Overload Protection	1.4 A		
<b>Power Requirements</b>			
Consumption	0.3 W	0.9 W	0.4 W

## Pin Assignments

### XW304

Vin5	Vin4	Vin3	Vin2	Vin1	Vin0	AGND	Vout0	DI3	DI2	DI1	DI0	GND	DO.PWR	DO3	DO2	DO1	DO0
(XW304)																	

### XW310

D/S	Vin3- / Vin7	Vin2- / Vin6	Vin1- / Vin5	Vin0- / Vin4	Vin3+ / Vin3	Vin2+ / Vin2	Vin1+ / Vin1	Vin0+ / Vin0	Vout1	Vout0	GND	DI2	DI1	DI0	DO.PWR	DO2	DO1	DO0
(XW310)																		

### XW310C

S/D	Vin7 / Vin3-	Vin3 / Vin3+	Vin6 / Vin2-	Vin2 / Vin2+	Vin5 / Vin1-	Vin1 / Vin1+	Vin4 / Vin0-	Vin0 / Vin0+	Iout1	Iout0	GND	DI2	DI1	DI0	DO.PWR	DO2	DO1	DO0
(XW310C)																		

Serial Port Board						
Models	XW506	XW509	XW507	XW508	XW511i	XW514
Pictures						
<b>Serial Port</b>						
Type	RS-232	RS-232	RS-422/485	RS-232	RS-485	RS-485
Port	6	2	1	8	4	8
Wire	TxD, RxD, GND	TxD, RxD, GND and CTS, RTS, GND	TxD+/D+, TxD-/D-, RxD+, RxD-, GND	TxD, RxD, GND	Data+, Data-	
Controller	16C550 compatible		16C950 compatible			
	Speed: 115200 bps Max.					
	Data bit : 7, 8					
	Stop bit : 1, 1.5, 2					
	Parity : None, Even, Odd, Mark, Space					
FIFO: Internal 16 bytes for each port			FIFO: Internal 128 bytes for each port			
Intra-module Isolation, Field to Logic					2500 V <sub>rms</sub>	-
<b>Digital Input</b>						
Channel		4	5			
Contact		Wet				
Sink/Source (NPN/PNP)		Sink/Source				
Wet Contact	On Voltage Level	+10 V <sub>DC</sub> ~ +50 V <sub>DC</sub>				
	Off Voltage Level	+4 V <sub>DC</sub> Max.				
Dry Contact	On Voltage Level	-				
	Off Voltage Level	-				
Input Impedance		10 KΩ				
Overvoltage Protection		60 V <sub>DC</sub>				
Intra-module Isolation, Field to Logic		3750 V <sub>rms</sub>				
<b>Digital Output</b>						
Channel		4	5			
Type		Open Collector				
Sink/Source (NPN/PNP)		Sink				
Load Voltage		+10 V <sub>DC</sub> ~ +40 V <sub>DC</sub>				
Max. Load Current		200 mA/channel				
Overload Protection		1.4 A				
Intra-module Isolation, Field to Logic		3750 V <sub>rms</sub>				
<b>Power Requirements</b>						
Consumption	0.2 W Max.	0.5 W Max.	0.4 W Max.	0.2 W Max.	0.8 W Max.	0.6 W Max.

## Pin Assignments

