2 5000 Series PAC

8.2. WinPAC-5000 Series

Overview



The ICP DAS WinPAC-5000 Series is the new generation PAC (Programmable Automation Controller). It is 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.

The WinPAC-5000 series has many advantages, including 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 gives it the ability to run PC-based control software such as Visual Basic.NET, Visual C#, Embedded Visual C++, SCADA software, SoftPLC ...etc. It gives users all of the best features of both traditional PLCs and Windows capable PCs.

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 D/I, D/O,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 WinPAC-5000 series, users can choose one of them to expand hardware features.

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

2. Local I/O and Communication Expansion Board

WinPAC-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

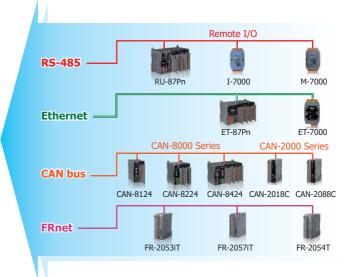
With the built-in RS-485 and Ethernet ports, the 5000 series can connect RS-485/Ethernet remote I/O units (RU-87Pn/ET-87Pn) or modules (I-7000/M-7000/ET-7000). With an XW-Board, the 5000 series can have more communication ports or different interface to connect to other type of devices, for example,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

4. Multi-Communication Interface Options

There are several of communication interfaces to expand I/O and connect to external devices:

- 1. Ethernet
- 2. RS-232/485
- 3. USB host
- 4. CAN bus





5. Various Memory Storage Options

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

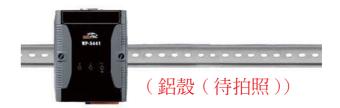


6. Unique 64-bit Hardware Serial Number to Protect Your Program

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 Environmen

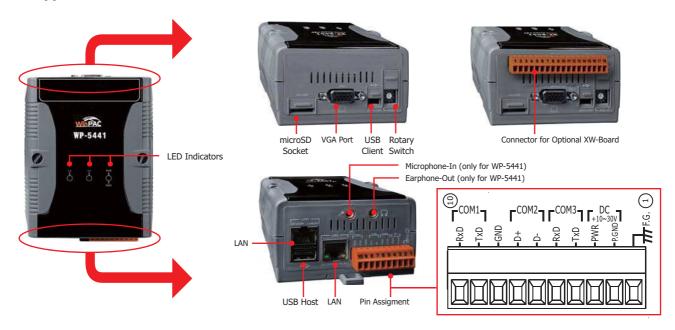
Our $\mu PACs$ operate in a wide range of temperature and humidity.

- Operating Temperature: -25 ~ +75°C
- Storage Temperature: $-30 \sim +80^{\circ}$ C
- Humidity 10 ~ 90% RH (non-condensing)

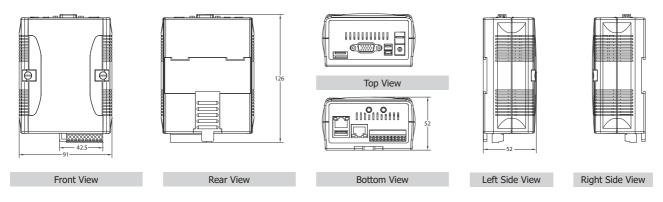


Hardware

1. Appearance



2. Dimensions (Units: mm)



Software

Selection Guide

WP-5



Audio 1: N/A 4: Yes



Communication

4: Ethernet x 2 & USB x 1



Software 1: Standard

7: ISaGRAF 9: InduSoft

6: ISaGRAF + Indusoft



Language

EN: English

TC: Traditional Chinese

SC: Simplified Chinese



Standard WinPAC

Model Name	os	Pre-installed Software	СРИ	Flash	SDRAM	Ethernet	VGA Resolution	RS-232/ RS-485	I/O Expansion Bus	Audio Port	
WP-5141	CE 5.0	CE 5.0 None	Nana	PXA270,	64 MB	128 MB	2	800 x 600	2/1	Yes	-
WP-5441		None	520 MHz	04 I ^M ID	120 MD	2	800 X 800	2/1	(Note)	Yes	

The controller supports the following software development tools:

- 1. DLLs of I/O modules for eVC, VS.Net 2003/2005/2008
- 2. DLLs of Modbus/RTU and Modbus/TCP for eVC and VS.Net 2003/2005/2008
- 3. OPC server (Quicker)
- Note: The I/O Expansion Bus can mount one XW-Board only.

ISaGRAF Based WinPAC

Model Name	os	Pre-installed Software	СРИ	Flash	SDRAM	Ethernet	VGA Resolution	RS-232/ RS-485	I/O Expansion Bus	Audio Port
WP-5147	CE 5.0	CE 5.0 153CI	ISaGRAF PXA270,	64 MB	128 MB	2	800 x 600	2/1	Yes	1
WP-5447		ISdGRAF	520 MHz	0 4 MB	120 MB	2	800 X 000	2/1	(Note)	Yes

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.
- Note: The I/O Expansion Bus can mount one XW-Board only.



InduSoft Based WinPAC ■

Model Name	os	Pre-installed Software	СРИ	Flash	SDRAM	Ethernet	VGA Resolution	RS-232/ RS-485	I/O Expansion Bus	Audio Port	
WP-5149	CE 5.0	CE 5.0 InduSoft	InduCoft	PXA270,	64 MB	128 MB	2	800 x 600	2/1	Yes	-
WP-5449		muuson	520 MHz	04 140	120 MB	2	800 X 000	2/1	(Note)	Yes	

The controller supports the following software development tools:

- 1. DLLs of I/O modules for eVC, VS.Net 2003/2005/2008
- 2. DLLs of Modbus/RTU and Modbus/TCP for eVC and VS.Net 2003/2005/2008
- 3. OPC server (Quicker)
- Note: The I/O Expansion Bus can mount one XW-Board only.



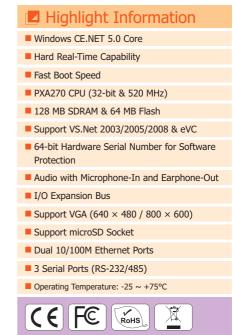
ISaGRAF & InduSoft Based WinPAC

Model Name	os	Pre-installed Software	CPU	Flash	SDRAM	Ethernet	VGA Resolution	RS-232/ RS-485	I/O Expansion Bus	Audio Port	
WP-5146	CE 5.0	ISa(ISaGRAF & PXA2	PXA270,	PXA270, 64 MB	120 MD	2	800 x 600	2/1	Yes	-
WP-5446		InduSoft	520 MHz	0 4 MB	128 MB	2	600 X 600	2/1	(Note)	Yes	

The controller includes features of ISaGRAF and InduSoft. Note: The I/O Expansion Bus can mount one XW-Board only.

8-2-4





Introduction .

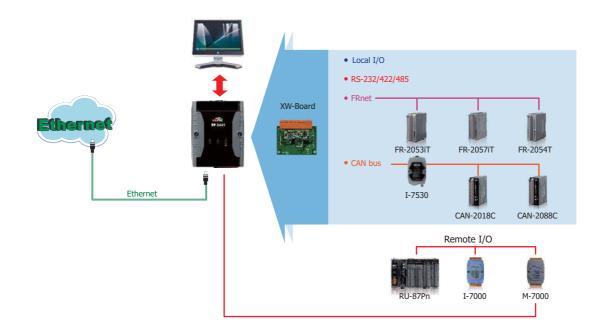
The ICP DAS WinPAC-5000 Series is the new generation PAC (Programmable Automation Controller). It is equipped a PXA270 CPU (520 MHz) running a Windows CE.NET 5.0 operating system, various connectivity (VGA, USB, Ethernet, RS-232/485) and I/O expansion bus.

The WinPAC-5000 series has many advantages, including 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 gives it the ability to run PC-based control software such as Visual Basic.NET, Visual C#, Embedded Visual C++, SCADA software, SoftPLC ...etc. It give users all of the best features of both traditional PLCs and Windows capable PCs.

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 D/I, D/O,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 WinPAC-5000 series, users can choose one of them to expand hardware features.

Applications

Rich I/O Expansion Ability





2

☑ Specifications _______

Models	WP-5141	WP-5441				
System Software						
OS Windows CE 5.0 Core						
.Net Compact Framework	2	2.0				
Embedded Service	Embedded Service FTP server, Web server					
SDK Provided	DII for eVC, DII for Visual S	Studio.Net 2003/2005/2008				
Multilanguage Support	English, German, French, Spanish, Russian, I	Italian, Simplifi ed Chinese, Traditional Chinese				
CPU Module						
CPU	PXA270 or compatible	e (32-bit and 520 MHz)				
SDRAM	128	3 MB				
Flash	64 MB (32 MB for OS, 32 MB for	System_Disk and System Registry)				
EEPROM	16	KB				
Expansion Flash Memory	microSD socket with one 2 GB microSD co	ard (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	e Copy Protection				
Dual Watchdog Timers	Υ	/es				
LED Indicators	1 LED for Power and Running					
	r programmable					
Rotary Switch	Yes (0 ~ 9)				
VGA & Communication Ports						
VGA	/es					
	640 × 480 / 800 × 600					
Ethernet	RJ-45 x 2, 10/100 Base-TX					
USB 1.1 (client)	(Auto-negotiating, Auto MDI/MDI-X, LED indicators)					
USB 1.1 (client)	1					
` ,	1					
Audio Port (Microphone-In and Earphone-Out)	-	Yes				
COM 1	PS-232 (PVD, TVD ar	l nd GND); Non-isolated				
COM 2); 2500 V _{DC} ; isolated				
COM 3		nd GND); Non-isolated				
I/O Expansion	K3-232 (KXD, TXD di	iu GND), Noi risolateu				
	Vog to mount one	antional VIV Doord				
I/O Expansion Bus	tes, to mount one	optional XW-Board.				
Mechanical	01 122) F2				
Dimensions (W x L x H)		2 mm x 52 mm				
Installation	DIN-Rail	Mounting				
Environmental	25	- 3700				
	Operating Temperature -25 ~ +75°C					
Storage Temperature		+80°C				
Ambient Relative Humidity	10 ~ 90% RH (non-condensing)				
Power		. 20 V				
Input Range		+30 Vbc				
Isolation		kV				
Consumption	4.8 W (0.2 A @ 24 VDC)	6 W (0.25 A @ 24 Vpc)				

☑ Ordering Information ______

WP-5141-EN CR Standard WinPAC-5000 (English Version of OS) (RoHS)			
WP-5441-EN CR Standard WinPAC-5000 with Audio (English Version of OS) (RoHS)			
WP-5141-TC CR Standard WinPAC-5000 (Traditional Chinese Version of OS) (RoHS)			
WP-5441-TC CR Standard WinPAC-5000 with Audio (Traditional Chinese Version of OS) (RoHS)			
WP-5141-SC CR Standard WinPAC-5000 (Simplified Chinese Version of OS) (RoHS)			
WP-5441-SC CR	Standard WinPAC-5000 with Audio (Simplified Chinese Version of OS) (RoHS)		

Option Accessories ______

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



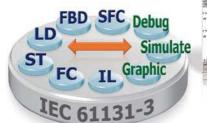


Introduction .

WP-5147 and WP-5447 Series are the new generation ISaGRAF based PACs of ICP DAS. It is equipped with a PXA270 CPU (520 MHz), various connectivity (VGA, USB, Ethernet, RS-232/485) and I/O slots for high performance parallel I/O modules (high profile I-8K Series) and serial I/ O modules (high profile I-87K series). The benefits of running Windows CE 5.0 on WinPAC include hard real-time capability, small core size, fast boot speed, interrupt handling at a deeper level and achievable deterministic control. WinPAC is also capable of running ISaGRAF and PC-based control software such as Visual Basic .NET, Visual C#,.... etc. It has all of the best features of both traditional PLCs and Windows capable PCs.

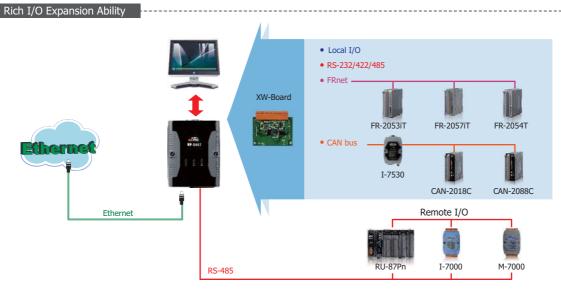
ISaGRAF is the most powerful SoftLogic package on the market. ISaGRAF is a PLC-like software and it supports IEC 61131-3 standard PLC programming languages (LD, FBD, SFC, ST, IL, FC), and can run the application generated by the workbench on any ISaGRAF PACs. The ISaGRAF workbench Ver. 3.x features

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





Applications



Specifications -

Models		WP-5147	WP-5447					
System Software								
OS		Windows CE 5.0 Core						
.Net Compac	t Framework	2.0						
Embedded S	ervice	FTP server,	FTP server, Web server					
Multilanguage Support		English, German, French, Spanish, Russian, It	talian, Simplifi ed Chinese, Traditional Chinese					
Development Software								
	ISaGRAF Ver.3	IEC 61131-	3 standard.					
ISaGRAF	Languages	LD, ST, FBD, SFC, IL & FC; support Soft-GRAF HMI.						
Software	Max. Code Size	1 MB						
Scan Time		$3\sim15$ ms for normal program; $15\sim50$ ms for complex or large program						
Non-ISaGRA	F	Options: MS eVC++ 4.0 or VS.NE	Options: MS eVC++ 4.0 or VS.NET 2005/2008 (VB.NET, C#.NET)					
CPU Modul	e							
CPU		PXA270 or compatible (32-bit and 520 MHz)						
SDRAM		128 MB						
Flash		64 MB (32 MB for OS, 32 MB for System_Disk and System Registry)						
EEPROM		16	KB					
Expansion Flash Memory		microSD socket with one 2 GB microSD ca	ard (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)						
VGA & Com	munication Ports							
VGA		Yes						
VGA		640 × 480 / 800 × 600						
Ethernet			RJ-45 x 2, 10/100 Base-TX (Auto-negotiating, Auto MDI/MDI-X, LED indicators)					
USB 1.1 (clie	ent)	1						
USB 1.1 (hos	-	1	1					
Audio Port	,		, ,					
(Microphone-	In and Earphone-Out)	-	Yes					
COM 1		RS-232 (RxD, TxD and GND); Non-isolated						
COM 2		RS-485 (D2+, D2-); 2500 Vpc; isolated						
COM 3		RS-232 (RxD, TxD and GND); Non-isolated						
I/O Expans	sion							
I/O Expansion	n Bus	Yes, to mount one optional XW-Board.						
Mechanical								
Dimensions (W x L x H)		91 mm x 132 mm x 52 mm						
Installation		DIN-Rail I	Mounting					
Environme	ntal							
Operating Temperature		-25 ~ +75°C						
Storage Tem	perature	-30 ∼ -	+80°C					
Ambient Rela	ative Humidity	10 ~ 90% RH (n	non-condensing)					
Power								
Input Range		+10 ~ +	+30 Vpc					
Isolation		11	kV					
Consumption		4.8 W (0.2 A @ 24 Vpc)	6 W (0.25 A @ 24 Vpc)					

☑ ISaGRAF Specifications ______

tional devices)
1~255, user-assigned by software
Link to max. 100 devices that support Standard Modbus TCP/IP Slave protocol
Support Multi-port. Max. 10 ports
Max. 5 Ports
Ethernet LAN1 & LAN2 support total up to 32 connections. When one Ethernet port is broken, the other one can still connect to PC HMI.
Ethernet Ports for connecting PC running Internet Explorer
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.
Max. 10 RS-485 ports can support M-7000 I/O. Each port can connect up to 32 M-7000 Modules.
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)
Supports functions to send email with one attached file via Ethernet port.
LAN2 to exchange data between ISaGRAF Ethernet PAC via Ethernet port.
LAN1 or LAN2 supports UDP Server and UDP Client protocol to send/receive message to/from PC/HMI or other devices.
LAN1 or LAN2 supports TCP Client protocol to send/receive message to/from PC/HMI or other devices which support TCP serve protocol. Ex: automatically report data to InduSoft's RXTX driver, or to connect a location camera.

☑ Ordering Information ______

WP-5147-EN CR ISaGRAF based WinPAC-5000 (English Version of OS) (RoHS)				
WP-5447-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-5447-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-5447-SC CR	ISaGRAF WinPAC-5000 with Audio (Simplified Chinese Version of OS) (RoHS)			

Option 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 Vbc/5.0 A, 120 W Power Supply with DIN-Rail Mounting (RoHS)
MDR-20-24 CR	24 Vbc/5.0 A, 24 W Power Supply with DIN-Rail Mounting (RoHS)
MDR-60-24 CR	24 Vbc/2.5 A, 60 W Power Supply with DIN-Rail Mounting (RoHS)
XW-Board	Add-on I/O Expansion Board



Highlight Information

- Windows CE.NET 5.0 Core
- Hard Real-Time Capability
- Fast Boot Speed
- PXA270 CPU (32-bit & 520 MHz)
- 128 MB SDRAM & 64 MB Flash
- Support VS.Net 2003/2005/2008 & eVC
- 64-bit Hardware Serial Number for Software Protection
- Audio with Microphone-In and Earphone-Out
- I/O Expansion Bus
- Support VGA (640 × 480 / 800 × 600)
- Support microSD Socket
- Dual 10/100M Ethernet Ports
- 3 Serial Ports (RS-232/485)
- Operating Temperature: -25 ~ +75°C









Introduction .

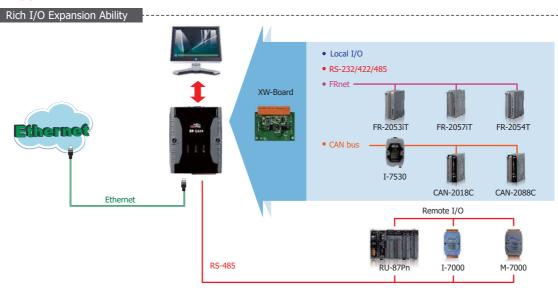
WP-5149 and WP-5449 Series are the new generation InduSoft based PACs of ICP DAS. It is equipped with a PXA270 CPU (520 MHz), various connectivity (VGA, USB, Ethernet, RS-232/485) and 1/4/8 I/O slots for high performance parallel I/O modules (high profile I-8K Series) and serial I/O modules (high profile I-87K series). The benefits of running Windows CE 5.0 on WinPAC include hard real-time capability, small core size, fast boot speed, interrupt handling at a deeper level and achievable deterministic control. WinPAC is also capable of running InduSoft and PC-based control software such as Visual Basic .NET, Visual C#,.... etc. It has all of the best features of both traditional PLCs and Windows capable PCs.

InduSoft 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
- System Redundancy
- 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)
- Database (Access, Excel, SQL, Oracle...)
- Online Configuration and debugging
- Others (VBScript, E-mail, FTP, SNMP...)

Applications



Specifications _____

Models	WP-5149	WP-5449
System Software		
OS	Windows CE 5.0 Core	
.Net Compact Framework	2.0	
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, Simplified Chinese, Traditional Chinese	
CPU Module		
CPU	PXA270 or compatible (32-bit and 520 MHz)	
SDRAM	128 MB	
Flash	64 MB (32 MB for OS, 32 MB for System_Disk and System Registry)	
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)	
VGA & Communication Ports		
VGA	Yes	
640 × 480 / 800 × 600 RJ-45 × 2, 10/100 Base-TX		
Ethernet	(Auto-negotiating, Auto MDI/MDI-X, LED indicators)	
USB 1.1 (client)	1	
USB 1.1 (host)	1	
Audio Port (Microphone-In and Earphone-Out)	-	Yes
COM 1	RS-232 (RxD, TxD and GND); Non-isolated	
COM 2	RS-485 (D2+, D2-); 2500 V _{DC} ; isolated	
COM 3	RS-232 (RxD, TxD and GND); Non-isolated	
I/O Expansion		
I/O Expansion Bus	Yes, to mount one optional XW-Board.	
Mechanical		
Dimensions (W x L x H)	91 mm x 132 mm x 52 mm	
Installation	DIN-Rail Mounting	
Environmental		
Operating Temperature	-25 ~ +75°C	
Storage Temperature	-30 ∼ +80°C	
Ambient Relative Humidity	10 ~ 90% RH (non-condensing)	
Power		
Input Range	+10 ~ +30 Vpc	
Isolation	1 kV	
Consumption	4.8 W (0.2 A @ 24 V _{DC})	6 W (0.25 A @ 24 Vpc)

☑ Ordering Information ______

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XW-Board	Add-on I/O Expansion Board