



ISaGRAF based μPAC-5000(D) Series

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



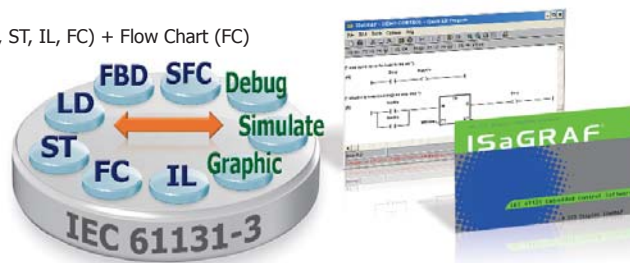
Introduction

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.

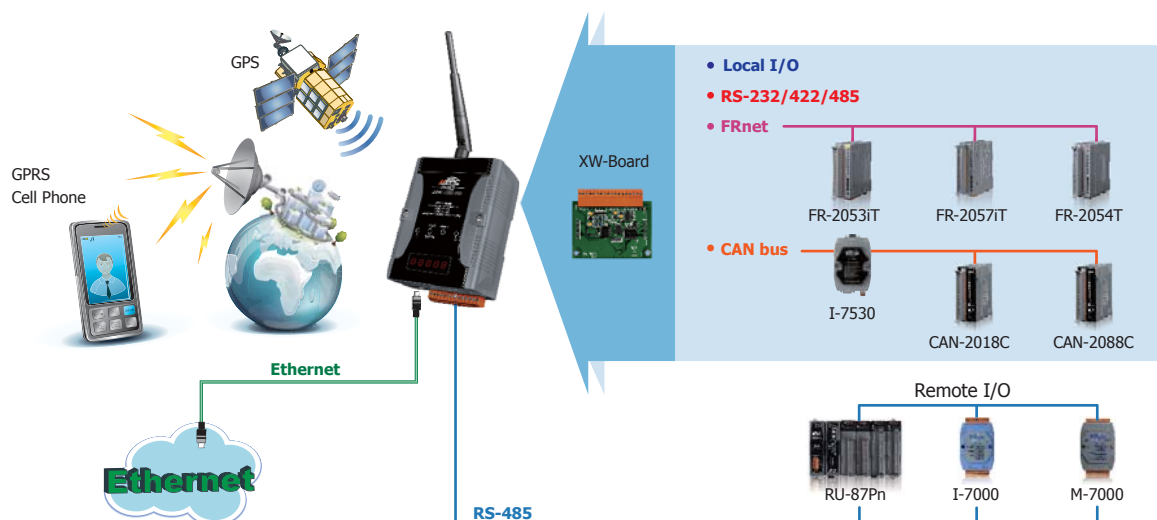
ISaGRAF is the most powerful SoftLogic package on the market. ISaGRAF is a PLC-like software and it supports IEC 61131-3 standard PLC programming languages (LD, FBD, SFC, ST, IL, FC), and can run the application generated by the workbench on any ISaGRAF PACs. The ISaGRAF workbench Ver. 3.x features

- 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
- Support Soft-GRAPH HMI

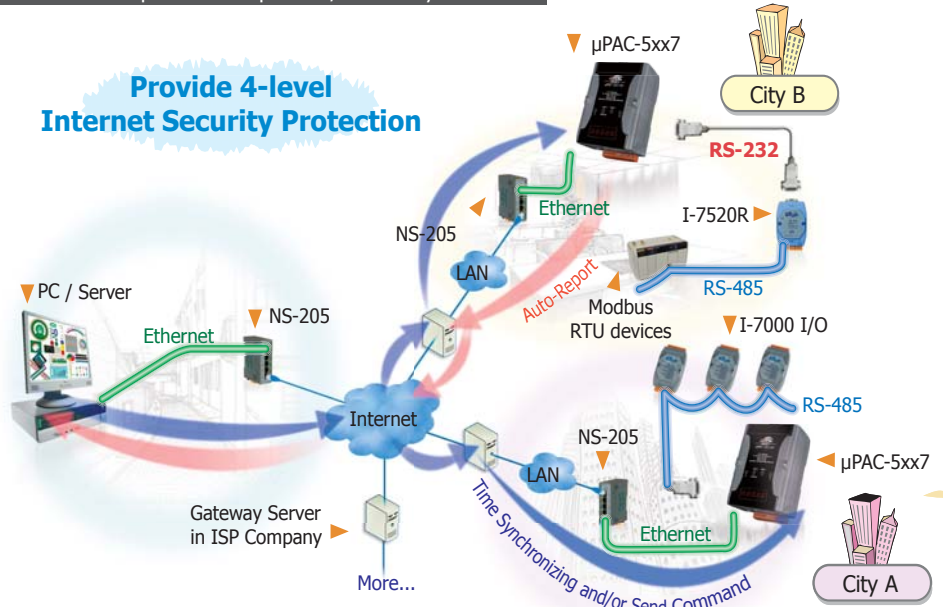


Applications

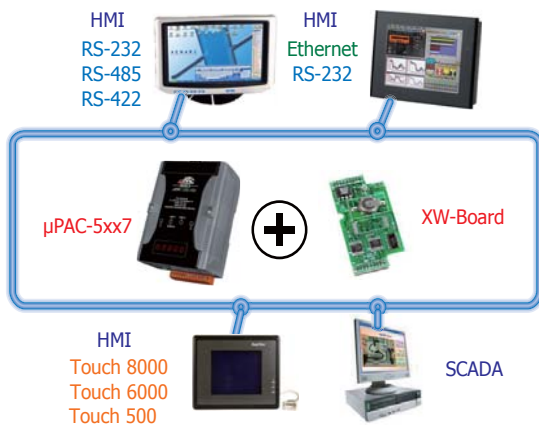
Rich I/O Expansion Ability



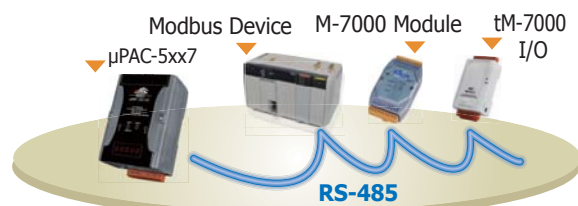
Cost-effective Auto-ReportData Acquisition/Control System



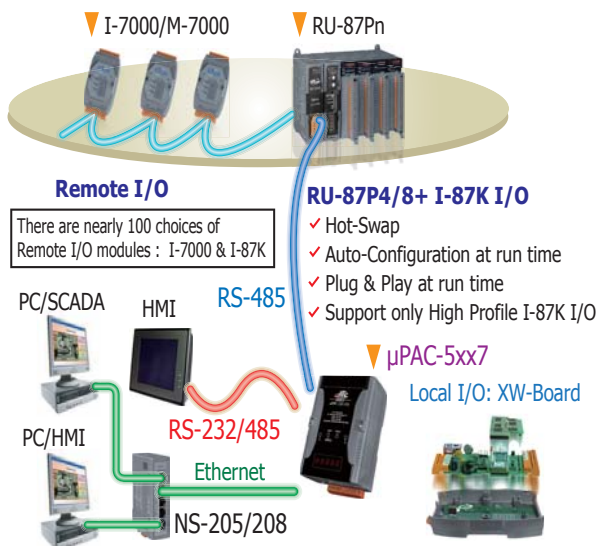
Modbus RTU/TCP Slave Ports



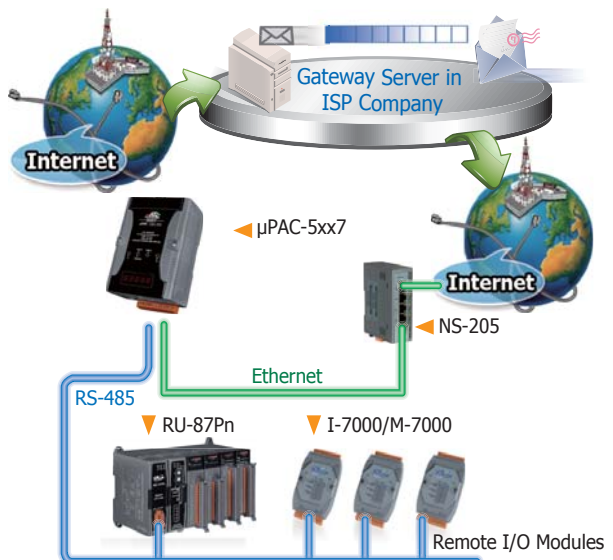
Modbus RTU/ASCII Master Ports



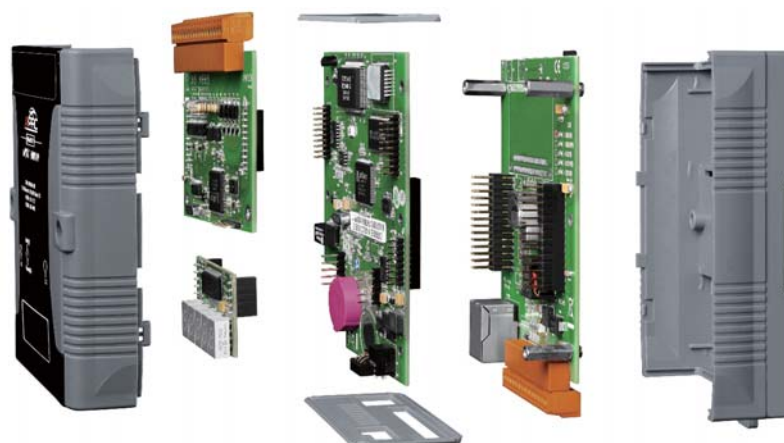
Local/Remote I/O Expansion & Multi-HMI



Send Email with one Attached File



• μPAC-5000 + XW-Board



• Common Specifications

Models		μPAC-5007(D)	μPAC-5107(D)	μPAC-5207(D)	μPAC-5307(D)	μPAC-5507(D)
System Software						
OS		MinIOS7 (DOS-like embedded operating system)				
Development Software						
ISaGRAF Software	ISaGRAF Ver.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				
SRAM		768 KB				
Flash		512 KB				
microSD Expansion		Yes (but ISaGRAF doesn't support)				
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)				
Communication Ports						
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.				
LED Indicator						
Programmable LED Indicators		2				
LED Display		5-digit 7-segment LED display for (D) versions				
Hardware Expansion						
I/O Expansion Bus		Yes (for one XW-Board only)				
Mechanical						
Dimensions (W x H x D)		91 mm x 123 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		+12 ~ +48 VDC				
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				

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 Email via Ethernet port through internet. Max.10 receivers for each sending and can send Email 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: µPAC-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 (Refer to ISaGRAF PAC I/O Selection Guide for I/O Module list)	
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-7K/I-87K DI modules support counters. 100 Hz max. value: 0 ~ 65535
Remote High Speed Counter	I-87082: 100 kHz max., 32-bit
* Note: COM3 ~ COM8 are resided at the optional XW-Board series if it is plugged inside the µPAC-5xx7. * ISaGRAF FAQ: http://www.icpdas.com/faq/isagraf.htm * Recommend to use NS-205/NS-208 Industrial Ethernet Switch.	



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)						2G (GPRS)	
µPAC-5307(D)						3G (WCDMA)	
µPAC-5507(D)						Wi-Fi (802.11 b/g)	

• Wireless Selection Guide


☑ ISaGRAF Based μPAC-5000

Models	μPAC-5007(D)	μPAC-5107(D)	μPAC-5207(D)	μPAC-5307(D)	μPAC-5507(D)
Wireless Communication	-	GPS	2G (GPRS)	3G (WCDMA)	Wi-Fi

☑ μPAC-5107(D) with GPS

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


☑ μPAC-5207(D)/μPAC-5307(D) with 2G (GPRS) / 3G (WCDMA)

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	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		
	ANT-421-01	
	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		
	ANT-421-02	
	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

μPAC-5507(D) with Wi-Fi

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

Ordering Information

μPAC-5007(D)	ISaGRAF based μPAC-5000 with LAN
μPAC-5107(D)	ISaGRAF based μPAC-5000 with LAN and GPS
μPAC-5207(D)	ISaGRAF based μPAC-5000 with LAN and 2G (GPRS)
μPAC-5307(D)	ISaGRAF based μPAC-5000 with LAN and 3G (WCDMA)
μPAC-5507(D)	ISaGRAF based μPAC-5000 with LAN and Wi-Fi (802.11 b/g)
Note: (D) means with 7-Segment LED Display.	

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: Do not offer 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.)	
Others	
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