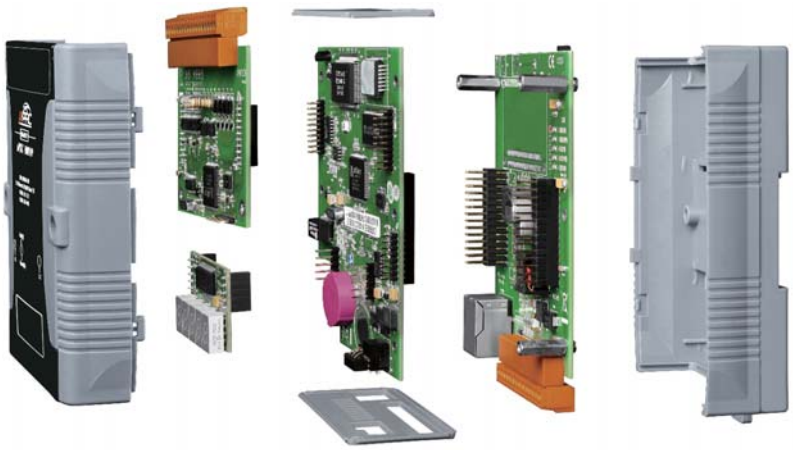
• µPAC-5000 + XW-Board



• Common Specifications

Models	µPAC-5000 Series		µPAC-5000-FD Series	µPAC-5xx7 Series	
System Software					
OS	MiniOS7 (DOS-like embedded operating system)				
Development Software	**C Language**			**ISaGRAF**	
	Download Interface	RS-232 (COM1) or Ethernet		ISaGRAF Version 3	IEC 61131-3 standard
	Language	C language		Languages	LD, ST, FBD, SFC, IL & FC
	Compilers	TC++ 1.01, TC 2.01, BC++3.1 ~ 5.2x, MSC 6.0, MSVC++ (before version 1.5.2)		Max. Code Size	Accepts max. 64 KB ISaGRAF code size (Appli.x8m must < 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	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)				
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 V_{DC}				
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	2G (GPRS)	1/1
µPAC-5301(D)	80 MHz	512 KB	512 KB	microSD	10/100 BaseTX	3G (WCDMA)	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

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

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

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

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	Wi-Fi (802.11 b/g)	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

ANT-124-05	
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)						2G (GPRS)	
µPAC-5307(D)						3G (WCDMA)	
µPAC-5507(D)						Wi-Fi (802.11 b/g)	

C Language based µPAC-5000(D) Series

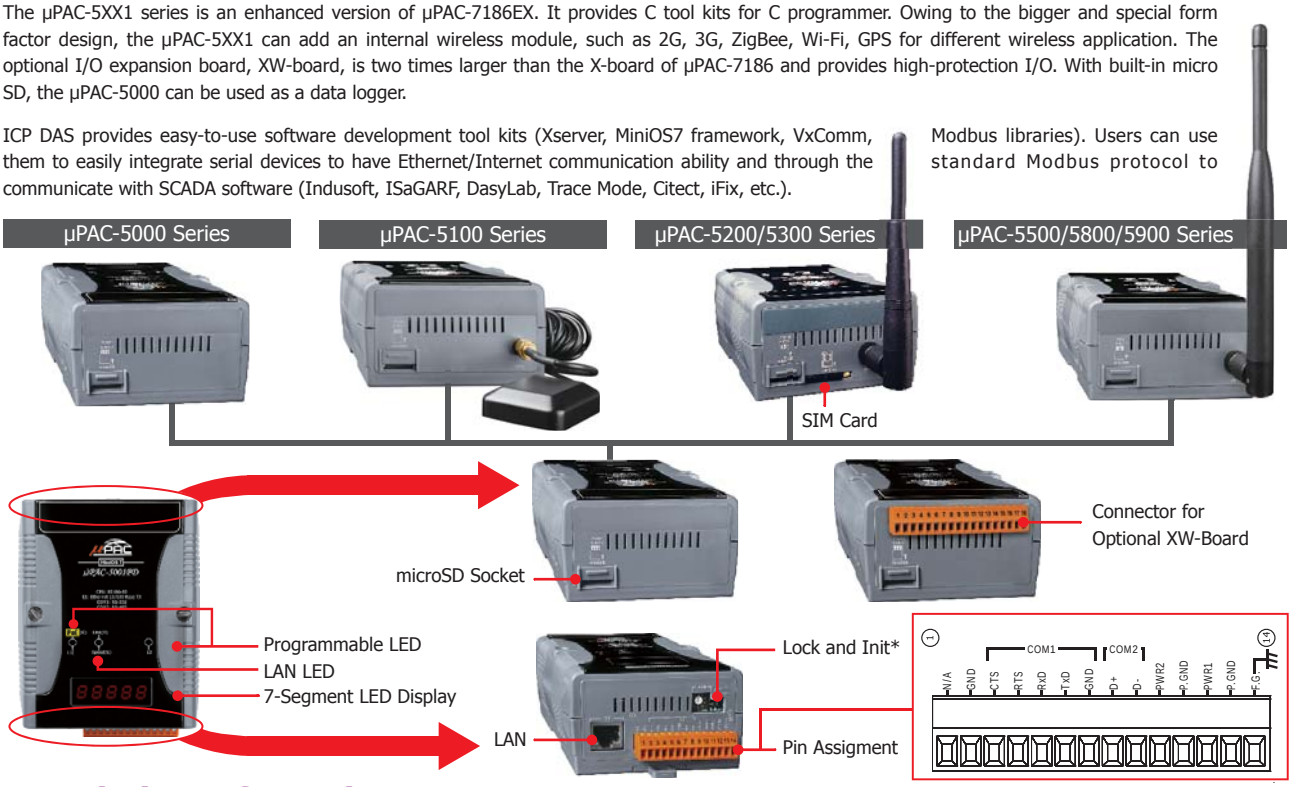
Features

- 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

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, Modbus libraries). Users can use them to easily integrate serial devices to have Ethernet/Internet communication ability and through the standard Modbus protocol to communicate with SCADA software (Indusoft, ISaGARF, DasyLab, Trace Mode, Citect, iFix, etc.).



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