

Features

- 80186, 80 MHz CPU
- MiniOS7 Inside
- ISaGRAF Ver.3 SoftLogic (IEC 61131-3) Inside
- 512 KB Battery Backup SRAM to Retain Data
- 64-bit Hardware Serial Number
- 4/8 Hot-Swap Slots for I-87K High Profile I/O Modules
- Dual 10/100 Ethernet Ports (for iP-8447/8847)
- 4 Serial Ports (RS-232/485)
- Redundant Power Inputs
- Operating Temperature: -25 ~ +75°C



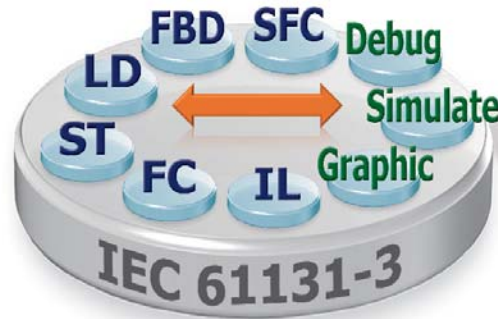
Introduction

iPAC-8xx7 Series (iP-8417/8817/8447/8847) is the ISaGRAF SoftLogic PAC of ICP DAS iPAC-8000 series. It is equipped an 80186, 80 MHz CPU running a MiniOS7 operating system, various connectivity (Dual 10/100 Base-TX Ethernet Ports for iP-8x47, one RS-232/485 port, one RS-485 port and two RS-232 ports) and 4/8 slots for high performance Parallel I/O modules (high profile I-8K series) and high performance Serial I/O modules (Hot-Swap high profile I-87K I/O modules). Users can also choose RS-485 Remote I/O modules (I-7000 series) or expansion units (RU-87Pn or I-87Kn) plugged with high profile I-87K serial I/O modules. Compared to I-8xx7, iPAC-8xx7 series is 2 ~ 4 times faster!

ISaGRAF Features

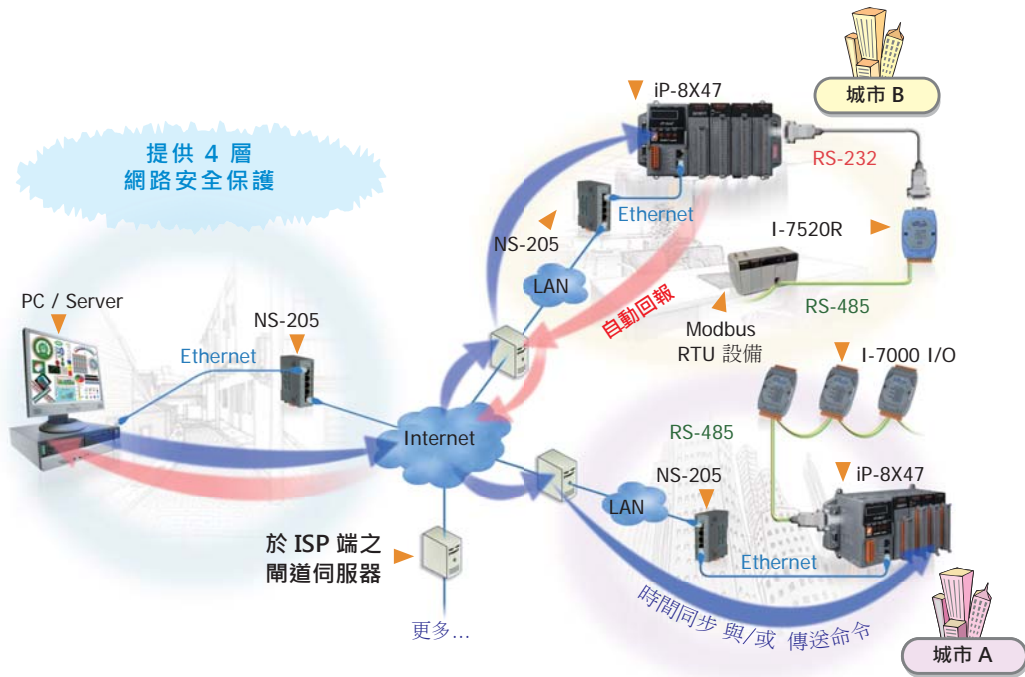
ISaGRAF is the most powerful SoftLogic package on the market. ISaGRAF is a PLC-like software and it supports IEC 61131-3 standard PLC programming languages (LD, FBD, SFC, ST, IL, FC), and can run the application generated by the workbench on any ISaGRAF PACs. The ISaGRAF workbench Ver. 3.x features.

- 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-GRAF HMI

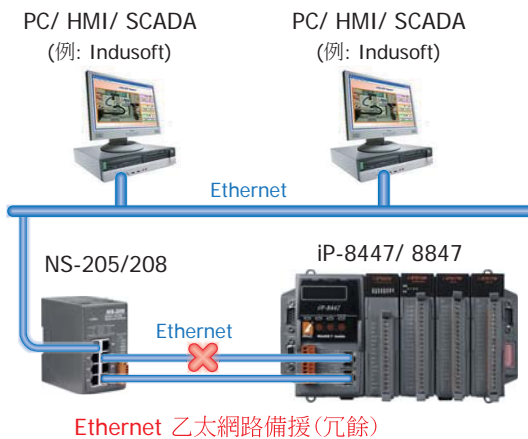


Applications

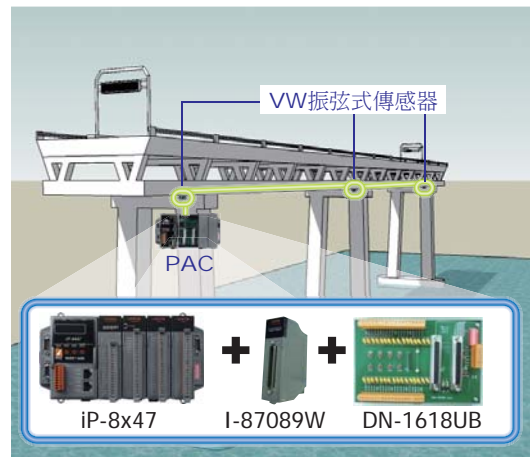
Cost-effective Auto-Report Data Acquisition/Control System



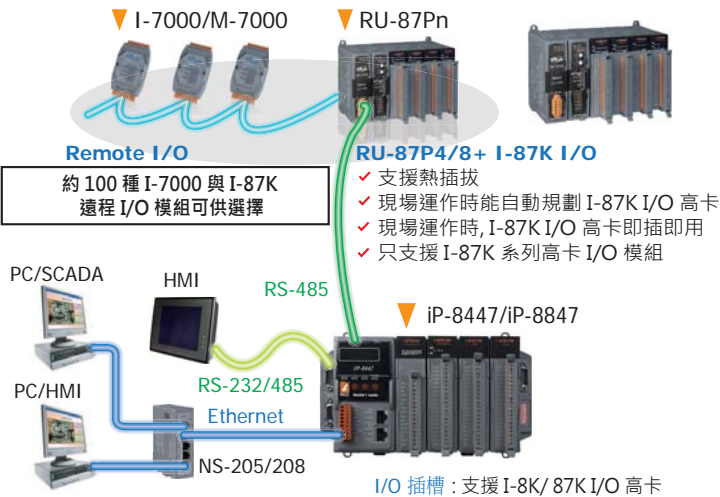
Ethernet Redundancy for HMI/PC/SCADA



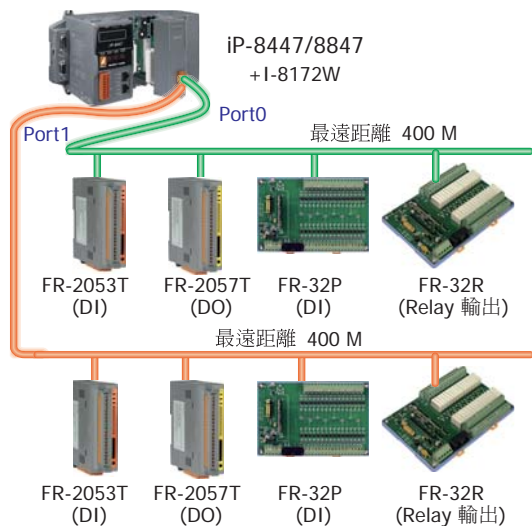
Stress Monitoring of Constructions



Local/Remote I/O Expansion & Multi-HMI



Fast FRnet Remote I/O



PAC Specifications

Models		iP-8417	iP-8817	iP-8447	iP-8847
System Software					
OS		MiniOS7 (DOS-like embedded operating system)			
Development Software					
ISaGRAF Software	ISaGRAF Version 3	IEC 61131-3 standard			
	Languages	LD, ST, FBD, SFC, IL & FC			
	Max. Code Size	64 KB			
	Scan Time	2 ~ 25 ms ms for normal program 10 ~ 125 ms (or more) for complex or large program			
CPU Module					
CPU		80186, 80 MHz			
SRAM		512 KB		768 KB	
Flash		512 KB; with Write Protect Switch			
microSD Expansion		Yes (but ISaGRAF doesn't support)			
Dual Battery Backup SRAM		512 KB; data valid up to 5 years (for retain variables)			
EEPROM		16 KB			
NVRAM		31 bytes (battery backup, data valid up to 5 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)			
DIP Switch		Yes (8 bits)			
Communication Ports					
Ethernet		-		RJ-45 x 2, 10/100 Base-TX (Auto-negotiating, Auto MDI/MDI-X, LED indicators)	
COM 0		Internal communication with the high profile I-87K series modules in slots			
COM 1		RS-232 (to update firmware) (Rx/D, Tx/D and GND); non-isolated			
COM 2		RS-485 (Data+, Data-) with internal self-tuner ASIC; 3000 VDC isolated			
COM 3		RS-232/RS-485 (Rx/D, Tx/D, CTS, RTS and GND for RS-232, Data+ and Data- for RS-485); non-isolated			
COM 4		RS-232 (Rx/D, Tx/D, CTS, RTS, DSR, DTR, CD, RI and GND); non-isolated			
SMMI					
LED Display		Yes, 5-Digit			
Programmable LED Indicators		3			
Push Buttons		4			
Buzzer		-	-	Yes	
I/O Expansion Slots					
Slot Number		4	8	4	8
		Note: For High Profile I-8K and I-87K Modules Only			
Data Bus		8/16 bits			
Address Bus Range		2 K for each slot			
Mechanical					
Dimensions (W x L x H)		231 mm x 132 mm x 111 mm	355 mm x 132 mm x 111 mm	231 mm x 132 mm x 111 mm	355 mm x 132 mm x 111 mm
Installation		DIN-Rail or Wall Mounting			
Environmental					
Operating Temperature		-25 ~ +75°C			
Storage Temperature		-30 ~ +80°C			
Ambient Relative Humidity		10 ~ 90% RH (non-condensing)			
Power					
Input Range		+10 ~ +30 VDC			
Isolation		1 kV			
Redundant Power Inputs		Yes, with one power relay (1 A @ 24 VDC) for alarm			
Capacity		30 W	30 W	30 W	30 W
Consumption		6.7 W	7.2 W	6.7 W	7.2 W

2

4

Compact PAC

ISaGRAF Specifications

Protocols (some protocols need optional devices)	
NET ID	8 bits DIP switch to assign NET ID as 1 ~ 255
Modbus RTU/ASCII Master	Max. 2 COM Ports, COM1 ~ COM5 can support Modbus RTU Master or ASCII Master protocol to connect to other Modbus Slave devices. Max. Modbus_XXX Function Block amount for 2 ports: 128. (*)
Modbus RTU Slave	Max. 2 COM Ports, COM1 and one of (COM2, COM3) can support Modbus RTU Slave protocol for connecting ISaGRAF, PC/HMI/OPC Server & MMI panels.
Modbus TCP/IP Slave	2 Ethernet ports support Modbus TCP/IP Slave Protocol for connecting ISaGRAF & PC/HMI. (Max. 6 connections) (for iP-8x47)
User-Defined Protocol	COM1 ~ COM20 by serial communication function blocks (*)
Remote I/O	One of COM2 or COM3 or COM4 supports I-7000 I/O modules & (I-87Kn or RU-87Pn + I-87K High Profile I/O boards) as Remote I/O. Max. 64 Remote I/O module for one PAC
Fbus	Built-in COM3 Port to exchange data between ICP DAS's ISaGRAF PACs.
Ebus	To exchange data between ICP DAS's ISaGRAF Ethernet PACs via Ethernet port. (The LAN2: upper port ONLY) (for iP-8x47)
SMS: Short Message Service	One of COM4/5 can link to a GSM Modem to support SMS. User can request data/control the controller by cellular phone. (*) The controller can also send data & alarms to user's cellular phone. Optional GSM/GPRS modem: GTM-201-RS232 (850/900/1800/1900 GSM/GPRS External Modem)
Modem Link	COM4 can connect a general Modem. Supports PC to remotely download & monitor the controller.
MMICON/LCD	One of COM3 or COM4 supports ICP DAS's MMICON. The MMICON is featured with a 240 x 64 dot LCD and a 4 x 4 Keyboard. User can use it to display picture, string, integer, float, and input a character, string, integer and float.
Redundant Bus7000	Two ISaGRAF PACs can link to remote I-7000 & I-87K High profile I/O modules at the same time. Only one controller is active to control these Remote I/Os. If one is dead, the other one will take over the control of Remote I/Os.
CAN/CANopen	COM1, 3, 4 or COM5 ~ COM12 can connect one I-7530 (converter: RS-232 to CAN) to support CAN/CANopen devices and sensors. One iP-8xx7 supports max. 3 RS-232 ports to connect max. 3 I-7530. (*) (FAQ-086)
FRnet I/O	Support max. 4 I-8172W FRnet Master cards to connect FRnet I/O modules (Max. 1024-ch. DI + 1024-ch. DO)
Send 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) (for iP-8x47)
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	High Speed PWM Module I-8088W, 8-ch PWM outputs, software support 1 Hz ~ 100 kHz (non-continuous), duty: 0.1 ~ 99.9%
	DO Module as PWM 8-ch max. for one controller. 500 Hz max. For Off=1 & On=1 ms Output Square Curve: Off: 1 ~ 32767 ms, On: 1 ~ 32767 ms. Optional DO Boards: I-8037W, 8041W, 8041AW, 8042W, 8050W, 8054W, 8055W, 8056W, 8057W, 8060W, 8063W, 8064W, 8068W, 8069W. (Relay Output boards cannot generate fast square wave)
Counters, Encoder, Frequency	Parallel DI Counter 8-ch. max. for 1 controller. Counter Val: 32-bit.; 500 Hz max. Min. ON & OFF width must >1 ms Optional DI boards: I-8040W, 8040PW, 8042W, 8046W, 8050W, 8051W, 8052W, 8053W, 8053PW, 8054W, 8055W, 8058W, 8063W.
	Serial DI Counter Counter input: 100 Hz max. Counter value: 0 ~ 65535 (16-bit) Optional serial I-87K DI boards: I-87040W, 87046W, 87051W, 87052W, 87053W, 87053W-A5, 87054W, 87055W, 87058W, 87059W, 87063W.
	Remote DI Counter All remote I-7K/I-87K DI modules support counters. 100 Hz max. value: 0 ~ 65535
	High Speed Counter I-87082W: 100 kHz max., 32-bit; I-8084W: 250 kHz max., 32-bit
	Encoder I-8093W: 3-axis Encoder Module, max. 1M Hz for quadrant input mode, max. 4M Hz for pulse/direction and cw/ccw input mode. (FAQ-112) I-8084W: 250 kHz max., 4-ch encoder, can be Dir/Pulse, or Up/Down or A/B phase (Quad. mode); Not support Encoder Z-index. (FAQ-100)
	Frequency I-87082W: 2-ch, 1 Hz ~ 100 kHz; I-87088W: 8-ch, 1 Hz ~ 100 kHz; I-8084W: 8-ch, 1 Hz ~ 250 kHz;
Motion	Motion Control Can integrate with one I-8091W (2-axis) or two I-8091W (4-axis) to do motion control. Ethernet communication is also available when doing motion control.
* Note: COM5 ~ COM20 are resided at the expansion boards if they are plugged on slot 0~7 of iP-8xx7.	
* ISaGRAF FAQ: http://www.icpdas.com/faq/isagraf.htm	
* Recommend to use NS-205/NS-208 Industrial Ethernet Switch.	

Ordering Information

iP-8417 CR	ISaGRAF based iPAC-8000 with 4 I/O Slots (RoHS)
iP-8817 CR	ISaGRAF based iPAC-8000 with 8 I/O Slots (RoHS)
iP-8447 CR	ISaGRAF based iPAC-8000 with 4 I/O Slots (RoHS)
iP-8847 CR	ISaGRAF based iPAC-8000 with 8 I/O Slots (RoHS)

Accessories

ISaGRAF Development Software	
ISaGRAF-256-E	ISaGRAF Workbench Software Ver.3 (256 I/O Tags) with One Application Book (English version) and one USB Dongle
ISaGRAF-256-C	ISaGRAF Workbench Software Ver.3 (256 I/O Tags) with One Application Book (Chinese version) and one USB Dongle
ISaGRAF-32-E	ISaGRAF Workbench Software Ver.3 (32 I/O Tags) with One Application Book (English version)
ISaGRAF-32-C	ISaGRAF Workbench Software Ver.3 (32 I/O Tags) with One Application Book (Chinese version)
Note: No upgrade service from ISaGRAF-32 to ISaGRAF-256. (Using ISaGRAF-32 can control more than 32 I/O tags. Please refer to ISaGRAF User's Manual Ch. 3.4)	
Power Supply	
DP-660	24 VDC/2.5 A, 60 W and 5 VDC/0.5 A, 2.5 W Power Supply with DIN-Rail Mounting
DP-665	24 VDC/2.7 A, 65 W Power Supply with DIN-Rail Mounting
DP-1200 CR	24 VDC/5.0 A, 120 W Power Supply with DIN-Rail Mounting (RoHS)
Converter	
I-7560 CR	USB to RS-232 Converter (RoHS)