

Features

- 80186, 80 MHz CPU
- ISaGRAF Ver.3 SoftLogic: Five IEC 61131-3 Standard Open PLC Languages + Flow Chart
- 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 10/100M Ethernet Ports (for iP-8447/8847)
- 4 Serial Ports (RS-232/485)
- Redundant Power Inputs
- Operating Temperature: -25 ~ +75°C

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Compact PAC

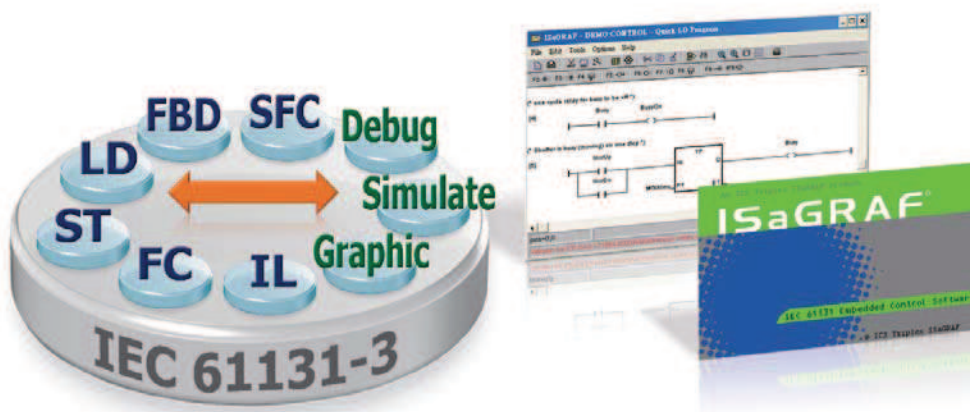
Introduction

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

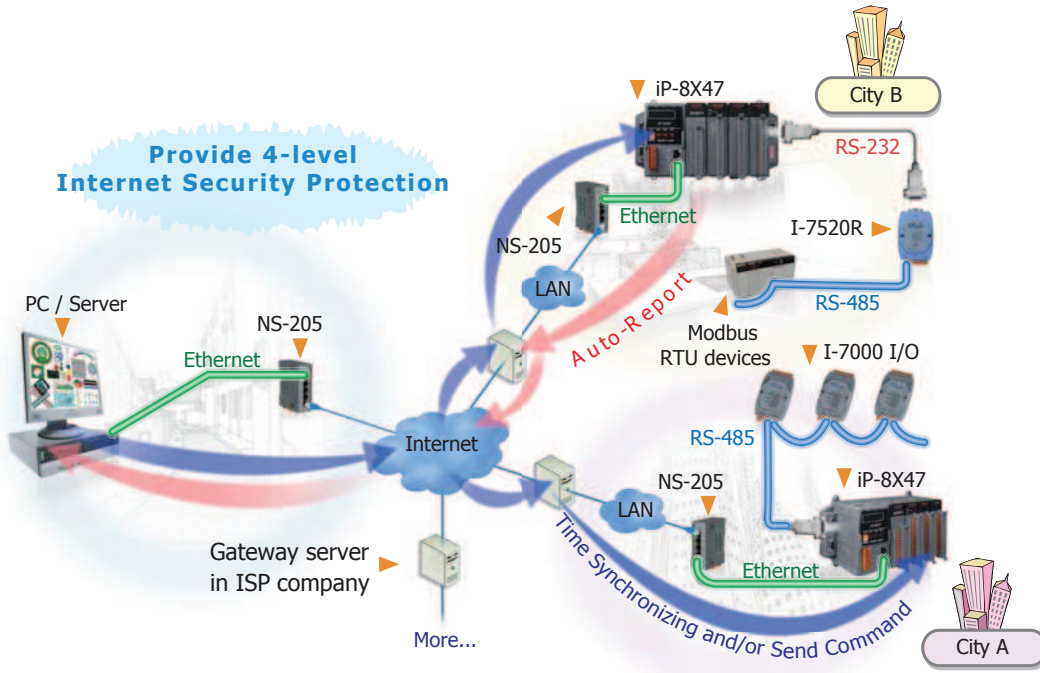
ISaGRAF is the most powerful SoftLogic package on the market. ISaGRAF is a PLC-like software and it supports IEC 61131-3 standard PLC programming languages (LD, FBD, SFC, ST, IL, FC), and can run the application generated by the workbench on any ISaGRAF PACs. The ISaGRAF workbench Ver. 3.x features.

- 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



Cost-effective Auto-Report Data Acquisition/Control System

Provide 4-level Internet Security Protection

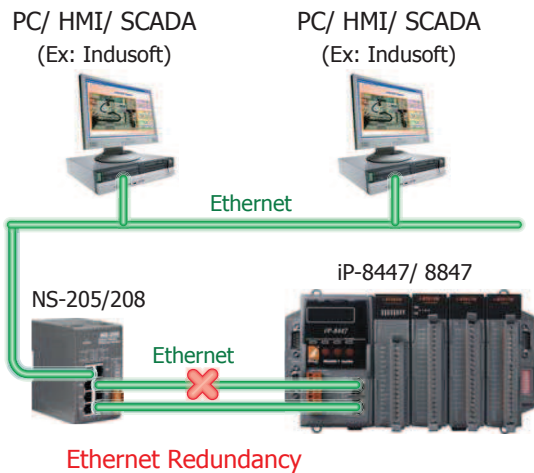


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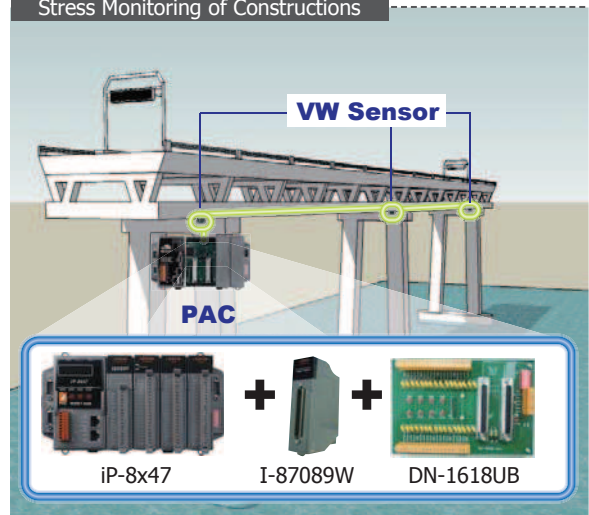
Compact PAC

Ethernet Redundancy for HMI/PC/SCADA

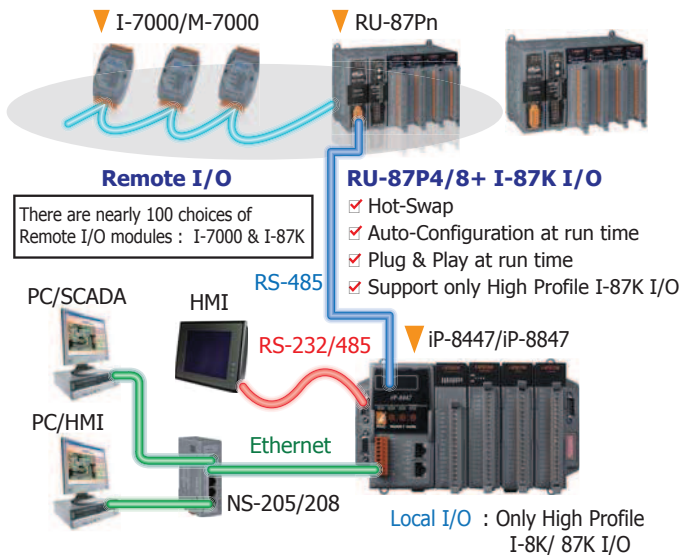


Ethernet Redundancy

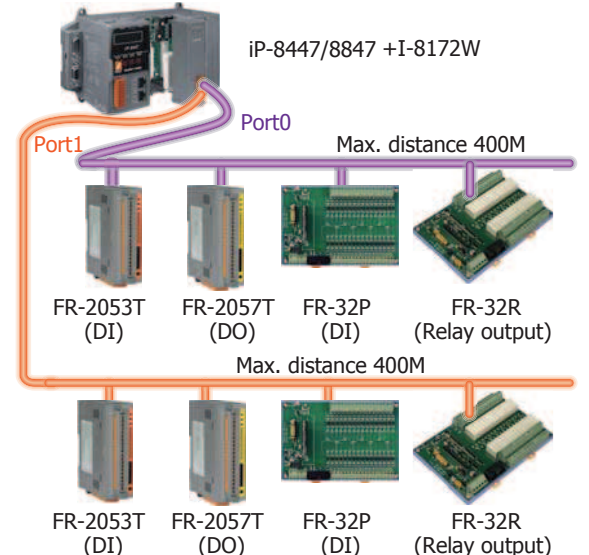
Stress Monitoring of Constructions



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 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, Tx and GND); non-isolated			
COM 2	RS-485 (Data+, Data-) with internal self-tuner ASIC; 3000 V _{dc} isolated			
COM 3	RS-232/RS-485 (Rx, Tx, CTS, RTS and GND for RS-232, Data+ and Data- for RS-485); non-isolated			
COM 4	RS-232 (Rx, Tx, 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 V _{dc}			
Isolation	1 kV			
Redundant Power Inputs	Yes, with one power relay (1 A @ 24 V _{dc}) for alarm			
Capacity	30 W	30 W	30 W	30 W
Consumption	6.7 W	7.2 W	6.7 W	7.2 W

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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)
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)
User-Defined Protocol		COM1 ~ COM20 by serial communication function blocks (*)
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 E-mail		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) (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 I-7000/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		

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) Note: No upgrade service from ISaGRAF-32 to ISaGRAF-256.
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 V _{dc} /2.5 A, 60 W and 5 V _{dc} /0.5 A, 2.5 W Power Supply with DIN-Rail Mounting
DP-665	24 V _{dc} /2.7 A, 65 W Power Supply with DIN-Rail Mounting
DP-1200 CR	24 V _{dc} /5.0 A, 120 W Power Supply with DIN-Rail Mounting (RoHS)
Converter	
I-7560 CR	USB to RS-232 Converter (RoHS)

ViewPAC



3.1. ViewPAC Overview

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- Hardware ----- P3-1-3
- Selection Guide----- P3-1-4

3.2. ViewPAC Series

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- VP-2111/VH-2110 ----- P3-2-1
- VP-2117 (ISaGRAF) ----- P3-2-3



- VP-23W1/VP-25W1 ----- P3-2-7
- VP-4131 ----- P3-2-9
- VP-23W7/VP-25W7/VP-4137 (ISaGRAF) ----- P3-2-11
- VP-23W9/VP-25W9/VP-4139 (InduSoft) ----- P3-2-16

