ISaGRAF XPAC

XP-8037-CE6

XP-8337-CE6

XP-8137-CE6

XP-8737-CE6

☑ Features

■ x86 CPU, 1.0 GHz, dual-core

■ Windows CE 6.0

■ Embedded ISaGRAF Ver.3 SoftLogic (IEC 61131-3)

■ Hard Real-Time Capability

■ VGA Port Output

■ Modbus RTU/TCP (Master, Slave)

■ Support eLogger HMI

■ Support Motion Control
　- Using I-8094F/8094/8092F

■ Redundant Power Inputs

■ Operating Temperature: -25 ~ +75 °C

CE FC RoHS

☑ Introduction

The **XP-8x37-CE6** Series **(XP-8037-CE6/XP-8137-CE6/XP-8337-CE6/XP-8737-CE6)** is the new generation ISaGRAF PAC frim ICP DAS. Each is equipped with an x86 CPU (1 GHz) dual-core running a Windows Embedded CE 6.0 operating system, a variety of input/output ports (VGA, USB, Ethernet, RS-232/485), and a range of I/O slots (0/1/3/7) that can be used to integrate high performance parallel I/O modules (high profile I-8K Series) or serial I/O modules (high profile I-87K series).

The benefits of running Windows CE 6.0 on an XPAC device include hard real-time capabilities, small core size, fast boot speed, interrupt handling at a deeper level, and achievable deterministic control. XPAC devices are also capable of running ISaGRAF and PC-based control software, such as Visual Basic .NET, Visual C#, etc., providing all of the best features of both traditional PLCs and Windows capable PCs.

Major advantage compared with the WP-8xx7 and VP-2xW7 :
- ● The USB-mouse operations and Ethernet communication of the XP-8x37-CE6 are more effective (consume less CPU loading) than the WP-8xx7 and VP-2xW7.
- ● The memory size (Flash and SDRAM) of the XP-8x37-CE6 is much more than the WP-8xx7 and VP-2xW7.

☑ ISaGRAF Features

ISaGRAF is the most powerful SoftLogic package on the market, and is a PLC-like software suite application that supports IEC 61131-3 standard PLC programming languages (LD, FBD, SFC, ST, IL) and Flow Chart (FC). ISaGRAF can be used to execute applications generated by the ISaGRAF workbench on any ISaGRAF PAC.
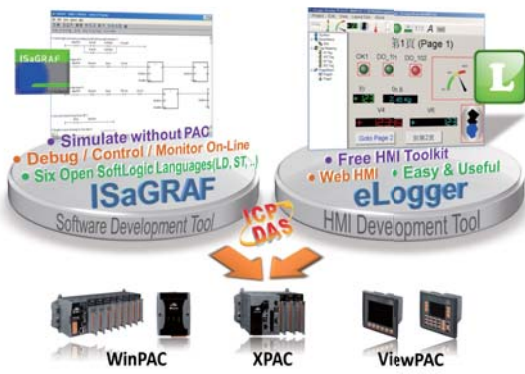
The features of the ISaGRAF workbench Ver. 3.x include:
- ■ IEC 61131-3 Standard Open PLC Programming Languages (LD, FBD, SFC, ST, IL) + Flow Chart (FC)
- ■ Auto-scan I/O
- ■ Online Debugging/Control/Monitoring, Offline Simulation
- ■ Simple Graphic HMI
- ■ Support eLogger HMI
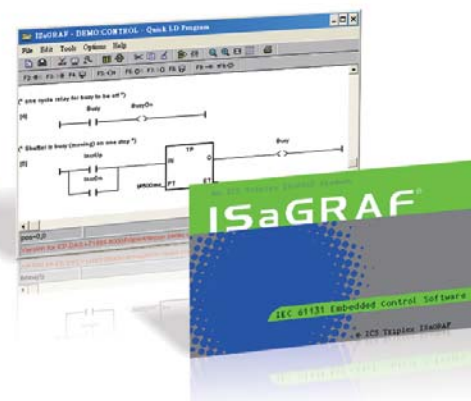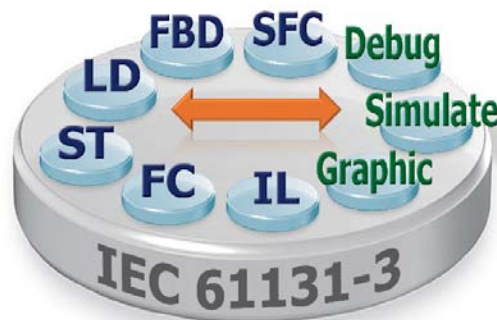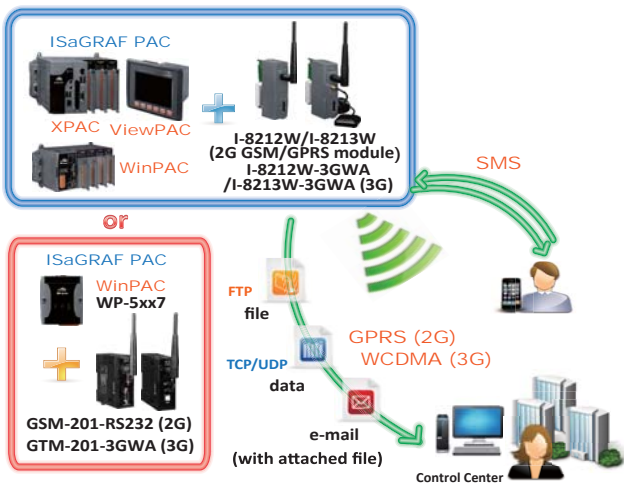
Applications

eLogger HMI Application

Modbus Master Ports

Modbus RTU/ASCII Master

XP-8xx7-CE6   Modbus Device   M-7000 Module   tM-7000 I/O

RS-485

Modbus TCP/IP Master

XP-8xx7-CE6

Max. 100 Connections

WP-8xx7

WP-5xx7

NS-208

VP-2xW7/4xx7

Modbus TCP/IP Master Protocol

Modbus TCP/IP Slave PLC
Modbus TCP/IP Slave Meter

ISaGRAF PAC
μPAC
iPAC
ViewPAC
WinPAC
XPAC

Modbus TCP/IP Slave

iDCS-8000 Redundant I/O
ET-7000 I/O   tPET-7000 I/O

Schedule Control

Schedule Control

ISaGRAF WinCE PAC

WinPAC   XPAC   ViewPAC
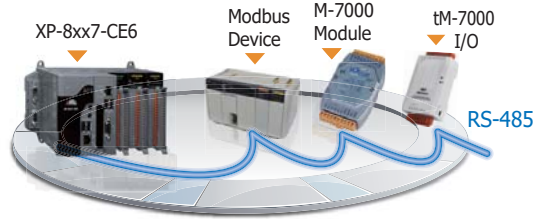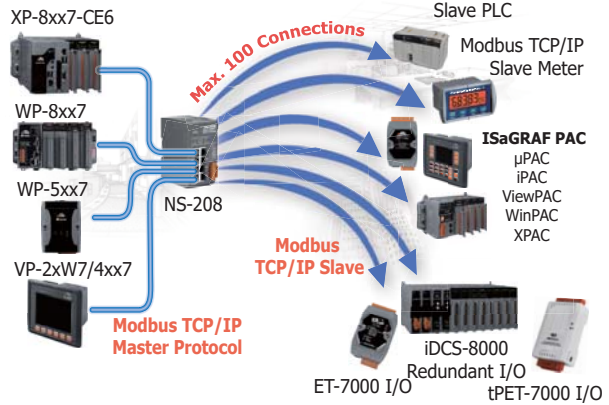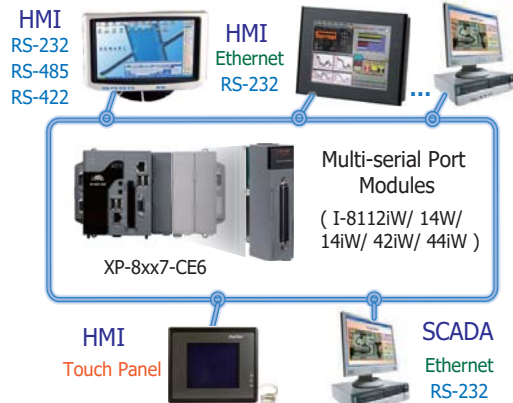
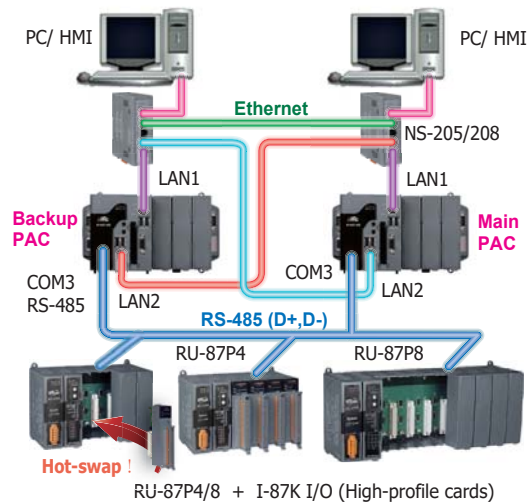## Modbus Slave : RTU / TCP

- Modbus RTU (RS-232/485/422) Slave: max. 9 ports
- Modbus TCP/IP Slave: max. 64 connections

HMI
RS-232
RS-485
RS-422

HMI
Ethernet
RS-232

Multi-serial Port Modules
(I-8112iW/ 14W/ 14iW/ 42iW/ 44iW)

XP-8xx7-CE6

HMI
Touch Panel

SCADA
Ethernet
RS-232

Motion Control: Using I-8094F/8092F/8094

eLogger HMI Page

XP-8xx7-CE6

I/O Devices
I-8K, I-87K

eLogger HMI

I-8000 Motion Control Module

Terminal Board

Motion Control

Servo Motors

Motion Devices

2G/3G Wireless Application

ISaGRAF PAC

XPAC   ViewPAC

WinPAC

I-8212W/I-8213W
(2G GSM/GPRS module)
I-8212W-3GWA
/I-8213W-3GWA (3G)

SMS

or

ISaGRAF PAC
WinPAC
WP-5xx7

FTP file

TCP/UDP data

GPRS (2G)
WCDMA (3G)

GSM-201-RS232 (2G)
GTM-201-3GWA (3G)

e-mail
(with attached file)

Control Center

Hot-Swap Redundant System

PC/ HMI   PC/ HMI

Ethernet

NS-205/208

LAN1   LAN1

Backup PAC   Main PAC

COM3 RS-485   LAN2   COM3   LAN2

RS-485 (D+,D-)

RU-87P4   RU-87P8

Hot-swap !

RU-87P4/8 + I-87K I/O (High-profile cards)

ISaGRAF XPAC

ICP DAS

ISaGRAF XPAC

▣ Specifications

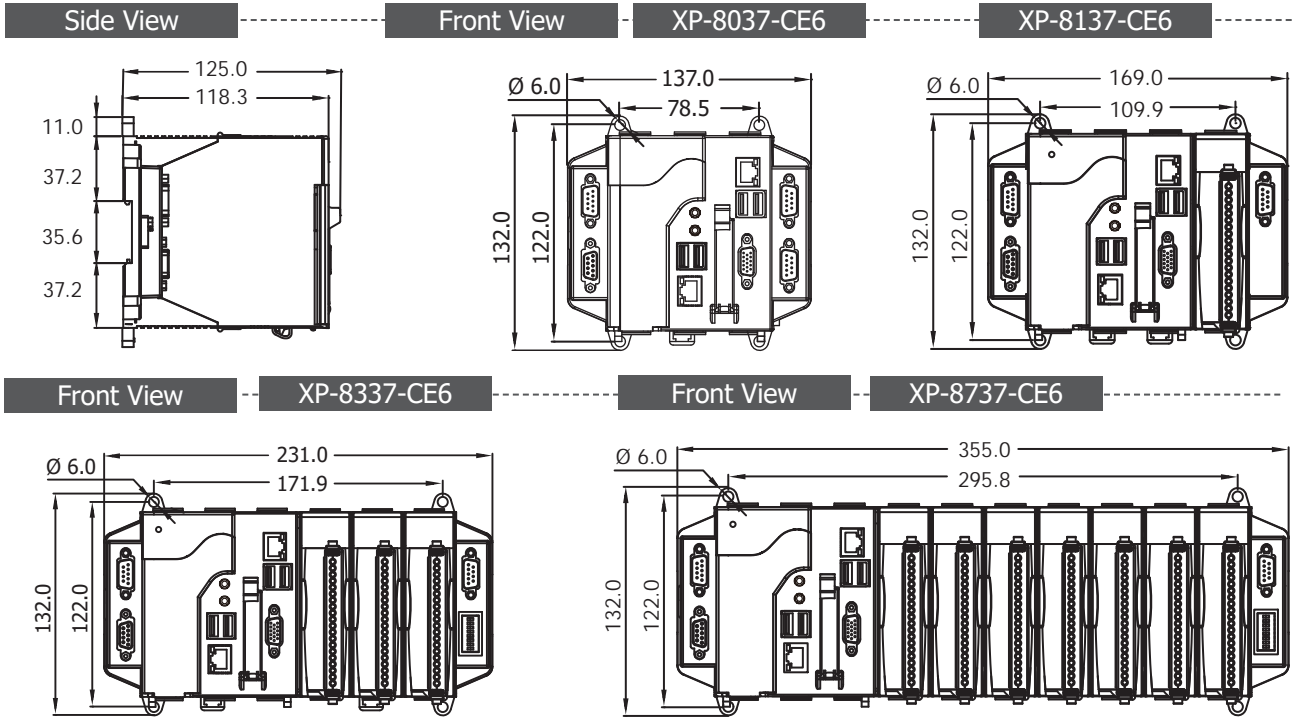| Models	XP-8037-CE6	XP-8137-CE6	XP-8337-CE6	XP-8737-CE6
System Software				
OS	Windows CE 6.0 R3 Core			
.Net Compact Framework	3.5			
Embedded Service	FTP Server, ASP (Java Script, VB Script), SQL Compact Edition 3.5			
SDK Provided	Dll for Visual Studio .Net 2005/2008			
Multilanguage Support	English, German, French, Spanish, Russian, Italian, Japanese, Simplified Chinese, Traditional Chinese			
Development Software				
ISaGRAF Software — ISaGRAF Ver.3	IEC 61131-3 standard.			
ISaGRAF Software — Languages	LD, ST, FBD, SFC, IL & FC			
ISaGRAF Software — Max. Code Size	2 MB			
ISaGRAF Software — Scan Time	3 ~ 15 ms for normal program; 15 ~ 50 ms for complex or large program			
Non-ISaGRAF	Options: VS.NET 2005/2008 (VB.NET, C#.NET)			
CPU Module				
CPU	x86 CPU, 1.0 GHz, dual-core			
System Memory	2 GB DDR3			
Non-volatile Memory, MRAM	512 KB (retain memory without battery support)			
Flash	32 GB			
EEPROM	16 KB (Data Retention: 40 years; 1,000,000 erase/write cycles)			
CF Card	8 GB (support up to 32 GB)			
RTC (Real Time Clock)	Display seconds, minutes, hours, date, day of the week, month, year			
Programmable LED Indicator	2			
64-bit Hardware Serial Number	Yes, for Software Copy Protection			
Dual Watchdog Timers	Yes			
Rotary Switch	Yes (0 ~ 9)			
DIP Switch	-	Yes (8 bits)		
Audio	Microphone-In and Earphone-Out			
VGA & Communication Ports				
VGA	Yes (Resolution: 1024 x 768, 800 x 600, 640 x480)			
Ethernet	RJ-45 x 2, 10/100 Base-TX (Auto-negotiating, Auto MDI/MDI-X, LED indicators).			
USB 2.0	4			
COM 1	RS-232 (RxD, TxD and GND); non-isolated	Internal communication with the high profile I-87K series modules in slots		
COM 2	RS-232 (RxD, TxD and GND); non-isolated			
COM 3	RS-485 (D2+, D2-) with internal self-tuner ASIC; 3000 V$_{DC}$ isolated			
COM 4	RS-232/RS-485 (RxD, TxD, CTS, RTS and GND for RS-232, Data+ and Data- for RS-485); non-isolated			
COM 5	RS-232 (RxD, TxD, CTS, RTS, DSR, DTR, CD, RI and GND); non-isolated			
I/O Expansion Slots				
Number of Slots	0	1	3	7
	Note: For High Profile I-8K and I-87K Modules Only			
Mechanical				
Dimensions (W x L x H)	137 x 132 x 125 (mm)	169 x 132 x 125 (mm)	231 x 132 x 125 (mm)	355 x 132 x 125 (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	20 W	20 W	35 W	35 W
Consumption	12 W (0.5 A @ 24 VDC)	16.6 W (0.69 A @ 24 VDC)	16.8 W (0.7 A @ 24 VDC)	18 W (0.75 A @ 24 VDC)

ISaGRAF Specifications

Protocols (Note that certain protocols require optional devices)	
Net ID	1 ~ 255, user-assigned by software
Modbus TCP/IP Master	Link to a max. of 100 devices that support the Standard Modbus TCP/IP Slave protocol (FAQ-113)
Modbus RTU/ASCII Master	A max. of 32 ports (COM1 ~ 33) (*) (To connect to other Modbus Slave devices)
Modbus RTU Slave	A max. of 8 ports (COM1 ~ 33) (*) (For connecting ISaGRAF, PC/HMI/OPC Server and HMI panels)
Modbus TCP/IP Slave	Two Ethernet ports each supporting the Modbus TCP/IP Slave protocol for connecting ISaGRAF and PC/HMI. The two ports support up to 64 connections. Note: If the PAC uses 1 connection to connect to the PC/HMI, it can connect to up to 64 PCs/HMIs; If the PAC uses 2 connections to connect to each PC/HMI, it can connect to up to 32 PCs/HMIs; If one of the Ethernet port malfunctions, the other one can still be used to connect to the PC/HMI.
Web HMI Protocol	Ethernet ports for connecting a PC running Internet Explorer.
User-defined Protocol	Custom protocols can be applied at COM1~33 using Serial communication function blocks. (*)
I-7000 & I-87K RS-485 Remote I/O	One of COM3~4 supports I-7000 I/O modules, I-87K base + I-87K Serial I/O boards, or RU-87Pn + I-87K High Profile I/O boards as remote I/O. A max. of 255 I-7000/87K remote I/O modules can connect to one PAC. (*)
M-7000 Series Modbus I/O	A max. of 32 RS-485 ports (*). Each port can connect to up to 32 M-7000 modules.
Modbus TCP/IP I/O	LAN2 supports ICP DAS Ethernet I/O: I-8KE4-MTCP and I-8KE8-MTCP. If LAN2 malfunctions, it will automatically switch to LAN1 to continuously work. (The IP address for LAN1 and LAN2 should be set in the same IP domain) (FAQ-042)
FRnet I/O	Enable a max. of 7 pcs. I-8172W boards in slot 1~7 to be used to connect to FRnet I/O modules, such as FR-2053, FR-2057, FR-32R, FR-32P. Each I-8172W board can link to a max. of 256 DI plus 256 DO channels. (FAQ-082, 154)
Send Email	Provide functions to send email with a single attached file via the Ethernet port.
Ebus	Used to exchange data between ICP DAS ISaGRAF Ethernet PACs via the Ethernet port. (LAN2 Port only)
SMS: Short Message Service	Either COM4 or COM5 can link to a GSM Modem to support SMS. The user can request data/control the controller via a cellular phone. The controller can also send data and alarms to the user's cellular phone. Optional GSM Modem: GTM-201-RS232 (850/900/1800/1900 GSM/GPRS External Modem)
MMICON/LCD	COM4 or COM5 supports the ICP DAS MMICON. (*)
UDP Server & UDP Client : Exchange Message & Auto-report	LAN1 or LAN2 supports the UDP Server and UDP Client protocols allowing messages to be sent/received to/from a PC/HMI or other device. For example, data can be automatically reported to the InduSoft's RXTX driver.
TCP Client : Exchange Message & Auto-report	LAN1 or LAN2 supports the TCP Client protocol allowing messages to be sent/received to/from a PC/HMI or other device that supports the TCP server protocol.
GPRS/SMS	Enable the I-8212W (2G/3G) card allowing short messages to be sent/received to/from or to access a dial up connection to link to the Internet and using a GPRS connection to send an email or communicate with remote stations using the "FTP Client" (FAQ-151) or the "TCP Client"/"UDP Server"/"UDP Client" (FAQ-143) protocols.
SQL Client	Support for the SQL Client function that allows data to be written (or read from) a Microsoft SQL Server (2000 SP3, 2005, 2008).
Hot-Swap and Redundant System	This redundant system has setup two "Active IP" address point to the active LAN1 and LAN2 ports always. One or more PC/HMI/SCADA can communicate with this redundant system via one of the two given active IP. So the PC/HMI/SCADA can access to the system easily without any notice about which PAC is currently active. Moreover, the new redundant system can integrate with the RU-87P4/87P8 Expansion Unit plus the I-87K high-profile I/O cards to support the hot-swap application. If the I/O card is damaged, the maintenance person just takes one good-card with same model number to hot-swap the damaged one without stopping this redundant system. (FAQ-138, 125)
CAN/CANopen	COM1, 2 and COM4~33 (*) can connect to one I-7530 (converter: RS-232 to CAN) to support CAN/CANopen devices and sensors. One PAC supports a max. of 32 RS-232 ports to connect a max. of 32 I-7530. (FAQ-086)
CANopen Master	Enable the I-8123W CANopen Master card to connect to other CANopen Slave devices. (FAQ-145)
HART Solutions	Enable I-87H17W modules in slots 1 to 7 to communicate with other HART devices.
FTP Client	Enable the FTP Client to upload files from the PAC to a remote FTP server on a PC. (FAQ-151)
eLogger HMI	Provide support for the eLogger HMI. The user can design the HMI screen using the eLogger on the PC and then download it to the PAC to display the HMI on the PAC. (FAQ-115)

Optional I/O Functions (Refer to the ISaGRAF PAC I/O Selection Guide for I/O Module list)		
PWM Output	High Speed PWM Module	I-7088, I-8088W, I-87088W: 8-ch PWM outputs, software support 1 Hz ~ 100 kHz (non-continuous), duty: 0.1~99.9%
	DO Module as PWM	8-ch max. 250 Hz max. For Off=2 & On=2 ms. Output square wave: Off: 2~32766 ms, On: 2 ~ 32766 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)
Counter, Encoder, Frequency	Parallel DI Counter	8 ch. max. for 1 controller. Counter val: 32 bit. 250 Hz max. Min. ON & OFF width must >2 ms. Optional DI boards: I-8040W, 8040PW, 8042W, 8046W, 8048W, 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. 4 MHz for pulse/direction and cw/ccw input mode. (FAQ-112) I-8084W: 250 kHz max., 4-ch encoder, pulse/direction 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, 0.1 Hz ~ 500 kHz; I-8084W: 8-ch, 1 Hz ~ 250 kHz;
Motion	Motion Control	Can be integrated with one or several I-8092F (2-axis) or I-8094F/I-8094 (4-axis).

* Note: The COM6 ~ COM33 ports are located in the expansion boards if they are installed in slots 1~7 of XP-8x37-CE6. The COM1 port on XP-8037-CE6 is RS-232; COM1 on other ISaGRAF XPAC is for internal communication with I-87K modules installed in slots only.

* ISaGRAF FAQ: www.icpdas.com > Support > FAQ > ISaGRAF Soft-Logic PAC

* ICP DAS recommends using NS-205/208 or RS-405/408 (Ring Switch) Industrial Ethernet Switches.

ISaGRAF XPAC

ISaGRAF XPAC

Dimensions

| Side View | | Front View | XP-8037-CE6 | XP-8137-CE6 |

| Front View | XP-8337-CE6 | Front View | XP-8737-CE6 |

Pin Assignment

COM1: RS-232	COM2: RS-232	COM3: RS-485	COM4: RS-232/485	COM5: RS-232

Ordering Information

XP-8037-CE6 CR	0 I/O slot WinCE 6.0 Based ISaGRAF XPAC (OS: Multi-Language version) (RoHS)
XP-8137-CE6 CR	1 I/O slot WinCE 6.0 Based ISaGRAF XPAC (OS: Multi-Language version) (RoHS)
XP-8337-CE6 CR	3 I/O slots WinCE 6.0 Based ISaGRAF XPAC (OS: Multi-Language version) (RoHS)
XP-8737-CE6 CR	7 I/O slots WinCE 6.0 Based ISaGRAF XPAC (OS: Multi-Language version) (RoHS)
XPCE6-GUP-17000	Upgrade the XP-8x31-CE6 to become XP-8x37-CE6 (or Upgrade the XP-8x39-CE6 to become XP-8x36-CE6)

Software and Accessories

ISaGRAF Development Software	
ISaGRAF-256	ISaGRAF Workbench Software Ver.3 (256 I/O Tags) with one USB Dongle
ISaGRAF-32	ISaGRAF Workbench Software Ver.3 (32 I/O Tags)
Note: No upgrade service from ISaGRAF-32 to ISaGRAF-256 is available. (ISaGRAF-32 can be used to control more than 32 I/O tags. Please refer to Ch. 3.4 of the ISaGRAF User Manual.)	
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 V_{DC}/5.0 A, 120 W Power Supply with DIN-Rail Mounting (RoHS)
MDR-60-24 CR	24 V_{DC}/2.5 A, 60 W Power Supply with DIN-Rail Mounting (RoHS)
NS-205 CR / NS-208 CR	5-port/8-port Unmanaged Industrial 10/100 Ethernet Switch with Plastic Case (RoHS)
RS-405 CR / RS-408 CR	5-port/8-port Real-time Redundant Ring Switch (RoHS)
TPM-4100/TP-4100	10.4" (800 x 600) resistive touch panel monitor with RS-232 or USB interface Accessories: VGA cable, RS-232 cable, USB cable, Mounting clamps and screws