I-7188XG(D)

ISaGRAF based uPAC with
1 DI, 1 DO

uPAC-7186EG(D)

ISaGRAF based uPAC with
10/100M Ethernet

Features

- 80186, 80 MHz CPU or 80188, 40 MHz CPU
- MiniOS7 Inside
- Embedded ISaGRAF Ver.3 SoftLogic (IEC 61131-3)
- Ethernet
  - ☐ 10/100 Base-TX (for uPAC-7186EG)
- Support Modbus RTU/ASCII Master
- Support Modbus RTU/TCP Slave
  - ☐ I-7188XG does not support Modbus TCP Slave
- Operating Temperature: -25 ~ +75°C

Introduction

The uPAC-7186EG Series (uPAC-7186EG, uPAC-7186EGD) is a palm-size PAC and includes **ISaGRAF** SoftLogic. It has one 10/100 Base-TX Ethernet port, one RS-232 port and one RS-485 port. The user can choose an I/O expansion board, X-Board, to expand the I/Os or memories of uPAC. uPAC-7186EG support Modbus Serial protocol, Modbus TCP/IP protocol, Modbus Master protocol, Remote I/O, Fbus, Ebus, SMS: Short Message Service, modem link, MMICON/LCD, ZigBee wireless communication, GPS application, FRnet, CAN remote I/O connection and user defined protocol.

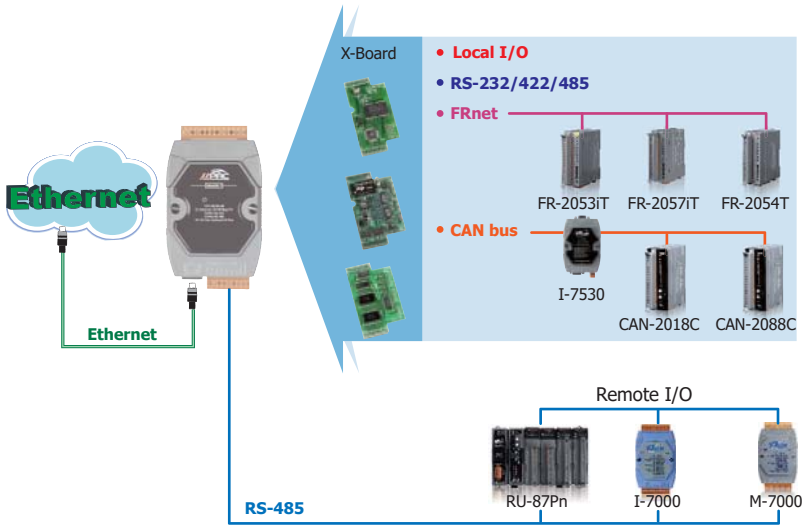
The I-7188XG series (I-7188XG, I-7188XGD) is a palm-size PAC with ISaGRAF SoftLogic. It has 2 Serial ports (COM1:RS-232/RS-485 & COM2:RS-485).

The user can choose an I/O expansion board, X-Board, to expand COM Ports, I/Os or memories of I-7188XG and uPAC-7186EG Series.

The features of the ISaGRAF workbench Ver. 3.x include:

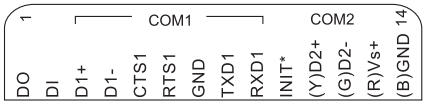
- IEC 61131-3 Standard Open PLC Programming Languages (LD, FBD, SFC, ST, IL)+ Flow Chart (FC)
- Auto-scan I/O
- Online Debugging/Control/Monitoring, Offline Simulation
- Simple Graphic HMI

Applications

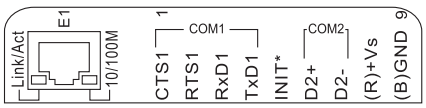


Pin Assignments

I-7188XG(D)



uPAC-7186EG(D)



PAC Specifications

Models		I-7188XG(D)	uPAC-7186EG (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	5 ~ 100 ms for normal program	2 ~ 5 ms for normal program
		25 ~ 500 ms (or more) for complex or large program	10 ~ 125 ms (or more) for complex or large program
CPU Module			
CPU		80188, 40 MHz	80186, 80 MHz
SRAM		512 KB	640 KB
Flash		512 KB	
EEPROM		2 KB	16 KB
NVRAM		31 Bytes (battery backup, data valid up to 10 years)	
RTC (Real Time Clock)		Provides seconds, minutes, hours, date, day of the 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 or RS-485 with internal self-tuner ASIC; non-isolated	RS-232 (TxD, RxD, RTS, CTS, GND), non-isolated
COM 2		RS-485 with internal self-tuner ASIC; non-isolated	
LED Indicator			
System LED		Yes	
LED Display		5-digit 7-segment LED display for (D) version	
Digital Input			
Channels		1	-
Contact		Dry	-
On Voltage Level		Connect to GND	-
Off Voltage Level		Open	-
Digital Output			
Channels		1	-
Output Type		Open Collector	-
Load Current		100 mA	-
Load Voltage		30 V_{DC} Max.	-
Hardware Expansion			
I/O Expansion Bus		Yes, 1 (14 Pins)	
Mechanical			
Dimensions (W x L x H)		72 mm x 119 mm x 33 mm	72 mm x 123 mm x 35 mm
Installation		DIN-Rail or Wall Mounting	
Environmental			
Operating Temperature		-25 ~ +75°C	
Storage Temperature		-40 ~ +80°C	
Ambient Relative Humidity		5 ~ 90% RH (non-condensing)	
Power			
Input Range		+10 ~ +30 V_{DC}	
Protection		Power reverse polarity protection	
Power Consumption		2 W; 3 W for (D) version	1.5 W; 2.5 W for (D) version

ISaGRAF Specifications

Protocols (Note that certain protocols require optional devices)		
NET ID		1 ~ 255, user-assigned by software
Modbus RTU/ASCII Master Protocol		A max. of 2 COM ports: I-7188XG COM 2 ~3, uPAC-7186EG COM 1~3 (*). (To connect to other Modbus Slave I/O devices.) A max. of Mbus_xxx Function Block amount for 2 ports : uPAC-7186EG: 128; I-7188XG: 64.
Modbus RTU Slave Protocol		A max. of 2 COM ports: COM1, one of COM2 or COM3 (*). (For connecting ISaGRAF, PC/HMI/OPC Server and HMI panels.)
Modbus TCP/IP Slave Protocol		Ethernet port supports Modbus TCP/IP Slave Protocol for connecting ISaGRAF & PC/HMI. uPAC-7186EG: up to 6 connections; I-7188XG: 0 connection.
User-defined Protocol		Custom protocols can be applied at uPAC-7186EG: COM1~8 or I-7188XG: COM2~8 using Serial communication function blocks. (*)
Remote I/O		One of COM2 or COM3: RS-485 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 64 I-7000/87K remote I/O modules can connect to one PAC. (*)
Fbus		Built-in COM2 Port to exchange data between ICP DAS's ISaGRAF controllers.
Ebus		Used to exchange data between ICP DAS ISaGRAF Ethernet PACs via the Ethernet port. (Not for I-7188XG)
Send Email		Provide functions to send email to a max. of 10 receivers with a single attached file via the Ethernet port through internet. If applying with an X607/608 X-Board, it could send Email with a single attached file and the maximum of file size is about X608:488 KB or X607:112 KB. (Not for I-7188XG)
SMS: Short Message Service		One COM port (uPAC-7186EG: one of COM1 or COM3 or COM4; I-7188XG: one of COM3 or COM4) can link to a GSM modem to support SMS. The user can request data or 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)
Modem Link		Support PC remotely download & monitor the controller through COM4 of X504. (*)
MMICON/LCD		COM3: RS-232 (*) 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 Solution		One is Master, one is Slave. Master handles all inputs & outputs at run time. If Master is damaged (or Power off), Slave takes the control of Bus7000b. If Master is alive 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, there is no need of any Ethernet switch). All I/O should be RS-485 I/O except the status I/O in the slot 0: X107. (for uPAC-7186EG series only)
CAN/CANopen		COM1 or COM3~8 can connect to one I-7530 (converter: RS-232 to CAN) to support CAN/CANopen devices and sensors. One PAC supports a max. of 3 RS-232 ports to connect a max. of 3 I-7530. (*) (for uPAC-7186EG only) (FAQ-086)
Optional I/O Functions (Refer to ISaGRAF PAC I/O Selection Guide for I/O Module list)		
PWM Output	Pulse Width Modulation Output	All X-board series DO boards support PWM output. Support max. 8-ch for one PAC; Max. frequency: 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 X-board series DI boards support DI counter. Support max. 8-ch for one PAC ; Max. count/frequency: 32-bit, 500 Hz ; Min. pulse width > 1 ms
	Remote DI Counter	All remote I-7000 & I-87K DI modules support counters. Max. count/frequency: 16-bit (0~65535), 100 Hz.
	Remote High Speed Counter	Max. count/frequency for I-87082: 32-bit, 100 kHz
SRAM Expansion	Battery Backup SRAM	With an X607/X608 plug in the only expansion I/O slot. Data can be stored in X607/X608, and then PC can load these data via COM1 or Ethernet. PC can also download pre-defined data to the X607/X608. (for retain variables) Optional: X607: 128 KB, X608: 512 KB
*** Note: The COM3 ~ COM8 are located in the optional X-Board series if it is installed inside the PAC.**		

Ordering Information

uPAC-7186EG CR	ISaGRAF based uPAC with 10/100M Ethernet (RoHS)
uPAC-7186EGD CR	uPAC-7186EG with display (RoHS)
I-7188XG CR	ISaGRAF based uPAC with 1 DI, 1 DO (RoHS)
I-7188XG CR	I-7188XG with display (RoHS)

Related Products

ISaGRAF Development Software	
ISaGRAF-256	ISaGRAF Workbench Software Ver.3 (256 I/O Tags) with one USB Dongle
Accessories	
I/O Expansion Boards	Refer to X-Board series expansion boards on the website