8.3. LinPAC-5000 Series

● Overview

The LinPAC-5000 family is a palm-size PAC (Programmable Automation Controller) and is designed to provide fast, convenient, flexible and simplified solutions for industrial and embedded applications. It is equipped with a PXA270 CPU (520 MHz) running a Linux kernel 2.6.19 operating system, multiple communication interfaces (VGA, USB, Ethernet, RS-232/485 and audio ports) and powerful software including development tools.

For the hardware expansion, it supports an I/O expansion bus to implement various I/O functions such as D/I, D/O, A/D, D/A, Timer/Counter, and various communication interfaces (RS-232/422/485), etc. Customers can choose functions which they would like to combine, and then optimize the performance of the LinPAC-5000 for every different situation.

● Features

1. Wide range of Development Support Tools

Linux kernel 2.6
PXA270 CPU
LP-5000 Series

- ■ LinPAC SDK for Windows and Linux
- ■ Support for GNU C Language
- ■ Support for JAVA: JVM, JIOD (Java I/O Driver)
- ■ Support for GUI: Using GTK + Library
- ■ Support for DCON, Modbus and SNMP Protocols
- ■ Support for USB to Serial Converter

2. Local I/O and Communication Expansion Board

The LinPAC-5000 series is equipped with an I/O expansion bus to support one optional expansion board, called the XW-Board. It can be used to implement various I/O functions, such as DI, DO, A/D, D/A, Timer/Counter and various communication interfaces, such as RS-232/422/485, etc.

8
3

5000 Series PAC
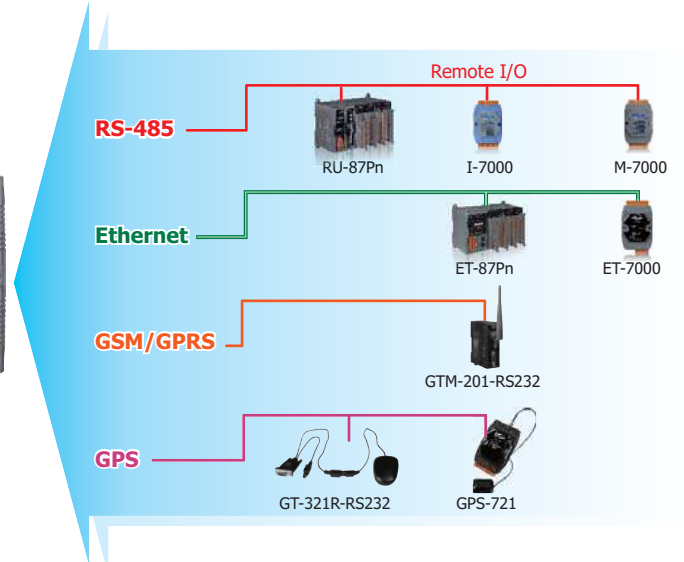
3. Remote I/O Module

With the built-in RS-485 and Ethernet ports, the LinPAC-5000 series can connect to remote RS-485/Ethernet I/O units (RU-87Pn/ET-87Pn) or modules (I-7000/M-7000/ET-7000).

4. Multiple Communication Interface Options

Multiple Communication Interface Options
1. Ethernet   4. GPS
2. RS-232/485   5. GSM/GPRS
3. USB host

GPS

GSM/GPRS

5000 Series

LP-5131

Internet

PC   Cell Phone

Remote I/O

RS-485   RU-87Pn   I-7000   M-7000

Ethernet   ET-87Pn   ET-7000

GSM/GPRS   GTM-201-RS232

GPS   GT-321R-RS232   GPS-721

5. Various Memory Storage Options

LinPAC-5000 provides various memory storage options, such as EEPROM, Flash or microSD. Customers can choose the memory based on their characteristics.

- 16 KB EEPROM: to store not frequently changed parameters.
- microSD/microSDHC: to implement portable data logging applications.
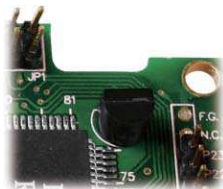
6. Unique 64-bit Hardware Serial Number to Protect Your Program

A unique 64-bit serial number is assigned to each hardware device to protect your software against piracy.

7. Plastic and Metal Casing

The default case is plastic material. Metal casing is also offered to provide extra security.

LP-5131
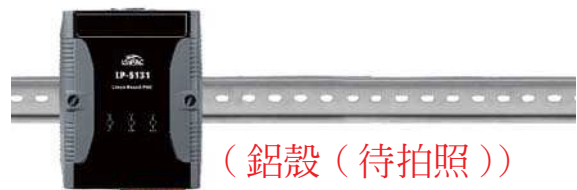
（鋁殼（待拍照））

8. Highly Reliable Under Harsh Environments

The LinPAC-5000 operates in a wide range of temperatures and humidity levels.

- Operating Temperature: -25 ~ +75°C
- Storage Temperature: -30 ~ +80°C
- Humidity 10 ~ 90% RH (non-condensing)

+75°C

-25°C

9. PoE and Redundant Power Inputs

PoE   Power2
Power1

8
3

5000 Series PAC

● Selection Guide

LP-5 X X X - XX

Audio & VGA
1: VGA only
3: Audio only
4: VGA & Audio

Communication
3: Ethernet x 1 & USB x 2
4: Ethernet x 2 & USB x 1

Software
1: Standard

Language
EN: English

✓ Standard LinPAC

Model Name	OS	Pre-installed Software	CPU	Flash	SDRAM	Ethernet	VGA Resolution	RS-232/ RS-485	I/O Slot	Audio Port
LP-5131	Linux kernel 2.6	None	PXA270, 520 MHz	64 MB	128 MB	1	800 x 600	2/1	I/O expansion board optional	None
LP-5331							None			Yes
LP-5431							800 x 600			Yes
LP-5141	Linux kernel 2.6	None	PXA270, 520 MHz	64 MB	128 MB	2	800 x 600	2/1	I/O expansion board optional	None
LP-5341							None			Yes
LP-5441							800 x 600			Yes
The controller supports following software development tools: 1. SDK for Linux environment 2. SDK for Windows environment										

8-3-3 ICP DAS CO., LTD. Professional Provider of High Quality Industrial Computer Products and Data Acquisition Systems Vol. PAC 2.0.00 Beta Version

8
3
5000 Series PAC

LP-5131/5331/5431

LP-5141/5341/5441

Highlight Information

- Linux kernel 2.6.19 Inside
- Embedded Service: Web Server, FTP Server, Telnet Server, SSH Server
- Power PXA270 CPU: 32-bit & 520 MHz
- 64 MB Flash, 128 MB SDRAM
- Built-in Ethernet, USB, RS-232, RS-485 Ports
- Built-in 800 × 600 VGA Port
- Built-in Audio with Microphone-In and Earphone-Out (for LP-53/54x1)
- I/O Expansion Board Optional
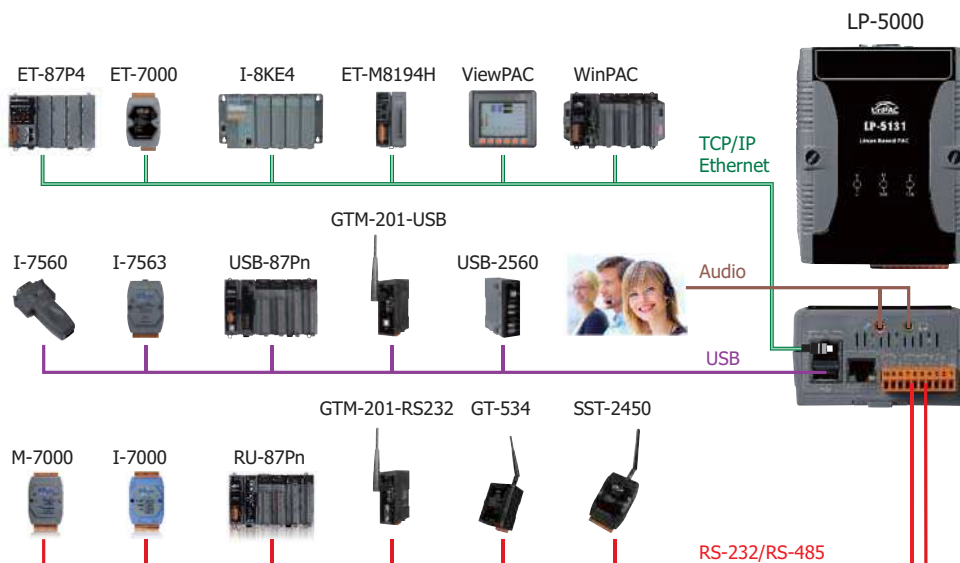- Operating Temperature: -25 ~ +75 °C

Introduction

The LinPAC-5000 is the new generation of Linux-based PACs from ICP DAS and is equipped with a PXA270 CPU (520 MHz) running a Linux kernel 2.6.19 operating system, multiple communication interfaces (VGA, USB, Ethernet, RS-232/485 and audio ports) and contains an optional I/O expansion board that can be used for implementing various I/O functions, such as DI, DO, A/D, D/A, Timer/Counter, UART, flash memory, or battery backup SRAM, etc.

Main advantage of the LinPAC-5000 is its high quality control system, including its stability, small core size, optional I/O expansion board, support for Web services (Web/FTP/Telnet/SSH server), and multiple development environments (LinPAC SDK for Linux and Windows environment using the GNU C language, JAVA and GUI software), etc., all of which give users the best features of both traditional PLCs and Linux capable PCs, meaning that it is one of the most powerful and flexible embedded control systems available.

Applications

Field Bus I/O Expansion

8

3

5000 Series PAC

Specifications

Models	LP-5131	LP-5331	LP-5431	LP-5141	LP-5341	LP-5441
System Software						
OS	Linux kernel 2.6.19					
Embedded Service	Web Server, FTP Server, Telnet Server, SSH Server					
SDK Provided	Standard LinPAC SDK for Windows and Linux by GNU C language					
CPU Module						
CPU	PXA270 or compatible (32-bit and 520 MHz)					
SDRAM	128 MB					
NVRAM	31 Byte (Battery backup, data valid up to 10 years)					
Flash	64 MB					
EEPROM	16 KB					
Expansion Flash Memory	microSD socket with one 2 GB microSD card (support up to 32 GB microSDHC card)					
RTC (Real Time Clock)	Provide second, minute, hour, date, day of week, month, year					
64-bit Hardware Serial Number	Yes, for Software Copy Protection					
Dual Watchdog Timers	Yes					
LED Indicator	3 Dual-Color LEDs (PWR, RUN, L1 ~ L4; RUN, L1 ~ L4 for user programmable)					
Rotary Switch	Yes (0 ~ 9)					
VGA & Communication Ports						
VGA	Yes 800 × 600	-	Yes 800 × 600	Yes 800 × 600	-	Yes 800 × 600
Ethernet	RJ-45 x 1, 10/100 Base-TX (Auto-negotiating, Auto MDI/MDI-X, LED indicators)			RJ-45 x 2, 10/100 Base-TX (Auto-negotiating, Auto MDI/MDI-X, LED indicators)		
USB 1.1 (host)	2			1		
Audio Port (Microphone-In and Earphone-Out)	-	1	1	-	1	1
COM 1	RS-232 (RxD, TxD and GND); Non-isolated					
COM 2	RS-485 (D2+, D2-); 2500 V_{DC}; isolated					
COM 3	RS-232 (RxD, TxD and GND); Non-isolated					
I/O Expansion						
I/O Expansion Bus	I/O expansion board optional					
Mechanical						
Dimensions (W x L x H)	91 mm x 132 mm x 52 mm					
Installation	DIN-Rail					
Environmental						
Operating Temperature	-25 ~ +75 ℃					
Storage Temperature	-30 ~ +80 ℃					
Ambient Relative Humidity	10 ~ 90% RH (non-condensing)					
Power						
Input Range	+10 ~ +30 V_{DC}					
Isolation	1 kV					
Consumption	4.8 W (0.2 A @ 24 V_{DC})	6 W (0.25 A @ 24 V_{DC})	6 W (0.25 A @ 24 V_{DC})	4.8 W (0.2 A @ 24 V_{DC})	6 W (0.25 A @ 24 V_{DC})	6 W (0.25 A @ 24 V_{DC})

Ordering Information

LP-5131-EN CR	Standard LinPAC-5000 with 800 × 600 VGA port (English Version of OS) (RoHS)
LP-5331-EN CR	Standard LinPAC-5000 with audio port (English Version of OS) (RoHS)
LP-5431-EN CR	Standard LinPAC-5000 with 800 × 600 VGA port and audio port (English Version of OS) (RoHS)
LP-5141-EN CR	Standard LinPAC-5000 with 800 × 600 VGA port (English Version of OS) (RoHS)
LP-5341-EN CR	Standard LinPAC-5000 with audio port (English Version of OS) (RoHS)
LP-5441-EN CR	Standard LinPAC-5000 with 800 × 600 VGA port and audio port (English Version of OS) (RoHS)

Option 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-20-24 CR	24 V_{DC}/5.0 A, 24 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)
XW-Board	Add-on I/O Expansion Board

8

3

5000 Series PAC