

## iPAC-5070

### Linux-based Programmable Automation Controller

- ✓ Pre-built Linux 2.6.x OS with file system
- ✓ 180MHz ARM9 CPU, 64MB SDRAM and 16MB Flash
- ✓ 4x 16-bit high-precision multiplexed analog inputs
- ✓ 8x 2500Vrms opto-isolated digital inputs
- ✓ 8x 500mA high-drive digital outputs
- ✓ Two 10/100Mbps Ethernet ports
- ✓ One RS-232 port, one RS-485 port
- ✓ Two USB 2.0 host ports for add-on functionality expansion
- ✓ One SD memory card slot included for storage expansion
- ✓ GNU C/C++ tool chain for Linux/Windows environment
- ✓ 9-40VDC input range



## Introduction

The iPAC-5070 is a Linux-based, network-enabled and Web-ready programmable automation controller, with on-board 16-bit high precision analog inputs, opto-isolated digital inputs and 500mA high-drive digital outputs.

### Open and standard programming environment

The iPAC-5070 is a true Linux computing platform with file system support. Users can operate the iPAC-5070 the same way as they do on a normal Linux desktop.

Open-source GNU Tool Chain, including C/C++ cross-compiler and POSIX standard C/C++ library, is bundled with the iPAC-5070 for free.

### Network enabled and Web ready

The iPAC-5070 provides two 10/100Mbps Ethernet ports. A sophisticated Web server is pre-installed for users to implement applications which need Web-based remote monitor and controls. In addition, it is easy to add IEEE-802.11b/g WiFi support through the iPAC-5070's USB 2.0 ports.

### High-speed serial interface

Also, the iPAC-5070 provides one RS-232 and one RS-485 serial ports, running up to 921.6kbps. The RS-485 port supports hardware direction control.

### On-board industrial digital I/Os

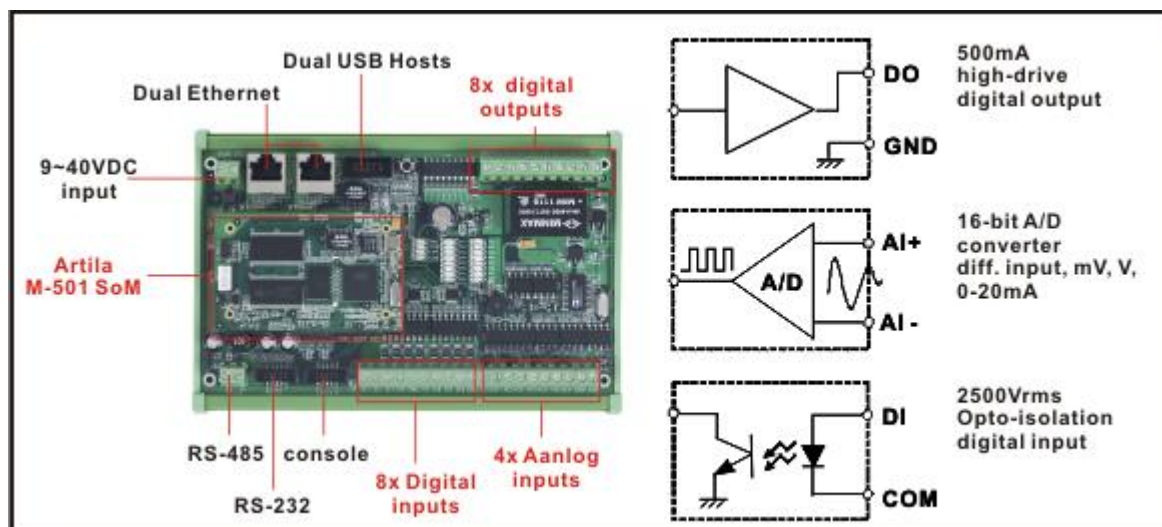
The iPAC-5070 provides 8 channels of 2500Vrms opto-isolated digital input and 8 channels of 500mA high-drive digital outputs. Each input/output channel comes with a on/off status LED.

### 16-bit High-precision analog inputs

The iPAC-5070 features an on-board 16-bit high-precision A/D converter, which can measure up to 4 channel of mV, V, or 0~20mA analog signals, up to 10 readings per second.

### Optional 2GB SD Card for Data Storage

Users can install one standard SD Flash memory card, up to 2GB now, into the iPAC-5070 as an additional hard drive.



## H/W Specifications

### CPU/Memory

- ▶ CPU: ATME180MHz AT91RM9200 (ARM9, w/MMU)
- ▶ Memory: 64MB SDRAM, 16MB Flash

### Network Interface

- ▶ Two 10/100BaseT, RJ-45 connector

### TTY (Serial) Ports

- ▶ RS-485: one port, with screw-fixed wiring terminal  
Signals: Data+, Data-, GND
- ▶ RS-232: one port, with 10P header  
Signals: Tx, Rx, RTS, CTS, DSR, DTR, DCD, GND
- ▶ Cosole: one port, with 10P header  
Signals: Tx, Rx, GND

### TTY (Serial) Port Parameters

- ▶ Baud Rate: up to 921.6 Kbps
- ▶ Parity: None, Even, Odd, Mark, Space
- ▶ Data Bits: 5,6,7,8
- ▶ Stop Bit: 1, 1.5, 2 bits
- ▶ Flow Control: RTS/CTS, XON/XOFF, None

### USB Host Ports

- ▶ Two USB 2.0 compliant hosts, with 10P header
- ▶ Data rate: up to 12Mbps

### Mass Storage

- ▶ One SD 1.0 compliant socket inside

### General

- ▶ WatchDog Timer: yes, for kernel use
- ▶ Real Time Clock: yes
- ▶ Buzzer: yes
- ▶ Power input: 9~40VDC
- ▶ Power consumption: 800mA@12VDC
- ▶ Dimension: 160 x 104 x 32mm
- ▶ Operation Temperature: 0 to 70C(32 to 158F)
- ▶ Regulation: CE Class A, FCC Class A

## Industrial Digital I/Os

### Isolated Digital Input

- ▶ No. of channels: 8
- ▶ Logical high: 5 ~ 24VDC
- ▶ Logical low: 0 ~ 1.5VDC
- ▶ Input resistance: 1.2k ohms@0.5W
- ▶ Response time: 20us
- ▶ Opto-isolation: 2500Vrms

### 500mA Digital Output

- ▶ No. of channels: 8
- ▶ Source driver: UDN2981A (Allegro)
- ▶ Source voltage (VDD): 5~50VDC
- ▶ Output current: 500mA max.

## S/W Specifications

### General

- ▶ OS: Linux, kernel 2.6.x
- ▶ Boot Loader: U-Boot 1.1.2
- ▶ File Systems: JFFS2, ETX2/ETX3, VFAT/FAT, NFS

### Protocol stacks

- ▶ IPv4, ICMP, ARP, DHCP, NTP, TCP, UDP, FTP, Telnet, HTTP, PPP, PPPoE, CHAP, PAP, SMTP, SNMP V1/V2, SSL, SSH 1.0/2.0

### Utilities

- ▶ bash: shell command
- ▶ tinylogin: login and user manager utility
- ▶ telnet: Telnet client program
- ▶ busybox: Linux utility collection
- ▶ ftp: FTP client program

### Daemon

- ▶ pppd: Dial In/out over serial port and PPPoE
- ▶ snmpd: SNMP agent program
- ▶ telnetd: Telnet server program
- ▶ inetd: TCP server program
- ▶ ftpd: FTP server program
- ▶ boa: Web server program
- ▶ sshd: secured shell server
- ▶ iptables: Firewall service manager
- ▶ armd: Artila manager daemon

### Tool Chain for Linux

- ▶ GCC: C/C++ PC cross compiler for Linux, CygWin
- ▶ GLIBC: POSIX Library

### Device Drivers

- ▶ SD/MMC, UART, Real Time Clock, Buzzer, Digital I/O, Ethernet, Watchdog Timer

### USB Host Drivers (could be customized)

- ▶ Flash disk
- ▶ WiFi (IEEE-802.11b/g)
- ▶ RS-232 adaptors

## High-precision Analog Input

### General

- ▶ A/D converter: AD7712 (Analog Device)
- ▶ No. of channels: 4, multiplexed, 10 readings per second
- ▶ Resolution: 16-bit
- ▶ Accuracy: +/- 1%
- ▶ Voltage input mode: differential, 100db CMR
- ▶ Voltage input impedance: 20M Ohms
- ▶ Current input impedance: 120 Ohms
- ▶ Isolation protection: 1500Vdc

### Input range (select by software)

- ▶ 0~150mV, 0~500mV, +/- 150mV, +/- 500mV
- ▶ 0~1V, 0~5V, 0~10V, +/-1V, +/-5V, +/-10V
- ▶ 0~20mA