IPPC-4001 Series

5.7" VGA TFT LCD 4U 19" Rack Industrial Panel PC with 14 Expansion Slots & Keyboard Drawer

Users Manual

Part No. 2003I400000 1st Edition
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FCC Class A

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Additional Information and Assistance

Step 1. Visit the Advantech web site at **www.advantech.com** where you can find the latest information about the product.

Step 2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:

- Product name and serial number
- Description of your peripheral attachments
- Description of your software (operating system, version, application software, etc.)
- A complete description of the problem
- The exact wording of any error messages

Safety Instructions

1. Read these safety instructions carefully.
2. Keep this User's Manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. DO NOT COVER THE OPENINGS.
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
12. Never pour any liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
14. If one of the following situations arises, get the equipment checked by service personnel:
    a. The power cord or plug is damaged.
    b. Liquid has penetrated into the equipment.
    c. The equipment has been exposed to moisture.
    d. The equipment does not work well, or you cannot get it to work according to the user's manual.
    e. The equipment has been dropped and damaged.
    f. The equipment has obvious signs of breakage.
15. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE MAY GO BELOW -20° C (-4° F) OR ABOVE 60° C (140° F). THIS COULD DAMAGE THE EQUIPMENT. THE EQUIPMENT SHOULD BE IN A CONTROLLED ENVIRONMENT.
16. CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER, DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.

The sound pressure level at the operator's position according to IEC 704-1:1982 is no more than 70 dB (A).

DISCLAIMER: This set of instructions is given according to IEC 704-1. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

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CHAPTER 1

General Information

Chapter 1 General Information

1.1 Introduction

The IPPC-4001 is a 4U height 14-slot rackmount IPC workstation with 5.7" LCD display and built-in slim keyboard and Touch Pad drawer. It is designed as an all-in-one and cost-effective solution for traditional IPC users. This IPPC-4001 includes a versatile 14-slot passive-backplane and an optional power supply for different application inquiries, 10 function and cursor keys for SI/VAR application programs, 2 front USB ports for front accessible devices, a slim keyboard and touch pad drawer, and a 5.7" TFT LCD screen. The optional SNMP-1000, a fully integrated Rackmount IA Master, supports system fault detection. The web-enabled and webbased alarm notification system monitors system status, including SBC status, voltages, power supply, cooling fans and temperature through web browser by minimizing system down time. A wide range of standard computing peripherals from current Advantech IPC family can be integrated into the IPPC-4001 to meet different application development.

1.2 Specifications

1.2.1 General

- Certifications BSMI, CCC, CE, FCC
- Cooling System 2 x 85 CFM fan w/Air Filter
- Dimensions (W x H x D)482 x 177 x 480 mm (19" x 7" x 18.9")
- Disk Drive Bay 3 x 5.25" (Front Accessible)
- Weight (Gross) 18 kg (39.6 lb)
- Power Input 90 ~ 264 VAC @ 47 ~ 63 Hz full range 6.0/3.0A
- Power Ouput +5 V @ 30 A, +12 V @ 15 A, +3.3 V @ 28 A, -5 V @ 0.3 A, -12 V @ 0.8 A, +5 VSB @ 2 A
- Power Supply 300 W, MTBF: 100,000 hrs
- Weight (Gross) 18 kg (39.7 lb)

1.2.2 Passive Backplane

- Passive Backplane PCA-6114P10
- Slots 2 PICMG, 10 PCI, 2 ISA
- Backplane Size 315 x 260 mm (12.4" x 10.24")
- PCI Bridge Pericom PI7C8150MA
- PCI Slot Primary 3 slots, Secondary: 7 slots

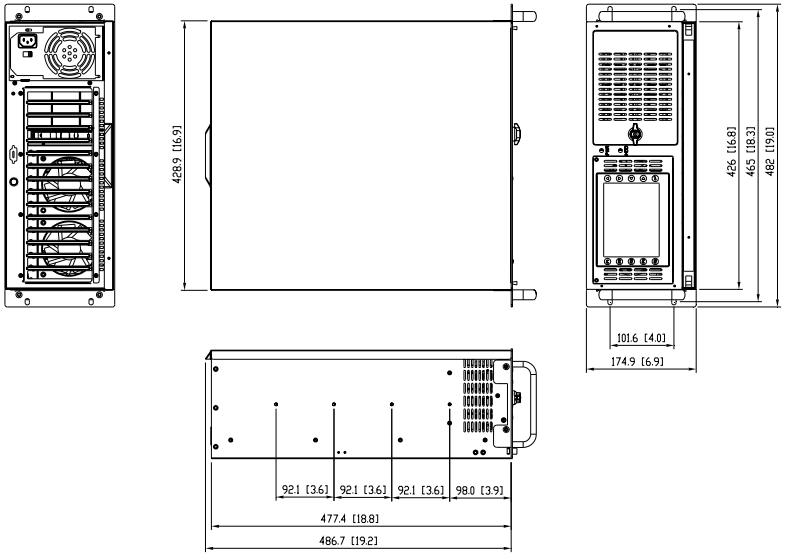
1.2.3 LCD Display

- Backlight Life 50,000 hrs (LED Backlight)
- Contrast Ratio 300 : 1
- Display Size 5.7"
- Display Type QVGA TFT LCD
- Luminance 220 cd/m2
- Max. Colors 262 K (RGB 6-bit)
- Max. Resolution 640 x 480
- OSD Control ON/OFF, Brightness down, up
- Viewing Angle (H/V°)140/100

1.2.4 Environment

- Humidity 10 ~ 85% RH @ 40° C (non-condensing)
- Operating Temperature 0 ~ 50° C (32 ~ 122° F)
- Storage Temperature -20 ~ 60° C (-4 ~ 140° F)
- Vibration Protection 5 ~ 500 Hz, 1 GRMS random vibration

1.3 Dimensions



CHAPTER 2

System Setup

Chapter 2 System Setup

2.1 System Installation

WARNING: *Before starting the installation process, be sure to shut down all power from the chassis. Do this by turning off the power switch, and unplugging the power cord from the power outlet. When in doubt, consult with an experienced technician.*

2.1.1 Attaching the Handles

The handles for the front panel are in the accessory box. To install the handles, simply secure them to the front panel with the provided screws.

2.1.2 Removing the Top Cover

First, remove the chassis cover.

The top cover is fixed to the chassis by two thumbscrews

To remove the top covers:

1. Release two thumbscrews on the rear upper location of the chassis.
2. Lift the cover.

2.1.3 Chassis Front and Rear Sections

The front panel switches behind the door are used for system power, system reset 1, system reset 2 (option), alarm reset and power switch. The door cover is on the left side of the door cover, where the system LED status and key lock switch are located. The key can be found in the accessory box as shown below.

The USB and PS/2 keyboard connectors are on the left of the front panel.

System Reset 1: Press this switch to reinitialize the system. This is the same as the hardware reset button. (Default setting)

System Reset 2: Press this switch to reinitialize the second system.

(Optional)

Alarm Reset Switch: Press this switch to suppress or stop an audible alarm. Whenever a fault in the system occurs (e.g. fan failure, rising chassis temperature, backplane voltage problem), an audible alarm is activated. Pressing this switch will cause the alarm to stop.

Power On/Off Switch: Use this switch to turn on/off the system power.

Momentary Switch: Use this switch and by way of ATX (PS_ON) function to turn on system power. Please use system shutdown to turn off system power automatic or press momentary switch for a while to turn off system power

USB connector: If you have you want to connect any USB interface device to the system, you could use this connector.

PS/2 connector: If you want to connect the PS/2 keyboard, you could use this connector.

2.1.4 Drive Bay Installation

The drive bay of IPPC-4001 can hold 5.25" (x3) devices.

Installation of disk drives:

1. Remove the top cover
2. Undo the two screws of cushion and four screws on the drive bay
3. Lift off the Standard Drive Bay.
4. Insert the drives into their proper locations in the drive bay and secure them with the screws provided.
5. Connect the disk drive power and signal cables.

2.2 LED Indicators

2.2.1 System Status LED

The System Status LED shows as follows:

LED	Description	RED	GREEN or Orange
PWR	System Power	Abnormal	Normal
HDD	Hard Drive activity	No light	Data access
FAN	Cooling Fan status	Abnormal	Normal
TEMP	Chassis Temperature	Abnormal	Normal

When the PWR LED is RED, it indicates a redundant power supply failure. To stop the alarm buzzer, press the Alarm Reset button. Please check out the redundant power supply right away and replace failure power supply module with a good one.

When the FAN LED is RED and blinking, it indicates a failing cooling fan. An audible alarm is also activated. To stop the alarm buzzer, press the Alarm Reset button then replace the fan immediately.

If the TEMP LED is RED and blinking, the system detects rising temperature inside the chassis. An audible alarm is activated. To stop the alarm buzzer, press the Alarm Reset button. Inspect the rear section and fan filter immediately. Make sure airflow inside the chassis is smooth and not blocked by dust or other particles.

2.2.2 Power Status LED

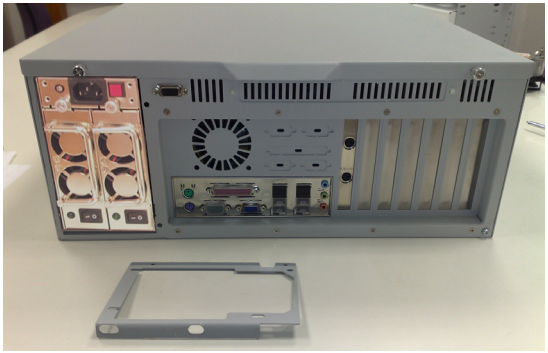
Power Status LED indicates the status of the backplane voltage signals.

LED	Description	Light	No light
+3.3V	+3.3V signal	Normal	No output
+5V	+ 5V signal	Normal	No output
+12V	+12V signal	Normal	No output
-5V	- 5V signal	Normal	No output
-12V	-12V signal	Normal	No output

When a LED fails to light, it indicates a problem with one of the voltage signals. An audible alarm is sounded. Check to make sure that the power supply connector is properly attached to the backplane. If problem persists, consult an experienced technician.

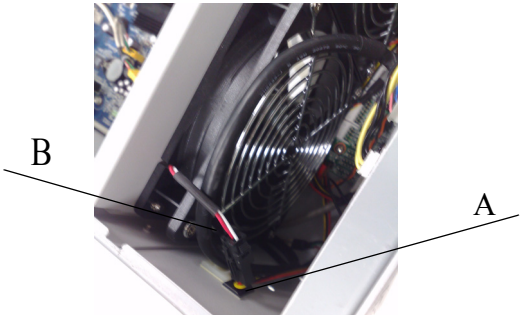
2.3 Power Supply

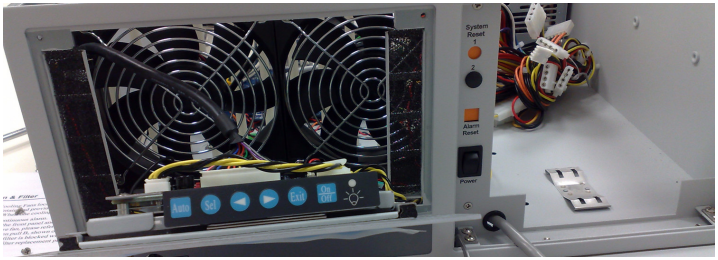
IPPC-4001 supports PS/2 and redundant power supply both and without any modifications.



2.4 Cooling Fan & Filter

There are two cooling fans located inside the chassis. When one cooling fan breaks down, the system sounds a continuous alarm. To disable the alarm, press the Alarm Reset switch and replace the fan immediately. To replace a defective fan, refer to the figures below. Press location A and then pull B, the connector can then be released. If the filter is blocked with dust, refer to the figure below for the filter replacement procedure.





CHAPTER 3

Alarm Board

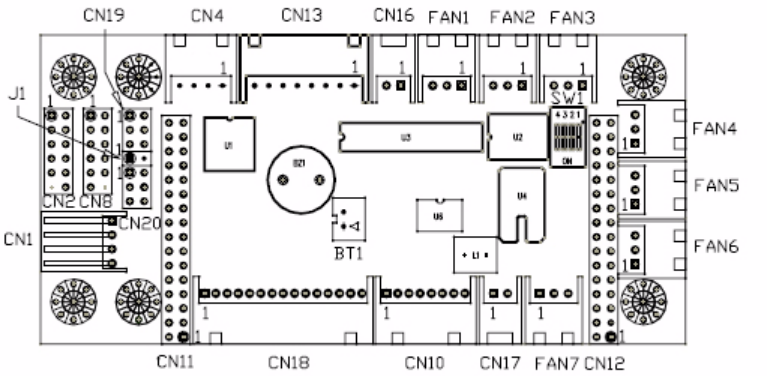
Chapter 3 Alarm Board

The alarm board is located under the cooling fan section. It gives an audible alarm when:

1. Any power supply module of redundant power supply fails
2. One of the cooling fans fai1s
3. Temperature inside the chassis rises
4. A problem occurs in one of the backplane voltage levels

The detailed layout and specification of the alarm board are as follows:

3.1 Alarm Board Layout



3.2 Alarm Board Specification

Input Power: +5V, +12V

Input Signals:

- 7 FAN connectors (GND_+12V_FAN)
- One thermal board connector (up to 8 thermal boards in a roll)
- One power good input
- One alarm reset input.
- One voltage signal connector (connect from backplane, includes ±12V, ±5V, 3.3V)
- One ATX power connector (connect from CPU card)
- One system reset connector (connect from CPU card)
- One Hard Disk LED connector (connect from CPU card)

Output Signals:

- One LED board connector
- One LCM board connector
- SNMP daughter board connector (connect to SNMP-1000 mainboard)
- One Buzzer output
- ATX power connector (connect to chassis)
- System reset connector (connect to chassis)

Other Interfaces:

- One pair of Watch dog input/output signals
- One pair of I2C Bus signals (DATA and CLK)
- One LAN connector
- One COM connector
- One Battery pack connector

Pin Definition

CN1 : External Power Connector, standard mini 4 Pin power connector

Pin 1 : +12V, 2A current maximum Pin 2 : GND

Pin 3 : GND Pin 4 : +5V, 2A current maximum

CN2 : 10/100M LAN Connector

Pin 1 : SPLED Pin 2 :

TERMPLANE Pin 3 : RX+ Pin 4 : RX-

Pin 5 : GND Pin 6 : LVCC

Pin 7 : TX+ Pin 8 : TX-

Pin 9 : LILED Pin 10 : TERMPLANE

Pin 11 : N/A Pin 12 : NC

CN4 : I2C Sensor board (LM75) Connector

Pin 1 : +5V Pin 2 : Sensor board I2C bus clock

Pin 3 : Sensor board I2C bus data Pin 4 : GND

CN8 : RS-232 Connector

Pin 1 : DCD Pin 2 : RX

Pin 3 : TX Pin 4 : DTR

Pin 5 : GND Pin 6 : DSR

Pin 7 : RTS Pin 8 : CTS

Pin 9 : RI Pin 10 : NC

Pin 11 : NC Pin 12 : N/A

CN10 : LCM Display Board Connector

Pin 1 : LCM I2C bus data Pin 2 : LCM I2C bus clock

Pin 3 : +12V Pin 4 : GND

Pin 5 : +5V Pin 6 : +5V

Pin 7 : Diagnostic LED Pin 8 : GND

CN11 : SNMP-1000 Daughter Board Connector (Left side)

Pin 1 : SIN	Pin 2 : SOUT
Pin 3 : CTS#	Pin 4 : DCD#
Pin 5 : RTS#	Pin 6 : DTR#
Pin 7 : DSR#	Pin 8 : ID 0
Pin 9 : ATX ON	Pin 10 : DO 4
Pin 11 : GND	Pin 12 : DO 3
Pin 13 : Watchdog IN	Pin 14 : DO 2
Pin 15 : Watchdog OUT	Pin 16 : DO 1
Pin 17 : SPLED	Pin 18 : NC
Pin 19 : LILED	Pin 20 : NC
Pin 21 : GND	Pin 22 : NC
Pin 23 : TX+	Pin 24 : NC
Pin 25 : TX-	Pin 26 : NC
Pin 27 : RX+	Pin 28 : NC
Pin 29 : RX-	Pin 30 : NC
Pin 31 : TERMPLANE	Pin 32 : NC

CN12 : SNMP-1000 Daughter Board Connector (Right side)

Pin 1 : NC	Pin 2 : NC
Pin 3 : Power Good A	Pin 4 : NC
Pin 5 : NC	Pin 6 : NC
Pin 7 : Diagnostic LED	Pin 8 : FAN 1
Pin 9 : GND	Pin 10 : FAN 2
Pin 11 : GND	Pin 12 : FAN 3
Pin 13 : VCC	Pin 14 : FAN 4
Pin 15 : VCC	Pin 16 : FAN 5
Pin 17 : VCC	Pin 18 : FAN 6
Pin 19 : BEEP	Pin 20 : FAN 7
Pin 21 : 5VSB	Pin 22 : NC
Pin 23 : -5V	Pin 24 : NC
Pin 25 : +5V	Pin 26 : B_SCLK
Pin 27 : +3.3V	Pin 28 : B_SDAT
Pin 29 : -12V	Pin 30 : T_SCLK
Pin 31 : +12V	Pin 32 : T_SDAT

CN13 : Voltage Detect Input Connector

Pin 1 : 5VSB	Pin 2 : GND
Pin 3 : GND	Pin 4 : -5V
Pin 5 : +5V	Pin 6 : +3.3V
Pin 7 : -12V	Pin 8 : +12V

CN16 : 4 bit Power Good Input,

Pin 1 : Power GOOD A	Pin 2 : GND

CN18 : LED Board Connector

Pin 1 : GND	Pin 2 : +5V Signal
Pin 3 : +12V Signal	Pin 4 : -5V Signal
Pin 5 : -12V Signal	Pin 6 : HDD Signal
Pin 7 : Power Good Signal	Pin 8 : Power Fail Signal
Pin 9 : Temperature Good Signal	Pin 10 : Temperature Fail Signal
Pin 11 : Fan Good Signal	Pin 12 : FAN Fail Signal
Pin 13 : NC	Pin 14 : +3.3V Signal
Pin 15 : 5VSB Signal	

CN19 : Connector bank from CPU card

Pin 1 : HDD LED Signal	Pin 2 : ATX soft power switch
Pin 3 : I2C Clock	Pin 4 : ATX soft power switch(-)
Pin 5 : I2C Data	Pin 6 : System Reset Signal

CN20 : Connector bank to Chassis

Pin 1 : ATX Momentary switch	Pin 2 : ATX Momentary switch(-)
Pin 3 : GND	Pin 4 : System Reset Signal
Pin 5 : Watch Dog IN	Pin 6 : Watch Dog OUT

J1 : External Speaker

Pin 1 : Buzzer	Pin 2 : +5V

3.3 Switch Setting

Fan Number Setting

FAN NUMBER	SW 1-1	SW 1- 2	SW 1- 3	SW 1- 4
1	OFF	OFF	ON	OFF
2	OFF	ON	OFF	OFF
3	OFF	ON	ON	OFF
4	ON	OFF	OFF	OFF
5	ON	OFF	ON	OFF
6	ON	ON	OFF	OFF
7	ON	ON	ON	OFF

Thermal Board Temperature Setting

TEMP INDEX	SW 1 -1	SW 1 - 2	SW 1 - 3	SW 1 - 4
TEMP 1	OFF	OFF	OFF	ON
TEMP 2	OFF	OFF	ON	ON
TEMP 3	OFF	ON	OFF	ON
TEMP 4	OFF	ON	ON	ON
TEMP 5	ON	OFF	OFF	ON
TEMP 6	ON	OFF	ON	ON
TEMP 7	ON	ON	OFF	ON
TEMP 8	ON	ON	ON	ON