User Manual

PPC-L158T

Intel Atom Processor- Based
Panel PC with 15" Color TFT
LCD Display

AD\ANTECH

Enabling an Intelligent Planet

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Because of Advantech's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

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2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.

3. If your product is diagnosed as defective, obtain an RMA (return merchandise authorization) number from your dealer. This allows us to process your return more quickly.

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5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

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Declaration of Conformity

CE

This product has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. This kind of cable is available from Advantech. Please contact your local supplier for ordering information.

CE

This product has passed the CE test for environmental specifications. Test conditions for passing included the equipment being operated within an industrial enclosure. In order to protect the product from being damaged by ESD (Electrostatic Discharge) and EMI leakage, we strongly recommend the use of CE-compliant industrial enclosure products.

FCC Class B

Note: This equipment has been tested and found to comply with the limits for a Class B 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.

Technical Support and Assistance

1. Visit the Advantech web site at www.advantech.com/support where you can find the latest information about the product.
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 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:
15. The power cord or plug is damaged.
16. Liquid has penetrated into the equipment.
17. The equipment has been exposed to moisture.
18. The equipment does not work well, or you cannot get it to work according to the user's manual.
19. The equipment has been dropped and damaged.
20. The equipment has obvious signs of breakage.
21. 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.
22. 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.
23. The sound pressure level at the operator's position according to IEC 704-1:1982 is no more than 70 dB (A).
24. For use only with UL Listed Wall Mount Bracket with minimum weight/load 6 kg or equivalent.

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

Safety Precaution - Static Electricity

Follow these simple precautions to protect yourself from harm and the products from damage.

- To avoid electrical shock, always disconnect the power from your PC chassis before you work on it. Don't touch any components on the CPU card or other cards while the PC is on.
- Disconnect power before making any configuration changes. The sudden rush of power as you connect a jumper or install a card may damage sensitive electronic components.

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Chapter **1**

General Information

This chapter gives background information on the PPC-L158T.

Sections include:

■ Specifications

■ Dimensions

1.1 Introduction

Advantech PPC-L158T is an Intel Atom processor based Panel PC with a bright 15" LCD display. The powerful Atom CPU and Intel ICH8M chipsets bring the most dynamic applications to life without sacrifices to any industrial reliability. The Internal CFast card interface can serve as an alternate HDD solution for OS booting and the Mini PCIe interface can be used by many expansion cards such as a wireless LAN card to extend device mobility. In order to satisfy customers' security concerns, PPC-L158T is also offered in a two Gigabit LAN port configuration. Four serial ports and four USB V2.0 ports give the PPC-L158T advanced application capability.

1.2 Specifications

1.2.1 General Specifications

- **Dimensions (W X H X D):** 396.5 x 317.6 x 103.5 mm (15.6" x 12.5" x 4.08")
- **Weight**: 6 kg (13.22 lb)
- **Power:**
  - DC Model: input voltage 15 ~ 24 V
  - AC Model: 85 W (Max)
    Output Voltage: 100 ~ 240 Vac, 50 ~ 60 Hz, 1 ~ 2 A

1.2.2 Standard PC Functions

- **CPU:** Supports Intel® D525 processor up to 1.8 GHz
- **BIOS:** Award 8 MB Flash BIOS, supports plug and play, ACPI (advanced configuration and power interface)
- **Chipset:** Intel D525/ICH8M
- **RAM:** Two 204-pin sockets up to 4 GB DDR3 SDRAM
- **Serial ports:** Four serial ports, COM1, 3 and 4 are RS-232; COM2 is RS-232/422/485
- **Universal serial bus (USB) port:** Supports up to four USB V2.0 ports
- **Bus Expansion:** PCI-e * 1; mini PCI-e *1; PCI or PCI-e bus expansion slot *1

1.2.3 Internal Graphics Specifications

- Intel Dynamic Video Memory Technology 4.0
- 400 MHz render clock frequency
- 2 display ports: LVDS and RGB
- Intel@ Clear Video Technology (MPEG2 Hardware Acceleration, ProcAmp)

1.2.4 Audio Functions

- **Chipset:** Realtek ALC892
- **Audio controller:** Supports host/soft audio from the Intel ICH series chipset
- **Stereo sound:** Two stereo ADCs support 16/20/24-bit PCM format

1.2.5 Ethernet Interface

- 802.3x flow control support compliant
- IEEE 802.1p and 802.1q support
- 10/100/1000 IEEE 802.3 compliant

1.2.6 Touchscreen Specifications (Optional)

Table 1.1: Touchscreen Specifications	
Type	**Analog Resistive**
Resolution	2048*2048
Light Transmission	80%
Controller	COM/USB
Power Consumption	+5.5 V @ 70 mA
Software Driver	Windows
Durability (touches in a life-time)	35 million

1.2.7 Optional Modules

- **CPU:** Supports Intel Atom processor, dual-core D525 1.8 G
- **Memory:** Supports up to 4 GB DDR3 SDRAM [204-pin SODIMM socket x 2]
- **HDD:** Supports 2.5" SATA HDD
- **Touchscreen:** Analog resistive
- **DVD+/-RW Drive:** SATA Slim 8x or above
- **Combo Drive:** SATA Slim DVD/CD-RW 8D/24W/24E/24R or above
- **CFast:** One type I, II CFast slot

1.2.8 Environment

- **Temperature:** 0 ~ 50° C (32 ~ 122° F)
- **Relative humidity:** 10 ~ 95% @ 40° C (non-condensing)
- **Shock:** 10 G peak acceleration (11 msec duration)

1.2.9 Certifications:

- **EMC:** CE, FCC, BSMI, CCC
- **Safety:** CE, CB, UL, BSMI, CCC, VCCI

1.3 Dimensions
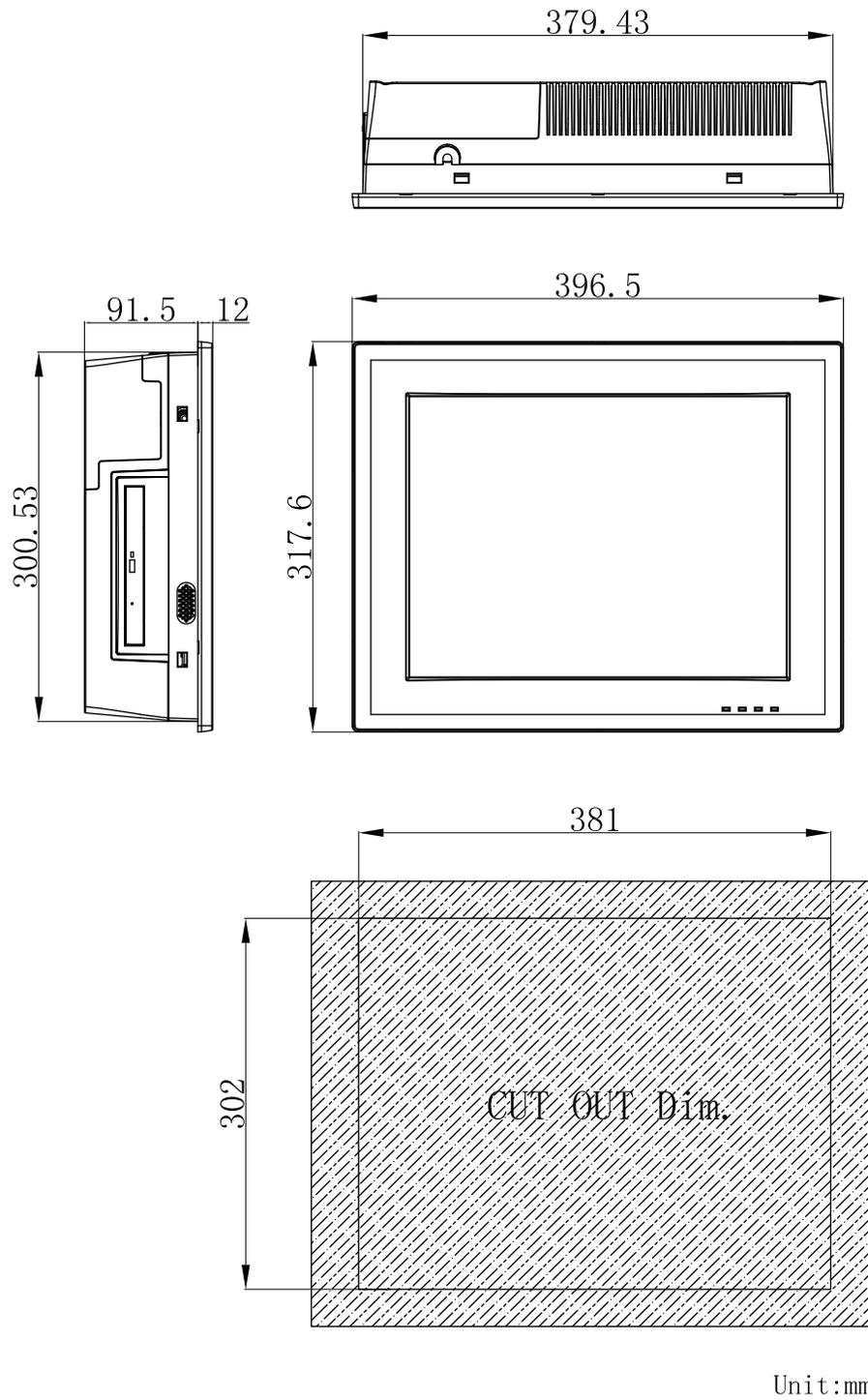
Figure 1.1 Dimensions of PPC-L158T

Chapter 2

System Setup

This chapter gives system setup information for the PPC-L158T.

Sections include:

- A Quick Tour
- Installation Procedures
- Running the BIOS Setup
- Installing System software

2.1 A Quick Tour of the Panel PC

Before starting to set up the panel PC, take a moment to become familiar with the locations and purposes of controls, drives, connectors and ports, which are illustrated in the figures below.

When placed upright on the desktop, the front panel of the panel PC appears as shown in Figure 2.1.
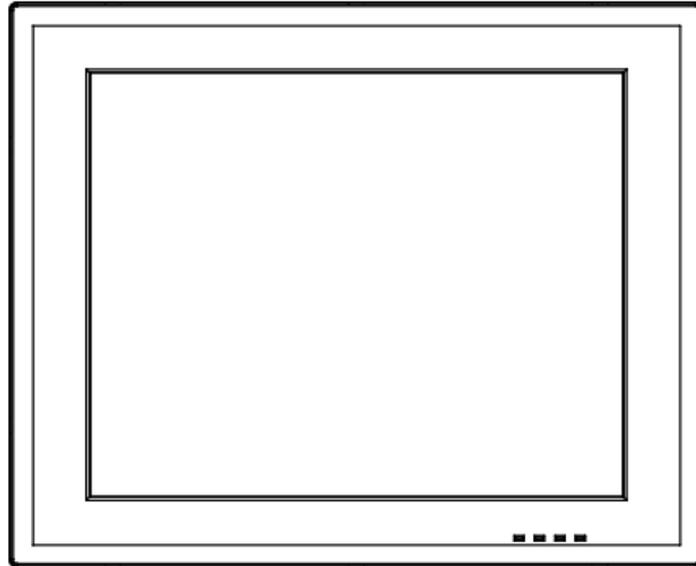
Figure 2.1 Front Panel of PPC-L158T

When viewed from the left side of the panel PC, the optical device drive, USB ports are visible, as shown in Figure 2.2.
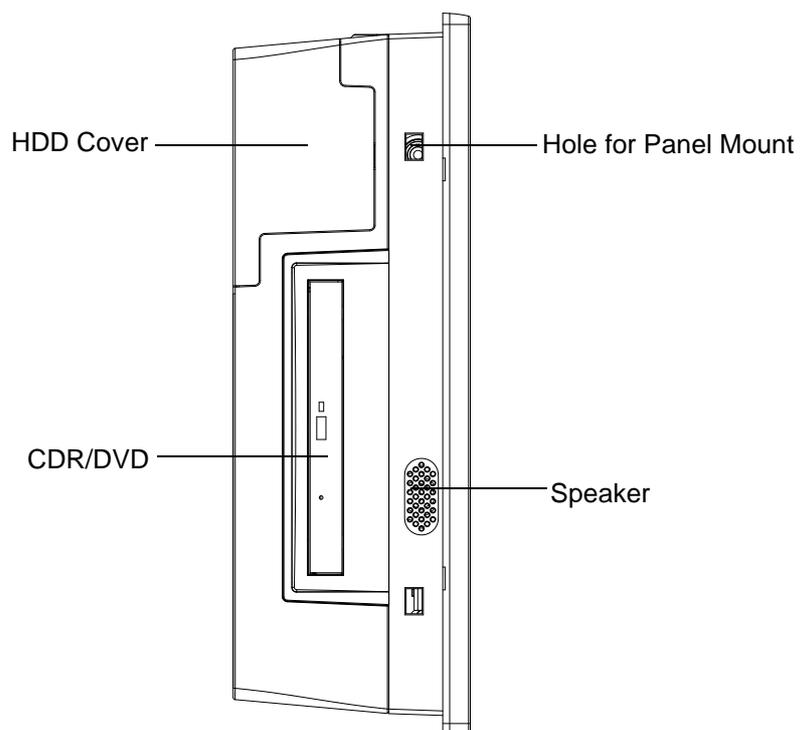
Figure 2.2 Side View of the Panel PC

Viewed from the bottom. Please note that the expansion slot is optional for either one PCI slot or one PCI Express. It is located on the back of the Panel PC as shown in Figure 2.3. (The I/O section includes various I/O ports, including serial ports, USB ports, the Ethernet ports, KB/MS, the audio jacks, and so on.)
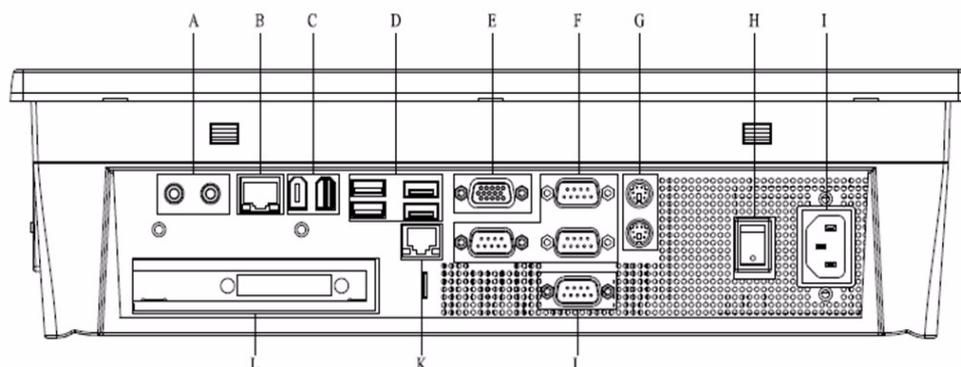
Figure 2.3 I/O Peripheral Connectors Panel of AC Input Model

A: Line out/Mic in
C: IEEE 1394 x 2 (optional)
E: VGA Port
G: PS2 Mouse x 1 / Keyboard x1
I: AC Inlet
K: 10/100/1000 Mbps Ethernet x 1

B: 10/100/1000 Mbps Ethernet x 1
D: USB 2.0 x 4
F: RS-232 x 2, RS-232/422/485 x 1
H: Power Switch
J: RS-232 x 1 (or GPIO x 1 by cable swapping)
L: PCI Slot x 1 (or PCIe Slot x 1)

Figure 2.4 I/O Peripheral Connectors Panel of DC Input Model

A: Line out/Mic in
C: IEEE 1394 x 2 (optional)
E: VGA Port
G: PS2 Mouse x 1 / Keyboard x 1
I: DC Inlet
K: 10/100/1000 Mbps Ethernet x 1

B: 10/100/1000 Mbps Ethernet x 1
D: USB 2.0 x 4
F: RS-232 x 2, RS-232/422/485 x 1
H :Power Swith
J: RS-232 x 1 (or GPIO x 1 by cable swapping)
L: PCI Slot x 1 (or PCIe Slot x 1)

VESA standard, both 100 x 100 mm and 75 x 75 mm mounting size.
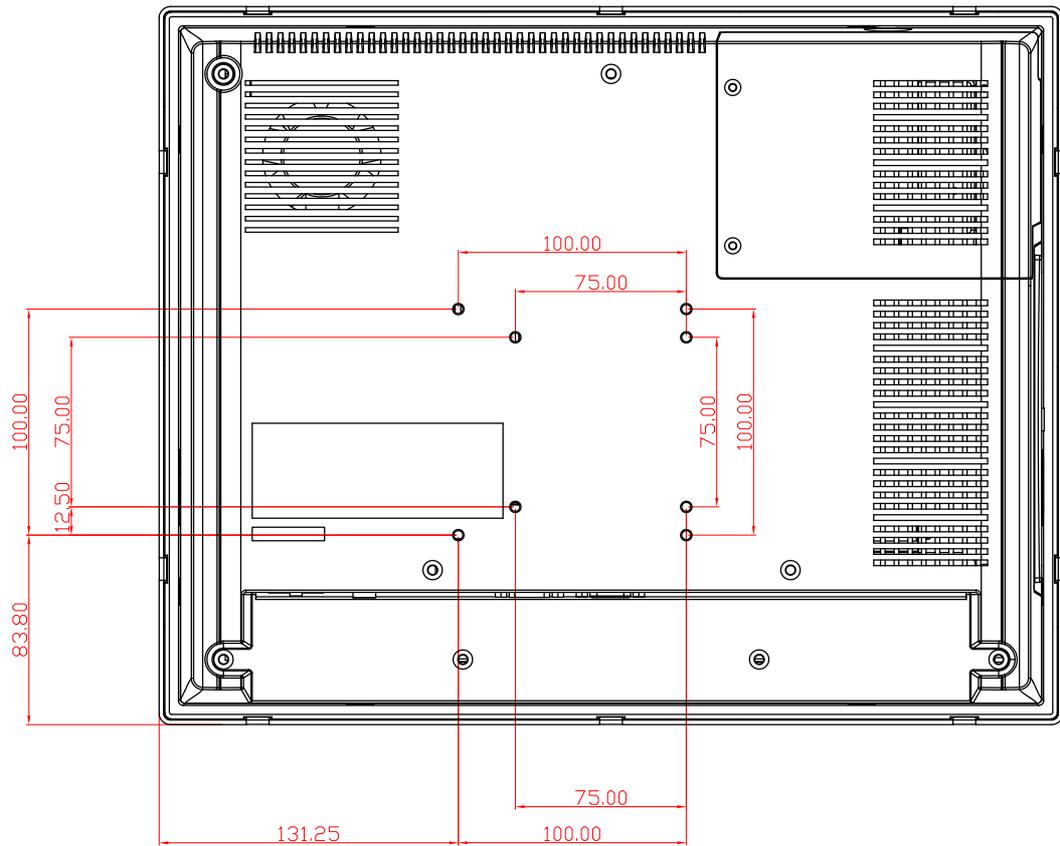
Recommended VESA Mount Screw : M4 x 8 - 12 (mm)

Figure 2.5 Rear View of the Panel PC

Caution! *Use recommended mounting apparatus to avoid risk of injury.*

2.2   Preparing for First-time Use

Before commencing set up of the panel PC system, the following items should be available:

- Keyboard
- Mouse (for system software installation)

2.3   Installation Procedures

2.3.1   Connecting the Power Cord

The panel PC can be powered through an AC electrical outlet (100 ~ 250 volts,

50 ~ 60 Hz) or DC outlet (15 ~ 24 V). Be sure to handle the power cords by holding the plug ends only. Follow these procedures in order:

1. Connect the female end of the power cord to the AC/DC inlet of the panel PC.
2. Connect the 3-pin male plug of the power cord to an electrical outlet.

2.3.2   Connecting the Keyboard and Mouse

Connect the mouse and keyboard to the I/O section of PPC. If using a serial mouse and the panel PC has a touchscreen, it is possible to connect the mouse to any COM port.

2.3.3   Switching on the Power

Switch on the power switch, which is located inside the bottom side cover.

2.4   Running the BIOS Setup Program

The panel PC will be properly set up and configured by the dealer prior to delivery. However, it may be necessary to use the panel PC's BIOS (Basic Input-Output System) setup program to change the system configuration information, such as the current date and time, or the type of hard drive. The setup program is stored in read-only memory (ROM). It can be accessed either when you turn on or reset the panel PC, by pressing the 'Del' key on your keyboard immediately after powering on the computer.

The settings specified with the setup program are recorded in a special area of memory called "CMOS RAM". This memory is backed up by a battery so that it will not be erased after turning off or resetting the system. Whenever the power is turned on, the system reads the settings stored in CMOS RAM and compares them to the equipment check conducted during the power on self-test (POST). If a problem occurs, an error message will be displayed on screen, and the computer prompts the user to run the setup program.

2.5   Installing System Software

Recent releases of operating systems from major vendors include setup programs which load automatically and guide you through hard disk formatting and operating system installation. The guidelines below will help determine the steps necessary to install the operating system onto the panel PC hard drive.

> **Note!**   *Some distributors and system integrators may have already pre-installed system software prior to shipment.*

2.6 Installing the Drivers

After installing your system software, you will be able to set up the Chipset, Ethernet, VGA, audio and touchscreen functions. All the drivers are stored in a CD-ROM disc labeled "Drivers and Utilities". The CD-ROM can be found in your accessory box.

Figure 2.6 Drivers and Utilities on the CD-ROM

Note! The drivers and utilities used for the PPC-L158T panel PCs are subject to change without notice. If in doubt, check Advantech's website or contact our application engineers for the latest information regarding drivers utilities.

Chapter **3**

Using the Panel PC

This chapter explains onboard
devices and peripheral I/O ports
available on the PPC-L158T.

Sections include:

- CD-ROM Drive

- PS/2 Mouse and Keyboard

- PCI or PCIe Bus Expansion

- Serial COM Ports

- VGA Port

- USB Ports

- Audio Interface

- Ethernet

- Touchscreen (Optional)

3.1 Introduction

This chapter describes basic features and procedures for using the panel PC. Topics covered include: the CD-ROM drive, I/O ports and the touchscreen.

This product is a high performance panel PC, please keep upright (see Fig. 3.1).

3.2 CD-ROM Drive (Optional)

It is possible to use the USB external optical device.

To insert a CD-ROM disc, press the eject button on the CD-ROM drive.

To eject a CD-ROM disc, first ensure that the drive activity light is not active. Then press the eject button on the drive.

Figure 3.1 Inserting and ejecting a CD-ROM

3.3 PS/2 Mouse and Keyboard

1. To install a full-size desktop PS/2 keyboard and mouse with the panel PC, follow these instructions:
2. Be sure the panel PC is turned off.
3. Attach the keyboard to the purple colored 5-pin PS/2 port.
4. Attach the PS/2 mouse to the green colored port.
5. Turn on the panel PC.

3.4 PCI or PCIe Bus Expansion

The panel PC supports either one PCI or one PCIe bus expansion card. To integrate a new expansion bus card into the system, follow these instructions:

1. Turn off the panel PC.
2. Unscrew the screws on the top of the rear cover, and remove them.
3. Remove the metal plate by unscrewing the attaching screw.
4. Insert the PCI or PCIe into the PCIe slot of the riser card. (See Figure 3.2)
5. Run the setup program within the OS to configure the system.

Figure 3.2 PCI & PCIe Bus Expansion

3.5 Serial COM Ports

There are four serial COM ports on the bottom. It is simple to attach a serial device to the panel PC, such as an external modem or mouse. Follow these instructions:

1. Be sure the panel PC and any other peripheral devices that are connected to the panel PC are turned off.
2. Attach the interface cable of the serial device to the panel PC's serial port. (See Figure 3.3.) If necessary, attach the other end of the interface cable to the serial device. Fasten any retaining screws.
3. Turn on any other peripheral devices which are connected to the panel PC, and then turn on the panel PC.
4. Refer to the manual(s) which accompanied any serial device(s) for instructions on configuring the operating environment to recognize the device(s).
5. Run the BIOS setup program and configure the jumper settings to change the mode of the COM ports.
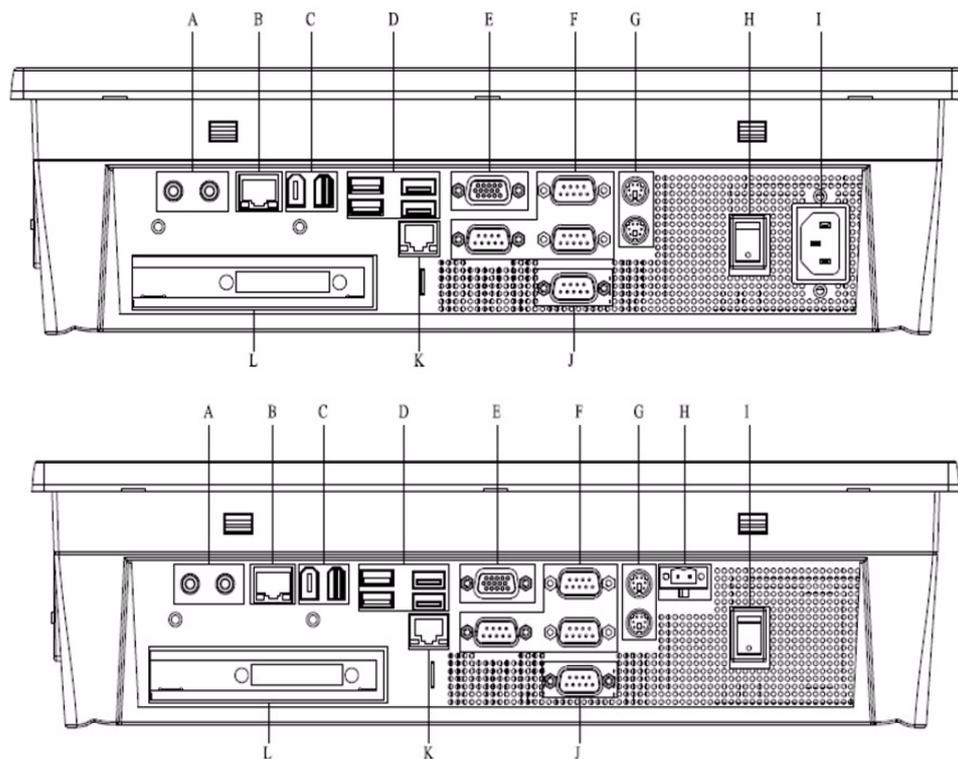

Figure 3.3 I/O Ports

3.6 VGA Port

An external VGA-compatible device may be connected to the system through the 15-pin external port located on the bottom of the system unit.

The panel PC simultaneously supports an external CRT monitor in addition to the built-in LCD display.

1. Be sure the panel PC is turned off.
2. Connect the external monitor to the system. (See Figure 3.3.)
3. Turn on the panel PC and the external monitor.

3.7 USB Ports

An external USB device may be connected to the system through the 4-pin USB ports located on the rear side and left side of the system unit.

1. Connect the external device to the system. (See Figure 3.3)
2. The USB ports support hot plug-in connections. Install the device driver before using the device.

3.8 Audio Interface

The audio interface includes two jacks: Microphone in and Line out. (See Figure 3.3) Their functions are:

- Microphone in: Use an external microphone to record voice and sound.
- Line out: Output audio to external devices such as speakers or earphones.
1. Connect the audio device to the system. (See Figure 3.3)
2. Install the driver before using the device.

3.9 Ethernet

External devices on the network may be connected to the system through the external Ethernet port located on the bottom of the system unit.

1. Be sure the panel PC is turned off.
2. Connect the external device(s) to the panel PC.
3. Turn on the panel PC and the external device(s).

3.10 Touchscreen (Optional)

The touchscreen is connected to the internal USB port. Its function is similar to that of a mouse. PPC-L158T supports resistive touchscreen.

It is necessary to install the touchscreen driver before it will function. The touchscreen drivers for various operating systems are stored on the CD-ROM disc inside the accessory box.

Chapter 4

Hardware Installation

This chapter gives instructions for installing hardware devices on the PPC-L158T.

Sections include:

- Jumpers and Connectors
- Disassembling the Panel PC
- Installing the Central
- Processing Unit (CPU)
- Installing the DDR3 SDRAM Memory Module

4.1 Jumpers and Connectors

The panel PC consists of a PC-based computer that is housed in a metal shielding case with a plastic cover on the rear and bottom. All the computer devices, like the CPU, HDD, SDRAM, and power supply are all readily accessible after removing the rear panel or the HDD cover. Any maintenance or hardware upgrades can be easily completed after removing the rear panel and/or HDD cover.

> **Warning!** *Do not remove the plastic rear cover until verifying that no power is flowing within the panel PC. Power must be switched off and the power cord must be unplugged. Each time the panel PC is serviced, users should be aware of this condition.*

4.2 Disassembling the Panel PC

The following are standard procedures for disassembling the panel PC before upgrading the system. All procedures are illustrated in Figure 4.1.

1. Unfasten the screws securing the rear plastic cover and remove it.

Figure 4.1 Unfastening the Rear Cover

4.3 Installing the 2.5" Hard Disk Drive

One enhanced Serial ATA (SATA) hard disk drive may be attached to the panel PC. The following instructions are for installing the HDD:

1. Remove the two screws on side cover first. (See Figure 4.2)
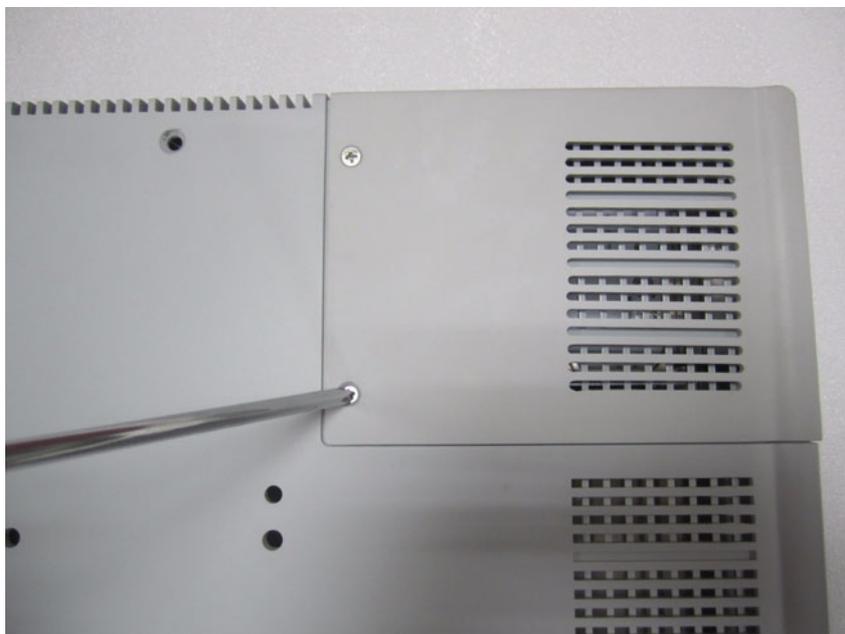
Figure 4.2 The PPC Side Cover

2. Remove the four screws on the metal plate on both sides of the HDD. (See Figure 4.3)

Figure 4.3 The PPC HDD

3. Connect the SATA cable from the mainboard.

Figure 4.4 Plugging in the SATA Cable

4.4 Installing the DDR3 SDRAM Memory Module

The panel PC system provides two 204-pin SODIMM sockets and it is possible to install 4 GB of DDR3 SDRAM memory.

Figure 4.5 Placing the Memory Module in the SODIMM Socket

Figure 4.6 Stick the Thermal Pad on the Memory Heatsink
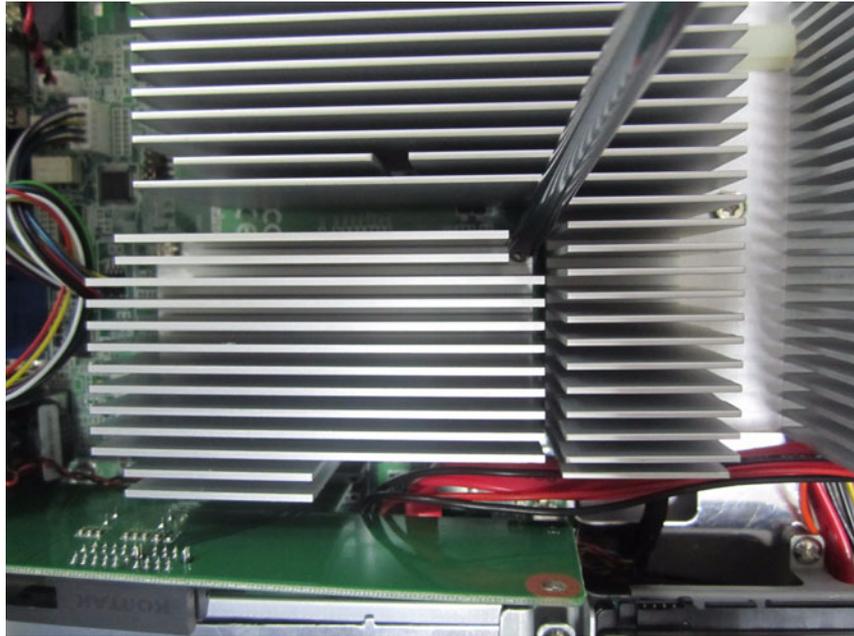
Figure 4.7 Fasten the Memory Heatsink onto the Board

4.5 Installing the Optical Device Drive

1. Remove all the screws on the rear cover.

Figure 4.8 Rear Cover Photo

2. Plug in the SATA ODD cable.

Figure 4.9 Plug in the SATA ODD Cable

3. Place ODD on device bracket, then fasten screws on IO shielding.

Figure 4.10 Fasten Screw on IO Shielding

4. Fasten screws on the ODD bracket.

Figure 4.11 Fasten Screws on the ODD Bracket

4.6 Installing GPIO Cable

The GPIO cable uses same cable as COM4 Figure 4.12, so just change the cable
PIN header from CN18 to CN11, see Figure 4.13.

Figure 4.12 GPIO Location on I/O Bracket
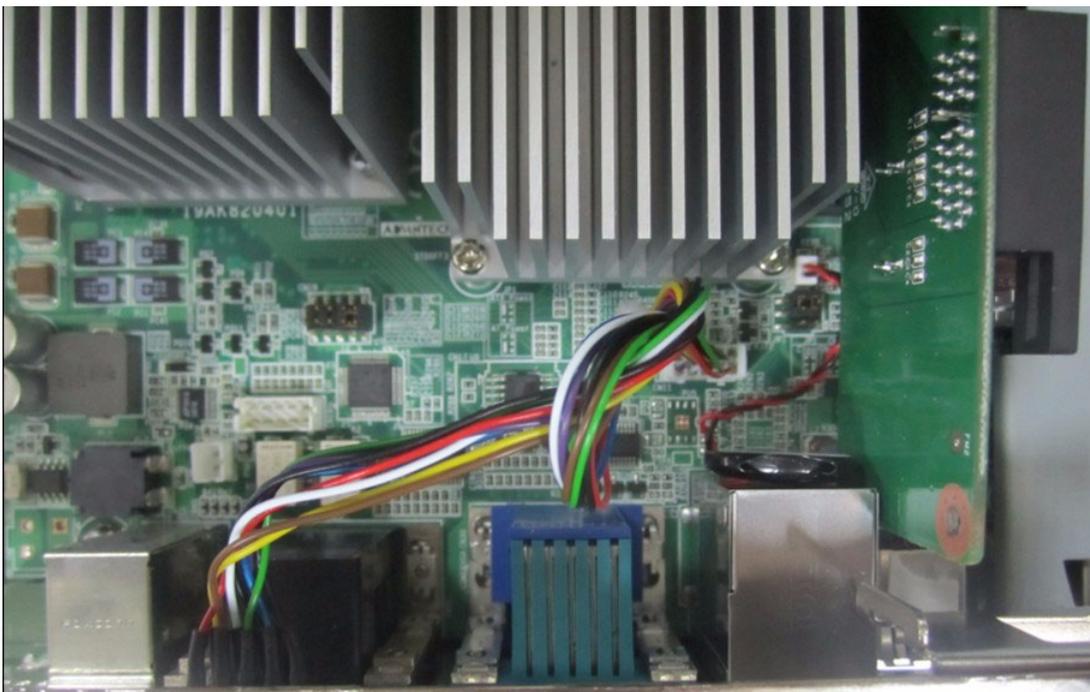
Figure 4.13 Change Cable PIN Header to CN11

4.7 Installing the LPT Cable

Fetch LPT cable from accessory box.

1. Remove system rear cover and device brackets, remove the original bracket on the I/O bracket, and insert the LPT cable PIN header on the motherboard CN37 location.
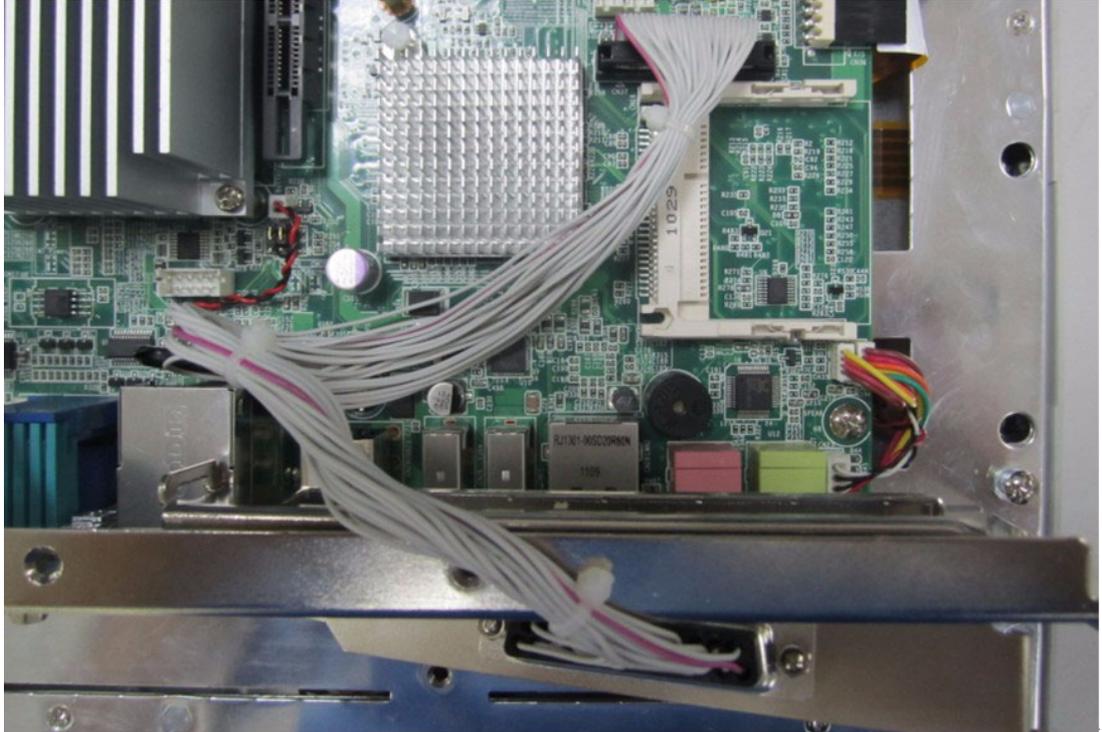
Figure 4.14 Insert LPT Cable PIN Header on the Motherboard

2. Assemble the device bracket, then fasten the LPT cable bracket on the I/O bracket.
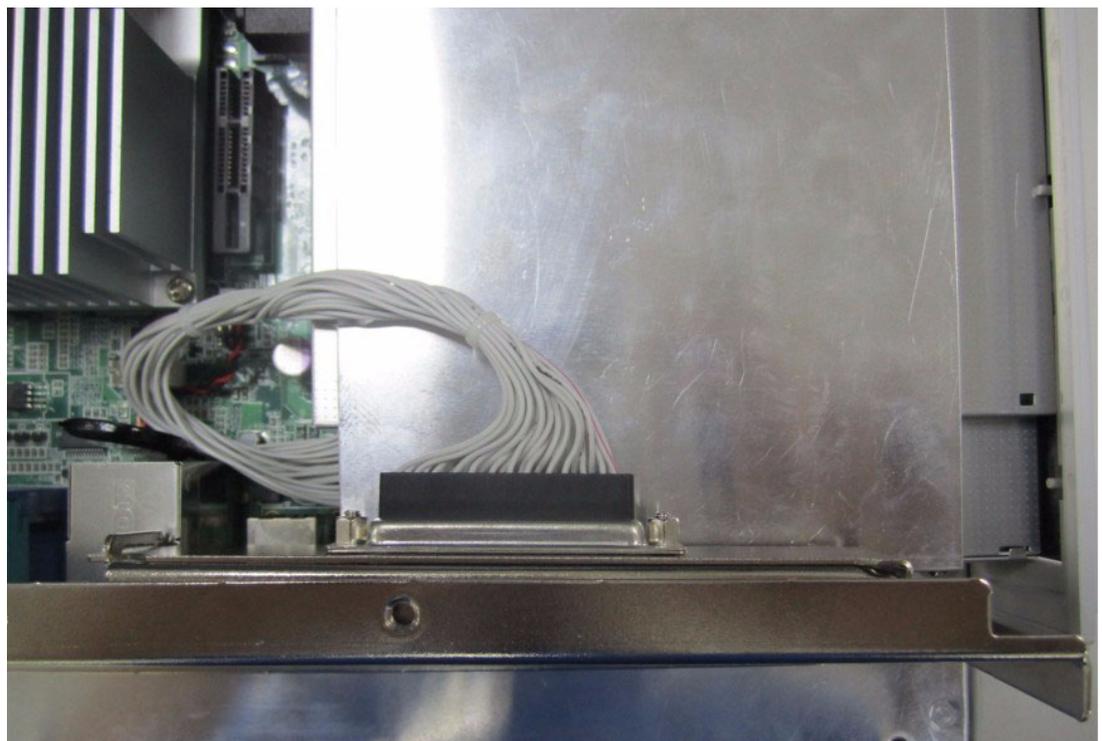
Figure 4.15 Fix the LPT Cable on the I/O Bracket

3. Remember to secure the LPT bracket and I/O bracket with a screw.
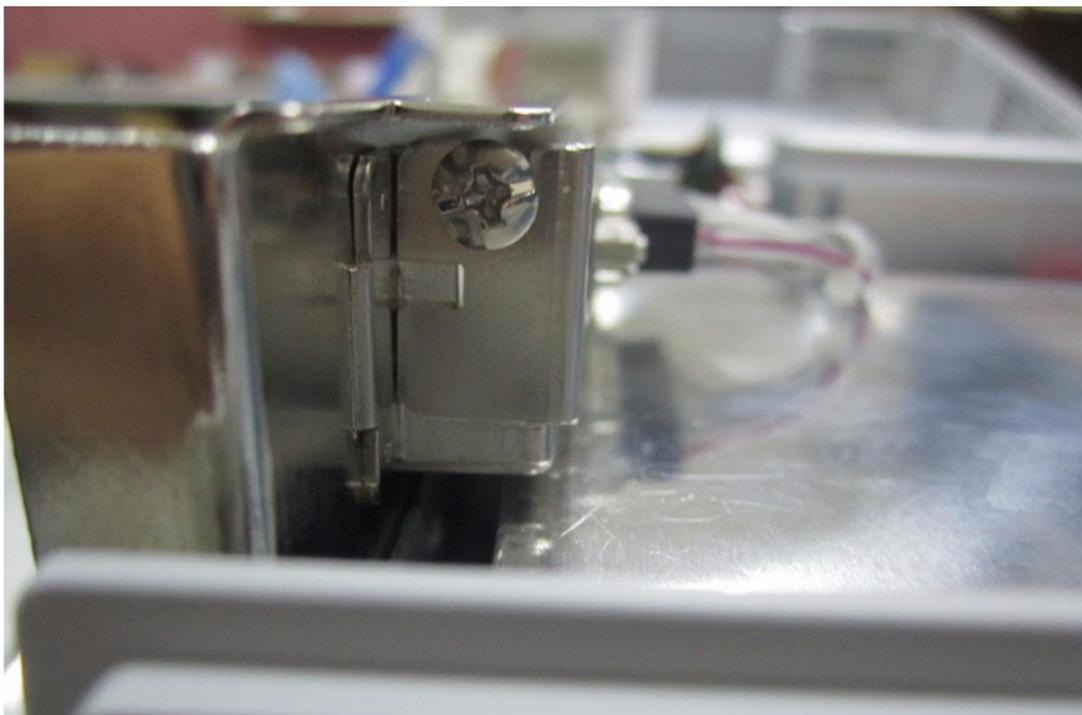
Figure 4.16 Fasten the Screw on the Bracket

4. The completed LPT cable assemblage below.

Figure 4.17 Completed Photo of LPT Cable Assemblage

4.8 Installing Dual-USB Cable

Fetch dual-USB cable from accessory box.

1. Remove the rear cover and device brackets, remove the original bracket on I/O bracket, and insert the dual-USB cable PIN header on motherboard CN9 or CN10 location.
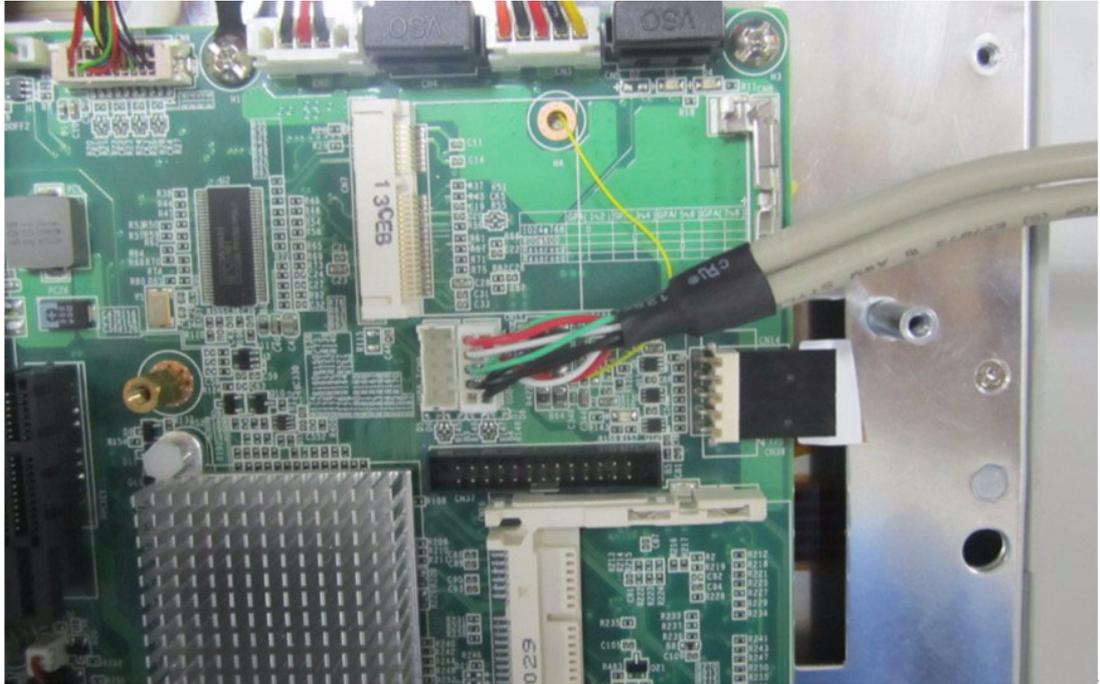
Figure 4.18 Insert Dual-USB Cable on CN9 or CN10

2. Assemble the device bracket, then fasten the dual-USB cable bracket on the I/O bracket.
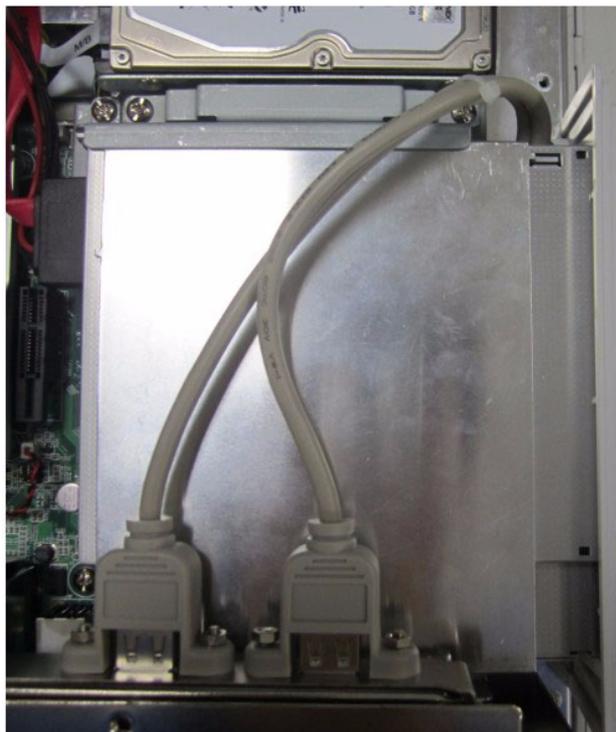
Figure 4.19 Dual-USB Cable Assembly on I/O Bracket

3. Remember to secure dual-USB bracket and I/O bracket with a screw.
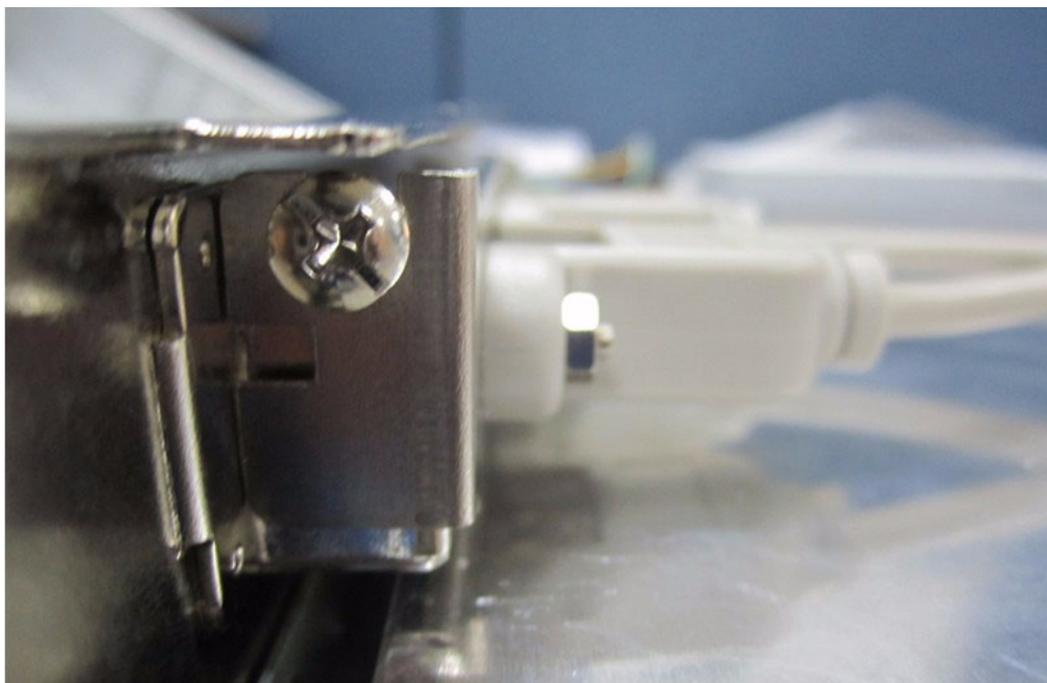
Figure 4.20 Fasten Screw on Bracket

4. Completed assembly as below.

Figure 4.21 Completed Assembled Dual-USB Cable

Chapter 5

Jumpers and Connectors

This chapter gives information on setting jumpers and using the connectors on the PPC-L158T motherboard.

Sections include:

■ Setting Jumpers

■ Jumpers and Connectors locations

■ Connectors

5.1 Jumpers and Connectors

This chapter supplies more detailed information about the internal jumper settings and an outline of the I/O ports available on the PPC-L158T.

5.1.1 Setting Jumpers

The Panel PC can be configured to match the needs of each application by setting jumpers. A jumper is the simplest kind of electrical switch. It consists of two metal pins and a small metal clip (often protected by a plastic cover), which slides over the pins to close the circuit and connect them. To "close" a jumper, connect the pins with the clip. To "open" a jumper, remove the clip. Sometimes a jumper has three pins, labeled 1, 2, and 3. In this case, it is possible to connect either pins 1 and 2 or pins 2 and 3 to each other.

Open   Closed   Closed 2-3
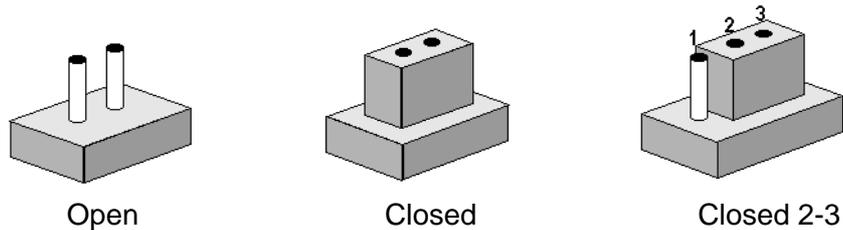
The jumper settings are schematically depicted in this manual as follows:

Open   Closed   Closed 2-3
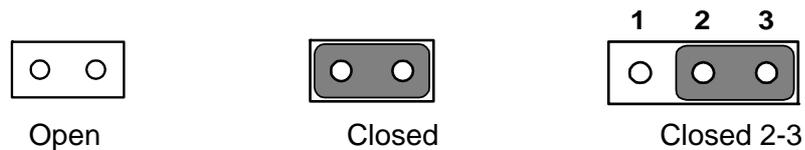
A pair of needle-nose pliers may be helpful when working with jumpers. If there are any doubts about the best hardware configuration for a particular application, contact the local distributor or sales representative before making any changes. An arrow is printed on the motherboard to indicate the first pin of each jumper.

5.1.2 Jumpers

The motherboard of the panel PC has a number of jumpers that help configure the system. It also has LED indicator lights that display the system operation status. The table below lists the function of each jumper and LED.

The motherboard of the PPC-L158T has a number of jumpers that allow you to configure your system to suit your applications.

JP1	CMOS CLEAR & AT/ATX Select
CN19	Ring and Power for COM1/2 pin 9

Table 5.1: JP1 (CMOS Setting & AT / ATX Select)	
Setting	**Function**
(1-3)	CMOS Clear
(3-5)	Normal (default)
(2-4)	AT Power
(4-6)	ATX Power (default)

Table 5.2: CN19(Ring and Power for COM1/2 pin 9)	
Setting	**Function**
(1-3)	COM1_Pin9 RI
(3-5)/(5-7)	COM1_Pin9 +V5
(7-9)	COM1_Pin9 +V12
(2-4)	COM2_Pin9 RI
(4-6)/(6-8)	COM2_Pin9 +V5
(8-10)	COM2_Pin9 +V12

5.1.3 Jumper and Connector Locations
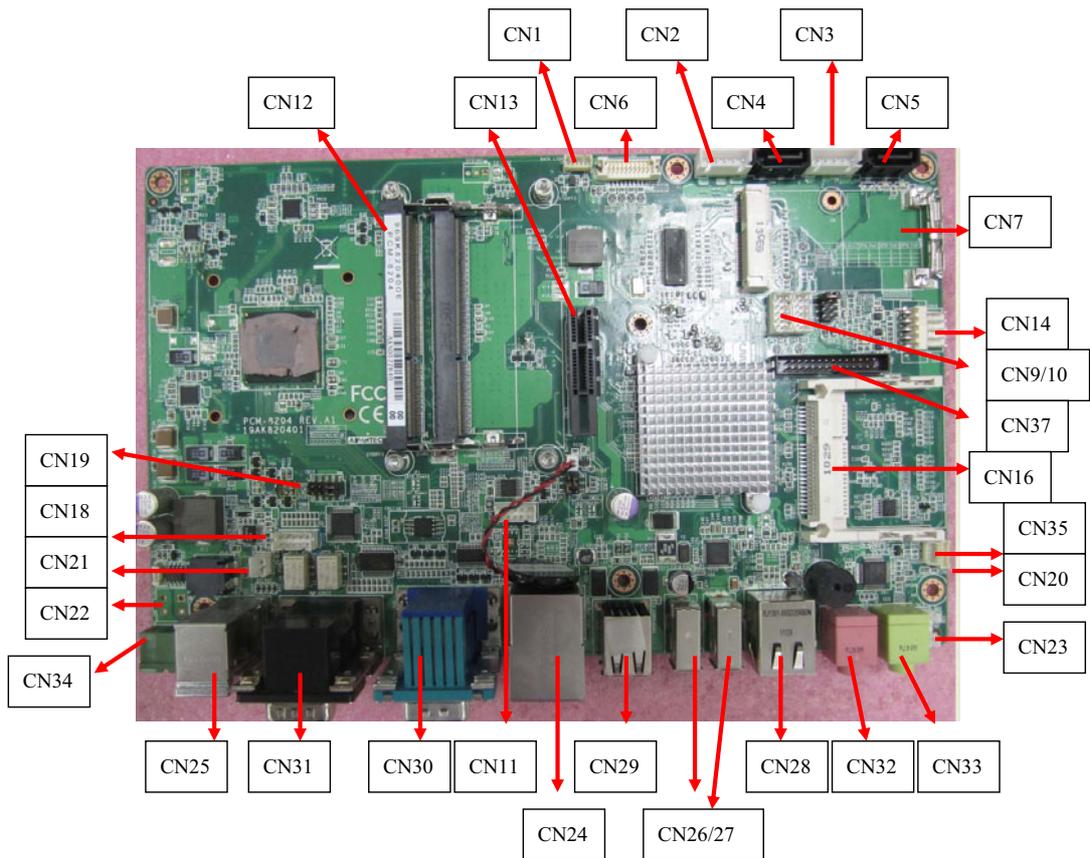
Figure 5.1 Jumpers & Connectors on PPC-L158T Motherboard

5.1.4 Connectors

Onboard connectors link the panel PC to external devices such as hard disk drives. The table below lists the function of each of connectors.

CN1	LVDS Back Light
CN2	SATA Power
CN3	SATA Power
CN4	SATA1
CN5	SATA0
CN6	LVDS
CN7	MiniPCIE
CN9	USB6/7
CN10	USB4/5
CN11	GPIO
CN12	Memory1
CN13	Memory0
CN14	T/S
CN16	CFAST
CN18	COM4
CN20	LED Connect
CN21	Button
CN22	DC IN (For 12V)
CN23	Speak
CN24	LAN1&USB01
CN25	PS2
CN26/27	13940/1
CN28	LAN2
CN29	USB23
CN30	COM1&VGA
CN31	COM23
CN32	MIC IN
CN33	LIN OUT
CN34	DC IN (For DC)

Table 5.3: CN1 (LVDS Back Light)	
Pin	Pin Name
1.	+V12_INVERTER
2	GND
3	BKLT_EN
4	LVDS0_CTLBK

Table 5.4: CN2/3 (SATA Power)

Pin	Pin Name
1	+V3.3
2	GND
3	+V5
4	GND
5	+V12

Table 5.5: CN4/5 (SATA0/1)

Pin	Pin Name
1	GND
2	SATA1_TX+
3	SATA1_TX-
4	GND
5	SATA1_RX-
6	SATA1_RX+
7	GND
8	GND
9	GND

Table 5.6: CN6 (LVDS)

Pin	Pin Name
1	GND
2	GND
3	LVDS0_z_D0-
4	GND
5	LVDS0_z_D0+
6	GND
7	LVDS0_z_D1-
8	GND
9	LVDS0_z_D1+
10	LVDS0_DDC_SD
11	LVDS0_z_D2-
12	GND
13	LVDS0_z_D2+
14	LVDS0_DDC_SC
15	LVDS0_z_CLK-
16	GND
17	LVDS0_z_CLK+
18	NA
19	+V_LCD
20	+V_LCD

Table 5.7: CN7 (MiniPCIE)	
Pin	**Standard connect**

Table 5.8: CN9/10 (USB4/5/6/7)	
Pin	**Pin Name**
1	+V5_USB
2	+V5_USB
3	USB4//6_P-
4	USB5/7_P-
5	USB4//6_P+
6	USB4//6_P+
7~10	GND

Table 5.9: CN11 (GPIO)	
Pin	**Pin Name**
1	GND
2	GPIO4
3	GPIO0
4	GPIO5
5	GPIO1
6	GPIO6
7	GPIO2
8	GPIO7
9	GPIO3
10	+V5

Table 5.10: CN12/13 (Memory 0/1)	
Pin	**Standard connect**

Table 5.11: CN14 (T/S)	
Pin	**Standard connect**
1	Y+
2	X+
3	SENSE
4	Y-
5	X-

Table 5.12: CN18 (COM4)

Pin	Pin Name
1	COM4_DCD#
2	COM4_RX
3	COM4_TX
4	COM4_DTR#
5	GND
6	COM4_DSR#
7	COM4_RTS#
8	COM4_CTS#
9	COM4_RI#
10	+5v

Table 5.13: CN20 (LED Connect)

Pin	Pin Name
1	GND
2	LAN2_LED0
3	LAN1_LED0
4	SATA_LED#
5	+V5

Table 5.14: CN21 (Button)

Pin	Pin Name
1	PWRBTN#
2	GND

Table 5.15: CN22 (DC IN (For 12V))

Pin	Pin Name
1	DC_IN (+12v)
2	DC_IN (+12v)
3	GND
4	GND

Table 5.16: CN23 (Speak)

Pin	Pin Name
1	AUD_OA-
2	AUD_OA+
3	AUD_OB+
4	AUD_OB-

Table 5.17: CN24 (LAN1&USB01)	
Pin	Standard connect

Table 5.18: CN25 (PS2)	
Pin	Standard connect

Table 5.19: CN26/27(1394)	
Pin	Pin Name
1	+V12
2	GND
3	XTPBM
4	XTPBP
5	XTPAM
6	XTPAP

Table 5.20: CN28 (LAN2)	
Pin	Pin Name
1	MDI0+
2	MDI0-
3	MDI1+
4	MDI1-
5	VDC1
6	VDC2
7	MDI2+
8	MDI2-
9	MDI3+
10	MDI3-
11	+3.3V
12	ACT#
13	LINK1000#
14	LINK100#

Table 5.21: CN29 (USB23)	
Pin	Pin Name
1	+V5_USB
2	USB2_P-
3	USB2_P+
4	GND
5	+V5_USB
6	USB5/7_P-
7	USB4//6_P+
8~12	GND

| 1 | 2 | 3 | 4 | 5 |
| 6 | 7 | 8 | 9 | |
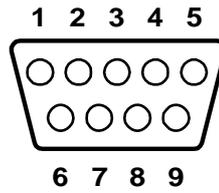
Table 5.22: CN30 A (COM1 RS232)

Pin	Pin Name
1	COM1_DCD
2	COM1_RXD
3	COM1_TXD
4	COM1_DTR
5	GND
6	COM1_DSR
7	COM1_RTS
8	COM1_CTS
9	RIA

Table 5.23: CN30B VGA

Pin	Standard Connect

| 1 | 2 | 3 | 4 | 5 |
| 6 | 7 | 8 | 9 | |
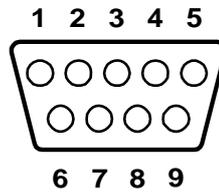
Table 5.24: CN31 A (COM2 RS232/422/485 Select by BIOS)

Pin	Pin Name		
	RS232	RS422	RS485
1	DCD	422_TXD-	485_Data-
2	RXD	422_TXD+	485_Data+
3	TXD	422_RXD+	
4	DTR	422_RXD-	
5	GND	GND	
6	DSR		
7	RTS		
8	CTS		
9	RIC		

```
     1  2  3  4  5
    ┌─────────────────┐
    │ ○ ○ ○ ○ ○ │
    │  ○ ○ ○ ○  │
    └───────────────┘
      6  7  8  9
```
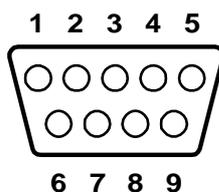
Table 5.25: CN31 B (COM3 RS-232 serial port)	
Pin	Pin Name
1	DCD#
2	RX
3	TX
4	DTR#
5	GND
6	DSR#
7	RTS#
8	CTS#
9	R#

Table 5.26: CN32 (MIC IN)	
Pin	Pin Name
1	GND_AUD
2	MIC1_z_L
3	GND_AUD
4	MIC_JD
5	MIC1_z_R

Table 5.27: CN33 (LINE OUT)	
Pin	Pin Name
1	GND_AUD
2	LOUT_z_L
3	GND_AUD
4	FRONT_JD
5	LOUT_z_R

Table 5.28: CN34 (DC IN (For DC))	
Pin	Pin Name
1	DC_IN
2	GND

Chapter 6

Driver Installation

This chapter gives information on installing drivers for the PPC-L158T.

Sections include:
- ■ Driver Installation
- ■ Updating Drivers

6.1 Introduction

A Driver CD is supplied inside the accessory box. Customers may need to use an external USB CD-ROM related device to load the CD and install the drivers for the PPC-L158T.

6.1.1 Driver Installation

Before installing the Ethernet driver, note the procedures below. It is necessary to know which operating system is installed on the PPC-L158T. Then refer to the corresponding installation flow chart. Follow the steps described in the flow chart to complete the installation quickly. There are Drivers and documents included on the CD for the chipset, LAN, Audio, Touchscreen, VGA, and USB, as well as a PDF copy of this user manual.

> **Note!**
> 1. *The CD-ROM drive is designated as "D" throughout this chapter.*
> 2. *<Enter> means pressing the "Enter" key on the keyboard.*

6.2 Updating Driver Search on the Advantech Website

For further information about installing drivers on the PPC-L158T, and to access driver updates, troubleshooting guides and FAQ lists, visit the following web resources:

Advantech websites:
www.advantech.com
www.advantech.com.tw
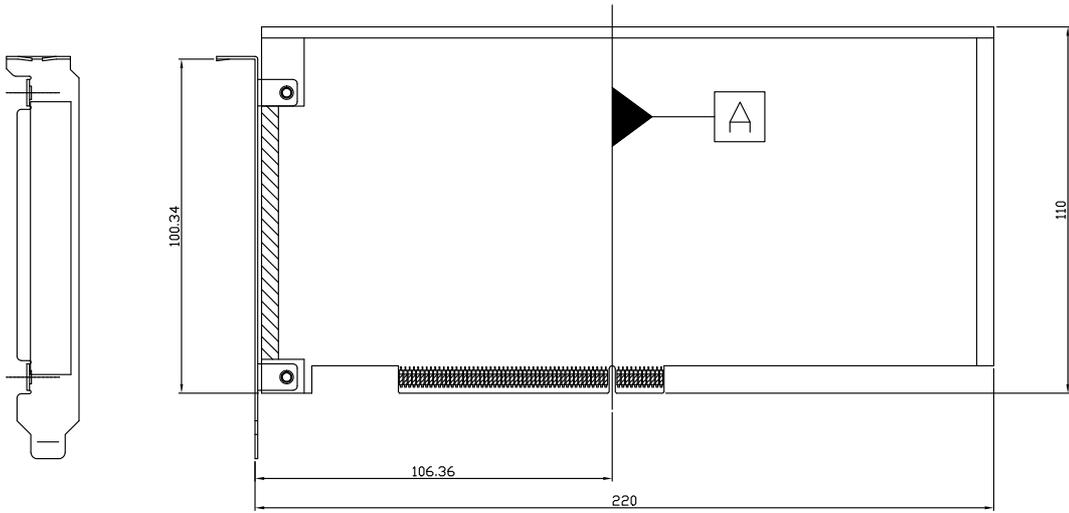
Appendix A

PCI Card and PCIe Size Limits

This chapter details the size limits for PCI and PCIe cards that may be installed on the Panel PC motherboard.

A.1 PCIe Interface Card

A.2 PCI Interface Card

A.3 Add-on Card

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