PPC65B-1x

IP65-Compliant Fanless Panel PC with Touch Screen (Industrial Intel Atom® E3845) Product Manual

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Revision History

Document Version	Last Updated Date	Brief Description of Change
v1.0	8/2017	Initial release
v1.1	12/2025	Updates to conformal coating and warranty

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Trademark Acknowledgments

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1. Before You Begin

Review the warnings (in this section) and the best practice recommendations (see “Best Practices” on page 58) when using and handling the WinSystems PPC65B-1x. Adherence to these recommendations provides an optimal user experience and prevents damage. Read through this document and become familiar with the PPC65B-1x before proceeding.

APPLYING CONFORMAL COATING AFTER PURCHASE WILL VOID YOUR WARRANTY. FAILING TO COMPLY WITH THESE BEST PRACTICES MAY DAMAGE THE PPC65B-1x AND VOID YOUR WARRANTY.

1.1 Warnings

Only qualified personnel should configure and install the PPC65B-1x. While observing the best practices, pay particular attention to the following:

Avoid Electrostatic Discharge (ESD)
Only handle the circuit board and other bare electronics when electrostatic discharge (ESD) protection is in place. Having a wrist strap and a fully grounded workstation is the minimum ESD protection required before the ESD seal on the product bag is broken.

Warning
Do not reverse the positive and negative terminals when you connect power to the unit. This will void the warranty and damage the board.

2. Introduction

This manual provides configuration and usage information for the PPC65B-1x. If you still have questions, contact Technical Support at (817) 274-7553, Monday through Friday, between 8 AM and 5 PM Central Standard Time (CST).

Refer to the WinSystems website for other accessories (including cable drawings and pinouts) that can be used with your PPC65B-1x.

3. Functionality

The PPC65B-1x Panel PC Series is IP65-certified and optimized for use in demanding market applications including industrial machinery, utilities, petroleum, transportation, pipeline and food processing, wherever there is need for tight system integration in a minimal foot print.

High performance embedded applications will benefit from the PPC65B-1x's 1.91 GHz Quad-Core Intel® Atom™ E3845 processor. The panel PC is designed and engineered to operate without a fan—even with the quad-core processor—resulting in quieter operation, lower maintenance, and increased product service life.

The front panel and touchscreen of the PPC65B-1x are environmentally sealed to protect the unit from damaging moisture, dust, and dirt when mounted in an IP65-rated enclosure. It can also be attached to a 75 x 75 mm or 100 x 100 mm VESA mount.

Applications that require a conventional 2.5" SATA hard drive or 2.5" SATA SSD will benefit from the built-in drive tray that facilitates easy insertion and removal of the drive without the need for a SATA cable.

The PPC65B-1x series supports operating systems (OS) such as Linux and Windows 10. Contact an Applications Engineer for details on pre-installed operating system options. The unit is engineered to meet and exceed industry standards for RF emissions and susceptibility, is shock- and vibration-resistant, and confirmed to be compliant with FCC Part 15 Class A and CE EN 55022/55024: 2010 Class A.

Information to configure and operate the PPC65B-1x for most applications is included in this Product Manual or on our website at www.winsystems.com.

NOTE WinSystems can provide custom configurations for Original Equipment Manufacturer (OEM) clients. For details, please contact an Application Engineer through Technical Support (see contact information in the Introduction section on page 1).

4. Features

This section describes the features of the PPC65B-1x.

Package Contents

- One PPC65B-1x
- Panel mount kits
- HDD installation hardware
- 3-pin terminal block connector (female)
- I/O kit
- Available Options:
  - 60 W Power Adapter with Power Cord (EU/US type) and Power Switch Cable (from adapter to 3-pin terminal block connector)

Performance for Industrial IoT Applications

- 1.91 GHz Quad-Core Intel® Atom™ E3845 processor
- Up to 8 GB of RAM
- Supports Linux, Windows 10 Operating Systems

Rugged Design for Demanding Environments

- IP65-compliant fanless panel PC
- Front display sealed against water and dust
- Panel or VESA mounting configurations
- -20 °C to +70 °C operating temperature range
- SATA controller with 2.5-inch HDD/SSD tray
- Wide input power: 12 V-24 V DC

Fast Graphics at High Resolutions

- Five-wire resistive touchscreen
- Resolution: 1024 x 768 / 1280 x 1024

Connectivity and I/O for Embedded Systems

- 2x Gigabit Ethernet ports
- 1x USB 2.0 port (up to 3x with expansion)
- 1x USB 3.0 port
- Watchdog timer

Expansion Options

- 2x RS-232/422/485 plus 2x USB (default)
- 2x RS-232/422/485 plus 1x RS-232 (optional)
- 1x line-out, 1x RS-232/422/485 plus 2x USB (optional)

Embedded Single Board Computer (SBC)

- Single Board Computer
- Intel E3845 series Atom processor
  - Core Speed: 1.91 GHz
  - Number of Cores: 4
  - L2 Cache: 2 MB

Operating Systems (compatibility)

The PPC65B-1x uses the Intel® BayTrail-I SOC. An older operating system might not be able to recognize this chip. For compatibility issues with older Windows Operating Systems such as Windows 8, please install the BayTrail-I SOC chipset component driver (INF) before any other driver.

- Microsoft Windows
- Linux
- Other x86-compatible systems

Memory

- Up to 8 GB DDR3L 1333/1600 MHz SDRAM (one 204-pin SODIMM)

BIOS

- AMI BIOS

Power

Power Supply: 12 V-24 V DC input (3-pin Terminal Block Connector)

Temperature Specifics

- Operating temperature: -20 °C to +70 °C (-4 °F to +158 °F)
- Storage temperature: -40 °C to +85 °C (-40 °F to +185 °F), relative humidity (RH) between 20-90%, non-condensing

5. General Operation

5.1 Touch Screen Components

The PPC65B-1x is a full-featured embedded system with a variety of on-board I/O options. See Figure 5–1 Front View on page 5.

5.1.1 Ambient Light Sensor

The ambient light sensor detects light intensity in its surroundings. This feature allows the Panel PC to adjust panel brightness accordingly.

5.1.2 TFT-LCD Display with Touch

The PPC65B-1x has a built in a TFT-LCD display and designed with a 5-wire resistive touch screen. The touch screen allows contacts of pen or finger to move the mouse pointer. This function requires integrating the necessary software.

NOTE Do not use a hard or a pointed object (like screw drivers or pliers) to operate the touch screen.

NOTE For OEMs, an optional projective capacitive (P-CAP) touch screen is available.

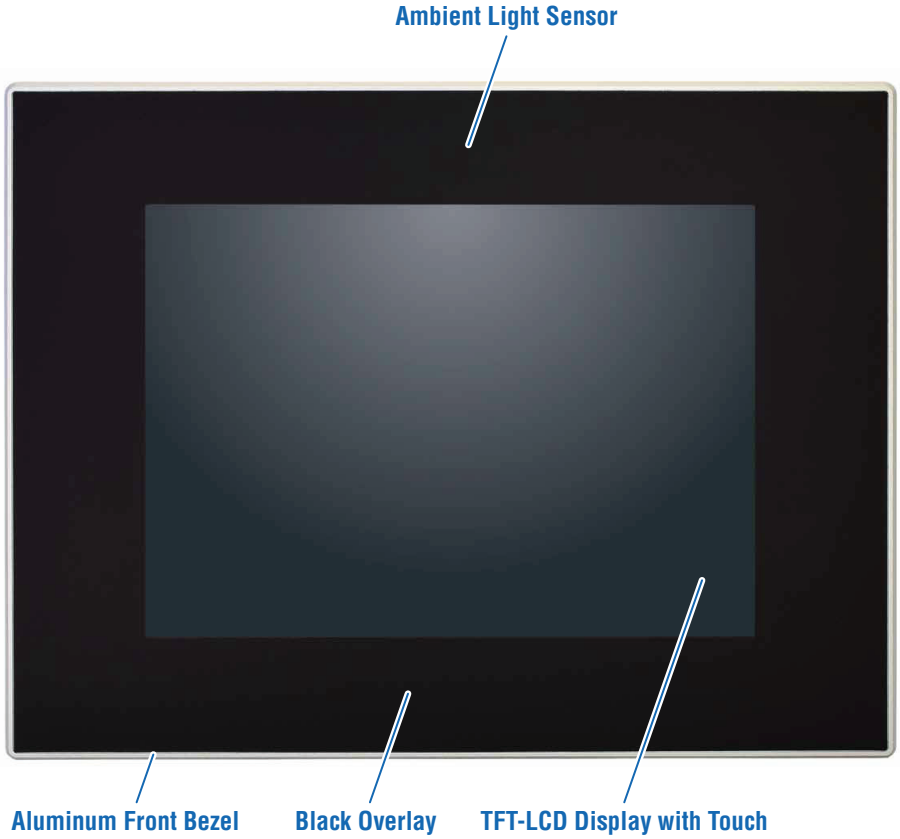
5.1.3 Aluminum Front Bezel

Rugged Aluminum front bezel meets IP65 protection.

5.1.4 Black Overlay

The following figures illustrate the basic features of the PPC65B-1x:

Figure 5–1: Front View



5.2 Touch Screen External Control, Connector, and Indicator Locations

The PPC65B-1x external connectors, indicators (LEDs) and controls are located on the bottom of the unit. See Figure 5–2 Bottom View on page 6. For access covers, see Figure 5–3 Top View on page 6 and Figure 5–4 Side Views on page 7.

NOTE See “Connecting Power to J16” on page 13 and “Connecting Components” on page 13 for information on the connectors.

5.2.1 Power Button

Press the power button to turn ON/OFF the PPC65B-1x.

5.2.2 Reset Button

Press the reset button to restart the PPC65B-1x.

5.2.3 Power LED and HDD LED

The LEDs demonstrate the power status and HDD-working status of the PPC65B-1x.

Table 5–1: PPC65B-1x LED status

Status	Power LED	HDD LED
Off	N/A	N/A
Working	Green	Red

Figure 5–2: Bottom View

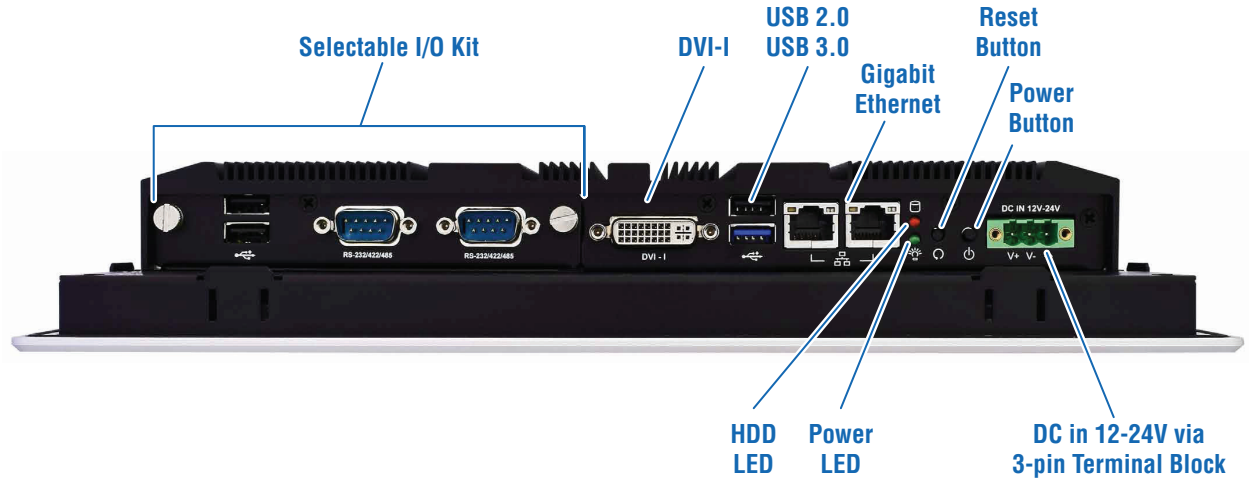


Figure 5–3: Top View

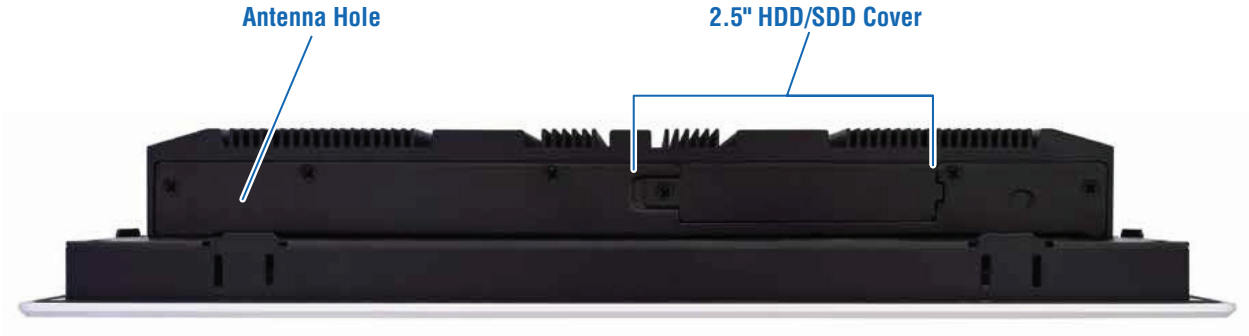
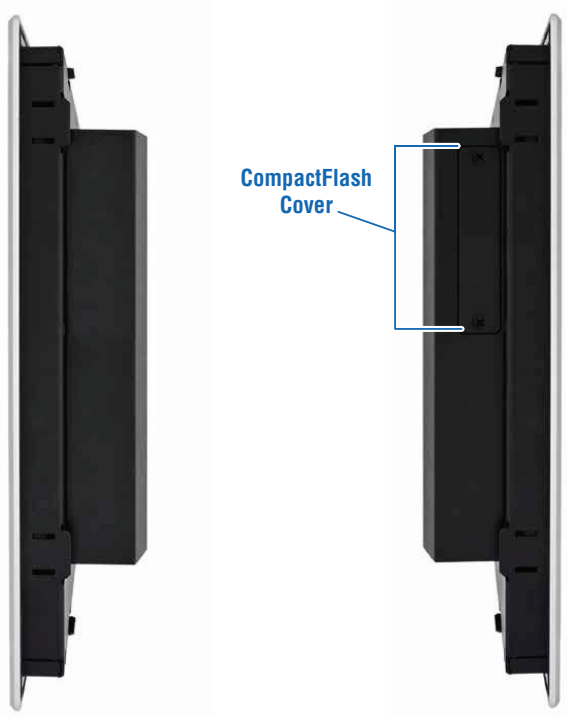


Figure 5–4: Side Views



6. Specifications

The PPC65B-1x adheres to the following specifications and requirements.

6.1 Part Number

The part number in PPC65B-*x*-*a*-*b*-*c* format describes the model PPC65B-1x options. See the following table for specifics.

Identifier	Option
x	**Screen dimension** 10 = 10.4" 12 = 12.1" 15 = 15" 17 = 17" 19 = 19"
a	**Installed Ram** 2 = 2G, 4 = 4G, 8 = 8G
b	**Expansion Options** 0 = 4 USB 2.0, 2 Serial (RS-232/422/485) 1 = 2 USB 2.0, 3 Serial (1x RS-232, 2x RS232/422/485) 2 = 4 USB 2.0, 1 Serial (RS-232/422/485), Audio Line-Out
c	Contact Application Engineer for media and operating system (OS) options

6.2 Specifications

The PPC65B-1x adheres to the following specifications and requirements.

Table 6–1: Specifications

PART NUMBER	PPC65B-10	PPC65B-12	PPC65B-15	PPC65B-17	PPC65B-19
DISPLAY	**LCD Size: 10.4"** Res: XGA 1024 x 768 Brightness: 450 cd/m2 Contrast Ratio: 3000:1	**LCD Size: 12.1"** Res: XGA 1024 x 768 Brightness: 500 cd/m2 Contrast Ratio: 700:1	**LCD Size: 15"** Res: XGA 1024 x 768 Brightness: 450 cd/m2 Contrast Ratio: 700:1	**LCD Size: 17"** Res: SXGA 1280 x 1024 Brightness: 350 cd/m2 Contrast Ratio: 700:1	**LCD Size: 19"** Res: SXGA 1280 x 1024 Brightness: 350 cd/m2 Contrast Ratio: 1000:1
	• Backlight: LED type • Touch Screen: 5-Wire Resistive Single Touch (P-CAP Touch available with MOQ)				
SYSTEM	• SOC: Intel® Atom™ Quad-Core E3845 (1.91 GHz) • Memory: DDR3L SO-DIMM 1333/1600 MHz max up to 8 GB • BIOS: AMI • Graphics: Intel® Gen7 Graphics • LAN: Chipset Dual Intel® I210IT Gigabit Ethernet • Audio: Realtek High Definition Audio Codec • Watchdog Timer: 1~255 Programmable for 1-255 seconds or minutes • Storage Device: 2.5" SATA HDD / SSD, CompactFlash II and Secure Digital card • OS: Windows 10, Linux, and other x86 Operating Systems				
ONBOARD I/O	• Serial Ports: 2 x RS-232/422/485 (Expansion: default) • Display: 1 x DVI-I • USB Options: 1 x USB 2.0 and 1 x USB 3.0 or 2 x USB 2.0 (Expansion: default) • Ethernet: 2 x Gigabit Ethernet • Half-Size Mini-PCIe Expansion slot • Others: 1 x SMA Antenna hole for WiFi/3G Solution • Expansion Options: –– Option 1 – 2 x RS-232/422/485, 1 x RS-232 –– Option 2 – 1 x Line-out, 1 x RS-232/422/485, 2 x USB 2.0				
MECHANICAL	Weight: 3.5 Kg Dimension (mm): 314 x 253 x 50.2	4.3 Kg Dimension (mm): 343 x 282 x 53.2	5.3 Kg Dimension (mm): 425.4 x 330 x 55.6	6.8 Kg Dimension (mm): 437 x 375 x 58.6	7.8 Kg Dimension (mm): 480 x 400 x 58.6
POWER	**Consumption (Max):** 31.5 W (12 V); 35.2 W (24 V) **Consumption (Min):** 10.3W (12 V); 11.8W (24 V)	**Consumption (Max):** 29.4 W (12 V); 30.2 W (24 V) **Consumption (Min):** 10.2 W (12 V); 11.5 W (24 V)	**Consumption (Max):** 30 W (12 V); 30.5 W (24 V) **Consumption (Min):** 10 W (12 V); 11.8 W (24 V)	**Consumption (Max):** 37.8 W (12 V); 38.3 W (24 V) **Consumption (Min):** 10 W (12 V); 11.8 W (24 V)	**Consumption (Max):** 33.7 W (12 V); 33.8 W (24 V) **Consumption (Min):** 10.2 W (12 V); 11.5 W (24 V)
	• Power Supply: DC 12 V-24 V input with 3-pin Terminal Block Connector • Power Adapter: 12 V, 5 A / 60 W (Optional)				
ENVIRONMENTAL	• Operational Temperature Range: -20 °C to +70 °C • Storage Temperature Range: -40 °C to +85 °C (20-90% non-condensing) • Vibration: 1.0G (SD/CF/SSD) and 0.5G (HDD), Power on & 2.16G, Packaged; 5-500Hz, IEC 60068-2-64 • Shock: 15G peak acceleration, 11 ms (Power on condition), IEC 60068-2-27 • Drop: Package with Carton from 96.5 cm (1-Corner, 3-Axis, 6-Face), ISTA 2A Standard • Front Panel Protection: IP65 (Front) / IP20 (Rear), IEC 60529 Edition 2.1 Standard • Certification: CE/FCC Class A				

7. Setup and Installation

Use the information in this section to setup and install the PPC65B-1x. Refer to “Configuration” on page 22 to locate and identify the connectors outlined in this section.

7.1 Installing the I/O Kit

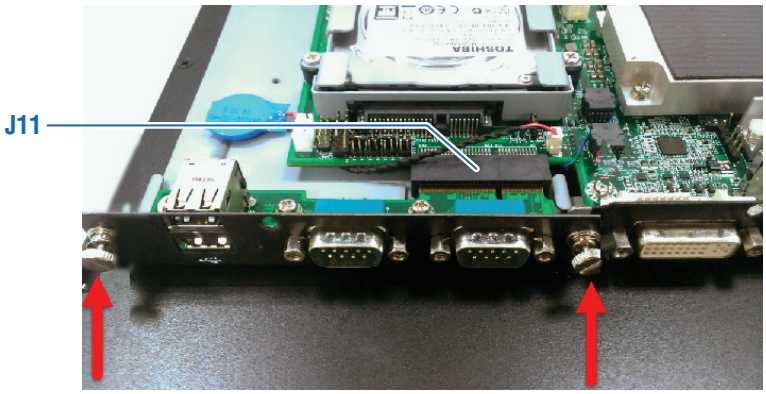
To install the I/O kit:

1. Remove power from the PPC65B-1x.
2. Remove the screws securing the rear cover and remove the cover.

Figure 7–1: Remove rear cover

3. Push the I/O daughter board into J11.

Figure 7–2: Securing the daughter board



4. Secure I/O daughter board using the two captive knurled screws.
5. Reinstall the rear cover.

7.2 Installing Memory

To install memory:

1. Remove power from the PPC65B-1x.
2. Remove the screws securing the rear cover and remove the cover.

Figure 7–3: Remove rear cover

3. Insert Memory module into J3 at an angle, and then press down so the memory is flat.

Figure 7–4: Installing memory

4. Reinstall the rear cover.

7.3 Installing the Hard Drive (HDD/SDD)

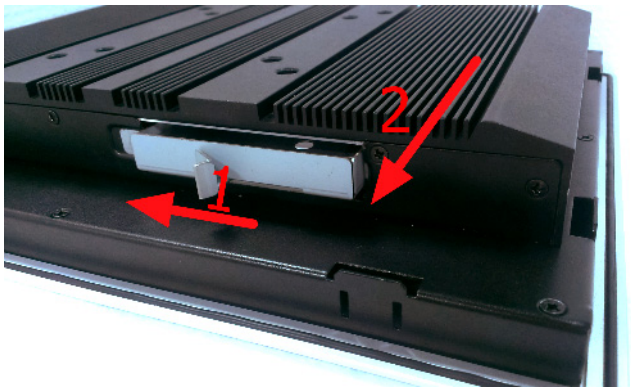
To install a hard drive:

1. Remove power from the PPC65B-1x.
2. Remove the screw securing the HDD slot cover and remove the cover.

Figure 7–5: Remove HDD cover

3. Remove the HDD tray (release the tray by pushing the lever to the left).

Figure 7–6: Release HDD tray



4. Secure the HDD to the tray using four M3 x 3.5mm, 0.5mm pitch screws.

Figure 7–7: Secure HDD to tray

5. Push drive and tray back into PPC65B-1x.
6. Reinstall the HDD slot cover.

7.4 Installing CompactFlash and Secure Digital cards

NOTE Although both CompactFlash and Secure Digital (SD) memory cards can be used at the same time, the SD memory card cannot be used to start the Windows Operating System (OS).

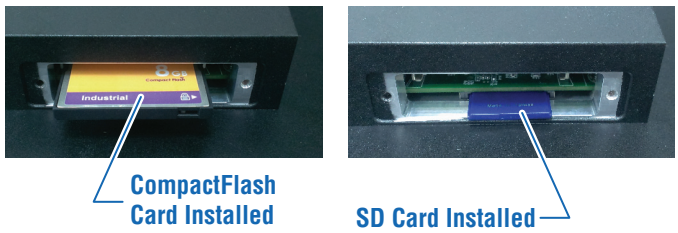
To install CompactFlash and SD memory cards:

1. Remove power from the PPC65B-1x.
2. Remove the screws securing the CompactFlash slot cover and remove the cover.

Figure 7–8: CompactFlash slot cover

3. Insert the CompactFlash or Secure Digital card into the applicable socket. Both card types can be used at the same time.
   - Eject a CompactFlash card by pressing the card eject button.
   - Eject a Secure Digital card by pressing it in until it clicks and then removing it.

Figure 7–9: CompactFlash and Secure Digital (SD) card locations



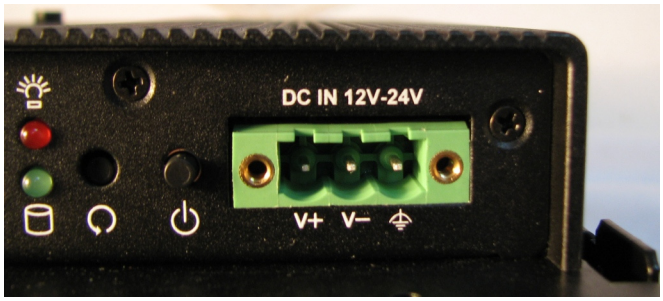
4. Reinstall the CompactFlash slot cover.

7.5 Connecting Power to J16

You can connect power through the 3-pin terminal block or the optional DC power adapter.

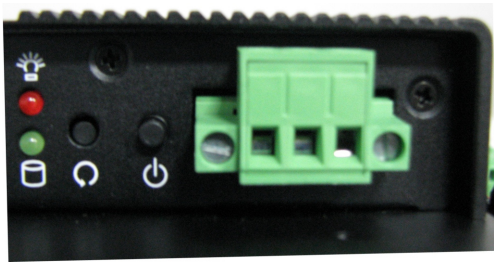
To connect power through the 3-pin terminal block:

Figure 7–10: J16 power connector



1. Plug the 3-pin female terminal block to J16 securing with the two captive screws.

Figure 7–11: Install 3-pin female terminal block



2. Using the following the pin definition (Table 7–1 on page 13), install the power supply wiring and secure with connector screw.
   - Use AWG 22-14 wire
   - Supply voltage between 12 V DC and 24 V DC
   - Make connections according to the following table

Table 7–1: J16 Power Input Connector Terminal Block Pins

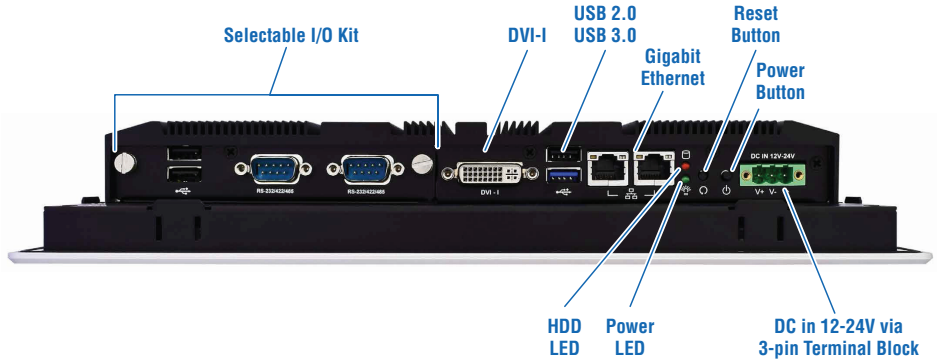
Pin	Description
1	Ground (Earth)
2	Voltage in negative (Vin-)
3	Voltage in (Vin+)

7.6 Connecting Components

The PPC65B-1x provides edge connectors for common external connections, and also internal connections to components on the board (see “Touch Screen External Control, Connector, and Indicator Locations” on page 5).

1. Connect an Ethernet cable to Gigabit Ethernet (connects to J13/J14, as applicable).
2. Connect optional components to the PPC65B-1x as needed. For example:
   - Connect USB keyboard to a USB 2.0/3.0 port (connects to J12 or the I/O kit, as applicable).
   - Connect an external monitor to DVI-I interface (connects to J15).
   - Connect communications ports to an available COMM port (connects to the I/O kit).

Figure 7–12: Edge Connectors



7.7 Mounting Method

Mount the PPC65B-1x into a panel or a sub-frame of an industrial cabinet using the provided panel mount holes and kits (see “Panel Mount” on page 14), or a VESA compliant adapter plate (see “VESA Mount” on page 16).

Figure 7–13: Panel mounting hole locations and kits

NOTE To protect the PPC65B-1x from dust and water, mount the system on a non-textured surface.

7.7.1 Panel Mount

To install the PPC65B-1x using a panel mount:

1. Verify or cut-out installation site using the following cut-out dimensions. Refer to “Mechanical Drawings” on page 60 for model specific drawings.

Figure 7–14: Cut-out and clearance dimensions for panel mount

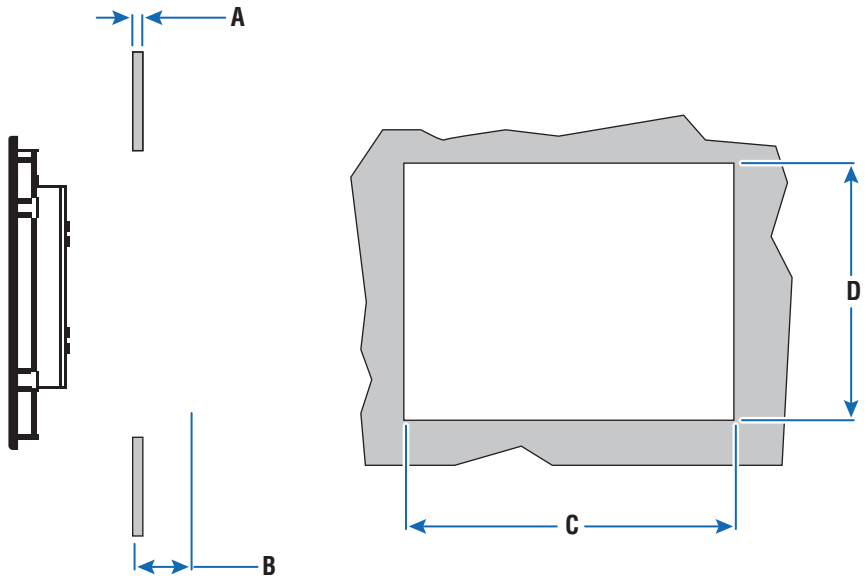


Table 7–1: Panel Mounting Dimensions

Part Number	A (mm)[1]	B (mm)[2]	C (mm)[3]	D (mm)[3]	Quantity of Kits
PPC65B-10	<10.7	50.2	297	236	8
PPC65B-12	<10.9	53.2	326	265	12
PPC65B-15	<11.3	55.6	409	313	16
PPC65B-17	<12	58.6	420	358	16
PPC65B-19	<12	58.6	463	383	20

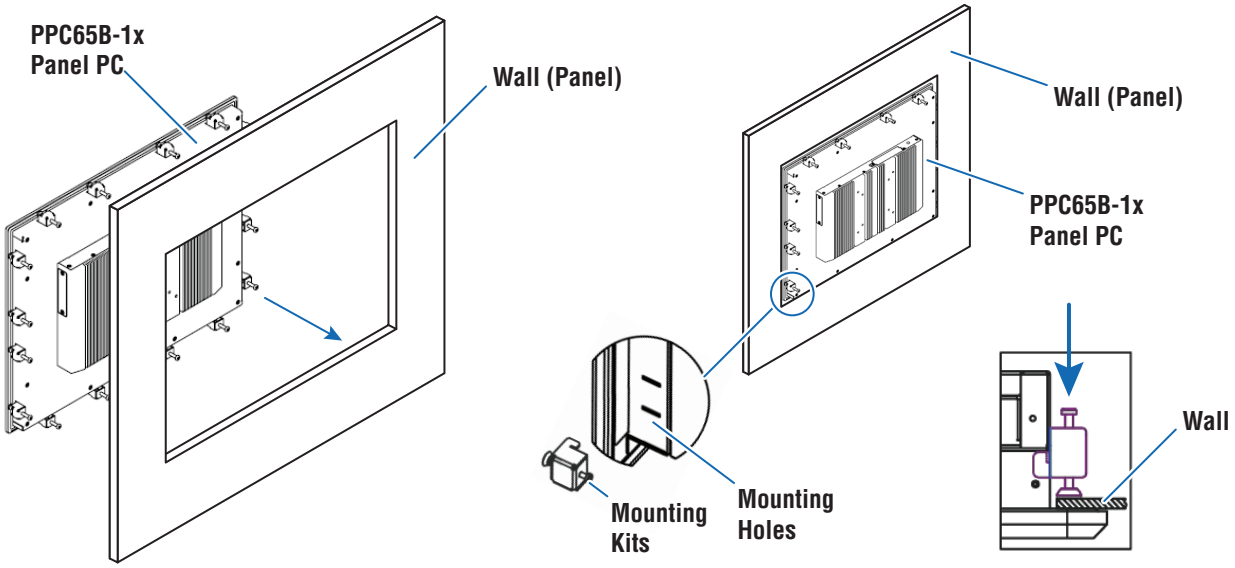
[1] Dimension A is the maximum wall thickness.

[2] Dimension B is the minimum clearance behind the wall.

[3] Tolerance +/-1 mm.

2. Place the PPC65B-1x in the cut-out and secure with the mounting kits. To secure, from the backside of the installation, hook a clip into each panel mount hole.

Figure 7–15: Placing and securing PPC65B-1x to panel

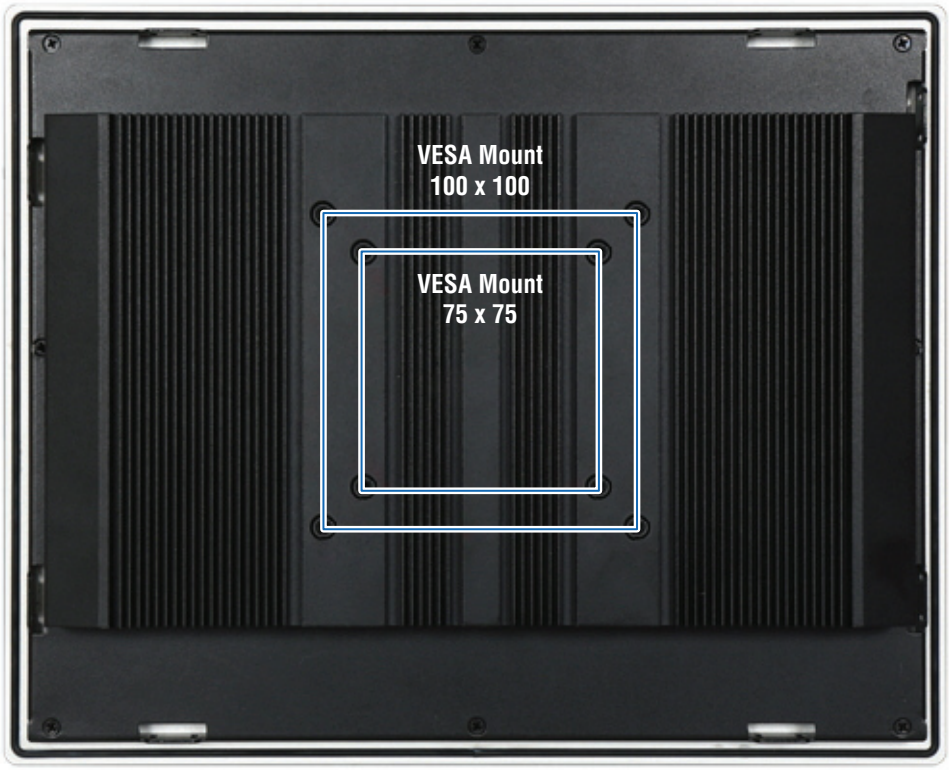


3. Tighten each clip by turning in the screw (see the blue arrow in Figure 7–15) to a maximum of 13.23 Kgf-cm (11.483 pound-inch).

7.7.2 VESA Mount

The PPC65B-1x can be installed using a VESA® 75x75/100x100 compliant adapter plate. Refer to the following figure for dimensions.

Figure 7–16: VESA Mount dimensions



7.8 Power Up

Plug in a compatible DC power source to the DC in 12-24 V terminal block (see “Connecting Power to J16” on page 13). The first time power is applied, the PPC65B-1x will boot automatically bypassing the power button. After initial startup, briefly press the power button to turn the PPC65B-1x on and off or press and hold it to reset. Pressing the reset button will also reset the unit.

7.9 Installing Drivers

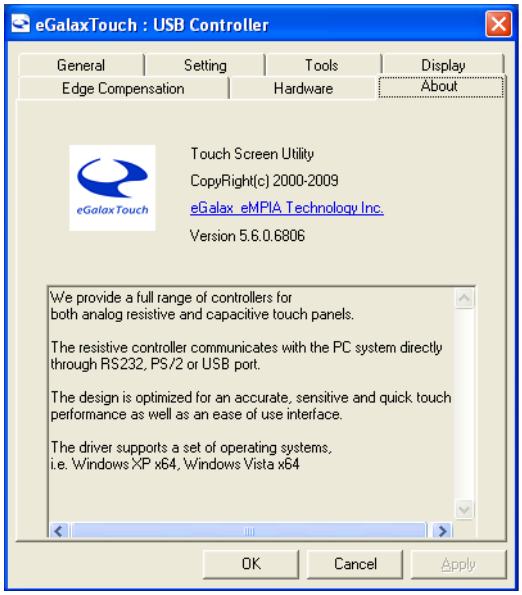
To obtain drivers, see the WinSystems website at www.winsystems.com.

7.10 Calibrating the Touch Screen

Calibration aligns the active touch-sensitive area of the touch screen with the displayed image. Calibration determines the edges of the screen image and locates the center of the touch screen. If the touch screen is not calibrated properly, the active area of the touch screen may not be aligned with the screen's image or may be unnecessarily small in size.

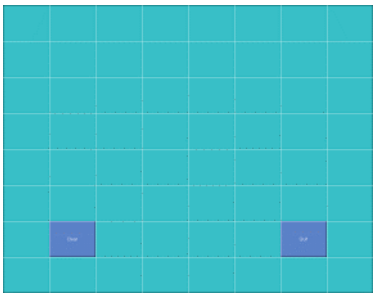
1. Make sure the touch driver utility is installed properly.
2. Use **Start** to find the **eGalaxTouch Configure Utility**.
3. Click **About** to see information and version of the utility.

Figure 7–17: eGalaxTouch USB controller: about



4. Click **General** to view the installed USB touch screen controller.
5. Click **Setting** and choose the **9 points** or **25 points** linearization style.
6. Click **Tools** to align touch with the display and verify touch accuracy.
7. Click **4 Points Calibration** to match display.
8. Click **Linearization** to provide better touchdown linearity.
9. Click **Draw Test** and then draw by touch pen (or use finger) to determine touch accuracy.

Figure 7–18: eGalaxtouch sample draw test



10. You can also verify or adjust the following touch screen elements. Click **Apply** to save any adjustments.
    - Click **Display** to select the **Operation Mode**. Select **Full Screen**, **Lower Screen**, **Left Screen**, **Upper Screen**, or **Right Screen**.
    - To display controller model and firmware version, click **Hardware**.
    - Click **Hardware Setting** to adjust sensitivity and delay time of the touch screen.
    - Click **Edge Compensation** to adjust the edge parameters.
11. Click **OK** to finish.

7.11 Setting the Light Sensor Function

PPC65B-1x automatically adjusts panel brightness by sensing light intensity in the surroundings. The sensor can be detected by Windows 7 and Windows 8 without driver installation.

NOTE The light sensor function is enabled by default, but can be disabled through a BIOS setting.

7.12 Watchdog Timer (WDT)

The PPC65B-1x features an advanced watchdog timer (WDT) that can be used to guard against software lockups. The timer is programmable from 1 second to 255 minutes (15,300 seconds).

NOTE Use a long timeout if the watchdog timer is enabled and booting to an operating system.

Use the following example as a guide to programming the WDT.

7.12.1 Example Code for WDT

The following watchdog timer code example is written in C++. Use this example as a guide to program the WDT.

Table 7–2: Example code for WDT

```
#include <stdio.h>
#include <stdlib.h>
#include <conio.h>
#include <dos.h>

#define EC_DATA  0x62
#define EC_CMD   0x66
#define EC_CMD_READ 0x80
#define EC_CMD_WRITE 0x81

#define  WDT_MODE        0x06  // WDT Select mode.
#define  WDT_MIN      0x07  // Minute mode counter
#define  WDT_SEC     0x08  // Second mode counter

// Use port 62 and port 66 to access EC command / data.
static int IBF_Check()
{
         unsigned char IBF_status;
         do
         {
                  pw_udelay (20);  // delay 20 us
                  IBF_status = inportb (EC_CMD);
         } while (IBF_status & 0x02);
         return 1;
}

static int OBF_Check ()
{
         unsigned char OBF_status;
         do
         {
                  pw_udelay (20);  // delay 20 us
                  OBP_status = inportb (EC_CMD);
         } while (!(OBF_status & 0x01));
         return 1;
}
```

Table 7–2: Example code for WDT (Continued)

```
static void Write_EC (unsigned char index, unsigned char data)
{
         IBF_Check ();
         outportb (EC_CMD, EC_CMD_WRITE);
         IBF_Check ();
         outportb (EC_DATA, index);
         IBF_Check ();
         outportb (EC_DATA, data);
}

static unsigned char Read_EC (unsigned char address)
{
         unsigned char data;
         IBF_Check ();
         outportb (EC_CMD, EC_CMD_READ);
         IBF_Check ();
         outportb (EC_DATA, address);
         OBF_Check();
         data = inportb (EC_DATA);
         return data;
}
void EC_WDT_Trigger ()
{
         /* WDT Counter */
         Write_EC (WDT_SEC, 0x05);
         /* if use minute mode */
         /* Write_EC (WDT_MIN, 0x05); */

         /* 0x01 is second mode */
         /* 0x03 is minute mode */
         Write_EC (WDT_MODE, 0x01);
}

Write_EC ((b->wdt.ec.count_m_addr & 0xFF), b->wdt.ec.timeout);
Write_EC ((b->wdt.ec.cfg_addr & 0xFF), 0x03); // WDTCFG[1:0]=11

int main ()
{
    int i;
         EC_WDT_Trigger ();
         for (i = 0; i < 5; i++)
         {
                  printf ("Reset counter ..................%d\n", 5 - i);
                  delay (1000);
         }
         return 0;
}
```

7.13 Reset CMOS BIOS Configuration

Jumpers can be used to reset the BIOS CMOS settings to the factory default. Enable/disable the Clear CMOS Function hardware circuit, by placing or removing the jumper from JP1 as needed. See “Reset CMOS BIOS Configuration” on page 56 for usage.

8. Configuration

This section describes the PPC65B-1x components and configuration.

8.1 Component Layout

The PPC65B-1x provides edge connectors for common external connections (see “Connecting Components” on page 13), and internal connections to components on the board.

8.1.1 Internal Components

The following figures illustrate the location of each connector, jumper, and switch on the PPC65B-1x main board (internal).

Pin 1 of each connector or jumper is indicated by a red square in the figure.

Figure 8–1: Main Board Components

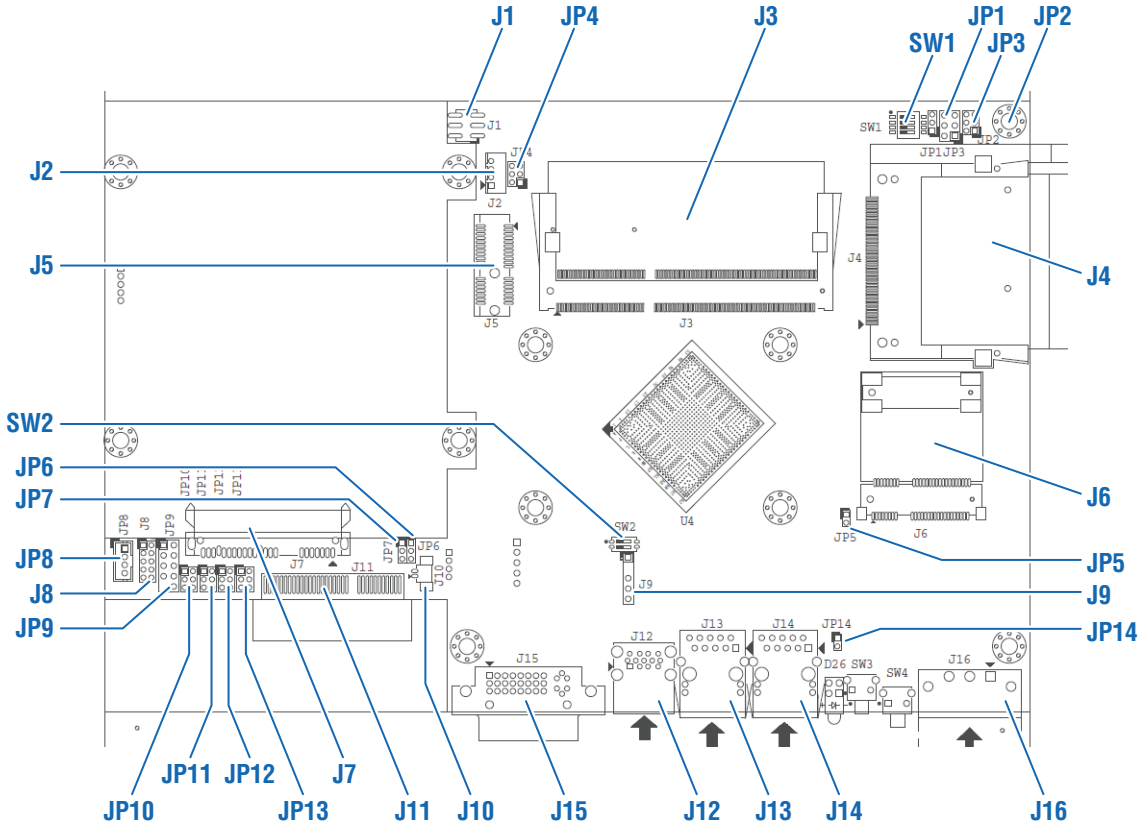
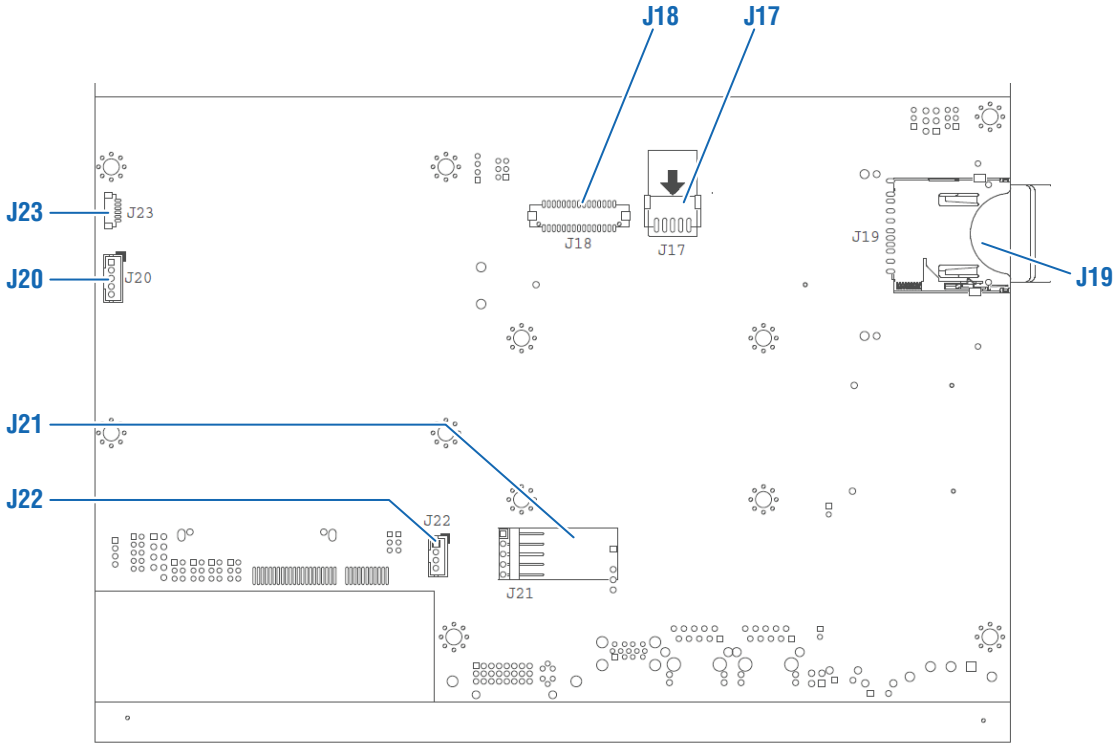


Figure 8–2: Main Board Components (backside)



Connectors

The following table provides connector descriptions and references for Figure 8–1 Main Board Components on page 22 and Figure 8–2 Main Board Components (backside) on page 23.

NOTE Refer to Jumper JP8 for the audio out connector.

Item	Description	Reference
J2	Reserve for CH7511 Backlight Control (Wafer/2.0mm)	-
J3	DDR3 SO-DIMM Socket	page 25
J4	Compact Flash Connector	-
J5	PCI-E X 1 Slot	-
J6	Mini-PCI-E Slot (Half size)	-
J7	SATA Connector with power	-
J8	GPIO Connector (2*5 Pin/2.0mm)	page 25
J9	SM-Bus Connector	-
J10	Battery Connector	-
J11	PCI-E X 4 Slot (Right angle) for Audio and COM Port Signal	-
J12	USB Port 0~1 D-Sub Connector (Up: USB2.0; Down: USB3.0)	-

Item	Description	Reference
J13	RJ45 Connector	page 26
J14	RJ45 Connector	page 26
J15	DVI-I D-sub Connector	-
J16	Power Input Connector (Terminal Blocks 3Px1/5.08 mm female)	page 27
J17	LCD Inverter Power Connector (1 x 5 Pin wafer/2 mm)	page 27
J18	LCD LVDS Connector (2 x 15 Pin Hirose/1.25 mm)	page 28
J19	Secure Digital Card	-
J20	Front Panel Connector (1 x 5 Pin Wafer/2 mm)	page 28
J21	Touch Panel Connector (1 x 5 Pin Header/2.54 mm)	page 29
J22	USB Port 3 Connector (1 x 4 Pin Wafer/2 mm)	page 29
J23	Light sensor Connector (1 x 6 Pin Wafer/1 mm)	-

Jumpers

The following table provides jumper descriptions and references for Figure 8–1 Main Board Components on page 22.

Item	Description	Reference
JP1	Clear CMOS	page 29
JP2	Backlight Voltage Setup	page 30
JP3	LCD Panel Voltage Setup	page 30
JP4	LCD Panel Type Setup	page 30
JP7	GPIO Voltage Selection	page 31
JP8	Audio Out Connector (From amplifier)	page 31
JP9	LPC Debug Port	page 32
JP10	COM PORT RI and Power Source Adjust Pin	page 32
JP11	COM PORT RI and Power Source Adjust Pin	page 32
JP12	COM PORT RI and Power Source Adjust Pin	page 33
JP13	COM PORT RI and Power Source Adjust Pin	page 33

Switches

The following table provides switch descriptions and references for Figure 8–1 Main Board Components on page 22.

Item	Description	Reference
SW1	LCD Resolution Setup	page 34
SW2	AT/ATX & BIOS recovery Setup	page 35

8.2 Power

The main power supply to the board is +12 to +24 V DC. The PPC65B-1x draws power through the J16 connector. See “Power Input Connector (J16)” on page 27.

8.3 Connectors

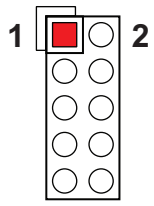
8.3.1 DDR3 SO-DIMM Socket (J3)

The PPC65B-1x supports DDR3 DSRAM system memory, 1066 MHz or 1333 MHz, through this on-board SODIMM socket (204-pin).

8.3.2 General Purpose I/O Pin Header (J8, 5 x 2 Pin Header)

This 5x2-pin header provides access to eight PPC65B-1x GPIO connections (GPIO0 through GPIO7).

Layout and Pin Reference:



Pin	Name	Pin	Name
1	GPIO0	2	GPIO4
3	GPIO1	4	GPIO5
5	GPIO2	6	GPIO6
7	GPIO3	8	GPIO7
9	Ground	10	+5 V

8.3.3 RJ45 Connector (J13/J14)

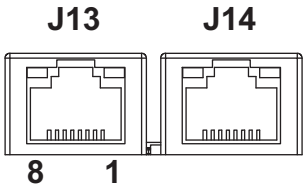
Two Intel I210 Gigabit Ethernet controllers provide standard IEEE 1588 and 802.1AS protocol timestamping. Each Ethernet interface includes 10/100/1000 Mb/s multispeed, full, and half-duplex operation.

The following pinout describes the standard RJ45 Ethernet connectors.

On-board Ethernet activity LEDs are built into the connectors at J13 and J14. There is one green LED (left) and one bi-color green/yellow LED (right).

LED	Activity	Ethernet Status
Left	Off	No Link
	Flashing (green)	Linked
Right	Off	No Link
	Off	Linked at 10 MB
	On (yellow)	Linked at 100 MB
	On (green)	Linked at 1 GB

Layout and Pin Reference:



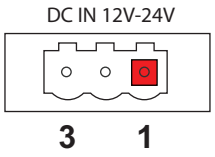
Pin	Function	Description
1	TX_D1+	Transceive Data+
2	TX_D1-	Transceive Data-
3	RX_D2+	Receive Data+
4	BI_D3+	Bi-Directional Data+
5	BI_D3-	Bi-Directional Data-
6	RX_D2-	Receive Data-
7	BI_D4+	Bi-Directional Data+
8	BI_D4-	Bi-Directional Data-

8.3.4 Power Input Connector (J16)

This connector provides for DC input from a power supply or adapter through terminal blocks (3Px1/5.08 mm female).

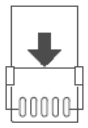
Caution

Do not connect a power supply outside of the power specifications to this connector (J16). See “Specifications” on page 8.



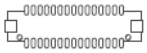
Pin	Description
1	GND EARTH
2	Vin-
3	Vin+

8.3.5 LCD Inverter Power Connector (J17, 1 x 5 Pin Wafer/2mm)



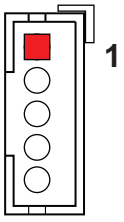
Pin	Description
1	LCD_ENBLT
2	GND
3	+12 V
4	LCD_BLADJ
5	+5 V

8.3.6 LCD LVDS Connector (J18, 2 x 15 Pin Hirose/1.25mm)



Pin	Description	Pin	Description
1	YAP0	2	YAM0
3	YAP1	4	YAM1
5	YAP2	6	YAM2
7	YAP3	8	YAM3
9	CLKAP	10	CLKAM
11	YBP0	12	YBM0
13	YBP1	14	YBM1
15	YBP2	16	YBM2
17	YBP3	18	YBM3
19	CLKBP	20	CLKBM
21	DDCPCLK	22	DDCPDATA
23	GND	24	NC
25	GND	26	GND
27	+LVDS	28	+LVDS
29	NC	30	+LVDS

8.3.7 Front Panel Connector (J20, 1 x 5 Pin Wafer/2mm)

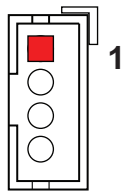


Pin	Description
1	LED (Hi: Green LED +; Low: Orange LED -)
2	LED (Hi: Orange LED+; Low: Green LED-)
3	Power Button
4	Power Button
5	NC

8.3.8 Touch Panel Connector (J21, 1 x 5 Pin Header/2.54mm)

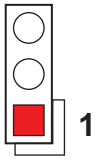
Pin	Description
1	UL
2	UR
3	Probe
4	LL
5	LR

8.3.9 USB Port 3 Connector (J22, 1 x 4 Pin Wafer/2mm)



Pin	Description
1	+ 5 V
2	USB_D3-
3	USB_D3+
4	GND

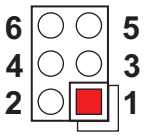
8.3.10 CMOS Setup (JP1)



Jumper	Description
1-2	Normal (Keep CMOS Setup, Default)
2-3	Clear CMOS Setup

8.3.11 LCD Panel Inverter ON/OFF Signal Setup (JP2)

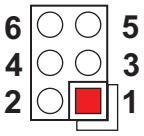
The following table contains descriptions of the signal setup for different jumpers installed.



Jumper		Description
1-3	2-4	+5 V High Active (Default)
1-3	4-6	+12 V High Active
2-4	3-5	+5 V Low Active
3-5	4-6	+12 V Low Active

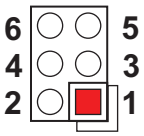
8.3.12 LCD Panel Voltage Setup (JP3)

Select the appropriate voltage setting using this jumper.



Jumper	Description
1-3	+3.3V TFT LCD (Default)
3-5	+5 V TFT LCD
None	+12 V TFT LCD

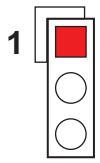
8.3.13 LCD Panel Type Setup (JP4)



Jumper	Description
1-3	CCFL LCD
3-5	LED LCD (Default)
2-4	CCFL LCD Brightness Limit
4-6	LED LCD Brightness Limit

8.3.14 GPIO Power Selection (JP7)

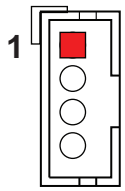
This jumper configures the on-board programmable 8-bit Digital I/O interface.



Jumper	Description
1-2	5 V Level (Default)
2-3	3.3 V Level

8.3.15 Internal Audio Connector (JP8, 4 x 1 Pin header)

This 4x1-pin header provides access to left and right audio connections.



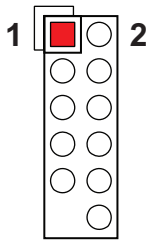
Pin	Description
1	Audio_R+
2	Audio_R-
3	Audio_L+
4	Audio_L-

Additional Information

This connection is a JST B4B-PH-K-S(LF)(SN).

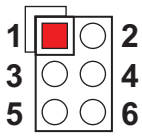
Mating Connector: JST PHR-4

8.3.16 LPC Debug Port Pin Assignment (JP9)



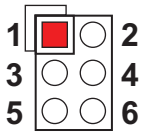
Pin	Description	Pin	Description
1	LAD0	2	3.3 V
3	LAD1	4	LPC_RESET
5	LAD2	6	LPC_FRAME
7	LAD3	8	LPC_CLOCK
9	NC	10	GND

8.3.17 COM2 Pin 9 Function Setup (JP10)



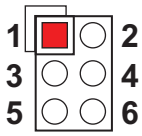
Jumper	Description
1-2	+5 V Output
3-4	RI Function (Default)
5-6	+12 V Output

8.3.18 COM1 Pin 9 Function Setup (JP11)



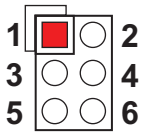
Jumper	Description
1-2	+5 V Output
3-4	RI Function (Default)
5-6	+12 V Output

8.3.19 COM4 Pin 9 Function Setup (JP12)



Jumper	Description
1-2	+5 V Output
3-4	RI Function (Default)
5-6	+12 V Output

8.3.20 COM3 Pin 9 Function Setup (JP13)

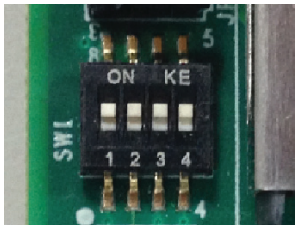


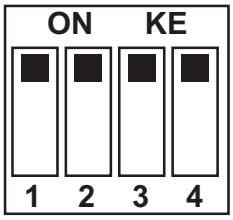
Jumper	Description
1-2	+5 V Output
3-4	RI Function (Default)
5-6	+12 V Output

8.3.21 LCD Resolution Setup (SW1)

NOTE The factory default setting varies with the panel size.

The following figure illustrates resolution 800 x 600 setting



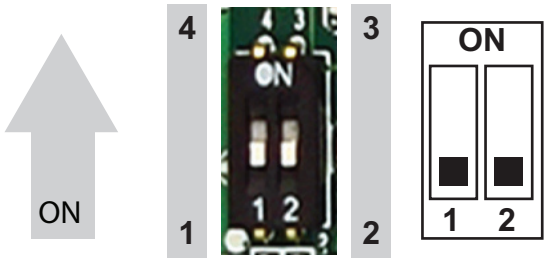


Pin				Resolution	Port
1	2	3	4		
ON	ON	ON	ON	800 x 600 (18-bit)	Single
OFF	ON	ON	ON	1024 x768 (18-bit)	Single
ON	OFF	ON	ON	1024 x768 (24-bit)	Single
OFF	OFF	ON	ON	1280 x 768 (18-bit)	Single
ON	ON	OFF	ON	1280 x 800 (18-bit)	Single
OFF	ON	OFF	ON	1280 x 960 (18-bit)	Single
ON	OFF	OFF	ON	1280 x 1024 (24-bit)	Dual
OFF	OFF	OFF	ON	1366 x 768 (18-bit)	Single
ON	ON	ON	OFF	1366 x 768 (24-bit)	Single
OFF	ON	ON	OFF	1440 x 900 (24-bit)	Dual
ON	OFF	ON	OFF	1400 x 1050 (24-bit)	Dual
OFF	OFF	ON	OFF	1600 x 900 (24-bit)	Dual
ON	ON	OFF	OFF	1680 x 1050 (24-bit)	Dual
OFF	ON	OFF	OFF	1600 x 1200 (24-bit)	Dual
ON	OFF	OFF	OFF	1920 x 1080 (24-bit)	Dual
OFF	OFF	OFF	OFF	1920 x 1200 (24-bit)	Dual

8.3.22 AT/ATX & BIOS Recovery Setup (SW2)

Select the appropriate Power On / BIOS Recovery setting using these switches (SW2).

The following figure illustrates default setting



Switch	Description
1-4 (Port 1)	ON: AT Mode OFF:ATX Mode (Default)
2-3 (Port 2)	ON: Recover BIOS OFF: Disable (Default)

9. BIOS Settings

9.1 General Information

The PPC65B-1x includes an AMI BIOS stored in Flash ROM. Access setup information through the BIOS setup utility to modify basic system configuration. The configuration is stored in CMOS RAM (it is retained during power-off). When power is applied to the system, the PPC65B-1x communicates with peripheral devices and checks hardware resources against the configuration information stored in the CMOS memory. If during startup an error is detected or the CMOS parameters need to be initially defined, the diagnostic program prompts the user to enter the SETUP program. Some errors are significant enough to cause the startup to fail.

9.2 Entering Setup

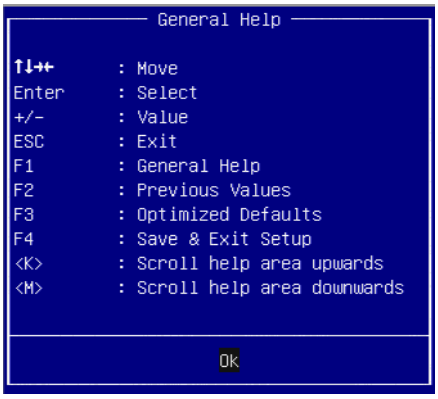
To enter setup, apply power to the computer and then press the delete key. This key (**Delete** or **Del**) must be pressed when either the splash screen is displayed (during the system power-on self test, POST) or when the **Press <Del> to enter SETUP** message is displayed. It may take a few seconds before the main setup menu screen is displayed.

Press <Del> to enter SETUP

If the message disappears before responding and you still wish to enter Setup, restart the system by pressing the RESET button. It can be also restarted by pressing the **Ctrl**, **Alt**, and **Delete** keys on the keyboard simultaneously.

Press <F1> to Run General Help or Resume

The BIOS setup program provides a General Help screen. The menu can be easily called up from any menu by pressing **F1**. The Help screen lists all the possible keys to use and the selections for the highlighted item. Press **Esc** to exit the Help screen.



9.3 Navigating the Menus

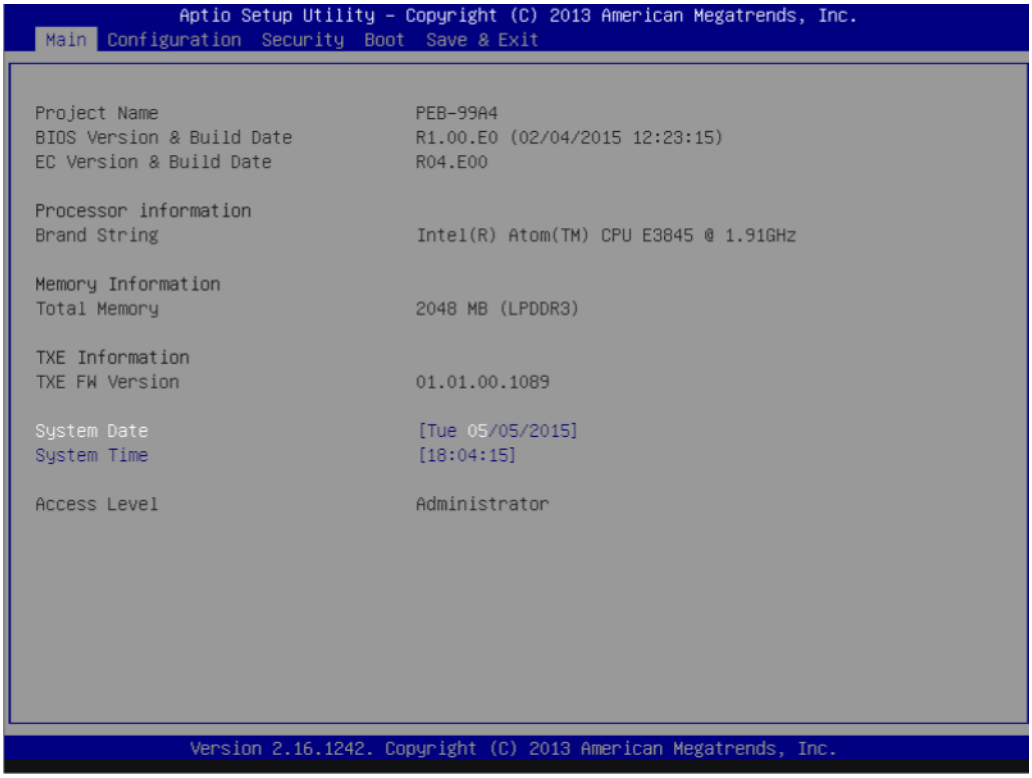
Use the up and down arrow keys to move among the selections and press **Enter** when a selection is highlighted to enter a sub-menu or to see a list of choices. See “BIOS Screens” on page 37 for available options.

9.4 BIOS Screens

The following BIOS screens contain the options and sample settings for the PPC65B-1x. Your actual configuration may differ from the screens shown here.

NOTE Use care when modifying BIOS settings.

Main Menu



Use the **Main** screen to set basic system configuration including time, date, and so on.

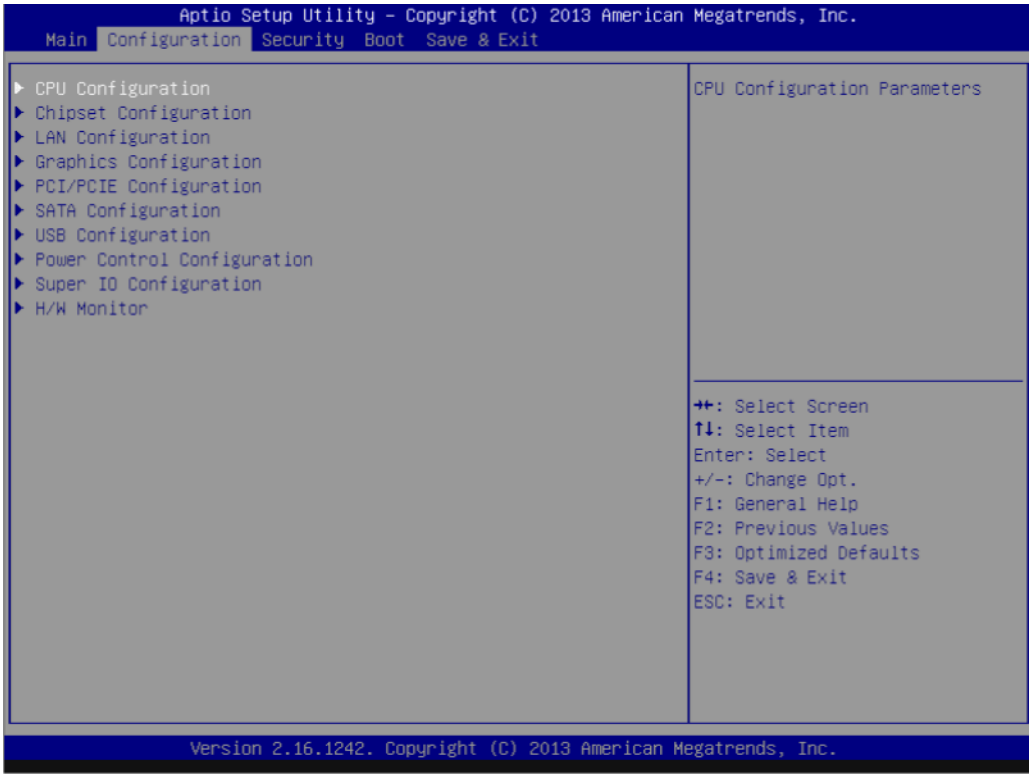
System Date

Displays the current date in MM/DD/YYYY format. To set or change the date, highlight the row using the up/down arrow keys, then highlight the month, day, or year by pressing the Enter key until the desired value is highlighted with a square block. Use the +/- keys to change the highlighted value, or enter the time using the number keys.

System Time

Displays the current time in HH/MM/SS format. To set or change the time, highlight the row using the up/down arrow keys, then highlight the hour, minute, or second by pressing the Enter key until the desired value is highlighted with a square block. Use the +/- keys to change the highlighted value.

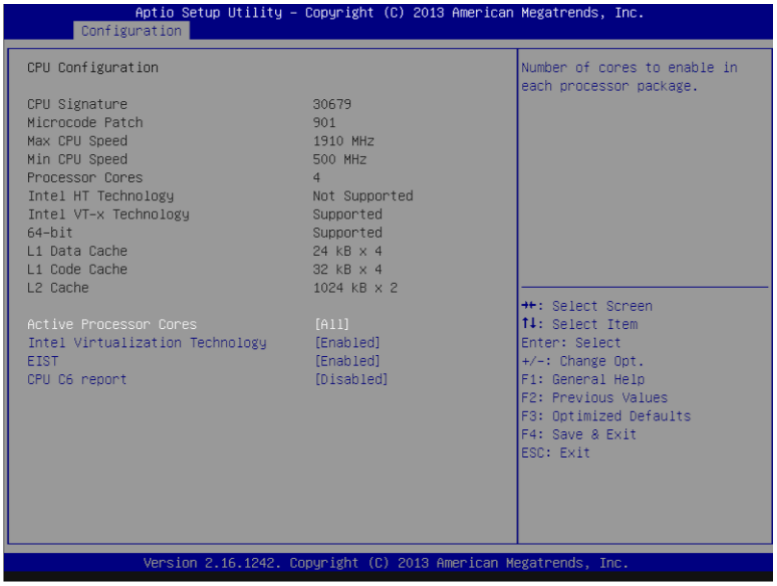
Configuration



Use the **Configuration** screen to set enhanced configuration features.

CPU Configuration

Use the CPU Configuration screen to configure the specific active cores and advanced processor management technologies.



Active Processor Cores

Number of cores to enable in each processor package. Choices: All (Default), 1.

Intel Virtualization Cores

When enabled, a VMM can utilize the additional hardware capabilities provided by Vander pool Technology. Choices: Disabled, Enabled (Default).

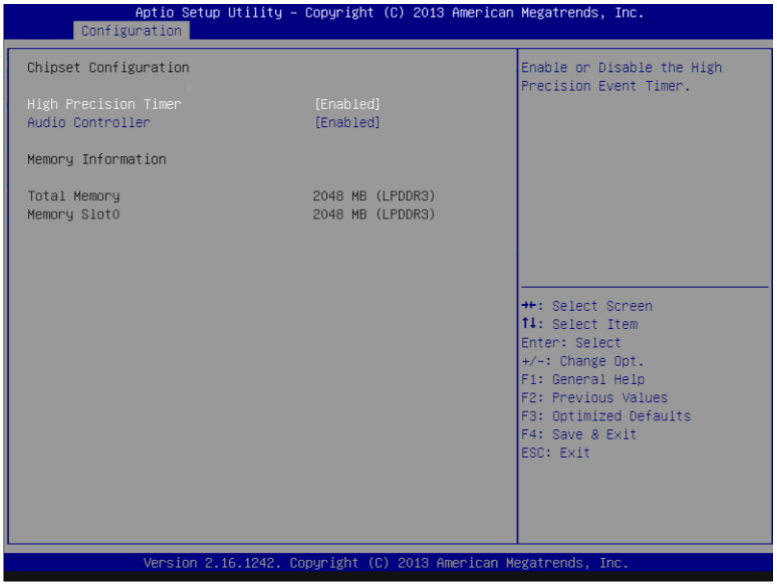
EIST

Enable/Disable Intel Speed Step. Choices: Disabled, Enabled (Default).

CPU C6 report

Enable or Disable the CPU C6 (ACPI C3) report to the operating system (OS). Choices: Disabled (Default), Enabled.

Chipset Configuration



Use the Chipset Configuration screen to configure the following chipset features.

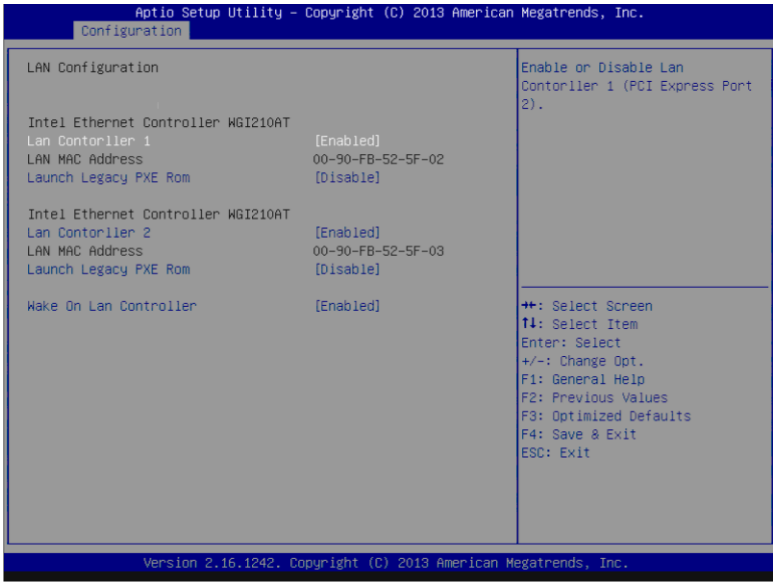
High Precision Timer

Enable or Disable the High Precision Event Timer. Choices: Disabled, Enabled (Default).

Audio Controller

Control Detection of the Azalia device. Choices: Disabled (Azalia will be unconditionally disabled). Enabled (Azalia will be unconditionally Enabled, Default).

LAN Configuration



Use the LAN Configuration screen to configure the following onboard LAN features.

LAN Controller 1

Enable or Disable LAN Controller 1 (PCI Express Port 2). Choices: Disabled, Enabled (Default).

Launch Legacy PXE Rom

Launch Legacy PXE Rom. [Disable] Not Launch Rom, [Enabled] Force Launch Rom. Choices: Disabled (Default), Enabled.

LAN Controller 2

Enable or Disable LAN Controller 2 (PCI Express Port 3). Choices: Disabled, Enabled (Default).

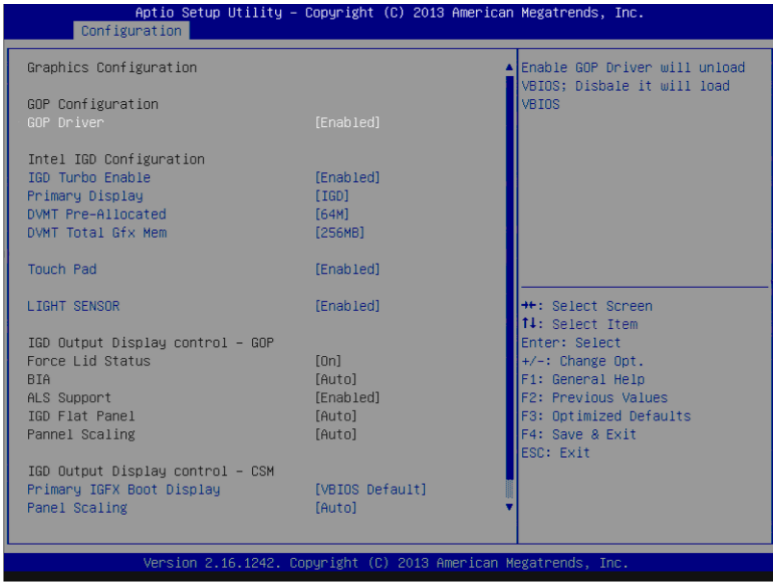
Launch Legacy PXE Rom

Launch Legacy PXE Rom. [Disable] Not Launch Rom, [Enabled] Force Launch Rom. Choices: Disabled (Default), Enabled.

Wake on LAN Controller

Enable or Disable Intel LAN 0 and Intel LAN 1 WGI210AT wakeup function. Choices: Disabled, Enabled (Default).

Graphics Configuration



Use the Graphics Configuration screen to configure the following onboard graphics features.

GOP Driver

Choices: Enabled (GOP Driver will unload VBIOS, Default), Disabled (GOP Driver will load VBIOS

IGD Turbo Enable

Choices: Enabled (Enable IGD Turbo, Default); Disabled (Disable IGD Turbo).

Primary Display

Select which IGD/PCI Graphics device should be Primary Display. Choices: Auto, IGD (Default), PCI, and SG.

DVMT Pre-Allocated

Select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory sized used by the Internal Graphic Device. Choices: 64M(Default), 96M, 128M, 160M, 192M, 224M, 256M, 288M, 320M, 352M, 384M,416M, 448M, 480M, and 512M.

DVMT Total GFX Mem

Select DVMT 5.0 Total Graphics Memory sized used by the Internal Graphic Device. Choices: 128MB, 256MB (Default), Max.

Touch Pad

Choices: Enabled (Default), Disabled.

LIGHT SENSOR

Enable/Disable light sensor support. Choices: Enabled (Default), Disabled.

Primary IGFX Boot Display

Select the Video Device activated during POST. This as no effect if external graphics present. Secondary will appear based on your Selection. VGA modes will be supported only on primary display. Choices: VBIOS Default (Default), DVI, LVDS.

Panel Scaling

Select the LCD Panel scaling option used by Internal Graphic device. Choices: Auto (Default), Off, Force Scaling.

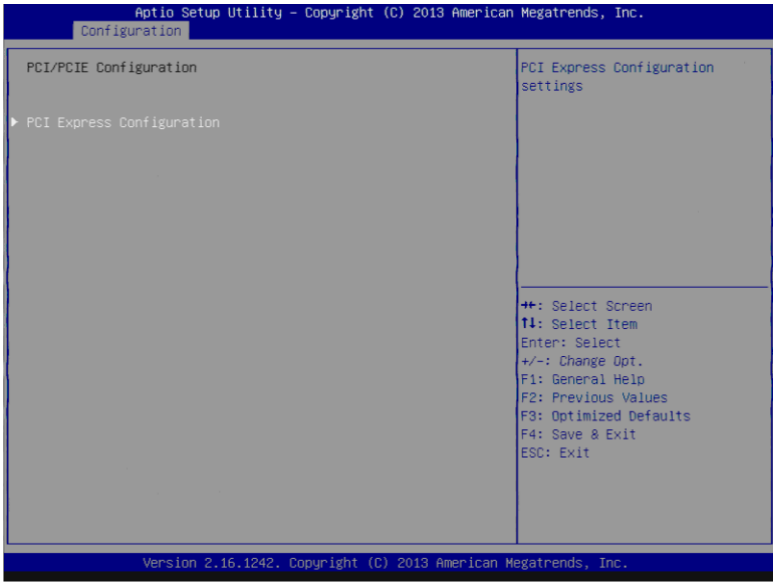
Backlight Control

Back Light Control Setting. Choices: PWM Inverted, PWM Normal (Default), GMBus Inverted, GMBus Normal.

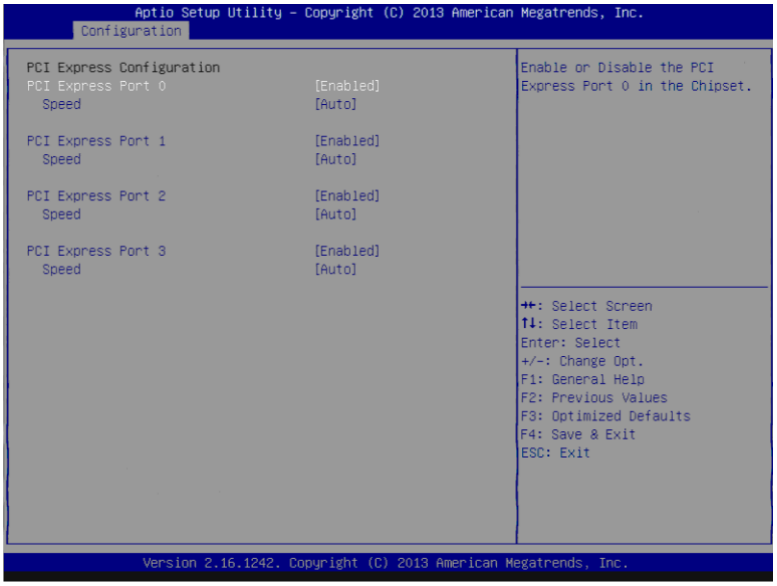
Active LFP

Select the Active LEP Configuration. No LVDS: VBIOS does not enable LVDS. eDP Port-A: LFP driven by Int-DisplayPort encoder from Port-A. Choices: No LVDS, eDP Port-A (Default).

PCI/PCIE Configuration



Use the PCI/PCIE Configuration screen to configure the PCI, PCI-X, and PCI Express Settings.



Use the PCI Express configuration screen to configure the PCI Express Settings.

PCI Express Configuration Port 0

Choices: Enabled (Default), Disabled.

Speed

Set configuration PCIe speed. Choices: Auto (Default), Gen1, Gen2.

PCI Express Configuration Port 1

Choices: Enable (Default), Disable.

Speed

Set configuration PCIe speed. Choices: Auto (Default), Gen1, Gen2.

PCI Express Configuration Port 2

Choices: Enabled (Default), Disabled.

Speed

Set configuration PCIe Speed. Choices: Auto (Default), Gen1, Gen2.

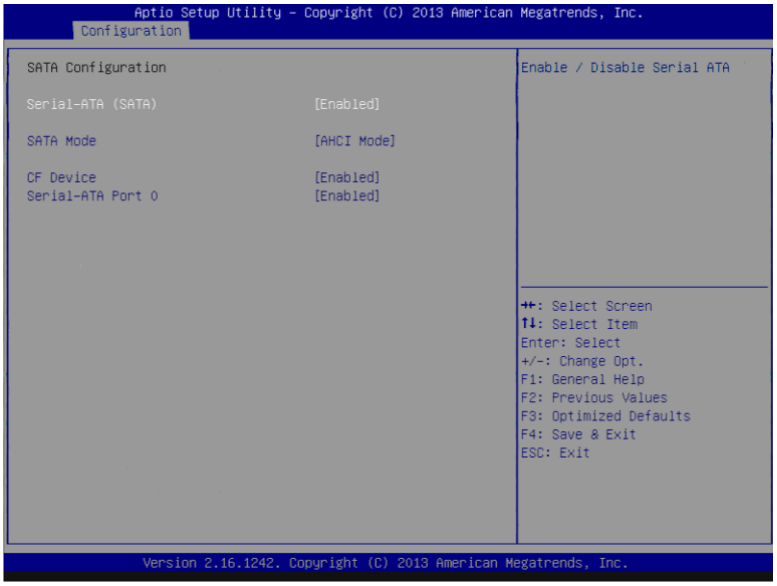
PCI Express Configuration Port 3

Choices: Enable (Default), Disable.

Speed

Set configuration PCIe Speed. Choices: Auto (Default), Gen1, Gen2.

SATA Configuration



Use the SATA Configuration screen to configure the SATA device options.

Serial-ATA (SATA)

Enable or disable the Serial ATA. Choices: Disabled, Enabled (Default).

SATA Mode

Sets SATA mode as IDE or AHCI or disables. Choices: Disabled, IDE, AHCI (Default).

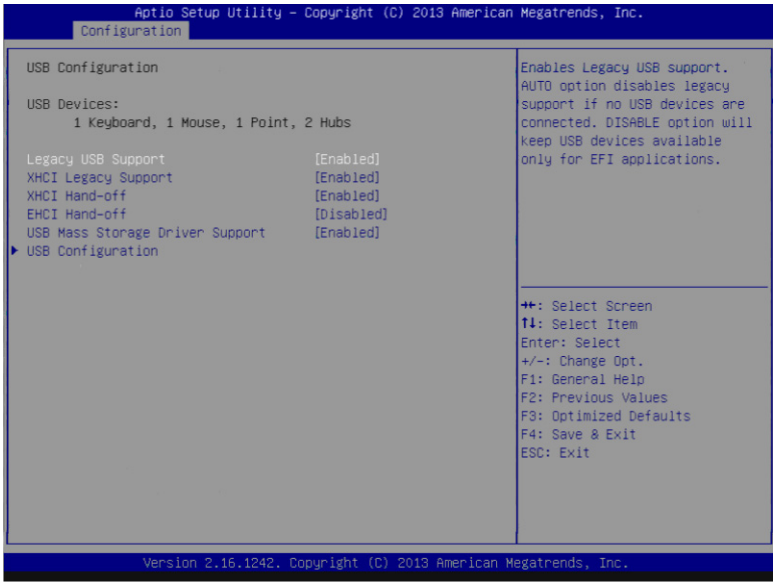
CF Device

Enables or disables CompactFlash device. Choices: Disabled, Enabled (Default).

Serial-ATA Port 0

Enables or disables Serial ATA Port 0. Choices: Disabled, Enabled (Default).

USB Configuration



Use the USB configuration screen to configure the USB settings.

Legacy USB Support

Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications. Choices: Enabled, Disabled (Default).

XHCI Legacy Support

Enable/Disable XHCI Controller Legacy support. Choices: Enabled, Disabled (Default).

XHCI Hand-off

This is a workaround for operating systems (OS) without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver. Choices: Enabled, Disabled (Default).

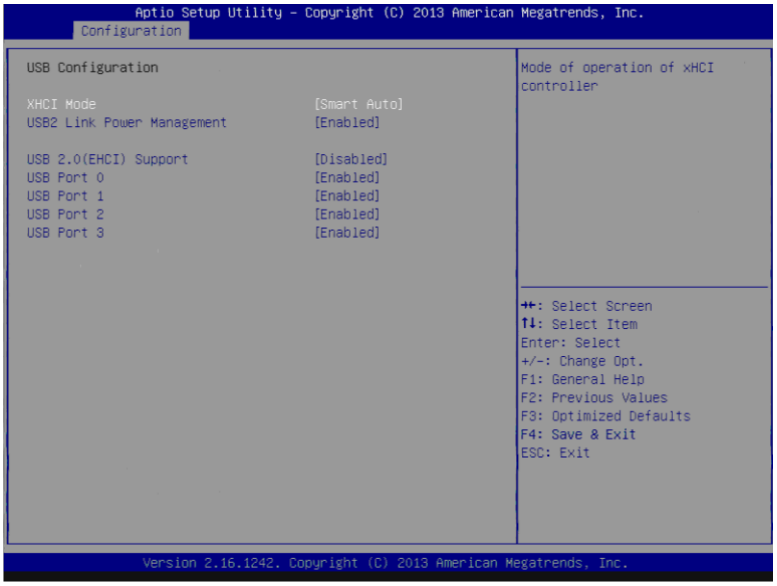
EHCI Hand-off

This is a workaround for operating systems (OS) without EHCI hand-off support. The EHCI ownership change should be claimed by EHCI driver. Choices: Enabled, Disabled (Default).

USB Mass Storage Driver Support

Enable/Disable USB Mass Storage Driver Support. Choices: Enabled (Default), Disabled.

USB Configuration



Use the USB configuration screen to configure specific USB device settings.

XHCI Mode

Mode of operation of XHCI controller. Choices: Smart Auto (Default), Auto, Enable, Disable.

USB2 Link Power Management

Enable/Disable USB2 Link Power Management. Choices: Enable (Default), Disable.

USB 2.0 (EHCI) Support

Control the USB EHCI (USB2.0) functions. One EHCI controller must always be enabled. Choices: Enable, Disable (Default).

USB Port 0

Enable/Disable USB Port 0: USB 3.0 port on Board. Choices: Enable (Default), Disable.

USB Port 1

Enable/Disable USB Port 1: USB 2.0 port on Board. Choices: Enable (Default), Disable.

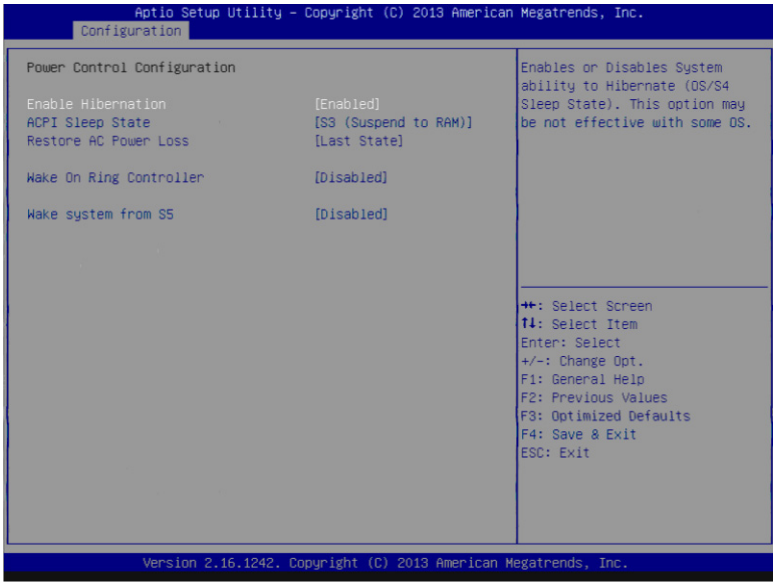
USB Port 2

Enable/Disable USB Port 2: The USB port turns into a mini PCIE. Choices: Enable (Default), Disable.

USB Port 3

Enable/Disable USB Port 3: The USB port as USB HUB have 2 USB Port in external cart. Choices: Enable (Default), Disable.

Power Control Configuration



Use the Power Control Configuration screen to set System Power Control Configuration Parameters.

Enable Hibernation

Enable or disable System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS. Choices: Disabled, Enabled (Default).

ACPI Sleep State

Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed. Choices: Suspend Disable, S3 (Suspend to RAM) (Default)

Restore AC Ring Loss

Select AC Power state when power is re-applied after a power failure. Choices: Power Off, Power On, Last State (Default).

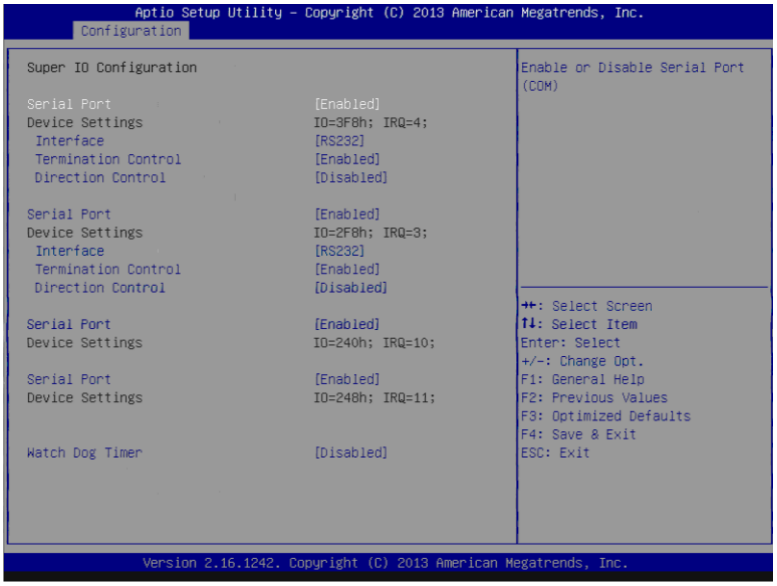
Wake on Ring Controller

Enable / Disable GPIO wake on Ring function. Choices: Disabled (Default), Enabled.

Wake System from S5

Enable or Disable System wake on alarm event. Select Enable to have the system wake on the **hr: mm: sec:** specified. Choices: Disabled (Default), Enabled.

Super I/O Configuration



Use the Super IO Configuration screen to set the System Super IO Chip Parameters.

Serial Port

Enable or Disable Serial Port (COM) IO=3F8H; IRQ=4. Choices: Disabled, Enabled (Default).

Interface

Set present UART mode RS232, RS485, RS485/RS422. Choices: RS232(Default), RS485 HALF DUPLEX, RS485/422 FULL DUPLEX.

Termination Control

Set Termination Control to Disabled/Enabled. Choices: Disabled, Enabled (Default).

Direction Control

Set Direction Control to Enabled (Transceiver) or Disabled (Receiver). Choices: Disabled (Default), Enabled.

Serial Port

Enable or Disable Serial Port (COM) IO=2F8H; IRQ=3. Choices: Disabled, Enabled (Default).

Interface

Set present UART mode RS232, RS485, RS485/RS422. Choices: RS232(Default), RS485 HALF DUPLEX, RS485/422 FULL DUPLEX.

Termination Control

Set Termination Control to Disabled/Enabled. Choices: Disabled, Enabled (Default).

Direction Control

Set Direction Control to Enabled (Transceiver) or Disabled (Receiver). Choices: Disabled (Default), Enabled.

Serial Port

Enable or Disable Serial Port (COM) IO=240H; IRQ=10. Choices: Disabled, Enabled (Default).

Serial Port

Enable or Disable Serial Port (COM) IO=248H; IRQ=11. Choices: Disabled, Enabled (Default).

Watch Dog Timer

Enable or Disable Watch Dog Timer. Choices: Disabled (Default), Enabled.

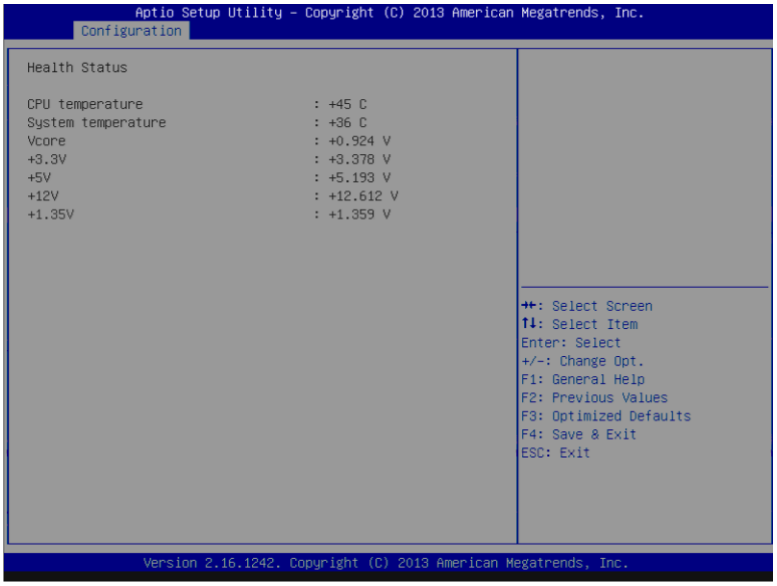
Timer Unit (Watch Dog Timer Enabled)

Select Timer count unit of WDT. Choices: Seconds (Default), Minutes.

Timer value (Watch Dog Timer Enabled)

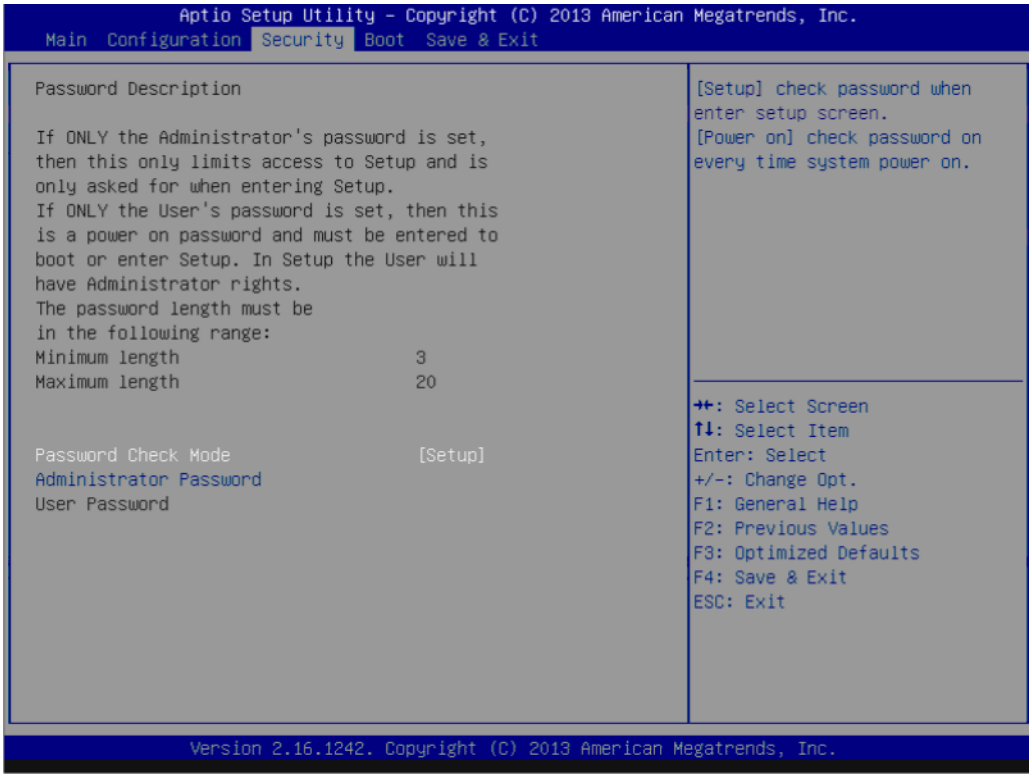
Set WDT Timer value in seconds/minutes. Choices: Default [20].

Health Status (hardware monitor)



Use the Health Status screen to set the monitor the hardware status.

Security



Use the Security Status screen to set passwords.

Password Check Mode

[Setup] check password when enter setup screen, [Power On] check password every time the system powers on. Choices: Setup (Default), Power On.

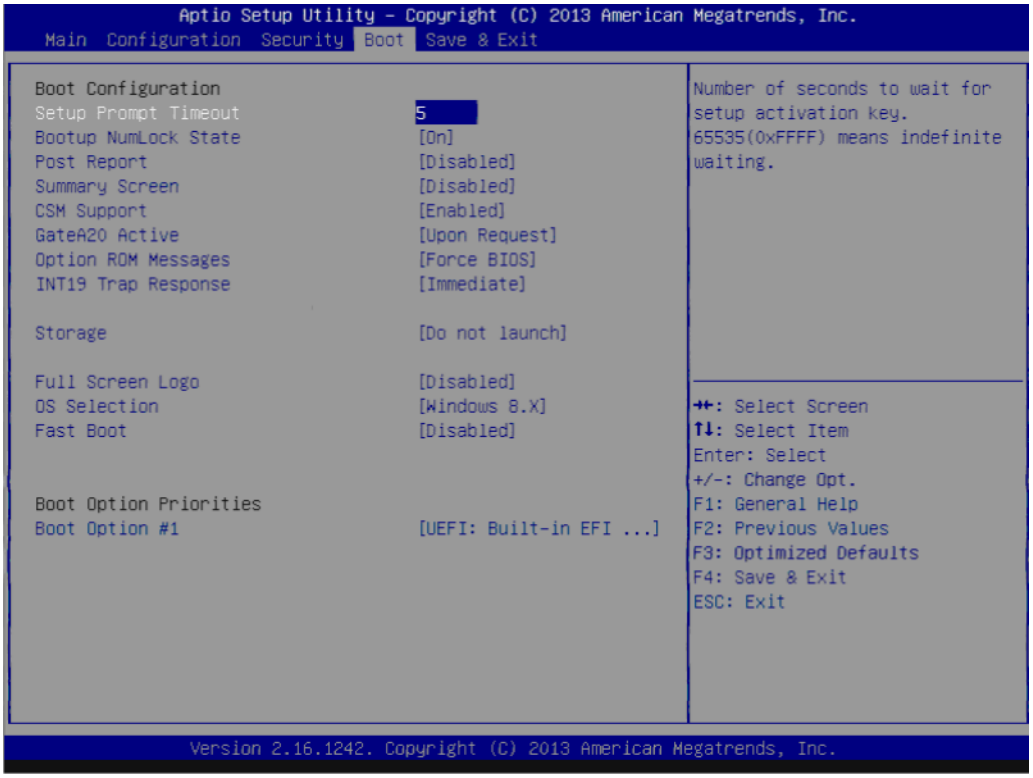
Administrator Password

Set Administrator Password.

User Password

Set User Password.

Boot



Use the Boot configuration screen to specify the priority of boot devices.

Setup Prompt Timeout

Number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting. Choices: Default [5].

Bootup NumLock state

Select the keyboard NumLock state. Choices: On (Default), Off.

Post Report

Post Report Support Enabled/Disabled. Choices: Disabled (Default), Enabled.

Summary Screen

Summary Screen Support Enabled/Disabled. Choices: Disabled (Default), Enabled.

CSM Support

Enabled/Disabled CSM Support. Choices: Disabled, Enabled (Default).

GateA20 Active

UPON REQUEST – GA20 can be disabled using BIOS services. ALWAYS – do not allow disabling GA20; this option is useful when any RT code is executed above 1MB. Choices: Upon Request (Default), Always.

Option ROM Messages

Set display mode for Option ROM. Choices: Force BIOS (Default), Keep Current.

INT19 Trap Response

BIOS reaction on INT19 trapping by Option ROM: IMMEDIATE – execute the trap right away; POSTPONED – execute the trap during legacy boot. Choices: Immediate (Default), Postponed.

Storage

Controls the of execution of UEFI and Legacy Storage OpROM. Choices: Do not launch (Default), UEFI only, Legacy only.

Full Screen Logo

Enables or Disables Quiet Boot option and Full Screen Logo. Choices: Disabled (Default), Enabled.

OS Selection

Operating System (OS) Selection Choices: Windows 8.X(Default), Windows 7.

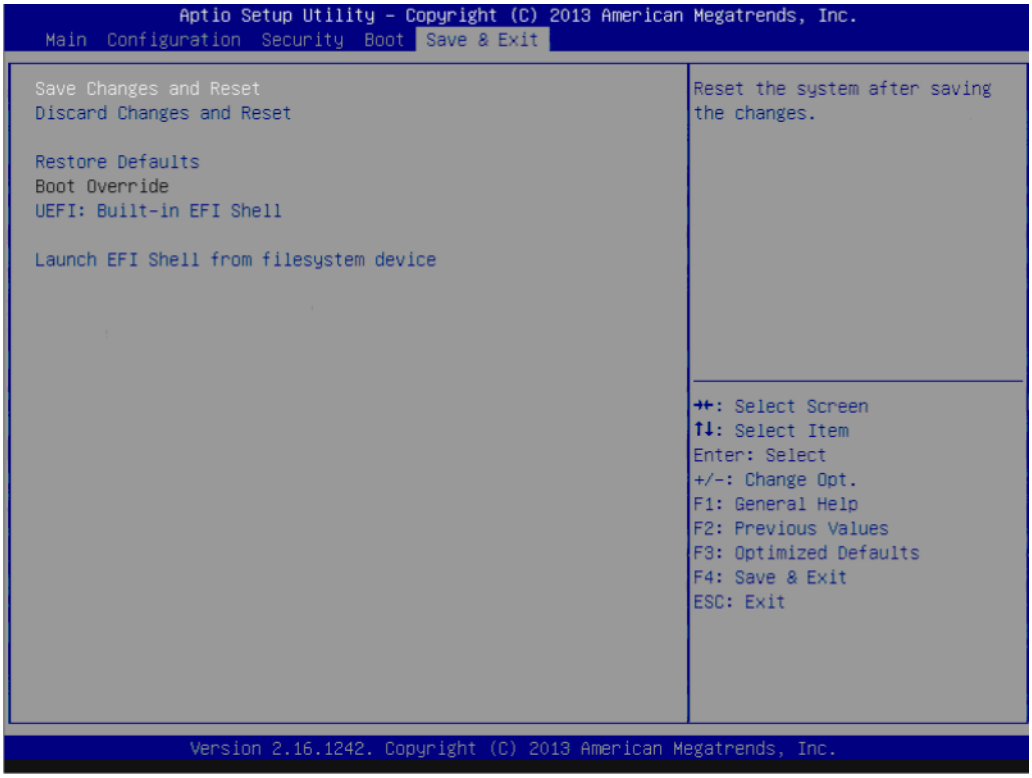
Fast Boot

Enables or Disables boot with initialization of a minimal set of devices required to launch active boot option. Has no effect for BBS boot options. Choices: Disable (Default), Enabled.

Boot Option #1

Sets the system boot order. Choices: UEFI: Built-in EFI Shell, Disabled.

Save and Exit



Use the **Save & Exit** screen to save changes, discard changes, restore defaults, and other similar commands as listed.

10. Frequently Asked Questions

10.1 To what chemicals or compounds is the touch screen resistant?

The touch screen is resistant to the following chemicals and compounds.

Chemical item	Oil item	General item
Acetone	Water-white mineral oil	Ammonia cleanser
Butane	Unlead gasoline	Clothing cleanser
Isopropanol	Diesel fuel	Vinegar
Hexane	Engine oil	Coffee
Turpentine	Speed change oil	Tea
Methanol	Antifreeze	Animal fat
		Normal Saline
		Salad oil

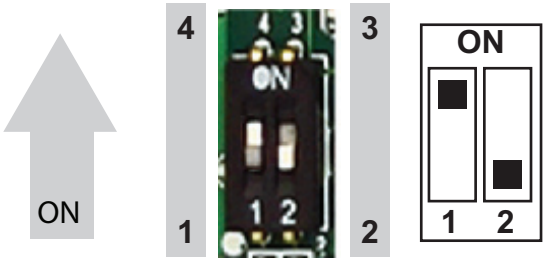
10.2 If the password of the system BIOS is lost, how can you reset the system?

Reset the BIOS to factory configuration. See “Reset CMOS BIOS Configuration” on page 56.

10.3 How can the system be configured for AT mode?

The default setting is ATX mode. This mode requires the power button to be pressed to turn the system on. By configuring SW2 port 1 and restarting the system, you can configure the system as AT mode. See “AT/ATX & BIOS Recovery Setup (SW2)” on page 35.

Figure 10–1: AT Mode setting (1-4 ON, 2-3 OFF)



11. Troubleshooting

This section provides useful tips to get the PPC65B-1x operating. For basic hardware installation and configuration, refer to “Setup and Installation” on page 9. This section addresses system integration issues in terms of BIOS setting and OS diagnostics.

11.1 BIOS Settings

This section assumes that you have correctly selected and connected all the devices with the required cables before applying power. If this is in question, inspect the connection and application of each of the following components: 204-pin DDR3 Memory, keyboard, mouse, SATA hard disk, VGA connector, power cable of the device, and all ATX accessories. Failure of any of these components can cause system failure.

It is recommended that you press **<Del>** and enter the BIOS setup menu during the initial boot-up sequence to configure a stable BIOS configuration that can be woken.

NOTE Although you can access the BIOS by pressing **<Esc>** instead of **<Del>**, **<Del>** is used in the following procedures.

11.1.1 Loading the Default Optimal Setting

NOTE If the system appears to be unstable during its startup, you can try loading the default BIOS configuration to see if this solves the issues.

When prompted in the main setup menu, load setup defaults:

1. Apply power to an installed PPC65B-1x and press **<Del>** to enter the BIOS setup menu.
2. Select the **Exit** menu and then scroll to **Restore Defaults**.
3. Press **Enter**.
4. To load the default optimal BIOS setup, select **Yes**. This forces the BIOS setting back to the initial factory configuration.

11.1.2 Reset CMOS BIOS Configuration

A jumper can reset the BIOS CMOS settings to the factory default. Enable/disable the Clear CMOS Function hardware circuit, by placing or removing the jumper from JP1.

To reset the BIOS CMOS configuration to the factory default settings:

1. Remove power from the PPC65B-1x.
2. Find JP1.
3. Remove jumpers from pins 1-2.
4. Install jumpers on pins 2-3 and wait five seconds.
5. Replace jumpers back on pins 1-2.
6. Restart.

11.1.3 Update BIOS

1. Obtain the ROM file and flash utility. See “Cables and Software Drivers” on page 57.
2. Extract the files from the zip archive to the root directory of a bootable USB flash drive.
3. Insert the USB flash drive in USB port of the PPC65B-1x and apply power to the board.
4. Boot to EFI-Shell mode.
5. At the prompt, enter the command **fs0:** to change to the root directory of the USB drive.
6. At the root directory of the USB drive, enter the command **update** to start the updating the BIOS.
7. When the update has completed, there will be a 5-second pause and then the computer automatically restarts.
8. Press **<Del>** to open the BIOS setup menu and select **Restore Defaults**.
9. To finish the update, select the **Save Changes and Reset Changes** option.

12. Cables and Software Drivers

Go to www.winsystems.com for cable information and software drivers.

Appendix A. Best Practices

This section outlines the best practices for operating the PPC65B-1x in a safe and effective manner that does not damage the board. Please read this section carefully.

Avoid Electrostatic Discharge (ESD)—Only handle the circuit board and other bare electronics when electrostatic discharge (ESD) protection is in place. Having a wrist strap and a fully grounded workstation is the minimum ESD protection required before the ESD seal on the product bag is broken.

Power Supply

Power Supply Budget

Evaluate your power supply budget. It is usually good practice to budget twice the typical power requirement for all of your devices.

Use Proper Power Connections (Voltage)—When verifying the voltage, measure it at the power connector on the PPC65B-1x. Measuring it at the power supply does not account for voltage drop through the wire and connectors.

Power Harness

Minimize the length of the power harness. This will reduce the amount of voltage drop between the power supply and the PPC65B-1x.

Gauge Wire

Use the largest gauge wire available for your application and connector. Most connector manufacturers have a maximum gauge wire they recommend for their pins.

Power Down

Make sure that power has been removed from the system before making or breaking any connections.

Power Supply OFF—The power supply should always be off before it is connected to the I/O Module. Do not hot-plug the PPC65B-1x on a host platform that is already powered.

I/O Connections OFF—I/O Connections should also be off before connecting them to the embedded computer modules or any I/O cards. Connecting hot signals can cause damage whether the embedded system is powered or not.

Operations/Product Manuals

Every single board computer has an Operations manual or Product manual.

Periodic Updates—Operations/Product manuals are updated often. Periodically check the WinSystems website (http://www.Secure Digital) for revisions.

Check Pinouts—Always check the pinout and connector locations in the manual before plugging in a cable. Many I/O modules will have identical headers for different functions and plugging a cable into the wrong header can have disastrous results.

Contact an Engineer—If a diagram or chart in a manual does not seem to match your board, or if you have additional questions, contact a WinSystems Applications Engineer at: +1-817-274-7553.

Conformal Coating

Conformal coating by any source other than WINSYSTEMS voids the product warranty and will not be accepted for repair by WINSYSTEMS. If such a product is sent to WINSYSTEMS for repair, it will be returned at customer expense and no service will be performed. A WINSYSTEMS product conformally coated by WINSYSTEMS will be subject to regular WINSYSTEMS warranty terms and conditions. Conformal coating by any source other than WINSYSTEMS voids the product warranty and will not be accepted for repair by WINSYSTEMS. If such a product is sent to WINSYSTEMS for repair, it will be returned at customer expense and no service will be performed. A WINSYSTEMS product conformally coated by WINSYSTEMS will be subject to regular WINSYSTEMS warranty terms and conditions.

Appendix B. Mechanical Drawings

Figure B–1: PPC65B-10 Dimensions

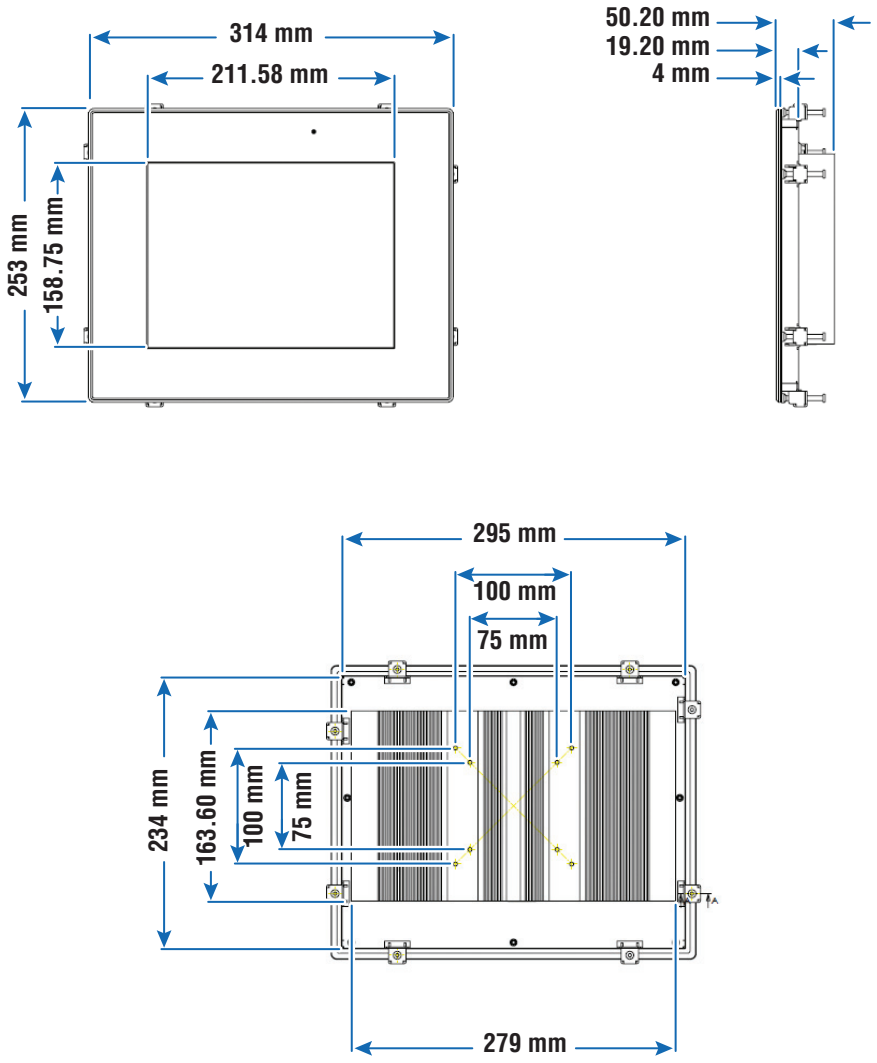


Figure B–2: PPC65B-12 Dimensions

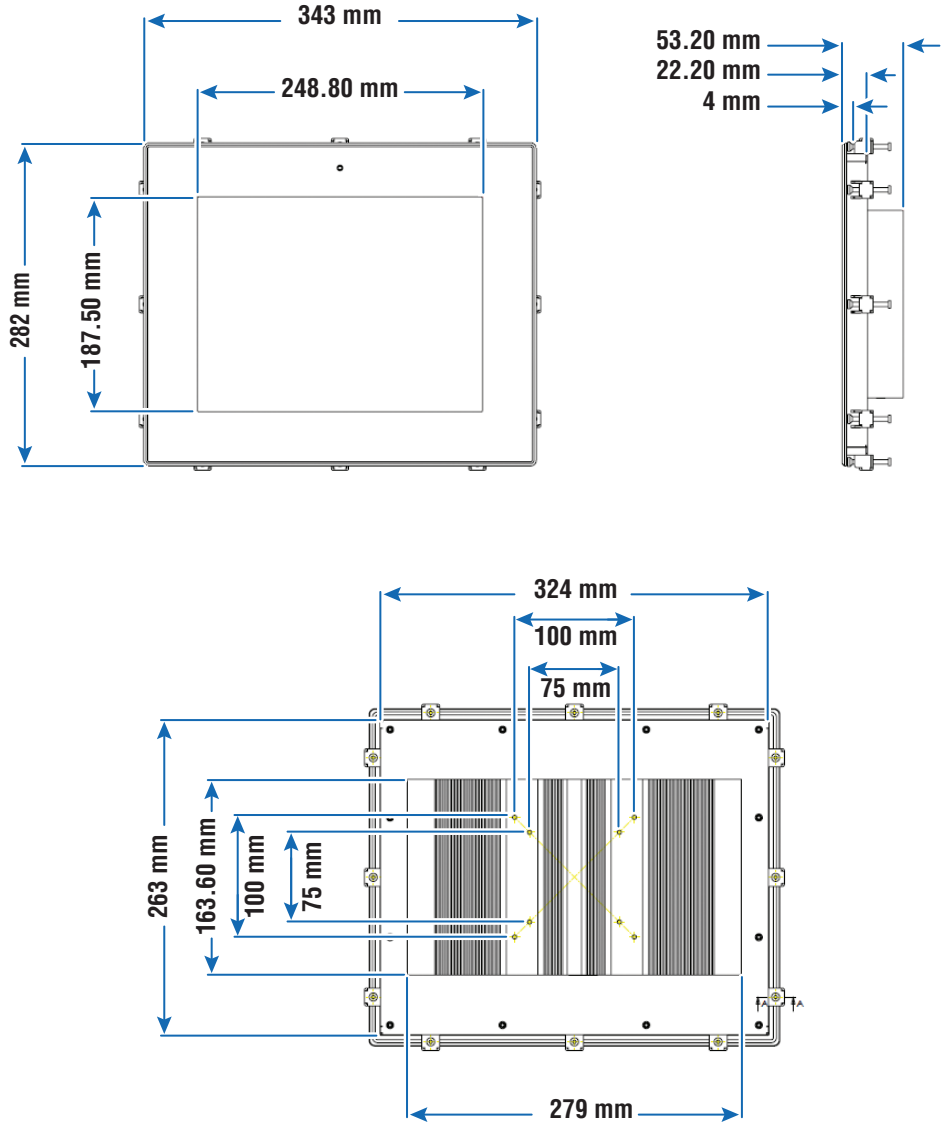
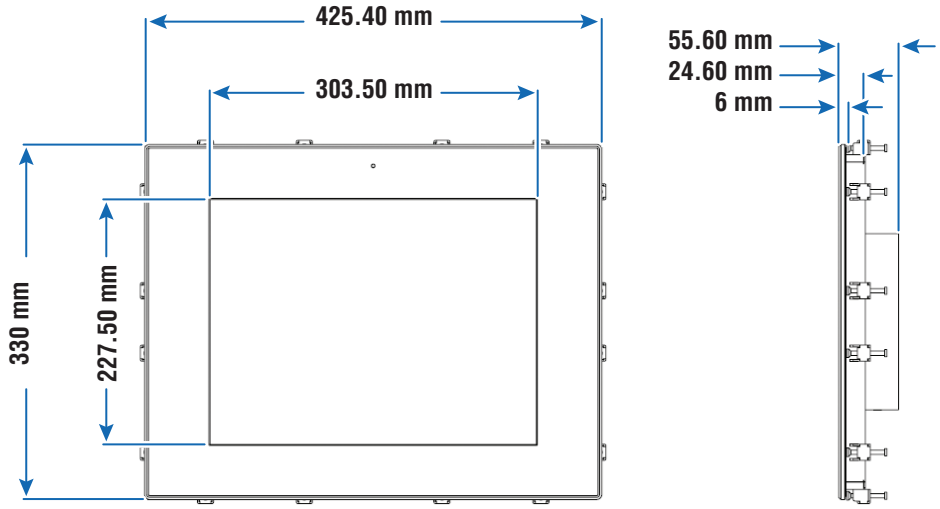


Figure B–3: PPC65B-15 Dimensions



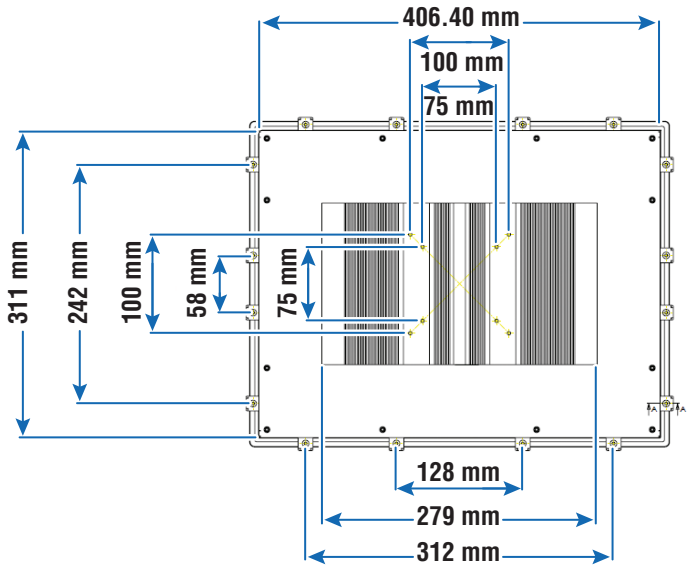
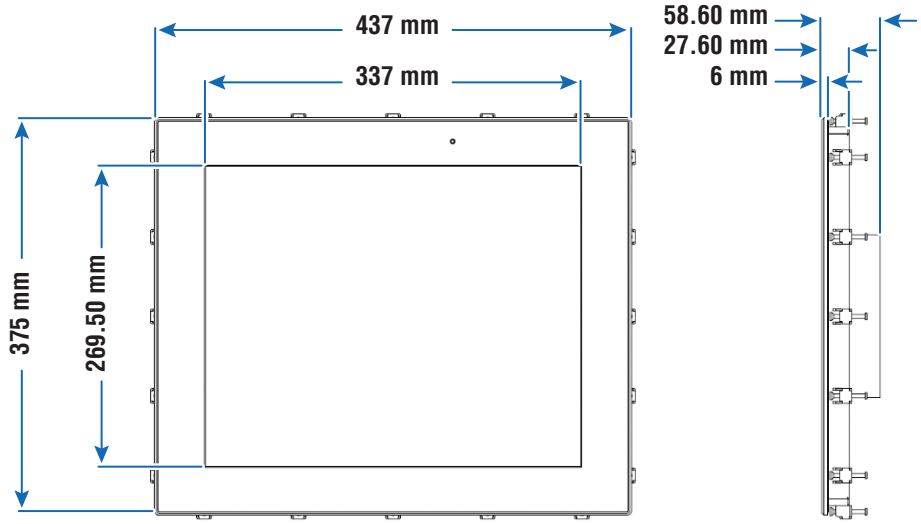


Figure B–4: PPC65B-17 Dimensions



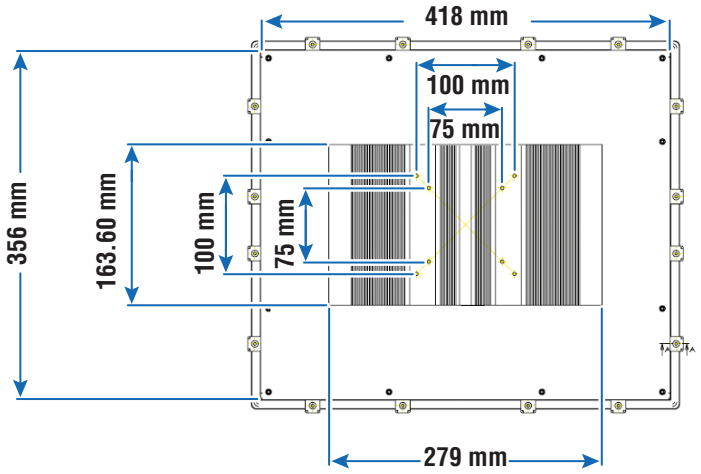
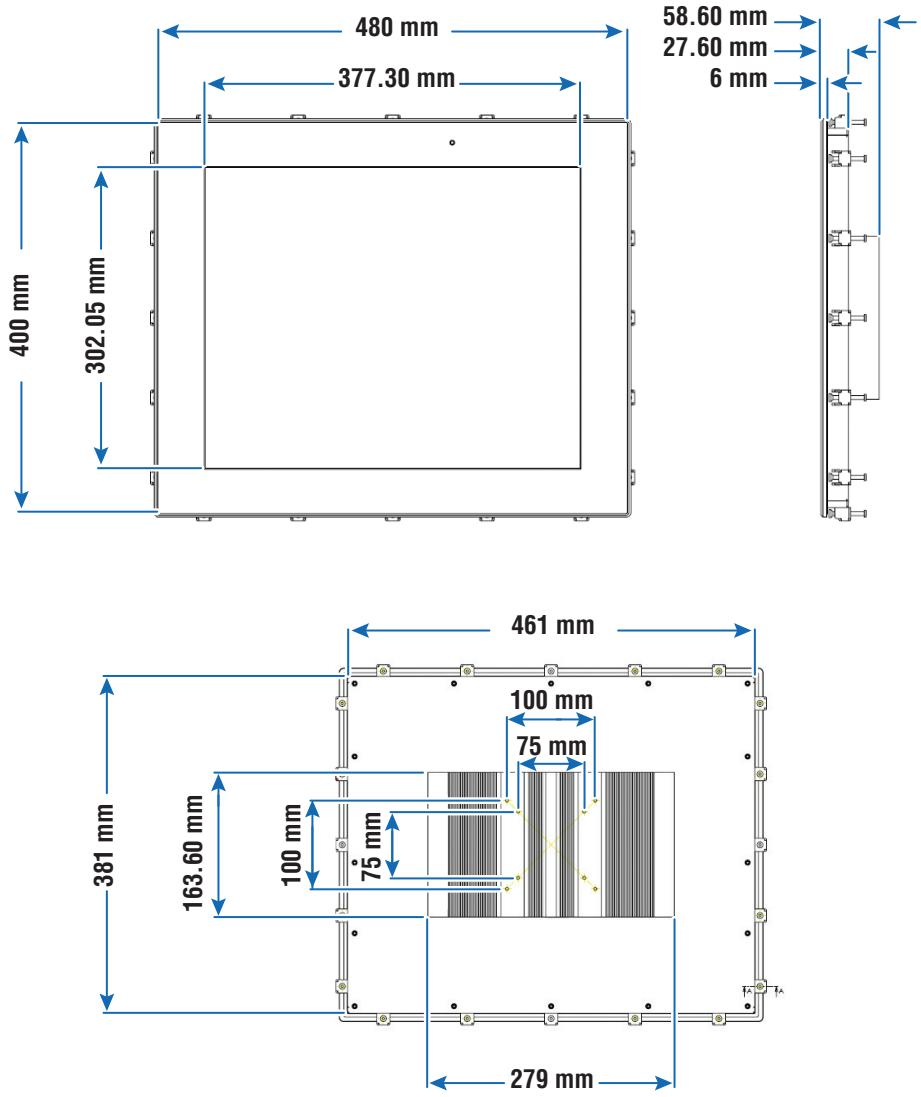


Figure B–5: PPC65B-19 Dimensions



Appendix C. Warranty Information

WinSystems warranty information can be found on our website at https://winsystems.com/company-policies/warranty.