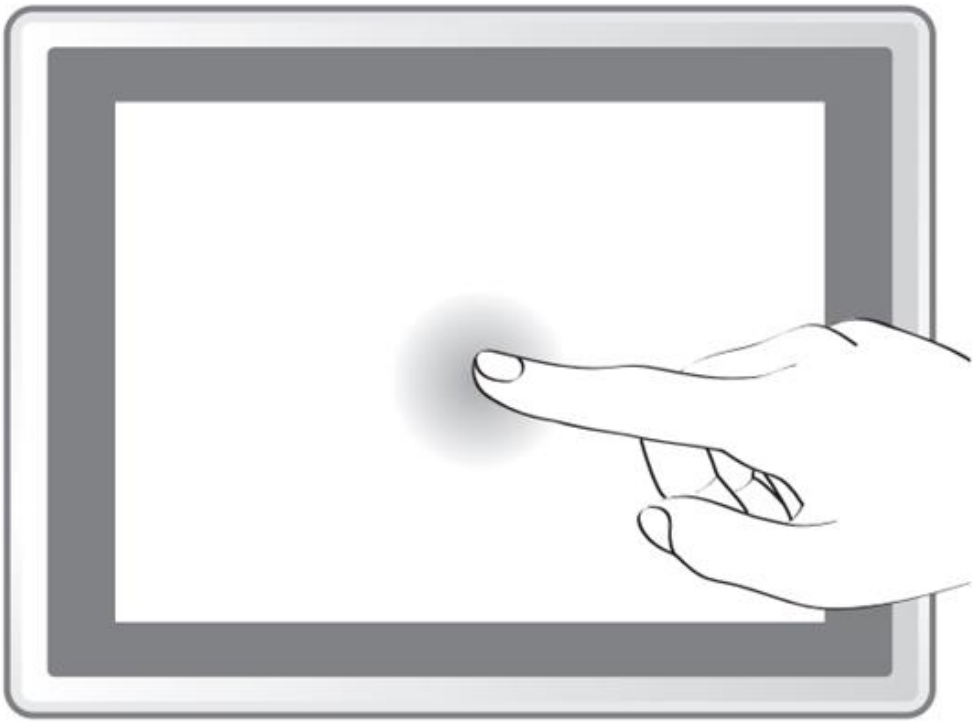
15” Full IP65 Stainless

Class I Division 2

Intel® Celeron® Bay Trail-M N2930, 1.83 GHz



R15IB3S-65EX

User Manual

Document Version 2.0
Document Part No. 9152150I1006

Please read these instructions carefully before using this product, and save this manual for future use.

Contents

Preface

Copyright Notice

Trademark Acknowledgement

Disclaimer

We reserve the right to make changes, without notice, to any product, including circuits and/or software described or contained in this manual in order to improve design and/or performance. We assume no responsibility or liability for the use of the described product(s) conveys no license or title under any patent, copyright, or masks work rights to these products, and make no representations or warranties that these products are free from patent, copyright, or mask work right infringement, unless otherwise specified. Applications that are described in this manual are for illustration purposes only. We make no representation or guarantee that such application will be suitable for the specified use without further testing or modification.

Warranty

Our warranty guarantees that each of its products will be free from material and workmanship defects for a period of one year from the invoice date. If the customer discovers a defect, we will, at his/her option, repair or replace the defective product at no charge to the customer, provide it is returned during the warranty period of one year, with transportation charges prepaid. The returned product must be properly packaged in its original packaging to obtain warranty service. If the serial number and the product shipping data differ by over 30 days, the in-warranty service will be made according to the shipping date. In the serial numbers the third and fourth two digits give the year of manufacture, and the fifth digit means the month (e. g., with A for October, B for November and C for December).

For example, the serial number 1W14Axxxxxxxx means October of year 2014.

Customer Service

We provide a service guide for any problem by the following steps: First, visit the website of our distributor to find the update information about the product. Second, contact with your distributor, sales representative, or our customer service center for technical support if you need additional assistance.

You may need the following information ready before you call:

- Product serial number
- Software (OS, version, application software, etc.)
- Description of complete problem
- The exact wording of any error messages

In addition, free technical support is available from our engineers every business day. We are always ready to give advice on application requirements or specific information on the installation and operation of any of our products.

Advisory Conventions

Four types of advisories are used throughout the user manual to provide helpful information or to alert you to the potential for hardware damage or personal injury. These are Notes, Important, Cautions, and Warnings. The following is an example of each type of advisory.

NOTE:
A note is used to emphasize helpful information

IMPORTANT:
An important note indicates information that is important for you to know.

CAUTION/ ATTENTION
A Caution alert indicates potential damage to hardware and explains how to avoid the potential problem.

Une alerte d'attention indique un dommage possible à l'équipement et explique comment éviter le problème potentiel.

WARNING!/ AVERTISSEMENT!
An Electrical Shock Warning indicates the potential harm from electrical hazards and how to avoid the potential problem.

Un Avertissement de Choc Électrique indique le potentiel de chocs sur des emplacements électriques et comment éviter ces problèmes.

ALTERNATING CURRENT / MISE À LE TERRE!
The Protective Conductor Terminal (Earth Ground) symbol indicates the potential risk of serious electrical shock due to improper grounding.

Le symbole de Mise à Terre indique le risqué potential de choc électrique grave à la terre incorrecte.

Safety Information

WARNING! / AVERTISSEMENT!

Always completely disconnect the power cord from your chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronics personnel should open the PC chassis.

Toujours débrancher le cordon d'alimentation du chassis lorsque vous travaillez sur celui-ci. Ne pas brancher de connections lorsque l'alimentation est présente. Des composantes électroniques sensibles peuvent être endommagées par des sauts d'alimentation. Seulement du personnel expérimenté devrait ouvrir ces chassis.

CAUTION/ATTENTION

Always ground yourself to remove any static charge before touching the CPU card. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components in a static-dissipative surface or static-shielded bag when they are not in the chassis.

Toujours verifier votre mise à la terre afin d'éliminer toute charge statique avant de toucher la carte CPU. Les équipements électroniques moderns sont très sensibles aux décharges d'électricité statique. Toujours utiliser un bracelet de mise à la terre comme précaution. Placer toutes les composantes électroniques sur une surface conçue pour dissiper les charge, ou dans un sac anti-statique lorsqu'elles ne sont pas dans le chassis.

Safety Precautions

For your safety carefully read all the safety instructions before using the device. All cautions and warnings on the equipment should be noted. Keep this user manual for future reference.

CAUTION/ATTENTION

Do not cover the openings!

Ne pas couvrir les ouvertures!

***Let service personnel to check the equipment in case any of the following problems appear:**

- The power cord or plug is damaged.
- Liquid has penetrated into the equipment.
- The equipment has been exposed to moisture.
- The equipment does not work well or you cannot get it to work according to the user manual.
- The equipment has been dropped and damaged.
- The equipment has obvious signs of breakage.

- Do not leave this equipment in an uncontrolled environment where the storage temperature is below -20°C (-4°F) or above 60°C (140°F). It may damage the equipment.

CAUTION/ATTENTION
Use the recommended mounting apparatus to avoid risk of injury.

Utiliser l'appareil de fixation recommandé pour éliminer le risque de blessure.

WARNING! / AVERTISSEMENT!
Only use the connection cords that come with the product. When in doubt, please contact the manufacturer.

Utiliser seulement les cordons d'alimentation fournis avec le produit. Si vous doutez de leur provenance, contactez le manufacturier.

WARNING!/ AVERTISSEMENT!
Always ground yourself against electrostatic damage to the device.

Toujours vérifier votre mise à la terre afin que l'équipement ne se décharge pas sur vous.

Special Conditions of Use

- Subject device has been evaluated to the enclosure requirements for Ingress Protection IP65 in accordance with EN 60079-15. All external connections must be Ex certified with minimum IP65 degree of protection. Suitability of wiring must be determined in end-use applications. Box cover does not have an IP rating.
- The equipment shall only be used in an area of not more than pollution degree 2, as defined in EN 60664-1.
- Transient protection shall be provided that is set at a level not exceeding 140 % of the peak rated voltage value at the supply terminals to the equipment.

General Guideline

It is recommended to reboot the device when some functions are defect or inactive. If it still can't solve the problems please contact your dealer or agent.

Important Information

Federal Communications Commission Radio Frequency Interface Statement

FC	This device complies with part 15 FCC rules. Operation is subject to the following two conditions: • This device may not cause harmful interference. • This device must accept any interference received including interference that may cause undesired operation.

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 him own expense.

EC Declaration of Conformity

CE	This equipment is in conformity with the requirement of the following EU legislations and harmonized standards. Product also complies with the Council directions.

Certifications and Standards

Agency Standard for Marking	Description
II 3 G Ex ic nA IIC Gc	Certification with ATEX Directive 94/9/EC; Independent 3rd party assessment (Notified Body: DEMKO) DEMKO 14 ATEX 1319472U EN 60079-0: 2012 / EditionEN 60079-11: 2012 / EditionEN 60079-15: 2010 Edition
EX nA IIC T4 Gc	Independent 3rd party assessment IECEx UL 17.0030X IEC 60079-0:2011, 6th Edition IEC 60079-15:2010, 4th Edition
N. A. Safety for Information Technology Equipment	Certification by Underwriter's Laboratories to UL60950-1, 2nd Edition standard and equivalent CSA C22.2 No 60950-1-07, 2nd Edition Standard
I.T.E. FOR USE IN HAZ.LOC. E361897 **N. A. Safety for Hazardous Locations Class I, Div. 2, Groups A, B, C, D, T4**	Certification by Underwriter's Laboratories to ANSI/ISA- 12.12.01 -2012 standard and equivalent CAN/CSA C22.2 No 213-M1987 Standard
	Self-Declaration in accordance with European LVD Directive 2006/95/EC; Independent 3rd party assessment (Accredited by IEC 17025)
	Self-Declaration in accordance with EMC Directive 2004/108/EC; Independent 3rd party assessment (Accredited by IEC 17025)

About This User Manual

This User Manual provides information about using the Winmate® 15-inch Stainless Panel PC. The documentation set provides information for specific user needs, and includes:

- **15-inch Stainless Panel PC User Manual** – contains detailed description on how to use the display, its components and features.

NOTE:
Some pictures in this guide are samples and can differ from actual product.

Document Revision History

Version	Date	Note
1.0	18-Apr-2016	New document release
2.0	3-Dec-2020	Revise formatting, add special conditions of use.

Chapter 1: Introduction

This chapter gives you product overview, describes features and hardware specification. You will find all accessories that come with the HMI in the packing list. Mechanical dimensions and drawings included in this chapter.

1.1 Overview

15-inch Stainless Panel PC has a footprint of 15.6 x 12.2 inches and is less than two inches thick. The sturdy stainless steel housing has anti-corrosion protection and carries an IP65/NEMA4 sealing rating, meaning that it's completely protected against dust, and also protected against low-pressure water jets from all directions. The very wide -4 to 140122 degree Fahrenheit operating temperature range means the panel can be deployed almost anywhere.

This device is suitable for deployment in certain hazardous locations where flammable substance may be present. Specifically, the device is certified for use in Class 1, Division 2, Groups A through D (i.e. Acetylene, Hydrogen, Ethylene, and Propane) classified areas and surface temperatures not exceeding 275o Fahrenheit (135o Celsius) in the US market, and ATEX Gas Zone 2 Classified areas in European and other markets.

1.2 Product Features

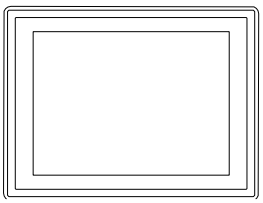
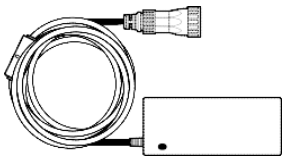
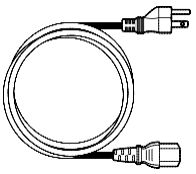
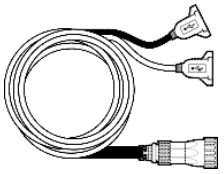
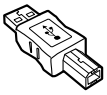
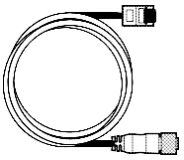
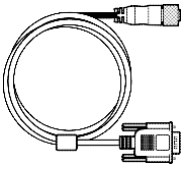
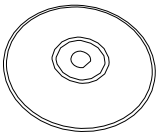
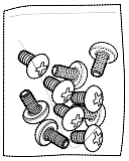
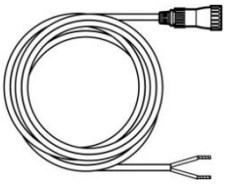
15-inch Stainless Flat Touch Screen Series Panel PC offers the following features:

- ATEX Zone 2 certified for hazardous area applications and suitable for use in Class I, Division 2
- Intel® Celeron N2930 1.83GHz processor
- Wide power input 9-36V DC with isolation protection
- Special IP65 M12 and M21 type connectors with cover plate
- NEMA 4 (IP65) dust proof and water protection
- Robust and fanless design for reliable operation
- Fanless cooling system and ultra-low power consumption
- Projected capacitive (PCAP) multi-touch screen
- Protection enclosure with cable gland

1.3 Packing List

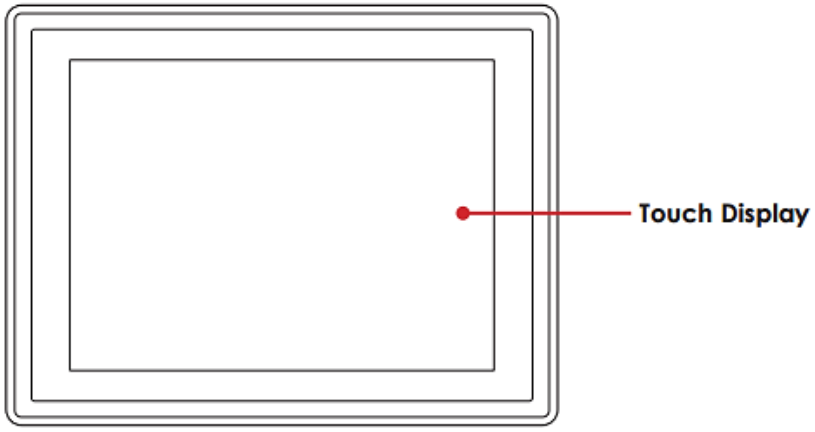
Carefully remove the box and unpack your device. Please check if all the items listed below are inside your package. If any of these items are missing or damaged contact us immediately.

Standard factory shipment list:

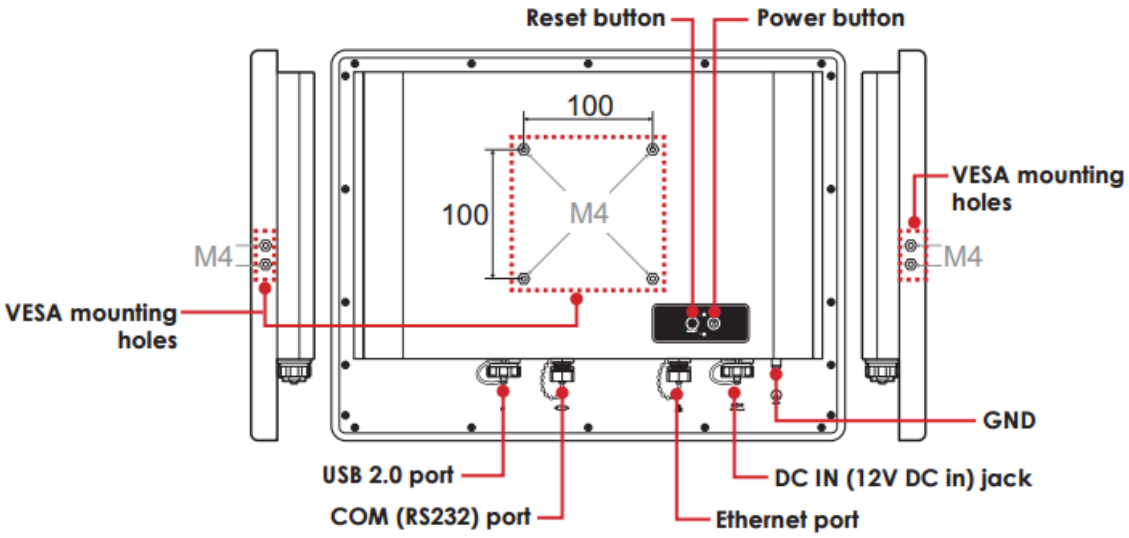
			
Panel PC	**AC to DC adapter**	**Power Cord**	**USB Cable**
			
USB adapter (USB Type A to Type B)	**Ethernet Cable**	**Ethernet extension adapter**	**RS-232 Cable**
			
Recovery DVD and touch driver CD	**User's Manual and Quick Start Guide**	**VESA Mounting Screws**	**Power cable (open wire)**

1.4 Appearance

1.4.1 Front View

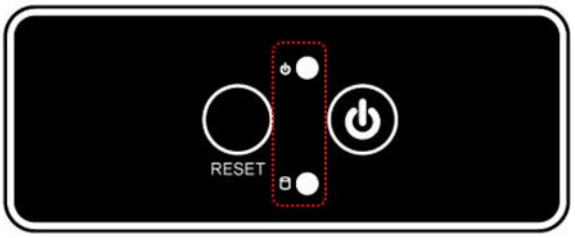


1.4.2 Side and Rear Views



**OSD Panel is located under the enclosure.*

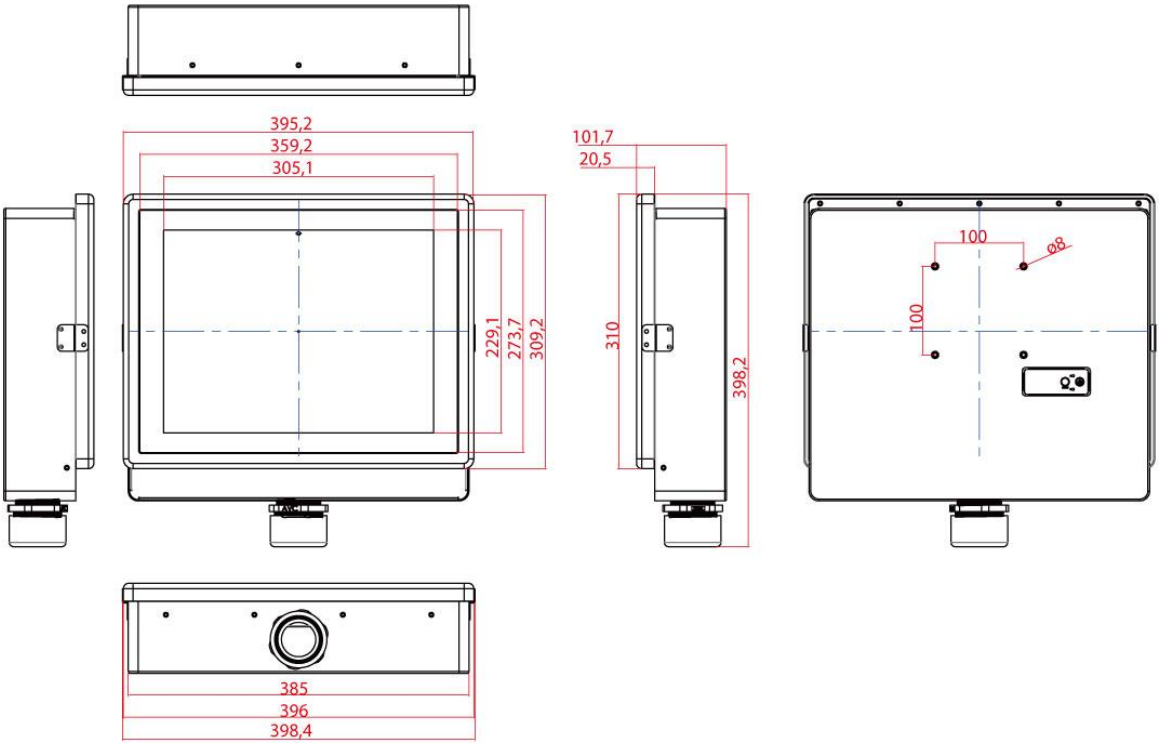
1.4.3 LED Indicators



LED Type	Status	Description
Power	On	Power is on.
	Off	Power is off.
Storage	Blinking	Storage activity (data is being read or written).
	Off	System is idle.

1.5 Mechanical Dimensions

1.5.1 Dimensions 15”



1.6 Hazardous Locations

This equipment (R15IB3S-65EX) is primarily intended for use in Class I, Division 2 Groups A, B, C, and D; or non-hazardous locations only. It is suitable for use in oil, gas, and petrochemical manufacturing plants and locations where ignitable gases or vapor may be presented. This device is typically used for automation or control purposes.

WARNING! / AVERTISSEMENT!

1. Provision shall be made to provide transient protection device to be set at a level not exceeding 140% of the rated voltage at the power supply terminals of the apparatus.

   Une provision devra être faite pour fournir un appareil de protection des survoltages, a un niveau n'excédant pas 140% du voltage spécifié, au connecteur d'alimentation de l'appareil.

2. Explosion Hazard – Do not connect or disconnect the equipment unless power has been switched off or the area is known to be non-hazardous.

   Risque d'explosion – Ne pas brancher ou débrancher l'équipement a moins que l'alimentation ait été coupée ou que la zone ne soit pas explosive.

3. Explosion Hazard – Substitution of components may impair suitability for Class I, Division 2.

   Risque d'explosion – Si vous substituez des composantes vous pourriez affecter la certification Classe 1, Division 2.

4. The equipment should be adequately protected from direct light when installed indoor or outdoor.

   L'équipement doit être protégé adéquatement de la lumière directe lorsqu'il est installé à l'intérieur ou l'extérieur.

Chapter 2: Getting Started

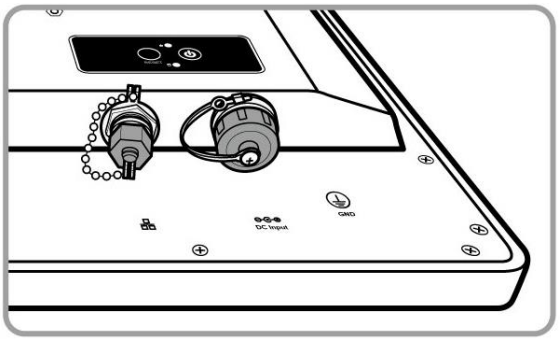
This chapter provides information on how to connect the device to the source of power, connector pinouts and the guideline to turn on/off the Panel PC.

2.1 Turning On and Off Your Device

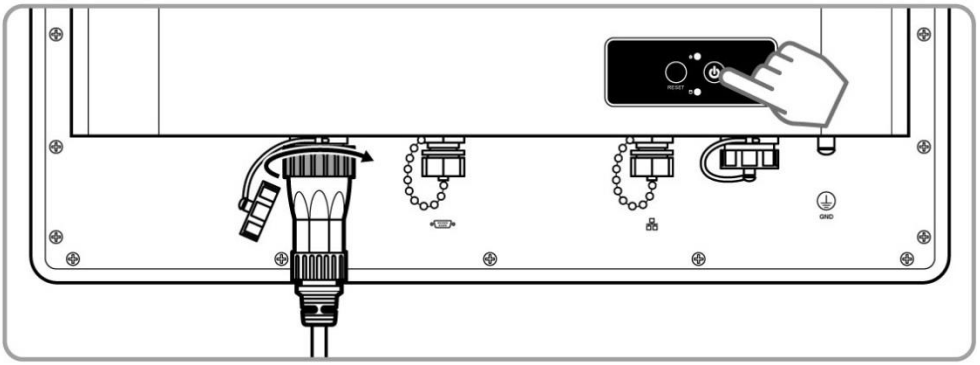
IMPORTANT:
Power button is located under the enclosure on the rear side of the Panel PC. In order to access it, you need to open the enclosure.

To **Turn ON** the device:

1. Remove the protective cap out of the DC IN Jack.



2. Plug the AC adapter to the DC-in jack of your device. Make sure the cable fits to the connector, then tighten the O-ring (by turning it clockwise) to secure the connection.



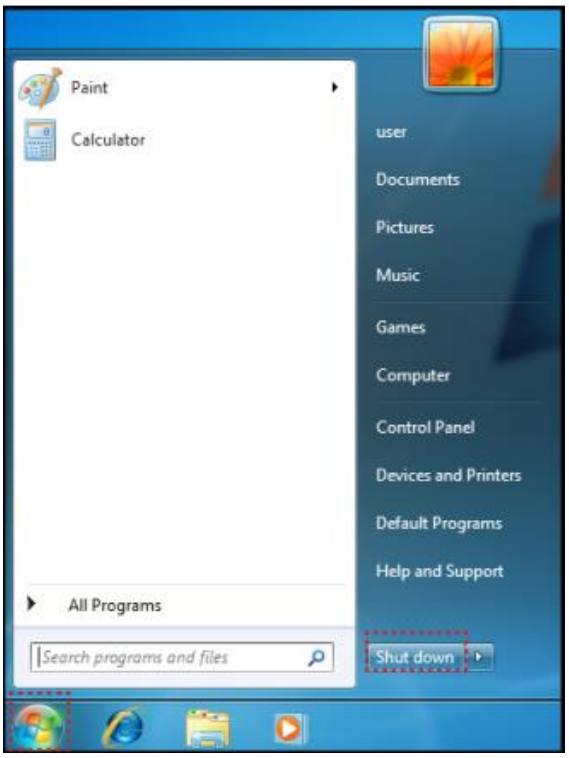
3. Connect the AC adapter to the power cord.
4. Plug the power cord to an electrical outlet.
5. Press the **Power** button to turn on the device.

NOTE:

When the system hangs, press the **Reset** button to restart the device.

To **Turn OFF** the device:

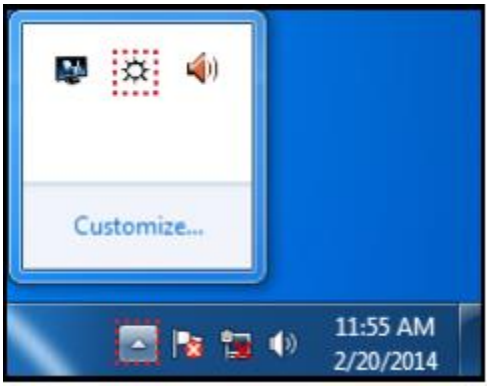
To shut down your device, do the following: Tap Start ( ) > Shut down.



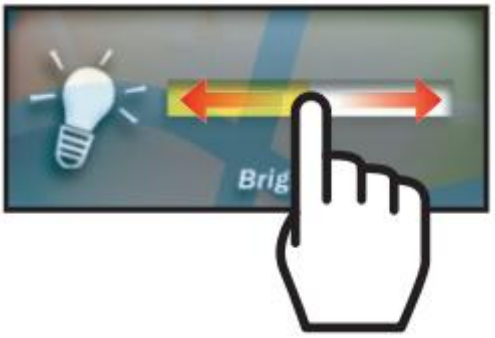
Wait for your Panel PC to completely turn off before disconnecting the power cord (if necessary).

2.2 Adjusting the LCD Display Brightness

1. Tap the arrow on the system tray to display the hidden icons.



2. Double-tap the icon ( ) to display the brightness menu.
3. Drag the brightness bar to adjust the brightness level according to your preference.



2.3 Connectors

2.3.1 Wiring Requirements

The following common safety precautions should be observed before installing any electronic device:

- Strive to use separate, non-intersecting paths to route power and networking wires. If power wiring and device wiring paths must cross make sure the wires are perpendicular at the intersection point.
- Keep the wires separated according to interface. The rule of thumb is that wiring that shares similar electrical characteristics may be bundled together.
- Do not bundle input wiring with output wiring. Keep them separate.
- When necessary, it is strongly advised that you label wiring to all devices in the system.

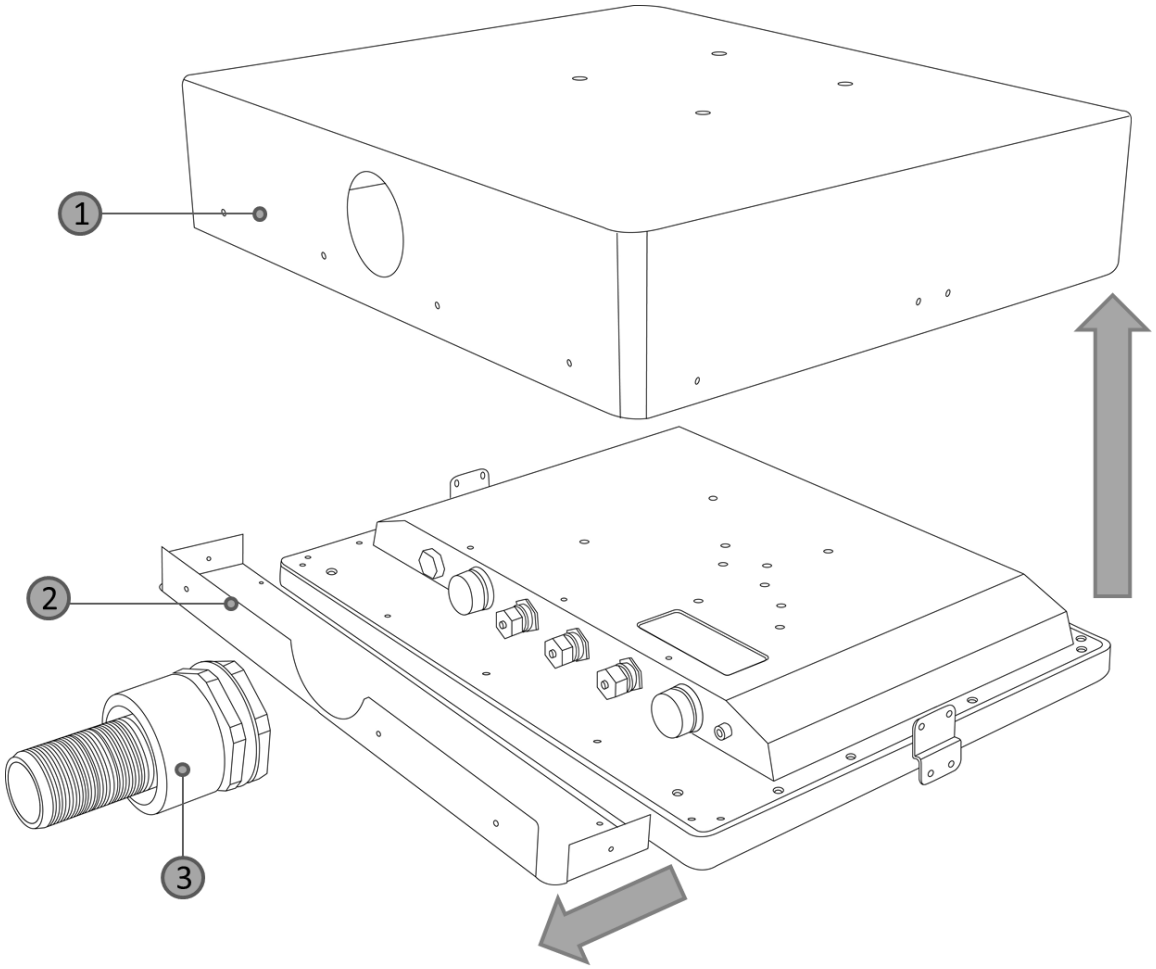
Safety Precautions:

- Do not run signal or communication wiring and power wiring in the same conduit. To avoid interference, wires with different signal characteristics (i.e., different interfaces) should be routed separately.
- Be sure to disconnect the power cord before installing and/or wiring your device.
- Verify the maximum possible current for each wire gauge, especially for the power cords. Observe all electrical codes dictating the maximum current allowable for each wire gauge.
- If the current goes above the maximum ratings (80 W), the wiring could overheat, causing serious damage to your equipment.
- Be careful when handling the unit. When the unit is plugged in, the internal components generate a lot of heat which may lead the outer casing too hot to touch.

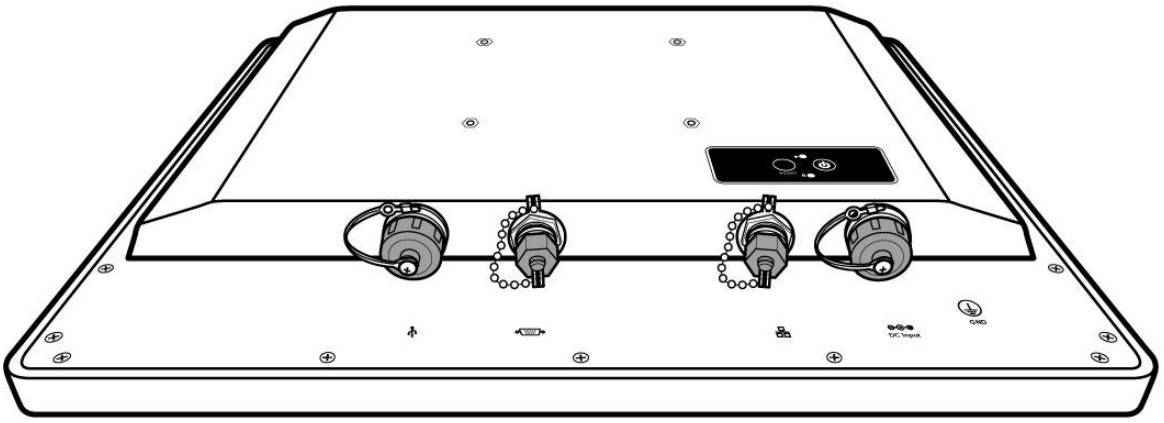
2.3.2 Connecting the Interface

This Panel PC comes with various interfaces located on the bottom panel. All of these connectors have been shipped with protective caps and tethers. If you wish to detach the tethers, the screws securing them to the bottom panel will need to be removed. To ensure the waterproof function can work properly, make sure that the protective caps and the tethers have been securely fastened whenever the connectors are not used.

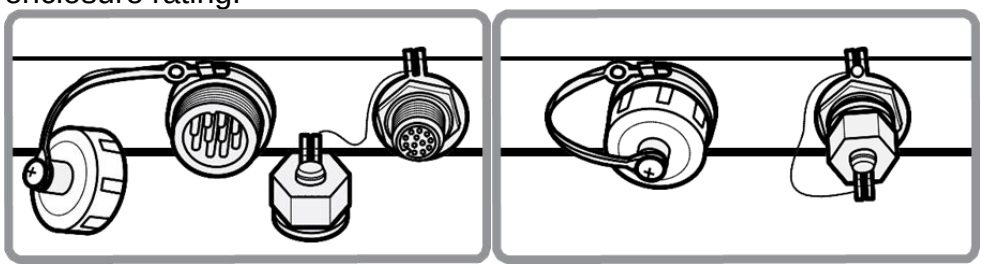
Panel PC exploded drawing.



Item No.	Description
1	Top cover lid of the enclosure
2	Bottom cover plate of the enclosure
3	The conduit



IMPORTANT:
Notice that when reinstalling the protective cap, it must be fully tightened to ensure the unit is properly sealed to meet the IP65 enclosure rating.

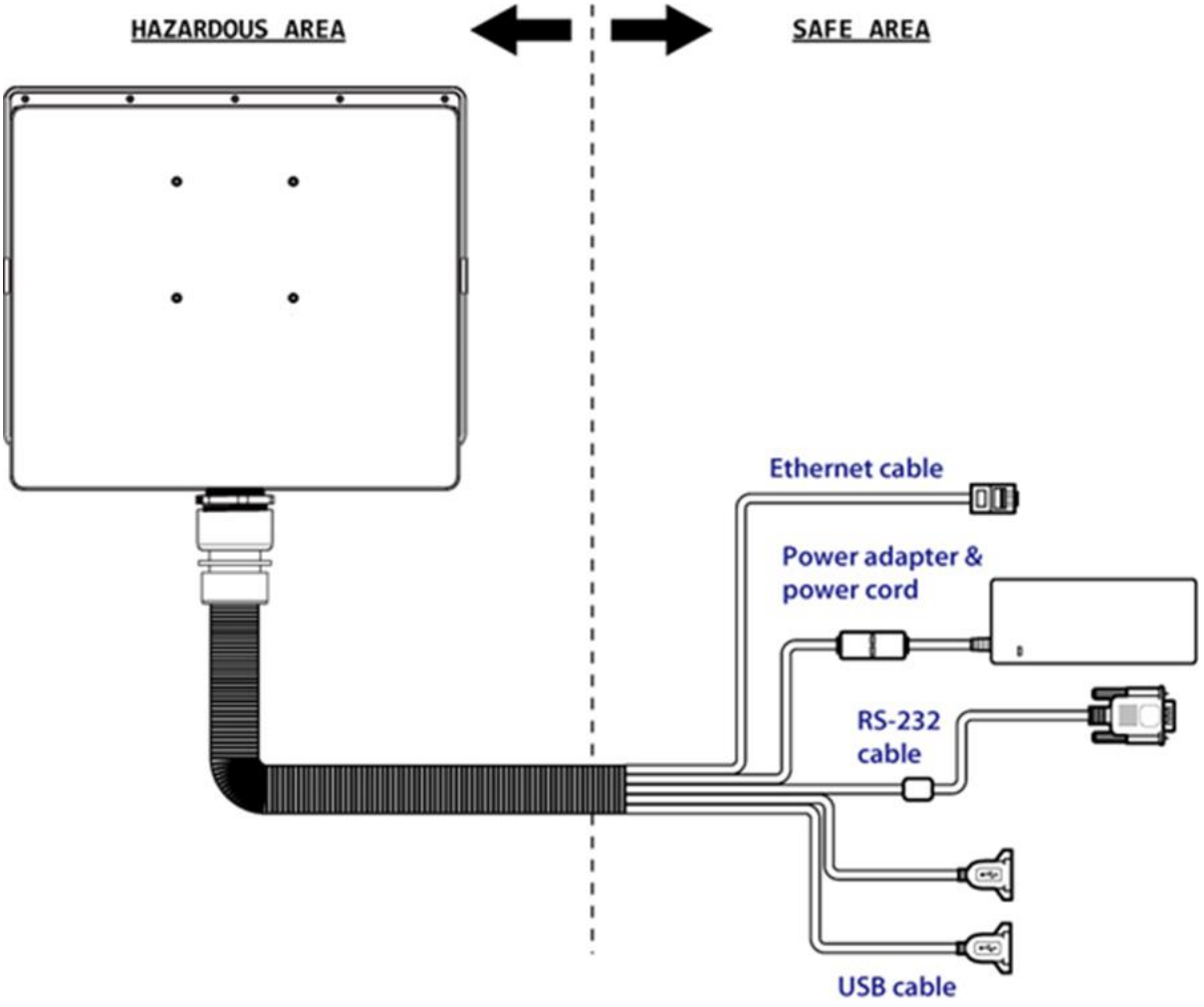


2.3.3 Workstation

2.3.3.1 ATEX Zone 2

The connector cables are located under the enclosure. You need to connect wires first (refer to Chapter 1, section 1.3 to find the connector placement), install the pipe, insert the wires into the pipe opening, and then secure the cover box to the Panel PC.

Hazardous and safe areas



How to Install the Conduit

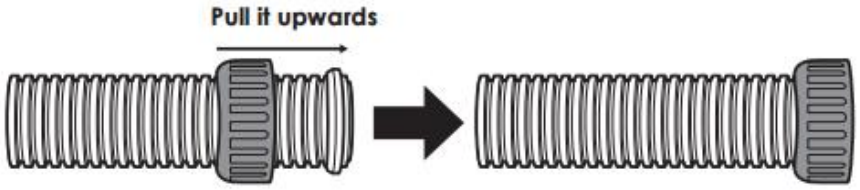
Before you start installing the pipe, be sure that you have the following components:

	**Slip Nut** To secure “L” fitting adaptors.
	**Stopper Plugs** To close unused cable entry holes in explosion protected equipment.
	**O-Ring Rubber / Gasket** To maintain the IP Rating between equipment and cable.
	**Conversion reducers** To convert thread forms and size between equipment and cable entry devices.
	**Locknuts** To secure adaptors / reducers, and stopper plugs into equipment.
	**Threaded 90-degree bends** To protect cables when installed in confined spaces where the cable may be bending. This threaded 90-degree bends are available with male connection threads.

To install the conduit, perform the following:

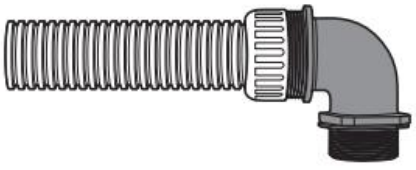
2.1 Insert the slip nut followed by the O-ring rubber/ gasket into the tube.

2.2 Adjust the location of O-ring rubber and pull the slip nut into the O-ring rubber and tighten up to ensure the waterproof seal.



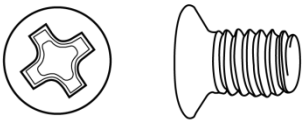
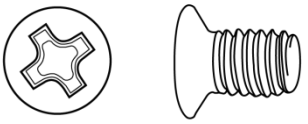
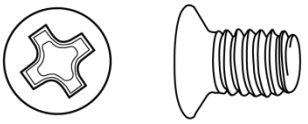
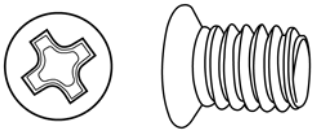
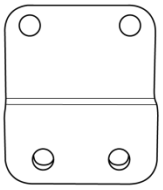
2.3 Install the conversion reducers.

2.4 Place the threaded 90-degree bends into the slip nut and then fasten it.



You will need the following screws to fix enclosure to the Panel PC:

	Size	Where used	Quantity	Appearance
Screw				

	M3x 6	Secure the plate to the bottom side	2	
		Secure the cover on the top side	3	
		Secure the cover on the bottom side	4	
	M4 x 6	Secure the cover to both sides with the plate	8	
Metal Plate				
	34.8 x 30.8 x 6.7	Secure the enclosure (box) to the Pan el PC	2	

To secure the enclosures follow the instruction below.

1) Turn the Panel PC face down. Secure the bottom plate to the Panel PC with two Philips M3 x 6 flathead screws.
2) Install the pipe to the bottom side of enclosure.
3) Align all the wires and insert into the pipe opening.
4) Secure the cover on both top (three screws) and bottom (four screws) sides with M3 x 6 Philips flathead screws.
5) Secure the plate with four Philips M4x6 flathead screws on both sides.

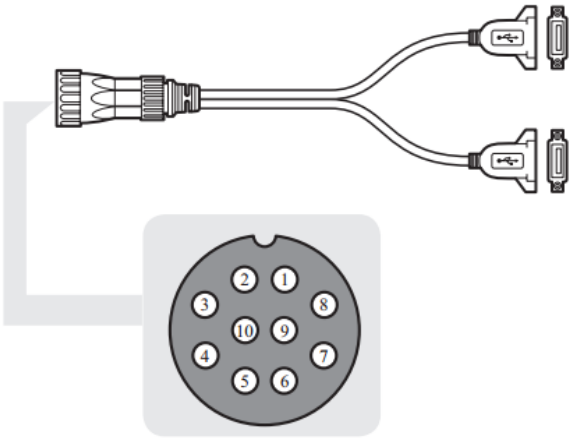
Reverse the procedures to open the enclosure.

2.3.4 Connector Pinouts

This Panel PC is equipped with four connectors which are IP65 level and fool-proofing design. Use only the cables that are included in the package. The pin assignments of the cables are as follows:

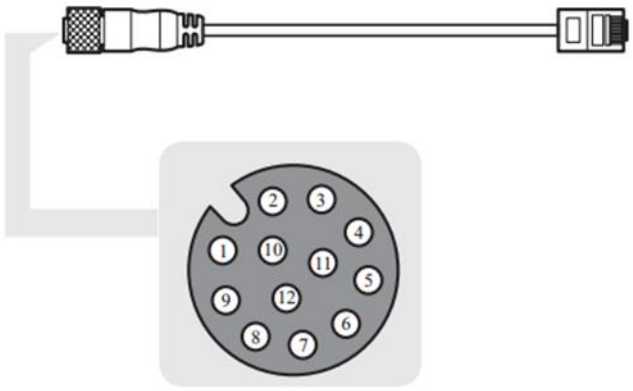
IMPORTANT:
Minimum input cables size is 18AWG,
Minimum temperature rating of the cables is 105°C.

2.3.4.1 USB Cable



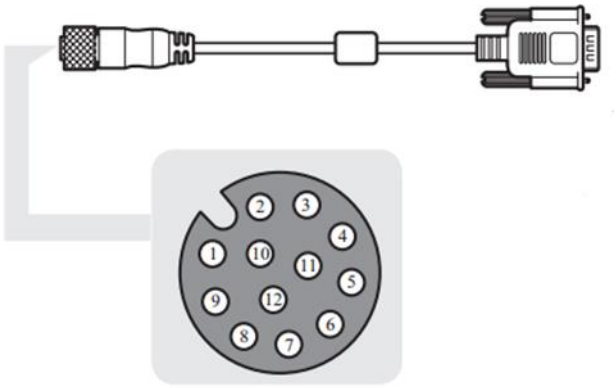
Pin No.	Symbol	Color
CN1-1	VCC	RED
CN1-2	VCC	RED
CN1-3	D-	WHITE
CN1-4	D-	WHITE
CN1-5	D+	GREEN
CN1-6	D+	GREEN
CN1-7	GND	BLACK
CN1-8	GND	BLACK
CN1-9	Braid	

2.3.4.2 Ethernet (LAN) Cable



Pin No.	Color
CN2-1	White/Orange
CN2-2	Orange
CN2-3	White/Green
CN2-4	Blue
CN2-5	White/Blue
CN2-6	Green
CN2-7	White/Brown
CN2-8	Brown

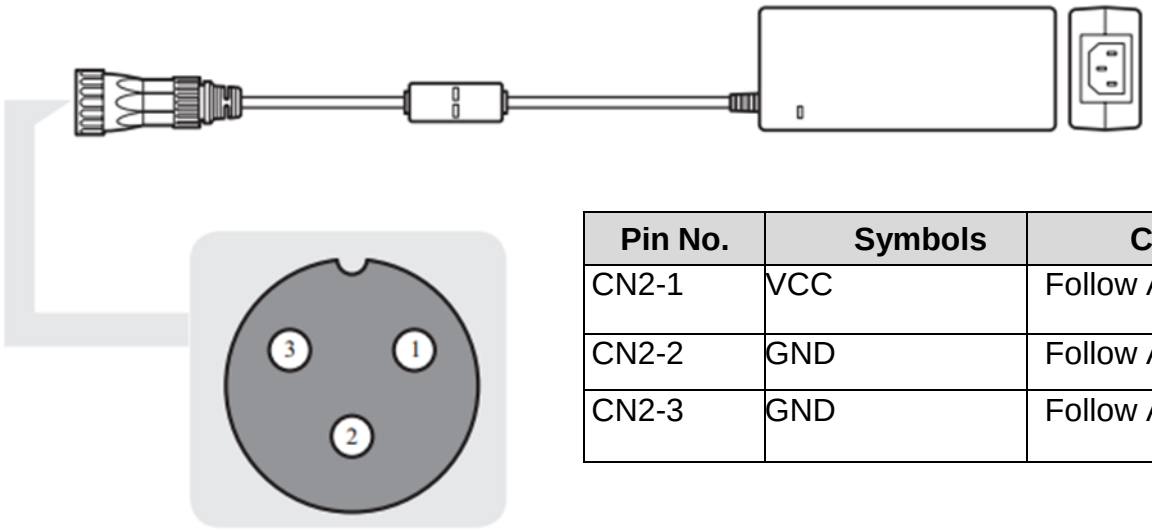
2.3.4.3 RS-232 Cable (Optional RS-422/485)



RS-232		
Pin No.	**Symbols**	**Color**
CN2-1	DCD-CON2	Green
CN2-2	DSR-CON2	Brown
CN2-3	RXD-CON2	Red
CN2-4	RTS-CON2	Orange
CN2-5	TXD-CON2	Blue
CN2-6	CTS-CON2	White
CN2-7	DTR-CON2	Purple
CN2-8	RI-CON2	Yellow
CN2-9	GND-CON2	Black

RS-422			RS-485		
Pin No.	**Symbols**	**Color**	**Pin No.**	**Symbol**	**Color**
CN2-1	TX-	Green	CN2-1	TXRX-	Green
CN2-2	TX+	Brown	CN2-2	TXRX+	Brown
CN2-3	RX+	Red	CN2-3		Red
CN2-4	RX-	Orange	CN2-4		Orange
CN2-5		Blue	CN2-5		Blue
CN2-6		White	CN2-6		White
CN2-7		Purple	CN2-7		Purple
CN2-8		Yellow	CN2-8		Yellow
CN2-9	GND-CON2	Black	CN2-9	GND-	Black

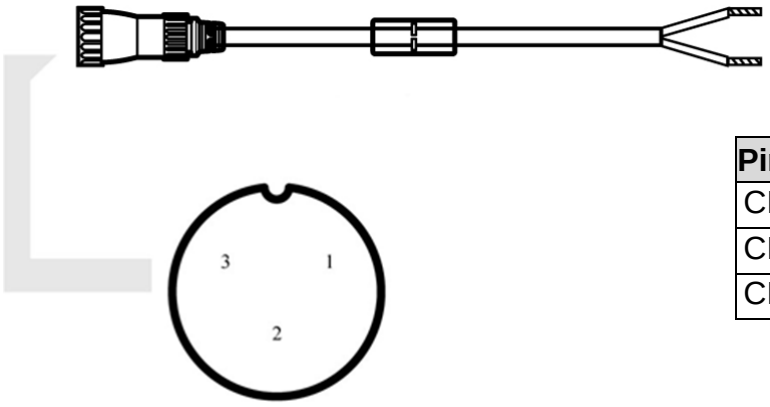
2.3.4.5 Power Adapter



Pin No.	Symbols	Color
CN2-1	VCC	Follow Adapter
CN2-2	GND	Follow Adapter
CN2-3	GND	Follow Adapter

NOTE:
The adapter is certified by UL, CUL TUV/GS CE, FCC, BSMI, EK, DOIR+C-TICK, CCC, PSE.

2.3.4.6 DC Power Cable (Open Wire)



Pin No.	Symbols	Color
CN2-1	VCC	Red
CN2-2	Shield	
CN2-3	GND	Black

WARNING!/ AVERTISSEMENT!
Ensure that the external power source is OFF before connecting or disconnecting the DC IN jack.

Assurez-vous que la source d'alimentation externe est coupée avant de brancher et de débrancher la prise DC IN.

Chapter 3: Installation

This chapter provides mounting guide for all available mounting options and hardware installation instructions. Pay attention to cautions and warning to avoid any damages.

3.1 Cable Mounting Considerations

For a nice look and safe installation, make sure cables are neatly hidden behind the Panel PC. Refer to Chapter 2, section 2.2.1 for the cable installation instruction.

CAUTION/ ATTENTION
Follow mounting instructions and use recommended mounting hardware to avoid the risk of injury.
Suivez les instructions de montage et d'utilisation recommandé le matériel de montage pour éviter le risque de blessure.

CAUTION/ ATTENTION
Observe all local installation requirements for connection cable type and protection level.
Suivre tous les règlements locaux d'installations, de câblage et niveaux de protection.

CAUTION/ ATTENTION
Turn off the device and disconnect other peripherals before installation.
Éteindre l'appareil et débrancher tous les périphériques avant l'installation.

ALTERNATING CURRENT / MISE À LE TERRE!
To prevent electrical shock, the Safety Ground location on the rear must be bonded to the local earth ground through a minimum 12 AWG wire as short as possible
Pour éviter les chocs électriques, l'emplacement de la prise terre à l'arrière doit être lié à terre locale, à travers un 12 AWG minimum et aussi court que possible.

3.2 Safety Precautions

Observe the following common safety precautions before installing the equipment:

- Use separate, non-intersecting paths to route power and networking wires. If power wiring and device wiring paths must be crossed make sure the wires are perpendicular at the intersection point.
- Keep the wires separated according to the interface. Wires that share similar electrical characteristics must be bundled together.
- Do not bundle input wiring with output wiring. Keep them separate.
- When necessary, it is strongly advised that you label wiring to all devices in the system.

3.3 Mounting Guide

The device comes with different mounting options suitable for most of the industrial and commercial applications. The main mounting approach is chassis - very user-friendly in terms of installation. Refer to sub-sections below for more details.

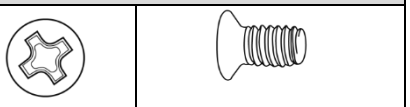
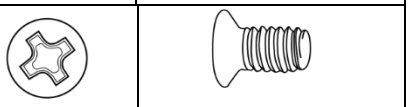
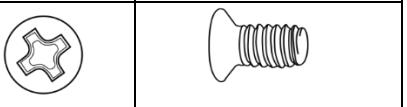
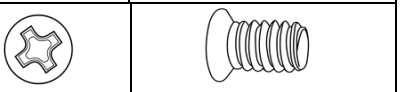
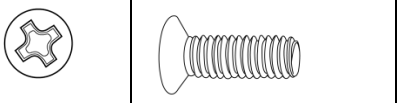
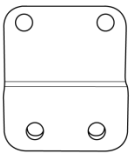
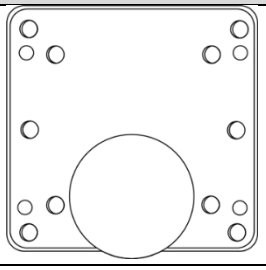
IMPORTANT:
Perform mounting after you establish all the necessary connections. Refer to Chapter 2, section 2.3 for wiring requirements and instructions.

The power button is located under the enclosure. Make sure the device is turned ON before it is mounted.

3.3.1 VESA Mount

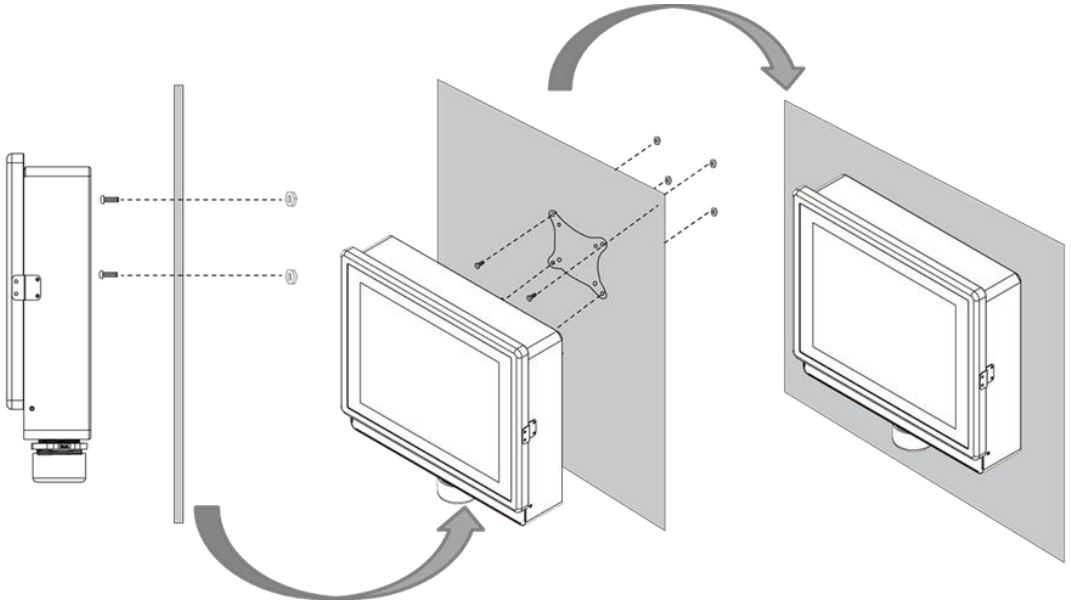
3.3.1.1 Wall Mount

Standalone Stainless Panel PC comes with VESA Mount solution. Follow the instruction below to complete mounting.

Tools needed:				
	Size	**Where used**	**Quantity**	**Appearance**
Screw				
	M3x 6	Secure the metal plate to the bottom side	2	
		Secure the box cover on the top side	3	
		Secure the box cover on the bottom side	4	
	M4 x 6	Secure the metal plate on the box cover to the Panel CP (left and right sides)	8	
	M5 x 10	Secure VESA Plate to the enclosure of the Panel PC	4	
Metal Nut				
	D=5 mm	Secure VESA Plate to the enclosure of the Panel PC	4	
Metal Plate				
	34.8 x 30.8 x 6.7	Secure the enclosure (box) to the Pan el PC	2	
VESA Plate				
	100 x 100	Mount Panel PC to the fixture	1	

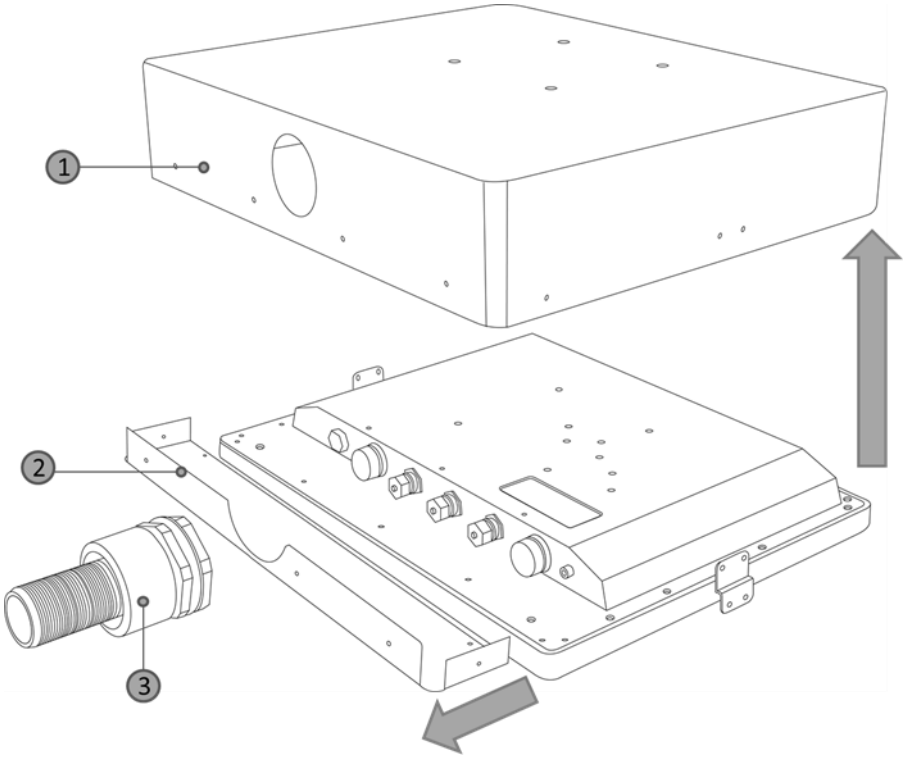
Mounting Steps:

Step 1 First, you need to open the enclosure (box cover) to install VESA Plate to the enclosure of the Panel PC.



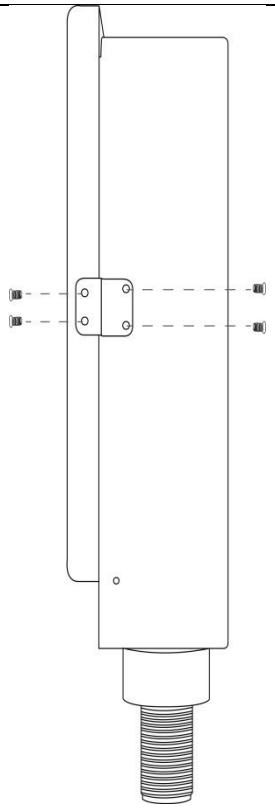
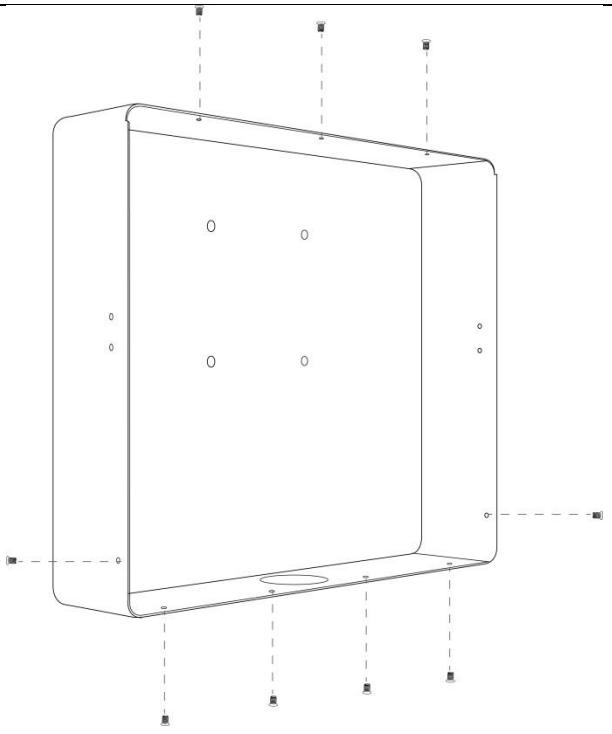
**with customer's bracket*

Exploded drawing:



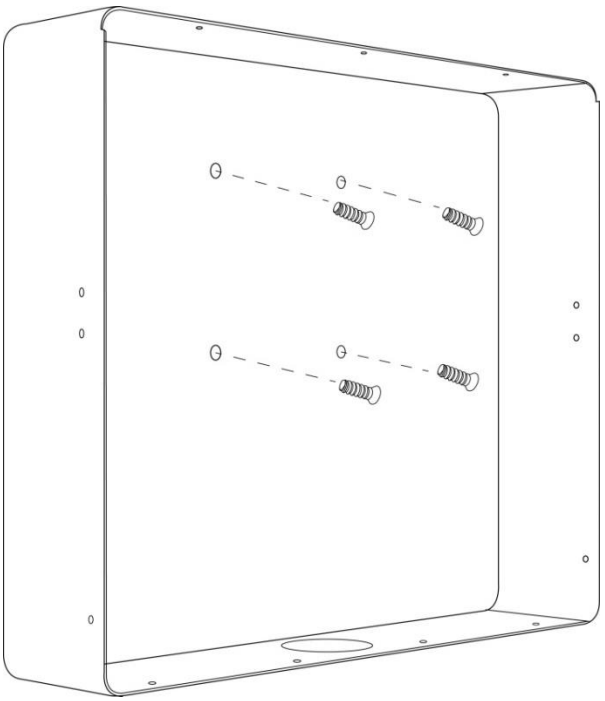
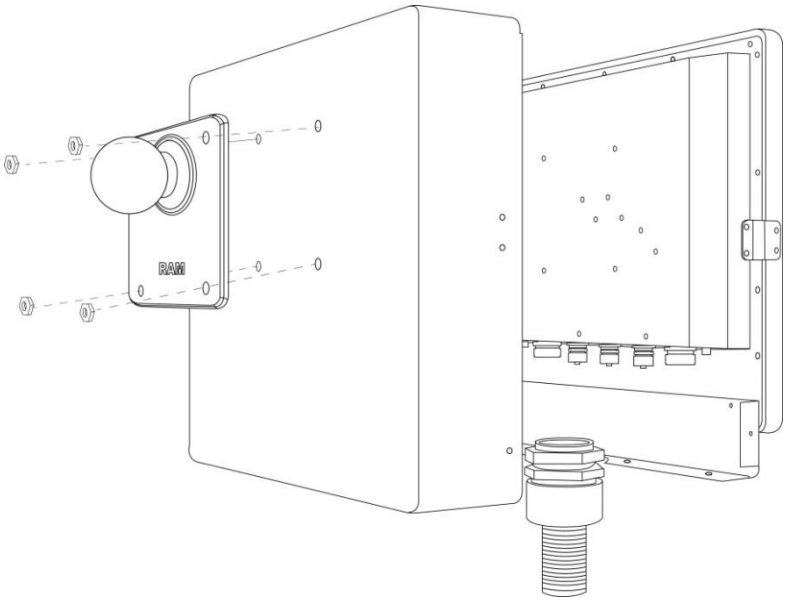
Item No.	Description
1	Top cover lid of the enclosure
2	Bottom cover plate of the enclosure
3	The conduit

To open the enclosure, follow the steps below:

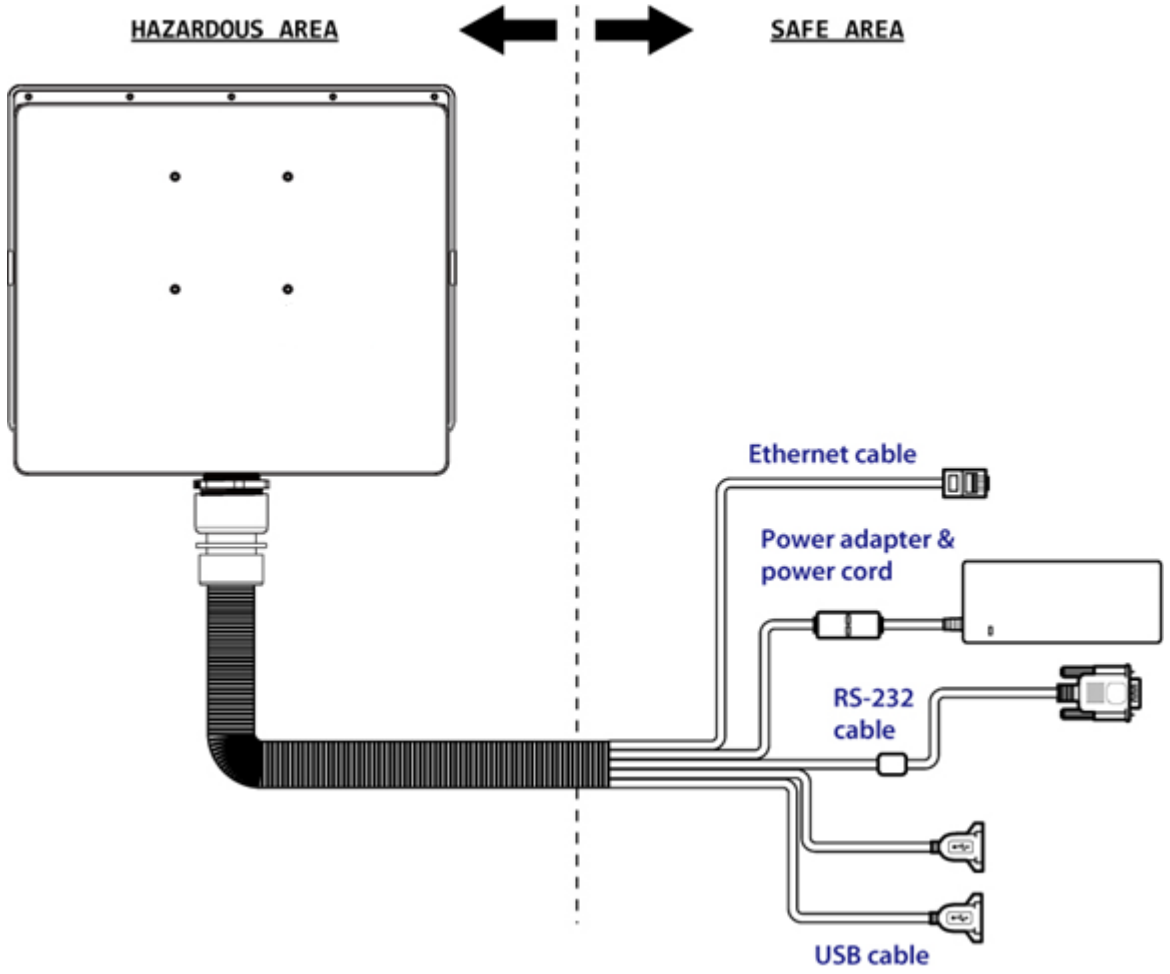
Description	Picture
1. Turn the Panel PC face down	
2. Loosen screws (M4 x 6) on two metal plates that secure enclosure to the Panel PC from each side;	
3. Loosen the screws (M3 x 6) that secure box cover on both top (three screws) and bottom (four screws) sides, and loosen the screws (one on each side) that secure box cover on the left and right sides;	
Remove the box top cover	

Step 2 After you opened the box cover, install VESA plate to the enclosure.

To install VESA Plate, follow the steps below:

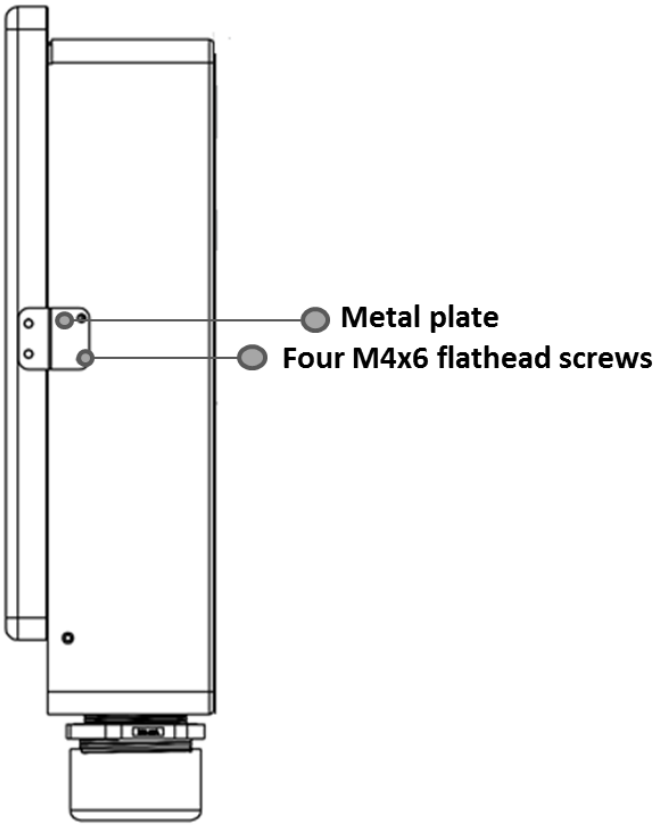
Description	Picture
1. Fasten four Philips M5x10 flathead screws from the inside of the box top cover.	
2. Secure the VESA plate from the outside with four metal nuts.	

Step 3 Align all the wires and insert into the pipe opening (refer to Chapter 2, section 2.3.3 for pipe installation instructions).



Step 4 Secure the cover box on both top (three screws) and bottom (four screws) sides with M3 x 6 Philips flathead screws, and fasten the screws (M3 x 6) that secure box cover on the left and right sides;

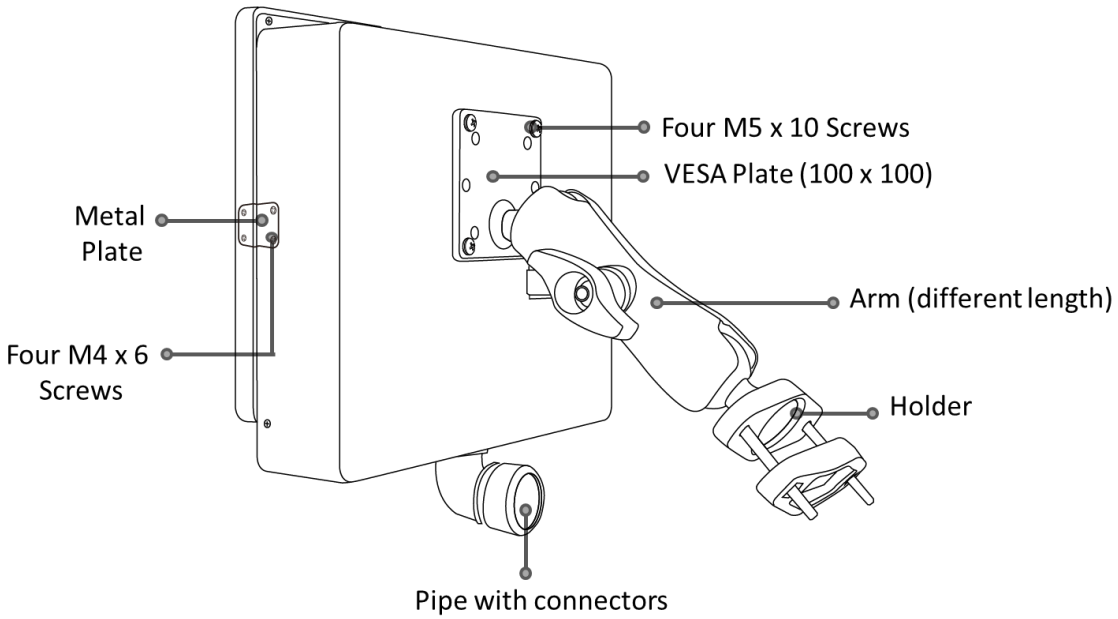
Step 5 Fasten four Phillips M4x6 flathead screws on metal plates on both sides to secure Panel PC to the enclosure.



Step 6 Carefully mount the device to the fixture (for ex. wall).
Step 7 When the installation is complete; plug the power cord into a grounded AC outlet. Turn on the power.

3.3.1.2 Swing Arm

The device can be installed on a swing arm. You can purchase swing arm from RAM Mount.



NOTE:
You need to secure VESA Plate to the Panel PC enclosure with four M5x10 screws from outside and fasten metal nuts from inside.

Chapter 4: Maintenance

This chapter provides information on regular cleaning and maintenance procedures. Follow all the recommendations included in this chapter in order to ensure long product lifecycle.

4.1 Cleaning the Display Screen

- Wipe the screen with a clean, soft, lint-free cloth. This removes dust and other particles. Do not use acetone, ethyl alcohol, toluene, ethyl acid or methyl chloride to clear the panel. It may permanently damage the display screen.
- You can apply a small amount of non-ammonia; non-alcohol based glass cleaner onto a clean, soft, lint-free cloth and wipe the screen.
- Never spray or pour any liquid directly on the screen or case.
- **Do Not** use water or oil directly on the display screen. If droplets are allowed to drop on the screen, permanent staining or discoloration may occur.

4.2 Cleaning the Casing

Use the following procedure to clean the equipment.

CAUTION/ ATTENTION
Always turn off the device and disconnect other peripherals before cleaning and maintenance procedures.
Toujours éteindre l'appareil et débrancher tous les périphériques avant que les procédures de nettoyage et d'entretien.

Before Cleaning:

- Make sure the device is turned off.
- Disconnect the power cable from any AC outlet.

When Cleaning:

- Wipe dust off the outside casing with a cloth slightly moistened with water or mild ammonia-based cleaning solution. Do not use this cloth on a display screen!
- Do not use an abrasive cleaner or high pressure washer on the screen.
- Do not rub the unit with a dry cloth. This action can result in a static charge being built up and cause a spark. Always use damp cloth while cleaning the unit.

WARNING!/ AVERTISSEMENT!
POTENTIAL ELECTROSTATIC CHARGE HAZARD – SEE INSTRUCTIONS
POTENTIEL ÉLECTROSTATIQUE CHARGE DANGER - VOIR INSTRUCTIONS

Chapter 5: BIOS Setup Utility

BIOS Setup Utility is a program for configuration basic Input / Output system settings of the Panel PC for optimum use. This chapter provides information on how to use BIOS setup, its functions and menu.

5.1 When and How to Use BIOS Setup

To enter the BIOS setup, you need to connect an external USB keyboard, press **<Del>** key when the prompt appears on the screen during start up. The prompt screen shows only few seconds, you need to press **<Del>** key quickly. If the message disappears before your respond, restart the system by turning it OFF and ON, and enter the BIOS again.

IMPORTANT:
Updated BIOS version may be published after the manual released. Check the latest version of BIOS on the website.

Run BIOS setup utility for:

1. Error message on screen indicates to check BIOS setup
2. Restoring the factory default settings.
3. Modifying the specific hardware specifications
4. Necessity to optimize specifications

5.2 BIOS Functions

BIOS Navigation Keys

BIOS navigation keys for keyboard control are listed below.
The following keys are enabled during POST:

Key	Function
Del	Enters the BIOS setup menu.
F7	Display the boot menu. Lists all bootable devices that are connected to the system. With cursor ↑and cursor ↓and by pressing <ENTER>, select the device used for the boot.
Pause	Pressing the [Pause] key stops the POST. Press any other key to resume the POST.

The following Keys can be used after entering the BIOS Setup.

Key	Function
F1	General Help
F2	Previous Values
F3	Optimized Defaults
F4	Save & Exit
Esc	Exit
+/-	Change Opt.
Enter	Select or execute command
Cursor ↑	Moves to the previous item
Cursor ↓	Goes to the next item
Cursor ←	Moves to the previous item
Cursor →	Goes to the next item

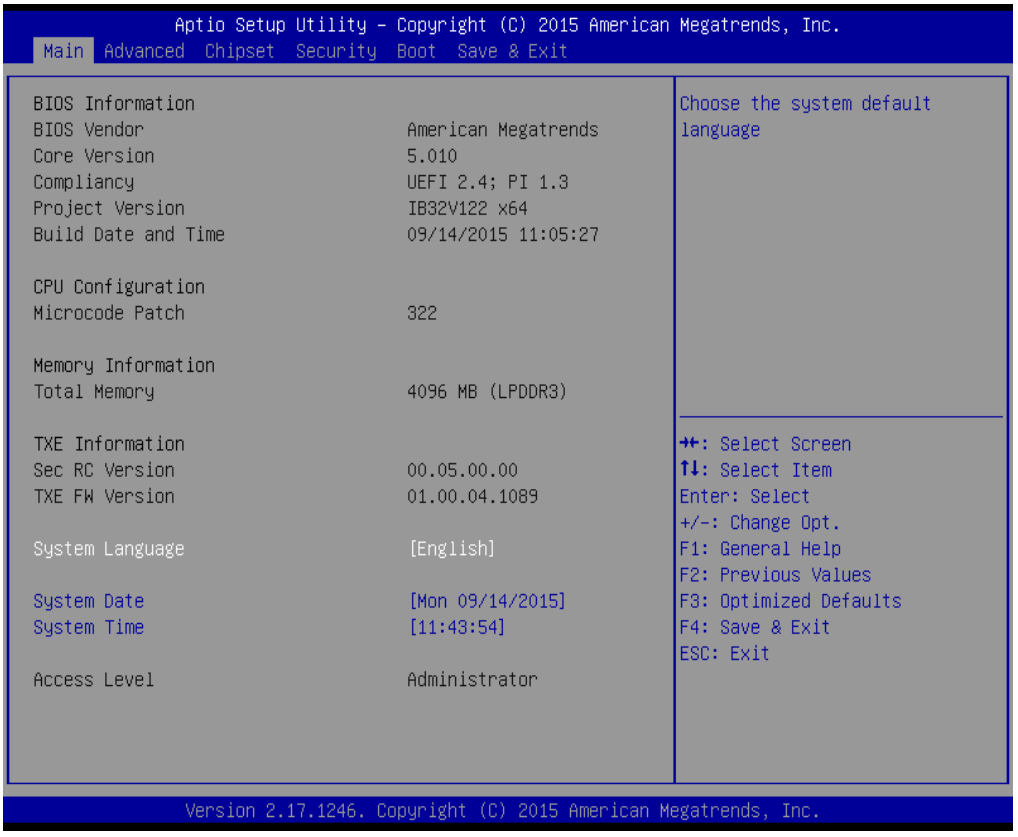
NOTE:
You can press the F1, F2, F3, F4, –/+, and Esc keys by connecting a USB keyboard to your device.

For items marked ► press **<Enter>** for more options.

5.3 BIOS Menu

5.3.1 Main Menu

When you enter BIOS setup, the first menu that appears on the screen is the main menu. The Main menu displays the basic information about yoursystem including BIOS version, processor RC version, system language, time, and date. It contains the system information including BIOS version, processor RC version, system language, time, and date.



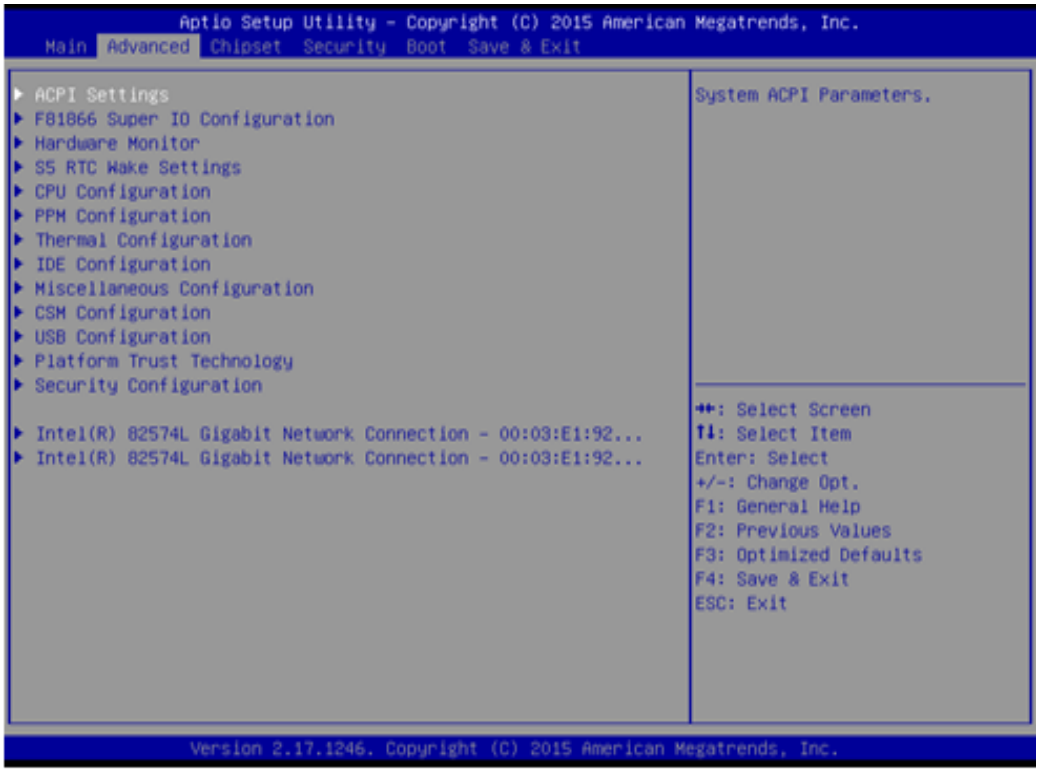
BIOS Setting	Description	Setting Option	Effect
System Language	Displays the system language. [English] is set up by default.	Adjustment of the language	Set the language in other language. The language in this device is English.
System Date/Time	This is current date setting. The time is maintained by the battery when the device is turned off.	Date and time changes.	Set the date in the format [mm/dd/yyyy]; The time in the format: [hh/mm/ss]
Access Level	The current user access settings	Changes to the level of access	Administrator is set up by the default

5.3.2 Advanced Menu

The advanced menu also uses to set configuration of the CPU and other system devices. There are sub menus on the left frame of the screen.

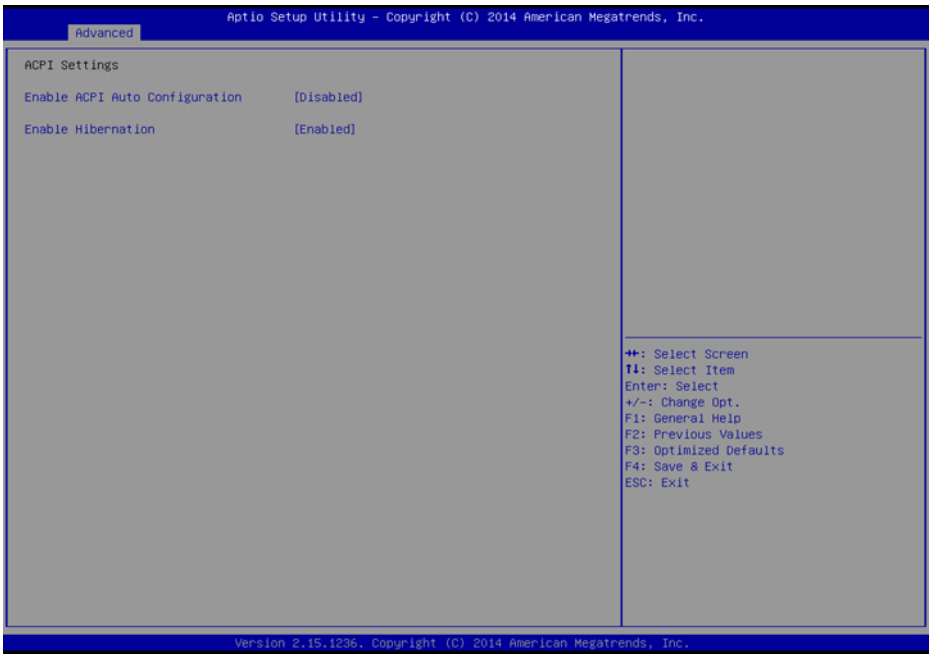
Important
Handle advanced BIOS settings page with caution. Any changes can affect the operation of your computer.

Advanced Configuration and Power Interface (ACPI) settings allow to control how the power switch operates. The power supply can be adjusted for power requirements. You can use the screen to select options of ACPI configuration. A description of the selected items will appear on the right side of the screen.



BIOS Setting	Description	Setting Option	Effect
ACPI Settings	Configures ACPI settings	Enter	Opens submenu
F81866 Super IO Configuration	Configures IO settings	Enter	Opens submenu
Hardware Monitor	Configures Hardware Monitor settings	Enter	Opens submenu
S5 RTC Wake Settings	Configures RTC Wake parameters	Enter	Opens submenu
CPU Configuration	Configures CPU settings	Enter	Opens submenu
PPM Configuration	Configures PPM settings	Enter	Opens submenu
Thermal Configuration	Configures Thermal Parameters	Enter	Opens submenu
IDE Configuration	Configures IDE Parameters	Enter	Opens submenu
Miscellaneous Configuration	Configures Miscellaneous Parameters	Enter	Opens submenu
CSM Configuration	Configures CSM Parameters	Enter	Opens submenu
USB Configuration	Configures USB Settings	Enter	Opens submenu
Platform Trust Technology	Configures Platform Trust Technology parameters	Enter	Opens submenu
Security Configuration	Configures Security parameters	Enter	Opens submenu

5.3.2.1 ACPI Settings



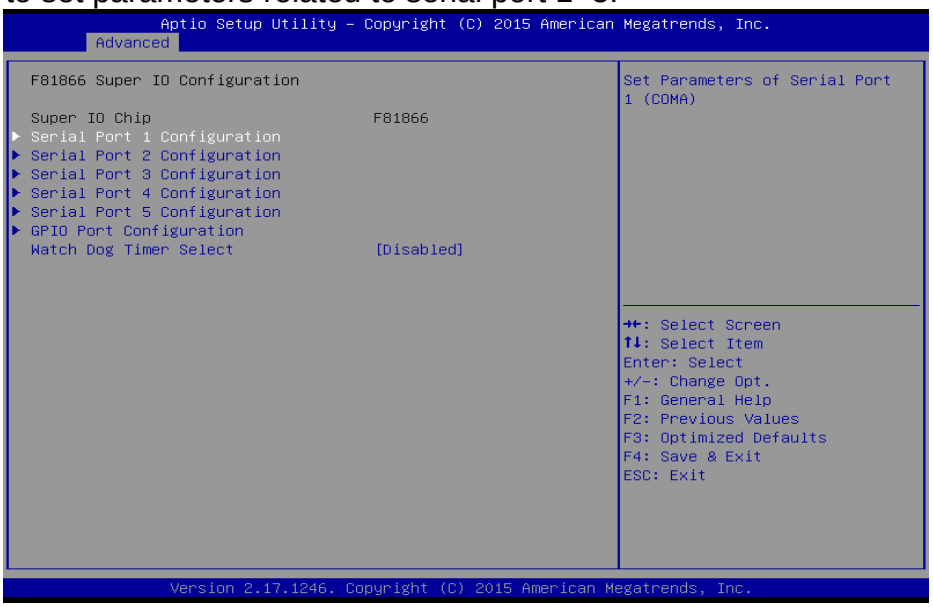
BIOS Setting	Description	Setting Option	Effect
Enable ACPI Auto Configuration	BIOS ACPI Auto Configuration	Enable/ Disable	Enables or Disables this function
Enable Hibernation	Control hibernation	Enable/ Disable	Enables or Disables this function

5.3.2.2 F81866 Super IO Configuration

You can use the screen to select options for Super IO Configuration, and change the value of the option selected. A description of the selected item appears on the right side of the screen. For items marked with ►, please press **<Enter>** for more options.

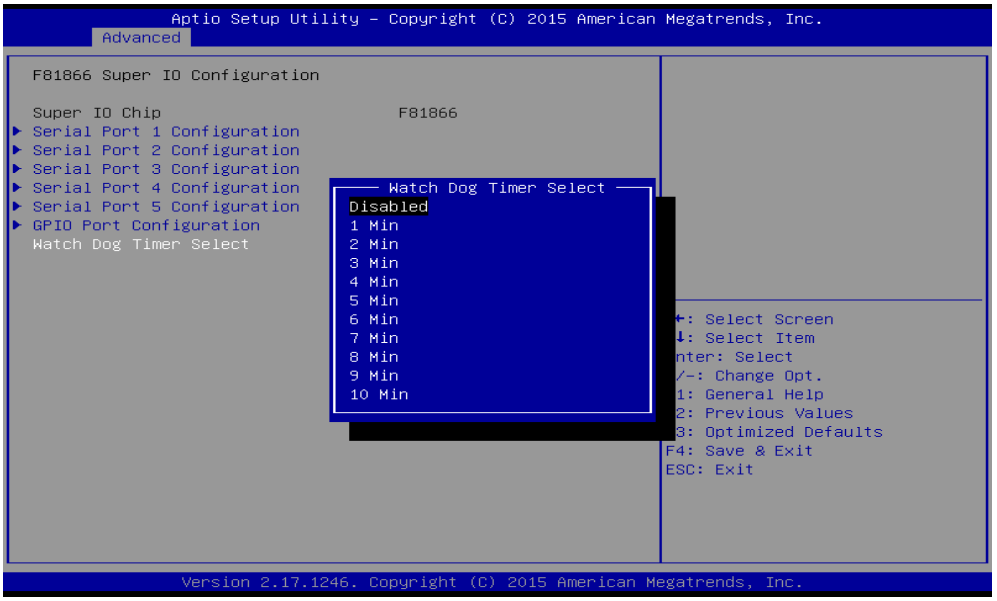
Serial Port 1~5

Use these items to set parameters related to serial port 1~5.



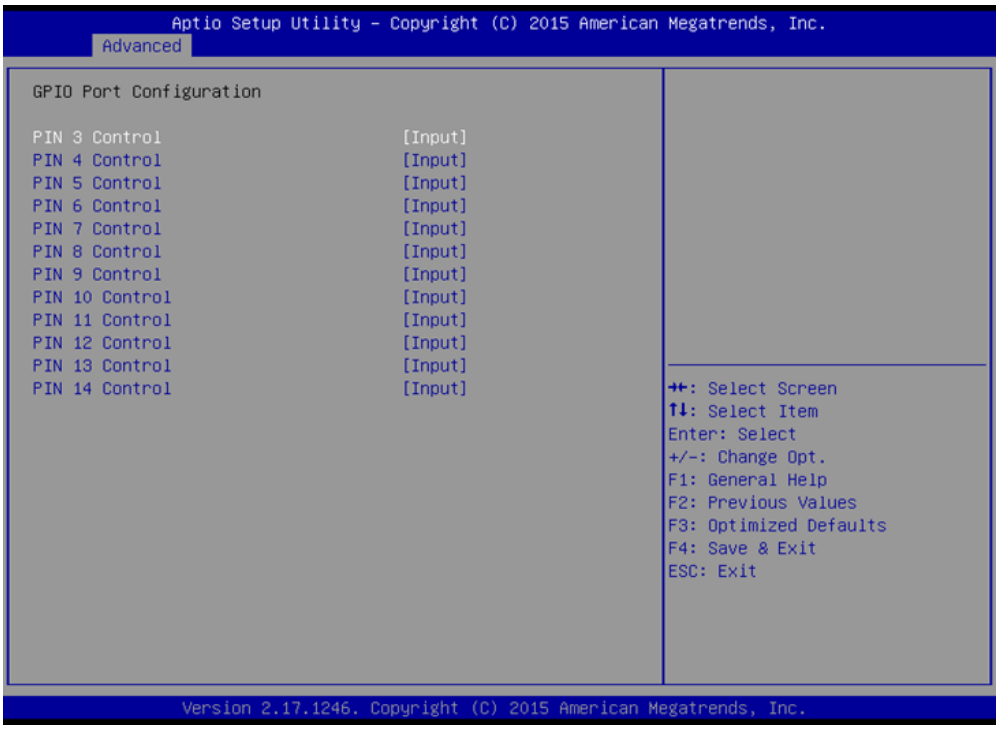
Watch Dog Time Select

You can either disable **Watch Dog Time Select**, or set up the time.Use **<Arrow>** keys to navigate and please press **<Enter>** to select the item.



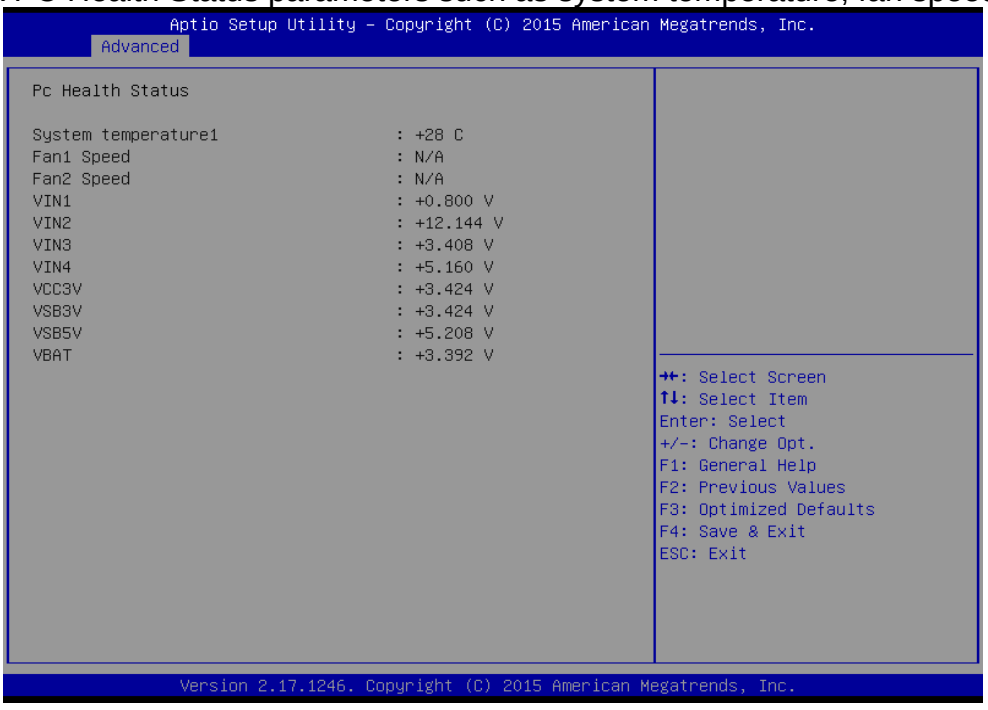
GPI0 Port Configuration

You can use the screen to change GPI0 Port setting. Use these items to set parameters related to **PIN3-PIN14 Control**.



5.3.2.3 Hardware Monitor

You can check PC Health Status parameters such as system temperature, fan speed etc.



5.3.2.4 S5 RTC Wake Settings

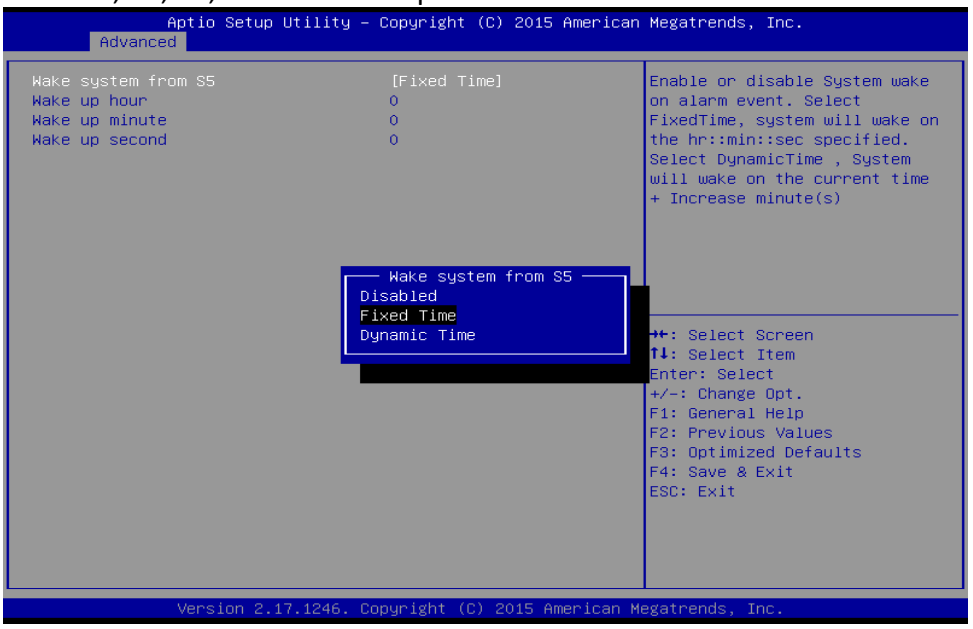
Wake System from S5 with fixed time setting

Wake system from S5 enables or disables system wake on alarm event. It allows you to wake up the system in a certain time.

Select **Fixed Time** to set the system to wake on the specified time.

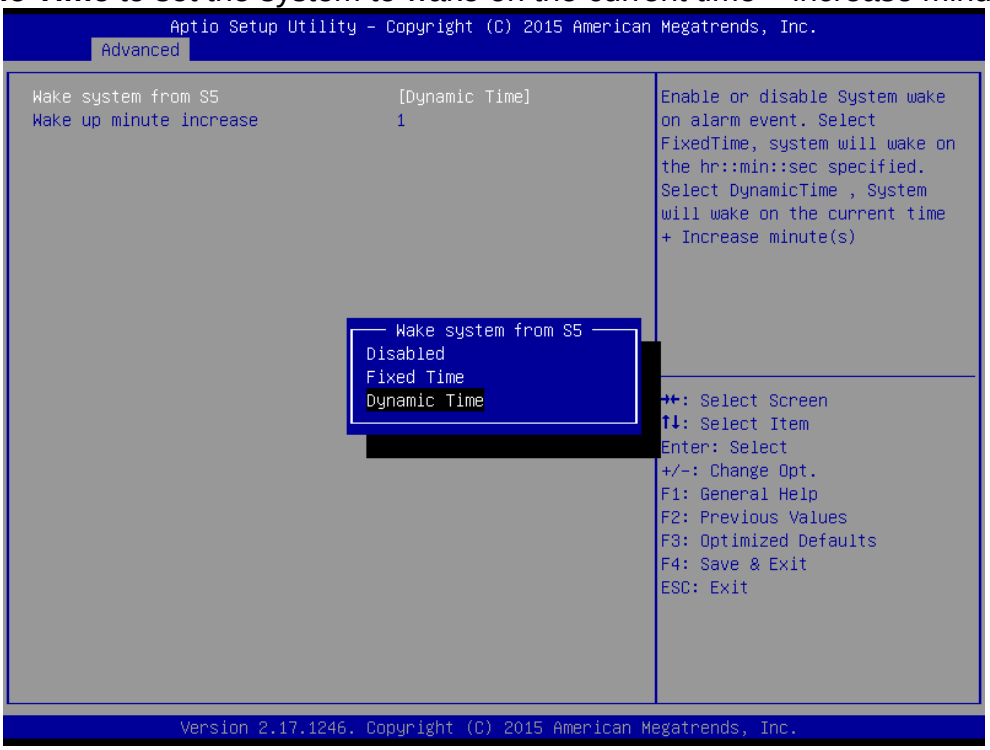
Use Navigation Keys ⬆ ⬇ to switch among the items: Day, Hour, Minute and Second. Type the desired value in the selected item.

For example, if you want the system to start up automatically at 15:30:30, the 10th day of each month, then you should enter 10, 15, 30, and 30 from top to bottom.



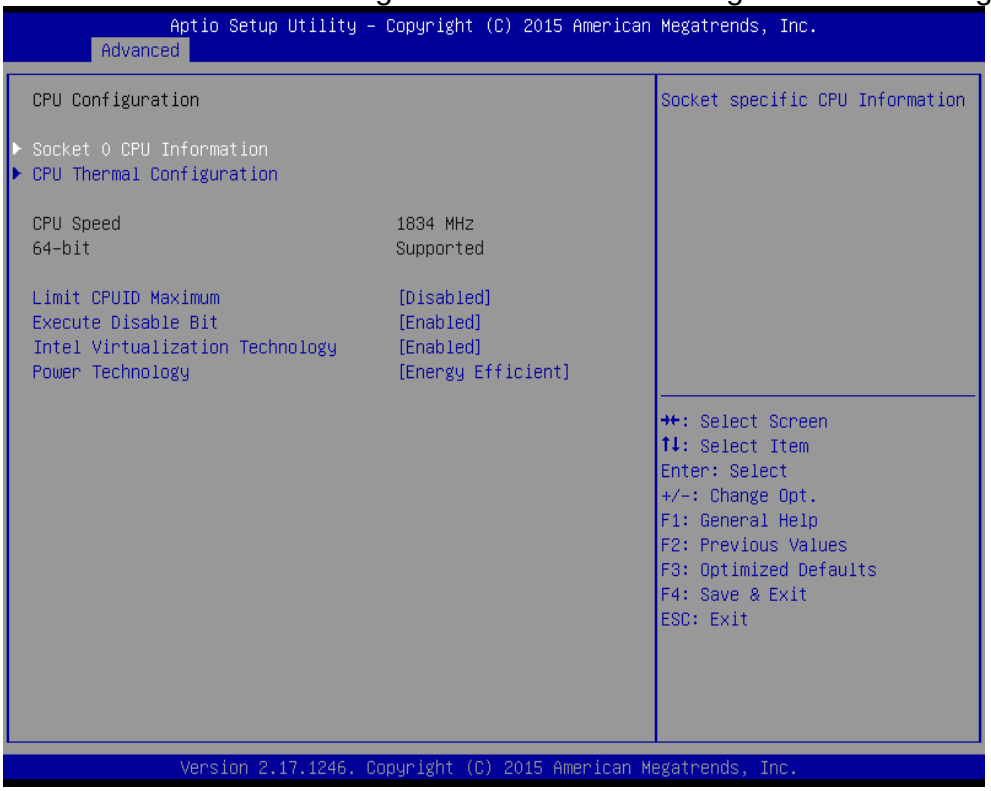
Wake system from S5 after dynamic time setting

Select **Dynamic Time** to set the system to wake on the current time + increase minute (s).



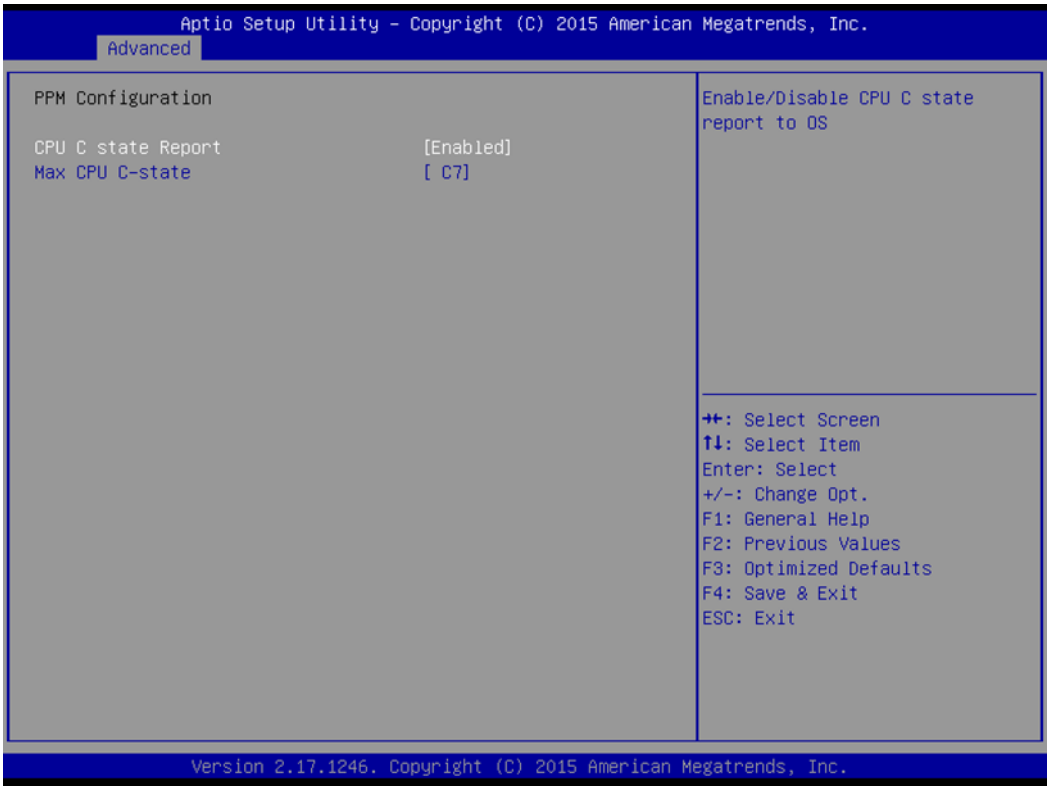
5.3.2.5 CPU Configuration

Press **<Enter>** to view current CPU configuration and make settings for the following sub-items.



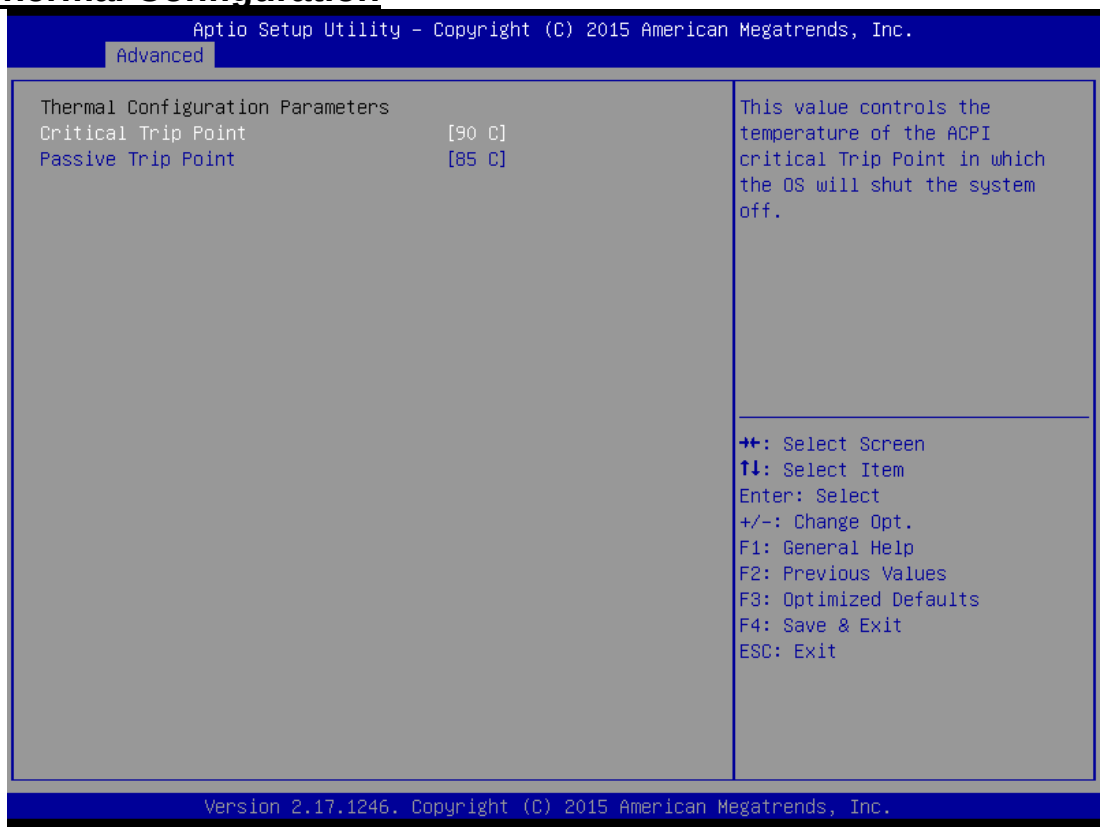
BIOS Setting	Description	Setting Option	Effect
Socket CPU Information	This item contains socket specific CPU information.	Enter	Open sub-menu
CPU Thermal Configuration	Thermal control	Enter	Open sub-menu
Limit CPUID Maximum	Limits CPIID Maximum	Disabled/ Enabled	Enable/Disable this function
Execute Disable Bit	Execute Disable Bit	Disabled/ Enabled	Enable/Disable this function
Intel Virtualization Technology	Allows to run recent OS and applications	Enabled/ Disabled	Enable/Disable this function
Power Technology	Control the performance and power management functions of the processors	Disabled	Disable this function
		Energy Efficient	Work on energy efficient mode

5.2.2.6 PPM Configuration



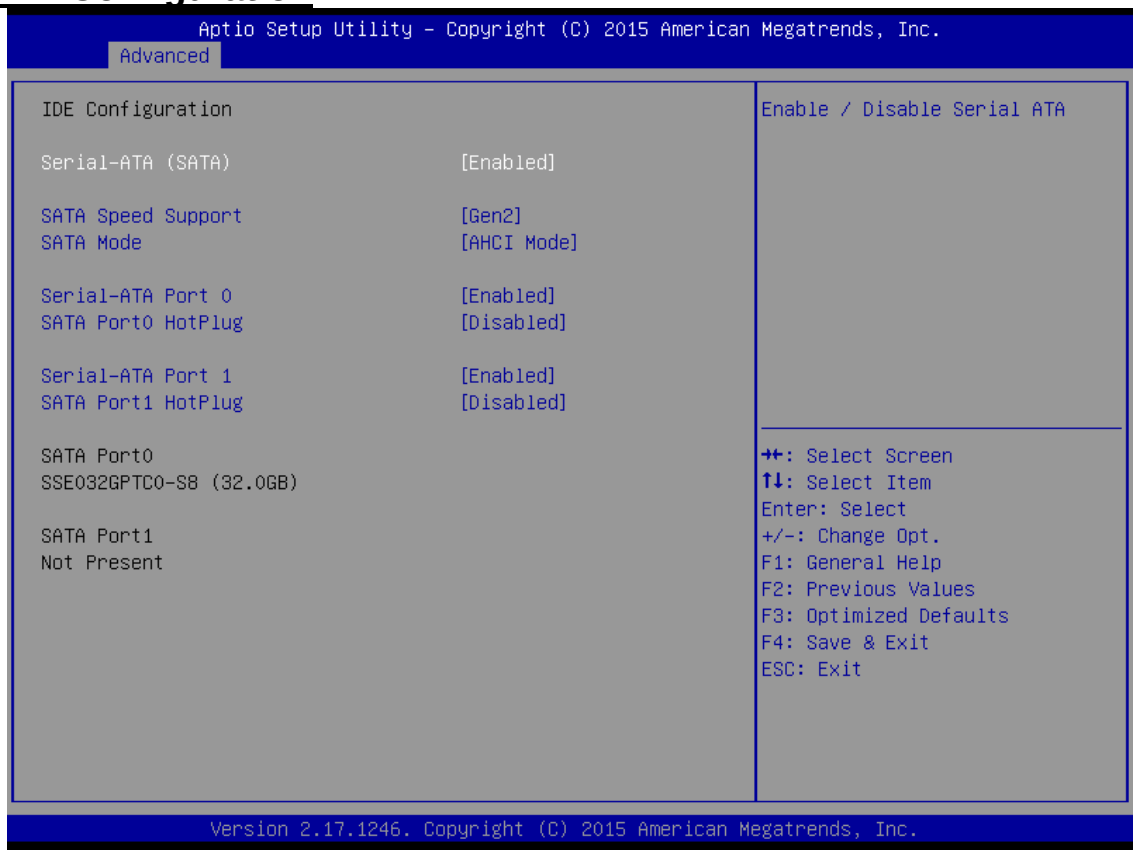
BIOS Setting	Description	Setting Option	Effect
CPU C State Report	Shows CPU C State Report	Enabled/ Disabled	Enable or Disable CPU C state report to OS
Max CPU C-State	Allows to enter power-saving mode in order to save energy	C1E, C3, C6, C7, Auto	Enable or Disable CPU C Max CPU S-Sate

5.3.2.7 Thermal Configuration



BIOS Setting	Description	Setting Option	Effect
Critical Trip Point	Specifies the temperature at which the OS will shut down the system	90C, 87C, 85C, 79C, 71C, 63C,55C,47C, 39C, 31C, 23C, 15C	Select the disable temperature for the system to shut down
Passive Trip Point	Specifies the temperature at which the OS will begin adjusting the processor	90C, 87C, 85C, 79C, 71C, 63C,55C,47C, 39C, 31C, 23C, 15C	Select the disable temperature for the system to start adjusting the processor

5.3.2.8 IDE Configuration



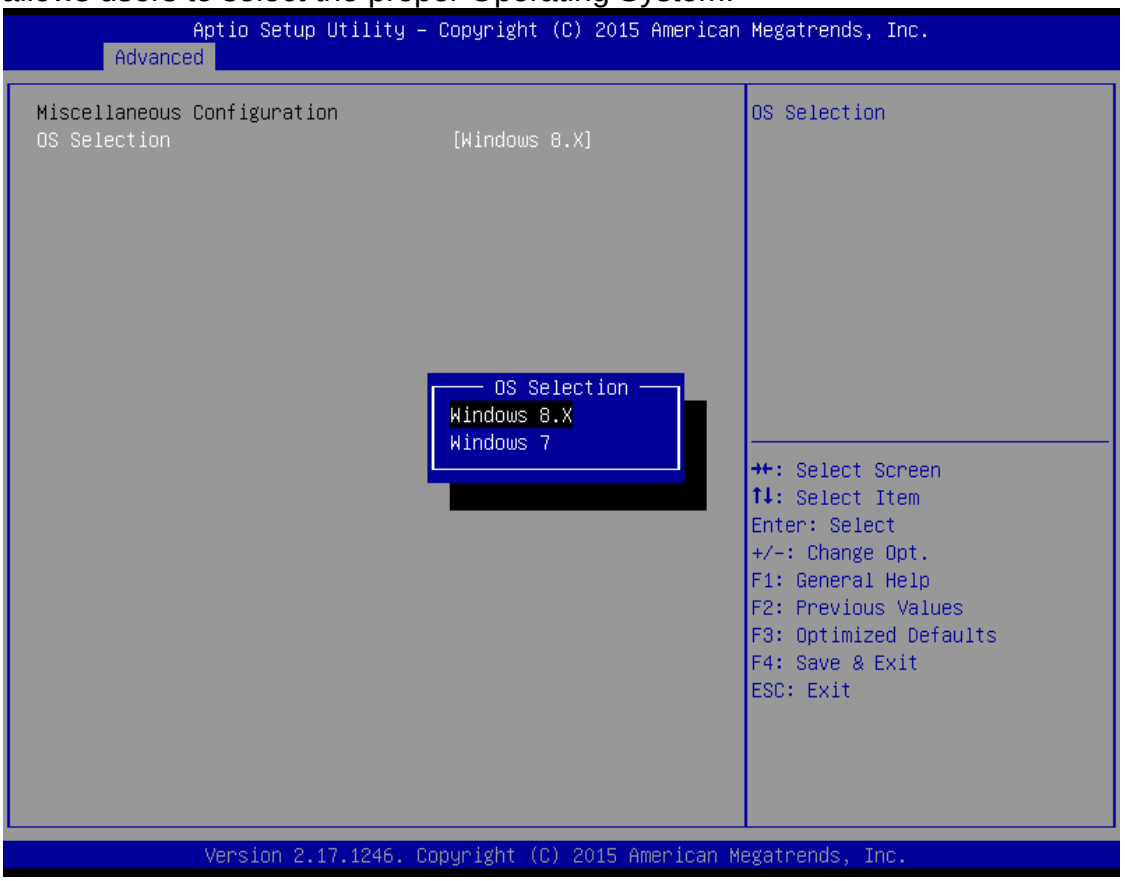
BIOS Setting	Description	Setting Option	Effect
Serial- ATA (SATA)	Responsible for supporting chipset drives with SATA interface.	Enabled/ Disabled	Enable or disable this function
SATA Speed Support	Allows forcing the speed limit SATA II ports standard IDE / SATA-controller chipset.	Gen1	The maximum speed will be limited to 150 MB/s
		Gen2	The maximum speed will be limited to 300 MB/s
		Disabled	Disables manual configuration of SATA II ports (mode will be selected based on the specifications of connected drives)
SATA Mode	This option specifies the operation mode of modern IDE / SATA-controller chipset	[AHCI]	Selecting this option allows you to take full advantage of the extended host controller SATA II
		[IDE]	SATA controller will operate in a mechanism similar to a conventional IDE-controller
		[RAID]	Allows combining hard drives in RAID-arrays in order to improve the reliability of data storage, or to increase the speed.

Serial- ATA Port 0	The option turns on or off Port 0 of SATA channels of standard IDE / SATA-controller chipset.	Enabled/ Disabled	Turn on (Enabled) or turn off (Disabled) Port 0
SATA Port0 HotPlug	This feature that allows you to attach and remove a SATA Port0	Enabled/ Disabled	Enable or disable this function
Serial- ATA Port 1	The option turns on or off Port 1 of SATA channels of standard IDE / SATA-controller chipset.	Enabled/ Disabled	Turn on (Enabled) or turn off (Disabled) Port 1
SATA Port1 HotPlug	This feature that allows you to attach and remove a SATA Port1	Enabled/ Disabled	Enable or disable this function

5.3.2.9 Miscellaneous Configuration

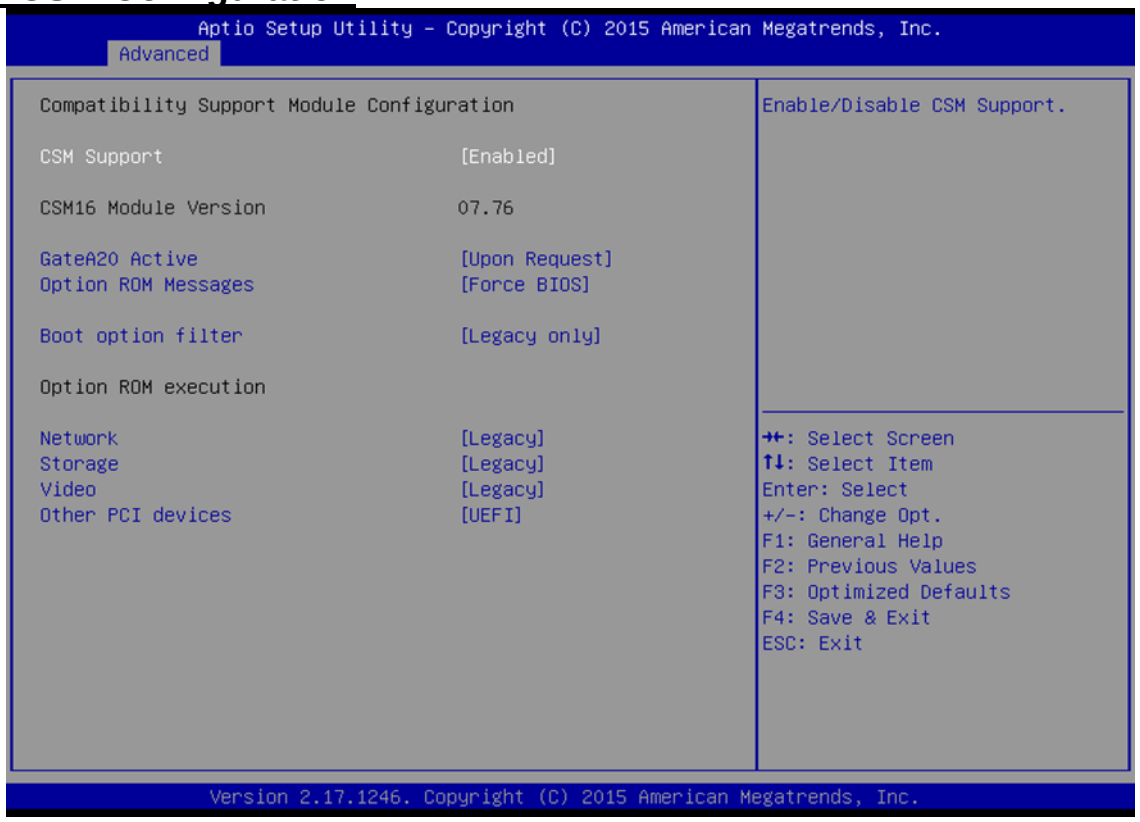
OS Selection

This item allows users to select the proper Operating System.



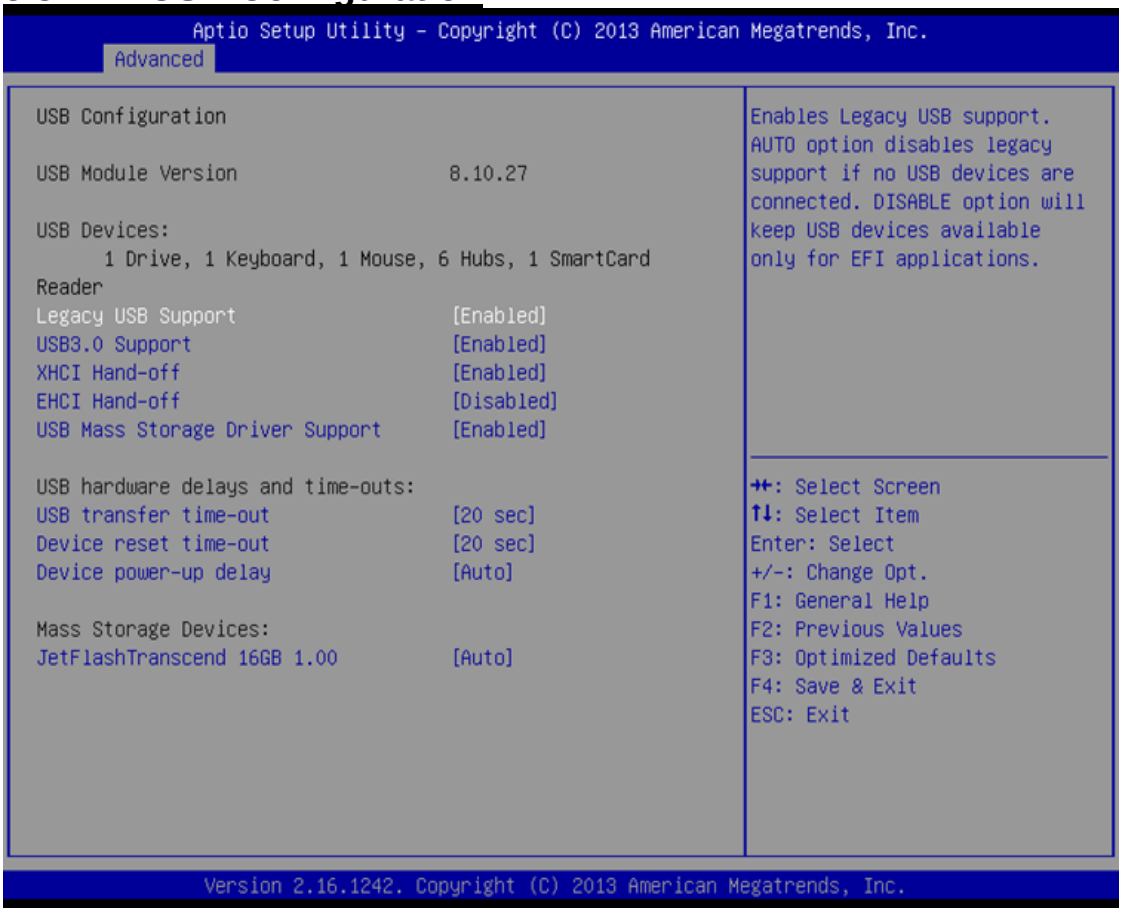
BIOS Setting	Description	Setting Option	Effect
Windows 8.X	Allows user to choose the proper OS.	Enter	Use Windows 8.X
Windows 7	Allows user to choose the proper OS.	Enter	Use Windows 7

5.3.2.10 CSM Configuration



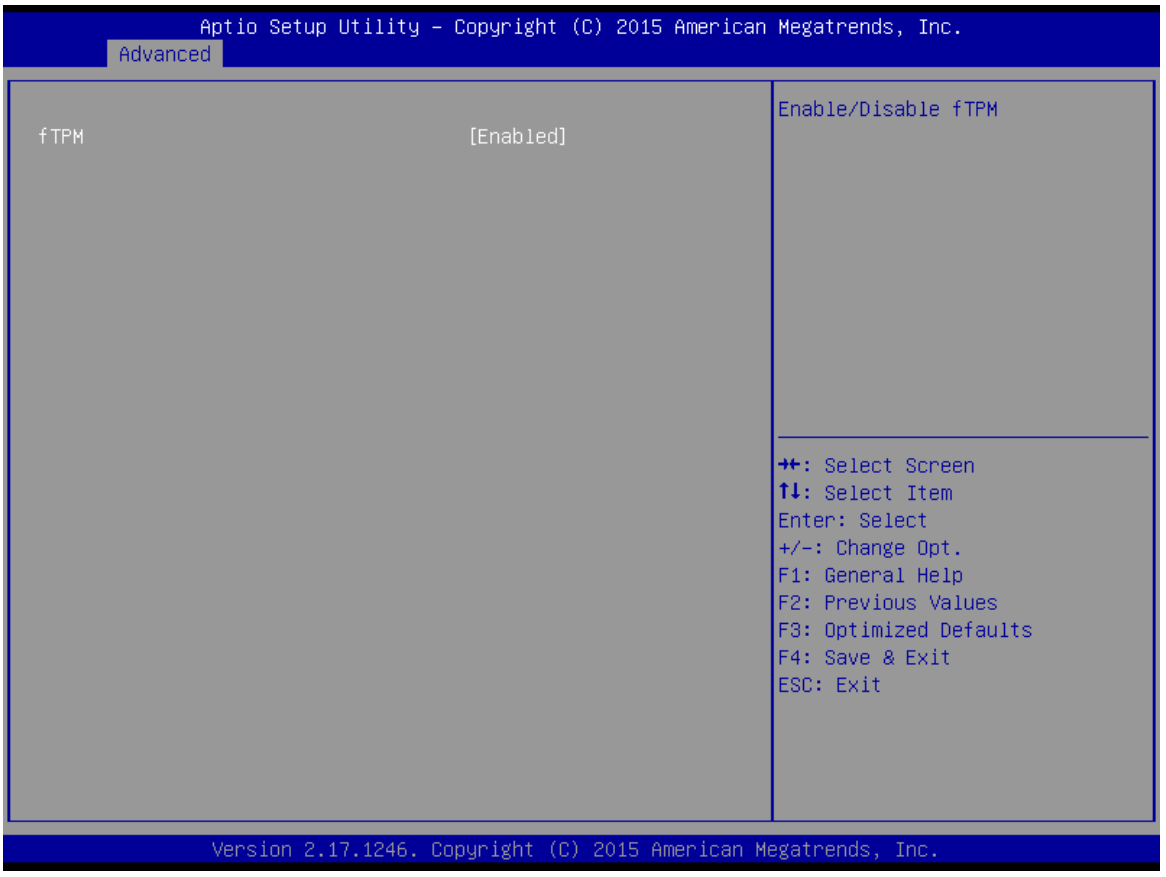
BIOS Setting	Description	Setting Option	Effect
CSM Support	The Compatibility Support Module (CSM) is a component of the UEFI firmware that provides legacy BIOS compatibility by emulating a BIOS environment, allowing legacy operating systems and some option ROMs that do not support UEFI to still be used.	Enabled/ Disabled	Enable or disable the Compatibility Support Module
GetaA20 Active	Activate GetaA20	Upon Request	Enable or disable this function
Option ROM Messages	Receiving ROM Messages Settings	Force BIOS	Set ROM messages parameters
Network	Specifies which Network option ROM is booted	UEFI	Only UEFI option ROMs are booted
		Legacy	
Storage	Specifies which Storage option ROM is booted	UEFI	Only UEFI option ROMs are booted
		Legacy	Only Legacy option ROMs are booted
Video	Specifies which Video option ROM is booted	UEFI	Only UEFI option ROMs are booted
		Legacy	Only Legacy option ROMs are booted
Other PCI Devices	Specifies which option ROM is booted for devices other than the network, storage or video	UEFI	Only UEFI option ROMs are booted
		Legacy	Only Legacy option ROMs are booted

5.3.2.11 USB Configuration



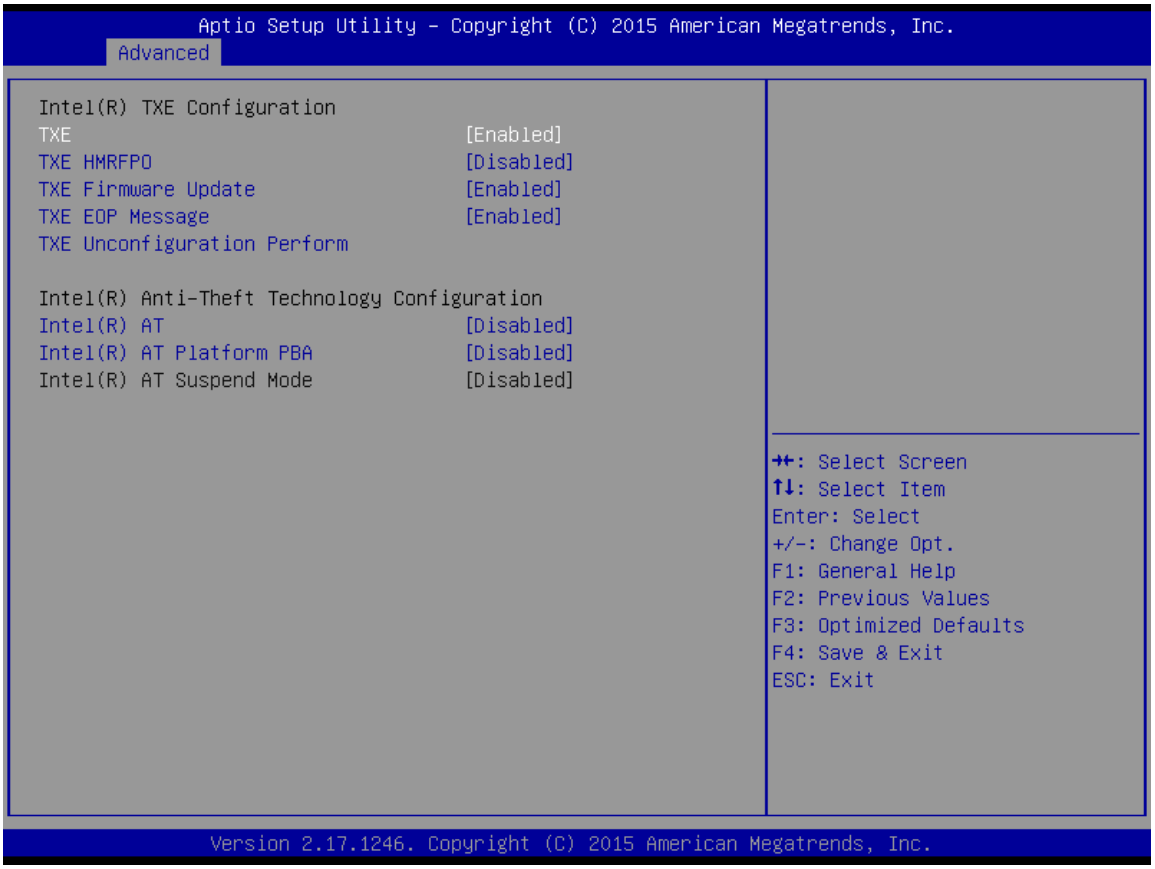
BIOS Setting	Description	Setting Option	Effect
Legacy USB Support	User can enable or disable USB port.	Disable	Will keep USB devices available only for EFI applications.
		Enable	Enable all the USB devices
USB 3.0 Support	User can enable or disable USB 3.0 (XHCI) controller support.	Enable	Enable USB 3.0 is enable
		Disable	USB 3.0 is disable
XHCI Hand- off	This is a workaround for OSs without XHCI hand- off support.	Disable	Disables this function
		Enable	Enables this function
EHCI Hand- off	This is a workaround for OSs without ECHI hand- off support.	Disable	Disables this function
		Enable	Enables this function
USB mass storage driver support	User can Enable or disable USB mass storage driver support.	Disable	Disables this function
		Enable	Enables this function
USB Transfer time- out	The time- out value for control, bulk, and interrupt transfers.	1 Sec 5 Sec 10 Sec 20 Sec	Depends on the time- out value
Device Reset time- out	USB mass storage device start unit command time-out.	10 Sec 20 Sec 30 Sec 40 Sec	Depends on the time- out value
Device power-up delay	Maximum time the device will take before it properly reports itself to the host controller.	Auto	Uses default value: for a root port it is 100 ms, for a Hub port the delay is taken from Hub descriptor

5.3.2.12 Platform Trust Technology



BIOS Setting	Description	Setting Option	Effect
fTPM	Trusted Platform Module parameters	Enabled/Disabled	Enables or disables this function

Security Configuration



BIOS Setting	Description	Setting Option	Effect
TXE	Trusted Execution Technology parameters	Enabled/Disabled	Enables or disables this function
TXE HMRFPO	TXE HMRFPO parameters	Enabled/Disabled	Enables or disables this function
TXE Firmware Update	TXE Firmware Update parameters	Enabled/Disabled	Enables or disables this function
TXE EOP Message	TXE EOP Message parameters	Enabled/Disabled	Enables or disables this function
Intel ® AT	Intel ® AT parameters	Enabled/Disabled	Enables or disables this function
Intel ® AT Platform PBA	Intel ® AT Platform PBA parameters	Enabled/Disabled	Enables or disables this function

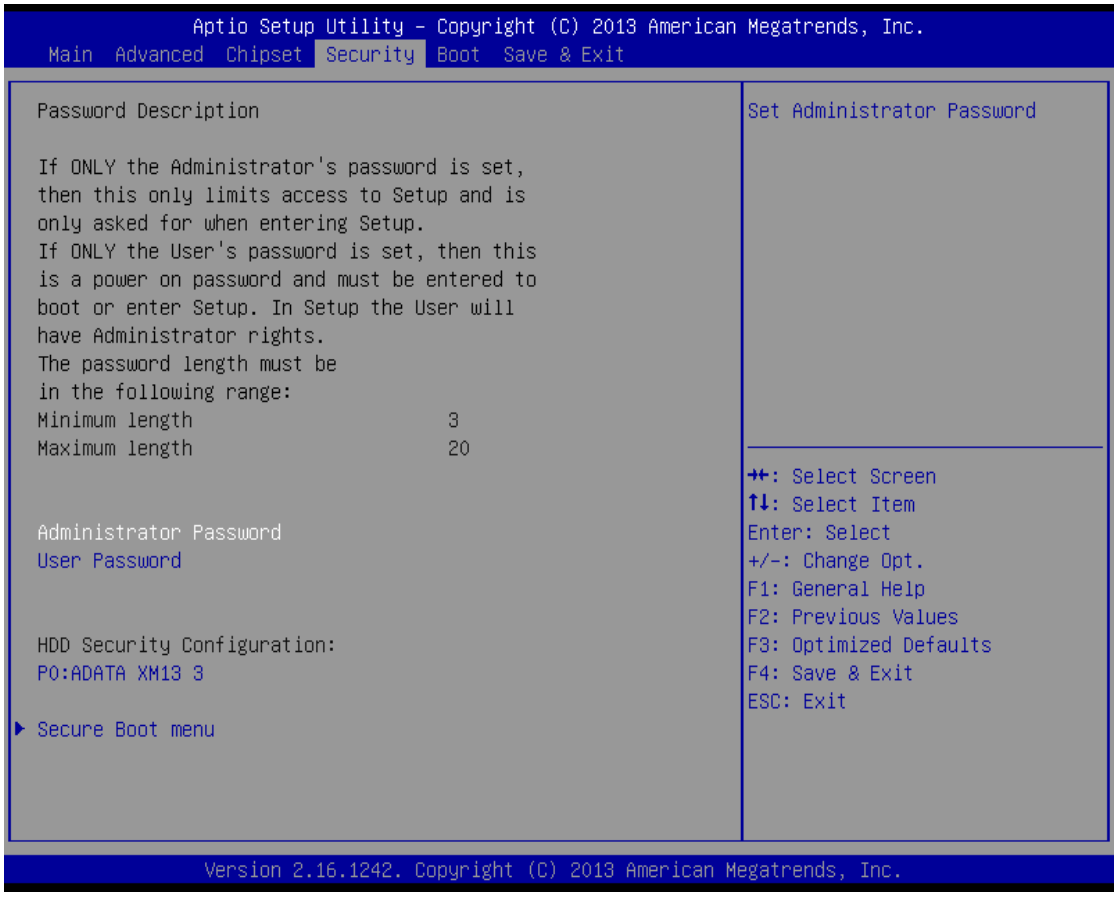
5.3.3 Chipset Menu

For items marked with ►, please press **<Enter>** for more options.

BIOS Setting	Description	Setting Option	Effect
High Precious Timer	Allow to set up High Precious Timer settings	Enabled/ Disabled	Enables/Disables this function
Restore AC Power Loss	This function allows to set up booting options after a power failure	Power on/ Power off	Boot automatically after a power failure
Serial IRQ Mode	When working with personal computer hardware, installing and removing devices, the system relies on interrupt requests. Interrupt request	Continuous	Allow user to set up desired IRQ Mode

5.2.4 Security Menu

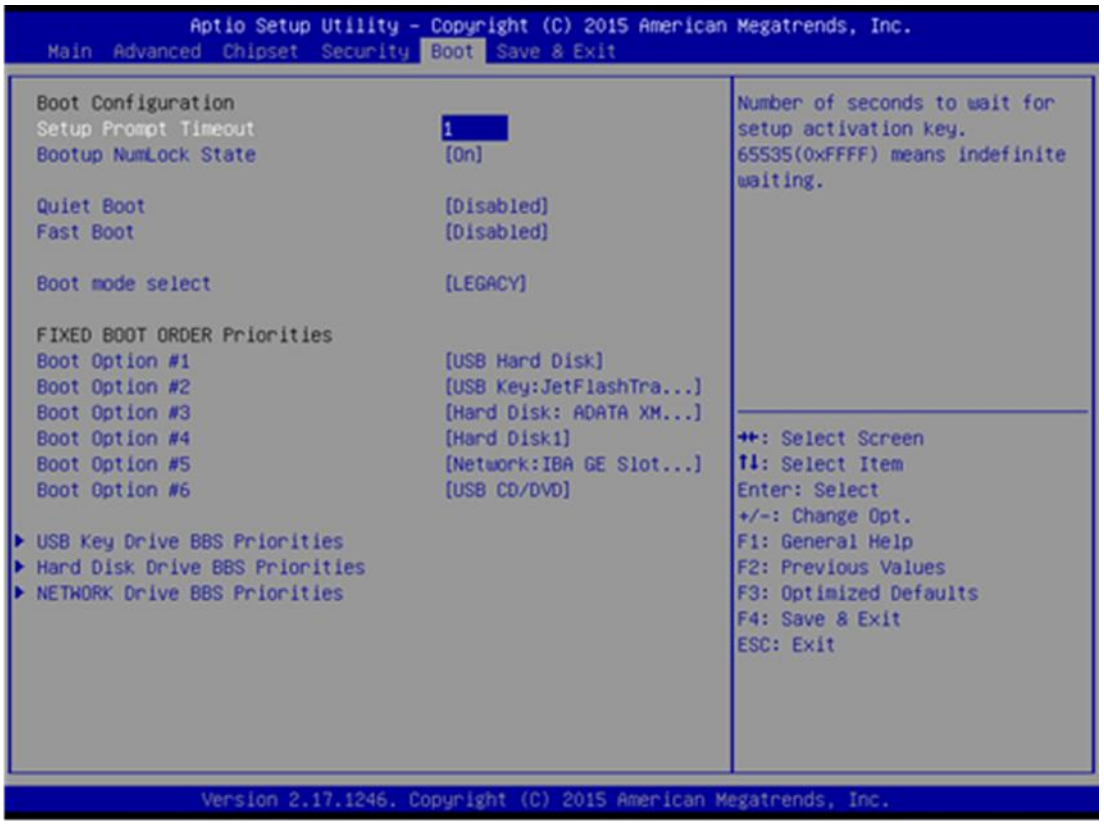
In the Security menu, users can set administrator password, user password, and HDD security configuration.



BIOS Setting	Description	Setting Option	Effect
Administrator Password	Displays whether or not an administrator password has been set.	Enter	Enter password
User Password	Display whether or not a user Password has been set.	Enter	Enter password

5.2.5 Boot Configuration

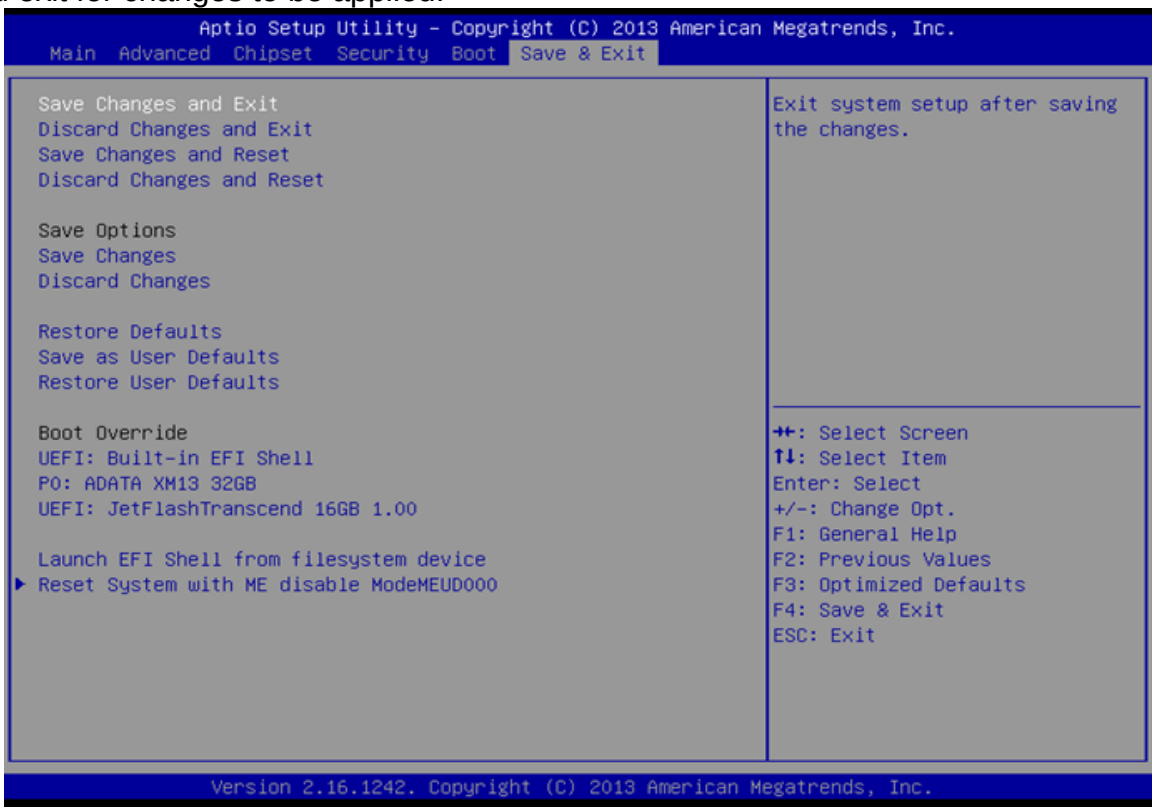
The Boot menu sets the sequence of the devices to be searched for the operating system. The bootable devices will be automatically detected during POST and shown here, allowing you to set the sequence that the BIOS use to look for a boot device from which to load the operating system.



BIOS Setting	Description	Setting Option	Effect
Setup Prompt Timeout	Allows user to configure the number of seconds to stay in BIOS setup prompt screen.	Enter	Set the prompt timeout
Boot NumLock State	Enables or disables NumLock feature on the numeric keypad of the keyboard after the POST (Default: On).	On	Remains On
		Off	Remains OFF
Quite Boot	Determines if POST message or OEM logo (default = Black background) is displayed.	Disabled	Disables this function
		Enabled	Enables this function
Fast Boot	Enables or disables Fast Boot to shorten the OS boot process. (Default: Disabled).	Disabled	Disables this function
		Enabled	Enables this function
Boot Mode Select	Specifies which mode will be used for booting	Legacy	Only Legacy option is booted
		UEFI	Only UEFI option is booted
Boot Option #1~#6	Specifies the overall boot order from the available devices	Ex: Boot Option#1 (hard drive)	Hard drive as the first priority
USB Key Drive BBS Priorities	USB Key Drive BBS Priorities	Enter	Open sub-menu
Hard Disk Drive BBS Priorities	Hard Disk Drive BBS Priorities	Enter	Open sub-menu
Network Drive BBS Priorities	Network Drive BBS Priorities	Enter	Open sub-menu

5.2.6 Save & Exit

The Exit menu displays a way how to exit BIOS Setup utility. After finishing your settings, you must save and exit for changes to be applied.



BIOS Setting	Description	Setting Option	Effect
Save Changes and Exit	This saves the changes to the CMOS and exits the BIOS Setup program.	<YES>	Save changes
Discard Changes and Exit	This exits the BIOS Setup without saving the changes made in BIOS Setup to the CMOS.	<YES>	Saves the changes
		<NO>	Return to the BIOS Setup Main Menu
Save Changes and Reset	Reset the system after saving the changes.	<YES>	Saves the changes
		<NO>	Return to the BIOS Setup Main Menu
Discard Changes and Reset	Reset system setup without saving any changes	<YES>	Saves the changes
		<NO>	Return to the BIOS Setup Main Menu
Save Changes	Save changes done so far to any of the setup options.	<YES>	Saves the changes
		<NO>	Return to the BIOS Setup Main Menu
Discard Changes	Discard changes done so far to any of the setup options.	<YES>	Saves the changes
		<NO>	Return to the BIOS Setup Main Menu
Restore Default	Restore/load default values for all the setup options.	<YES>	Saves the changes
		<NO>	Return to the BIOS Setup Main Menu
Save as User Defaults	Save the changes done so far as User defaults.	<YES>	Saves the changes
		<NO>	Return to the BIOS Setup Main Menu
Restore User Defaults	Restore the User Defaults to all the setup options.	<YES>	Saves the changes
		<NO>	Return to the BIOS Setup Main Menu

5.3 Using Recovery Wizard to Restore Computer

IMPORTANT:
Before starting the recovery process, be sure to backup all user data, as all data will be lost after the recovery process.

Follow the procedure below to enable quick one-key recovery procedure:

- Plug-in the AC adapter to Bay Trail series computer. Make sure the computer stays plugged in to power source during the recovery process.
- Turn on the computer, and when the boot screen shows up, press the **F6** to initiate the Recovery Wizard.
- The following screen shows the Recovery Wizard. Click Recovery button to continue.

A warning message about data loss will show up. Make sure the data is backed up before recovery, and click **Yes** to continue.

Wait the recovery process to complete. During the recovery process, a command prompt will show up to indicate the percent of recovery process complete. The system will restart automatically after recovery completed.

Chapter 6: Technical Support

This chapter includes technical support documents and software developing kit (SDK). If any problem occurs fill in problem report form enclosed and immediately contact us.

6.1 Software Developer Support

Download SDK from Winmate Download Center.

6.2 Problem Report Form

Stainless Flat Touch Series

Customer name:	
Company:	
Tel.:	Fax:
E-mail:	Date:

Product Serial Number:

_____

Problem Description: Please describe the problem as clearly as possible. Detailed description of the occurred problem will allow us to find the best solution to solve the problem as soon as possible.

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Appendix

Appendix A: Product Specifications

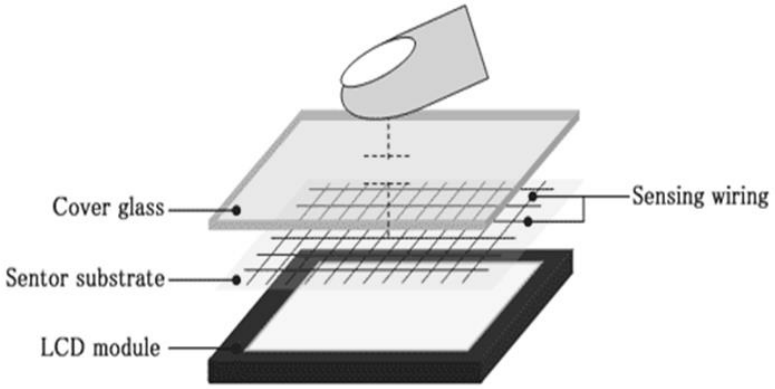
Model Name	R15IB3S-65EX
Item	**Specifications**
System Specifications:	
Processor	Intel® Celeron N2930, 2.16 GHz
System Chipset	Intel® SoC
BIOS	AMI BIOS
System Memory	DDR3L SO-DIMM 1066/1333 MHz, 4GB Default (Up to 8 GB)
Storage	mSATA SSD 64GB Default (Max 512 GB)
Display:	
Panel Size	15-inch
Resolution	1024 x 768
Brightness	550 cd/m^2(typ.)
Contrast Ratio	2000:1 (typ.)
View Angles	• Horizontal: 160 degree (left to right) • Vertical: 176 degree (up to down)
Max Colors	16.2M colors
Touch	Projected Capacitive Touch (PCAP)
Input/ Output Connectors:	
Ethernet LAN	Waterproof RJ45 connector
COM	1 x RS-232/RS422/RS485 pre-selectable by jumper
USB	2 x USB Type-A receptacle
Power	1 x 9-36 VDC
Power Requirements:	
Power Input	9-36V DC IN, typical 12V DC (isolation 800V)
Input Voltage	6.6 A
Power Consumption	56 W (maximum backlight and high CPU load)
Environment Consideration:	
Operating Temperature	-20 to 50°C (tamb)
Storage Temperature	-20 to 50°C
Operating Humidity	10 to 95% (non-condensing)
Anti-Vibration	MIL-STD-810G Method 514.6 Procedure I
Anti-Shock	MIL-STD-810G Method 516.6 Procedure I Fig. 514.6C-3
Transit Drop	MIL-STD-810G Method 516.6
Standards and Certifications:	
Safety	UL60950-1, CSA C22.2 No. 60950-1-07, EN60950-1, IEC60950-1, CE, FCC
Hazardous Locations	ATEX Zone 2 EX II 3 G Ex ic nA IIC Gc, UL Class I, Div.2, Groups ABCD T4 ANSI/ISA12.12.01
Accessories:	
1 x M21 to DC power cable with Power Adapter / Power cord 1 x M12 to RJ45 cable 1 x M12 to RS232 cable 1 x M21 to 2 x USB cable	
Order Information (options):	
Memory	SO DIMM DDR3 8GB
Storage	128GB / 256GB mSATA SSD
OS	Windows Embedded Standard 7 Windows 7 Pro for Embedded Systems Windows 8.1 Industrial PRO

Appendix B: Touchscreen

This section includes information on projected capacitive touchscreen (p-cap), its technology and specifications.

Overview

Projected Capacitive Touch (PCAP) technology is a variant of capacitive touch technology. All PCAP touch screens are made up of a matrix of rows and columns of conductive material, layered on sheets of glass. Projected capacitive technology enables touches to be sensed through a protective layer in front of a display, allowing touch monitors to be installed behind store windows or vandal-resistant glass. In addition, the surface material is glass, which is scratch-resistant, durable, and reliable in harsh environments.



The operational theory of a PCAP touch screen begins with two patterned Indium Tin Oxide (ITO) layers under a glass substrate cover which create a X-axis and Y-axis electric field. These electric fields project above the glass surface between adjacent ITO traces. When a finger approaches the glass surface, a new balance in the electric field will be established between the finger and the corresponding X-axis and Y-axis. The controller IC will locate the ITO traces exhibiting capacitance changes to pinpoint the finger touch accurately.

Specifications

Subject	Details
Input Method	Finger, gloved hand
Positional Accuracy	<1.5% of reported position in recommended viewing area.
Resolution	Touch point density is based on controller resolution of 4096 x 4096
Touch Activation Force	No minimum touch activation force is required
Light Transmission	Up to 90% per ASTM D1003-92

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