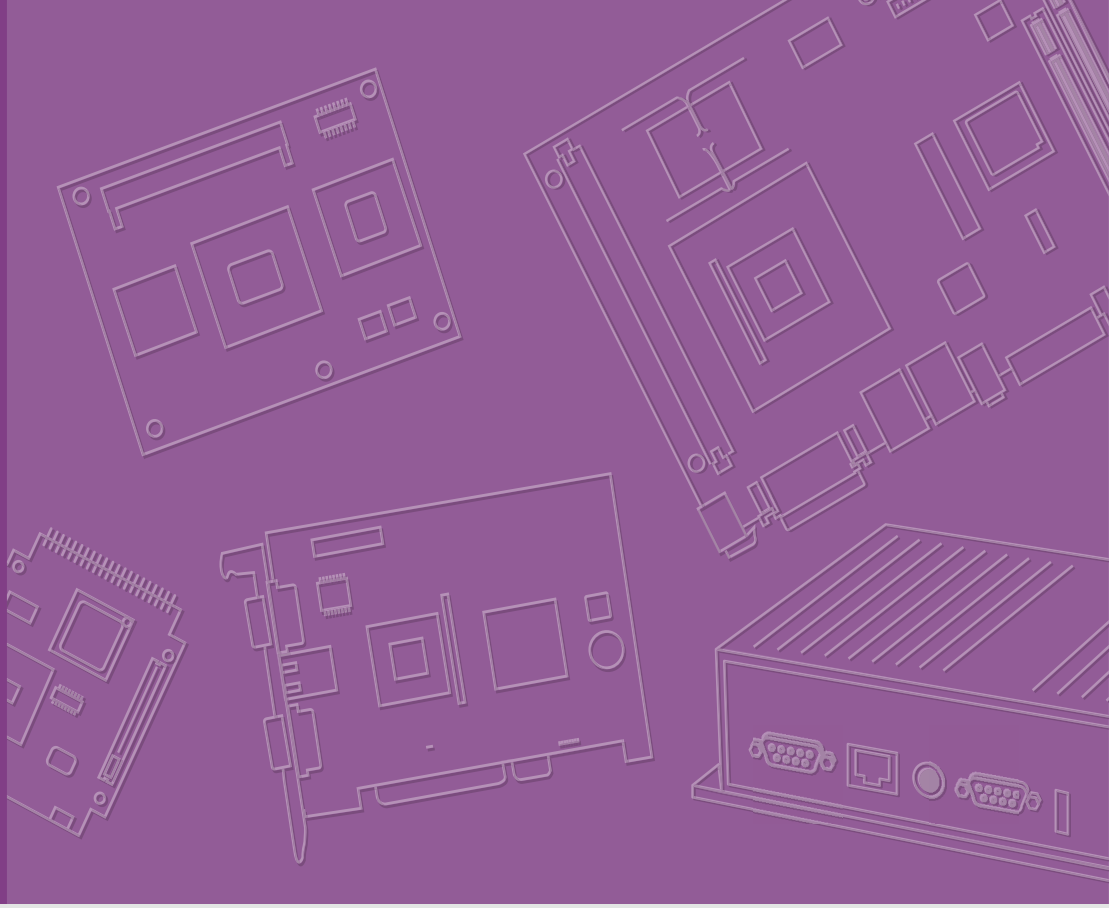

User Manual

TS-206

In-Vehicle Smart Fleet Management Computer

ADVANTECH

Enabling an Intelligent Planet

Attention!

This package contains a hard-copy user manual in Chinese for China CCC certification purpOS, Please download the latest English user manual and drivers on website: https://www.advantech.tw/products/1-flnuyz/ts-206/mod_fbd3dc60-12e1-41f6-978b-d74bdd128da4

Please disregard the printed Chinese copy of the user manual if the product is not to be sold and/or installed in China.

甲類警語： 警告使用者：這是甲類資訊產品，在居住的環境中使用時， 可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當對策。

Copyright

Acknowledgments

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Microsoft Windows and MS-DOS are registered trademarks of Microsoft® Corp.

All other product names or trademarks are properties of their respective owners.

Product Warranty (2 years)

Advantech warrants the original purchaser that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products that have been repaired or altered by persons other than repair personnel authorized by Advantech, or products that have been subject to misuse, abuse, accident, or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

Because of Advantech's high quality-control standards and rigorous testing, most customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced free of charge during the warranty period. For out-of-warranty repairs, customers will be billed according to the cost of replacement materials, service time, and freight. Please consult your dealer for more details.

If you believe your product to be defective, follow the steps outlined below.

1. Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages displayed when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain a return merchandise authorization (RMA) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a completed Repair and Replacement Order Card, and a proof of purchase date (such as a photocopy of your sales receipt) into a shippable container. Products returned without a proof of purchase date are not eligible for warranty service.
5. Write the RMA number clearly on the outside of the package and ship the package prepaid to your dealer.

Part No. 2006020600 Edition 1

May 2021

Declaration of Conformity

CE

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

Test conditions for passing also include the equipment being operated within an industrial enclosure. In order to protect the product from damage caused by electrostatic discharge (ESD) and EMI leakage, we strongly recommend the use of CE-compliant industrial enclosure products.

FCC Class B

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 in a residential installation. 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. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for assistance.

Technical Support and Assistance

1. Visit the Advantech website at www.advantech.com/support to obtain the latest product information.
2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before calling:
   - Product name and serial number
   - Description of your peripheral attachments
   - Description of your software (operating system, version, application software, etc.)
   - A complete description of the problem
   - The exact wording of any error messages

Warnings, Cautions, and Notes

Warning! *Warnings indicate conditions that if not observed can cause personal injury! Les avertissements indiquent des conditions qui, si elles ne sont pas respectées, peuvent provoquer des blessures!*

Caution! *Cautions are included to help prevent hardware damage and data losses.Des précautions sont incluses pour vous aider à éviter d'endommager le matériel ou de perdre des données. For example,*

"Batteries are at risk of exploding if incorrectly installed. Do not attempt to recharge, force open, or heat the battery. Replace the battery only with the same or equivalent type as recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions."

Note! *Notes provide additional optional information.*

Document Feedback

To assist us with improving this manual, we welcome all comments and constructive criticism. Please send all feedback in writing to support@advantech.com.

Packing List

Before system installation, check that the items listed below are included and in good condition. If any item does not accord with the list, contact your dealer immediately.

- 1 x TS-206 unit
- 1 x Hard copy user manual (Simplified Chinese)
- 1 x 3 pin phoenix power block 3.81mm
- 1 x 10 pin DIO plug block

Ordering Information

P/N	Description
TS-206-U4A1E	Intel Core i5-6300U DC 2.4GHz w/4 COM
TS-206-U6A1E	Intel Core i7 6600U DC 2.6GHz w/4 POE

Safety Instructions

1. Read these safety instructions carefully.
2. Retain this user manual for future reference.
3. Disconnect the equipment from all power outlets before cleaning. Use only a damp cloth for cleaning. Do not use liquid or spray detergents.
4. For pluggable equipment, the power outlet socket must be located near the equipment and easily accessible.
5. Protect the equipment from humidity.
6. Place the equipment on a reliable surface during installation. Dropping or letting the equipment fall may cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. Do not cover the openings.
8. Ensure that the voltage of the power source is correct before connecting the equipment to a power outlet.
9. Position the power cord away from high-traffic areas. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage from transient overvoltage.
12. Never pour liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
14. If any of the following occurs, have the equipment checked by service personnel:
    - The power cord or plug is damaged.
    - Liquid has penetrated the equipment.
    - The equipment has been exposed to moisture.
    - The equipment is malfunctioning, or does not operate according to the user manual.
    - The equipment has been dropped and damaged.
    - The equipment shows obvious signs of breakage.
15. Do not leave the equipment in an environment with a storage temperature of below -40 °C or above 80 °C as this may damage the components. Operating temperature is -20° C to 60° C.The equipment should be kept in a controlled environment.
16. CAUTION: Batteries are at risk of exploding if incorrectly replaced. Replace only with the same or equivalent type as recommended by the manufacturer. Discard used batteries according to the manufacturer’s instructions.
17. ATTENTION: L'ordinateur est muni d'un circuit en temps reél de l'horloge alimentée par betterie. Il ya un danger d'explosion si la pile est replacée de façon incorrecte. Remplacez uniquement par un type identique ou équivalent recommandé par le fabricant. Jetez les piles usagées selon les instructions du fabricant.
18. CAUTION: 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.
19. CAUTION: Always ground yourself to remove any static charge before touching the motherboard, backplane, or add-on cards. 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 on a static-dissipative surface or in a static-shielded bag when they are not in the chassis.

20. CAUTION: Any unverified component could cause unexpected damage. To ensure the correct installation, please always use the components (ex. screws) provided with the accessory box.
21. ATTENTION: Tout composant non vérifiée pourrait causer des dommages inattendu. Pour garantir une installation correcte, s'il vous plaît utilisez toujours les composants(vis ex.) fournies avec la boîte d'accessories.

Consignes de sécurité

1. Lisez attentivement ces instructions de sécurité.
2. Conservez ce manuel d'utilisation pour référence ultérieure.
3. Débranchez cet équipement de toute prise secteur avant de le nettoyer. Utilisez un chiffon humide. N'utilisez pas de détergents liquides ou en spray pour le nettoyage.
4. Pour les équipements enfichables, la prise de courant doit être située près de l'équipement et doit être facilement accessible.
5. Gardez cet équipement à l'abri de l'humidité.
6. Placez cet équipement sur une surface fiable pendant l'installation. Le laisser tomber ou le laisser tomber peut provoquer des dommages.
7. Les ouvertures du boîtier sont destinées à la convection d'air. Protégez l'équipement contre la surchauffe. NE COUVREZ PAS LES OUVERTURES.
8. Assurez-vous que la tension de la source d'alimentation est correcte avant de connecter l'équipement à la prise de courant. Le câble de la source d'alimentation doit être blindé.
9. Positionnez le cordon d'alimentation de sorte que personne ne puisse marcher dessus. Ne placez rien sur le cordon d'alimentation. La tension et le courant nominal du cordon doivent être supérieurs à la tension et au courant indiqués sur le produit.
10. Toutes les précautions et avertissements sur l'équipement doivent être notés.
11. Si l'équipement n'est pas utilisé pendant une longue période, débranchez-le de la source d'alimentation pour éviter tout dommage par surtension transitoire.
12. Ne versez jamais de liquide dans une ouverture. Cela peut provoquer un incendie ou un choc électrique.
13. N'ouvrez jamais l'équipement. Pour des raisons de sécurité, l'équipement ne doit être ouvert que par un technicien qualifié.
14. Si l'une des situations suivantes se présente, faites vérifier l'équipement par le personnel de service:
    - Le cordon d'alimentation ou la fiche est endommagé.
    - Du liquide a pénétré dans l'équipement.
    - L'équipement a été exposé à l'humidité.
    - L'équipement ne fonctionne pas bien, ou vous ne pouvez pas le faire fonctionner selon le manuel de l'utilisateur.
    - L'équipement est tombé et a été endommagé.
    - L'équipement présente des signes évidents de rupture.
15. Ne laissez pas cet équipement dans un environnement non conditionné où la température de stockage est inférieure à -40 ° C ou supérieure à 80 ° C, cela pourrait endommager l'équipement. La température de fonctionnement est de -20 ° C à 60 ° C.
16. ATTENTION: L'ordinateur est fourni avec un circuit d'horloge en temps réel alimenté par batterie. Il y a un risque d'explosion si la batterie n'est pas remplacée

correctement. Remplacez uniquement par un type identique ou équivalent recommandé par le fabricant. Jetez les piles usagées conformément aux instructions du fabricant.

17. ATTENTION: L'ordinateur est muni d'un circuit en temps réel de l'horloge alimentée par betterie. Il y a un danger d'explosion si la pile est replacée de façon incorrecte. Remplacez uniquement par un type identique ou équivalent recommandé par le fabricant. Jetez les piles usagées selon les instructions du fabricant.
18. ATTENTION: débranchez toujours complètement le cordon d'alimentation de votre châssis lorsque vous travaillez avec le matériel. N'établissez pas de connexions lorsque l'appareil est sous tension. Les composants électroniques sensibles peuvent être endommagés par des surtensions soudaines.
19. ATTENTION: mettez-vous toujours à la terre pour éliminer toute charge statique avant de toucher la carte mère, le fond de panier ou les cartes d'extension. Les appareils électroniques modernes sont très sensibles aux charges électriques statiques. Par mesure de sécurité, utilisez en tout temps un bracelet antistatique. Placez tous les composants électroniques sur une surface dissipant l'électricité statique ou dans un sac blindé antistatique lorsqu'ils ne sont pas dans le châssis.
20. ATTENTION: Tout composant non vérifié peut provoquer des dommages inattendus. Pour garantir une installation correcte, veuillez toujours utiliser les composants (ex. Vis) fournis avec la boîte d'accessoires.
21. ATTENTION: Tout composant non vérifié qui pourrait causer des dommages inattendus. Pour garantir une installation correcte, s'il vous plaît utiliser toujours les composants (vis ex.) Fournis avec la boîte d'accessoires.

Contents

Chapter 1

General Introduction

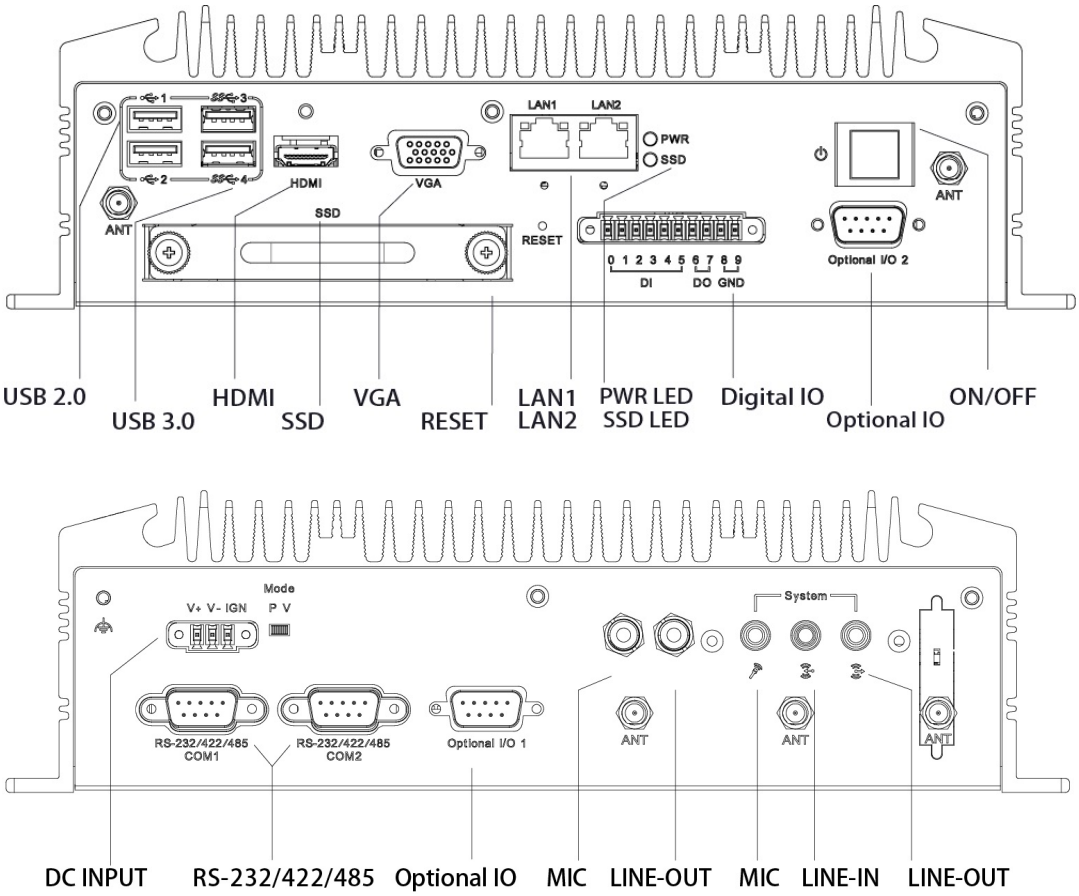
This chapter gives background information on TS-206 series.

1.1 Introduction

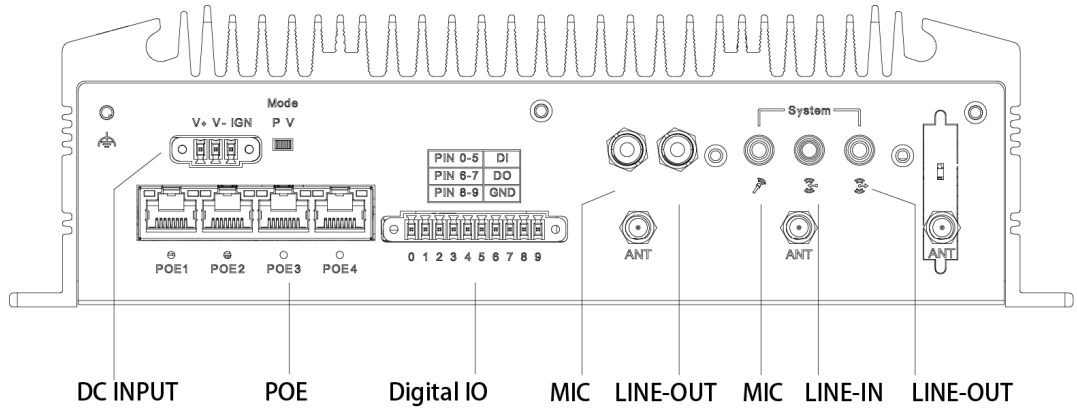
TS-206 is an industrial grade dual core mobile device for in-vehicle computer and in-vehicle NVR solutions.

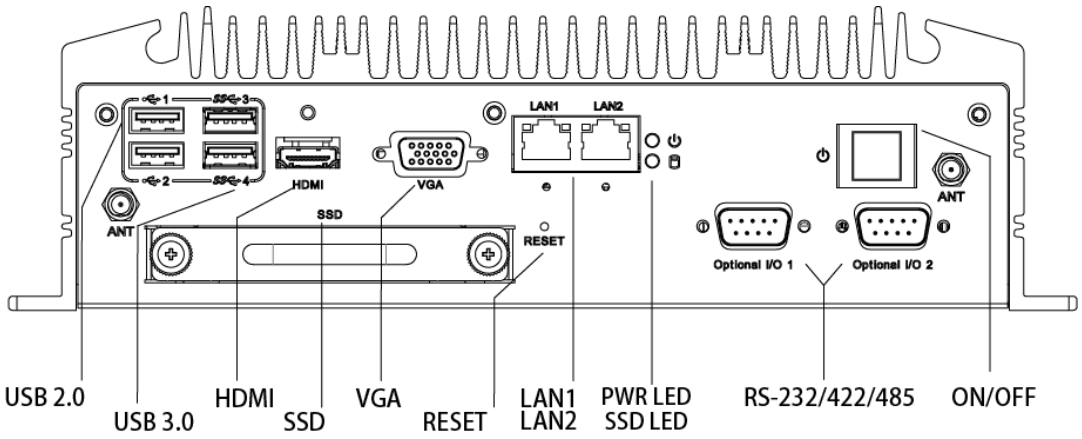
TS-206 supports Full-HD NVR solutions and is fully integrated with certified hardware and intelligent management software. TS-206 has integrated in-vehicle power (ISO-7637-2), conforms to in-vehicle certifications (E-Mark, IEC-60721-3-55M3), and has specially-developed vehicle software SDK and APIs for in-vehicle applications. It also provides wireless communication (GPS/G-sensor/Wi-Fi/3G/CAN- Bus) for excellent connectivity, has high graphics capability (up to 1080p @180fps) for video previews, has great expansion capability and comes with integrated soft- ware for manageability and security.

TS-206-U4A1E I/O Overview



TS-206-U6A1E I/O Overview





1.2 Features

- Intel® Core i5-6300U 2.4 GHz/Core i7-6600U 2.6 GHz SoC
- 4 PoE Ports to Support Mainstream IP Cameras
- Diversity Communication Abilities, ex. WWAN, WLAN
- Intelligent Vehicle Power Ignition
- 12/24 V_{DC} Wide Power Input w/isolation
- Dual storage: 1 x removable 2.5" drive bay & 1 x F/S mSATA
- Supports DeviceOn

1.3 Specifications

- **CPU:**
  - TS-206-U4A1E: Intel Core i5-6300U 2.4 GHz
  - TS-206-U6A1E: Intel Core i7-6600U 2.6 GHz
- **Chipset:** HD graphics 520
- **BIOS:** AMI EFI 128 Mbit
- **System memory:** 2 x 204pin SODIMM, DDR3L 1600 MHz, up to 16GB
- **Storage:**
  - 2.5" drive bay: 1 x removable 2.5" drive bay (Max 9.5 mm height)
  - mSATA: 1x full size mSATA storage
- **Serial ports:** TS-206-U4A1E: 2 x RS-232/422/485 ports w/3 KV isolation (support auto flow control, jumper selectable)

- **Optional I/O:**
  - TS-206-U4A1E: 2 x CANBus 2.0 A/B or 2 x RS-232/422/485
  - TS-206-U6A1E: 2 x CANBus 2.0 A/B or 2 x RS-232/422/485
- **Universal serial bus (USB) port:** 2 x USB 2.0 & 2 x USB3.0
- **LAN port:** 2 x Giga LAN 10/100/1000 Mbps
- **Power over Ethernet, POE (TS-206-U6A1E only):** Supports 4 x 10/100 Mbps
  - 4 ports full-load, IEEE802.3af Class 2 (7 Watt)
  - 2 ports full-load, IEEE802.3af Class 3 (15.4 Watt)
- **LED:** Power LED, SSD LED
- **Graphic output:**
  - 1 x VGA, up to 1920 x 1200 with 60 Hz, 154 MHz pixel clock rate
  - 1 x lockable HDMI connector, up to 4K at 24 Hz
- **Mini PCI express bus expansion slot:**
  - 1 x full size mini PCIe slot, support mSATA storage
  - 1 x falf size mini PCIe slot, support WLAN module
  - 2 x full size mini PCIe slots w/SIM holder, support WWAN module (USB interface)
- **Watchdog timer:** 255-level timer interval, setup by software
- **RTC Battery:** 3.0 V @ 200 mAH lithium battery
- **Digital I/O:** 6 x DI & 2 x DO w/3KV isolation
- **Input Voltage:** 0 to 30 V_{DC} at 25 Hz
- **Output Current:** Max. 500 mA per channel
- **On-state Voltage:** 24 V_{DC} nominal, open collector to 30 V_{DC}
- **Audio:**
  - Main system: Realtek ALC888S, High Definition Audio (HD), Line-in, Line out, Mic-in
  - Cellular Voice*: Supports WWAN voice function, Line-out, Mic-in
    (* To enable cellular voice function, setup the WWAN module function via AT command.)
- **Power Requirement:**
  - Input voltage: 12/24Vdc with E-Mark certification
  - Vehicle Power Ignition: Selectable boot-up & shut-down voltage, on/off delay time
  - Isolation: 1.5 KV Isolated
- **Dimensions: (W x H x D):** 264.5 x 75.1 x 133.0 mm (10.41" x 2.96" x 5.24")
- **Enclosure:** Ruggedized aluminum housing.
- **Operating temperature:**
  - With extended temperature peripherals: -20 ~ 55 °C with 0.7m/s air flow
  - With standard temperature peripherals:0 ~ 45 °C with 0.7m/s air flow
- **Storage temperature:** -40 ~ 85° C (-40 ~ 185 °F)
- **Relative humidity:** 95% @ 40 °C (non-condensing)
- **Vibration/Shock:** With mSATA/SSD: IEC 60721-3-5 Class 5M3
- **Certifications:**
  - EMC: CE/FCC Class B, CCC, BSMI
  - Safety: UL, CCC, BSMI, E-Mark (E13)
  - In-Vehicle Power: ISO7637-2 Lev.4

1.4 Dimensions

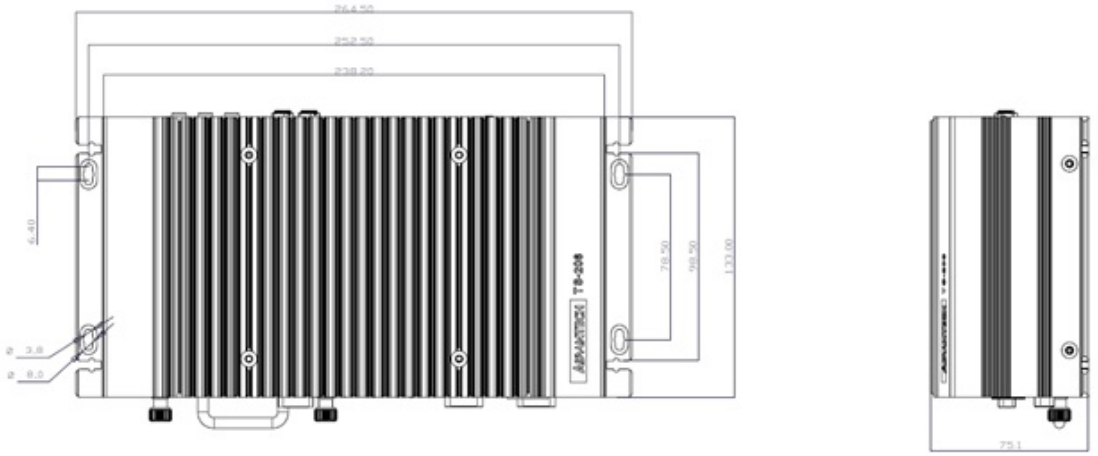


Figure 1.1 TS-206 dimensions

Chapter 2

Hardware Installation

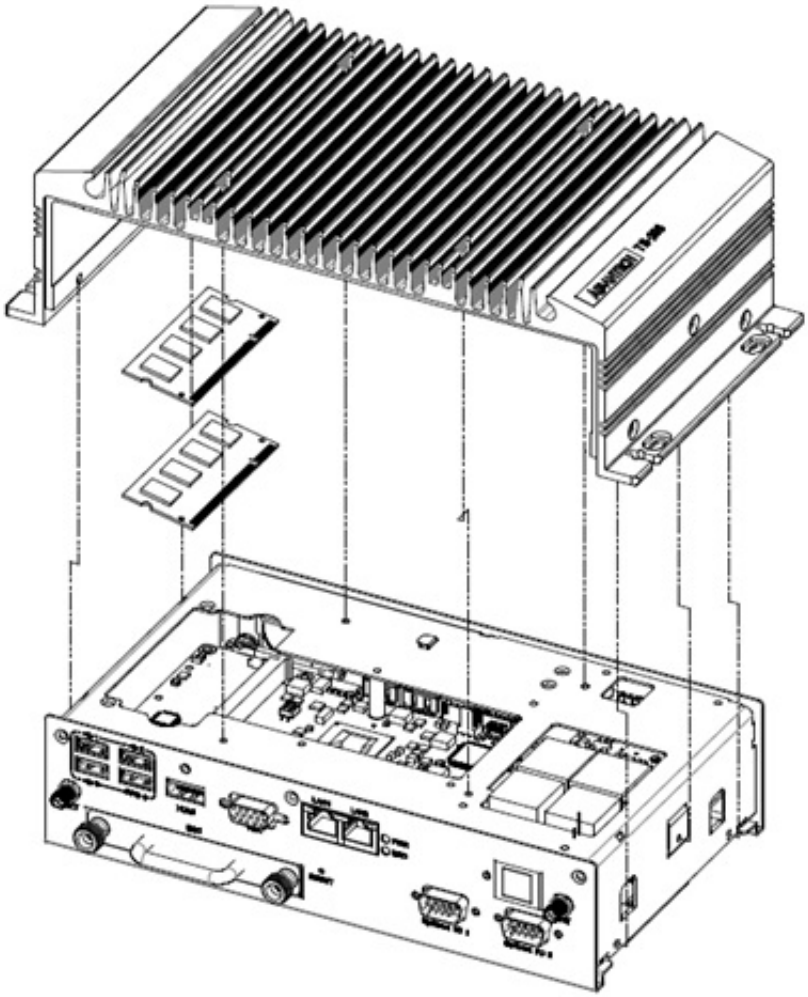
This chapter introduces the installation of TS-206 Hardware.

2.1 Overview of Hardware Installation & Upgrading

Warning! *Do not remove the ruggedized aluminum covers until verifying that no power is flowing within the computer. Power must be switched off and the power cord must be unplugged. Take care in order to avoid injury or damage to the equipment.*

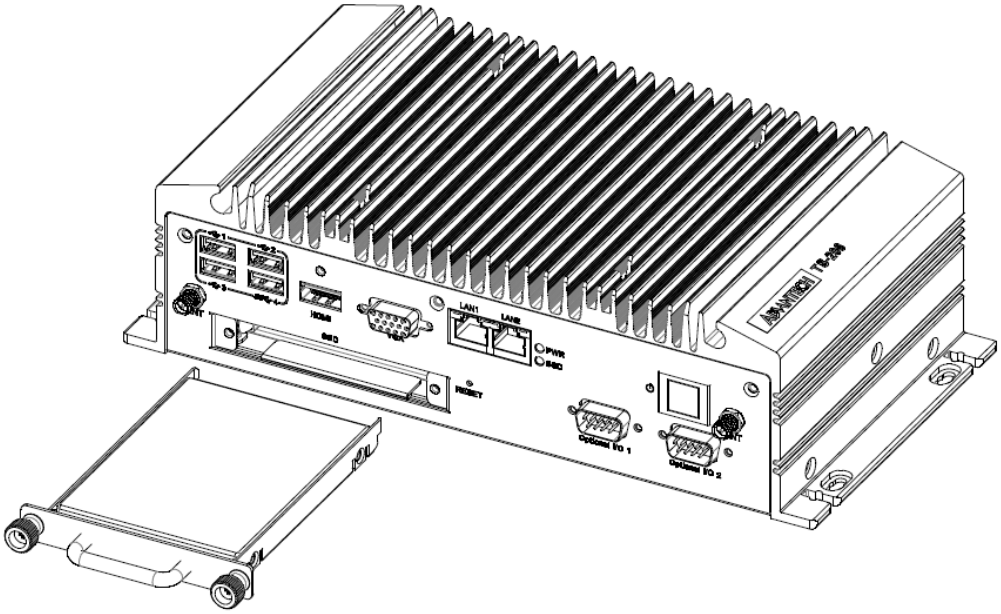
2.2 Installing Memory

Remove 9 screws in total to install memory on the top side of the board. (screws: 4pcs on top and 5pcs on side of the top cover)



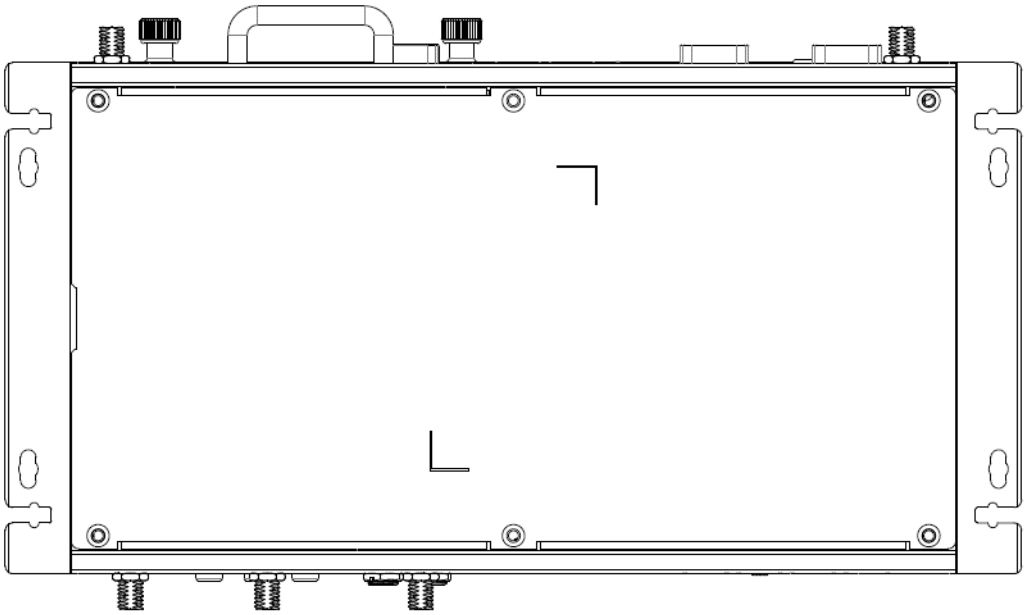
2.3 Installing storage

2.3.1 Installing 2.5" SSD or HDD

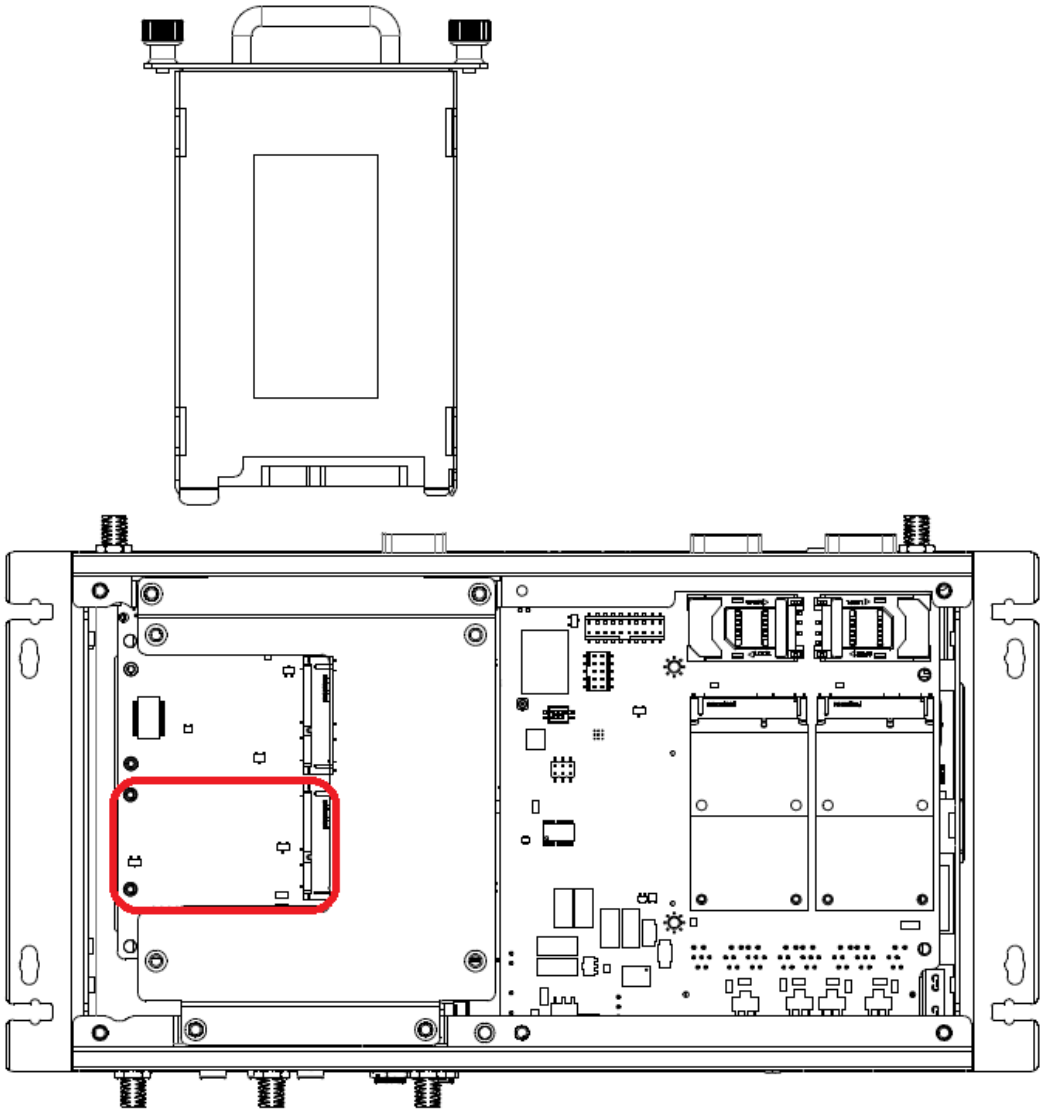


2.3.2 Installing mSATA Storage

1. Remove 6 screws on the bottom cover.



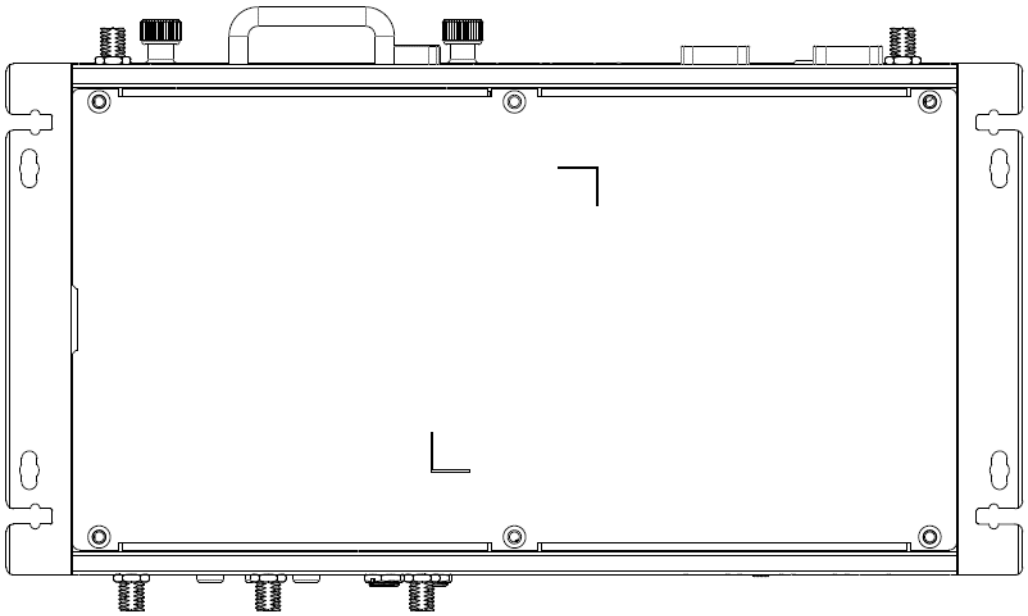
2. Remove 2.5" drive bay and Insert full size mSATA storage in the place marked.



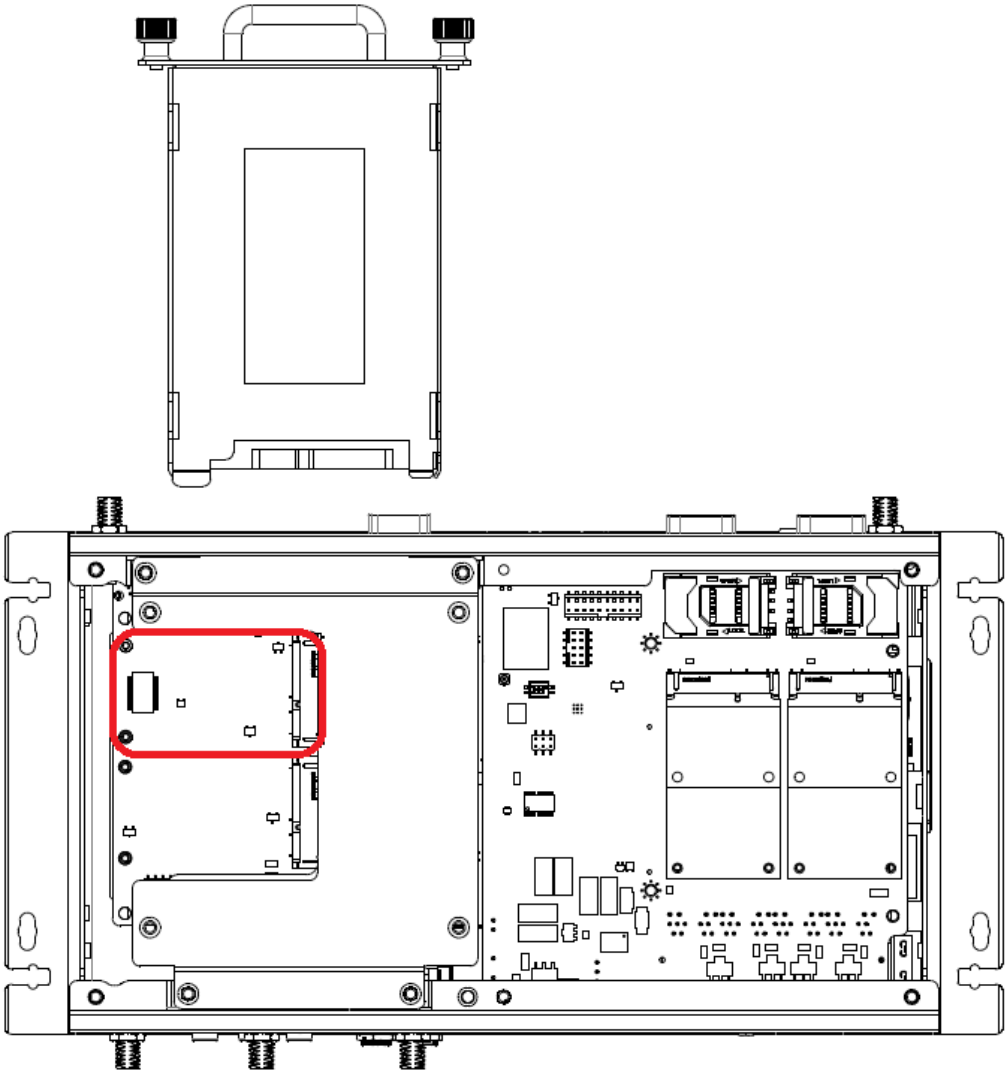
2.4 Installing Optional Modules

2.4.1 Installing WLAN module

1. Remove 6 screws on the bottom cover.

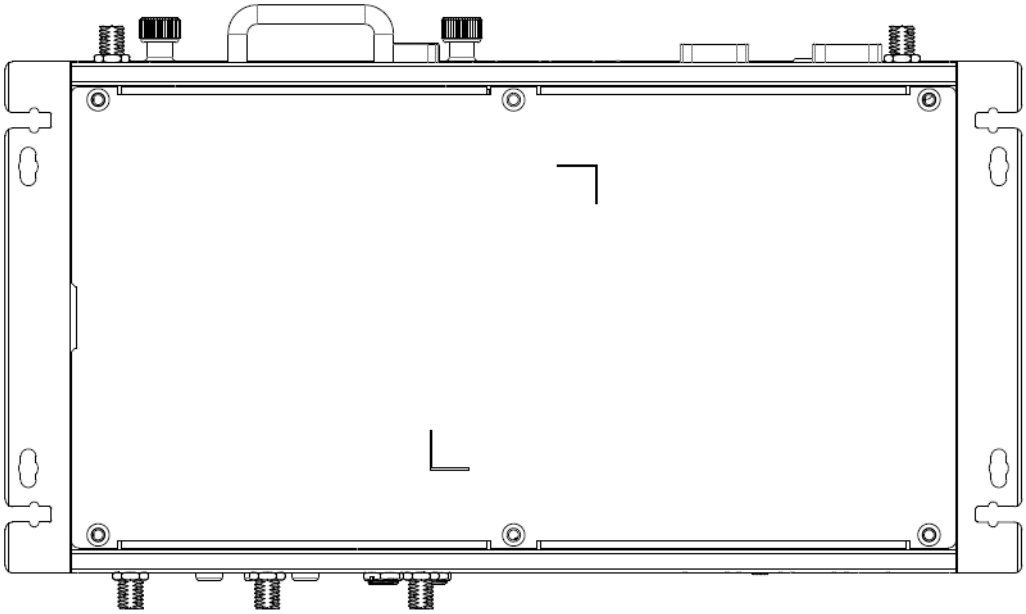


2. Remove the 2.5" drive bay and Insert the half size WLAN module in the place marked.

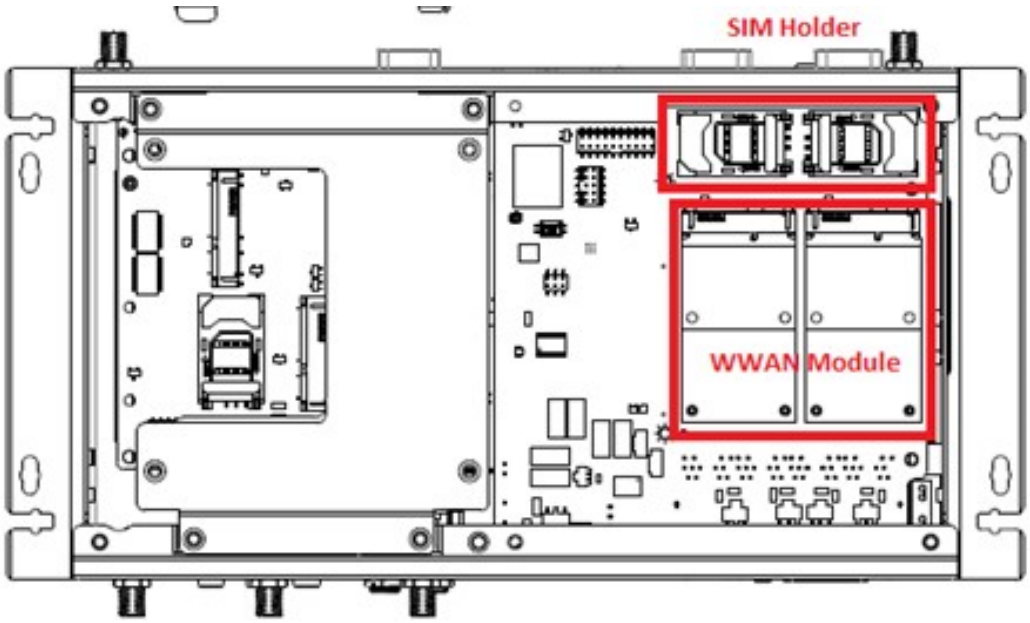


2.4.2 Installing WWAN module

1. Remove 6 screws on the bottom cover.



2. Insert the full size WWAN module in the place marked.



Chapter 3

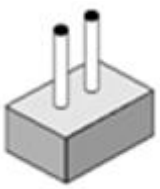
Jumper and Switch Settings

This chapter explains how to set up TS-206 Series hardware, including instructions on setting jumpers and connecting peripherals, and how to set switches and read indicators.

Be sure to read all the safety precautions before beginning the installation procedure.

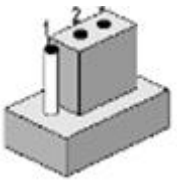
3.1 Setting Jumpers and Switches

It is possible to configure the In-Vehicle Computing Box to match the needs of the application by resetting the jumpers. A jumper is the simplest kind of electrical switch. It consists of two metal pins and a small metal clip, often protected by a plastic cover that slides over the pins to connect them. To “close” a jumper, connect the pins with the clip. To “open” a jumper, remove the clip. Sometimes a jumper has three pins, labeled 1, 2, and 3. In this case, connect either pins 1 and 2, or pins 2 and 3.



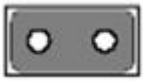
Open

Closed

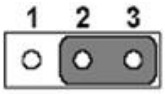


Closed 2-3

Open



Closed



Closed 2-3

A pair of needle-nose pliers may be helpful when working with jumpers. If there are any doubts about the best hardware configuration for the application, contact the local distributor or sales representative before making any changes.

An arrow is used on the motherboard to indicate the first pin of each jumper.

3.1.1 Main Board

Figure 3.1 Top side of main board

Figure 3.2 Bottom side of main board

3.1.2 I/O Board (TS-206-U4A1E Only)

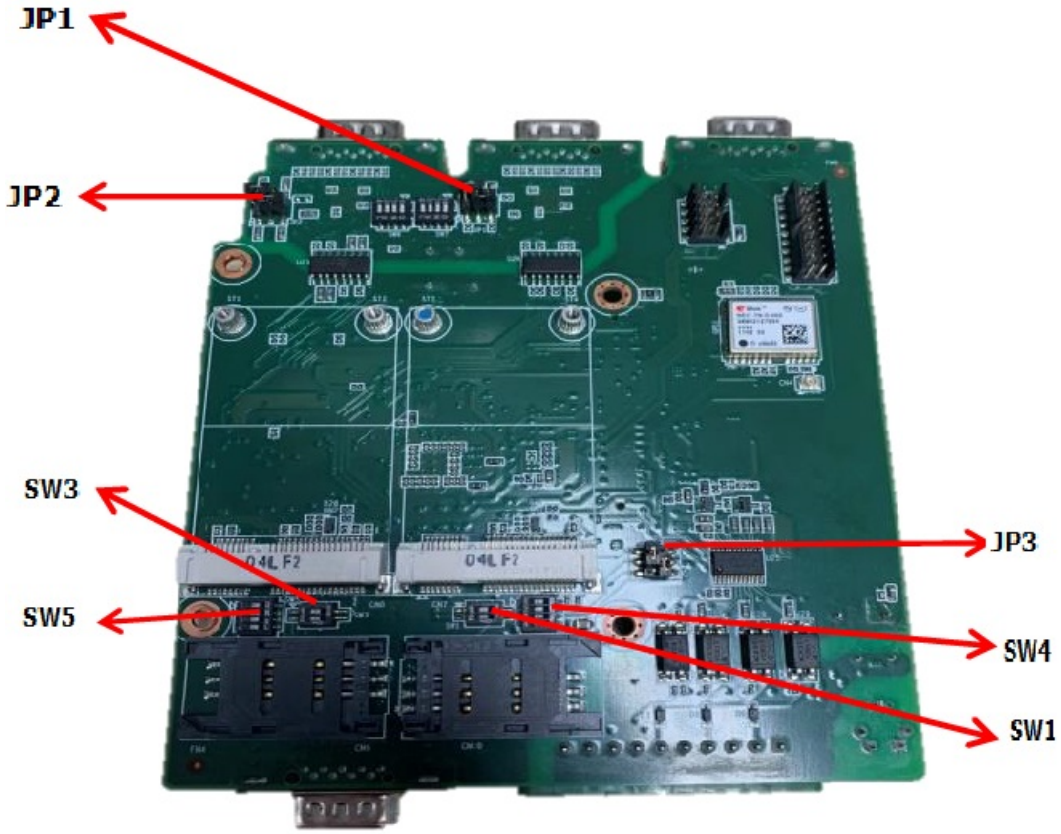


Figure 3.3 Top side of I/O board

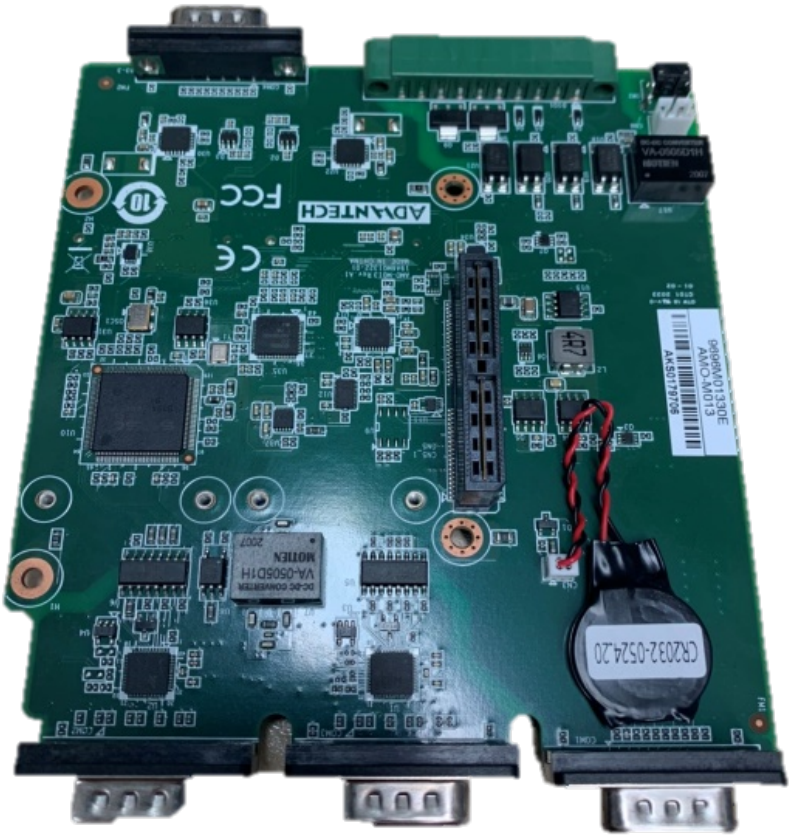


Figure 3.4 Bottom side of I/O board

3.1.3 I/O board (TS-206-U6A1E Only)

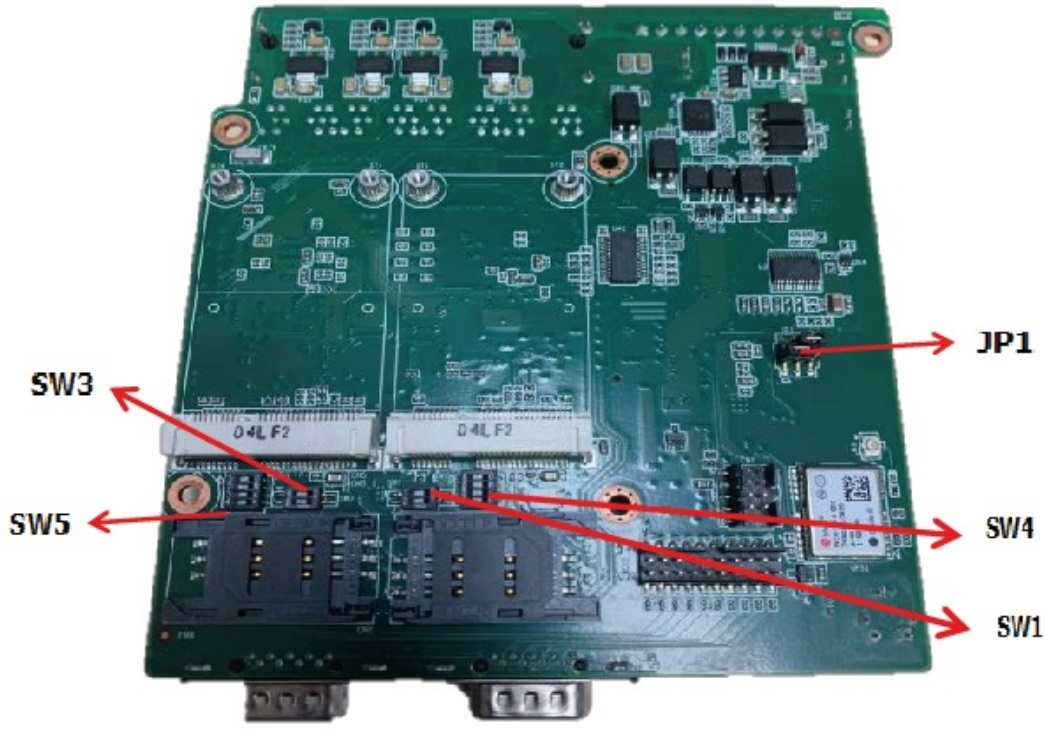


Figure 3.5 Bottom side of I/O board

3.1.4 Power Board

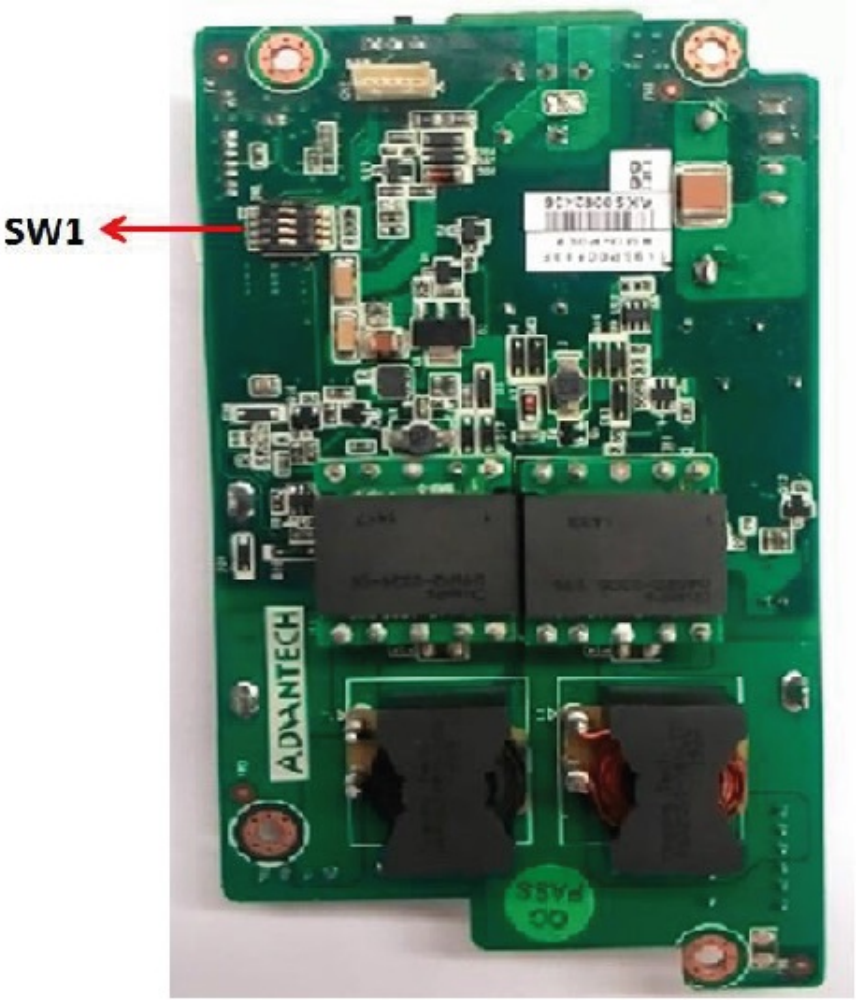


Figure 3.6 Top side of power board

3.2 Jumper Lists

3.2.1 Main Board

Jumpers & Switches	
J2	Auto Power On Setting
SW2	Clear CMOS

3.2.2 I/O Board (TS-206-U4A1E Only)

Jumper List	
JP1	RS232/422/485 Jumper Setting - COM2
JP2	RS232/422/485 Jumper Setting - COM1
JP3	3G Voice audio - PCM data in/out swap
SW1&SW4	3G/4G module Power Selection
SW3&SW5	3G/4G module Power Selection

3.2.3 I/O Board (TS-206-U6A1E Only)

Jumper List	
JP1	WWAN voice audio - PCM data in/out swap
SW1&SW4	3G/4G module Power Selection
SW3&SW5	3G/4G module Power Selection

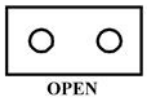
3.2.4 Power Board

Jumper List	
SW1	Power Ignition HW Setting

3.3 Jumper Settings

3.3.1 Main Board

3.3.1.1 Auto Power On Setting (J2)



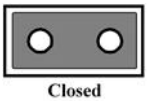
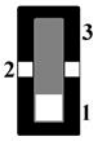


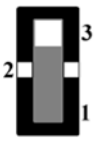
Table 3.1: Auto Power On Setting (J2)

Setting	Function
NC	Power Button for Power On
(1-2)*	Auto Power On (default)

3.3.1.2 Clear CMOS (SW2)



(1-2)*



(2-3)

Table 3.2: Clear CMOS (SW3)

Setting	Function
(1-2)*	Normal
(2-3)	Clear CMOS

3.3.2 I/O Board (TS-206-U4A1E Only)

3.3.2.1 RS232/422/485 Jumper Setting - COM1 (JP2)

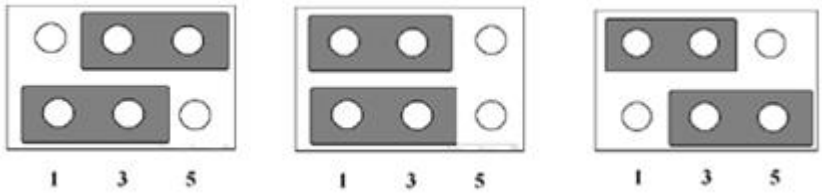


Table 3.3: RS232/422/485 Setting

Setting	Function
(1-3), (4-6) *	RS-232
(1-3), (2-4)	RS-422
(3-5), (2-4)	RS-485

3.3.2.2 RS232/422/485 Jumper Setting - COM2 (JP1)

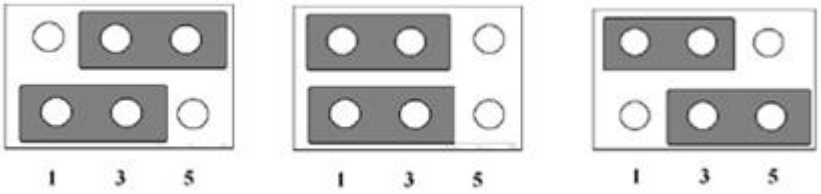


Table 3.4: RS232/422/485 Setting

Setting	Function
(1-3), (4-6) *	RS-232
(1-3), (2-4)	RS-422
(3-5), (2-4)	RS-485

3.3.2.3 WWAN voice audio - PCM data in/out swap (JP3)

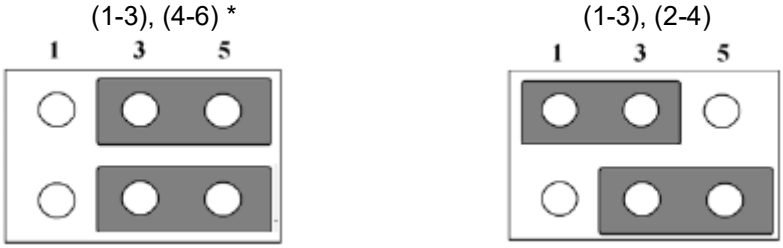


Table 3.5: WWAN Voice Audio -PCM Data In/Out Swap

Setting	Function
(1-3), (4-6) *	PCM_IN → PCMA_OUT; PCM_OUT → PCMA → IN
(3-5),(2-4)	PCM_IN → PCMA_IN; PCM_OUT → PCMA → Out

3.3.2.4 3G/4G module Power Selection-miniPCIE1(SW1&SW4)

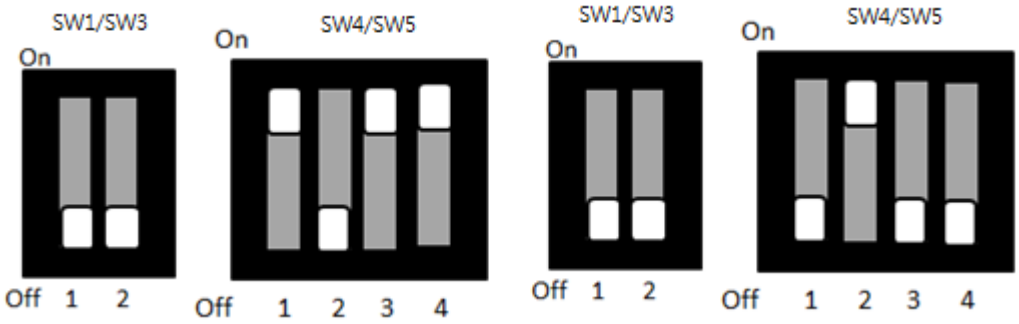


Table 3.6: WWAN Module Power Selection

Laction	Setting	Function
SW1 SW4	1(Off), 2(Off) 1(On), 2(Off), 3(On), 4(On)	3.3V
SW1 SW4	1(Off), 2(Off) 1(Off), 2(On), 3(Off), 4(Off)	3.8V

3.3.2.5 3G/4G module Power Selection-miniPCIE2 (SW3&SW5)

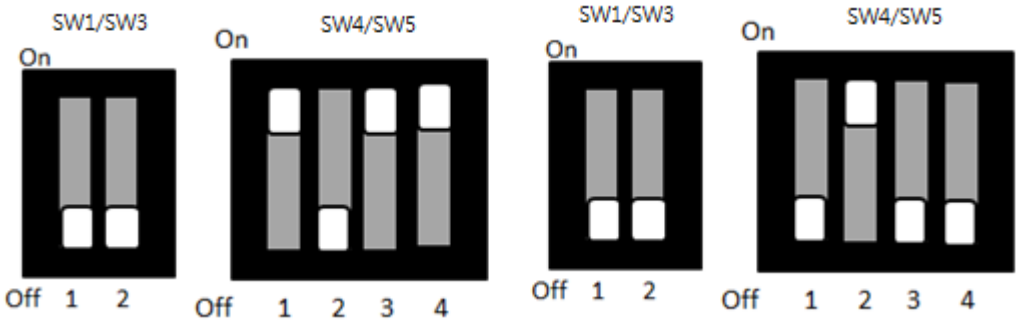


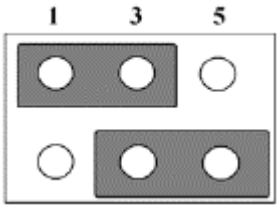
Table 3.7: WWAN Module Power Selection

Laction	Setting	Function
SW3 SW5	1(Off), 2(Off) 1(On), 2(Off), 3(On), 4(On)	3.3V
SW3 SW5	1(Off), 2(Off) 1(Off), 2(On), 3(Off), 4(Off)	3.8V

3.3.3 I/O Board (TS-206-U6A1E Only)

3.3.3.1 WWAN voice audio - PCM data in/out swap (JP1)

(1-3), (4-6) *



(1-3), (2-4)

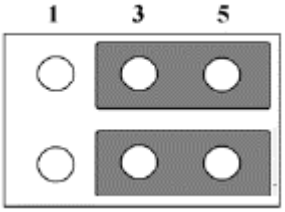


Table 3.8: 3G Voice Audio -PCM Data In/Out Swap

Setting	Function
(1-3), (4-6) *	PCM_IN → PCMA_OUT; PCM_OUT → PCMA → IN
(3-5),(2-4)	PCM_IN → PCMA_IN; PCM_OUT → PCMA → Out

3.3.3.2 3G/4G module Power Selection-miniPCIE1(SW1&SW4)

Table 3.9: WWAN Module Power Selection

Laction	Setting	Function
SW1 SW4	1(Off), 2(Off) 1(On), 2(Off), 3(On), 4(On)	3.3V
SW1 SW4	1(Off), 2(Off) 1(Off), 2(On), 3(Off), 4(Off)	3.8V

3.3.3.3 3G/4G module Power Selection-miniPCIE2 (SW3&SW5)

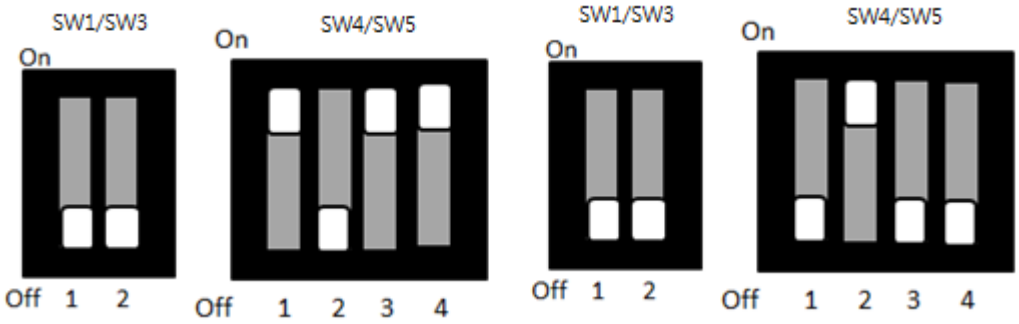


Table 3.10: WWAN Module Power Selection

Laction	Setting	Function
SW3 SW5	1(Off), 2(Off) 1(On), 2(Off), 3(On), 4(On)	3.3V
SW3 SW5	1(Off), 2(Off) 1(Off), 2(On), 3(Off), 4(Off)	3.8

3.3.4 Power Board

3.3.4.1 Power Ignition HW Setting (SW1_1-3)

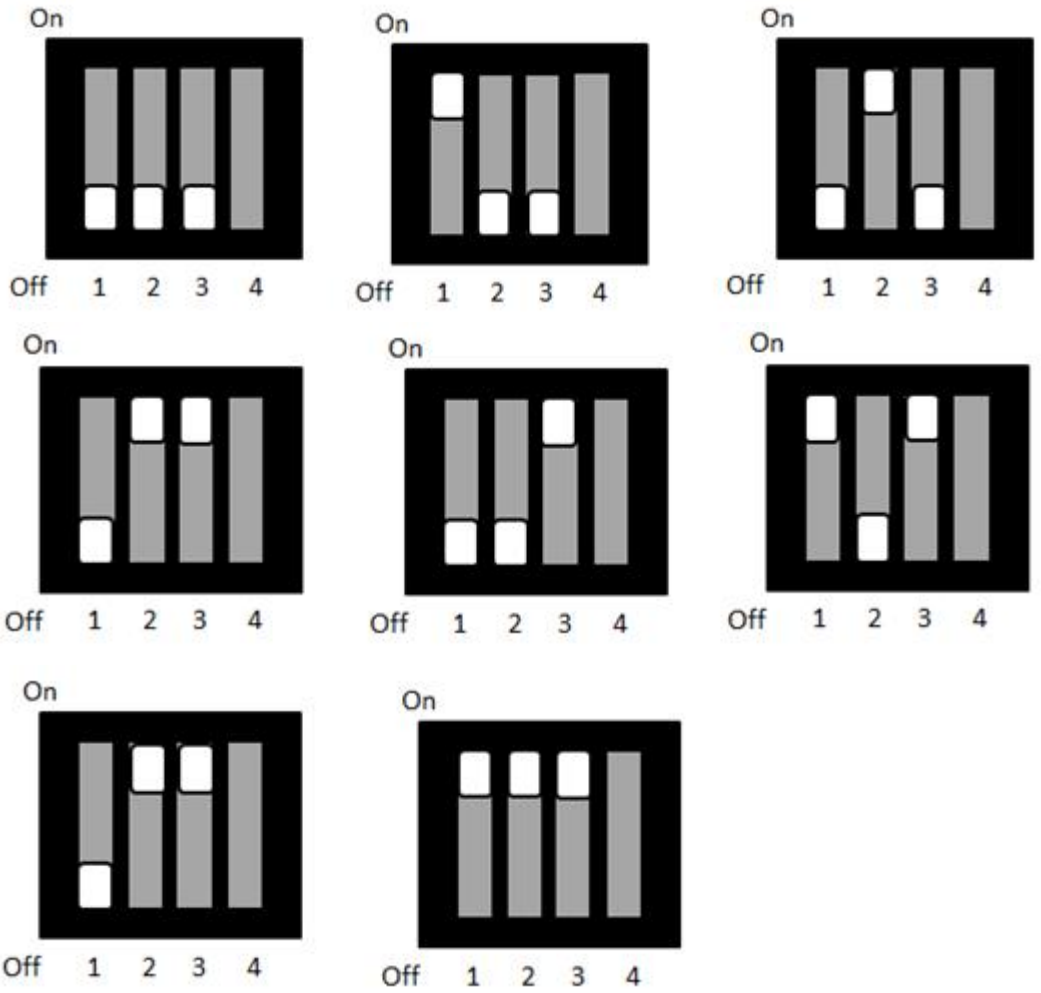


Table 3.11: Power Ignition HW Setting

Setting			Function		
1	2	3	Ignition on Timer	Ignition delay off timer	Ignition hard off timer
Off*	Off*	Off*	7	30	180
On	Off	Off	10	40	180
Off	On	Off	10	60	180
Off	On	On	30	60	180
Off	Off	On	60	120	180
On	Off	On	120	180	180
Off	On	On	180	240	180
On	On	On	7	0	180

3.3.4.2 Power Ignition SW/HW Setting (SW1_4)

Table 3.12: Power Ignition SW/HW Setting Selection

Setting	Function
Off*	Power Ignition SW setting
On	Power Ignition HW set

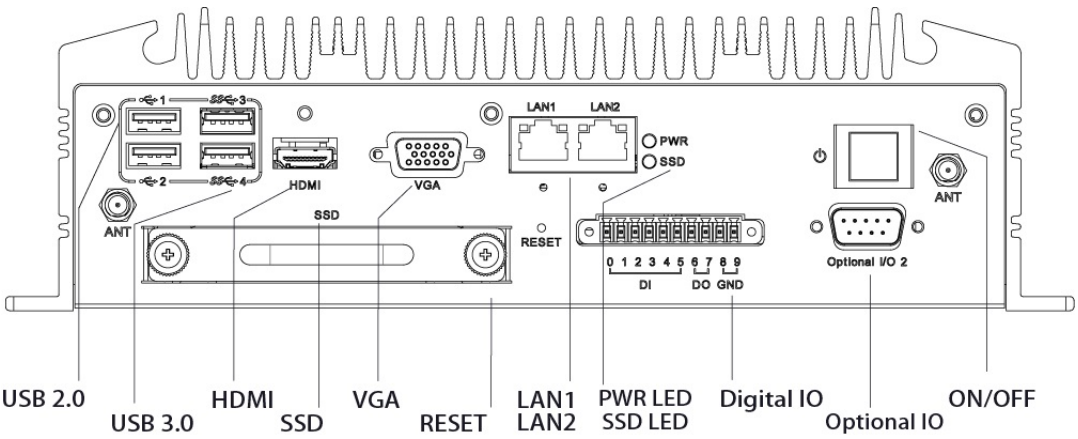
Chapter 4

Pin Assignments

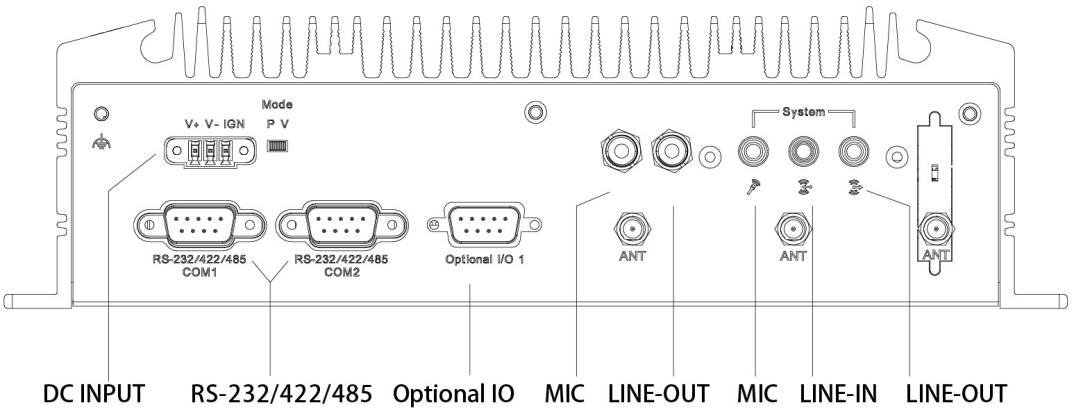
This chapter explains Pin Assignments of TS-206 Series.

4.1 TS-206-U4A1E I/O Connectors

4.1.1 TS-206-U4A1E Front I/O View



4.1.2 TS-206-U4A1E Rear I/O View



4.2 TS-206-U4A1E I/O Pin Definition

4.2.1 VGA Connector

The TS-206 provides a high resolution VGA interface connected by a D-sub 15- pin connector to support a VGA CRT monitor. It supports display resolution of up to 1920 x 1200 with 60 Hz.

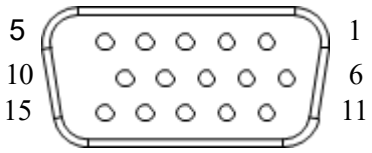


Figure 4.1 VGA Connector

Table 4.1: VGA Connector Pin Assignments

Pin	Signal Name	Pin	Signal Name
1	Red	2	Green
3	Blue	4	NC
5	GND	6	GND
7	GND	8	GND
9	NC	10	GND
11	NC	12	DDC Date
13	H-SYNC	14	V-SYNC
15	DDC Clock		

4.2.2 USB Connector

The TS-206 provides up to four USB interface connectors - 2 x USB 2.0 & 2 x USB 3.0, which give complete Plug & Play. The USB interface is compliant with USB UHCI, Rev. 2.0 & 3.0. The USB interface supports Plug and Play, which enables you to connect or disconnect a device whenever you want, without turning off the computer.

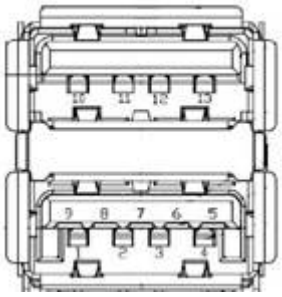


Figure 4.2 USB Connector [Upper (black): USB2.0/Down (blue): USB 3.0]

Table 4.2: USB Connector Pin Assignments

Pin	Signal Name	Pin	Signal Name
1	+5V	2	D-
3	D+	4	GND
5	SSRX-	6	SSRX+
7	GND	8	SSTX-
9	SSTX+	10	+5V
11	D-	12	D+
13	GND		

4.2.3 Ethernet Connector

TS-206 provides two RJ45 LAN interface connectors, which are fully compliant with IEEE 802.3u 10/100/1000 Base-T CSMA/CD standards. LAN1 is equipped with Intel I218 GbE and LAN2 is equipped with Intel I210 GbE. The Ethernet ports use standard RJ-45 jack connectors with LED indicators on the front side to show Active/Link status and Speed status.

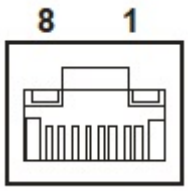


Figure 4.3 Ethernet Connector

Table 4.3: Table 4.3: Ethernet Connector Pin Assignments

Pin	Signal Name	Pin	Signal Name
1	TX+(10/100),BI_DA+(GHz)	5	BI_DC-(GHz)
2	TX-(10/100),BI_DA-(GHz)	6	RX-(10/100),BI_DB-(GHz)
3	RX+(10/100),BI_DB+(GHz)	7	BI_DD+(GHz)
4	BI_DC+(GHz)	8	BI_DD-(GHz)

4.2.4 HDMI Connector

TS-206 provides 1 x lockable HDMI port which resolution can support up to 4K at 24 Hz.

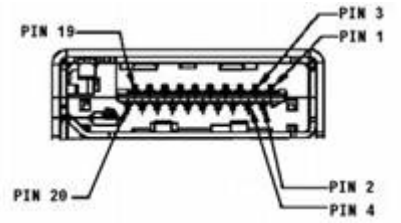


Figure 4.4 HDMI Connector

Table 4.4: HDMI/Display Port Connector Pin Assignments

Pin	Signal Name	Pin	Signal Name
1	TMDS_Data2+/DP_Data0+	2	GND
3	TMDS_Data2−/DP_Data0-	4	TMDS_Data1+/DP_Data1+
5	GND	6	TMDS_Data1−/DP_Data1-
7	TMDS_Data0+/DP_Data2+	8	GND
9	TMDS_Data0-/DP_Data2-	10	TMDS_Clock+/DP_Data3+
11	GND	12	TMDS_Clock−/DP_Data3-
13	NC	14	NC
15	SCL/AUX_CH+	16	SDA/GND
17	DDC GND/AUX_CH-	18	+5V/Hot plug detect
19	Hot plug detect/Return	20	DP_PWR

4.2.5 DIO Connector

TS-206 offers an 8-bit phoenix type DIO connector and two ground pin. 6 x DI & 2 x DO w/3 KV isolation.

- **Connector Type:** 10-pin screw terminal block (6 DI points, 2 DO points, GND)
- **Input Voltage:** 0 to 30 V_{DC} at 25 Hz
- **Digital Input Levels for Dry Contacts:**
  - Logic level 0: Close to GND
  - Logic level 1: Open
- **Digital Input Levels for Wet Contacts:**
  - Logic level 0: +3 V max.
  - Logic level 1: +5 V to +30 V
- **Output Current:** Max. 500 mA per channel
- **On-state Voltage:** 24 V_{DC} nominal, open collector to 30 V_{DC}

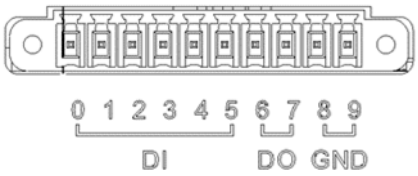


Figure 4.5 DIO Connector

4.2.6 Power Input Connector

TS-206 comes with 3-pin Pheonix type power input connector for 9 ~ 36 V_{DC} input.

Figure 4.6 Power Input Connector

4.2.7 COM Connector

TS-206-U4A1E provides two D-sub 9-pin connectors, which offers 2 x RS-232/422/485 serial communication ports w/3 KV isolation. (Jumper setting selectable).

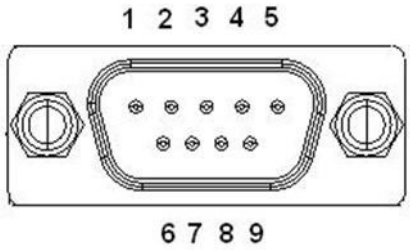


Figure 4.7 COM Port Connector

Table 4.5: COM Connector Pin Assignments

	RS-232	RS-422	RS-485
Pin	**Signal Name**	**Signal Name**	**Signal Name**
1	DCD	Tx-	DATA-
2	RxD	Tx+	DATA+
3	TxD	Rx+	NC
4	DTR	Rx-	NC
5	GND	GND	GND
6	DSR	NC	NC
7	RTS	NC	NC
8	CTS	NC	NC
9	RI	NC	NC

4.2.8 System Audio Connector

TS-206 offers stereo audio ports via phone jack connector of Line-out, Mic-in & Line-in. The audio chip controller is by Realtek ALC888, High Definition Audio.

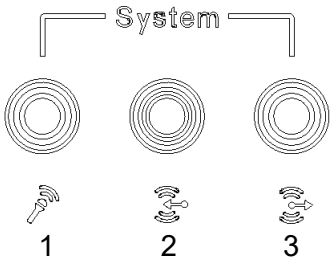


Figure 4.8 System Audio Connector

Table 4.6: Audio Connector Pin Assignments	
Pin	**Audio Signal Name**
1	MIC
2	Line-In
3	Line-Out

4.2.9 Cellular Voice Connector

TS-206 offers stereo audio ports by a phone jack connector of Line-out & Mic-in.

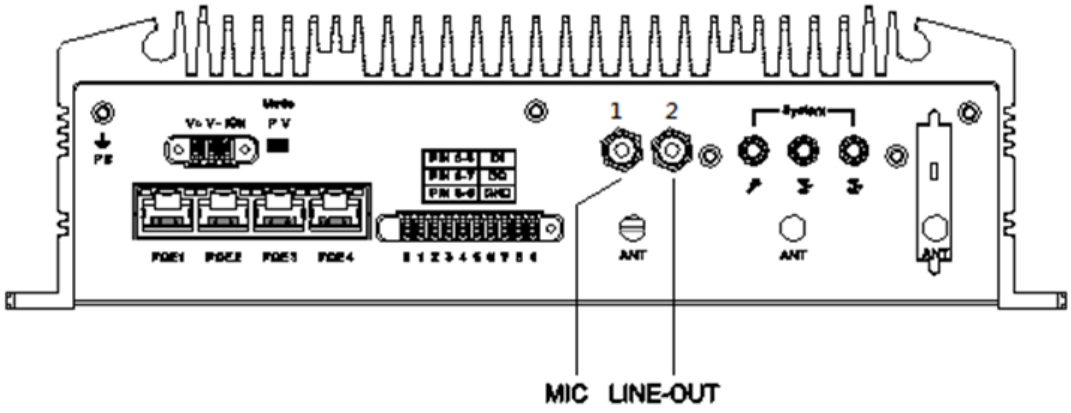


Figure 4.9 Cellular Voice Connector

Table 4.7: Cellular Voice Connector Pin Assignments	
Pin	**Cellular Signal Name**
1	MIC
2	Line Out

4.2.10 Optional I/O

TS-206-U4A1E provides two optional DB9 connectors which can have possible combinations as follows.

- 2 x DB9 connectors for RS-232/422/485 signal (Default)
- CANBus 2.0A/B (Module option)

DB9_1	DB9_2
COM	COM
1 x CANBus	1 x CANBus
COM	2 x CANBus
2 x CANBus	COM

4.2.11 Power Input Mode

TS-206 provides two power input modes. One is P and the other one is V. P means for power adapter; V means for in-vehicle purpose.

Figure 4.10 Power Input Mode

4.2.12 Power On/Off Button

TS-206 comes with a Power On/Off button, that supports dual function of Soft Power -On/Off (Instant off or Delay 4 Second), and Suspend.

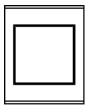


Figure 4.11 Power ON/OFF Button

4.2.13 Reset

TS-206 comes with a reset function for users to reset the unit if necessary.

Figure 4.12 Reset

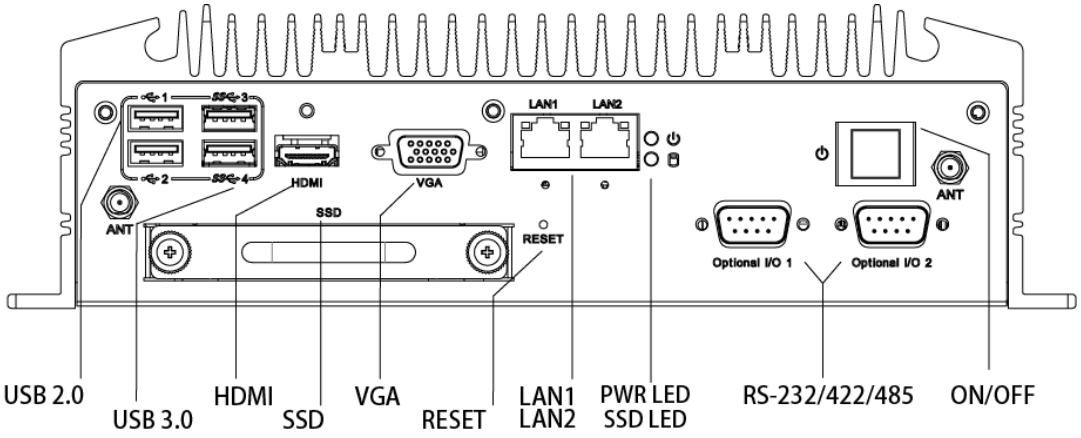
4.2.14 LED Indicator

There are two LEDs on TS-206 front metal face plate for indicating system status: PWR LED is for power status; and SSD LED is for SSD flash disk status.

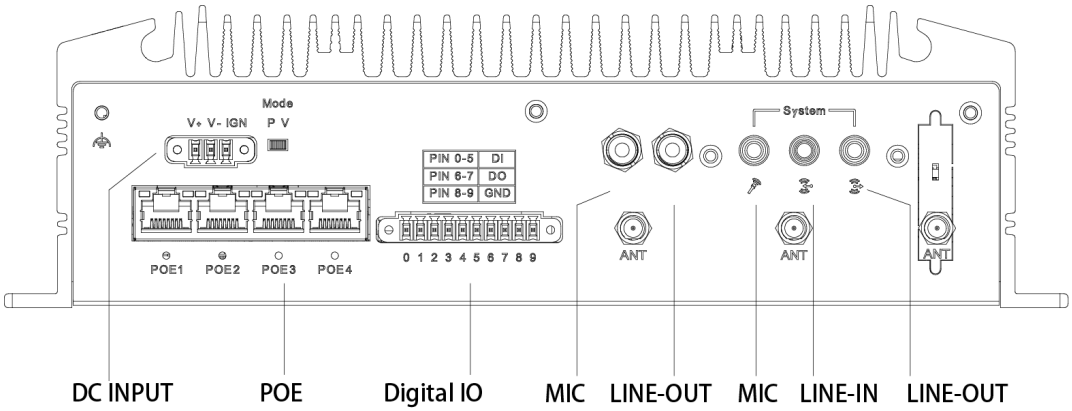
Figure 4.13 LED Indicator

4.3 TS-206-U6A1E I/O Connectors

4.3.1 TS-206-U6A1E Front I/O View



4.3.2 TS-206-U6A1E Rear I/O View



4.4 TS-206-U6A1E I/O Pin Definition

4.4.1 VGA Connector

The TS-206 provides a high resolution VGA interface connected by a D-sub 15- pin connector to support a VGA CRT monitor. It supports display resolution of up to 1920 x 1200 with 60 Hz.

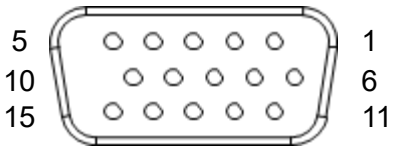


Figure 4.14 VGA Connector

Table 4.8: VGA Connector Pin Assignments

Pin	Signal Name	Pin	Signal Name
1	Red	2	Green
3	Blue	4	NC
5	GND	6	GND
7	GND	8	GND
9	NC	10	GND
11	NC	12	DDC Date
13	H-SYNC	14	V-SYNC
15	DDC Clock		

4.4.2 USB Connector

The TS-206 provides up to four USB interface connectors - 2 x USB 2.0 & 2 x USB 3.0, which give complete Plug & Play. The USB interface is compliant with USB UHCI, Rev. 2.0 & 3.0. The USB interface supports Plug and Play, which enables you to connect or disconnect a device whenever you want, without turning off the computer.

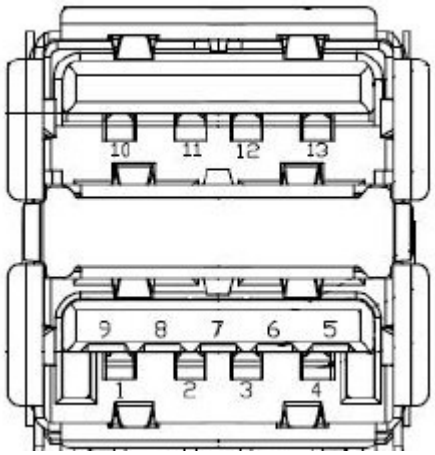


Figure 4.15 USB Connector [Upper (black): USB2.0/Down (blue): USB 3.0]

Table 4.9: USB Connector Pin Assignments

Pin	Signal Name	Pin	Signal Name
1	+5V	2	D-
3	D+	4	GND
5	SSRX-	6	SSRX+
7	GND	8	SSTX-
9	SSTX+	10	+5V
11	D-	12	D+
13	GND		

4.4.3 Ethernet Connector

TS-206 provides two RJ45 LAN interface connectors, which are fully compliant with IEEE 802.3u 10/100/1000 Base-T CSMA/CD standards. LAN1 is equipped with Intel I218 GbE and LAN2 is equipped with Intel I210 GbE. The Ethernet ports use standard RJ-45 jack connectors with LED indicators on the front side to show Active/Link status and Speed status.

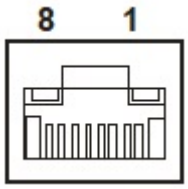


Figure 4.16 Ethernet Connector

Table 4.10: Ethernet Connector Pin Assignments

Pin	Signal Name	Pin	Signal Name
1	TX+(10/100),BI_DA+(GHz)	5	BI_DC-(GHz)
2	TX-(10/100),BI_DA-(GHz)	6	RX-(10/100),BI_DB-(GHz)
3	RX+(10/100),BI_DB+(GHz)	7	BI_DD+(GHz)
4	BI_DC+(GHz)	8	BI_DD-(GHz)

4.4.4 HDMI Connector

TS-206 provides 1 x lockable HDMI port which resolution can support up to 4K at 24 Hz.

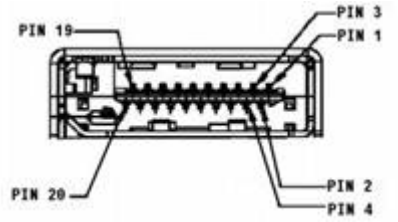


Figure 4.17 HDMI Connector

Table 4.11: HDMI/Display Port Connector Pin Assignments

Pin	Signal Name	Pin	Signal Name
1	TMDS_Data2+/DP_Data0+	2	GND
3	TMDS_Data2−/DP_Data0-	4	TMDS_Data1+/DP_Data1+
5	GND	6	TMDS_Data1−/DP_Data1-
7	TMDS_Data0+/DP_Data2+	8	GND
9	TMDS_Data0-/DP_Data2-	10	TMDS_Clock+/DP_Data3+
11	GND	12	TMDS_Clock−/DP_Data3-
13	NC	14	NC
15	SCL/AUX_CH+	16	SDA/GND
17	DDC GND/AUX_CH-	18	+5V/Hot plug detect
19	Hot plug detect/Return	20	DP_PWR

4.4.5 DIO Connector

TS-206 offers an 8-bit phenix type DIO connector and two ground pin. 6 x DI & 2 x DO w/3 KV isolation.

- **Connector Type:** 10-pin screw terminal block (6 DI points, 2 DO points, GND)
- **Input Voltage:** 0 to 30 V_{DC} at 25 Hz
- **Digital Input Levels for Dry Contacts:**
  - Logic level 0: Close to GND
  - Logic level 1: Open
- **Digital Input Levels for Wet Contacts:**
  - Logic level 0: +3 V max.
  - Logic level 1: +5 V to +30 V
- **Output Current:** Max. 500 mA per channel
- **On-state Voltage:** 24 V_{DC} nominal, open collector to 30 V_{DC}

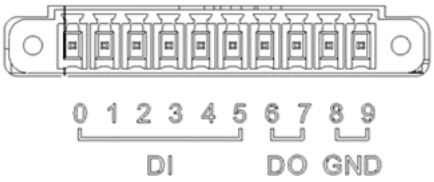


Figure 4.18 DIO Connector

4.4.6 Power Input Connector

TS-206 comes with 3-pin phoenix type power input connector for 9 ~ 36 V_{DC} input.

Figure 4.19 Power Input Connector

4.4.7 Power Over Ethernet

TS-206-U6A1E provides 4 x 10/100 PoE ports.

- 4ports full-load, IEEE802.3af Class 2 (7 Watt)
- 2ports full-load, IEEE802.3af Class 3 (15.4 Watt)

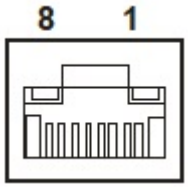


Figure 4.20 Power Over Ethernet Connector

Table 4.12: Power Over Ethernet (PoE) Pin Definition

Pin	Signal Name	Pin	Signal Name
1	Rx +/DC +	5	unused
2	RX -/DC +	6	Tx -/DC -
3	Tx +/DC -	7	Unused
4	Unused	8	Unused

4.4.8 System Audio Connector

TS-206 offers stereo audio ports by a phone jack connector of Line-out, Mic-in & Line-in. The audio chip controller is by Realtek ALC888, High Definition Audio.

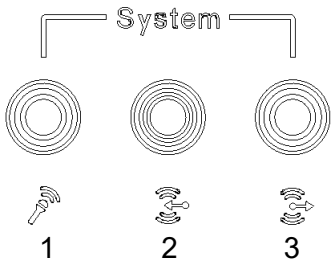


Figure 4.21 System Audio Connector

Table 4.13: Audio Connector Pin Assignments

Pin	Audio Signal Name
1	MIC
2	Line-In
3	Line-Out

4.4.9 Cellular Voice Connector

TS-206 offers stereo audio ports by a phone jack connector of Line-out & Mic-in.

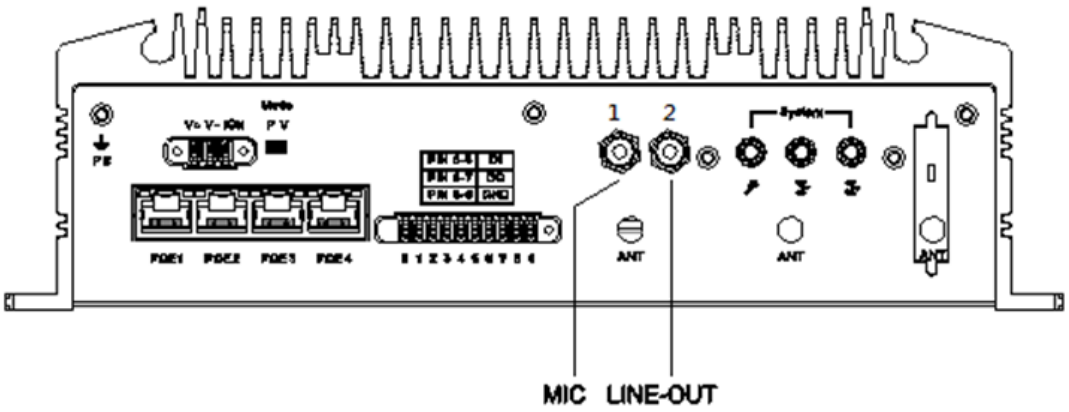


Figure 4.22 Cellular Voice Connector

Table 4.14: Cellular Voice Connector Pin Assignments

Pin	Cellular Signal Name
1	MIC
2	Line Out

4.4.10 Optional I/O

TS-206-U6A1E provides two optional DB9 connectors which can have the fol- lowing possible combinations:

- 2 x DB9 connectors for RS-232/422/485 signal (Default)
- CANBus 2.0A/B (Module option)

DB9_1	DB9_2
COM	COM
1 x CANBus	1 x CANBus
COM	2 x CANBus
2 x CANBus	COM

4.4.11 Power Input Mode

TS-206 provides two power input modes. One is P and the other one is V. P means for power adapter; V means for in-vehicle purpose.

Figure 4.23 Power Input Mode

4.4.12 Power On/Off Button

TS-206 comes with a Power On/Off button, that supports the dual function of Soft Power -On/Off (Instant off or Delay 4 Second), and Suspend.

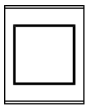


Figure 4.24 Power ON/OFF Button

4.4.13 Reset

TS-206 comes with reset function for users to reset the unit if necessary.

Figure 4.25 Reset

4.4.14 LED Indicator

There are two LEDs on TS-206 front metal face plate for indicating system status: PWR LED is for power status; and SSD LED is for SSD flash disk status.

Figure 4.26 LED Indicator

Chapter 5

BIOS settings

This chapter introduces how to set BIOS configuration data.

5.1 Introduction

AMIBIOS has been integrated into many motherboards for over a decade. With the AMIBIOS Setup program, you can modify BIOS settings and control the various system features. This chapter describes the basic navigation of the TS-206 BIOS setup screens.

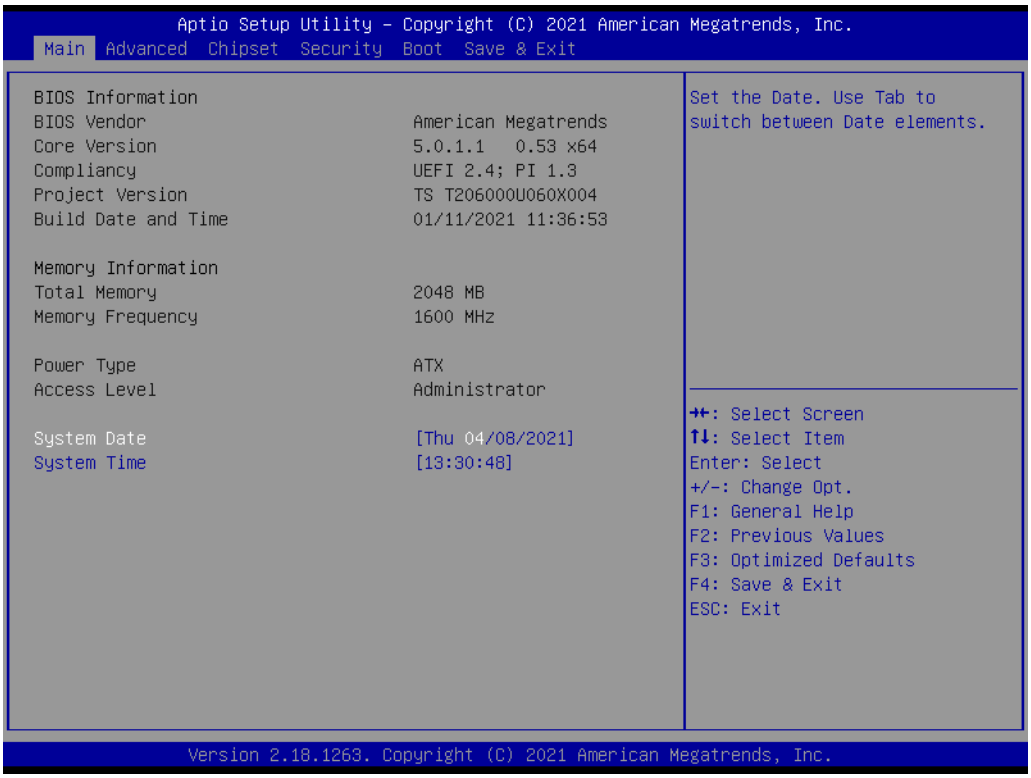


Figure 5.1 Setup program initial screen

AMI's BIOS ROM has a built-in setup program that allows users to modify the basic system configuration. This information is stored in battery-backed CMOS so it retains the setup information when the power is turned off.

5.2 Entering Setup

Turn on the computer and then press <F2> or <DEL> to enter the Setup menu.

5.2.1 Main Setup

When you first enter the BIOS Setup Utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab. There are two Main Setup options. They are described in this section. The Main BIOS Setup screen is shown below.

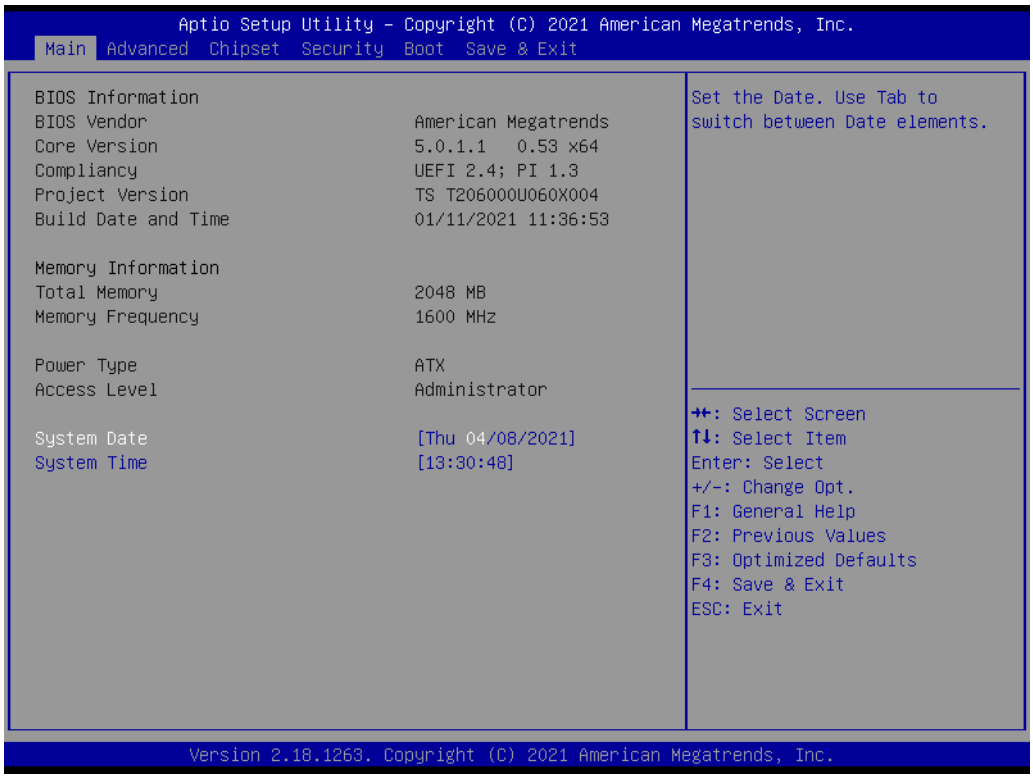


Figure 5.2 Main setup screen

The Main BIOS setup screen has two main frames. The left frame displays all the options that can be configured. Grayed-out options cannot be configured; options in blue can. The right frame displays the key legend.

Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it.

- **System Time/System Date**
  Use this option to change the system time and date. Highlight System Time or System Date using the <Arrow> keys. Enter new values through the keyboard. Press the <Tab> key or the <Arrow> keys to move between fields. The date must be entered in MM/DD/YY format. The time must be entered in HH:MM:SS format.

5.2.2 Advanced BIOS Features Setup

Select the Advanced tab from the TS-206 setup screen to enter the Advanced BIOS Setup screen. You can select any of the items in the left frame of the screen, such as CPU Configuration, to go to the sub menu for that item. You can display an Advanced BIOS Setup option by highlighting it using the <Arrow> keys. All Advanced BIOS setup options are described in this section. The Advanced BIOS Setup screens are shown below. The sub menus are described on the following pages.

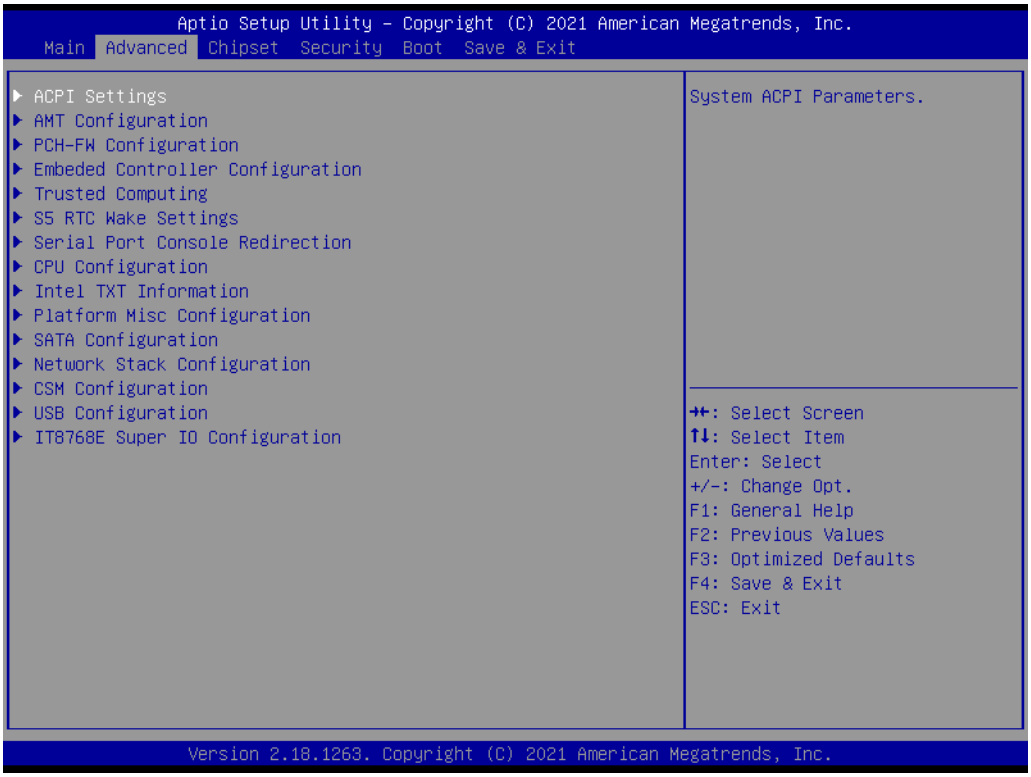


Figure 5.3 Advanced BIOS features setup screen

5.2.2.1 ACPI Settings

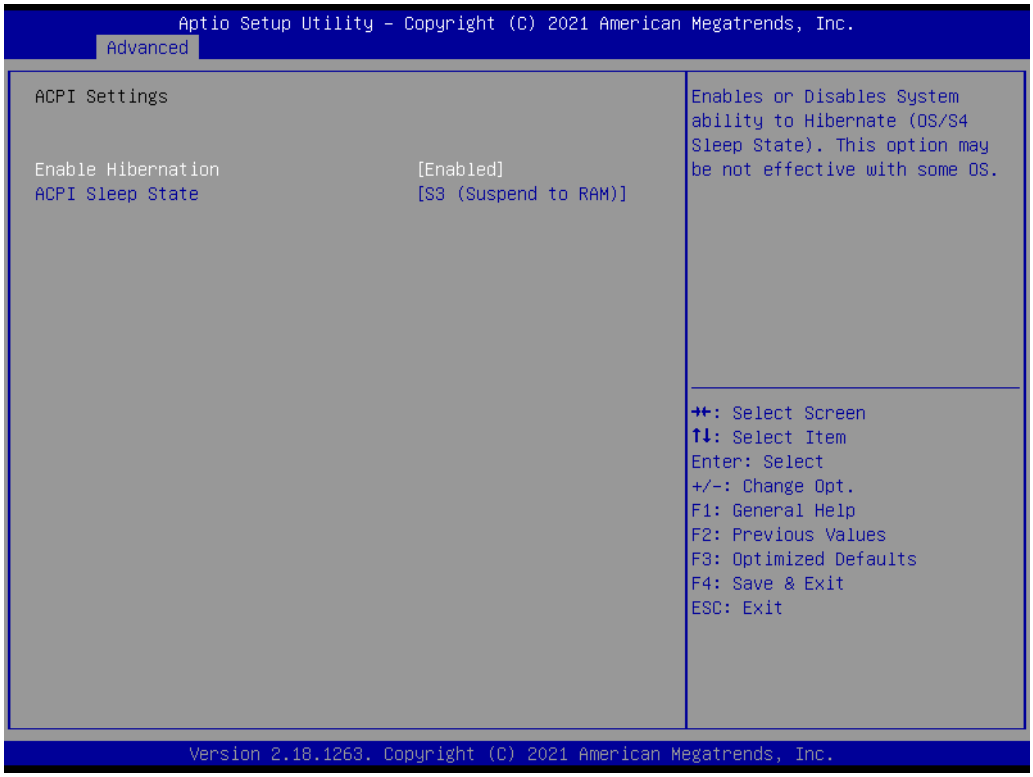


Figure 5.4 ACPI Settings

- **Enable Hibernation**
  Enables or Disables system ability to Hibernate (OS/S4 sleep state).
- **ACPI Sleep State**
  Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.

5.2.2.2 AMT Configuration

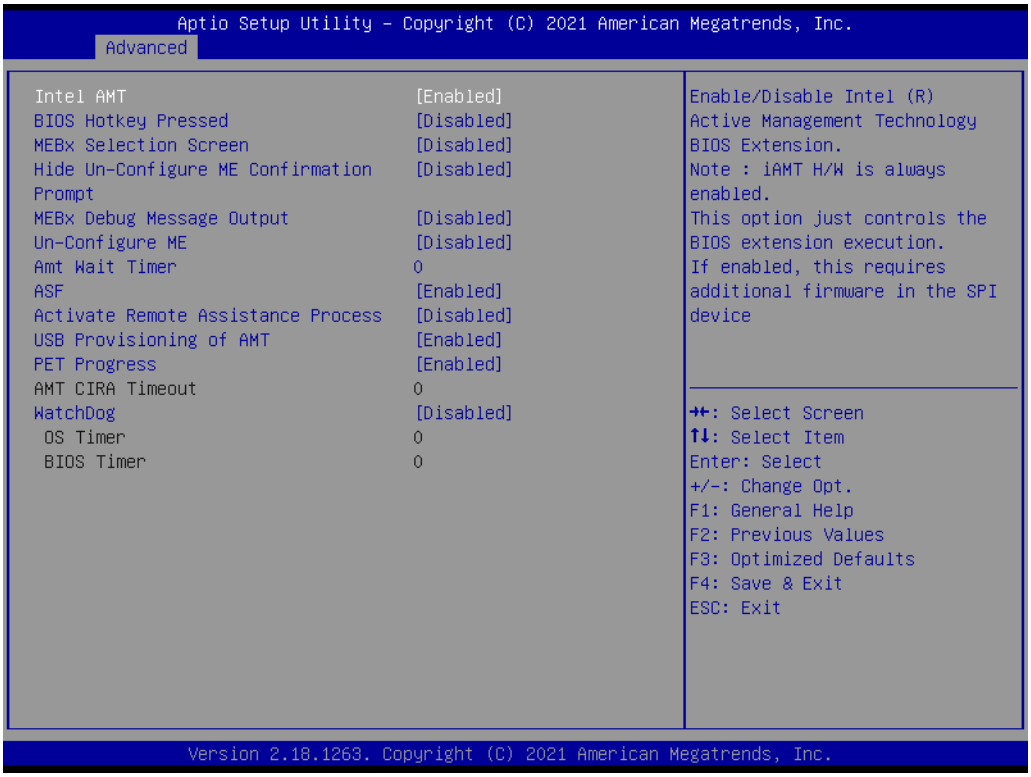


Figure 5.5 AMT Configuration

- **Intel AMT**
  Enable/Disable Intel Active Management Technology BIOS Extension.
- **BIOS Hotkey Pressed**
  Enable/Disable BIOS hotkey press.
- **MEBx Selection Screen**
  Enable/Disable MEBx selection screen.
- **Hide Un-Configure ME Confirmation Prompt**
  Hide Un-Configure ME without password Confirmation Prompt.
- **MEBx Debug Message Output**
  Enable MEBx debug message output.
- **Un-Configure ME**
  Un-Configure ME without password.
- **Amt Wait Timer**
  Set timer to wait before sending ASF_GET_BOOT_OPTIONS.
- **ASF**
  Enable/Disable Alert Specification Format.
- **Activate Remote Assistance Process**
  Trigger CIRA boot.
- **USB Provisioning of AMT**
  Enable/Disable of AMT USB Provisioning.
- **PET Progress**
  User can Enable/Disable PET Events progress to receive PET events or not.
- **WatchDog**
  Enable/Disable WatchDog Timer.

5.2.2.3 PCH-FW Configuration

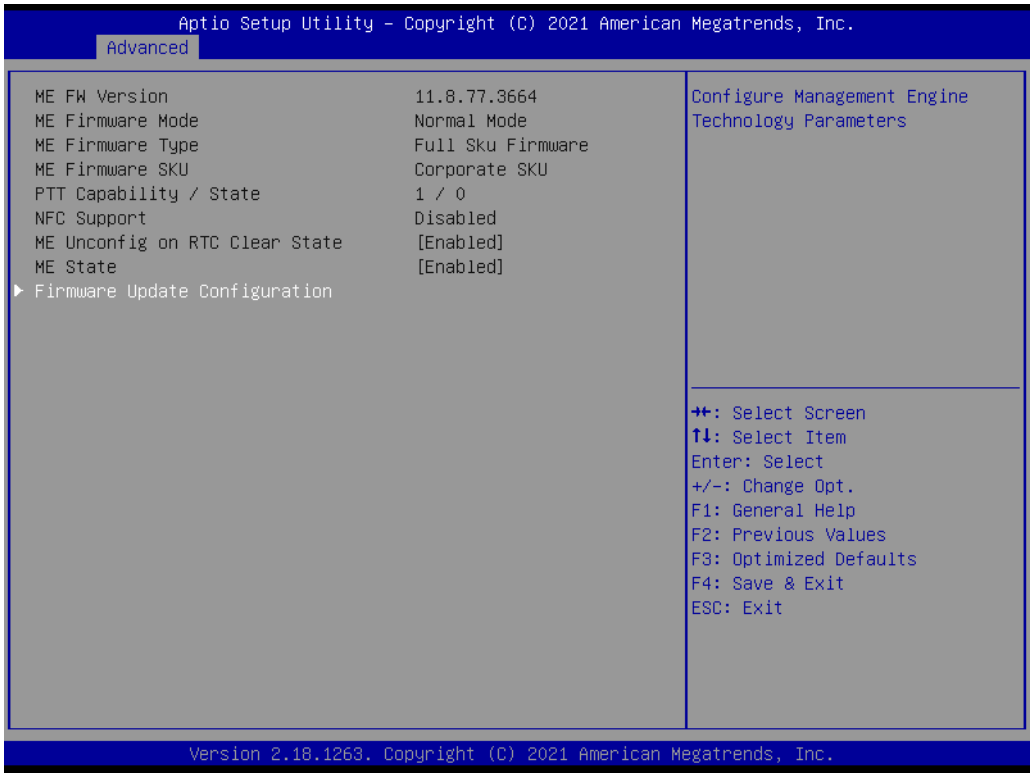


Figure 5.6 PCH-FW Configuration

- **ME Unconfig on RTC Clear Satat**
  Disabling this option will cause ME not to unconfigure on RTC clear.
- **ME State**
  Set ME to Soft Temporary Disabled.
- **Firmware Update Configuration**
  Configure Management Engine Technology Parameter.

Firmware Update Configuration

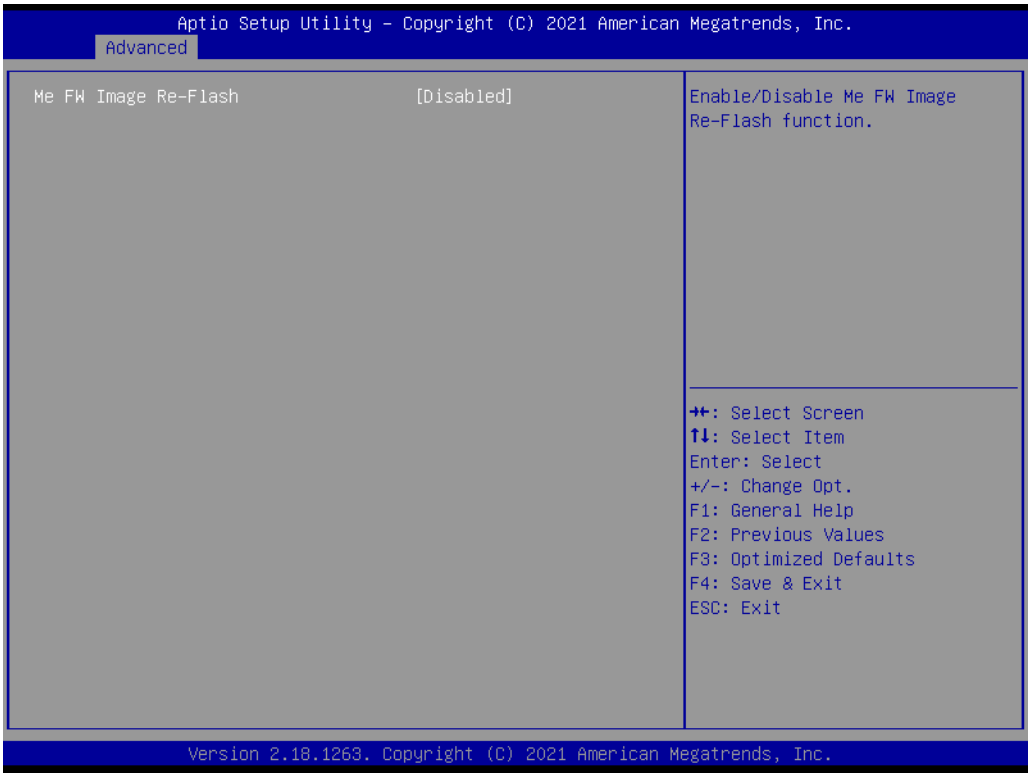


Figure 5.7 Firmware Update Configuration

- **Me FW Image Re-Flash**
  Enable/Disable Me FW Image Re-Flash function.

5.2.2.4 Embedded Controller Configuration

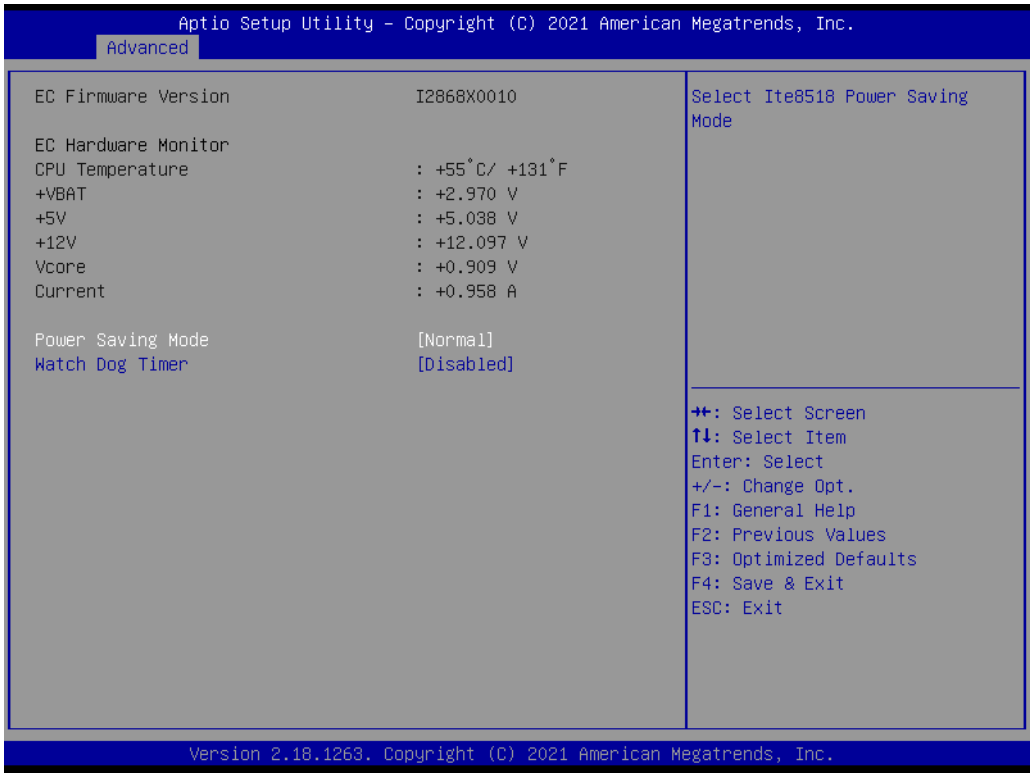


Figure 5.8 Embedded Controller Configuration

- **Power Saving Mode**
  Select ITE8518 Power Saving Mode.
- **Watch Dog Timer**
  Enabled or Disabled Watch Dog Timer function.

5.2.2.5 S5 RTC Wake Settings

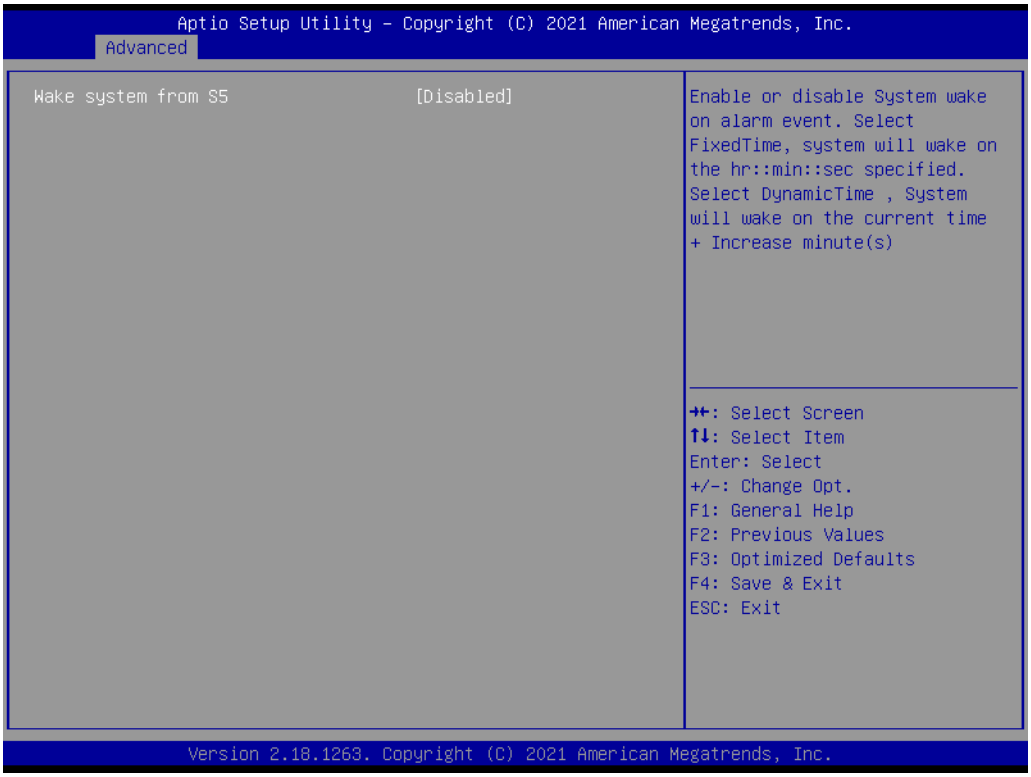


Figure 5.9 S5 RTC Wake Settings

- **Wake system from S5**
  Enable os disable System wake on alarm event.

5.2.2.6 Serial Port Console Redirection

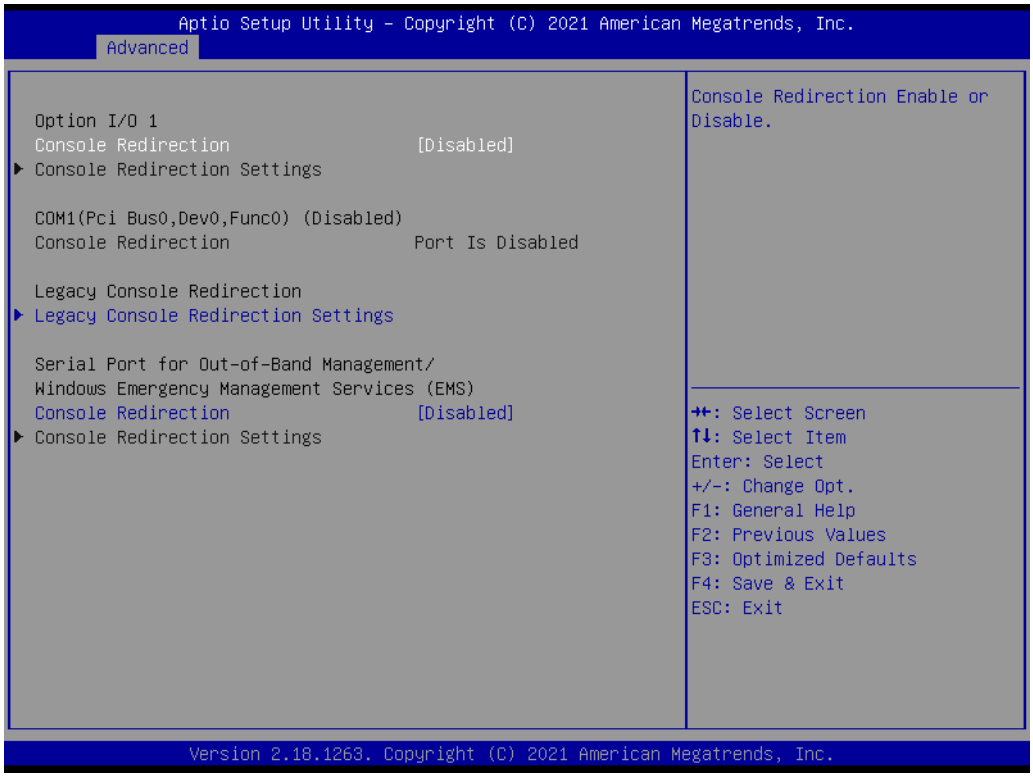
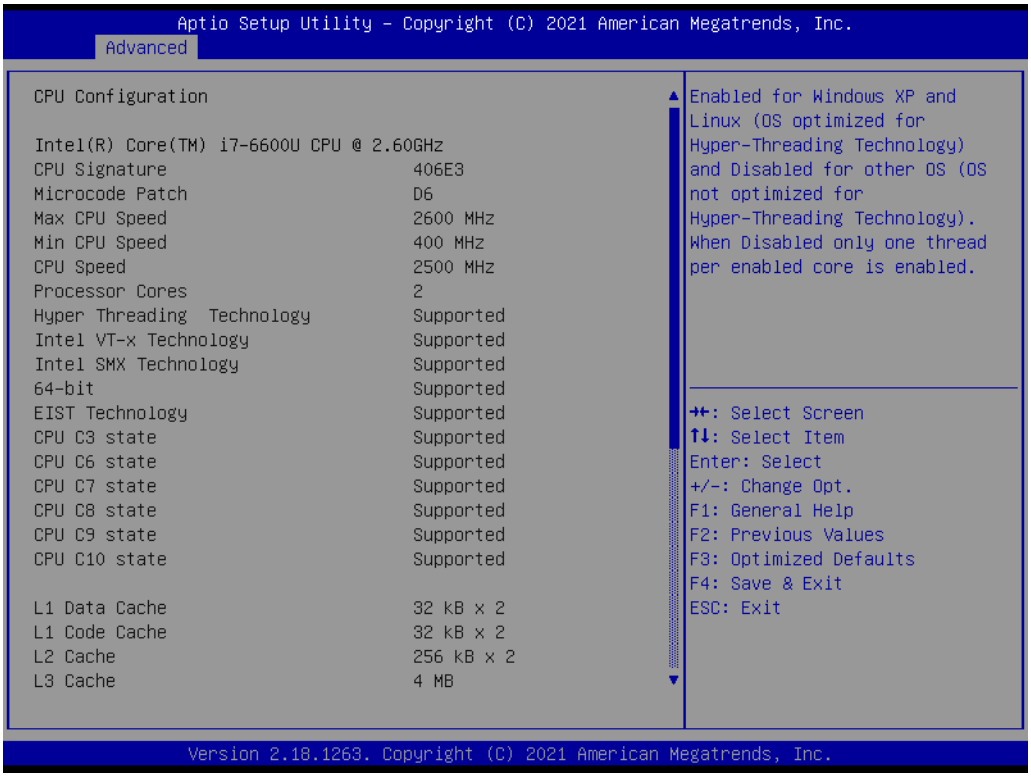


Figure 5.10 Serial Port Console Redirection

- **Console Redirection**
  Console Redirection Enable or Disable.
- **Legacy Console Redirection Settings**
  Legacy Console Redirection Settings.
- **Console Redirection**
  Console Redirection Enable or Disable.
- **Console Redirection Settings**
  The settings specify how the host computer and the remote computer (which the user is using) will exchange data.

5.2.2.7 CPU Configuration



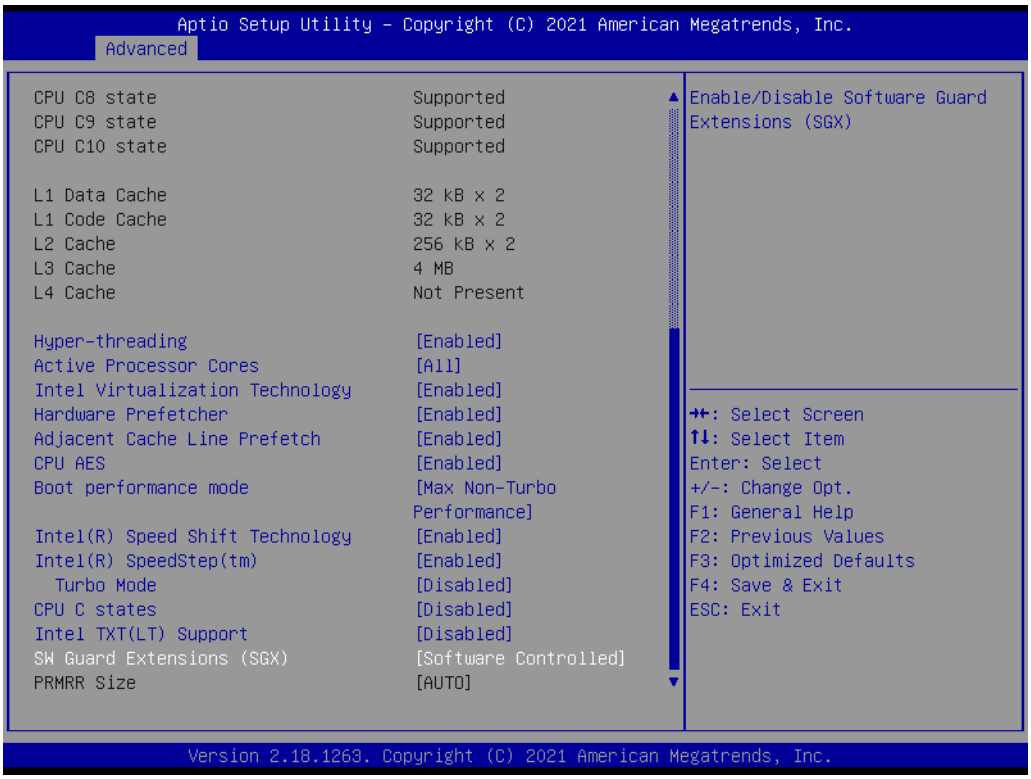


Figure 5.11 CPU Configuration

- **Hyper-threading**
  Enable for Windows XP and Linux and Disable for other OS.
- **Active Processor Cores**
  Number of cores to enable in each procesor package.

- **Intel Virtualization Technology**
  When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.
- **Hardware Prefetcher**
  To turn on/off the MLC streamer prefetcher.
- **Adjacent Cache Line Prefetch**
  To turn on/off prefetching of adjacent cache lines.
- **CPU AES**
  Enable/Disable CPU Advanced Encryption Standard instructions.
- **Boot performance mode**
  Select the performance state that the BIOS will set before OS handoff.
- **Intel® Speed Shift Technology**
  Enable/Disable Intel® Speed Shift Technology support.
- **Intel® SpeedStep™ Turbo Mode**
  Allows more than two frequency ranges to be supported.
- **Turbo Mode**
  Turbe Mode.
- **CPU C states**
  Enable or disable CPU C states.
- **Intel TXT(LT) Support**
  Enable or disable Intel® TXT(LT) support.
- **SW Guard Extensions (SGX)**
  Enable/Disable Software Guard Extensions (SGX).

5.2.2.8 Intel TXT Information

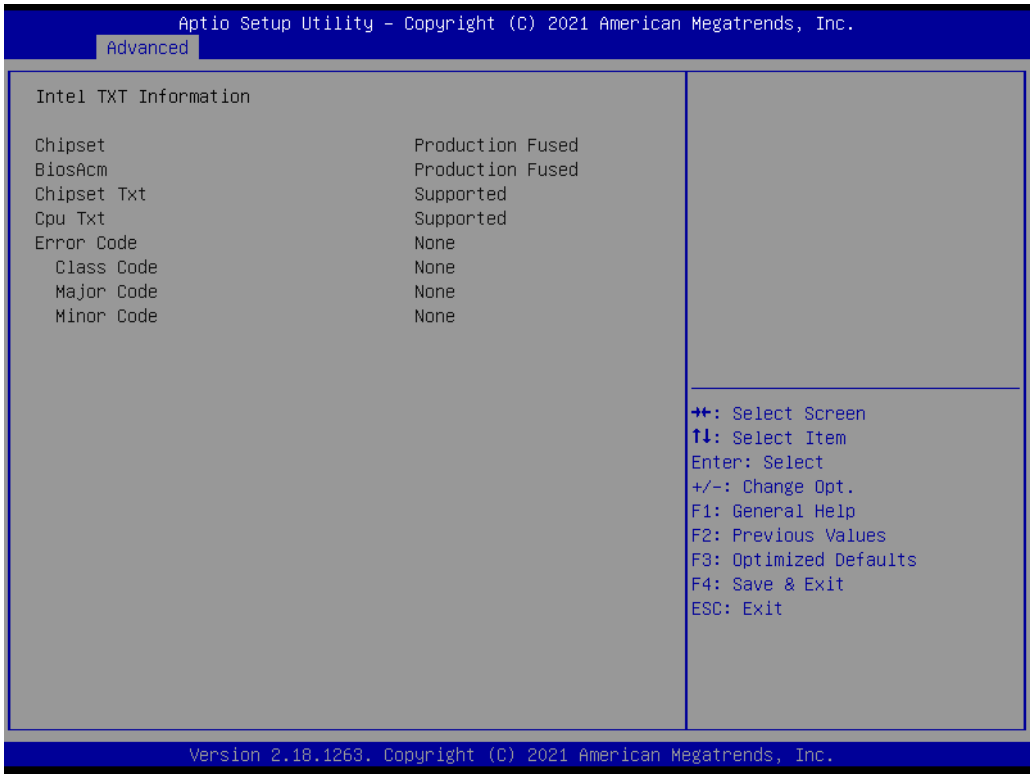


Figure 5.12 5.2.2.8 Intel TXT Information

5.2.2.9 Platform Misc Configuration

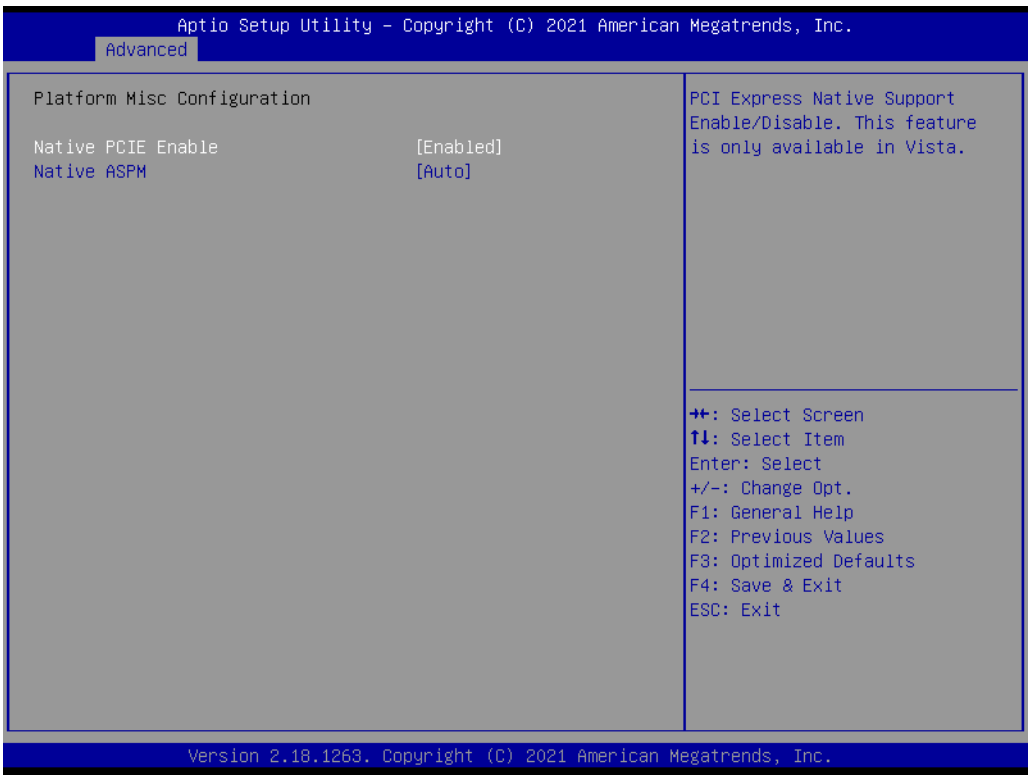


Figure 5.13 Platform Misc Configuration

- **Native PCIE Enable**
  PCI Express Native Support Enable/Disable.
- **Native ASPM**
  On enable, Vista will control the ASPM support for the device.

5.2.2.10 SATA Configuration

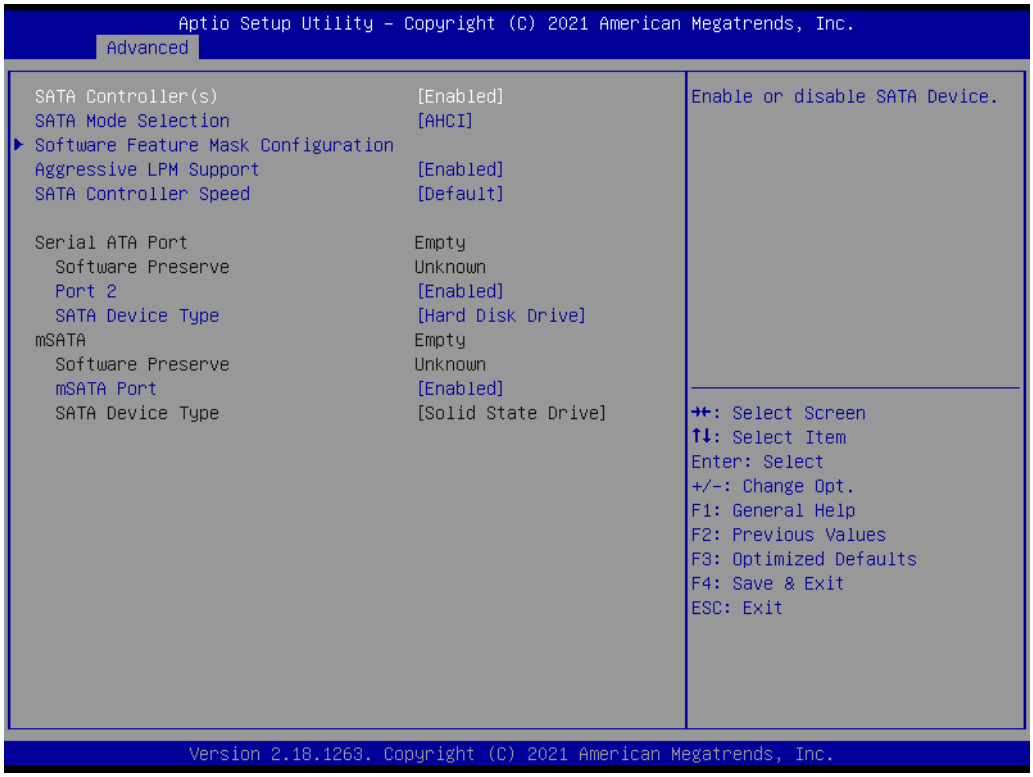


Figure 5.14 SATA Configuration

- **SATA Controller(s)**
  Enable or disable SATA Device.
- **SATA Mode Selection**
  Determines how SATA controller(s) operate.
- **Software Feature Mask Configuration**
  RAID OROM/RST driver will refer to the SWFM configuration to enable or disable the storage features.
- **Aggressive LPM Support**
  Enable PCH to aggressively enter link power state.
- **SATA Controller Speed**
  Indicates the maximum speed the SATA controller can support.

Software Feature Mask Configuration

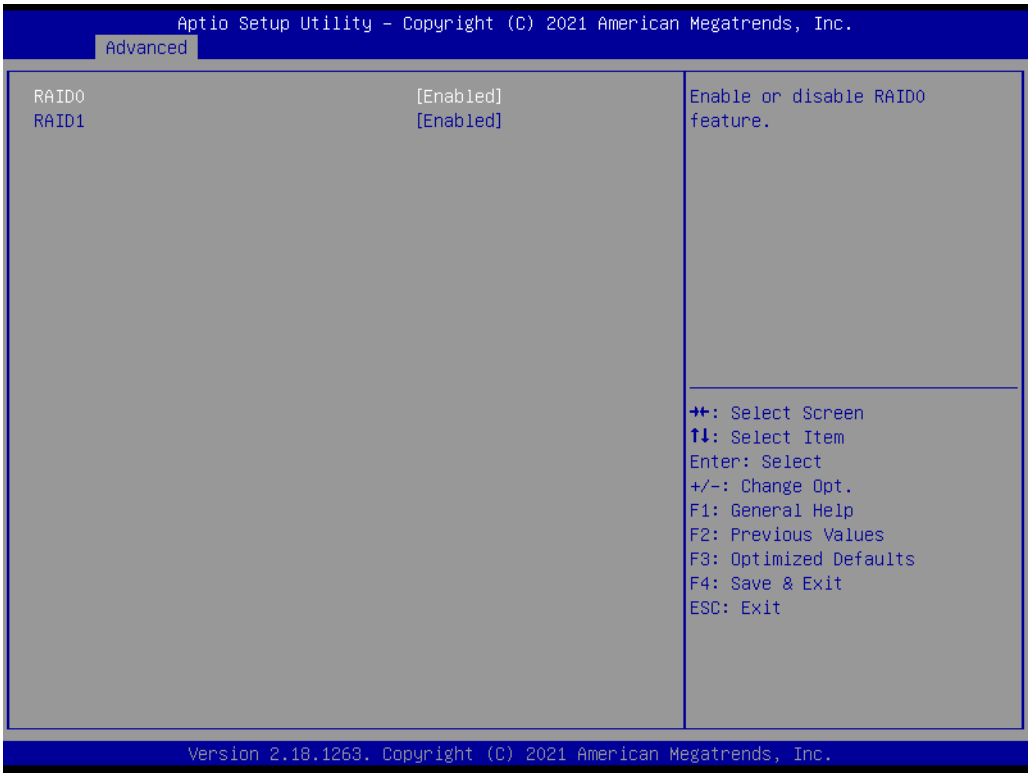


Figure 5.15 Software Feature Mask Configuration

- **RAID0**
  Enable or disable RAID0 feature.
- **RAID1**
  Enable or disable RAID1 feature.

5.2.2.11 Network Stack Configuration

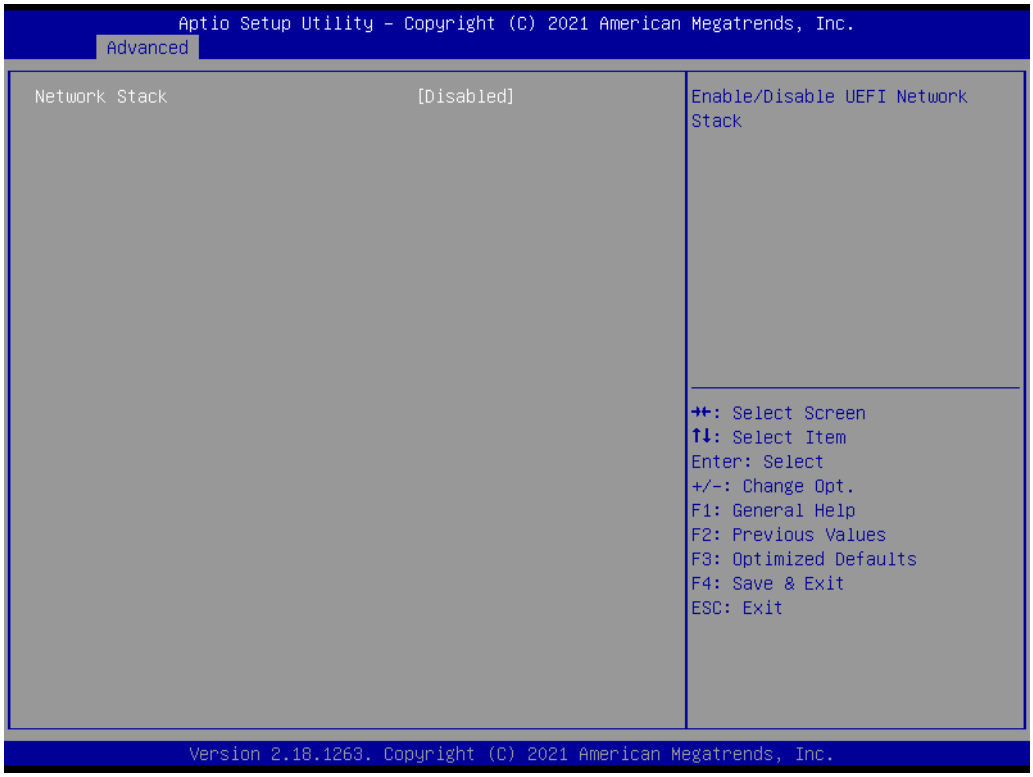


Figure 5.16 Network Stack Configuration

- **Network Stack**
  Enable/Disable UEFI Network Stack.

5.2.2.12 CSM Configuration

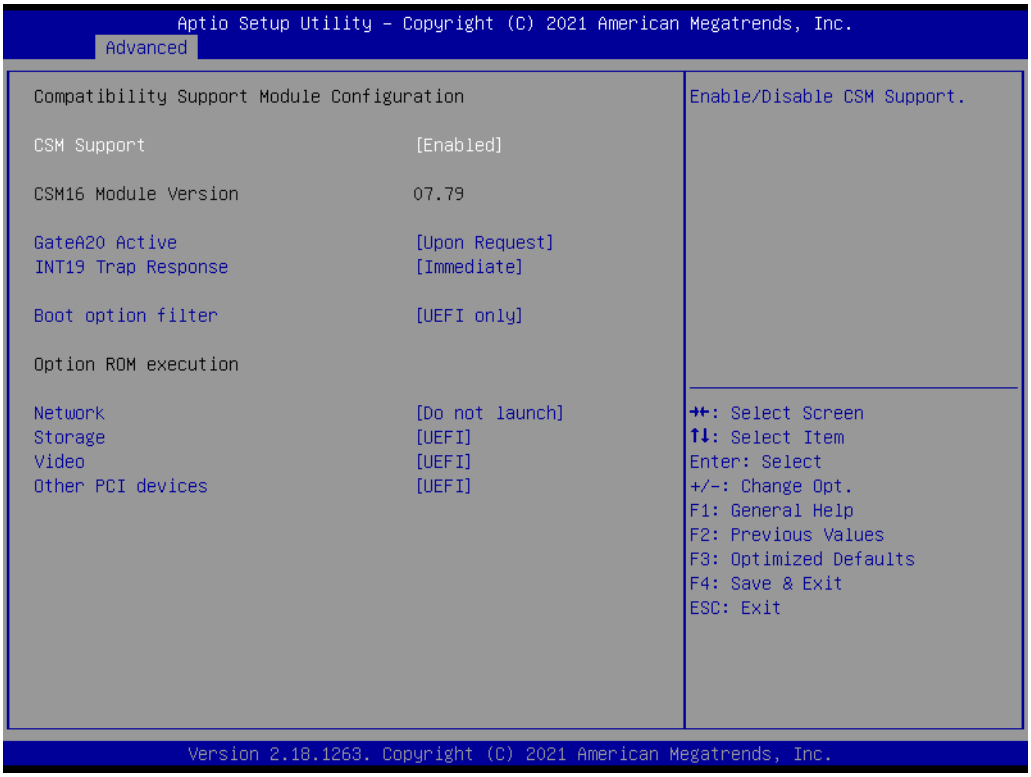


Figure 5.17 CSM Configuration

- **CSM Support**
  Enable/Disable CSM Support.
- **Gate20 Active**
  UPON REQUEST – GA20 can be disabled using BIOS services.
- **INT19 Trap Response**
  BIOS reaction on INT19 trapping by Option ROM: IMMEDIATE- execute the trap right away; POSTPONED-execute the trap during legacy boot.
- **Boot option filter**
  This option controls Legacy/UEFI ROMs priority.
- **Network**
  Controls the execution of UEFI and Legacy PXE OpROM.
- **Storage**
  Controls the execution of UEFI and Legacy Storage OpROM.
- **Video**
  Controls the execution of UEFI and Legacy Video OpROM.
- **Other PCI devices**
  Determines OpROM execution policy for devices other than Network, Storage, or Video.

5.2.2.13 USB Configuration

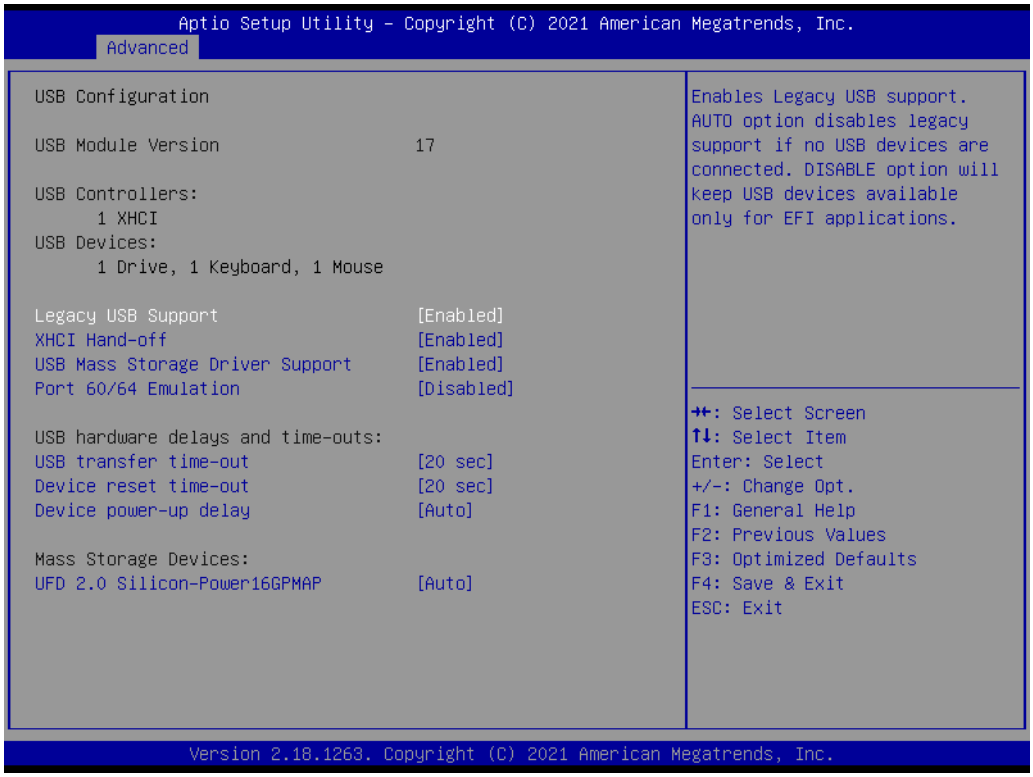


Figure 5.18 USB Configuration

- **Legacy USB Support**
  Enables Legacy USB support.
- **XHCI Hand-off**
  This is a workaround for Oses without XHCI hand-off support.
- **USB Mass Storage Driver Support**
  Enable/Disable USB Mass Storage Driver Support.
- **Port 60/64 Emulation**
  Enables I/O port 60h/64h emulation support.
- **USB transfer time-out**
  The time-out value for Control, Bulk, and Interrupt transfers.
- **Device reset time-out**
  USB mass storage device Start Unit command time-out.
- **Device power-ip delay**
  Maximum time the device will take before it properly reports itself to the Host Controller.

5.2.2.14 IT8768E Super IO Configuration

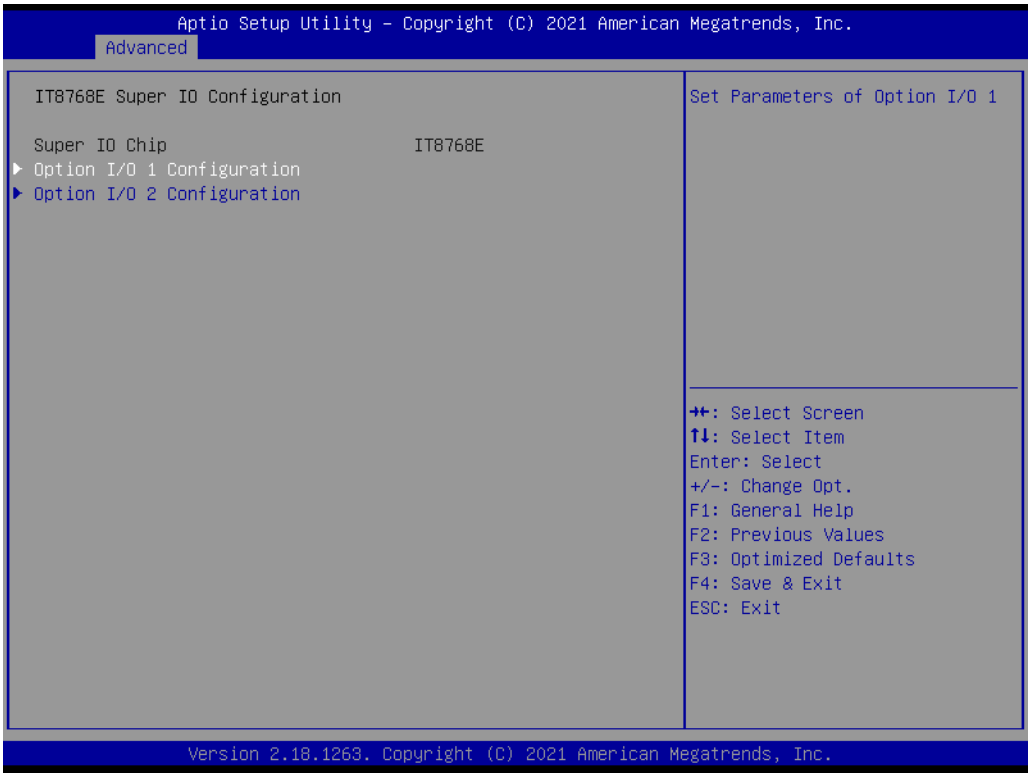


Figure 5.19 IT8768E Super IO Configuration

- **Optional I/O 1 Configuration**
  Set Parameters of Option I/O 1.
- **Optional I/O 2 Configuration**
  Set Parameters of Option I/O 2.

Option I/O 1 Configuration

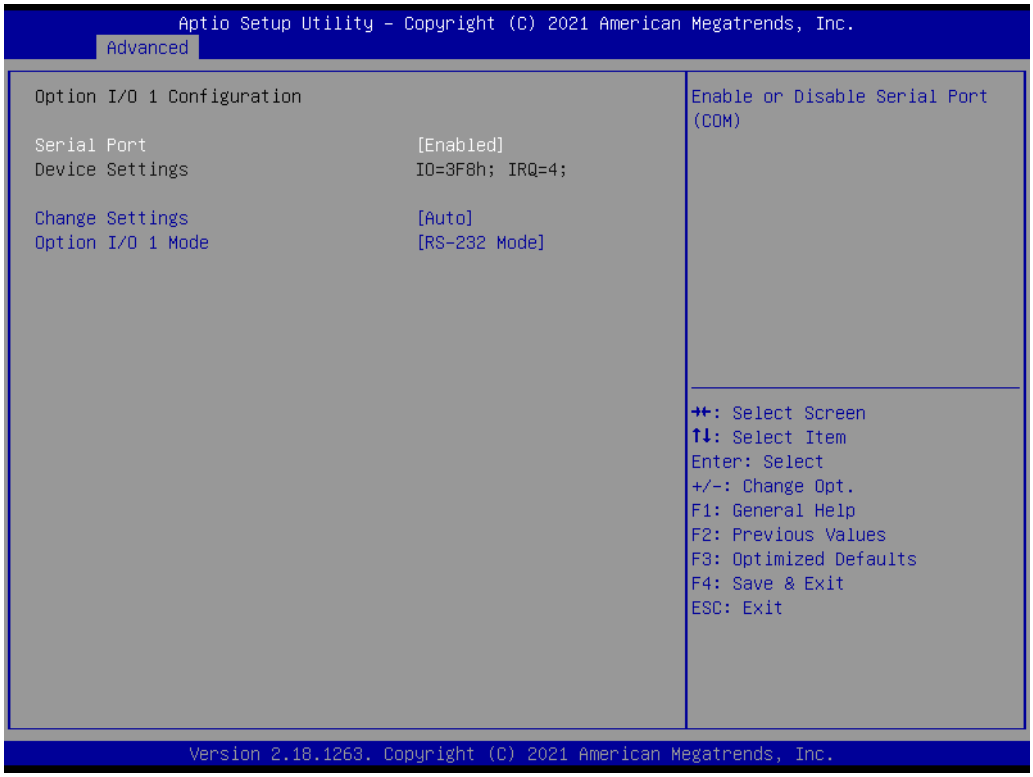


Figure 5.20 Option I/O 1 Configuration

- **Serial Port**
  Enable or Disable Serial Port (COM)
- **Change Settings**
  Select an optimal settings for Super IO Device.
- **Option I/O 1 mode**
  Option I/O 1 Mode Select.

Option I/O 2 Configuration

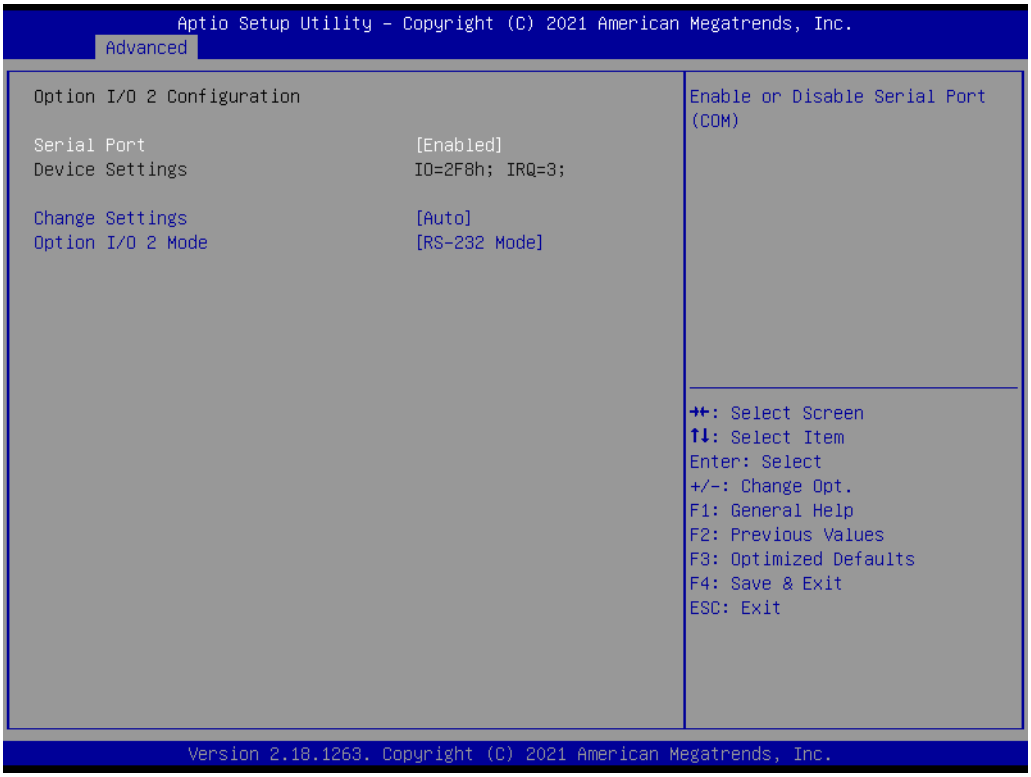


Figure 5.21 Option I/O 2 Configuration

- **Serial Port**
  Enable or Disable Serial Port (COM).
- **Change Settings**
  Select an optimal settings for Super IO Device.
- **Option I/O 1 mode**
  Option I/O 1 Mode Select.

5.2.3 Chipset

Select the Chipset tab from the TS-206 setup screen to enter the Chipset BIOS Setup screen. You can display a Chipset BIOS Setup option by highlighting it using the <Arrow> keys. All Plug and Play BIOS Setup options are described in this section. The Plug and Play BIOS Setup screen is shown below.

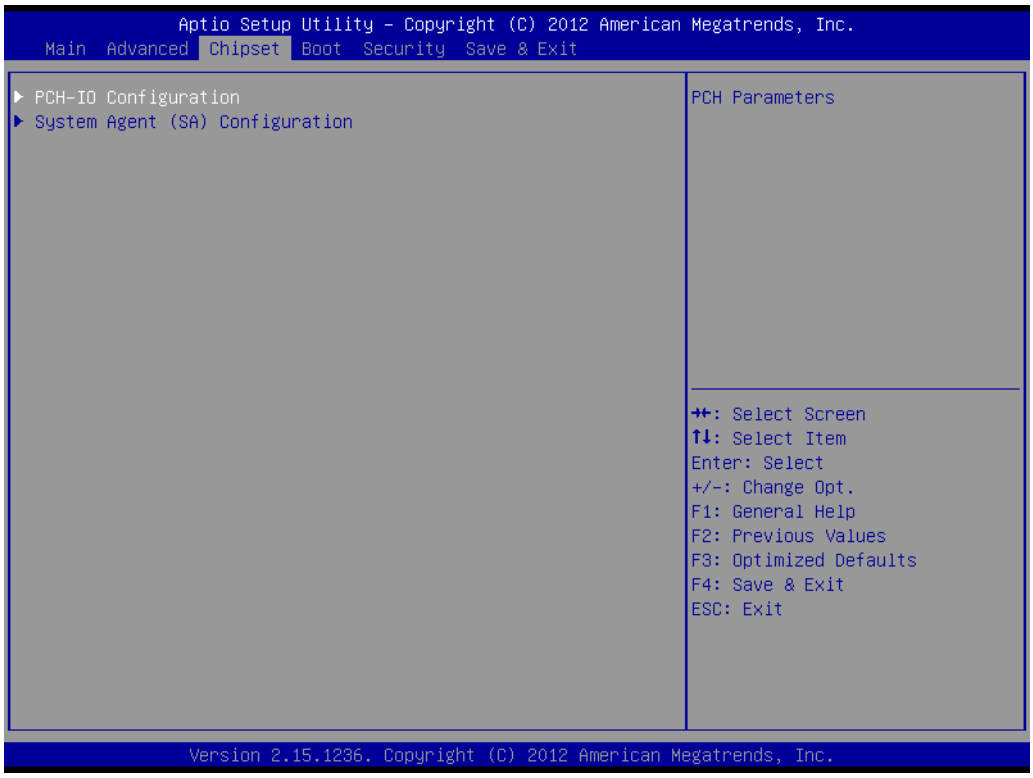


Figure 5.22 Chipset Setup

5.2.3.1 System Agent (SA) Configuration

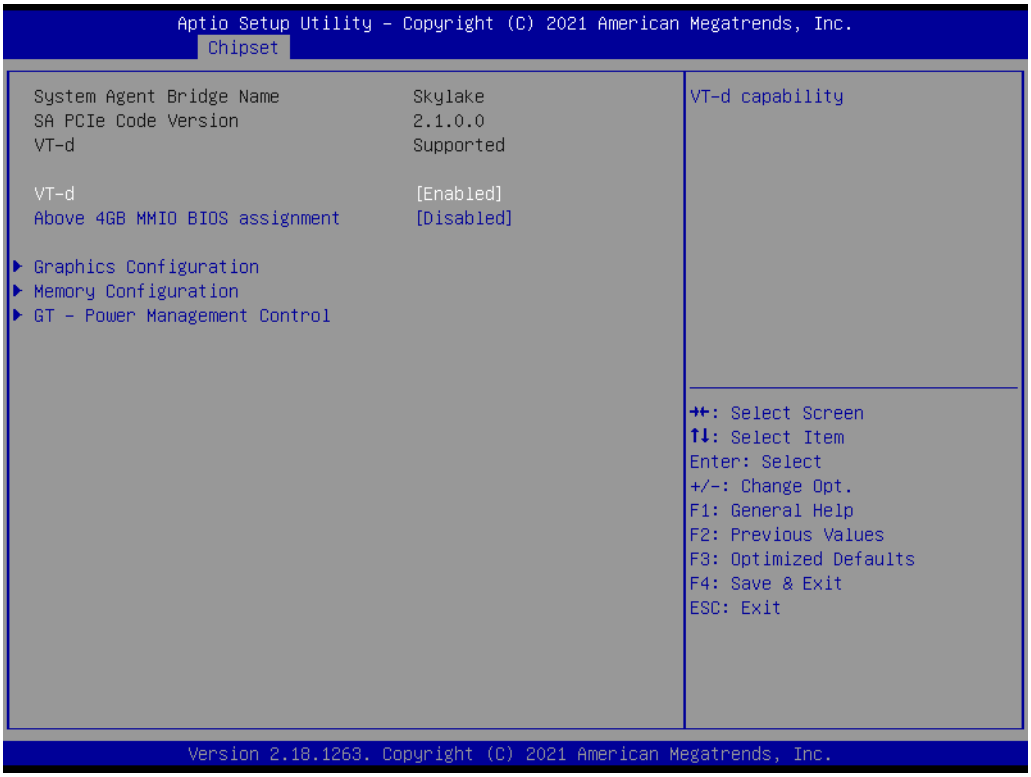


Figure 5.23 System Agent (SA) Configuration

- **VT-d**
  This item allows users to enable.

Graphics Configuration

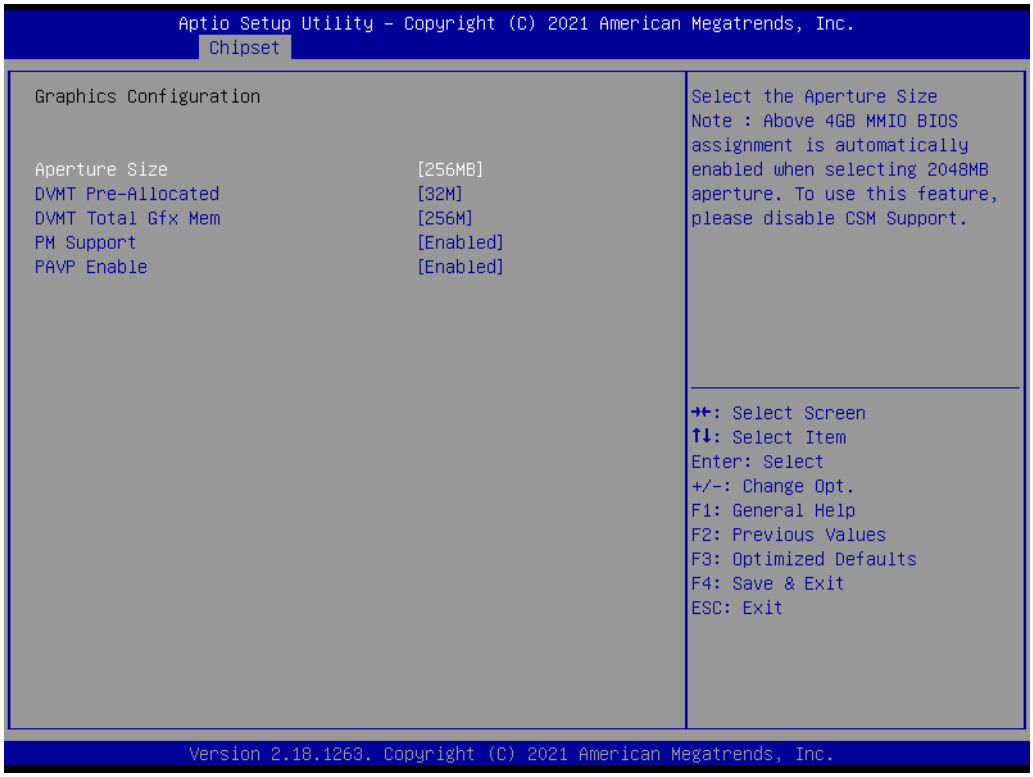


Figure 5.24 Graphics Configuration

- Aperture Size
  Select the Aperture Size.
- DVMT Pre-allocated
  Select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.
- DVMT Total Gfx Mem
  Select DVMT5.0 Total Graphic Memory size used by the Internal Graphics Device.
- PM Support
  Enable/Disable PM support.
- PAVP Enable
  Enable/Disable PAVP.

Memory Configuration

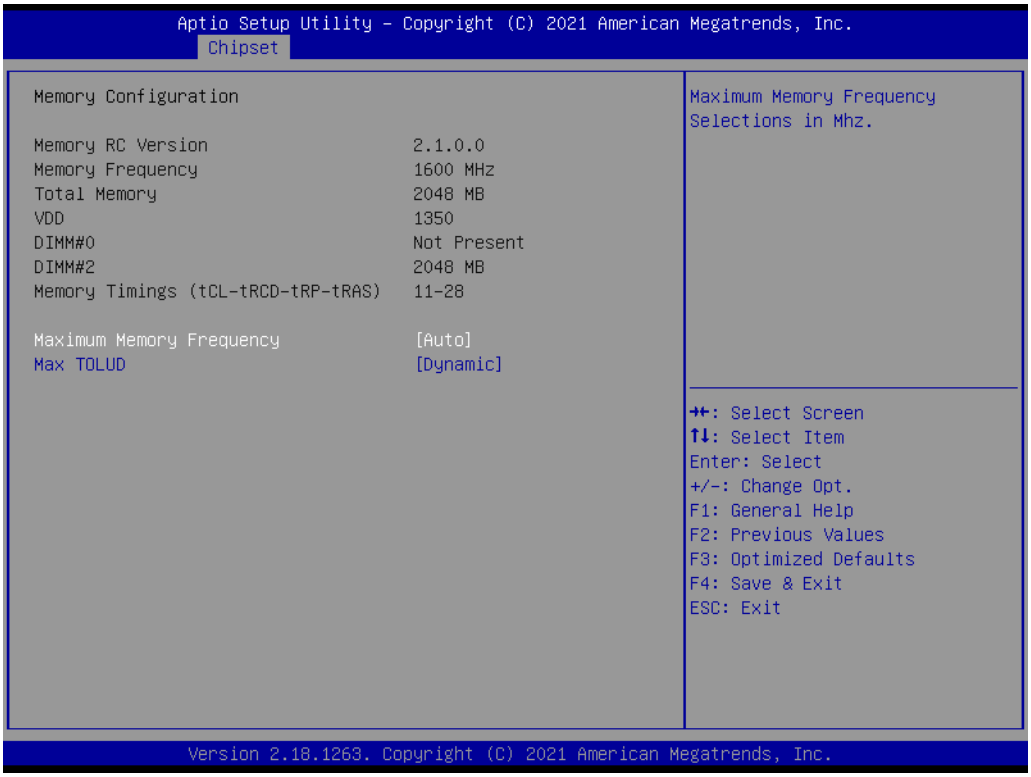


Figure 5.25 Memory Configuration

- **Maximum Memory Frequency**
  Maximum Memory Frequency Selections in Mhz.
- **Max TOLUD**
  Maximum Value of TOLUD.

GT – Power Management Control

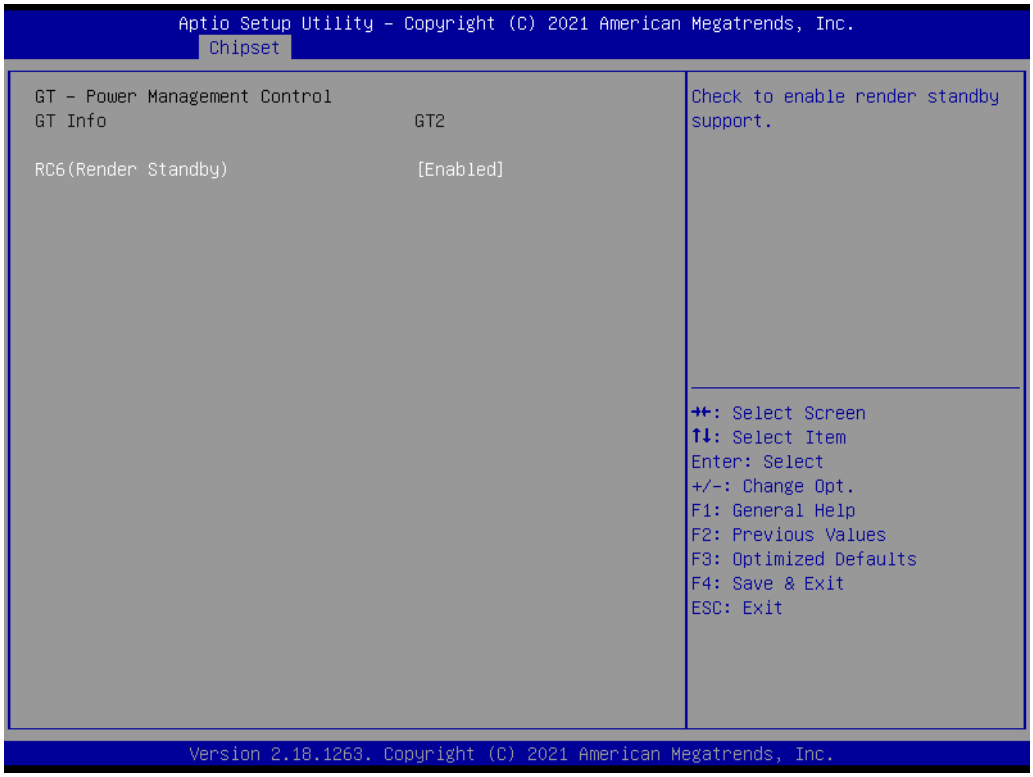


Figure 5.26 GT – Power Management Control

- **RC6 (Render Standby)**
  Check to enable render standby support.

5.2.3.2 PCH-IO Configuration

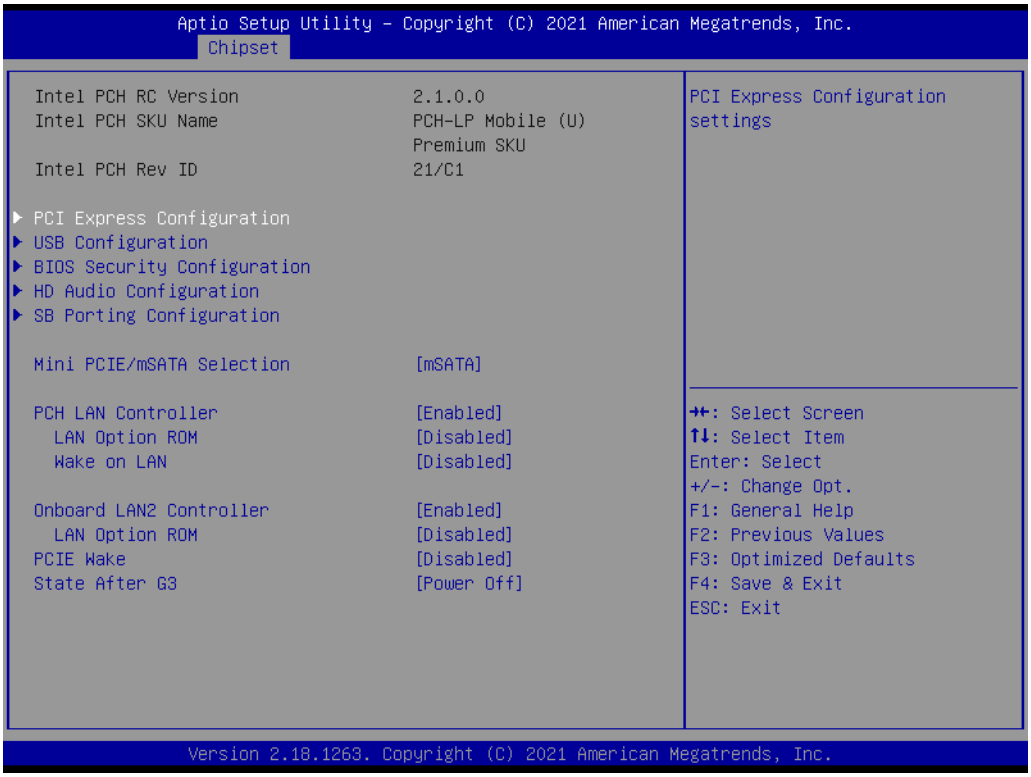


Figure 5.27 PCH-IO Configuration

- **PCI Express Configuration**
  PCI Express Configuration settings
- **USB Configuration**
  USB Configuration settings.
- **BIOS Security Configuration**
  BIOS Security Configuration settings.
- **HD Audio Configuration**
  HD Audio Subsystem Configuration Settings.
- **SB Porting Configuration**
  SB Porting Configuration.
- **Mini PCIE/mSATA Selection**
  Mini PCIE/mSATA.
- **PCH LAN Controller**
  Enabled/Disabled.
- **Lan Option ROM**
  Enabled/Disabled.
- **Wake on LAN**
  Enabled/Disabled.
- **Onboard LAN2 controller**
  Enabled/Disabled.
- **Lan option ROM**
  Enabled/Disabled.
- **PCIE Wake**
  Enabled/Disabled.
- **State After G3**
  Power On/Power off/Last State.

PCI Express Configuration

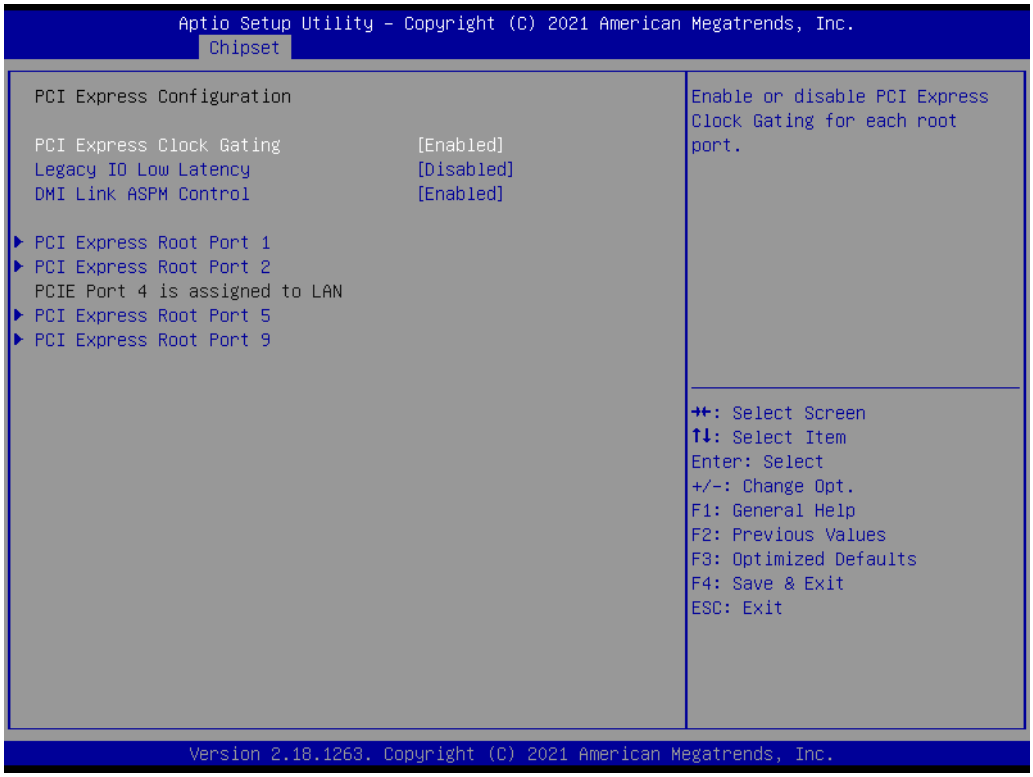


Figure 5.28 PCI Express Configuration

- **PCI Express Clock Gating**
  Enabled/Disabled.
- **Legacy IO Low latency**
  Enabled/Disabled.
- **DMI Link ASPM Control**
  Enabled/Disabled.
- **PCI Express Root Port 1**
  PCI Express Root Port 1 Settings.
- **PCI Express Root Port 2**
  PCI Express Root Port 2 Settings.
- PCI Express Root Port 5
  PCI Express Root Port 5 Settings.
- PCI Express Root Port 9
  PCI Express Root Port 9 Settings.

PCI Express Root Port 1

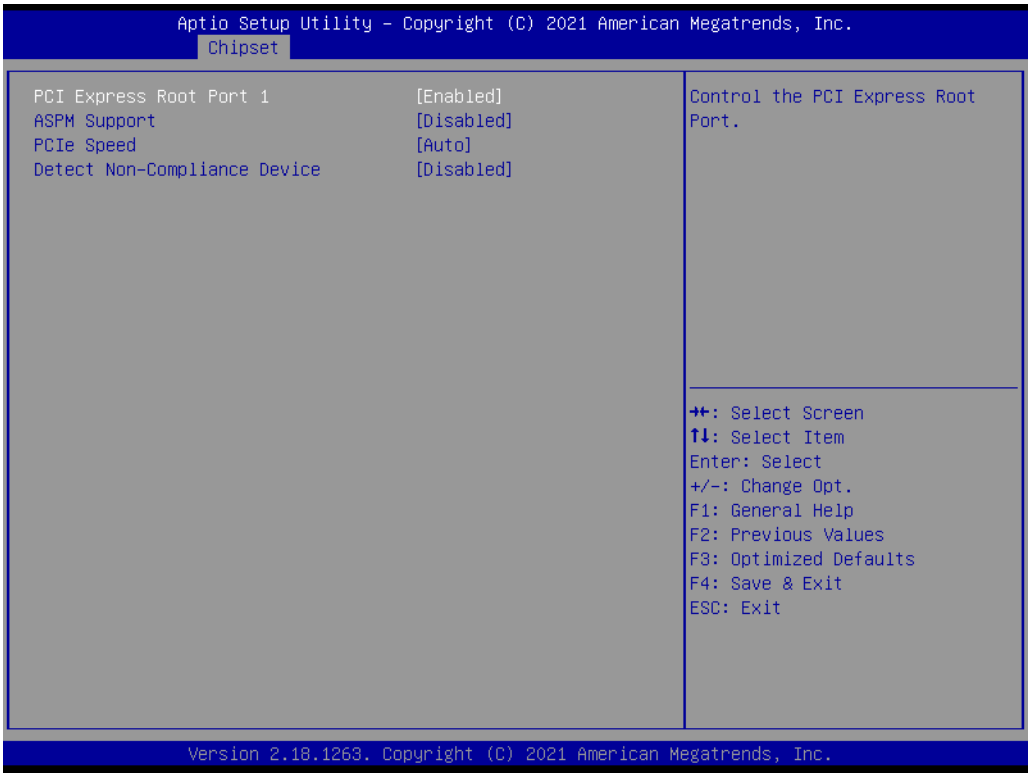


Figure 5.29 PCI Express Root Port 1

- **PCI Express Root Port 1**
  Enabled/Disabled.
- **ASPM Support**
  - Disabled
  - L0S
  - L1
  - L0sL1
  - Auto
- **PCIe Speed**
  - Auto-
  - Gen1
  - Gen2
  - Gen3
- **Detect Non-Compliance Device**
  Enabled/Disabled.

PCI Express Root Port 2

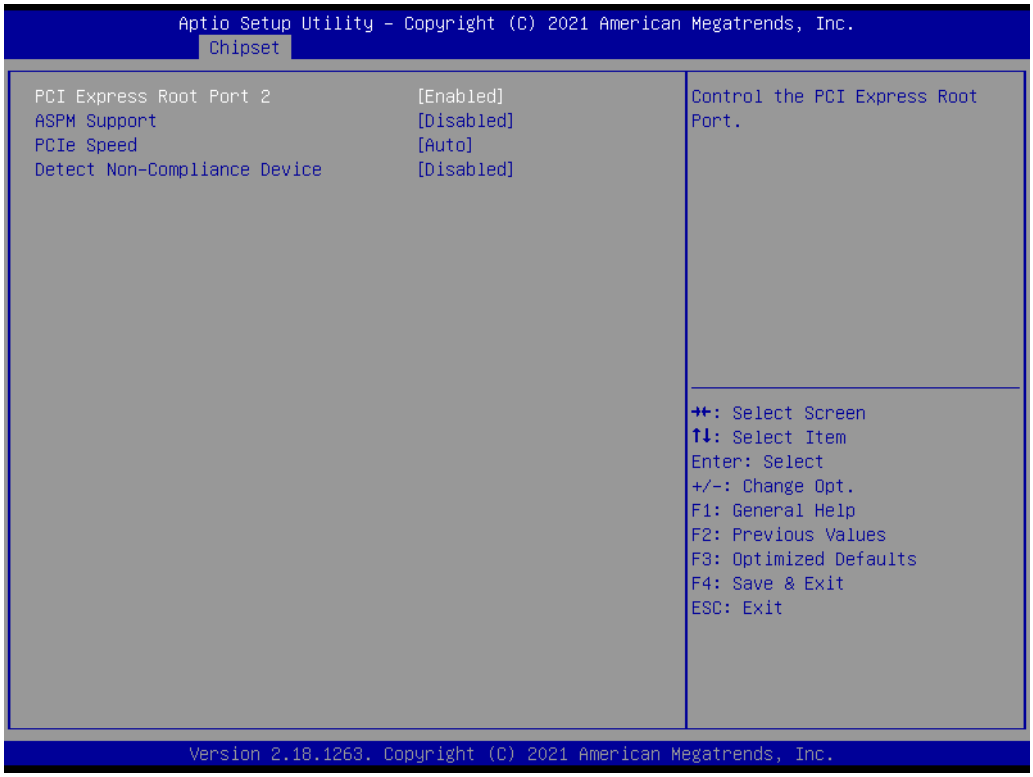


Figure 5.30 PCI Express Root Port 2

- **PCI Express Root Port 2**
  Enabled/Disabled.
- **ASPM Support**
  - Disabled
  - L0S
  - L1
  - L0sL1
  - Auto
- **PCIe Speed**
  - Auto-
  - Gen1
  - Gen2
  - Gen3
- **Detect Non-Compliance Device**
  Enabled/Disabled.

PCI Express Root Port 5

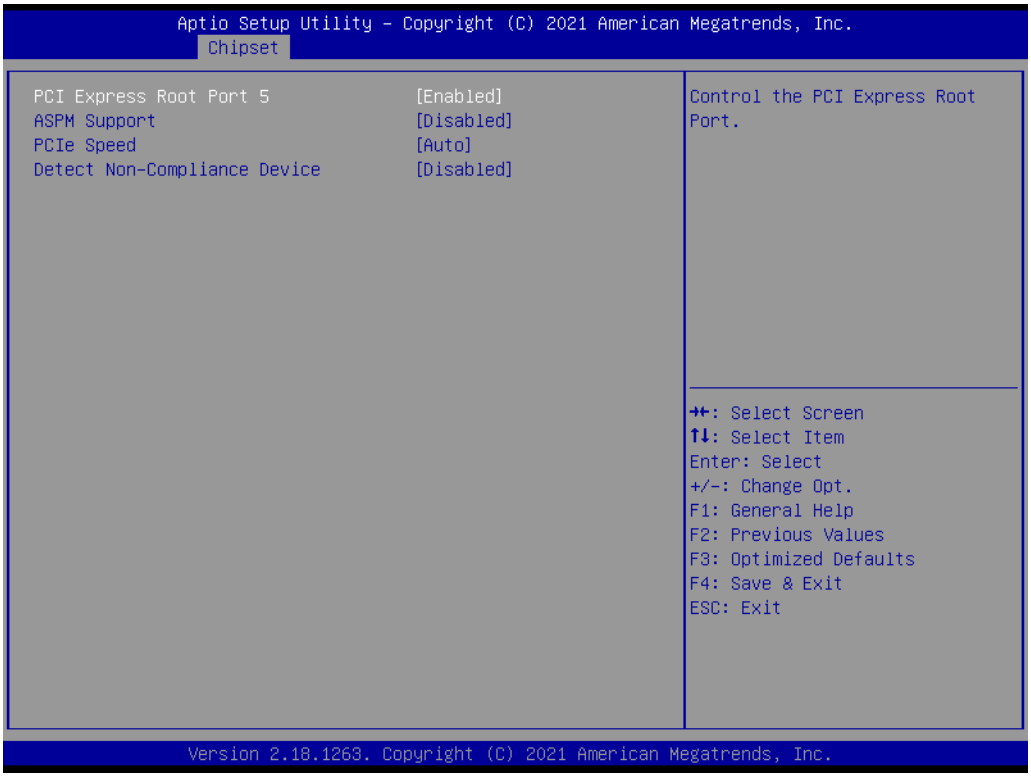


Figure 5.31 PCI Express Root Port 5

- **PCI Express Root Port 5**
  Enabled/Disabled.
- **ASPM Support**
  - Disabled
  - L0S
  - L1
  - L0sL1
  - Auto
- **PCIe Speed**
  - Auto-
  - Gen1
  - Gen2
  - Gen3
- **Detect Non-Compliance Device**
  Enabled/Disabled.

PCI Express Root Port 9

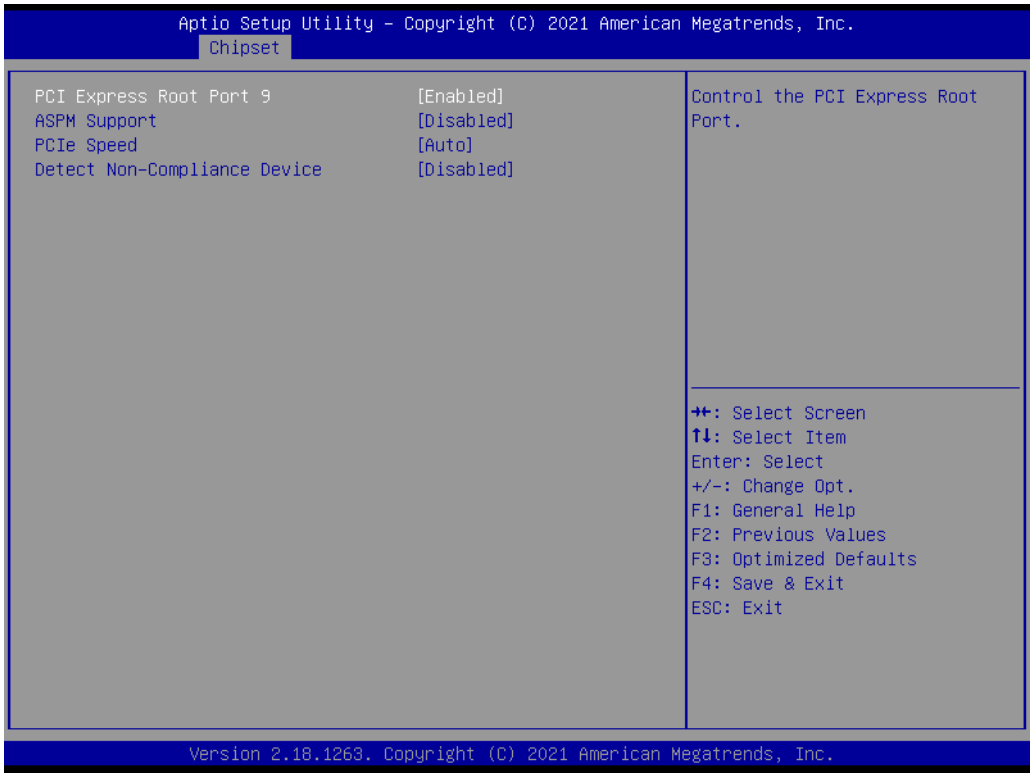


Figure 5.32 PCI Express Root Port 9

- **PCI Express Root Port 9**
  Enabled/Disabled.
- ASPM Support
  - Disabled
  - L0S
  - L1
  - L0sL1
  - Auto
- **PCIe Speed**
  - Auto-
  - Gen1
  - Gen2
  - Gen3
- **Detect Non-Compliance Device**
  Enabled/Disabled.

5.2.3.3 USB Configuration

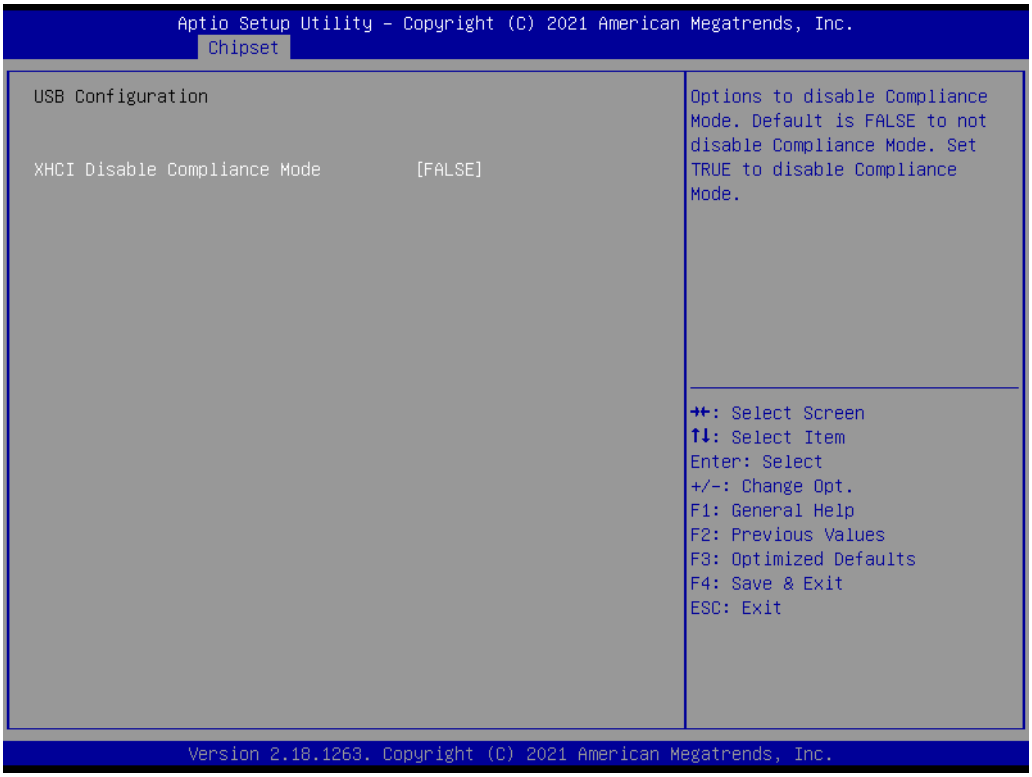


Figure 5.33 USB Configuration

- **XHCI Disable Compliance Mode**
  FALSE/TRUE.

5.2.3.4 BIOS Security Configuration

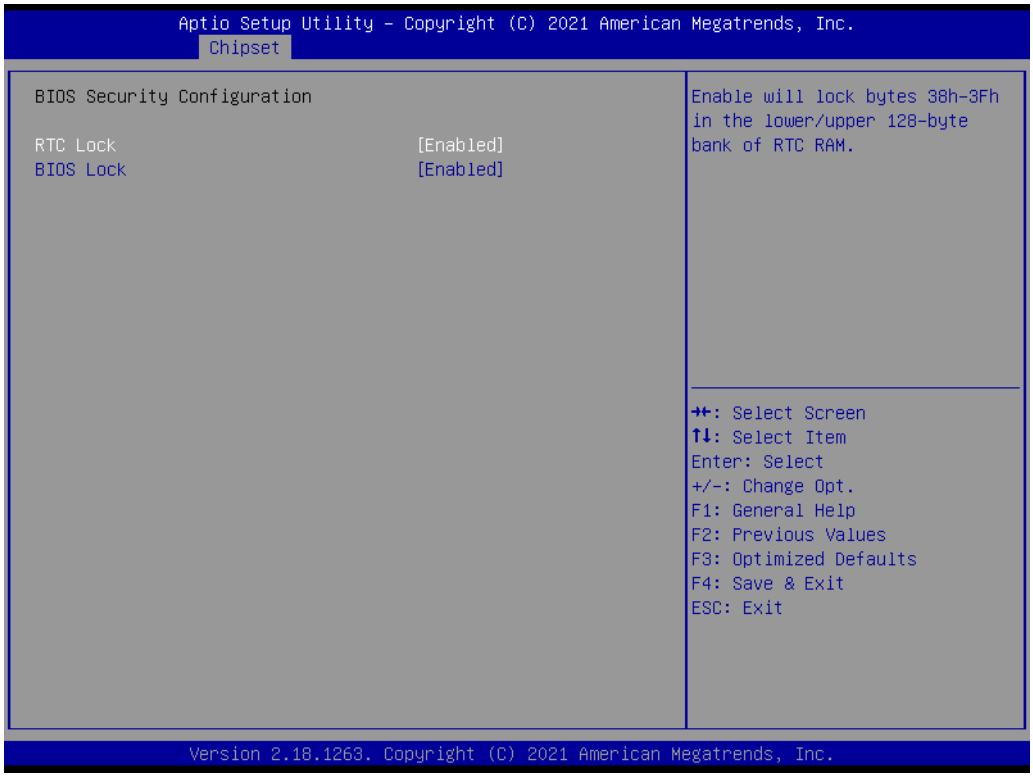


Figure 5.34 BIOS Security Configuration

- **RTC Lock**
  Enabled/Disabled.
- **BIOS Lock**
  Enabled/Disabled.

5.2.3.5 HD Audio Configuration

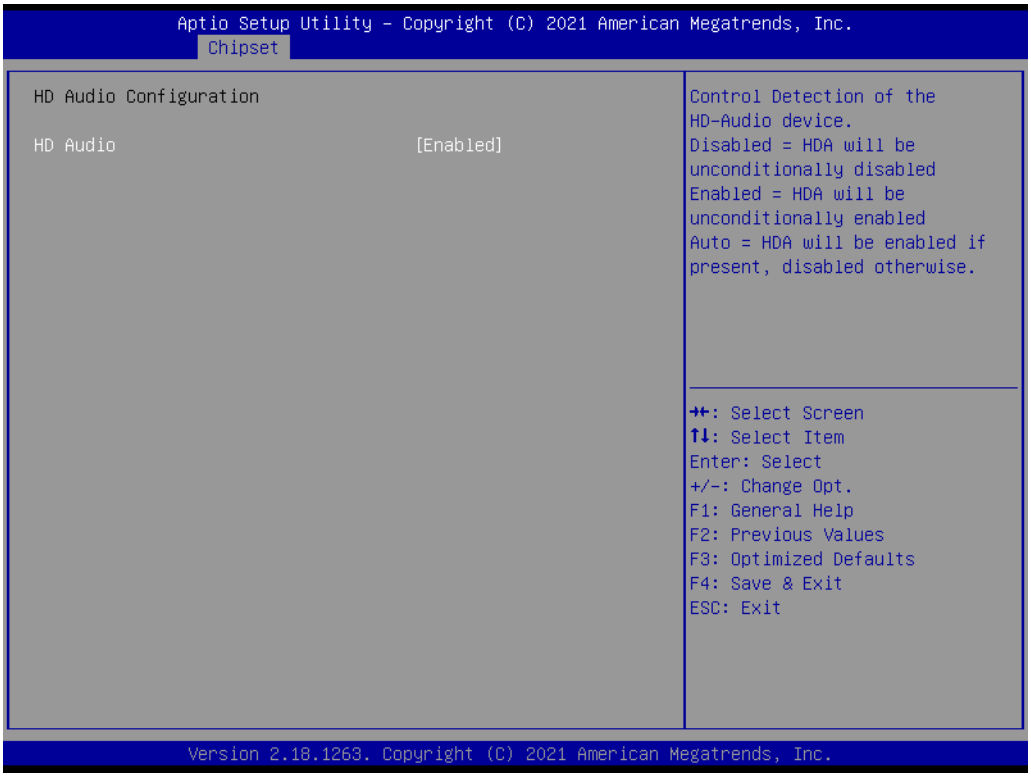


Figure 5.35 HD Audio Configuration

- **HD Audio**
  Enabled/Disabled.

5.2.3.6 SB Porting Configuration

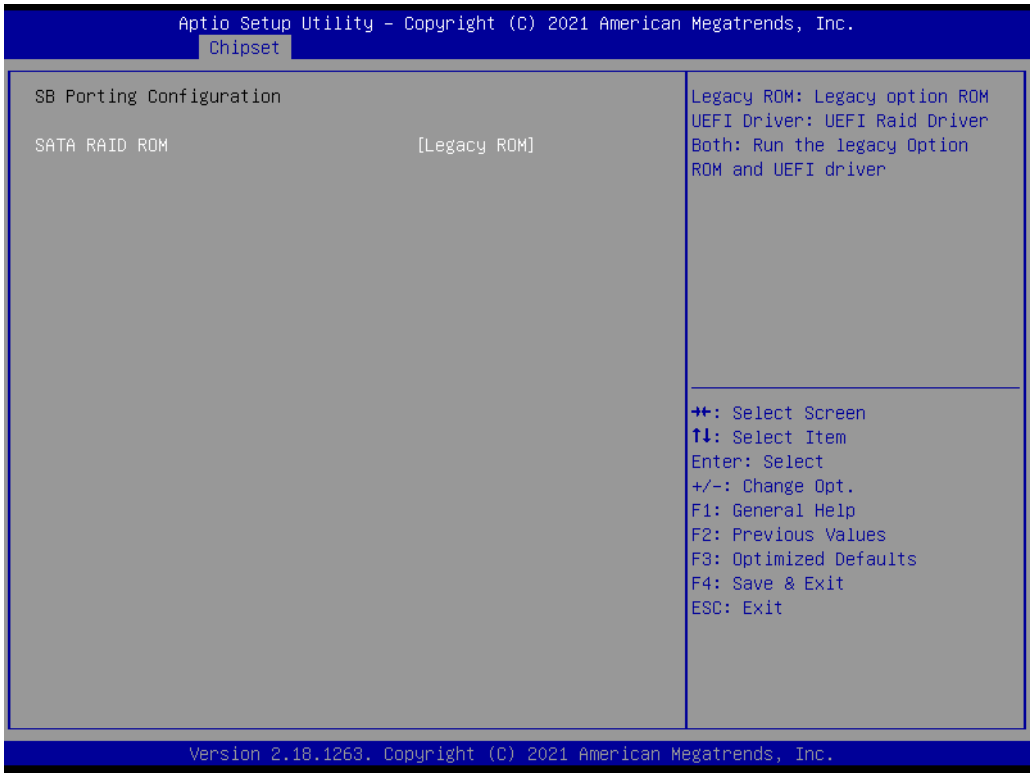


Figure 5.36 SB Porting Configuration

- **SATA RAID ROM**
  - Legacy ROM
  - UEFI Driver
  - Both

5.2.4 Security

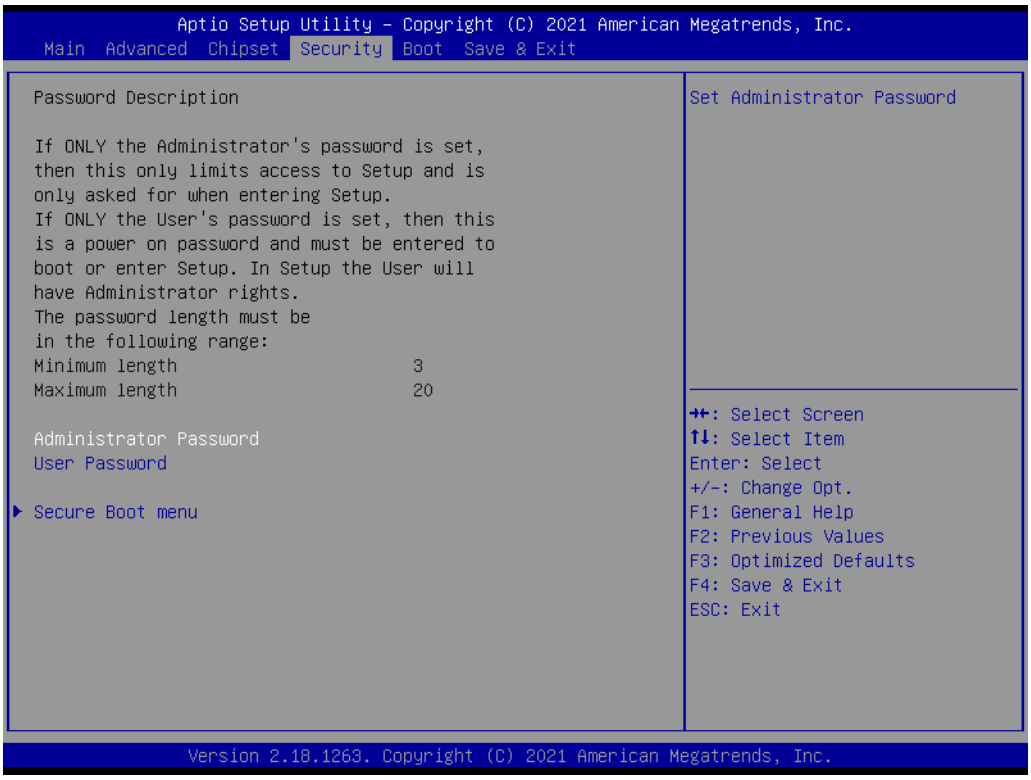


Figure 5.37 Security

- **Administrator Password**
  Set Administrator Password.
- **User Password**
  Set User Password.
- **Secure Boot menu**
  Customizable Secure Boot settings.

5.2.5 Boot

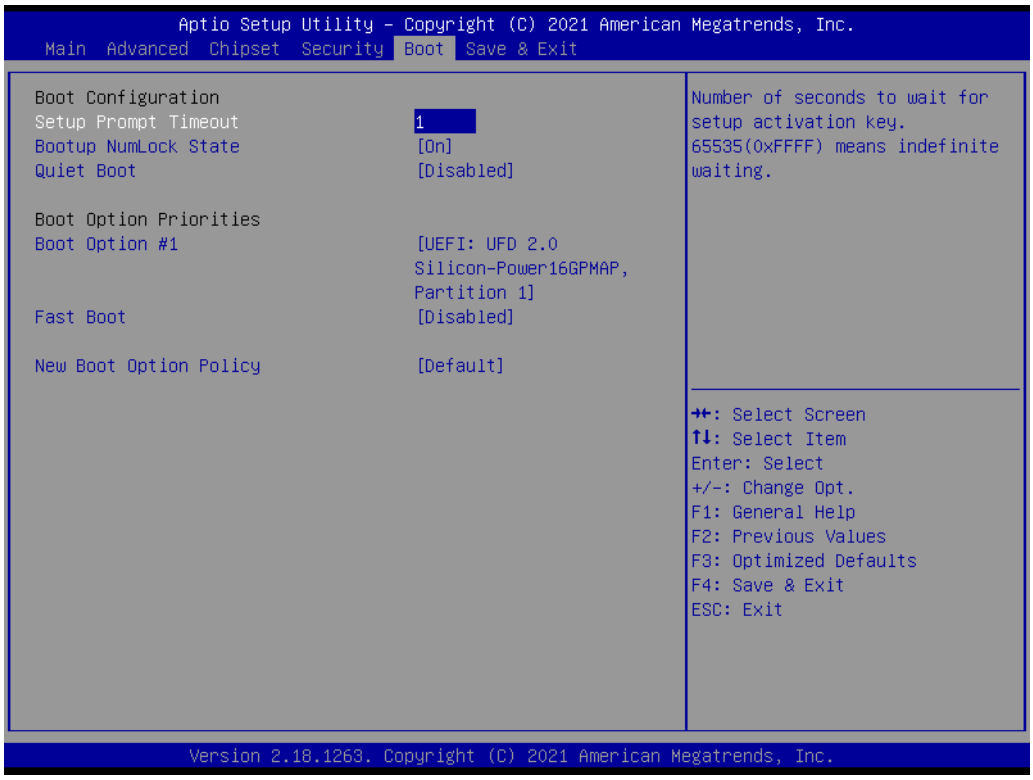


Figure 5.38 Boot

- **Setup Prompt Timeout**
  Number of seconds to wait for setup activation key.
- **Bootup NumLock State**
  Select the keyboard NumLock state.
- **Quiet Boot**
  Enables or disables Quiet Boot option.
- **Boot Option #1**
  Sets the system boot order.
- **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.
- **New Boot Option Policy**
  Controls the placement of newly detected UEFI boot options.

5.2.6 Save & Exit

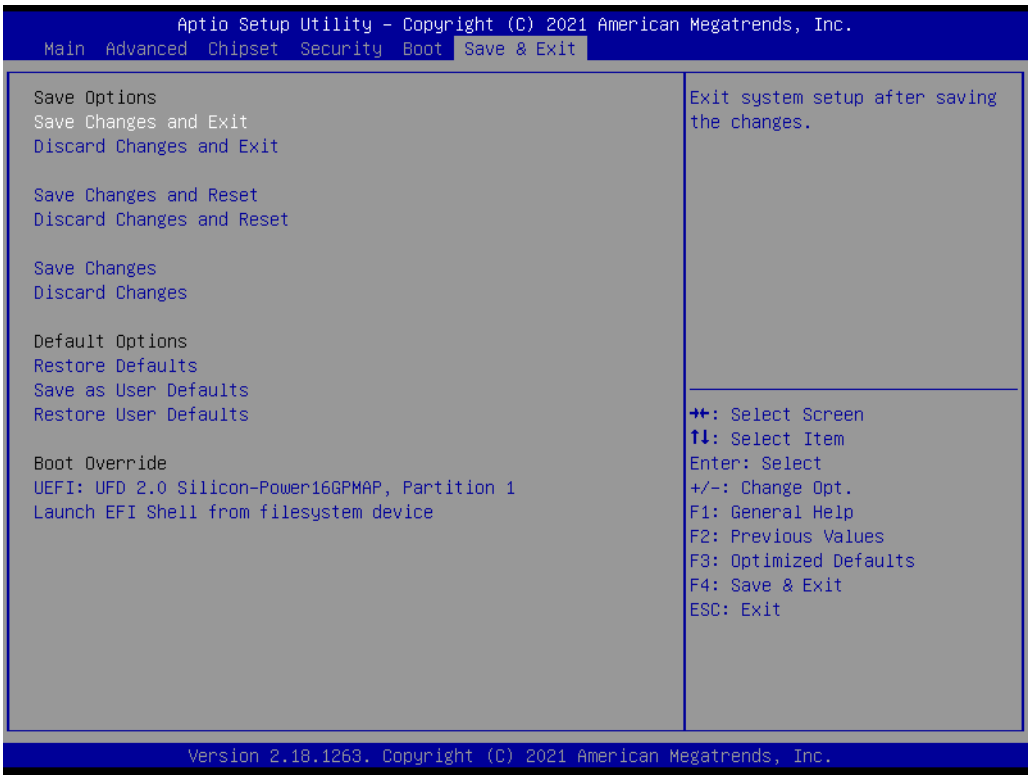


Figure 5.39 Save & Exit

- **Save Changes and Exit**
  When users have completed system configuration, select this option to save changes, exit BIOS setup menu and reboot the computer if necessary to take effect of all system configuration parameters.
- **Discard Changes and Exit**
  Select this option to quit Setup without making any permanent changes to the system configuration.
- **Save Changes and Reset**
  When users have completed system configuration, select this option to save changes, exit BIOS setup menu and reboot the computer to take effect of all system configuration parameters.
- **Discard Changes and Reset**
  Select this option to quit Setup without making any permanent changes to the system configuration and reboot the computer.
- **Save Changes**
  When users have completed system configuration, select this option to save changes without exiting BIOS setup menu.
- **Discard Changes**
  Select this option to discard any current changes and load previous system configuration.
- **Restore Defaults**
  The TS-206 automatically configures all setup items to optimal settings when users select this option. Optimal Defaults are designed for maximum system performance, but may not work best for all computer applications. In particular, do not use the Optimal Defaults if the user's computer is experiencing system configuration problems.

- **Save as User Defaults**
  When users have completed system configuration, select this option to save changes as user defaults without exiting BIOS setup menu.
- **Restore User Defaults**
  Users can select this option to restore user defaults.
- **Boot Override**
  This item allows users to choose boot device.

Appendix A

A WDT Sample Code

A.1 Watchdog Timer Sample Code

```
EC_Command_Port = 0x29Ah
EC_Data_Port = 0x299h
Write EC HW ram = 0x89
Watch dog event flag = 0x57
Watchdog reset delay time = 0x5E
Reset event = 0x04
Start WDT function = 0x28
================================================
.model small
.486p
.stack 256
.data
.code
org 100h
.STARTup


mov dx, EC_Command_Port
mov al,89h ; Write EC HW ram. out dx,al


mov dx, EC_Data_Port
mov al, 5Fh ; Watchdog reset delay time low byte (5Eh is high byte) index.
out dx,al


mov dx, EC_Data_Port
mov al, 30h ;Set 3 seconds delay time. out dx,al


mov dx, EC_Command_Port
mov al,89h ; Write EC HW ram. out dx,al


mov dx, EC_ EC_Data_Port
mov al, 57h ; Watch dog event flag. out dx,al


mov dx, EC_Data_Port
mov al, 04h ; Reset event. out dx,al


mov dx, EC_Command_Port
mov al,28h ; start WDT function. out dx,al
```

.exit

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