# ETR1500

## EN50155 Certified

## Railway Panel computer

- INTEL® Apollo Lake Series (N4200, N3350)
- 1x LAN (M12),1X USB w/ protect cover
- DC-in Voltage: 110Vcc (70-144Vcc)
  66-160Vcc for 0.1sec without malfunction and failure
- Highly sensitive P-CAP Touch w/ glove usage
- Auto-dimming adjustment
- Super contrast ratio 1500:1
- Support Slackware and Porteus

**User's Manual**

Revision Date: June. 15. 2020

# Safety Information

**Electrical safety**

- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.
- When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.
- Before connecting or removing signal cables from the motherboard, ensure that all power cables are unplugged.
- Seek professional assistance before using an adapter or extension cord. These devices could interrupt the grounding circuit.
- Make sure that your power supply is set to the correct voltage in your area.
- If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your local distributor.

**Operation safety**

- Before installing the motherboard and adding devices on it, carefully read all the manuals that came with the package.
- Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.
- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.
- Avoid dust, humidity, and temperature extremes. Do not place the product in any area where it may become wet.
- Place the product on a stable surface.
- If you encounter any technical problems with the product, contact your local distributor

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- All product specifications are subject to change without prior notice

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# Chapter 1: Product Introduction

## 1.1 Specifications

### System

| | |
|---|---|
| CPU | INTEL® Apollo Series (N4200, N3350) |
| Memory type | Up to 8 GB |
| Storage | mSATA Up to 1TB |

### Display

| | |
|---|---|
| Size | 15.6 |
| Resolution | 1920 *1080 |
| Contrast Ratio | 1500:1 |
| Aspect Ratio | 16:9 |

### AUTO DIMMING

Light Sensor

Min 20 nits~400 nits w/ modulated automatically or be controlled by SW

| Surrounding Environment | Light Sensor Value | LCD Dimming Level |
|---|---|---|
| Tunnel (0~26 Lux) | 0~50 | 23%~37% |
| Indoor (200~300 Lux) | 200~300 | 72%~80% |
| Outdoor cloudy (1000 Lux) | 1000 | 88%~100% |
| Outdoor sunny (2000 Lux up) | 1200 up | 100% |

### audio

| | |
|---|---|
| SPK | 1 (>75dbA @30cm) |

### front I/O

| | |
|---|---|
| USB | USB 2.0 x1 (w/ Waterproof Cover) |

### Rear I/O

| | |
|---|---|
| DC | 2W2C female (A1 pos, A2 neg), 4-40 UNC threaded insert |
| Ethernet | M12 D-coded connector |

### Environment

| | |
|---|---|
| Certification | EN50155 T3 class (-25 ˚C+70°C), |

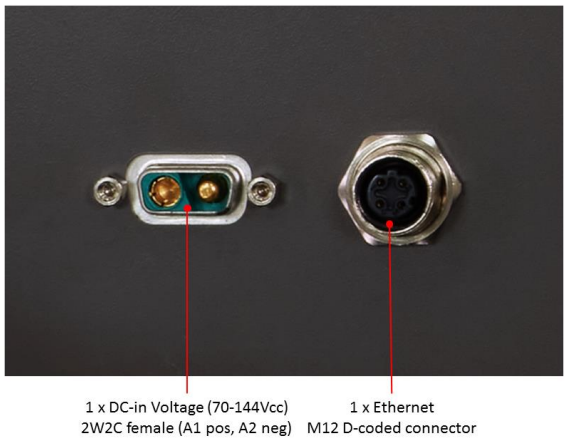
| | |
|---|---|
| | Shock and Vibration according to EN 61373 class B category 1<br>IEC 60605, EN50121-3-2 |

## Applications, Operating System

| | |
|---|---|
| Applications | Train journey, entertainment contents and commercial advertisements. |
| Operating System | Windows 10 64 Bit, Ubuntu13.04, Ubuntu13.10, Ubuntu14.04, Fedora20<br>Full compatible to Slackware and Porteus Linux distribution 4.14.29 |

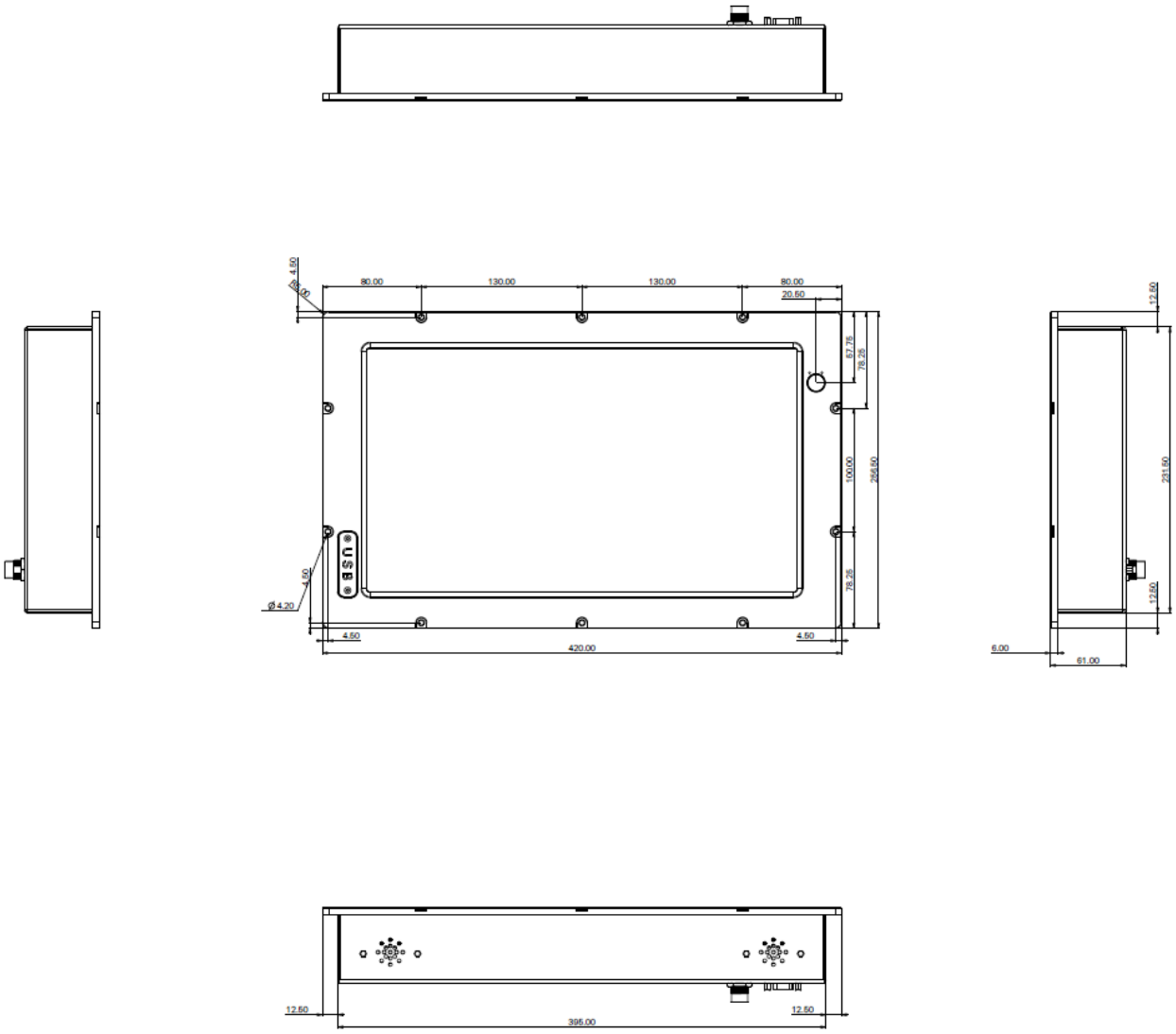
### 1.2 Front IO Placement

### 1.3 Rear IO Placement



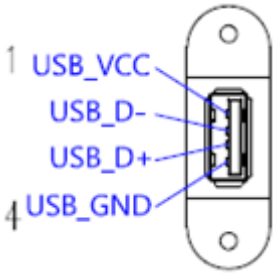
## 1.4 Mechanical dimension

# Mechanical Dimensions



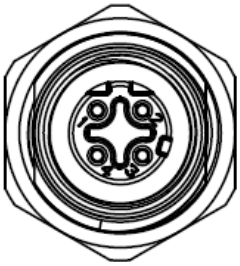
# Chapter 2: IO INTRODUCTION AND PIN ASSIGEMENT

## 2.1 USB 2.0 x1 (w/ Waterproof Cover)




## 2.2 2W2C female (A1 pos, A2 neg), 4-40 UNC threaded insert

## 2.3 M12 D-coded connector



| Shell |
|---|
| 4 (RX−) |
| 2 (RX+) |
| 3 (TX−) |
| 1 (TX+) |
| Conn. |

## Chapter 3: Auto Dimming

Because the human eye perceiving brightness is nonlinear, PWM duty must be set percentage at each stage of opening and closing

LCD Backlight:

Level 10 = 100%

Level 9 = 91%

Level 8 = 82%

Level 7 = 73%

Level 6 = 64%

Level 5 = 55%

Level 4 = 46%

Level 3 = 37%

Level 2 = 28%

Level 1 = 19%

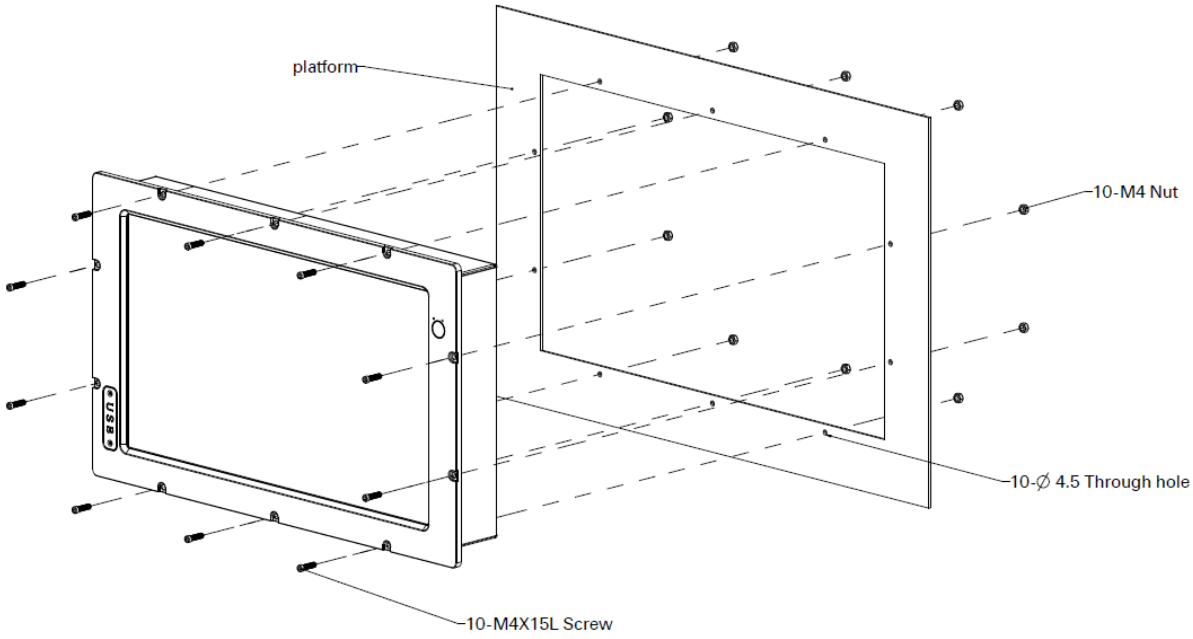
Level 0 =10%

**Auto dimming level**

| Surrounding environment | Light Sensor value | LCD dimming level |
|---|---|---|
| Tunnel (0~26 Lux) | 0~50 | 23%~37% |
| Indoor (200~300 Lux) | 200~300 | 72%~80% |
| Outdoor cloudy (1000 Lux) | 1000 | 88%~100% |
| Outdoor sunny (2000 Lux up) | 1200 up | 100% |

# Chapter 4: WALL MOUNT

The ETR1500 can be panel mounted using 10 countersunk M4 screws and Nut. Make sure there is adequate space behind the panel for ventilation and I/O connectors, and that the panel material and thickness can support the weight of the device.

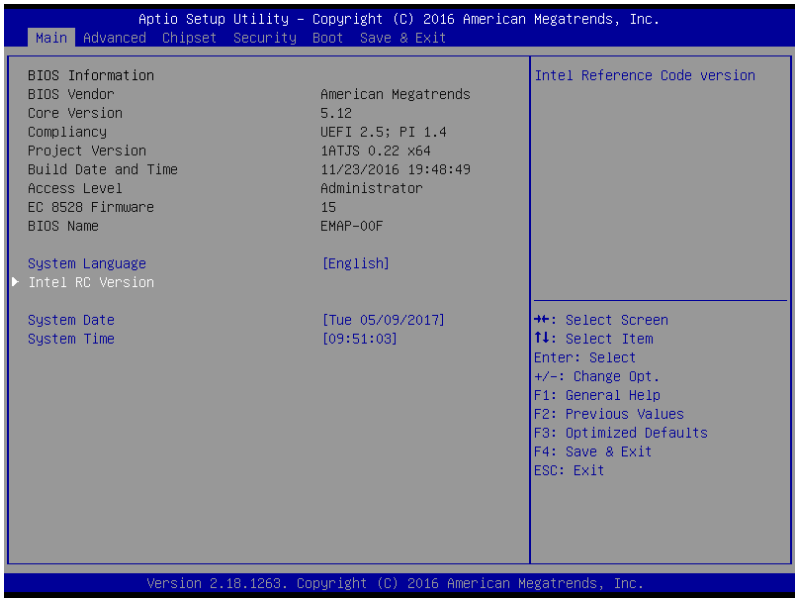


# Chapter 5: BIOS Setup

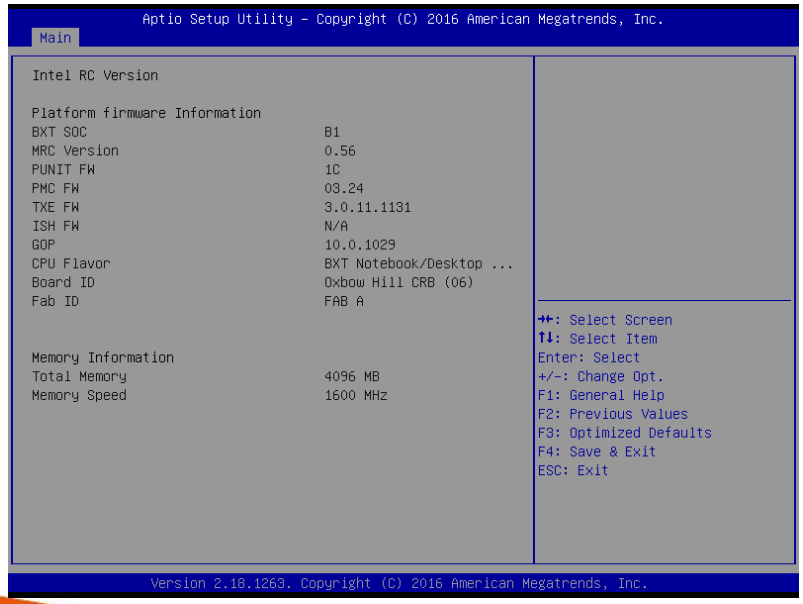
Once you enter the Aptio Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from several setup functions and exit choices. Use the arrow keys to select among the items and press <Enter> to accept and enter the sub-menu.

## 5.1 Main Page

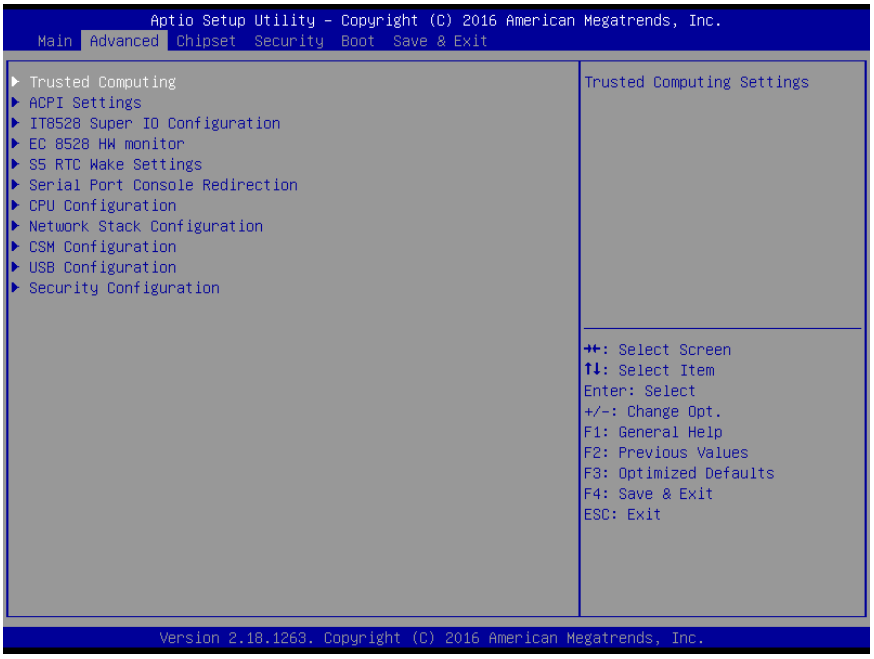
This section allows you to record some basic hardware configurations in your computer and set the system clock.



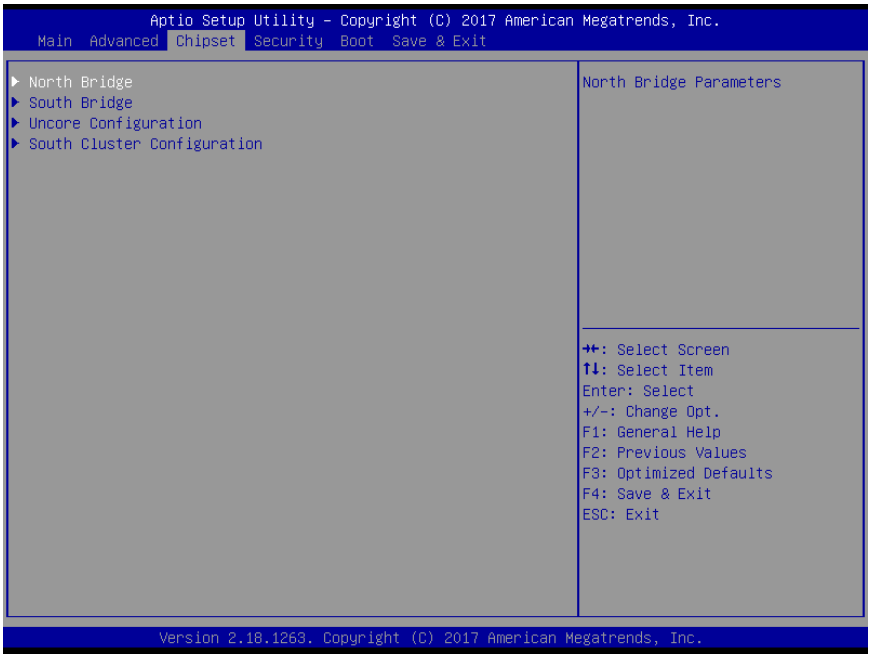

## 5.2 Advance Menu



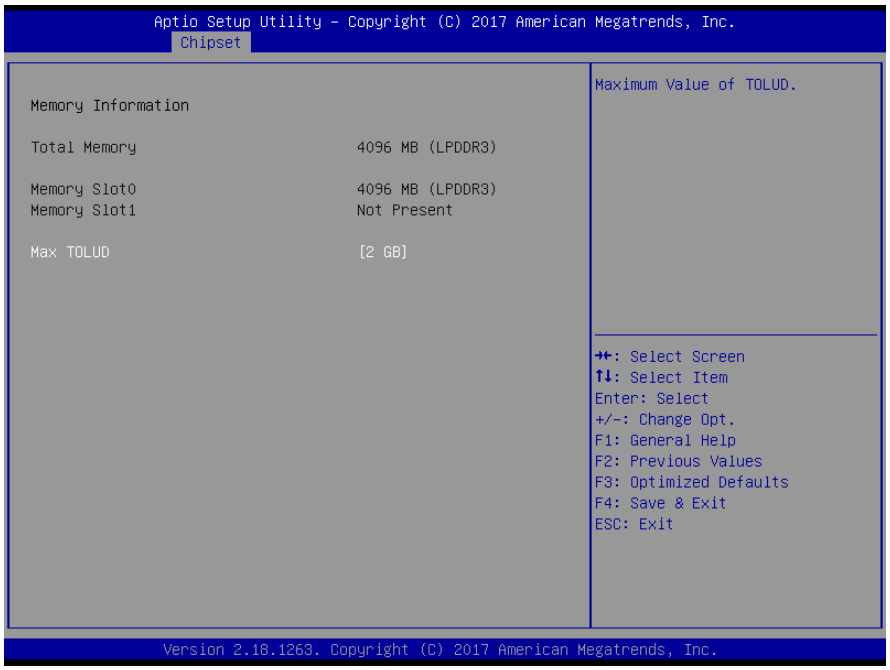
This section allows you to configure your CPU and other system devices for basic operation through the following sub-menus.




## 5.3 Chipset



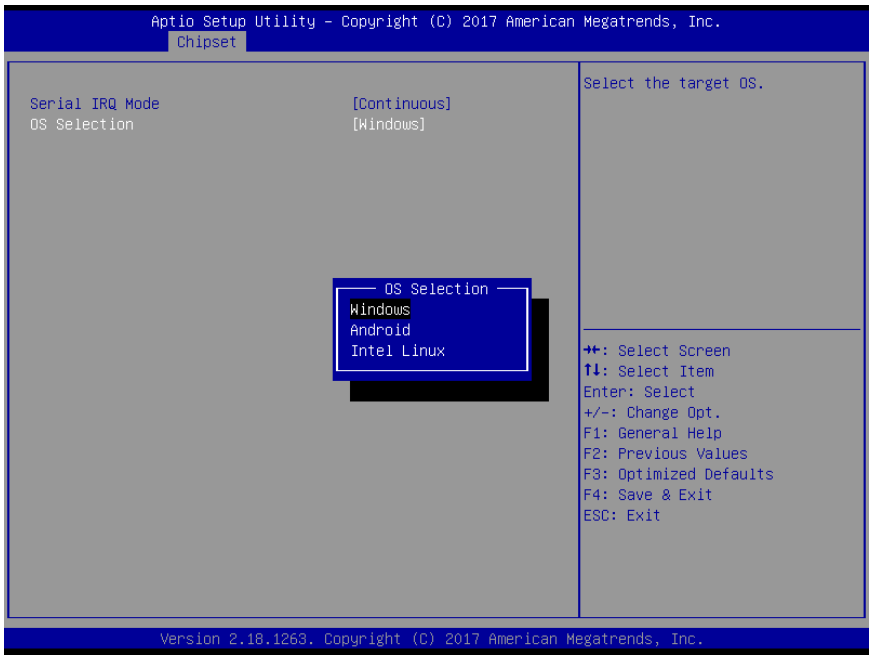
### 5.3.1North Bridge




| Item | Option | Description |
|---|---|---|
| Max TOLUD | 2 GB[Default]<br>2.25 GB<br>2.5 GB<br>2.75 GB | Maximum Value of TOLUD. |

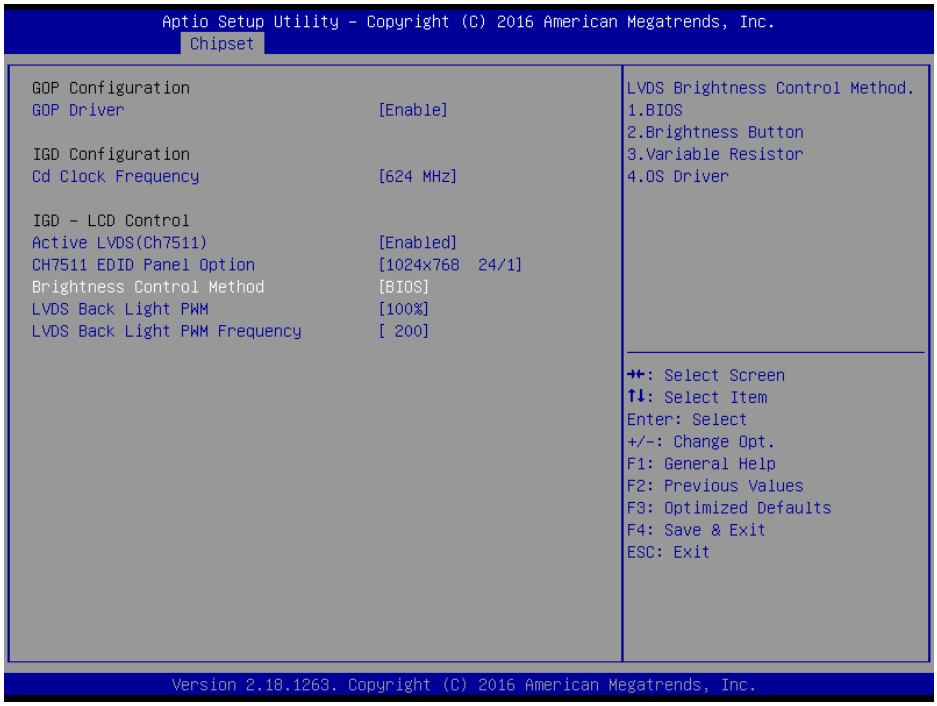
### 5.3.1SOUTH Bridge

| Item | Option | Description |
|---|---|---|
| Serial IRQ Mode | Quiet<br>Continuous[Default] | Configure Serial IRQ Mode. |
| OS Selection | Windows[Default]<br>Android<br>Intel Linux | Select the target OS. |



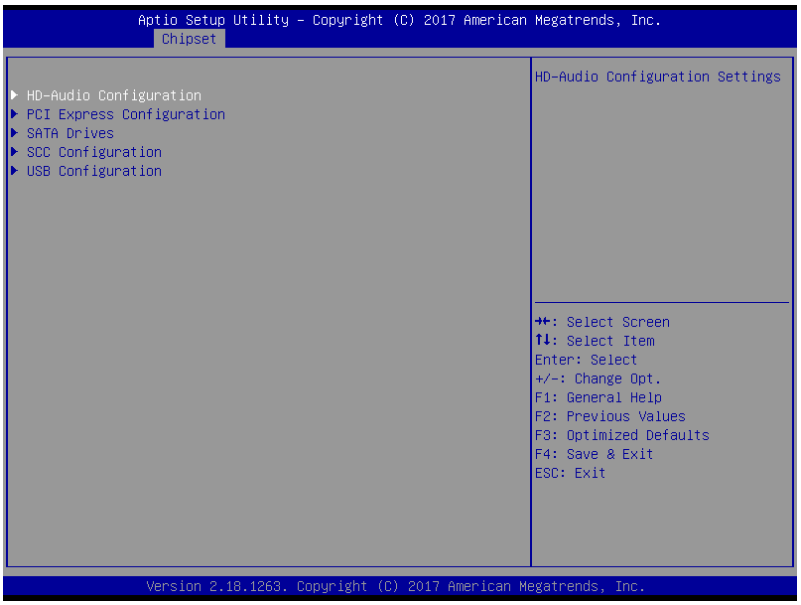

| | | |
|---|---|---|
| OS Selection | Windows[Default]<br>Android<br>Intel Linux | Select the target OS. |

## 5.4 Uncore configuration

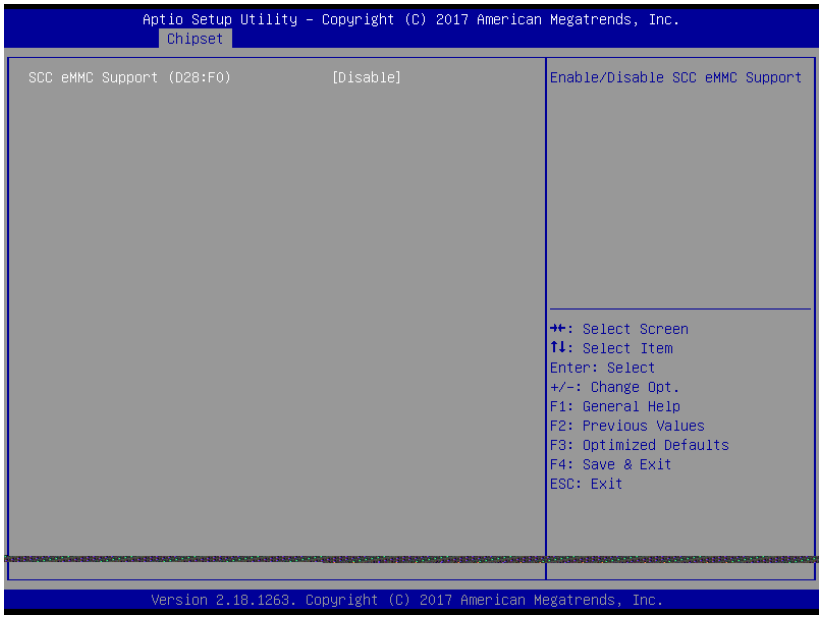


| Item | Option | Description |
|---|---|---|
| GOP Driver | Enable[Default]<br>Disable | Enable GOP Driver will unload VBIOS;<br>Disabled it will load VBIOS. |
| Cd Clock Frequency | 144 MHz<br>288 MHz<br>384 MHz<br>576 MHz<br>624 MHz[Default] | Select the highest Cd Clock frequency supported by the platform. |
| Active LVDS (Ch7511) | Disabled[Default]<br>Enabled | Active Internal LVDS(eDP->Ch7511-to-LVDS). |
| CH7511 EDID Panel Option | 1024x768 24/1[Default]<br>800x600 18/1<br>1024x768 18/1<br>1366x768 18/1<br>1024x600 18/1<br>1280x800 18/1<br>1920x1200 24/2<br>1920x1080 18/2<br>1280x1024 24/2<br>1440x900 18/2<br>1600x1200 24/2<br>1366x768 24/1<br>1920x1080 24/2<br>1680x1050 24/2 | Port1-EDP to LVDS(Chrotel 7511) Panel EDID Option. |
| Brightness Control Method | BIOS[Default] BR Button<br>VR<br>OS Driver | LVDS Brightness Control Method. 1.BIOS 2.Brightness Button 3.Variable Resistor 4.OS Driver. |
| LVDS Back Light PWM | 00%<br>25%<br>50%<br>75%<br>100%[Default] | Select LVDS back light PWM duty. |

## 5.5 South cluster configuration

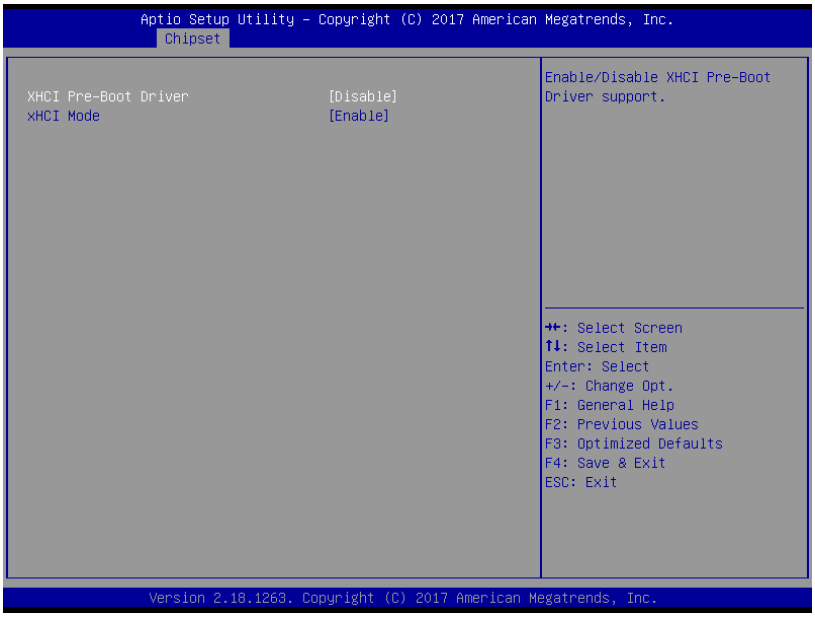



## 5.6 SCC configuration




| Item | Option | Description |
|---|---|---|
| SCC eMMC Support (D28:Fo) | Disable[Default], Enable | Enable/Disable SCC eMMC Support. |

## 5.7 usb configuration




| Item | Option | Description |
|---|---|---|
| XHCI Pre-Boot Driver | Enable,<br>Disable[Default] | Enable/Disable XHCI Pre-Boot Driver support. |
| XHCI Mode | Enable[Default]<br>Disable | Once disabled, XHCI controller would be function disabled, none of the USB devices ae detectable and usable during boot and in OS. Do not disable it unless for debug purpose. |