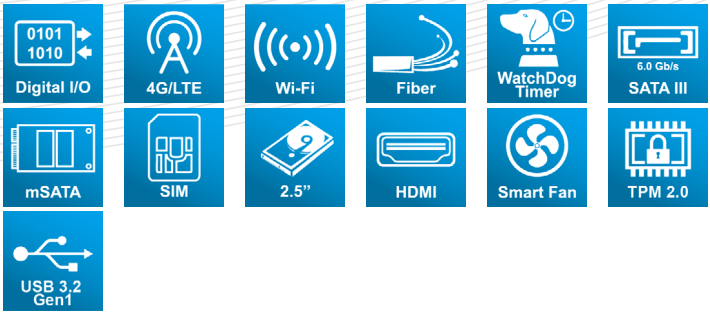
AND-EL6KE1

Desktop Network Appliance

- *Intel® Elkhart Lake SoC Processor 2~4 Cores*



User Manual

Acrosser Technology Co., Ltd.
www.acrosser.com

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Purpose

This document is intended to provide the information about the features and use of the product.

Audience

The intended audiences are technical personnel, not for general audiences.

WARNING

Danger of explosion if batteries are incorrectly replaced. Always replace the battery with the same specifications. Dispose of used batteries according to the manufacturer's instructions.

Before running the system, make sure the power cord is firmly plugged into the socket.

CAUTION

IEC 60417-6042 (2010-11)

IEC 60417-6172 (2012-09)

All power cords must be disconnected during product repair.

Ver: 101
Date: Mar. 10, 2022

To read this User Manual on your smart phone, you will have to install an APP that can read PDF file format first. Please find the APP you prefer from the APP Market.

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1. Product Specifications

The AND-EL6KE1 is powered by the latest Intel® Celeron® J6412 processors (formerly Elkhart Lake), designed to bring the performance needed to power network applications from UTM and firewall to VPN and SD-WAN. Supporting up to 32 GB of RAM, the system is capable of handling intensive networking processes, as well as ensure more accurate and secure connections thanks to technologies like Intel® AES-NI.

Designed for faster, more flexible connections, the unit comes standard with four copper Gigabit RJ-45 LAN ports and one fiber SFP port, allowing fast, direct connections. The AND-EL6KE1 provides wireless flexibility with six antenna ports and allow up to two wireless modules to be installed at the same time; including multiple Wi-Fi and Bluetooth networks, as well as 4G and 5G cellular modules.The system also features a redundant power supply for more reliable networking; and a 2.5” SATA drive bay to help power local network storage needs.

1.1. Specifications

(Specifications are subject to change without notice.)

Platform

Form Factor	• Desktop Network Appliance
Processor	• Intel® Elkhart Lake SoC Processor 2~4 Cores
Chipset	• SoC
System Memory	• 260-pin DDR4 SO-DIMM x 1 3200MHz

Network

Ethernet	• Intel® i211, Gigabit Ethernet x 4 • Intel® i210, SFP x 1
Bypass	• —

Display

Graphic Controller	• Intel® UHD Graphics
Connector	• HDMI x 1

Storage

HDD	• —
CF/CFast/mSATA	• mSATA slot x 1 • SATA III port x 1

Internal/Expansion Interface

PCIe slot	• —
Mini-PCIe Slot	• Mini Card Socket (PCIe + USB 2.0, full size) with SIM x 1 • Mini Card Socket (PCIe, half size) x 1
Keyboard and Mouse	• —
USB	• USB2.0 Type A x 2

Miscellaneous

RTC	• Internal RTC
Watchdog Timer	• 1~255 steps by software programmable
Software Button	• GPIO Programmable push button x 1
Fan	• Smart Fan
Color	• Black

Physical & Environmental

Power Requirement	• 2 x 12V DC Power Input Connector Lockable, 40W power adapter
Operating Temperature	• 32°F ~ 104°F (0°C ~ 40°C)
Storage Temperature	• -4°F ~ 140°F (-20°C ~ 60°C)
Operating Humidity	• 10%~80% relative humidity, non-condensing
Storage Humidity	• 10%~80% @40°C; non-condensing
Vibration	• 0.5 Grms/ 5 ~ 500Hz / operation (SSD) • 1.5 Grms/ 5 ~ 500Hz / non-operation
Shock	• 10 G peak acceleration (11 m sec. duration), operation • 20 G peak acceleration (11 m sec. duration), non-operation
Dimension (W x D x H)	• 8.27” x 4.09” x 1.73” (210mm x 105mm x 44mm)

I/O

Front Panel	• 3 x LEDs (Power, Status, Storage) • 1 x Micro-SIM • 2 x Antenna Holes
Rear Panel	• 2 x DC Power Input Connector Lockable • 1 x Power Button • 2 x USB2.0 Ports • 4 x 1.0Gbps RJ45 Ports • 1 x SFP • 1 x RJ-45 Console • 1 x Reset Button • 3 x Antenna Holes

1.2. Package Contents

Check if the following items are included in the package.

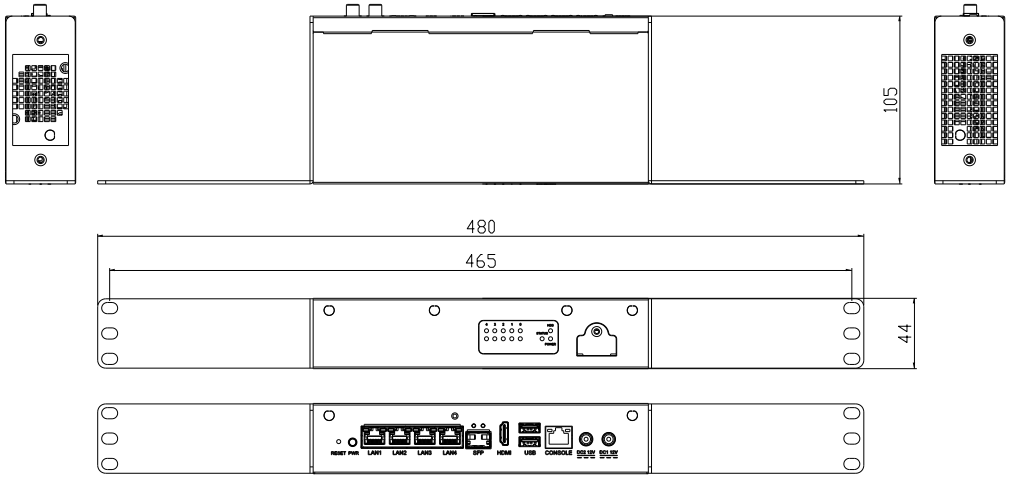
	Item	Q'ty	Remark
☐	AND-EL6KE1 System	1	
☐	2.5" SSD Bay	1	
☐	SATA Cable	1	
☐	SATA Power Cable	1	
☐	Power Adapter	1	
☐	System Rubber Foot	4	

2. Hardware Information

2.1. Dimensions

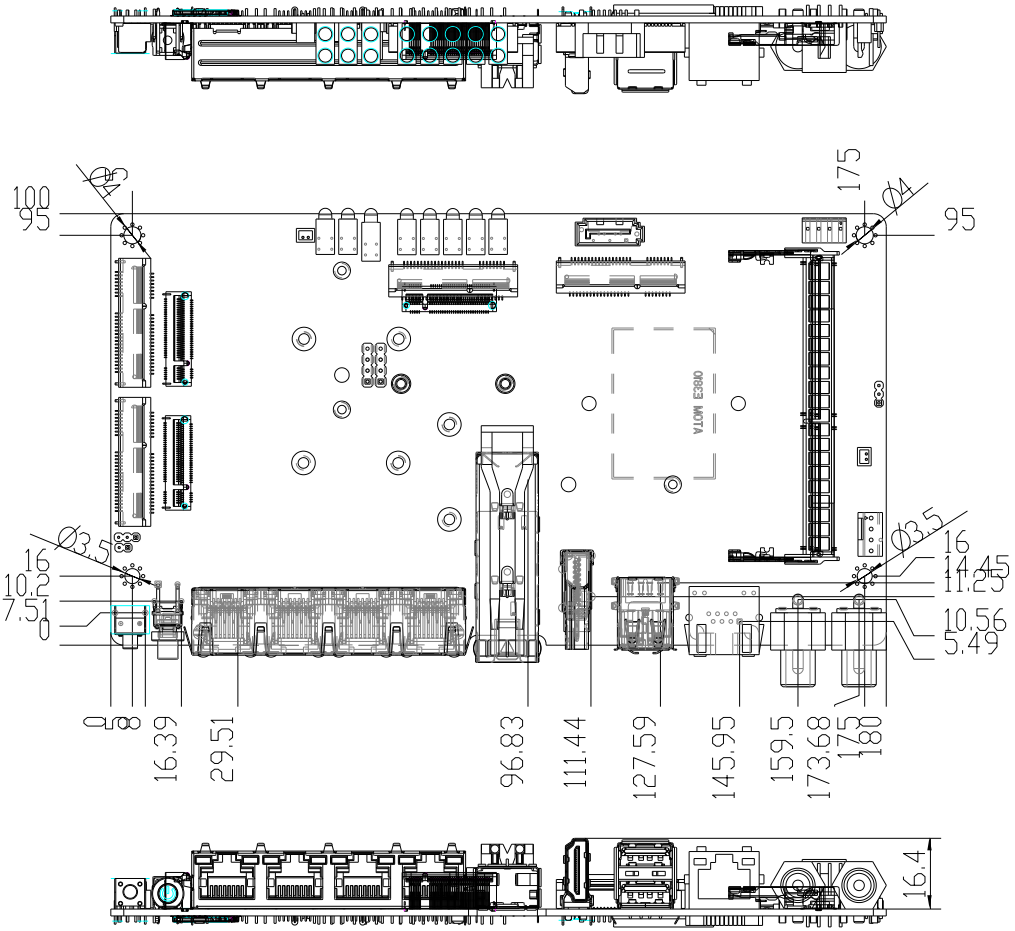
(Unit: mm)

System:

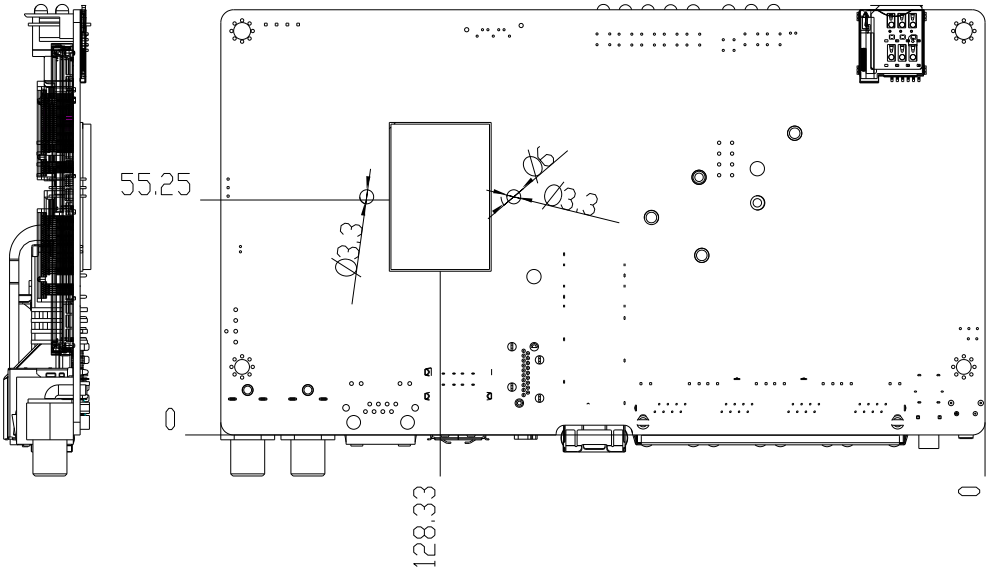


Board

Top and I/O View:



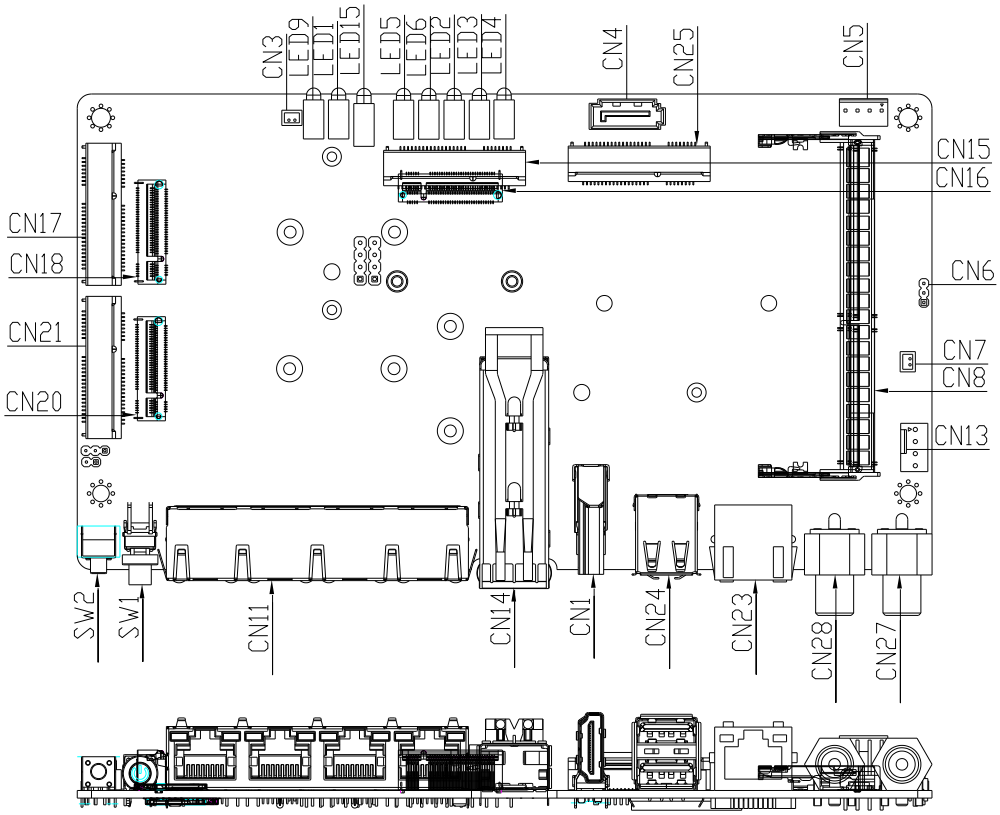
Bottom and Side View:



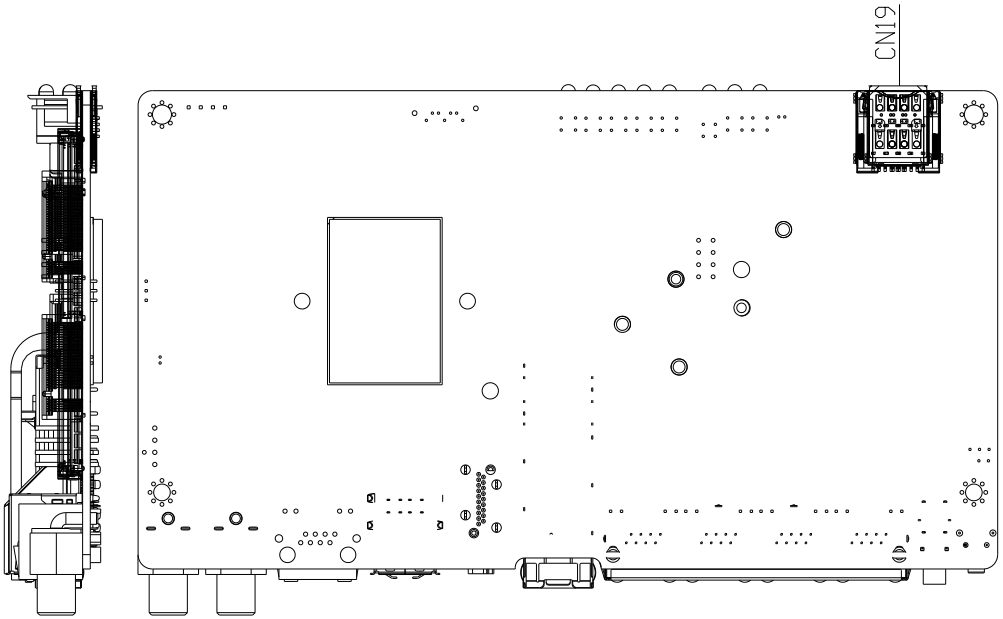
2.2. Jumpers and Connectors

Note: Components and their locations may vary depending upon which configuration was purchased.

Top and I/O View:



Bottom and Side View:

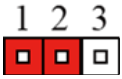
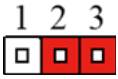


2.3. List of Jumpers

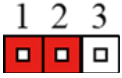
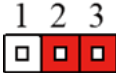
Please refer to the table below for all of the board's jumpers that you can configure for your application.

Label	Function
CN6	Clear CMOS
JP1	Auto Power Button Selection

2.3.1. Clear CMOS (CN6)

	
Normal (Default)	Clear CMOS

2.3.2. Auto Power Button (JP1)

	
Don't use Auto Power Button (Default)	Use Auto Power Button

2.4. List of Connectors

Please refer to the table below for all of the board's connectors that you can configure for your application. (Optional) denotes a component that is not included on the standard configuration. Some optional components may replace standard components.

Label	Function
CN1	HDMI Connector
CN4	SATA Connector
CN5	SATA Power Connector (only +5V)
CN10	LAN Ports 1 thru 4 RJ45
CN14	LAN Port 5 SFP
CN13	Fan Connector
CN15/CN16	Mini PCIe / M.2 E-Key (co-lay option) only PCIe function
CN17/CN18	Mini PCIe / M.2 E-Key (co-lay option) only PCIe function
CN19	Micro SIM for CN17/CN18

CN20/CN21	Mini PCIe / M.2 B-Key (co-lay option) only USB3.0 function
CN22	Micro SIM for CN21/CN20
CN23	Serial Port1
CN24	Dual USB2.0 Connector
CN25	mSATA Slot
CN27	Redundant DC-INPUT1 (12V)
CN28	Redundant DC-INPUT2 (12V)
CN30	DIO Connector
SW1	Power Button
SW2	Software Reset

2.4.1. SATA Power Connector (CN5)

Pin	Signal	Pin	Signal
1	NC	2	GND
3	GND	4	+5V

2.4.2. Digital I/O (CN30)

Pin	Signal	Signal Type
1	DIO0	Input / Output
2	DIO1	Input / Output
3	DIO2	Input / Output
4	DIO3	Input / Output
5	DIO4	Input / Output
6	DIO5	Input / Output
7	DIO6	Input / Output
8	DIO7	Input / Output
9	+3.3V	PWR
10	GND	GND

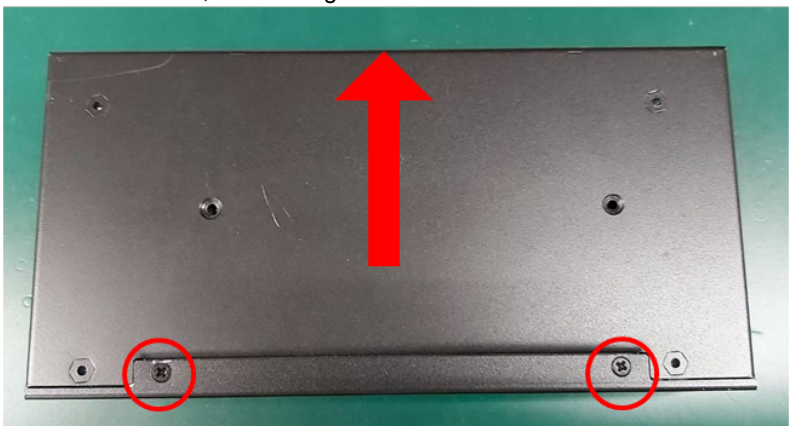
2.4.3. Switch GPIO Mapping (SW2)

SW2 GPIO Mapping
Mapping SIO GP64

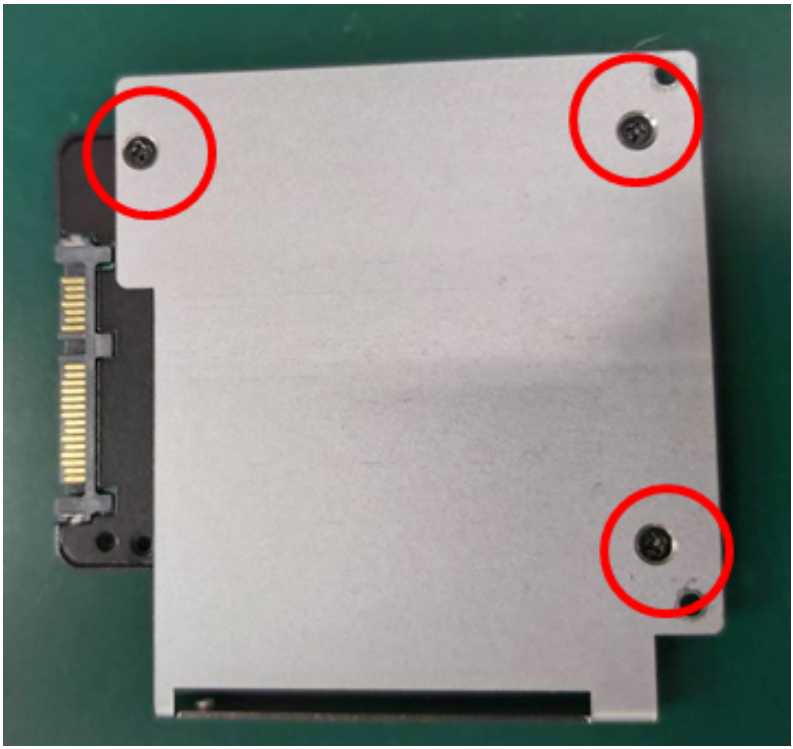
2.5. 2.5” Hard Drive Installation

This section details how to install a 2.5” SATA Drive (SSD) for the AND-EL6KE1.

Step 1: Remove the top cover by first removing the two screws which secure it to the bottom chassis, then sliding the bottom chassis as shown.



Step 2: Mount the SATA drive to the drive bracket and secure with three screws.



Step 3: Insert the bracket into the system, being careful to line the bracket up with the post on the chassis as shown:

Step 4: Secure the drive bracket to the standoffs with two screws:

Step 5: Connect the SATA and SATA Power Cables to the SATA drive.

Step 6: Reattach the top panel, making sure to replace the screws removed in Step 1.

3. AMI BIOS Setup

3.1. System Test and Initialization

The system uses certain routines to perform testing and initialization during the boot up sequence. If an error, fatal or non-fatal, is encountered, the system will output a few short beeps or display an error message. The system can usually continue the boot up sequence with non-fatal errors.

The system configuration verification routines check the current system configuration against the values stored in the CMOS memory and BIOS NVRAM. If a system configuration is not found or an error is detected, the system will load the default configuration and reboot automatically.

There are three situations in which the CMOS settings will need to be set or changed:

- Starting the system for the first time
- The system hardware has been changed
- The system configuration was reset by the Clear CMOS jumper
- The CMOS memory has lost power and the configuration information is erased

The system's CMOS memory uses a backup battery for data retention. The battery must be replaced when it runs down.

3.2. AMI BIOS Setup

The AMI BIOS ROM has a pre-installed Setup program that allows users to modify basic system configurations, which is stored in the battery-backed CMOS RAM and BIOS NVRAM so that the information is retained when the power is turned off.

To enter BIOS Setup, press <Del> or <Esc> immediately while your computer is powering up.

The function for each interface can be found below.

Main – Date and time can be set here. Press <Tab> to switch between date elements

Advanced – Access hardware monitor and advanced board features and options

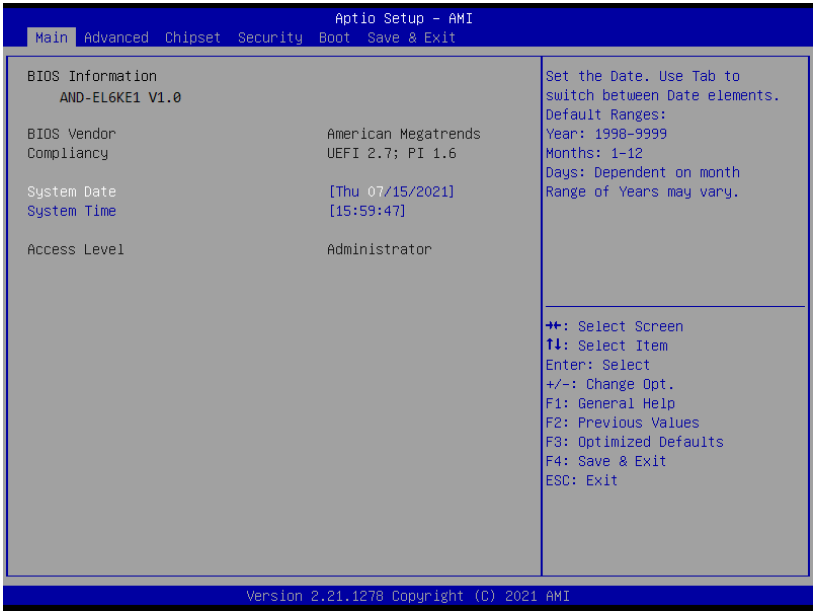
Chipset – Chipset settings and options

Security – The setup administrator password can be set here

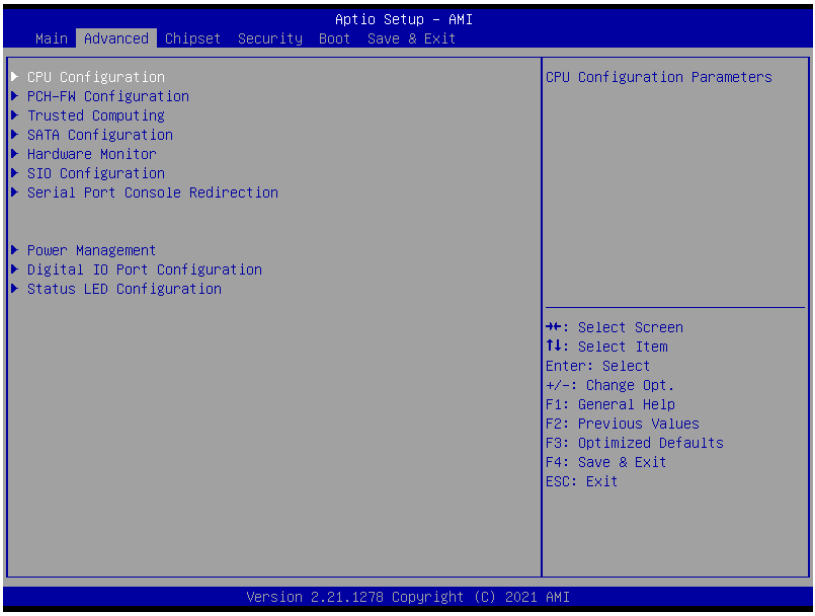
Boot – Set boot drive priority and quiet boot options

Save & Exit – Save changes and exit the program

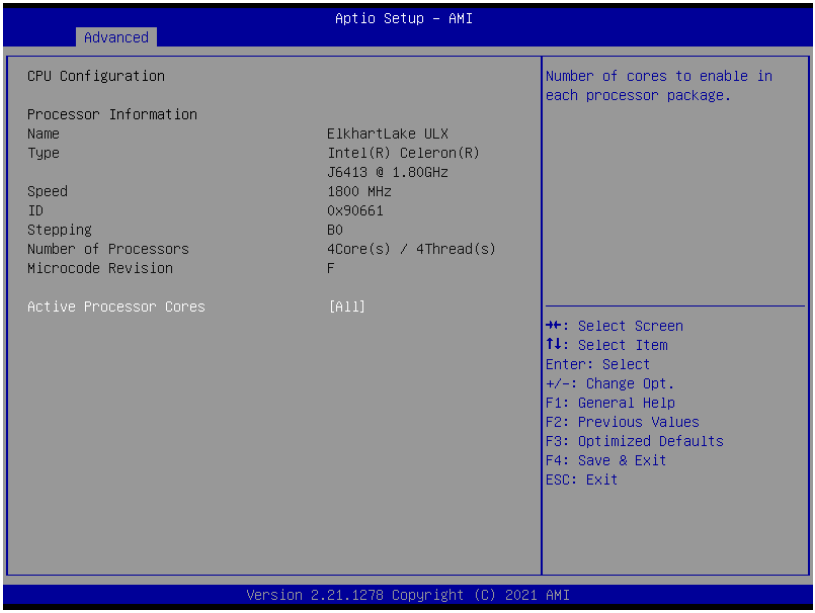
3.3. Setup Submenu: Main



3.4. Setup Submenu: Advanced

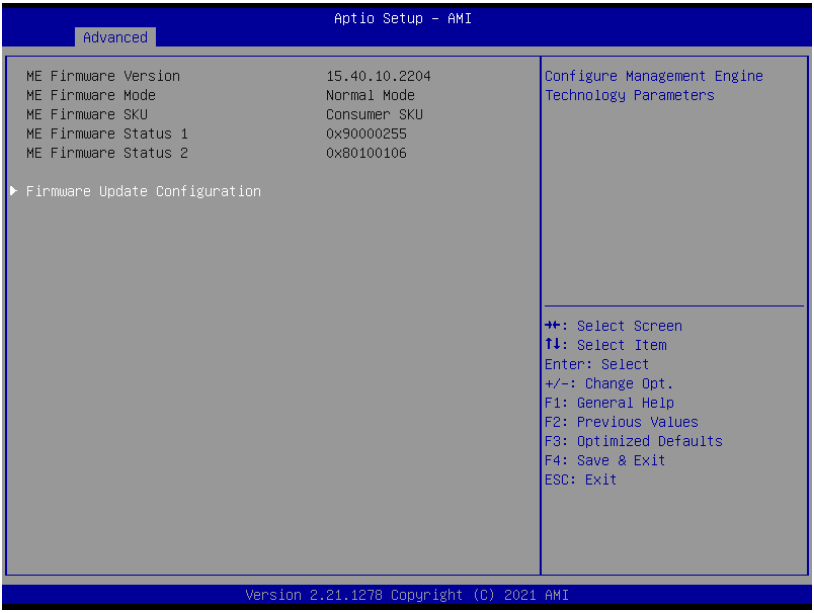


3.4.1. CPU Configuration

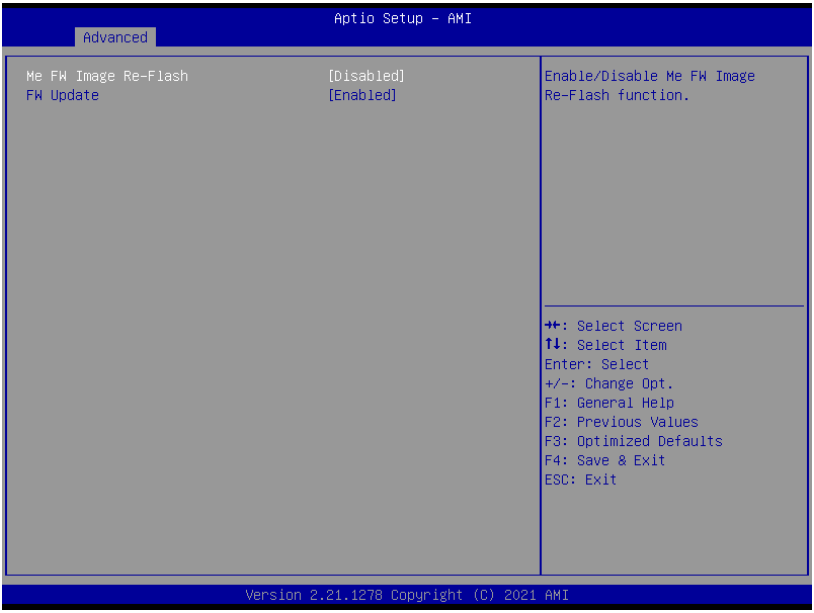


- **Active Processor Cores**
  Number of cores to enable in each processor package.

3.4.2. PCH-FW Configuration

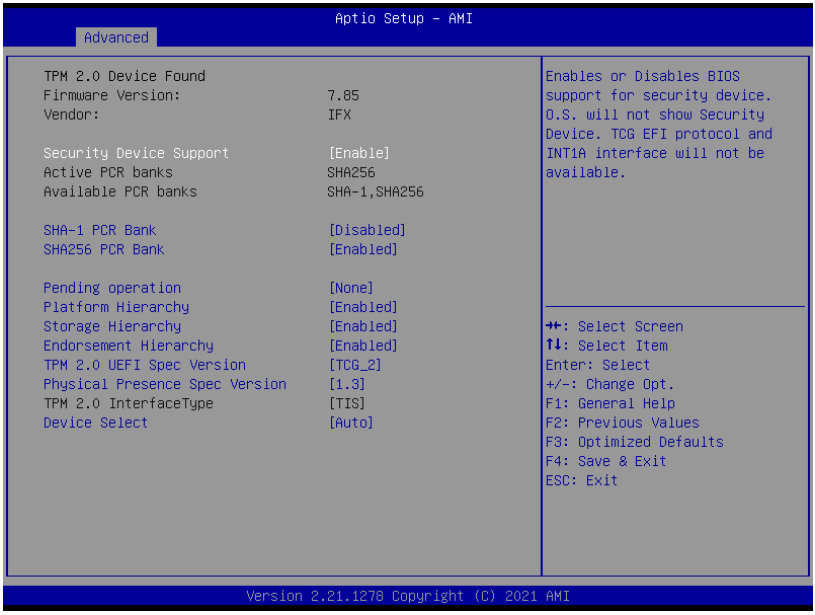


3.4.2.1. Firmware Update Configuration



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

3.4.3. Trusted Computing



- **Security Device Support**
  Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.
- **SHA-1 PCR Bank**
  Enable or Disable SHA256 PCR Bank.
- **Pending operation**
  Schedule an Operation for the Security Device. NOTE: Your Computer will reboot during restart in order to change State of Security Device.
- **Platform Hierarchy**
  Enable or Disable Platform Hierarchy.
- **Storage Hierarchy**
  Enable or Disable Storage Hierarchy.
- **Endorsement Hierarchy**
  Enable or Disable Endorsement Hierarchy.

- **TPM 2.0 UEFI Spec Version**
  Select the TCH2 Spec Version Support.

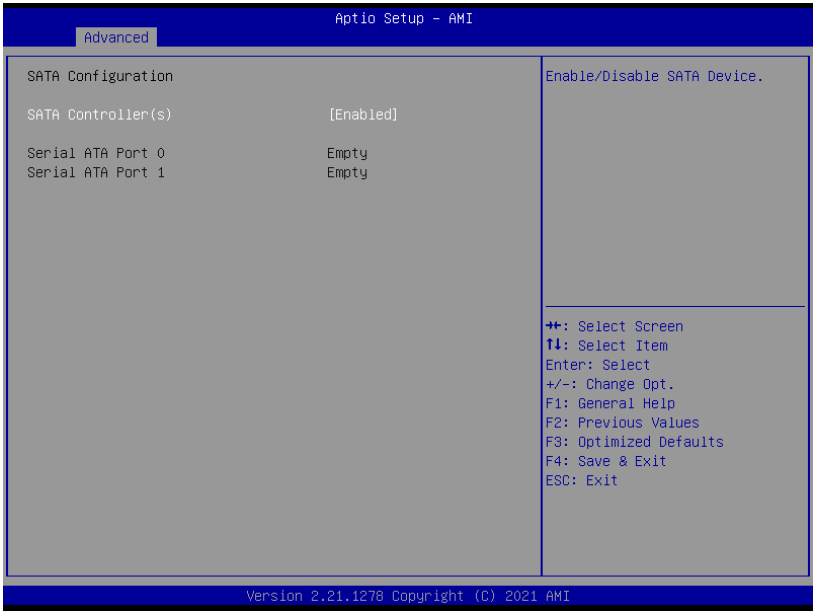
  TCG_1_2: the Compatible mode for Win8/Win10

  TCG_2: Support new TCG2 protocol and event format for Win10 or later

- **Physical Presence Spec Version**
  Select to Tell O.S. to support PPI Spec Version 1.2 or 1.3. Note some HCK tests might not support 1.3

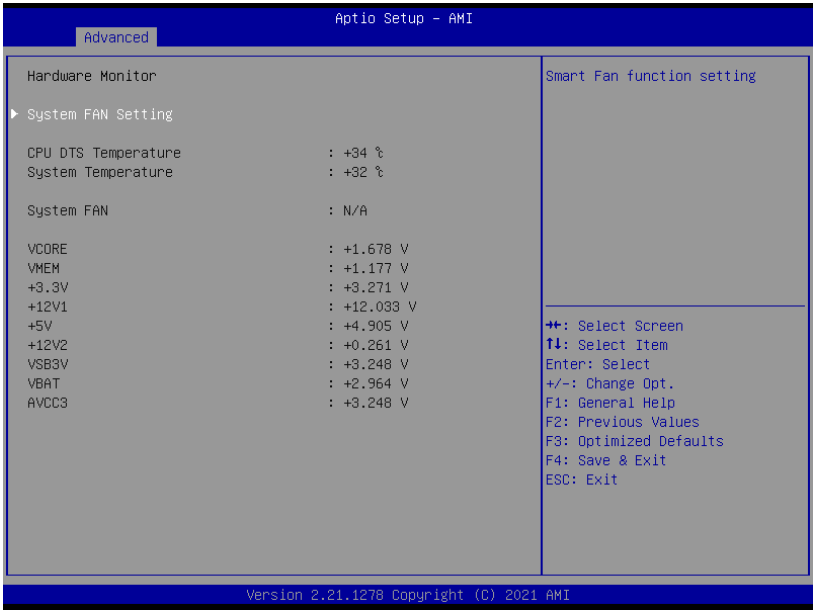
- **Device Select**
  TPM 1.2 will restrict support to TPM 1.2 devices, TPM 2.0 will restrict support to TPM 2.0 devices, Auto will support both with the default set to TPM 2.0 devices if not found, TPM 1.2 devices will be enumerated.

3.4.4. SATA Configuration

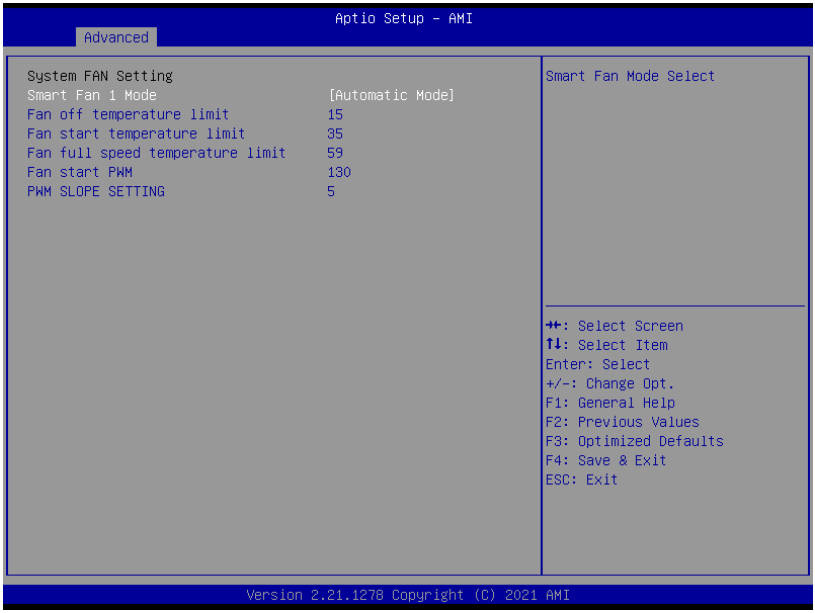


- **SATA Controller(s)**
  Enable/Disable SATA Device.

3.4.5. Hardware Monitor



3.4.5.1. Smart FAN Setting

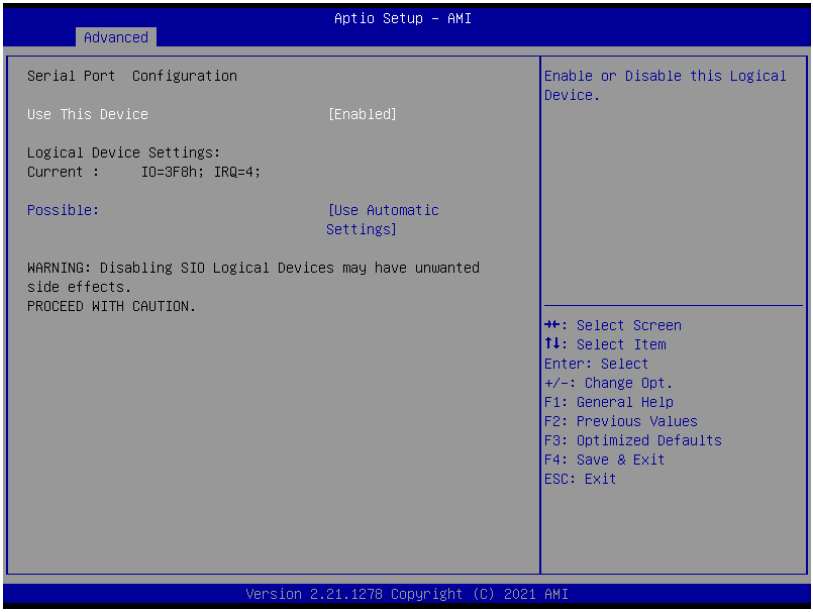


- **Smart Fan 1 Mode**
  Smart Fan Mode Select.
- **Manual PWM Setting**
  Manual Mode: Fan will work with this Manual PWM Value.
- **Fan off temperature limit**
  Fan will off when temperature lower than this limit.
- **Fan start temperature limit**
  Fan will work when temperature higher than this limit.
- **Fan full Speed Temperature limit**
  Fan will full speed when temperature higher than this limit.
- **Fan start PWM**
  Fan will start with this PWM value.
- **PWM SLOPE SETTING**
  PWM SLOPE Selection

  Slope = PWM value/°C.

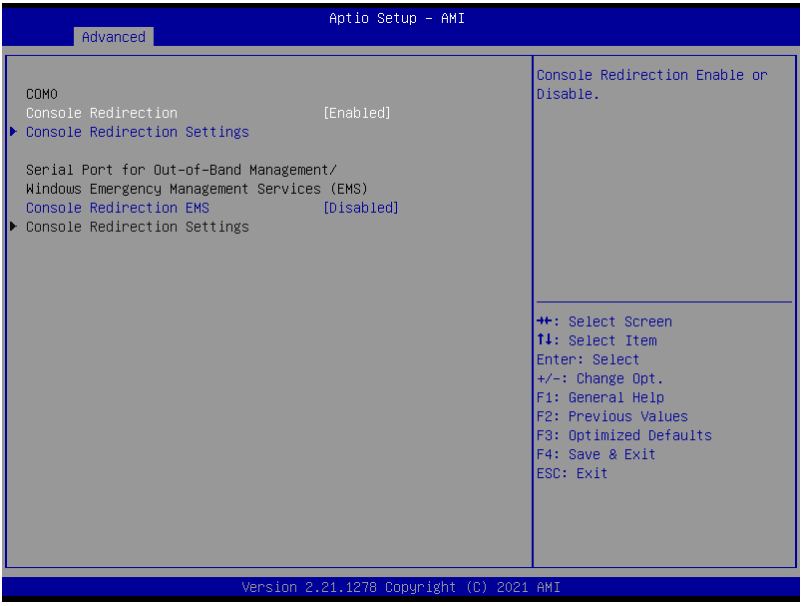
3.4.6. SIO Configuration

3.4.6.1. Serial Port Configuration



- **Use This Device**
  Enable/Disable this Logical Device.
- **Possible**
  Allow user to change Device's Resource settings. New settings will be reflected on This Setup Page after System restarts.

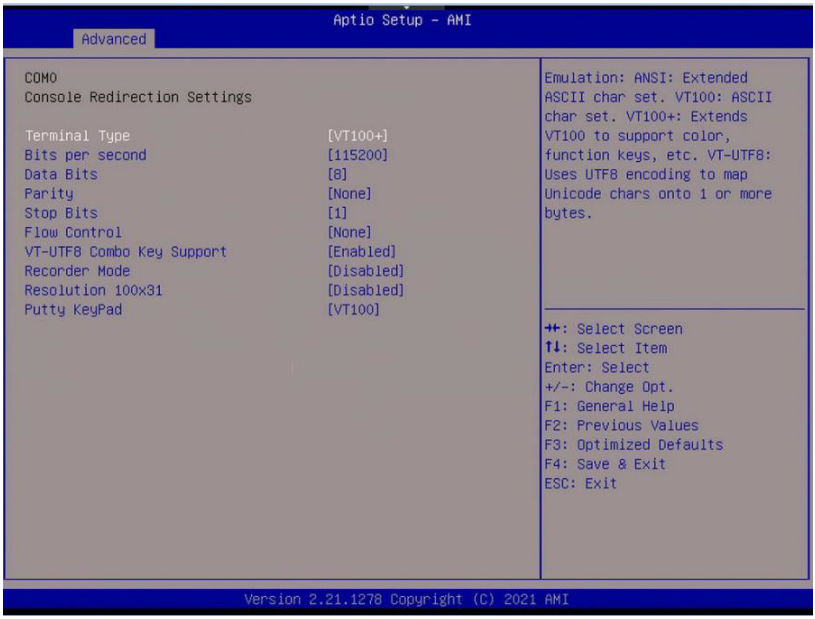
3.4.7. Serial Port Console Configuration



- **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.

  Both computers should have the same or compatible settings.
- **Console Redirection EMS**
  Console Redirection Enable or Disable.

3.4.7.1. COM0 Console Redirection Settings



- **Terminal Type**
  Emulation:

  ANSI: Extended ASCII char set.

  VT100: ASCII char set.

  VT100+: Extends VT100 to support color, function keys, etc.

  VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.

- **Bits per second**
  Selects serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.

- **Data Bits**
  Data Bits

- **Parity**
  A Parity bit can be sent with the data bits to detect some transmission errors.

  Even: parity bit is 0 if the number of 1's in the data bits is even.

  Odd: parity bit is 0 if the number of 1's in the data bits is odd.

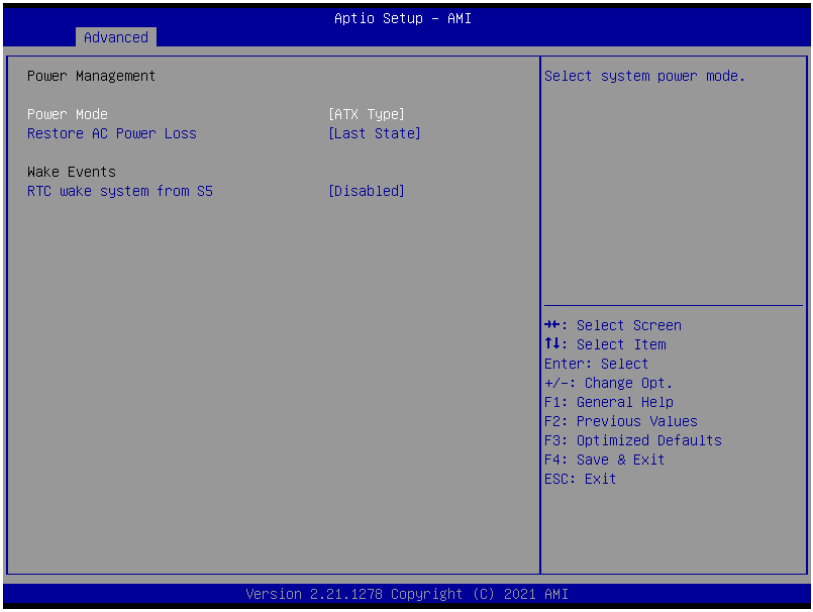
  Mark: parity bit is always 1.

  Space: parity bit is always 0. Mark and Space.

  Parity do not allow for error detection.

- **Stop Bits**
  Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.
- **Flow control**
  Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.
- **VT-UTF8 Combo Key Support**
  Enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals.
- **Recorder Mode**
  With this mode enabled only text will be sent. This is to capture Terminal data.
- **Resolution 100x31**
  Enables or disables extended terminal resolution.
- **Putty KeyPad**
  Select FunctionKey and KeyPad on Putty.

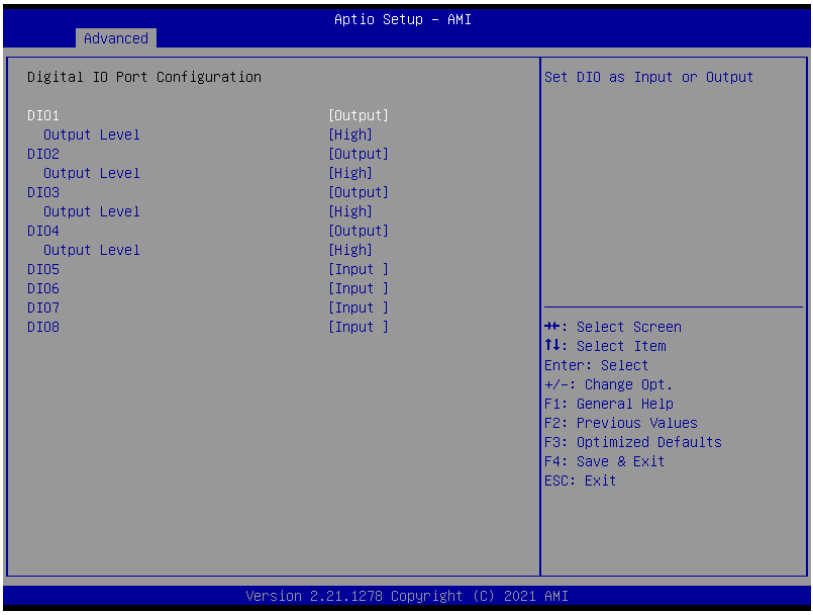
3.4.8. Power Management



- **Power Mode**
  Select power supply mode.

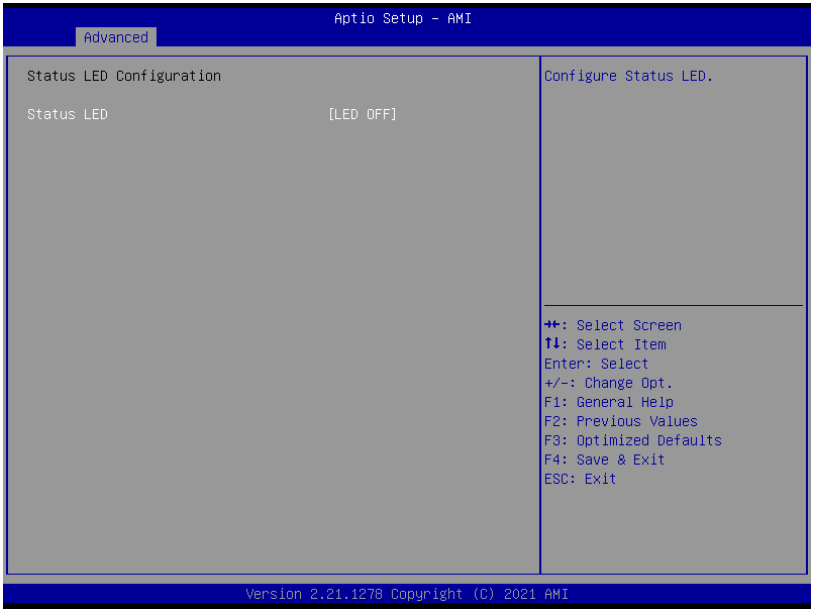
- **Restore AC Power Loss**
  Select power state when power is re-applied after a power failure.
- **RTC wake system from S5**
  Fixed Time : System will wake on the hr::min::sec
  Dynamic Time : System will wake on the current time + Increase minutes(s).
  Bypass: BIOS will not control RTC wake function during system shutdown.

3.4.9. Digital IO Port Configuration



- **DIO Port1~4**
  Set DIO as Input or Output.
- **Output Level**
  Set output level when DIO pin is output.
- **DIO Port5~8**
  Set DIO as Input or Output.

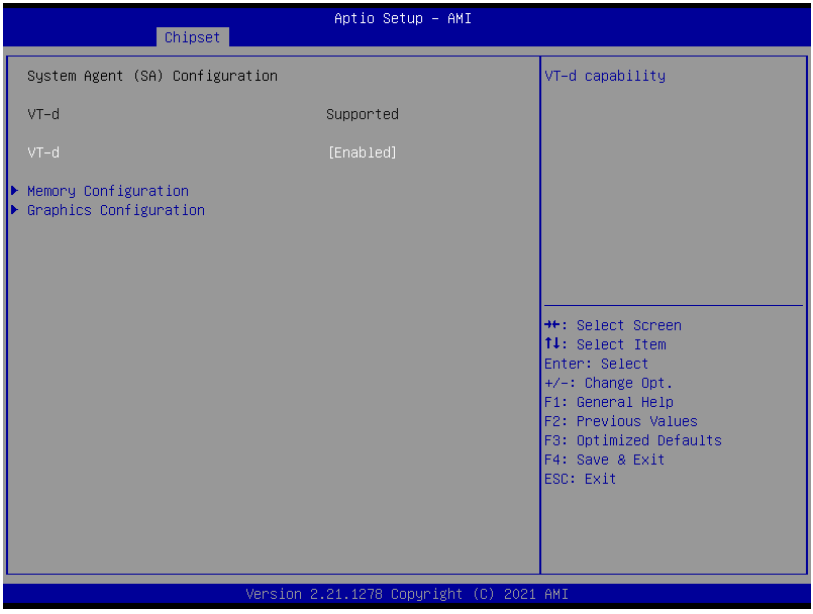
3.4.10. Status LED Configuration



- **Configure LAN Bypass Status LED**
  Configure Status LED.

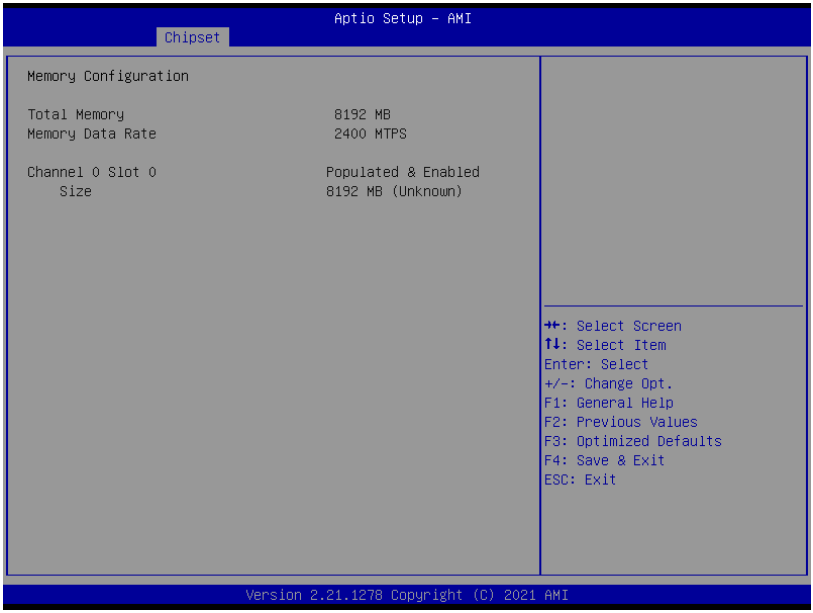
3.5. Setup Submenu: Chipset

3.5.1. System Agent (SA) Configuration

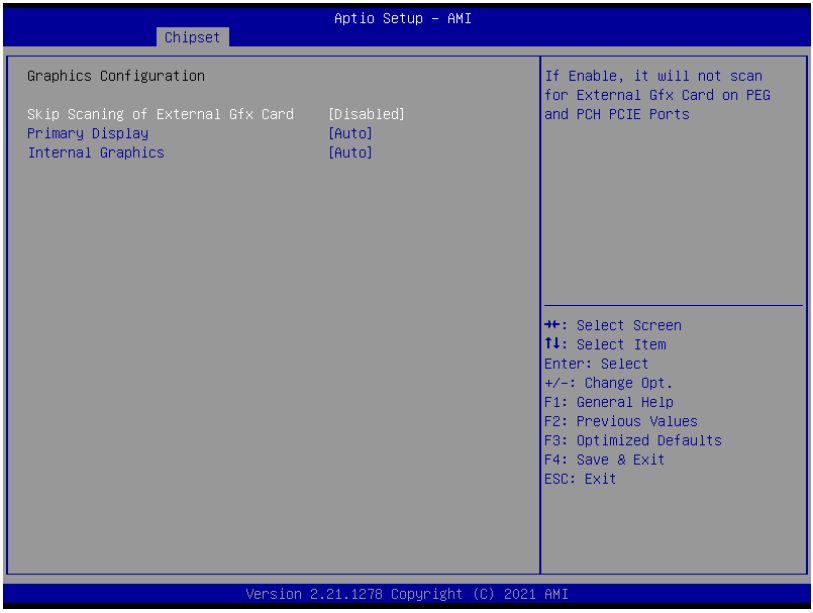


- **VT-d**
  VT-d capability.

3.5.1.1. Memory Configuration

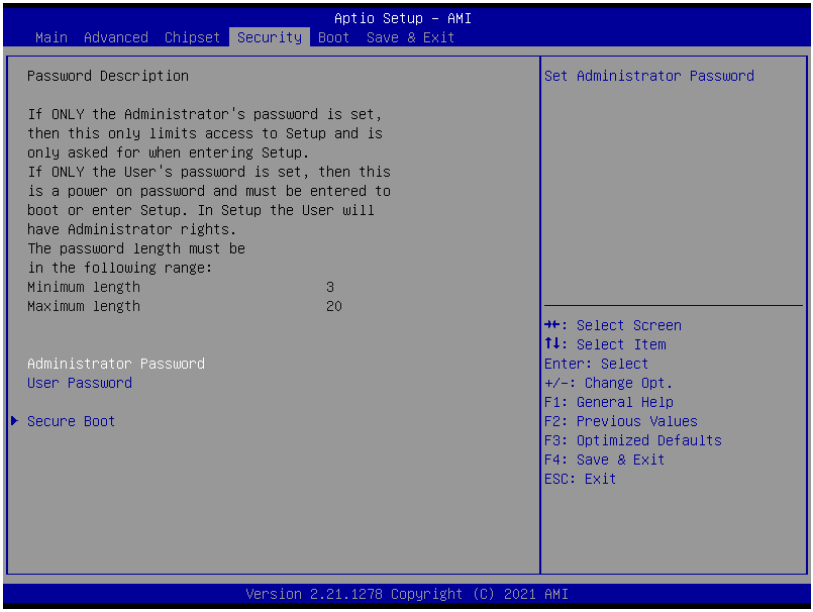


3.5.1.2. Graphics Configuration



- **Skip Scaning of External Gfx Card**
  If Enable, it will not scan for External Gfx Card on PEG and PCH PCIE Ports.
- **Primary Display**
  Select which of IGFX/PEG/PCI Graphics device should be Primary Display or select HG for Hybrid Gfx.
- **Internal Graphics**
  Keep IGFX enabled based on the setup options.

3.6. Setup Submenu: Security



- **Change User/Administrator Password**
  You can set an Administrator Password or User Password. An Administrator Password must be set before you can set a User Password. The password will be required during boot up, or when the user enters the Setup utility. A User Password does not provide access to many of the features in the Setup utility.

  Select the password you wish to set, and press Enter. In the dialog box, enter your password (must be between 3 and 20 letters or numbers). Press Enter and retype your password to confirm. Press Enter again to set the password.

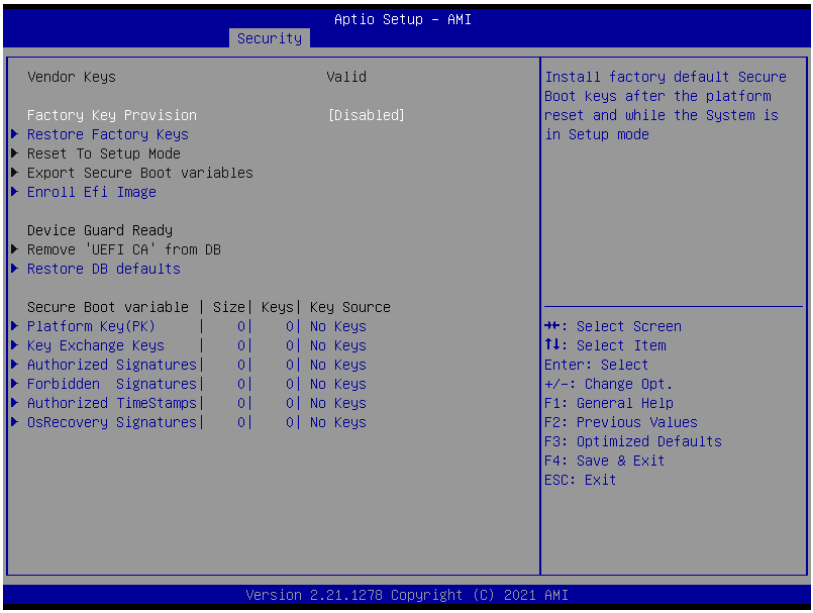
- **Removing the Password**
  Select the password you want to remove and enter the current password. At the next dialog box press Enter to disable password protection.

3.6.1. Secure Boot

- **Secure Boot**
  Secure Boot feature is Active if Secure Boot is Enabled, Platform Key (PK) is enrolled, and the System is in User mode. The mode change requires platform reset.
- **Secure Boot Mode**
  Secure Boot mode options: Standard or Custom.

  In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication.
- **Restore Factory Keys**
  Force System to User Mode. Install factory default Secure Boot key databases.
- **Reset To Setup Mode**
  Delete all Secure Boot key databases from NVRAM.

3.6.1.1. Key Management

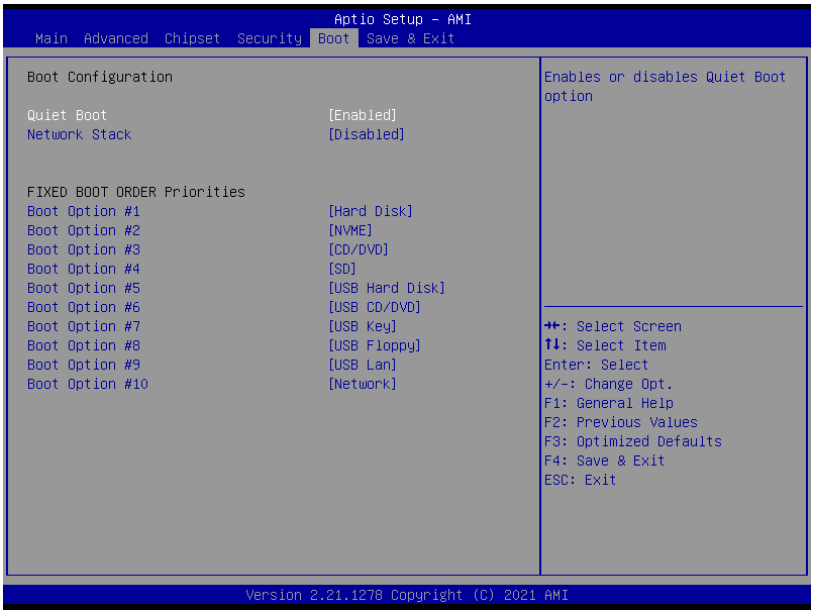


- **Factory Key Provision**
  Install factory default Secure Boot keys after the platform reset and while the System is in Setup mode.
- **Restore Factory Keys**
  Force System to User Mode. Install factory default Secure Boot key databases.
- **Reset To Setup Mode**
  Delete all Secure Boot key databases from NVRAM.
- **Export Secure Boot variables**
  Copy NVRAM content of Secure Boot variables to files in a root folder on a file system device.
- **Enroll Efi Image**
  Allow the image to run in Secure Boot mode. Enroll SHA256 Hash certificate of a PE image into Authorized Signature Database (db).
- **Remove 'UEFI CA' from DB**
  Device Guard ready system must not list 'Microsoft UEFI CA' Certificate in Authorized Signature database (db).
- **Restore DB defaults**
  Restore DB variable to factory defaults.
- **Secure Boot Variables**
  Enroll Factory Defaults or load certificates from a file:

1. Public Key Certificate in:
   a) EFI_SIGNATURE_LIST
   b) EFI_CERT_X509 (DER encoded)
   c) EFI_CERT_RSA2048 (bin)
   d) EFI_CERT_SHAXXX
2. Authenticated UEFI Variable
3. EFI PE/COFF Image (SHA256)

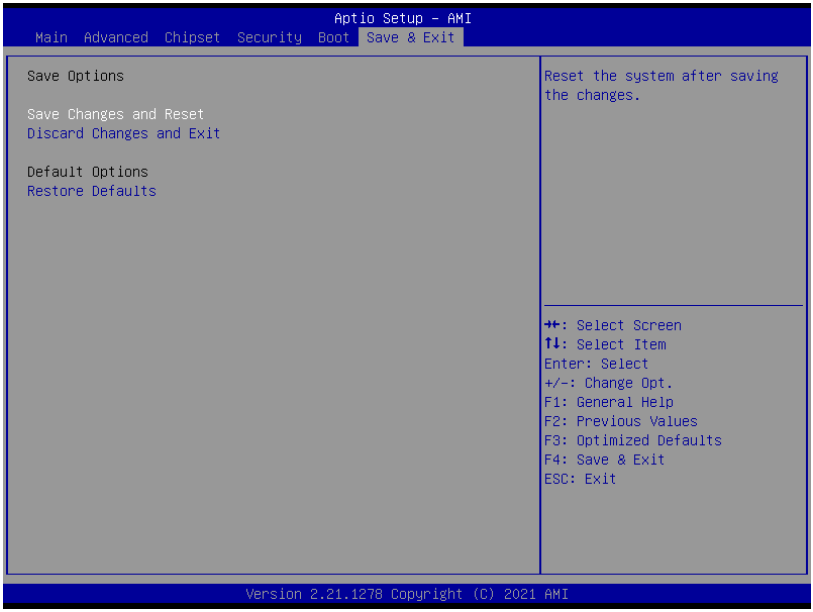
Key Source:
Default, External, Mixed

3.7. Setup Submenu: Boot



- **Quiet Boot**
  Enable / Disable Quiet Boot option.
- **Network Stack**
  Enable/Disable UEFI Network Stack.
- **FIXED BOOT ORDER Priorities**
  Sets the system boot order.

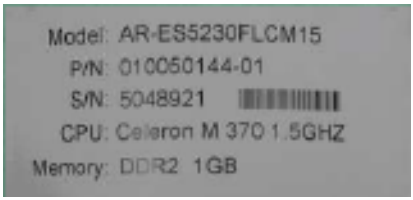
3.8. Setup Submenu: Save & Exit



4. FAQ

Q 1. Where is the serial number located on my system?

- The serial number (S/N) is an alpha-numeric character located on the bottom or side chassis.



(for reference only)

Technical Support Form

We deeply appreciate your purchase of Acrosser products. Please find the "**tech_form.doc**" file in our utility CD. If you have any questions or problems about Acrosser products, please fill in the following information. We will answer your questions in the shortest time possible.

Describe Your Info and Acrosser System Info

- Your Company Name: _____
- Your Contact Info: _____ Phone Number: _____
- Your E-Mail Address: _____
- Your Company Address: _____

  _____
- Acrosser Model Name: _____
- Acrosser Serial Number: _____

Describe System Configuration

- CPU Type: _____
- Memory Size: _____
- Storage Device (e.g. HDD, CF, or SSD): _____
- Additional Peripherals (e.g. Graphic Card): _____
- Operating System & Version (e.g. Windows 7 Embedded): _____
- Special API or Driver: _____

  (If yes, please provide it for debug.)
- Running Applications: _____
- Others: _____

Describe Your Problems or Questions:

Send the above information to one of the following Acrosser contacts:

- Acrosser Local Sales Representative
- Acrosser Authorized Sales Channels
- Acrosser Inquiry --- http://www.acrosser.com/inquiry.html
- Acrosser FAX Number --- 886-2-29992887

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