FES9280

Fully IP67 Fanless Embedded System
Intel 6th Generation Skylake Core i7 Processor
-20°C to 60°C Wide Range Working Temperature

Embedded Computers

User Manual

ACNODES

Declaration

Please read this chapter with some important notice before operations.

FCC Regulation Statement

This device complies with part 15 FCC rules.
Operation is subject to the following two conditions:

•This device may not cause harmful interference.
•This device must accept any interference received including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a class "a" digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at him own expense.

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Disclaimer

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Customer Service

The user guide includes simple debug and trouble shooting, for system crack or serious damage, please contact with your distributor, sales representative, the customer service center for technical support if you need additional assistance. You may have the following information ready before you call:
Product serial number
Peripheral attachments
Description of complete problem
The exact wording of any error messages
In addition, free technical support is available from our engineers every business day. We are always ready to give advice on application requirements or specific information on the installation and operation of any of our products. Please do not hesitate to call or e-mail us.

Safety Instructions

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

Please read these safety instructions carefully.
•Please keep this user's manual for later reference.
•Please disconnect this equipment from any AC outlet before cleaning. Do not
use acid or caustic liquid or spray detergents for cleaning. The good option is to use a damp cloth.
•Do not touch the LCD panel surface with sharp or hard objects.
•For pluggable equipment, the power outlet must be installed near the equipment and must be easily accessible.
•Place this equipment on a reliable surface during installation. Dropping it or letting it fall could cause damage..
•Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
•Position the power cord so that people cannot step on it. Do not place anything over the power cord.
•All cautions and warnings on the equipment should be noted.
•If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient over-voltage.
•Never open the equipment. For safety reasons, only qualified service personnel should open the equipment.

Getting Started

The design allows you to use it in harsh environments – places you would not take with normal commercial grade. The mechanical is designed to be special environment in various kind of Military sort of heavy duty application.

This chapter tells you will find instructions when you are ready to use it :

• Unpacking

• Installation

• Cable Connection

2-1 Unpacking

This Equipment is suitable to use in IP66 / IP67 extremely tough environment normally outdoor, outfield, non-human adapted place. Before the procurement of it, please check with sales representative for functionality and signal which are adequate to communicate to your peripheral equipment or local devices. We do not actively provide the cable set in the accessory list, but we are able to make the cable with required length, the plugs at opposite side, and the specified cable shielding.

Inside the carton are items as below,
1. MIL. Box PC x 1pc
2. Driver CD x 1pc
3. Pin assignment datesheet x 1pc
4. USB Stick for OS recovery (If OS ordered)
5. Cable Set (optional)
6. Opposite plug for I/O connectors (optional)
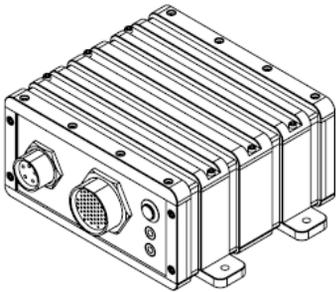
1 x Pin Assignment
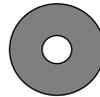
1 x User Manuel CD
(Containing Spec. , Drawing, Driver, Manuel)

Note: All connectors have protective plastic cap on it, please take it away before to use.

2-2 Installation

The box has 4 thread holes at bottom for locking down to the wall / table, each thread hole is with φ 6 in diameter, and 10mm in depth which was designed to avoid resonant and anti-vibration /shock together with the locking fixture. The L x W of the thread is 85 x 200 mm.
Please refer to the drawings as below,
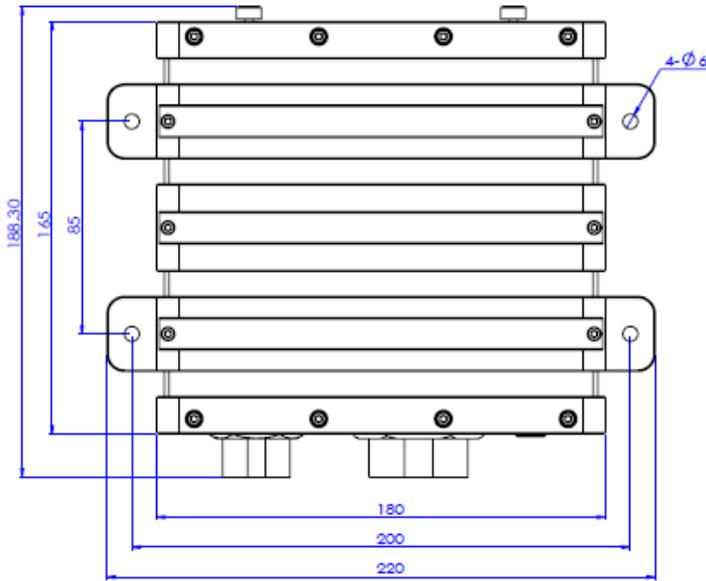
We also provide the add-on bracket for VESA mount or Din rail mount needed.

At back side of connectors there's a door for 1 bay removable storage, please loose 2 locking screws at both side, take the front door away. The space is for 1 x 2.5" SSD storage, the bus speed is connected to SATA I/II.
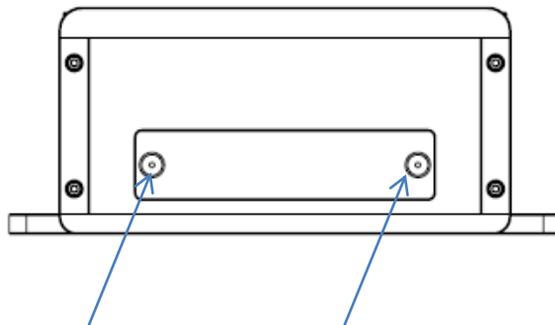
2-3 Cables Connections

Before to plug the cable and supply the power to it, please double check the Pin assignment provided by your sales representative, make sure the correct connector and pin definition all in appropriate to the Box.

Default Pin definition and connectors:
1. J1: D38999/24WH53SN
2. J2: D38999/24WD5SN
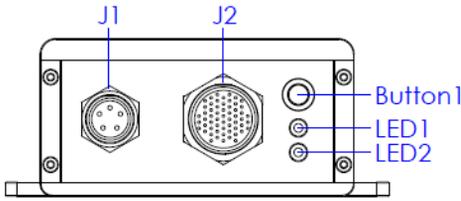
J1 Pin Assignments :

Pin	Pin Name
A	24V
B	24V
C	GND
D	GND
E	GND
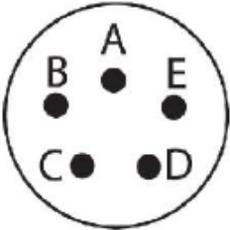
J2 Pin Assignments :

Pin	Pin Name	Interface
A	Data 2+	
B	Data 2-	
U	Data 1+	
V	Data 1-	
g	Data 0+	
r	Data 0-	
CC	Clock +	
s	Clock -	HDMI
C	GND	
W	SCL	
D	SDA	
X	DDC GND	
Y	Hot Plug Detect	
E	+5V	
DD	RED	
u	GREEN	
b	BLUE	
t	GND	
a	R,G,B_GND	VGA
H	Hsync	
Z	SCL	
G	Vsynv	
F	SDA	

Pin	Pin Name	Interface
S	USB1_VCC	
T	USB1_GND	USB1
n	USB1_D-	
p	USB1_D+	
AA	USB2_VCC	
BB	USB2_GND	USB2
GG	USB2_D-	
HH	USB2_D+	
P	TX_D1+	
R	TX_D1-	
k	RX_D2+	
m	RX_D2-	LAN
h	BI_D3+	
z	BI_D3-	
N	BI_D4+	
M	BI_D4-	
L	CD	
q	RXD	
y	TXD	
FF	DTR	
w	GND	RS232
f	DSR	
x	RTS	
K	CTS	
e	RI	
EE	TX-	
v	TX+	
c	RX+	RS422
d	RX-	
J	GND	
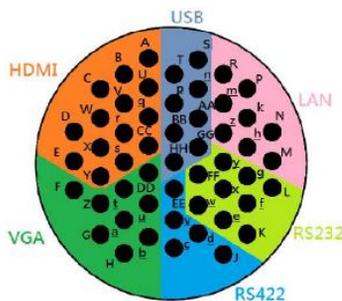
Operation

When using a device, be sure to read the instructions accompanying the device. This chapter provides detail hardware specification for more understanding to this Box PC

- Hardware specification
- BIOS Settings

3-1 Hardware Specification

Basic Configuration

Processor: 6th Generation Intel® Core™ U-series
– i7 6600U 2.6 GHz, Dual-Cores, Four Threads (default)
– i5 6300U 2.4 GHz, Dual-Cores, Four Threads (Option)
– i7 6600U: 4MB
– i5 6300U: 3MB

Features:

* Intel® Turbo Boost Technology 2.02 (i5/i7 series only)
* Intel® Advanced Vector Extensions 2.0 (Intel® AVX2)
  Intel® Hyper-Threading Technology
  Intel® Active Management Technology 11.0 (Intel® AMT 11.0, i5/i7 series only)
  Intel® Trusted Execution Technology (Intel® TXT)
  Intel® 64 Architecture
  Intel® Virtualization Technology (Intel® VT)
  Intel® Advanced Encryption Standard New Instructions (Intel® AES-NI)
  Enhanced Intel SpeedStep® Technology

I/O interface of Platform Controller Hub
– Integrated Serial ATA Host Controller
  Data transfer rates up to 6.0 Gb/s (600 MB/s)
  Integrated AHCI controller
– USB
  xHCI Host Controller, supporting 2 SuperSpeed USB 3.0 ports
  One EHCI Host Controllers, supporting 2 HighSpeed USB 2.0 ports
  Supports wake-up from sleeping states S1, S3
  Supports legacy Keyboard/Mouse software
– Power Management
  Full support of ACPI C-states as implemented by the following processor Cstates:
— C0, C1, C1E, C3, C6, C7, C8, C9, C10
  Enhanced Intel SpeedStep® Technology

System Memory Support

– Non-ECC, DDR3L/DDR3L-RS and LPDDR3 memory with dual SO-DIMM up to 16GB
– DDR3L/DDR3L-RS I/O Voltage of 1.35 1333 MT/s (PC3-10600), 1600 MT/s (PC3-12800)
– 64-bit wide channels

Integrated Graphics Controller

– Contains a generation 9 graphics core architecture (Intel® HD Graphics 520/510)
– Intel® QuickSync & Clear Video Technology HD Supportt
– Full Hardware Accelerated Video Decode: AVC/VC1/MPEG2/HEVC/VP8/JPEG.
– OpenGL4.4 and OpenCL2.1 support
– DirectX 12, DirectX 11.3, DirectX 11.2, DirectX 11.1, DirectX 10, DirectX 9 support
– Multi-display interfaces: VGA, HDMI on rear I/O, Dual Channel 24-bit LVDS
– Support Extend, Clone and Collage mode with multi-display device
– Dual Display:
   Any two combination between: VGA, HDMI
– Analog RGB display (VGA) output up to resolution 1920 x 1200 with 60 Hz, or 2048 x 1152 @ 60Hz with reduced blanking.
– HDMI interface supports the HDMI 1.4a specification with audio up to 4096x2160 at 24 Hz

Gigabit Ethernet

– Port1: Integrated Intel 100 Series Chipset (MAC) + i219 GbE (PHY)
   Integrated ASF Management Controller
   10/100/1000 BASE-T IEEE 802.3 specification conformance
   Supports the Energy Efficient Ethernet (EEE) IEEE802.3az specification
   Supports up to 9 KB jumbo frames (full duplex) * 802.1as/1588 conformance
– Port2(Optional) : i210 Gigabit Ethernet Controller
   Flow Control Support compliant with the 802.3X Specification
   Compliant with the 1 Gb/s IEEE 802.3 802.3u 802.3ab Specifications

Electrical Specifications

Power Requirement: Default 9~36V DC ± 10% power input
Power Consumption:
– Typically, under circumstances under normal operation
 w/i7 6600U: 30 W
 w/i5 6300U: 25 W

– System idle mode
 i7 6600U: < 9 W
 i5 6300U: < 6 W

RTC Battery:
– Typical Voltage: 3.0 V
– Normal discharge capacity: 210 mAh

Operating temperature: -20~ 60°C
Operating Humidity: 5~ 95% Non-Condensing
Storage Temperature: Storage temperature: -40~85°C
Storage Humidity: Relative humidity: 95% @ 60°C
Vibration: 2.5G, 5~500Hz/XYZ , MIL-STD- 810F Method 514.5 Procedure I
Shock: 40G, 11ms, MIL-STD-810F Method 516.5 Procedure I
EMI/EMC: MIL-STD- 461F compliance

Turn on the computer and then press <F2> or <DEL> to enter Setup menu.
With the BIOS Setup program, you can modify BIOS settings and control the various system features. This chapter describes the basic navigation of the BIOS setup screens.

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.

Main Setup

When you first enter the BIOS Setup Utility, you will encounter 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.

```
                Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
    Main  Advanced  Chipset  Security  Boot  Save & Exit

    BIOS Information                                          Choose the system default
    BIOS Vendor                    American Megatrends        language
    Core Version                   5.0.1.1   0.29 x64
    Compliancy                     UEFI 2.4: PI 1.3
    Project Version                MIO 5272000U160X016
    Build Date and Time            12/08/2015 16:40:49
    Access Level                   Administrator

    System Language                [English]

    System Date                    [Tue 12/08/2015]
    System Time                    [06:05:18]
    Power Type                     AT
                                                             →←: Select Screen
                                                             ↑↓: Select Item
                                                             Enter: Select
                                                             +/-: Change Opt.
                                                             F1: General Help
                                                             F2: Previous Values
                                                             F3: Optimized Defaults
                                                             F4: Save & Exit
                                                             ESC: Exit


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```

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.

Advanced BIOS Features Setup

Select the Advanced tab from this 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 is shown below. The sub menus are described on the following pages.

PCI Subsystem Settings

Enable ACPI Auto Configuration
Enable or disable BIOS ACPI auto configuration.
Enable Hibernation
Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This
option may be not effective with some OS.
ACPI Sleep State
Select the highest ACPI sleep state the system will enter when the SUSPEND button
is pressed.
Lock Legacy Resources
Enables or Disables Lock of Legacy Resources.
S3 Video Repost
Enable or Disable S3 Video Repost.

AMT Configuration
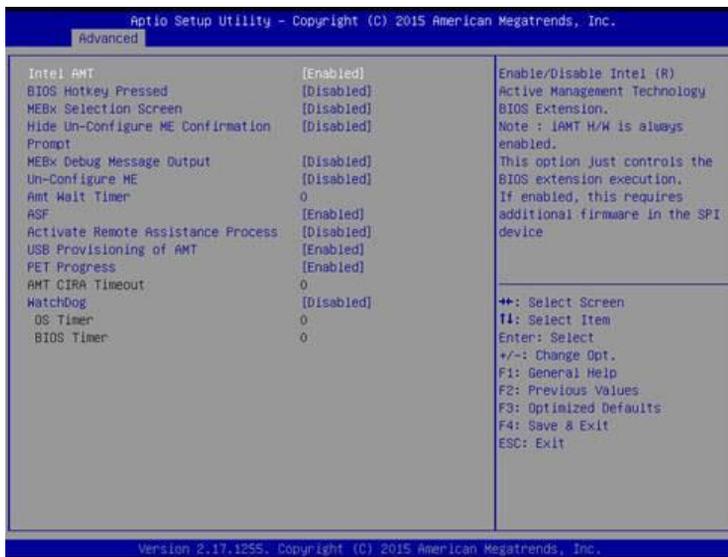
Intel AMT
Enable/Disable Intel® Active Management Technology BIOS Extension.
BIOS Hotkey Pressed
Enable/Disable BIOS hotkey press.
MEBx Selection Screen
Enable/Disable MEBx selection screen.
USB Provisioning of AMT
Enable/Disable of AMT USB Provisioning.
PET Progress
User can Enable/Disable PET Events progress to receive PET events or not.
Watch Dog
Enable/Disable WatchDog Timer.

PCH-FW Configuration

```
          Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
    Advanced

ME FW Version                    11.0.0.1191            Disabling this option will
ME Firmware Mode                 Normal Mode            cause ME not to unconfigure on
ME Firmware Type                 Full Sku Firmware      RTC clear
ME Firmware SKU                  Consumer SKU
PTT Capability / State           1 / 0
NFC Support                      Disabled
ME Unconfig on RTC Clear State   [Enabled]
ME State                         [Enabled]
▶ Firmware Update Configuration


                                                        ++: Select Screen
                                                        ↑↓: Select Item
                                                        Enter: Select
                                                        +/-: Change Opt.
                                                        F1: General Help
                                                        F2: Previous Values
                                                        F3: Optimized Defaults
                                                        F4: Save & Exit
                                                        ESC: Exit



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```

PCH-FW Configuration
This page display all information about system ME FW.
ME Unconfig on RTC Clear State
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 Parameters.

Embedded Controller Configuration

```
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    Advanced

EC Firmware Version              I2868X0006            Switch Backlight Enable
                                                       Polarity for Native or Invert
EC Hardware Monitor
CPU Temperature                  : +72°C/ +161°F
CPU FAN Speed                    : N/A
+VBAT                            : +2.970 V
+5VSB                            : +4.990 V
+12V                             : +12.158 V
Vcore                            : +0.900 V
Current                          : +1.250 A

Backlight Enable Polarity        [Native]
1st LVDS Backlight Control       [PWM]
Power Saving Mode                [Normal]            ++: Select Screen
  Deep Sleep delay time          10                 ↑↓: Select Item
Watch Dog Timer                  [Disabled]          Enter: Select
                                                     +/-: Change Opt.
                                                     F1: General Help
                                                     F2: Previous Values
                                                     F3: Optimized Defaults
                                                     F4: Save & Exit
                                                     ESC: Exit



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```

EC Hardware Monitor
This page display all information about system Temperature/Voltage/Current.
Backlight Enable Polarity
This item allows users to set backlight mode.
1st LVDS Backlight control
This item allows users to switch Backlight Control for PWM or DC mode.
Power Saving Mode
This item allows users to set board's power saving mode when off.
Deep Sleep delay time
Set delay time for Deep Sleep mode.
Watch Dog Timer
This item allows users to select EC watchdog timer.

Trusted Computing

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.

S5 RTC Wake Settings
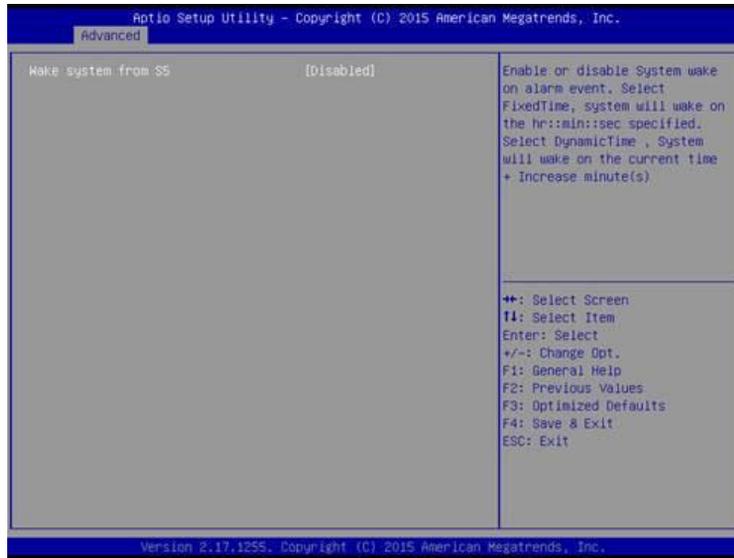
Enable or disable System wake on alarm event. Select FixedTime, system will wake on the hr::min::sec specified.

Serial Port Console Redirection
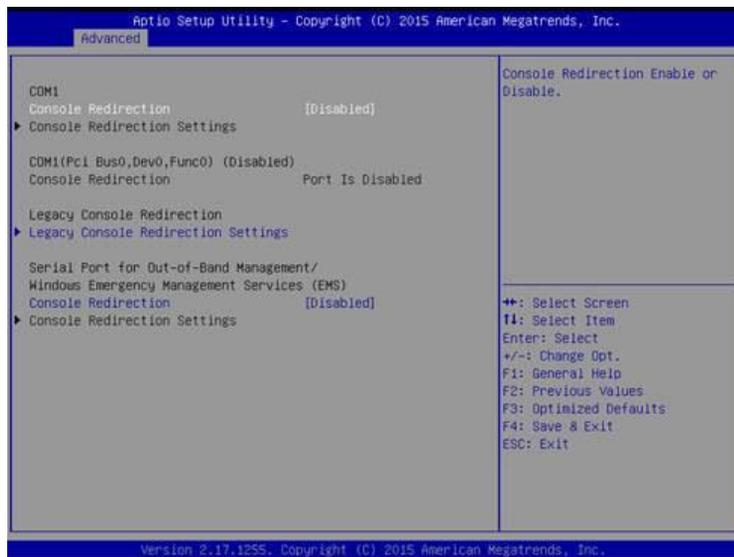
Console Redirection
This item allows users to enable or disable console redirection for Microsoft Windows Emergency Management Services (EMS).
Console Redirection
This item allows users to configuration console redirection detail settings.

CPU Configuration


```
           Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
  Advanced

  CPU Configuration                              ▲  Enabled for Windows XP and
                                                    Linux (OS optimized for
  Intel(R) Core(TM) i3-6100U CPU @ 2.30GHz          Hyper-Threading Technology)
  CPU Signature              406E3                   and Disabled for other OS (OS
  Microcode Patch            5C                      not optimized for
  Max CPU Speed              2300 MHz                Hyper-Threading Technology).
  Min CPU Speed              400 MHz                 When Disabled only one thread
  CPU Speed                  2200 MHz                per enabled core is enabled.
  Processor Cores            2
  Hyper Threading  Technology  Supported
  Intel VT-x Technology      Supported
  Intel SMX Technology       Not Supported
  64-bit                     Supported
  EIST Technology            Supported           ←→: Select Screen
  CPU C3 state               Supported           ↑↓: Select Item
  CPU C6 state               Supported           Enter: Select
  CPU C7 state               Supported           +/-: Change Opt.
  CPU C8 state               Supported           F1: General Help
  CPU C9 state               Supported           F2: Previous Values
  CPU C10 state              Supported           F3: Optimized Defaults
                                                 F4: Save & Exit
  L1 Data Cache              32 kB x 2           ESC: Exit
  L1 Code Cache              32 kB x 2
  L2 Cache                   256 kB x 2
  L3 Cache                   3 MB             ▼

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```

Hyper Threading Technology
This item allows users to enable or disable Intel? Hyper Threading technology.
Active Processor Cores
This item allows users to set how many processor cores should be active.
Intel Virtualization Technology
This item allows users to enable or disable the intel virtualization technology.
Hardware Prefetcher
This item allows users to enable or disable the hardware prefetcher feature.
Adjacent Cache Line Prefetch
This item allows users to enable or disable the adjacent cache line prefetch feature.
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™
Allows more than two frequency ranges to be supported.
Turbo Mode
Turbo Mode.
CPU C states
Enable or disable CPU C states.
CState Pre-Wake
Disable – to disable the CState Pre-Wake.

CPU Configuration

Hyper Threading Technology
This item allows users to enable or disable Intel? Hyper Threading technology.
Active Processor Cores
This item allows users to set how many processor cores should be active.
Intel Virtualization Technology
This item allows users to enable or disable the intel virtualization technology.
Hardware Prefetcher
This item allows users to enable or disable the hardware prefetcher feature.
Adjacent Cache Line Prefetch
This item allows users to enable or disable the adjacent cache line prefetch feature.
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™
Allows more than two frequency ranges to be supported.
Turbo Mode
Turbo Mode.
CPU C states
Enable or disable CPU C states.
CState Pre-Wake
Disable – to disable the CState Pre-Wake.

Package C State limit
Package C State limit.
SW Guard Extension (SGX)
Enable/Disable Software Guard Extensions (SGX).

Intel TXT Information
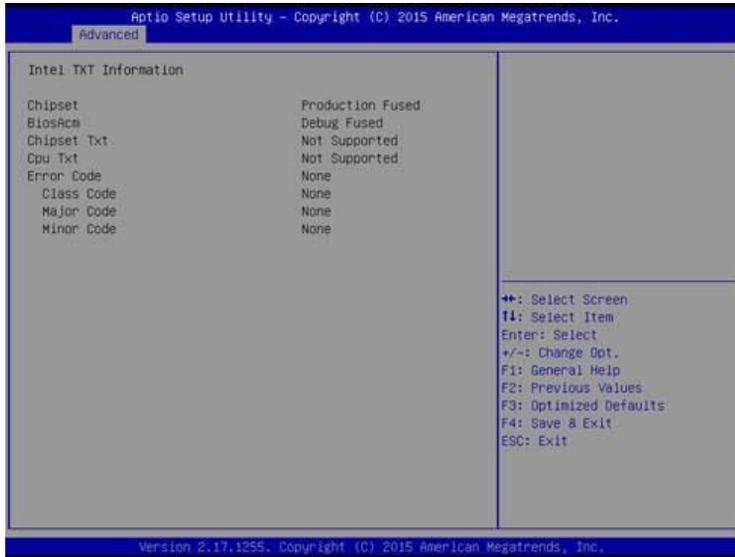
Intel TXT Information
Display Intel TXT information.

SATA Configuration

SATA Controller
Enable / Disable SATA Device.
SATA Mode Selection
Determine how SATA controller operate.
Aggressive LPM Support
Enable PCH to aggressively enter link power state.
Port 1 / Port 2 / mSATA Port
Enable / Disable Serial ATA Port 1 / Port 2 / mSATA Port.
SATA Device type
Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.

Network Stack Configuration

Enable/Disable UEFI Network Stack.

CSM Configuration

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Advanced

| Compatibility Support Module Configuration | | Enable/Disable CSM Support. |

CSM Support   [Enabled]

CSM16 Module Version   07.79

GateA20 Active   [Upon Request]
INT19 Trap Response   [Immediate]

Boot option filter   [UEFI only]

Option ROM execution

Network   [Do not launch]
Storage   [UEFI]
Video   [UEFI]
Other PCI devices   [UEFI]

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

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CSM Support
Enable/Disable CSM Support.
GateA20 Active
UPON REQUEST - GA20 can be disabled using BIOS services. ALWAYS - do not allow disabling GA20; this option is useful when any RT code is executed above 1MB.
Option ROM Message
BIOS Set display mode for Option ROM.
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.

USB Configuration


```
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    Advanced

 USB Configuration                                    Enables Legacy USB support.
                                                      AUTO option disables legacy
 USB Module Version         13                         support if no USB devices are
                                                      connected. DISABLE option will
 USB Controllers:                                     keep USB devices available
     1 XHCI                                           only for EFI applications.
 USB Devices:
     1 Drive, 2 Keyboards, 1 Mouse, 1 Hub

 Legacy USB Support          [Enabled]
 XHCI Hand-off               [Disabled]
 USB Mass Storage Driver Support  [Enabled]
 Port 60/64 Emulation        [Disabled]

 USB hardware delays and time-outs:                   ↔: Select Screen
 USB transfer time-out       [20 sec]                 ↑↓: Select Item
 Device reset time-out       [20 sec]                 Enter: Select
 Device power-up delay       [Auto]                   +/-: Change Opt.
                                                      F1: General Help
 Mass Storage Devices:                                F2: Previous Values
 Generic USB Flash Disk PMAP [Auto]                   F3: Optimized Defaults
                                                      F4: Save & Exit
                                                      ESC: Exit

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```
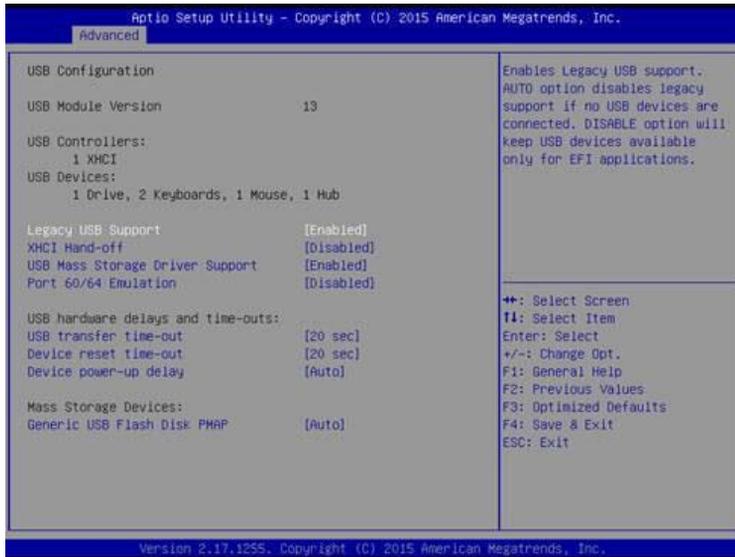
Legacy USB Support
Enables Legacy USB support. AUTO option disables legacy support if no USB
devices are connected. DISABLE option will keep USB devices available only for EFI
applications.
XHCI Hand-off
This is a workaround for OSes without XHCI hand-off support. The XHCI ownership
change should be claimed by XHCI driver.
USB Mass Storage Driver Support
Enable/Disable USB Mass Storage Driver Support.
Port 60/64 Emulation
Enables I/O port 60h/64h emulation support. This should be enabled for the complete
USB keyboard legacy support for non-USB aware OSes.
USB transfer time-out
Time-out value for control, Bulk, and interrupt transfers.
Device reset time-out
USB mass storage device start unit command time-out.
Device power-up delay
Maximum time the device will take before it properly reports itself to the Host Controller.
'Auto' uses default value: for a Root port it is 100 ms, for a Hub port the delay is
taken from Hub descriptor.

IT8768E Super I/O Configuration

Serial Port 1 Configuration
Set Parameters of Serial Port 1 (COMA).
Serial Port 2 Configuration
Set Parameters of Serial Port 2 (COMB).

Chipset
Select the Chipset tab from the 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.
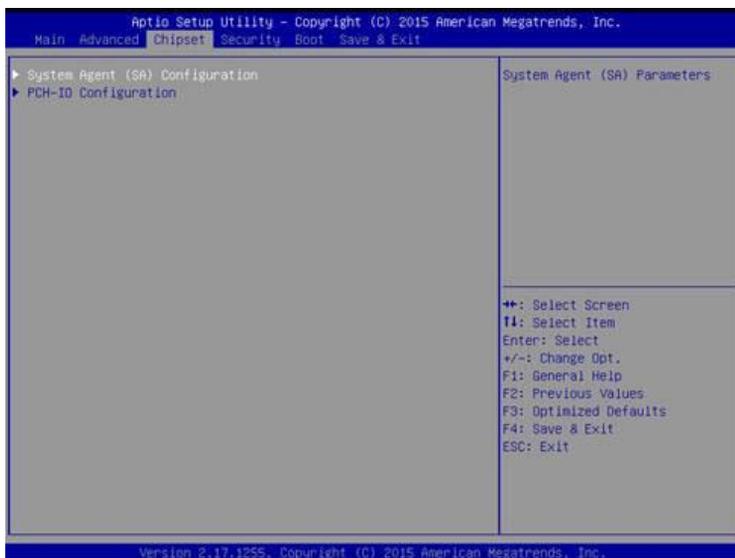
Graphics Configuration

Graphics Turbo IMON Current
Graphics turbo IMON current values supported.
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 DVMT 5.0 Total Graphic Memory size used by the Internal Graphics Device.
PM Support
Enable/Disable PM Support.
PAVP Enable
Enable/Disable PAVP.

Memory Configuration Options


```
              Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
                Chipset

  Memory Configuration                                    Maximum Memory Frequency
                                                          Selections in Mhz.
  Memory RC Version                1.8.0.1
  Memory Frequency                 1600 MHz
  Total Memory                     4096 MB
  VDD                              1350
  DIMM#0                           Not Present
  DIMM#2                           4096 MB
  Memory Timings (tCL-tRCD-tRP-tRAS)   11-28

  Maximum Memory Frequency         [Auto]
  Max TOLUD                        [Dynamic]
  SA GV                            [Enabled]
  SA GV Low Freq                   [MRC default]      ++: Select Screen
  Energy Performance Gain          [Disabled]         ↑↓: Select Item
  EPG DIMM Idd3N                   26                 Enter: Select
  EPG DIMM Idd3P                   11                 +/-: Change Opt.
  Memory Remap                     [Enabled]          F1: General Help
                                                      F2: Previous Values
                                                      F3: Optimized Defaults
                                                      F4: Save & Exit
                                                      ESC: Exit


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```

Maximum Memory Frequency
Maximum Memory Frequency Selections in Mhz.
Max TOLUD
Maximum Value of TOLUD.
SA GV
System Agent Geyserville.
SA GV Low Freq
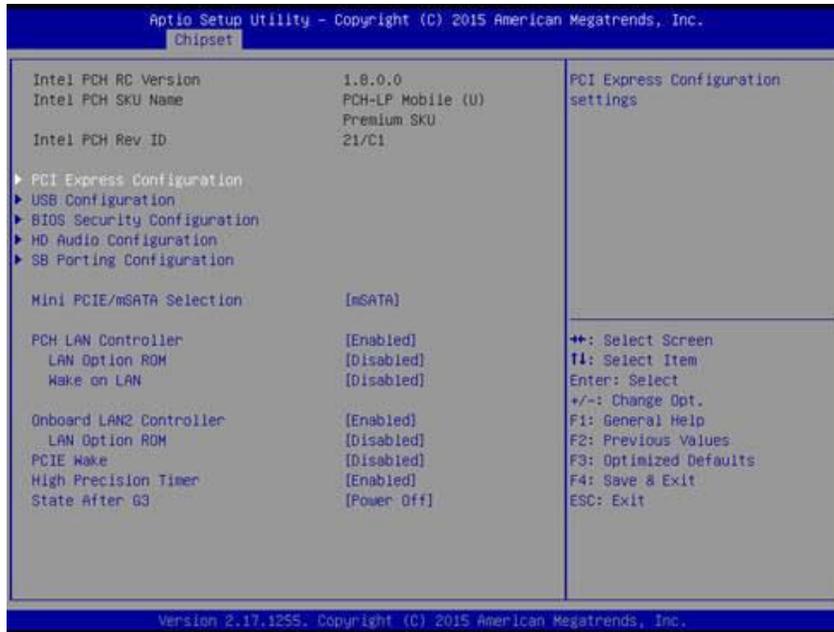System Agent Geyserville. Set frequency for low point.
Energy Performance Gain
Enable/disable Energy Performance Gain.
Memory Remap
Enable/Disable Memory Remap above 4GB.

PCH-IO Configuration

USB Configuration
USB Configuration Settings.
BIOS Security Configuration
BIOS Security Configuration Settings.
HD Audio Configuration
HD Audio Susbsystem Configuration Settings.
SB Porting Configuration
SB Porting Configuration Settings.
Mini PCIE/mSATA Selection
Select to enable Mini PCIE or mSATA for connector (CN25).
PCH LAN Controller
Enable or Disable onboard NIC.
LAN Option ROM
Enable or Disable onboard LAN's PXE option ROM.
Wake on LAN
Enable or Disable Integrated LAN to wake the system from S5.
Onboard LAN2 Controller
Enable or Disable onboard NIC.
LAN Option ROM
Enable or Disable onboard LAN's PXE option ROM.
PCIE Wake
Enable or Disable PCIE to wake the system from S5.
High Precision Timer
Enable or Disable High Precision Event Timer.
State After S3
Specify what state to go to when power is re-applied after a power failure (G3 state).

Boot


```
                Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
          Main  Advanced  Chipset  Security  Boot  Save & Exit

          Boot Configuration                              Number of seconds to wait for
          Setup Prompt Timeout          1                 setup activation key.
          Bootup NumLock State          [On]              65535(0xFFFF) means indefinite
          Quiet Boot                    [Disabled]        waiting.

          Boot Option Priorities
          Boot Option #1                [UEFI: Generic USB
                                        Flash Disk PMAP,
                                        Partition 1]
          Boot Option #2                [UEFI: Built-in EFI
                                        Shell]
          Fast Boot                     [Disabled]

          New Boot Option Policy        [Default]         ++: Select Screen
                                                          ↑↓: Select Item
                                                          Enter: Select
                                                          +/-: Change Opt.
                                                          F1: General Help
                                                          F2: Previous Values
                                                          F3: Optimized Defaults
                                                          F4: Save & Exit
                                                          ESC: Exit

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```

Setup Prompt Timeout
Number of seconds that the firmware will wait before initiating the original default boot selection. A value of 0 indicates that the default boot selection is to be initiated immediately on boot. A value of 65535(0xFFFF) indicates that firmware will wait for user input before booting. This means the default boot selection is not automatically started by the firmware.
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.