SCH200-X1

IEC-61850-3, IEEE-1613 1U Fanless Power Automation Computer

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

Statement

Revision History

Revision	Date (yyyy/mm/dd)	Changes
V1.0	2020/06/10	First release
V1.1	2020/07/10	Update the LAN module for optional.

Packing list

Item	Description	Q'ty
1	SCH200-X1 Embedded System	1
2	Driver CD	1
3	3-pin Terminal Block Power Connector (For DC Power Input)	1

If any of the above items is damaged or missing, please contact your local distributor.

Perfectron RoHS Environmental Policy and Status Update

Perfectron is a global citizen for building the digital infrastructure. We are committed to providing green products and services, which are compliant with

European Union RoHS (Restriction on Use of Hazardous Substance in Electronic Equipment) directive 2011/65/EU, to be your trusted green partner and to protect our environment.

In order to meet the RoHS compliant directives, Perfectron has established an engineering and manufacturing task force to implement the introduction of green products. The task force will ensure that we follow the standard Perfectron development procedure and that all the new RoHS components and new manufacturing processes maintain the highest industry quality levels for which Perfectron are renowned.

The model selection criteria will be based on market demand. Vendors and suppliers will ensure that all designed components will be RoHS compliant

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Chapter 1: Product Introduction

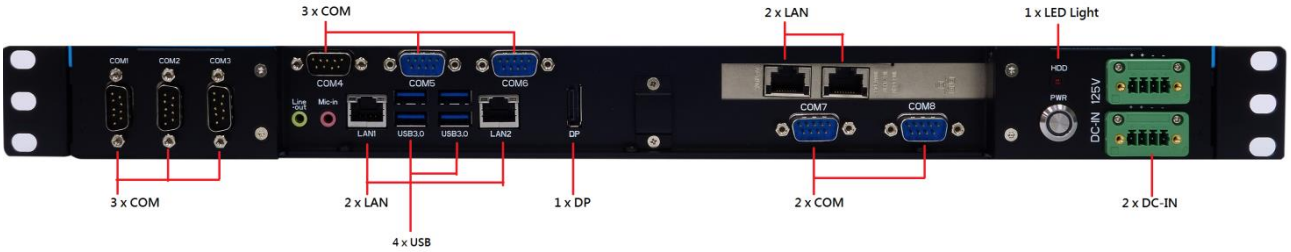
1.1 Specifications

System	
CPU	Socket LGA 1151 for Intel® Core i7/i5/i3/Celeron® (Supports up to 65W) Intel®
Memory type	2 x SO-DIMM DDR4 2400/2666 MHz up to 64GB
Chipset	Intel® Q370 Chipset
Display	
Display Port HDMI	Resolution up to 4096 x 2304 60@Hz Resolution up to 4096 x 2160 30@Hz
Storage	
M.2	Up to 1TB SSD RAID 0/1 (Optional)
Ethernet	
Ethernet	2 x 100Base-FX port supported 2 x 100Base-TX port supported
Rear I/O	
Display	1 x Display port 1 x HDMI port
Ethernet	4 x RJ45 (2 x 10Gb/s SFP+ or 4 x 1Gb/s Base-T RJ45 , optional)
Audio	2 x 3.5mm Audio Jacks (1 x MIC, 1 x Line-Out)
USB	4 x USB 3.0
DC-IN	2 x DC-in (Redundant Optional)
Button	1 x Power Button w/Indicator LED
COM	8 x ports (6 x RS-232/422/485 support, 2 x RS-232)
Power Requirement	
Power Input	125V DC-IN (this version)
Applications, Operating System	
Applications	Energy/Smart Grid/Power Plant Management, Intelligent Automation and manufacturing applications
Operating System	Windows 10 64Bit ,Windows server 2012 r2, Windows server 2016 Ubuntu13.04, Ubuntu13.10, Ubuntu14.04, Fedora20

Physical	
Dimension	450 x 482 x 44 mm (W x D x H)
Operation Temp.	-20°C to 60°C
Storage Temp.	-40°C to 85°C
Relative Humidity	5% to 95%, non-condensing
System Design	Conduction Cooing
Heatsink	Aluminum Alloy, Corrosion Resistant
Finish	Anodic aluminum oxide

Environment		
MIL-STD-810G Test		
Operating Tests		
Low Temperature	Method 502.5 Procedure 2	exposure(24h x 3 cycle) at -40℃ min.
High Temperature	Method 501.5 Procedure 2	60ºC for 2 hours after temperature stabilization.
Humidity	Method 507.5 Procedure 2	RH -95%. Test cycles: ten 24-hours , functional test after 5th and 10th cycles
Vibration	Method 514.6 Category 20	10—500Hz 1.04Grms Test duration: 1 hours x 3 axis (total 3 hours)
Shock	Method 516.6 Procedure 1	20G, 11mSec, 3 per axis
Non-Operating Tests		
Low Temperature Storage	Method 502.5	exposure(24h x 7 cycle) at -40℃ min.
High Temperature Storage	Method 501.5 Procedure 1	71ºC for 2 hours after temperature stabilization.
Vibration	Method 514.6 Category 24	200 to 2000Hz Test duration: One hour per axis; rms = 7.7 gs
Shock	Method 516.6 Procedure V	40G, 11ms, 3 pluse.

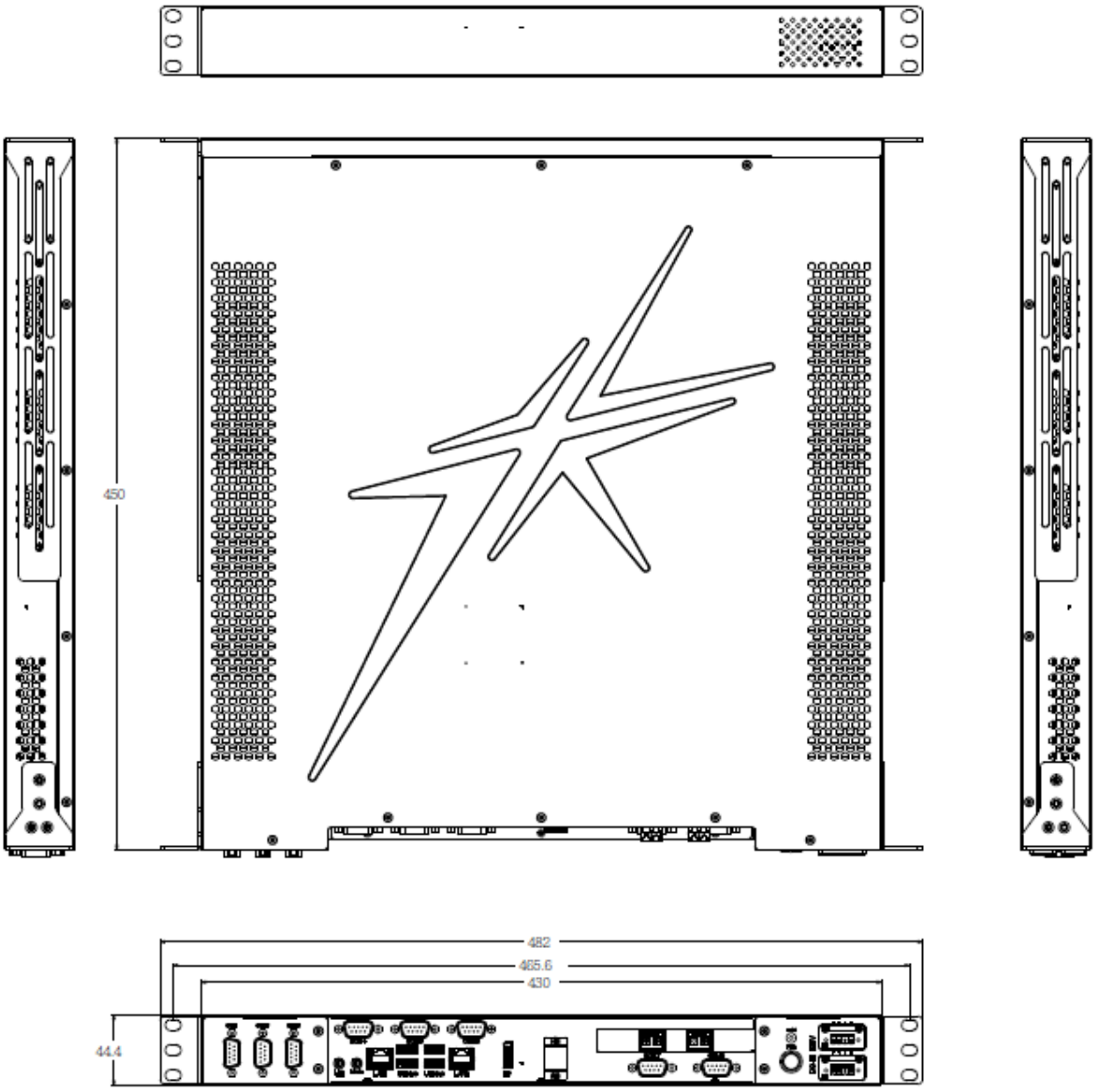
1.2 Front Panel i/o Placement



1	COM x 8
2	USB 3.0 x 4
3	LAN x 4
4	Display Port x 1
5	Audio Jack (Mic-in, Line-out)
6	Power Button with LED light x1
7	DC-IN x 2

*Optional:
Intel 82599ES Lan card, 2*10Gb/s SFP+, Gen2 PCI-e x8
Intel I350-AM4 Lan card, 4*1Gb/s Base-T RJ45, Gen2 PCI-ex8

1.3 Mechanical Dimension



Chapter 2: Front Panel Connector Pin Definitions

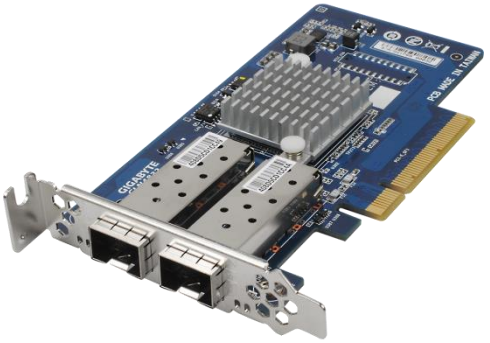
2.1 Front Panel Connector

COM	DEFINITION
COM1	RS-232/422/485 via mother Board
COM2	RS-232/422/485 via mother board
COM3	RS-232 via mother board
COM4	RS-232 via mother board
COM5	RS-232/422/485
COM6	RS-232/422/485
COM7	RS-232/422/485
COM8	RS-232/422/485

2.2 Front Panel Connector: Optional LAN Card Module

OPTIONAL 1: Intel® 82599ES 10Gb/s 2-port LAN Card

- Intel® 82599ES
- 2 x SFP+ LAN ports
- Supports 10Gb/s per port
- PCIe x8 (Gen2 x8 bus)

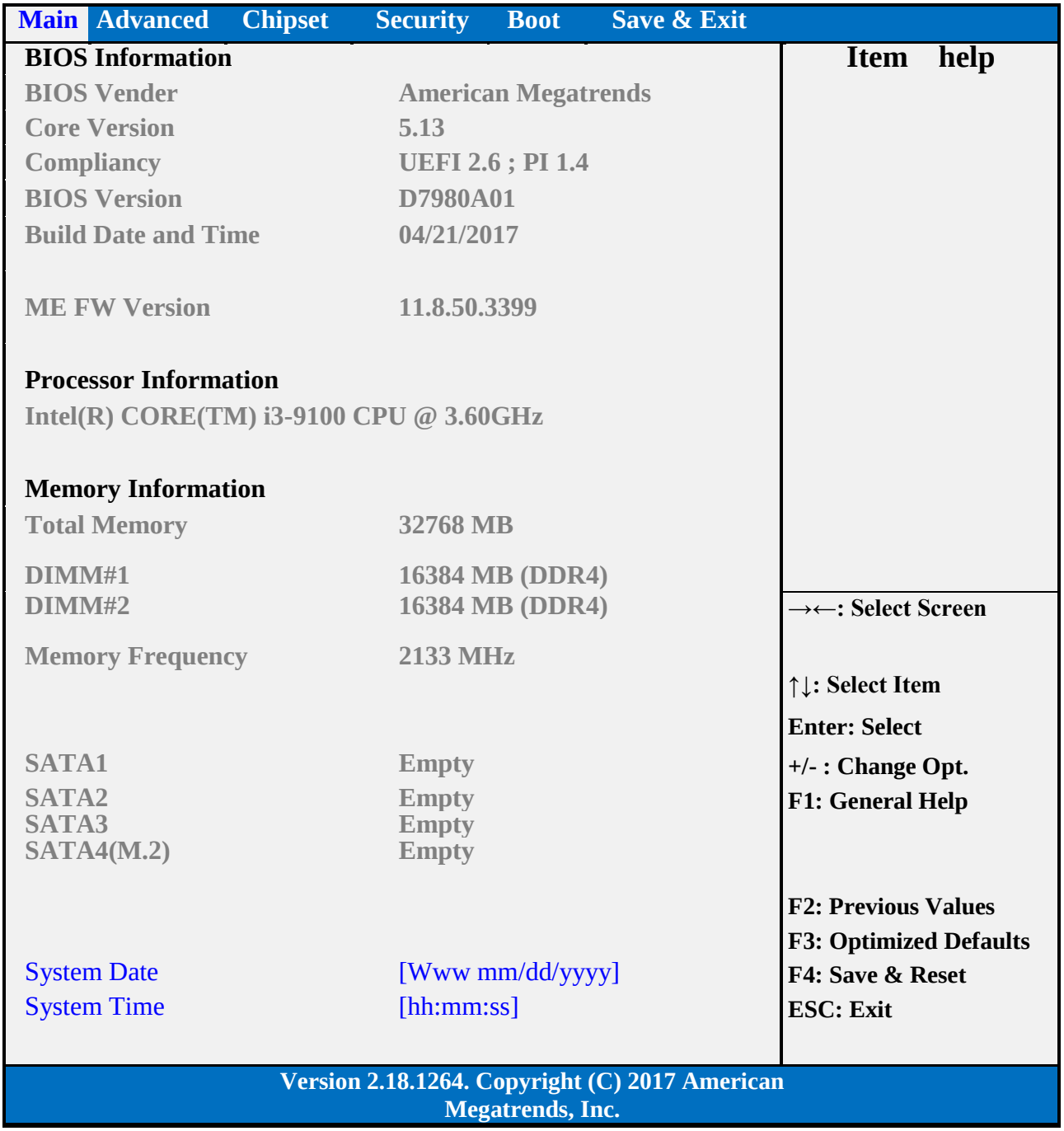


OPTIONAL 2: Intel® I350-AM4 1Gb/s 4-port LAN Card

- Intel® I350-AM4
- 4 x 1000BASE-T RJ45 LAN ports
- Supports 1Gb/s, 100Mb/s per port
- PCIe x4 (Gen2 x4 bus)

Chapter 3: BIOS Specification

3.1 MAIN PAGE



Field Name	**BIOS Vender**
Default Value	American Megatrends
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Core Version**
Default Value	5.12
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Compliancy**
Default Value	UEFI 2.6 ; PI 1.4
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**BIOS Version**
Default Value	Display the version of the BIOS
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Build Date and Time**
Default Value	Display build date of the BIOS
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**ME FW Version**
Value	ME Firmware Version.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Processor Information**
Value	Display the installed CPU brand.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Total Memory**
Value	Display the installed memory size.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**DIMM#[1:2]**
Help	Memory in the DIMM.
Comment	This field is not selectable. There is no help text associated with it.

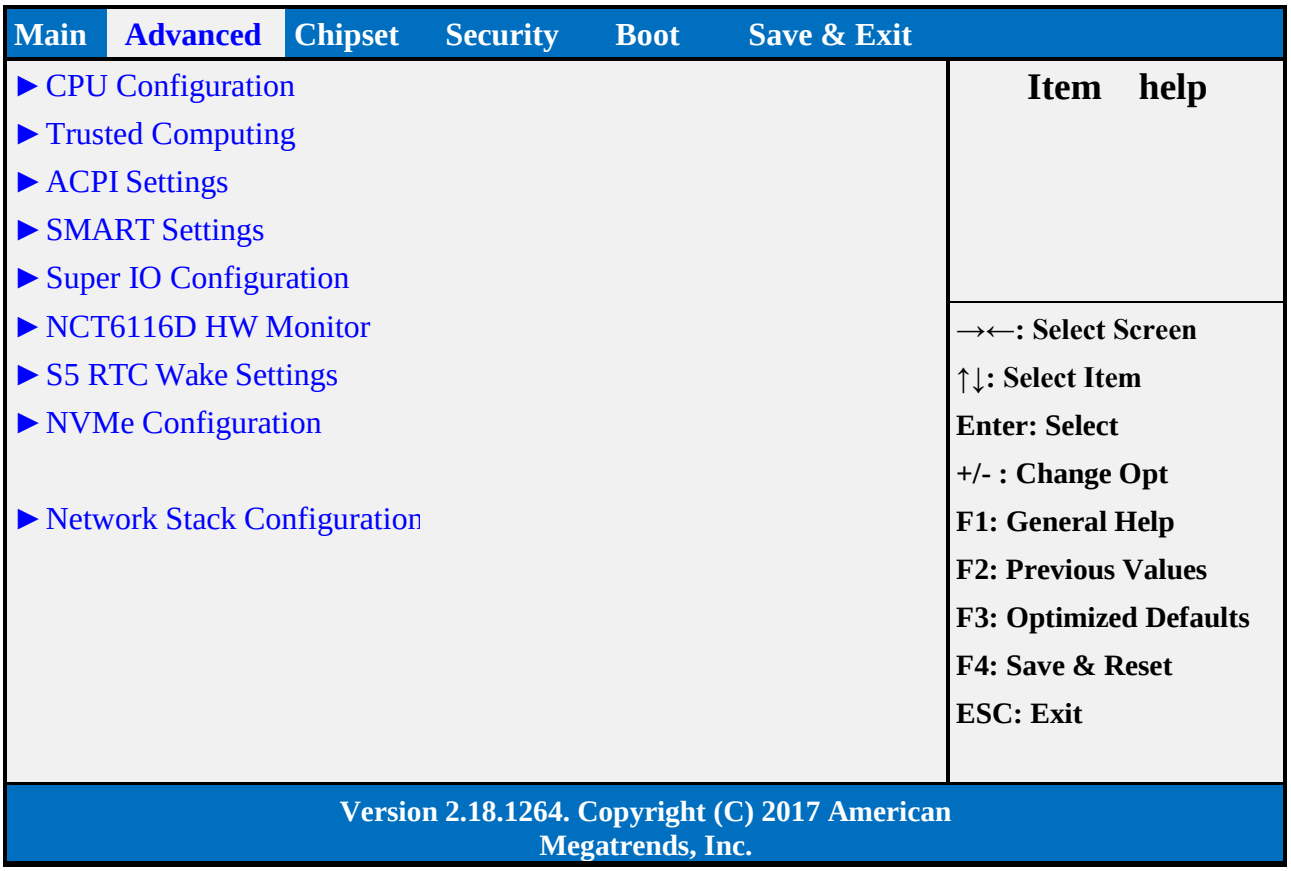
Field Name	**Memory Frequency**
Value	Display the installed memory frequency.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**SATA1**
Value	Display the installed SATA port device.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**System Date**
Default Value	[Www mm/dd/yyyy]
Possible Value	Www : Mon/Tue/Wed/Thu/Fri/Sat/Sun mm : 1-12 dd : 1-31 yyyy : 1998-9999
Help	Set the Date. Use Tab to switch between Date elements.

Field Name	**System Time**
Default Value	[hh :mm :ss]
Possible Value	hh : 0-23 mm : 0-59 ss : 0-59
Help	Set the Time. Use Tab to switch between Time elements.

3.2 ADVANCED PAGE



Field Name	**CPU Configuration**
Help	CPU Configuration Parameters.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Trusted Computing**
Help	Trusted Computing Settings
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**ACPI Settings**
Help	System ACPI Parameters.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**SMART Settings**
Help	System SMART Settings.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Super IO Configuration**
Help	System Super IO Chip Parameters.
Comment	Press Enter when selected to go into the associated Sub-Menu.

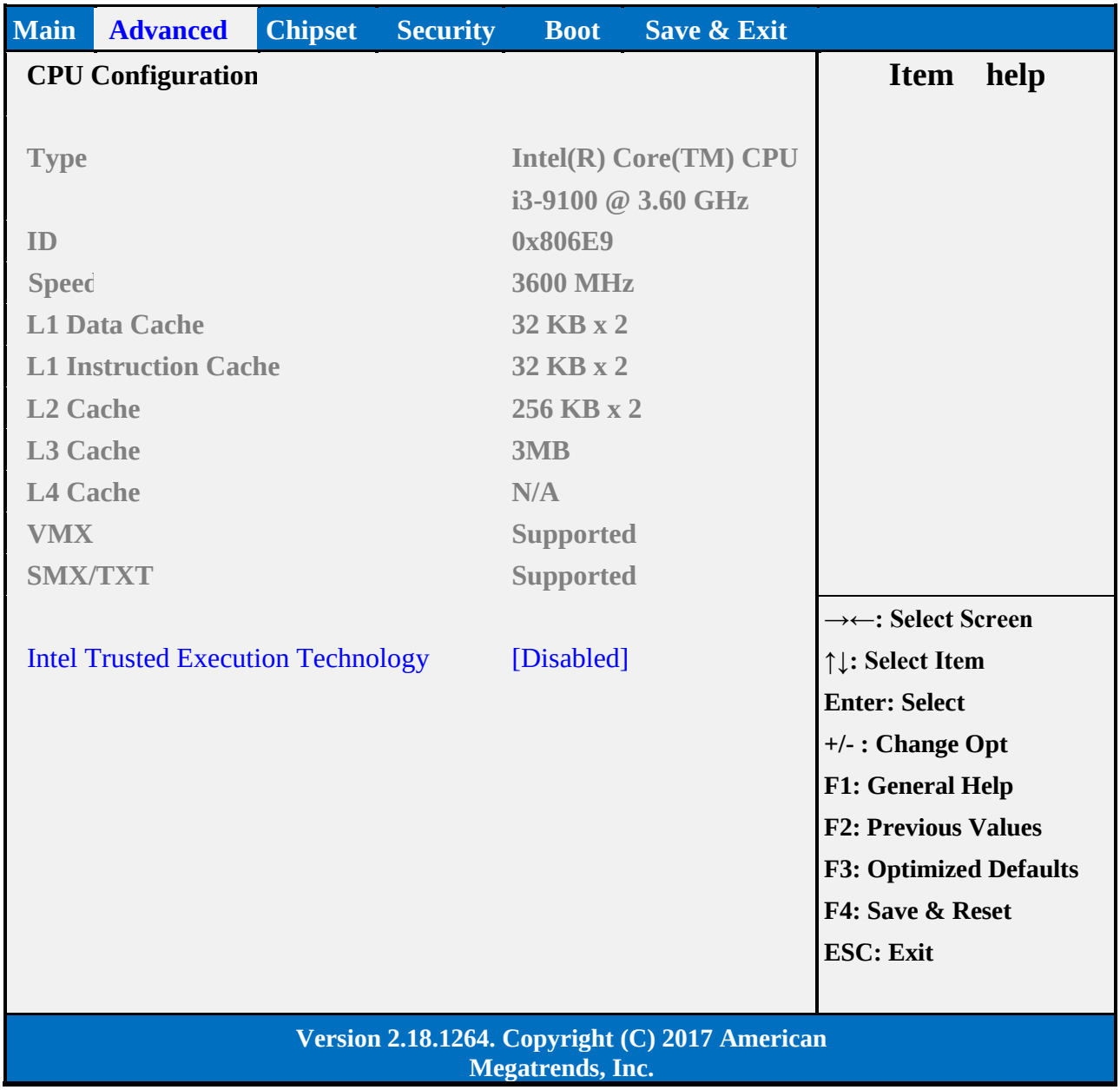
Field Name	**NCT6116D HW Monitor**
Help	Monitor hardware status
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**S5 RTC Wake Settings**
Help	Enable system to wake from S5 using RTC alarm.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Network Stack Configuration**
Help	Network Stack Settings.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**NVMe Configuration**
Help	NVMe Device Options Setting.
Comment	Press Enter when selected to go into the associated Sub-Menu.

3.1.1 CPU CONFIGURATION



Field Name	**Type**
Default Value	[Intel CPU Brand String]
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**ID**
Default Value	Displays CPU Signature
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Speed**
Default Value	Displays the CPU Speed
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**L1 Data Cache**
Default Value	L1 Data Cache Size
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**L1 Instruction Cache**
Default Value	L1 Code Cache Size
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**L2 Cache**
Default Value	L2 Cache Size
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**L3 Cache**
Default Value	L3 Cache Size
Comment	This field is not selectable. There is no help text associated with it.

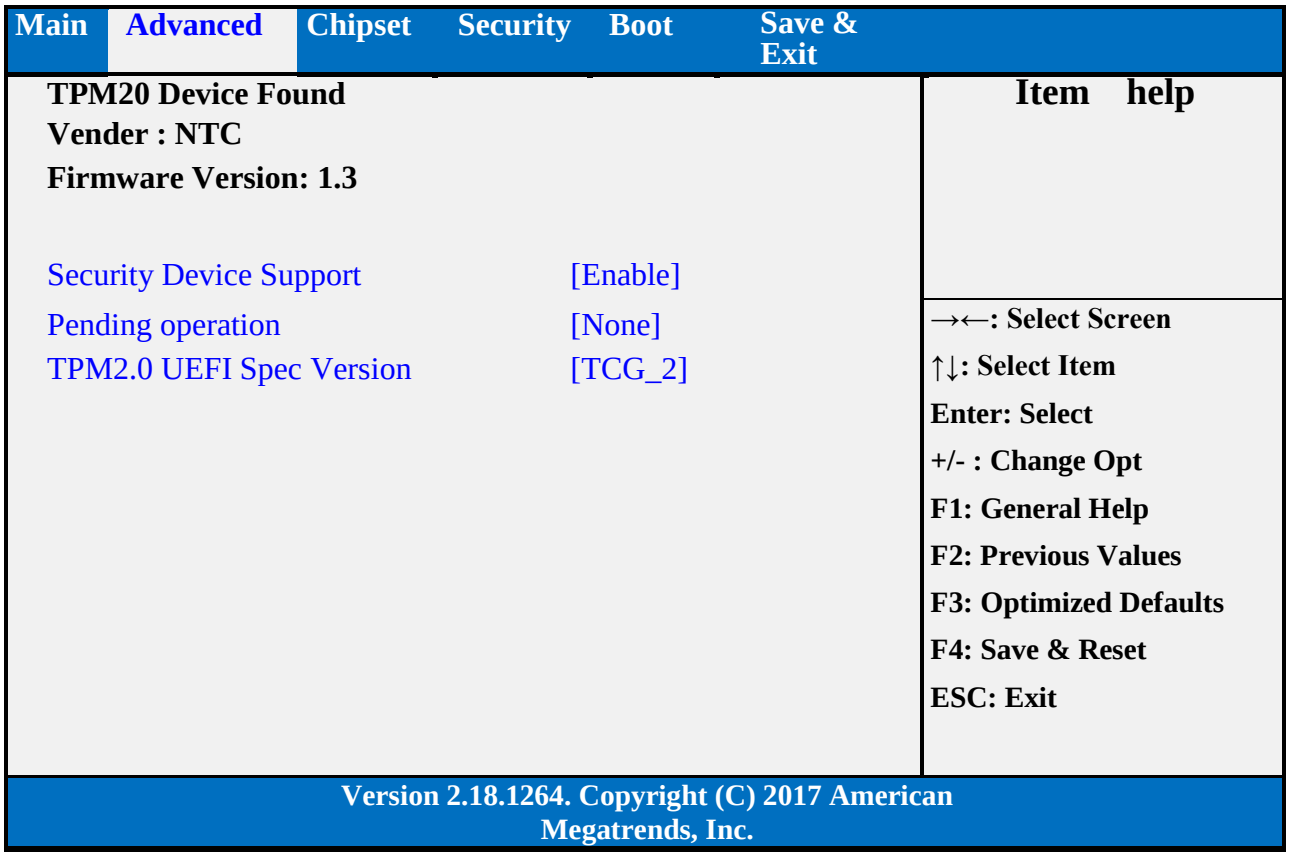
Field Name	**L4 Cache**
Default Value	L4 Cache Size
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**VMX**
Default Value	VMX Supported or Not
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**SMX/TXT**
Default Value	SMX/TXT Supported or Not
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Intel Trusted Execution Technology(Dependent on dTPM enable)**
Default Value	[Disabled]
Possible Value	Enabled Disabled
Help	Enables utilization of additional hardware capabilities provided by Intel (R) Trusted Execution Technology. Changes require a full power cycle to take effect.

3.1.2 TRUSTED COMPUTING (OPTIONAL)

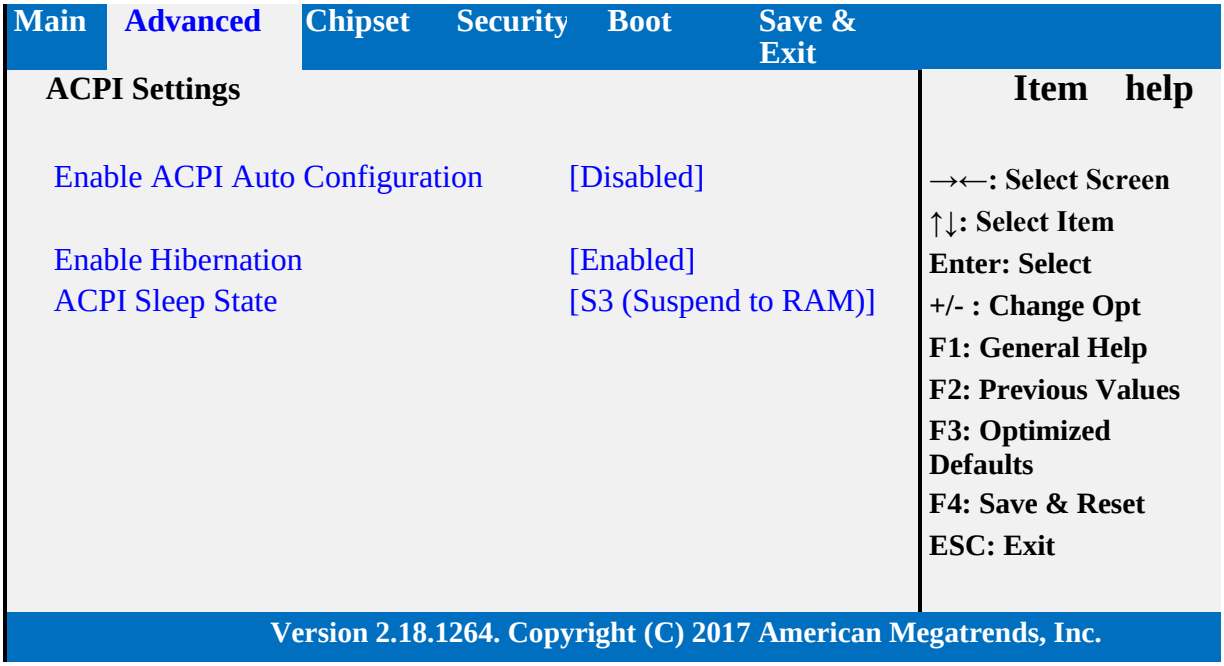


Field Name	**Security Device SUPPORT**
Default Value	[Enable]
Possible Value	Enable Disable
Help	Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

Field Name	**Pending operation**
Default Value	[None]
Possible Value	None TPM Clear
Help	Schedule an Operation for the Security Device. NOTE: Your Computer will reboot during restart in order to change State of Security Device.

Field Name	**TPM2.0 UEFI Spec Version**
Default Value	[TCG_2]
Possible Value	TCG_1_2 TCG_2
Help	Select the TCG2 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.

3.2.3 ACPI SETTINGS

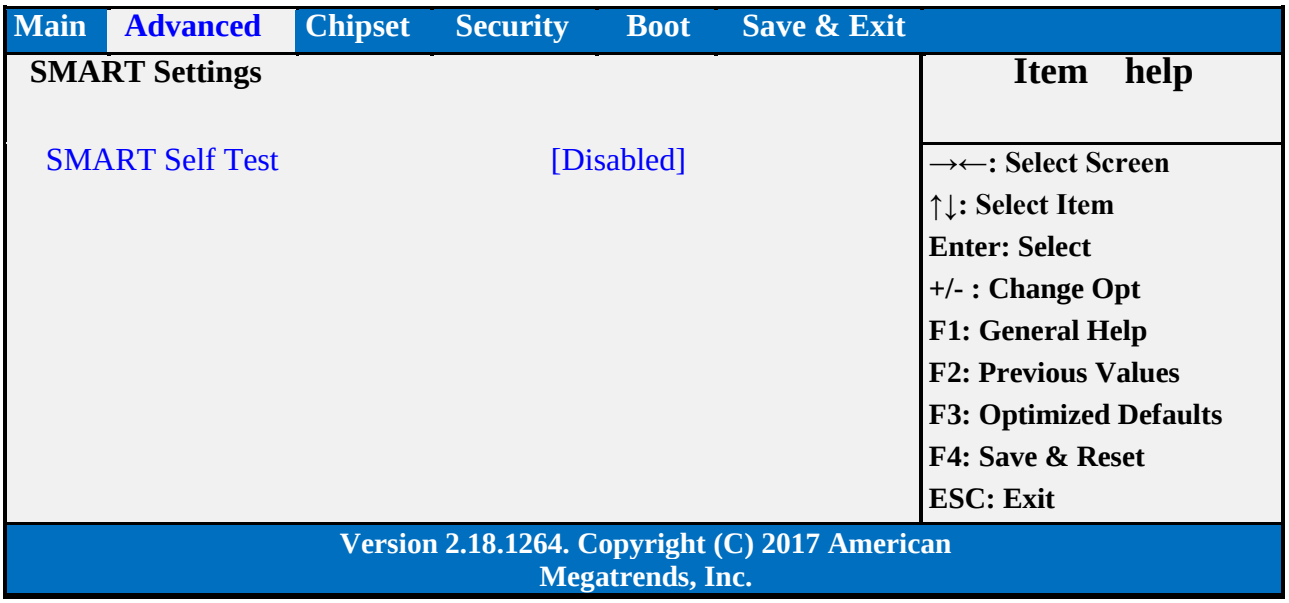


Field Name	**Enable ACPI Auto Configuration**
Default Value	[Disabled]
Possible Value	Enabled Disabled
Help	Enables or Disables BIOS ACPI Auto Configuration.

Field Name	**Enable Hibernation**
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some operating systems.

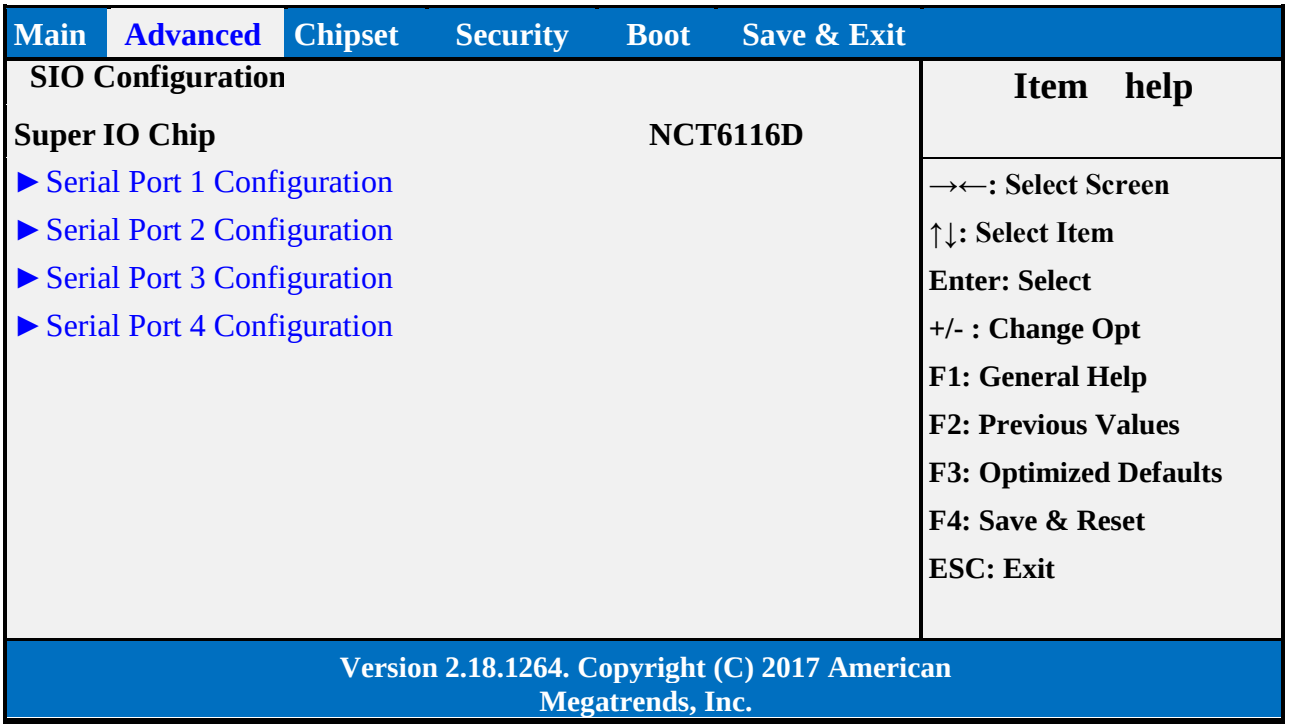
Field Name	**ACPI Sleep State**
Default Value	[S3 (Suspend to RAM)]
Possible Value	Suspend Disabled S3 (Suspend to RAM)
Help	Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.

3.2.4 SMART SETTINGS



Field Name	**SMART Self Test**
Default Value	[Disabled]
Possible Value	Disabled Enabled
Help	Run SMART Self Test on all HDDs during POST.

3.2.5 SUPER IO CONFIGURATION



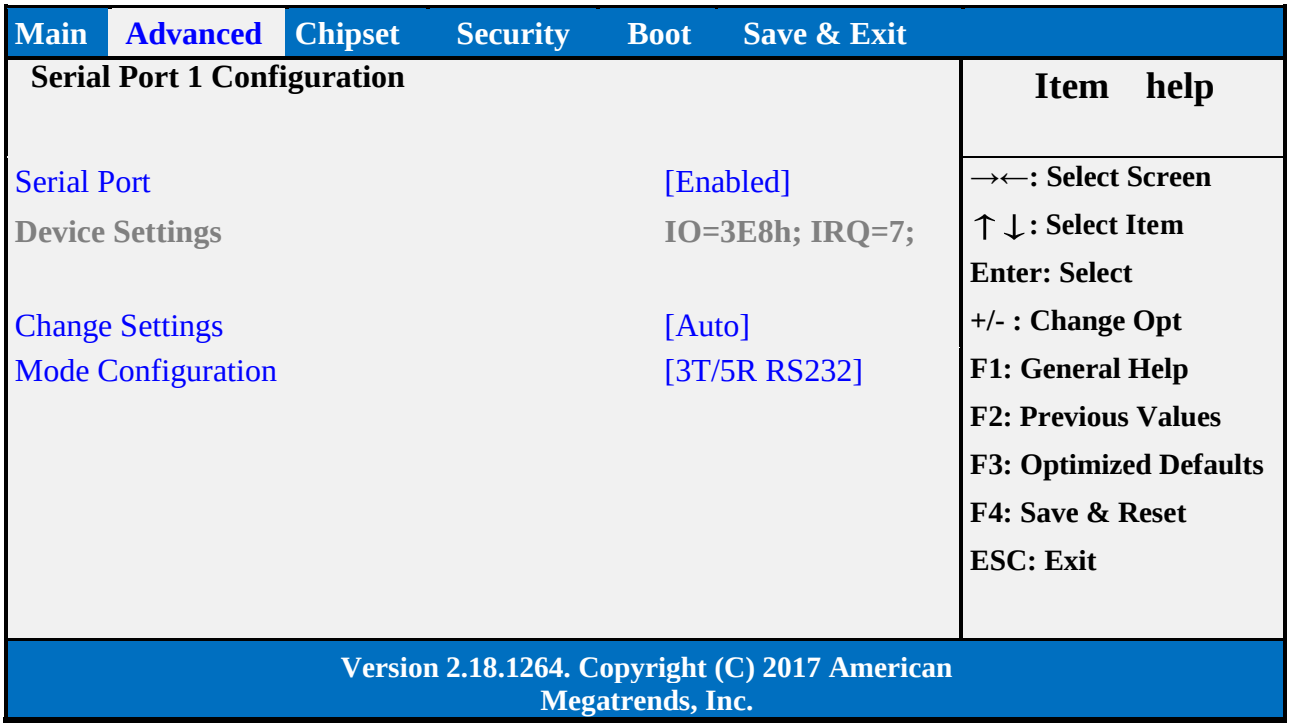
Field Name	**Serial Port 1 Configuration**
Help	Set Parameters of Serial Port 1 (COMA)
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Serial Port 2 Configuration**
Help	Set Parameters of Serial Port 2 (COMB)
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Serial Port 3 Configuration**
Help	Set Parameters of Serial Port 3 (COMC)
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Serial Port 4 Configuration**
Help	Set Parameters of Serial Port 4 (COMD)
Comment	Press Enter when selected to go into the associated Sub-Menu.

3.2.5.1 Serial Port 1 Configuration



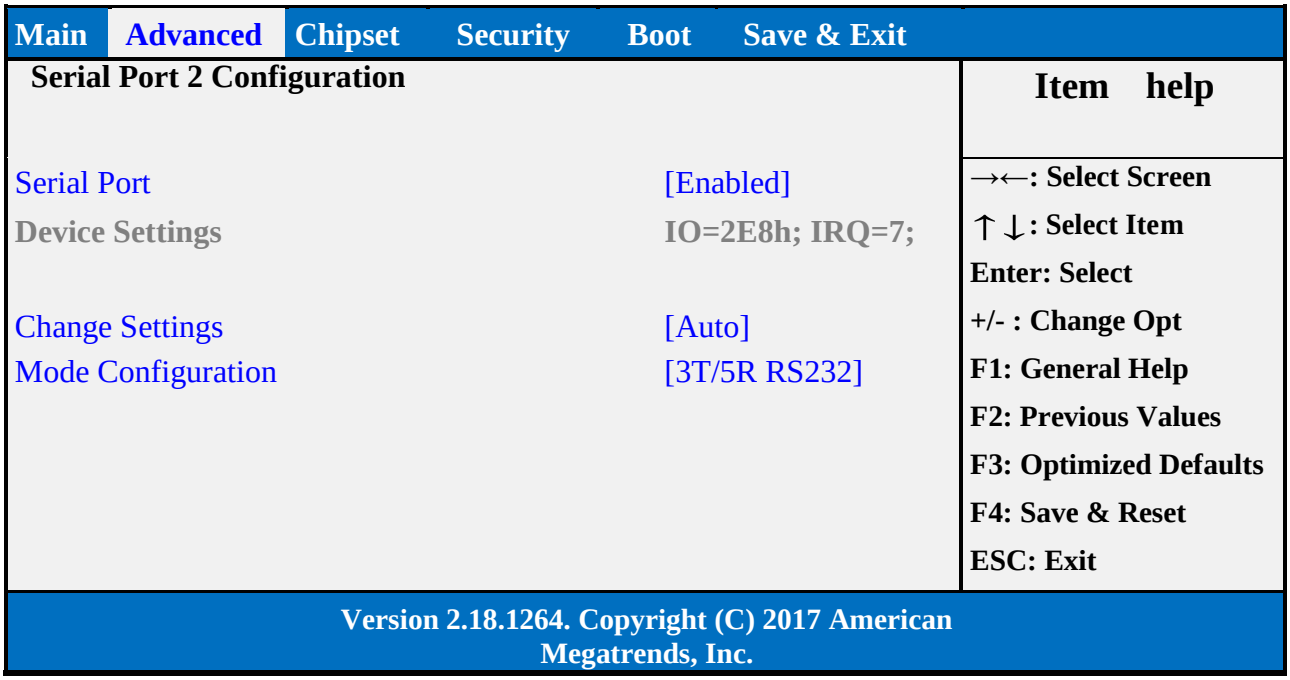
Field Name	**Serial Port**
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable or Disable Serial Port(COM)

Field Name	**Device Settings**
Default Value	Device Super IO COM1 Address and IRQ.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Change Settings**
Default Value	[Auto]
Possible Value	Auto IO=3E8h; IRQ=7; IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2F0h; IRQ=3,4,5,6,7,9,10,11,12; IO=2E0h; IRQ=3,4,5,6,7,9,10,11,12;
Help	Select an optimal settings for Super IO Device

Field Name	**Mode Configuration**
Default Value	[3T/5R RS232]
Possible Value	1T/1R RS422 3T/5R RS232 1T/1R RS485 TX ENABLE Low Active
	1T/1R RS485 with termination resistor TX ENABLE Low Active Disabled
Help	Configure serial port as RS232/RS422/RS485.

- **3.2.5.2 Serial Port 2 Configuration**



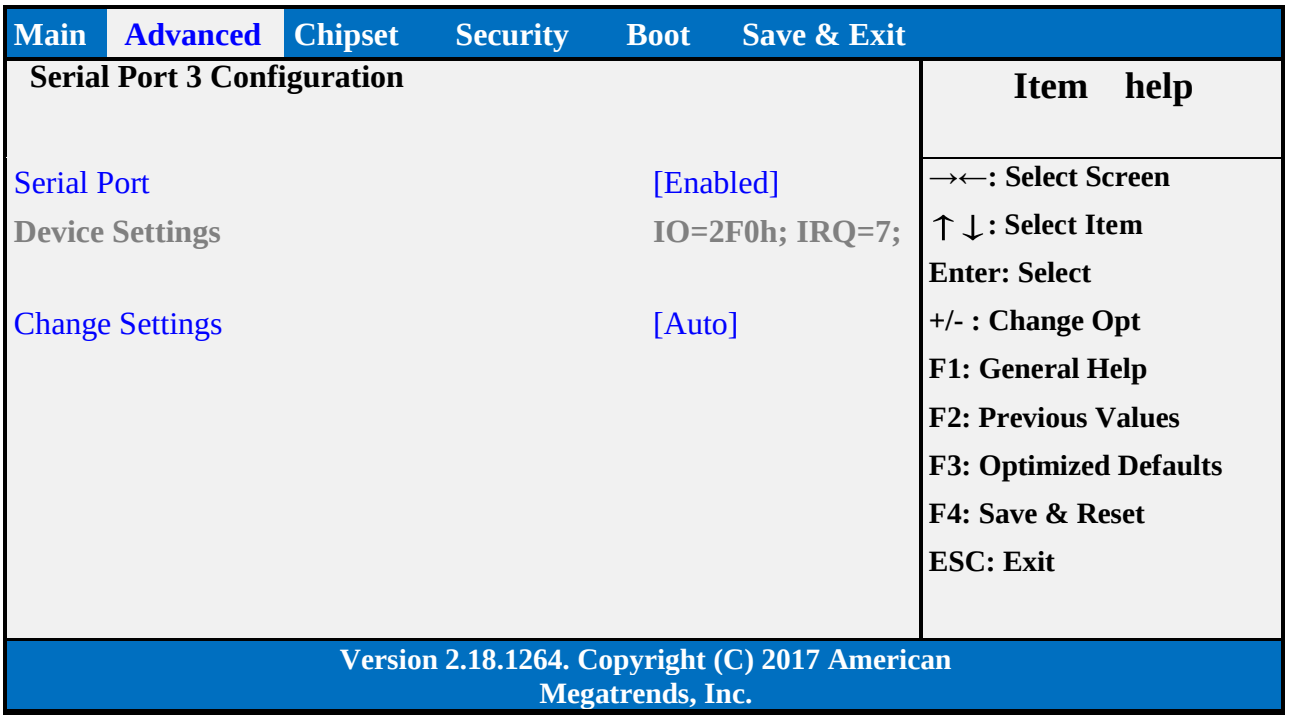
Field Name	**Serial Port**
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable or Disable Serial Port(COM)

Field Name	**Device Settings**
Default Value	Device Super IO COM2 Address and IRQ.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Change Settings**
Default Value	[Auto]
Possible Value	Auto IO=2E8h; IRQ=7; IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2F0h; IRQ=3,4,5,6,7,9,10,11,12; IO=2E0h; IRQ=3,4,5,6,7,9,10,11,12;
Help	Select an optimal settings for Super IO Device

Field Name	**Mode Configuration**
Default Value	[3T/5R RS232]
Possible Value	1T/1R RS422 3T/5R RS232 1T/1R RS485 TX ENABLE Low Active 1T/1R RS485 with termination resistor TX ENABLE Low Active Disabled
Help	Configure serial port as RS232/RS422/RS485.

3.2.5.3 Serial Port 3 Configuration

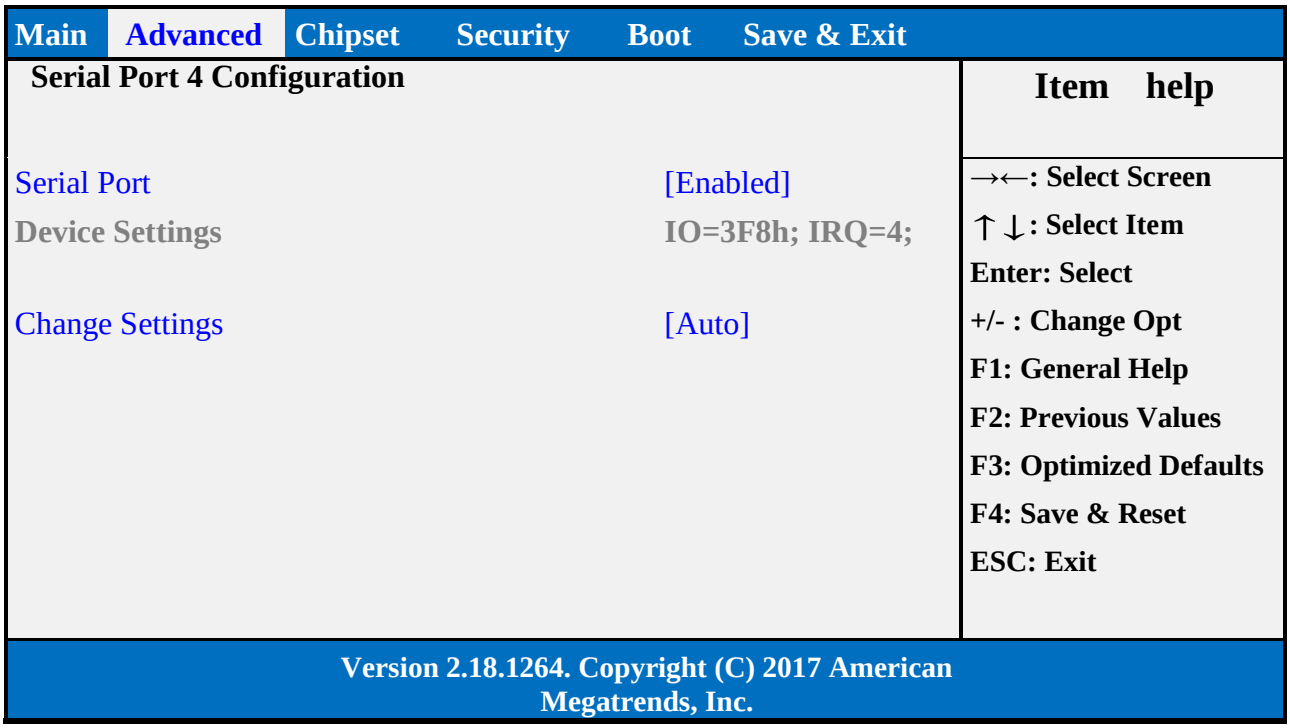


Field Name	**Serial Port**
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable or Disable Serial Port(COM)

Field Name	**Device Settings**
Default Value	Device Super IO COM3 Address and IRQ.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Change Settings**
Default Value	[Auto]
Possible Value	Auto IO=2E0h; IRQ=7; IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2F0h; IRQ=3,4,5,6,7,9,10,11,12; IO=2E0h; IRQ=3,4,5,6,7,9,10,11,12;
Help	Select an optimal settings for Super IO Device

2.2.5.4 Serial Port 4 Configuration



Field Name	**Serial Port**
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable or Disable Serial Port(COM)

Field Name	**Device Settings**
Default Value	Device Super IO COM4 Address and IRQ.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Change Settings**
Default Value	[Auto]
Possible Value	Auto IO=3F8h; IRQ=4; IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12; IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12;
Help	Select an optimal settings for Super IO Device

3.2.5 NCT6116D HW MONITOR

Main	Advanced	Chipset	Security	Boot	Save & Exit

PC Health Status

		Item help
CPU temperature	: xx °C	→←: Select Screen
CPU VR temperature	: xx °C	↑↓: Select Item
DIMM temperature	: xx °C	Enter: Select
CPU Fan Speed	: xxxx RPM	+/- : Change Opt
System Fan Speed	: xxxx RPM	
VCORE	: x.xxx V	F1: General Help
PCH IO volt	: x.xxx V	
System Memory	: x.xxx V	F2: Previous Values
AVSB	: x.xxx V	F3: Optimized Defaults
VSB3V	: x.xxx V	F4: Save & Reset
		ESC: Exit

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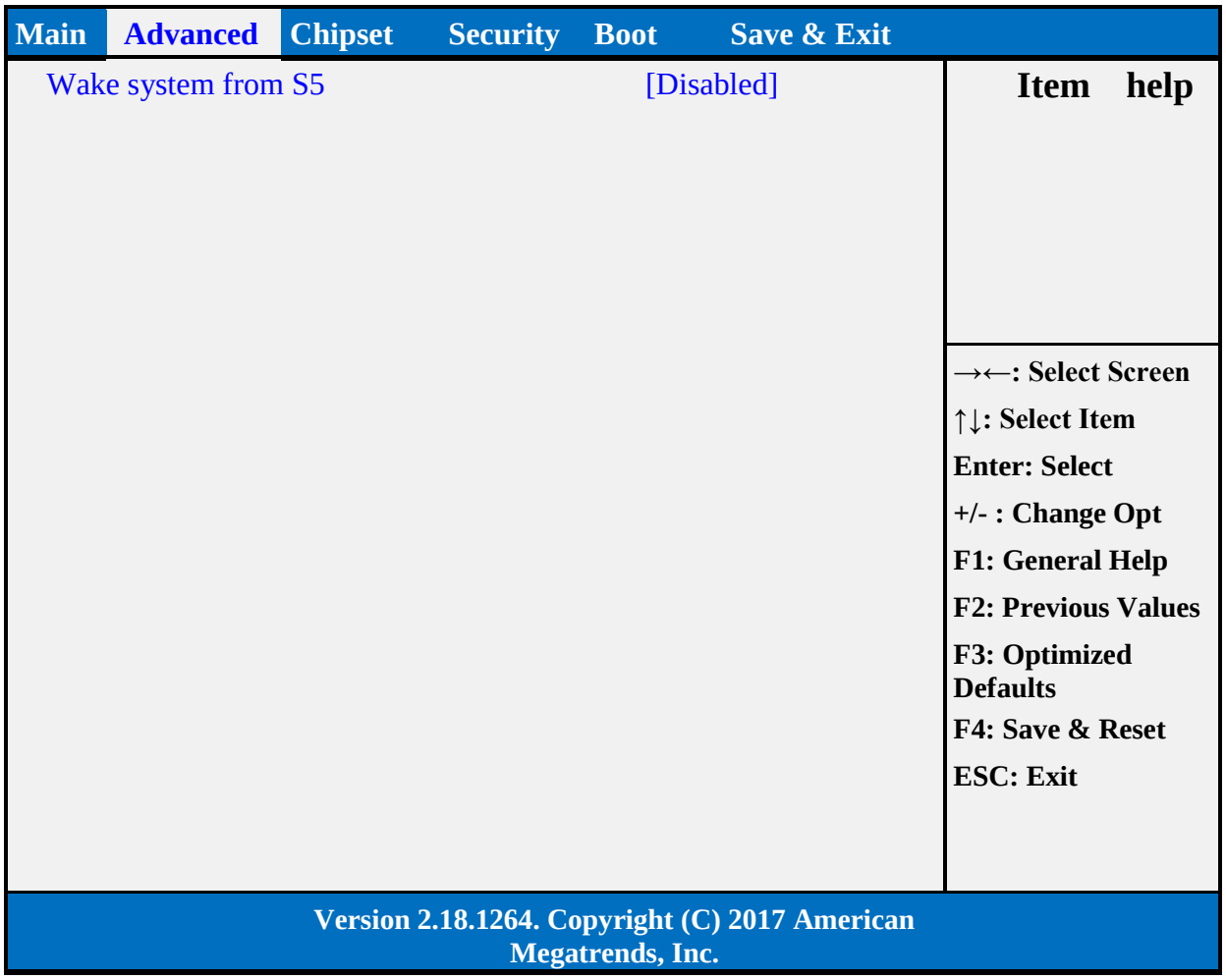
- **3.2.6 S5 RTC WAKE SETTINGS**



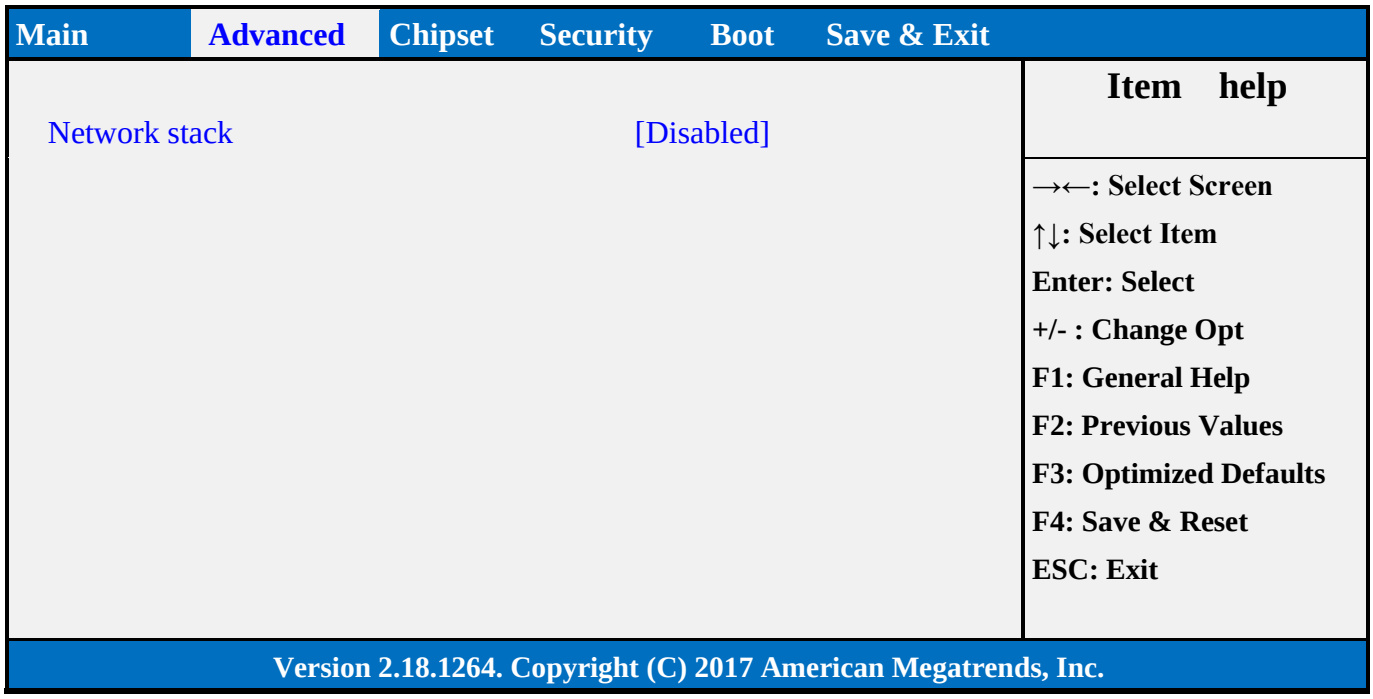
Field Name	Wake system from S5
Default Value	[Disabled]
Possible Value	Disabled Fixed Time
Help	Enabler or disable System wake on alarm event, Select FixedTime, system will wake on the hr::min::sec specified.

Field Name	Wake up hour(Show when Wake system from S5 set to Fixed Time)
Default Value	0
Possible Value	0-23
Help	Select 0-23 For example enter 3 for 3am and 15 for 3pm

Field Name	Wake up minute(Show when Wake system from S5 set to Fixed Time)
Default Value	0
Possible Value	0-59
Help	select 0-59 for Minute

Field Name	Wake up second(Show when Wake system from S5 set to Fixed Time)
Default Value	0
Possible Value	0 - 59
Help	select 0-59 for Second

3.2.7 NETWORK STACK CONFIGURATION

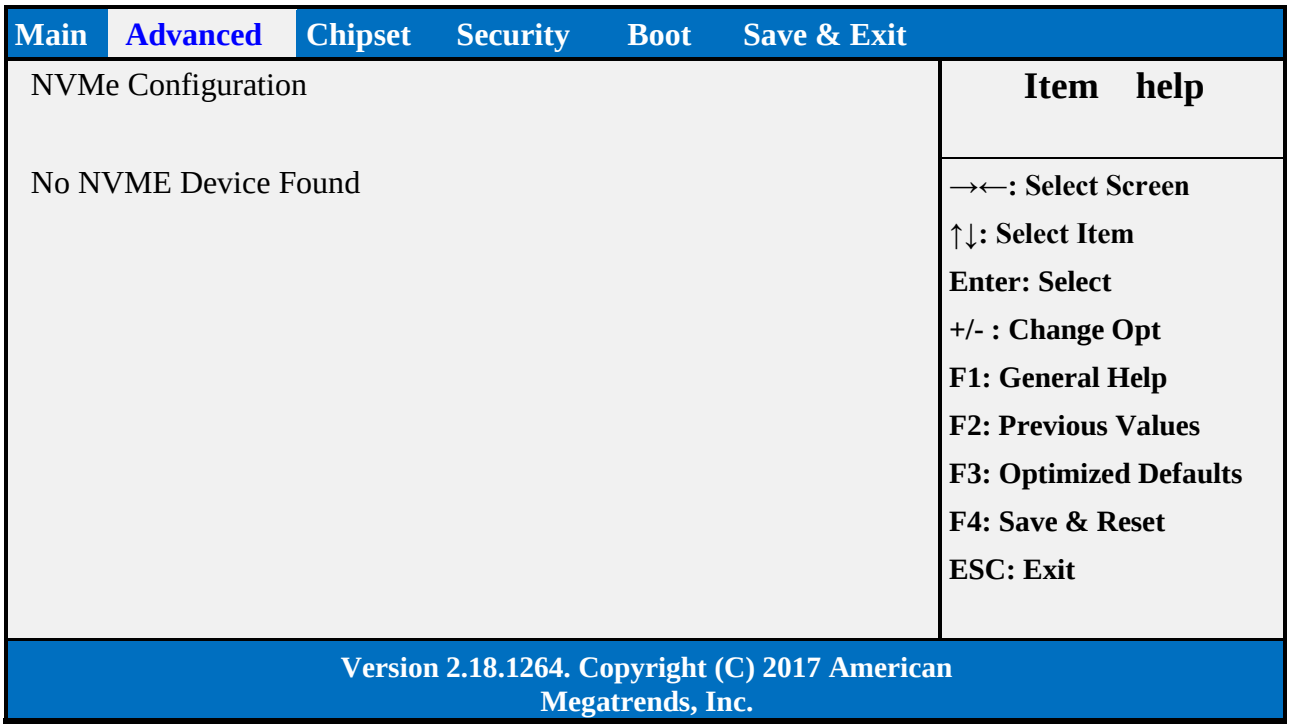


Field Name	**Network stack**
Default Value	[Disabled]
Possible Value	Disabled Enabled
Help	Enable/Disable UEFI Network stack.

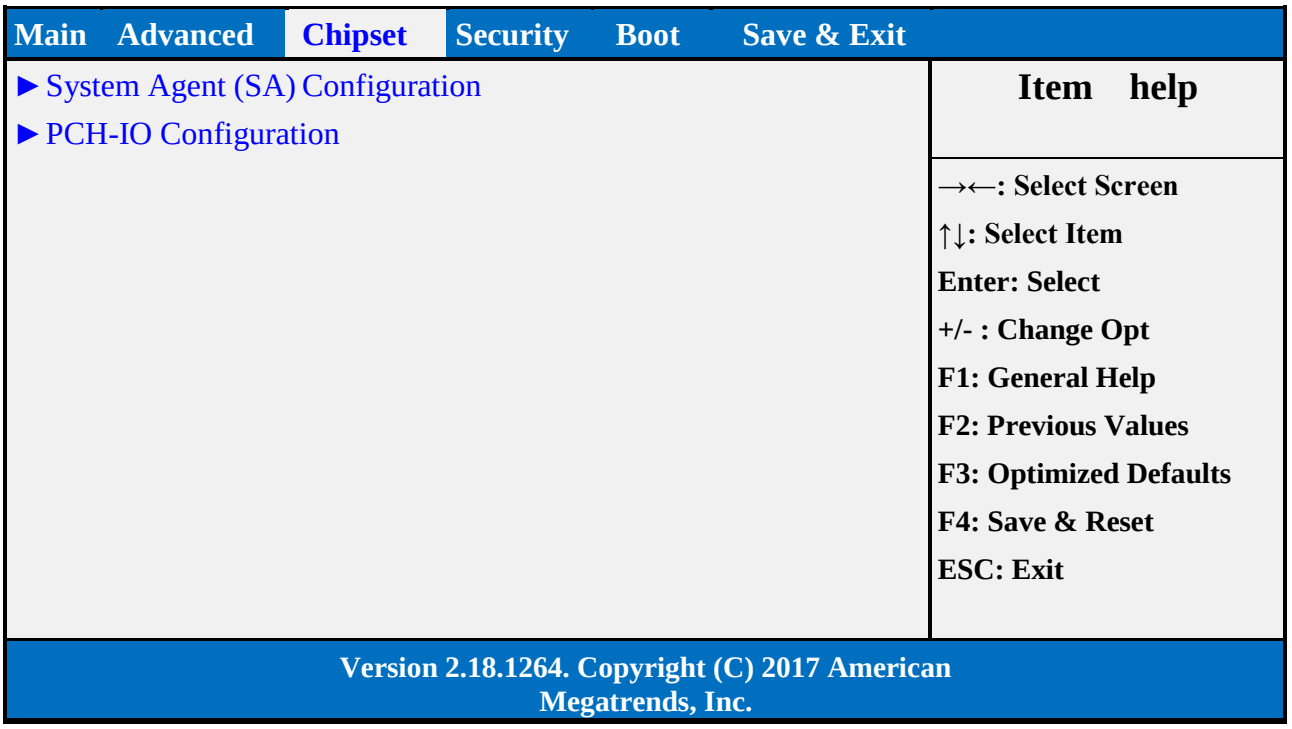
Field Name	**Ipv4 PXE Support**
Default Value	[Disabled]
Possible Value	Disabled Enabled
Help	Enable/Disable IPv4 PXE boot support. If disabled, IPv4 PXE boot support will not be available.

Field Name	**Ipv6 PXE Support**
Default Value	[Disabled]
Possible Value	Disabled Enabled
Help	Enable/Disable IPv6 PXE boot support. If disabled, IPv6 PXE boot support will not be available.

3.2.8 NVME CONFIGURATION



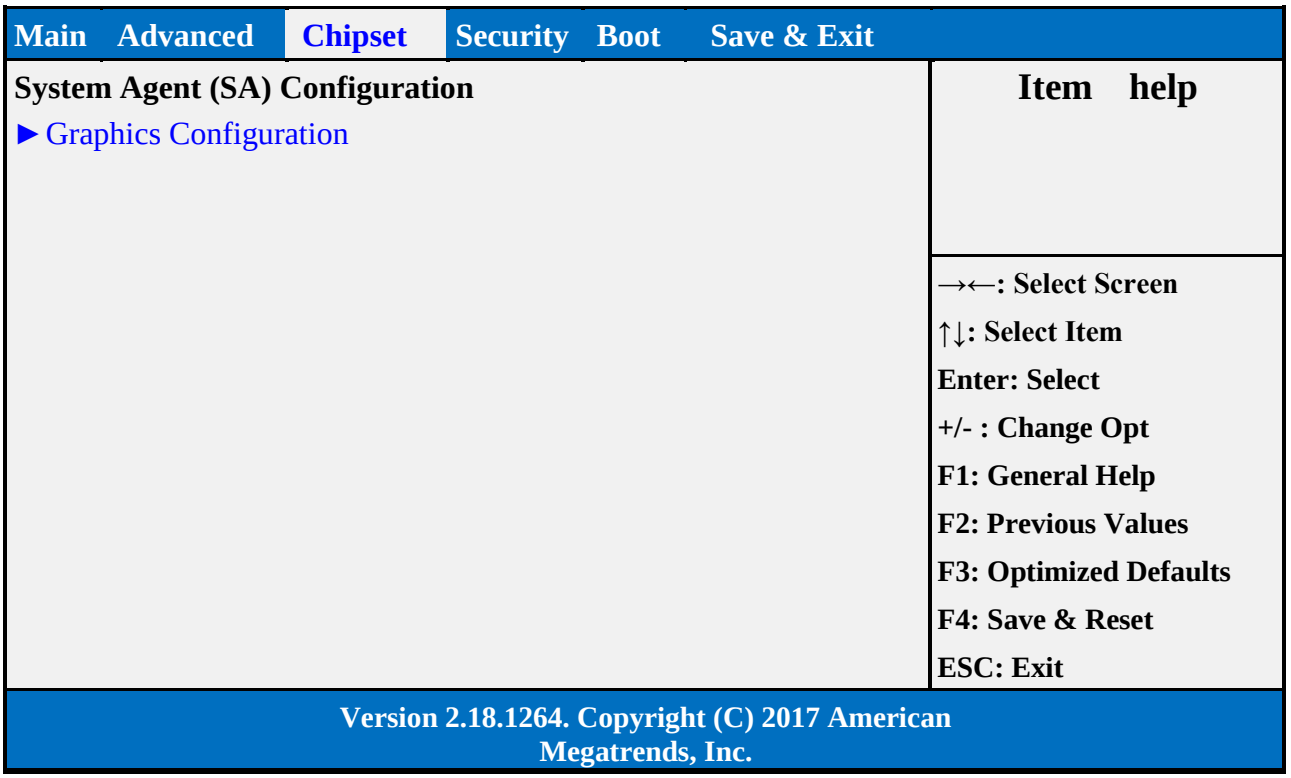
3.3 CHIPSET PAGE



Field Name	**System Agent (SA) Configuration**
Help	System Agent (SA) Parameters
Comment	Press Enter when selected to go into the associated Sub-Menu.

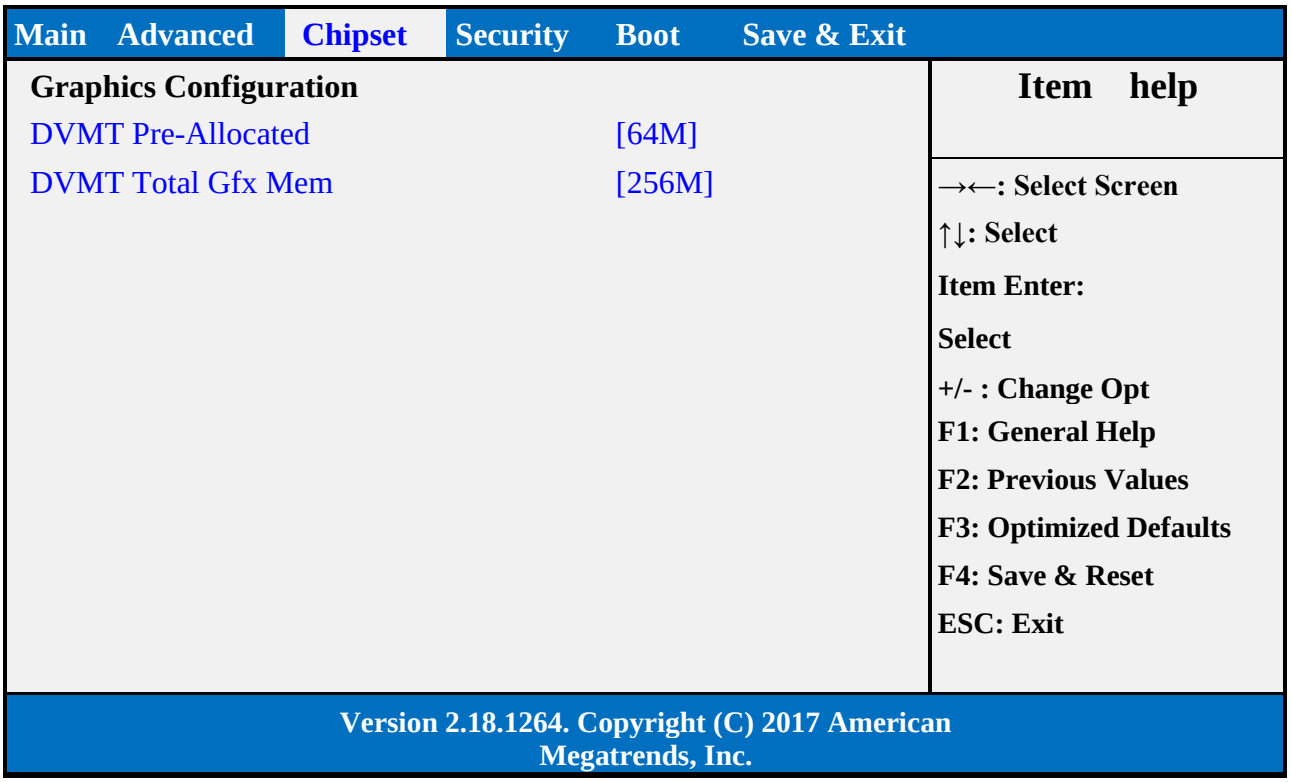
Field Name	**PCH-IO Configuration**
Help	PCH Parameters
Comment	Press Enter when selected to go into the associated Sub-Menu.

3.3.1 SYSTEM AGENT (SA) CONFIGURATION



Field Name	**Graphics Configuration**
Help	Graphics Configuration
Comment	Press Enter when selected to go into the associated Sub-Menu.

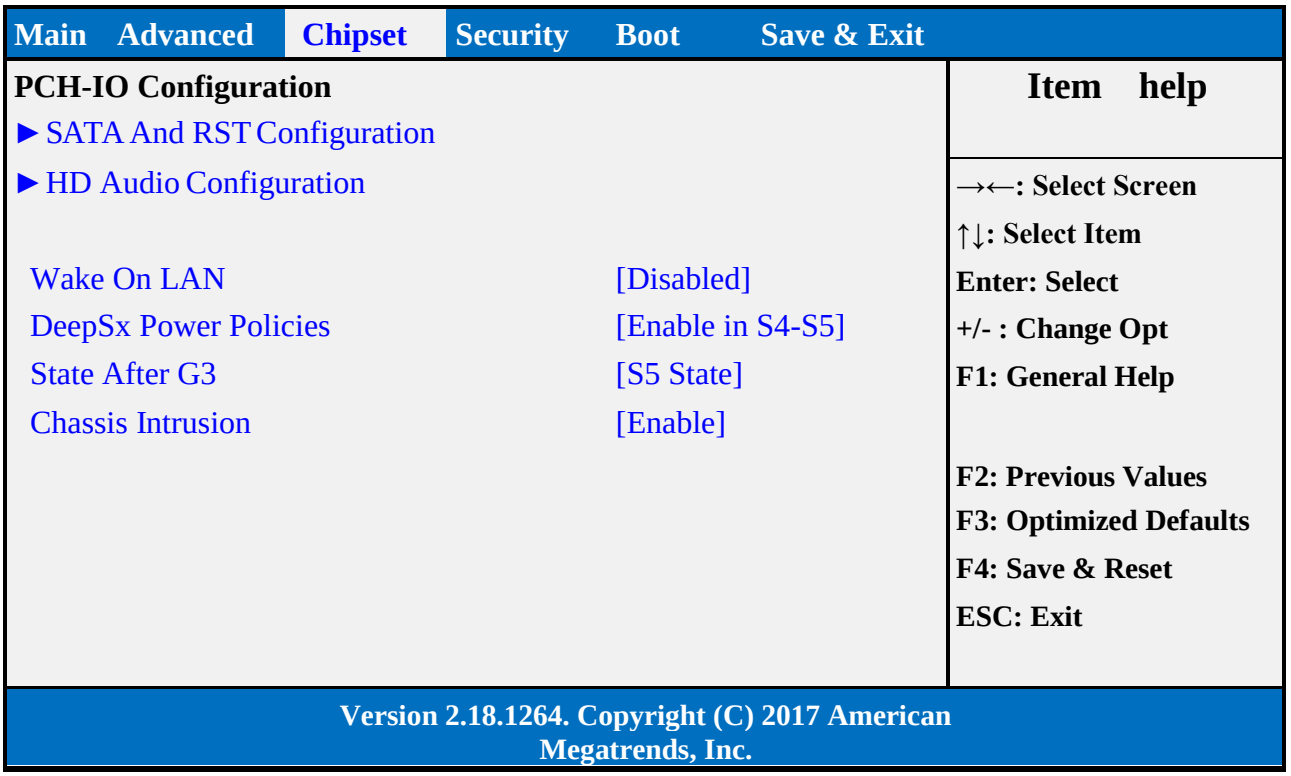
3.3.1.1 Graphics Configuration



Field Name	**DVMT Pre-Allocated**
Default Value	[64M]
Possible Value	64M /32M/F7/ 36M/ 40M/ 44M/ 48M/ 52M/ 56M/ 60M
Help	Select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.

Field Name	**DVMT Total Gfx Mem**
Default Value	[256M]
Possible Value	128MB / 256MB / MAX
Help	Select DVMT5.0 Total Graphic Memory size used by the Internal Graphics Device.

3.3.2 PCH-IO CONFIGURATION



Field Name	**SATA And RST Configuration**
Help	SATA Device Options Settings
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**HD Audio Configuration**
Help	HD Audio Subsystem Configuration Settings
Comment	Press Enter when selected to go into the associated Sub-Menu.

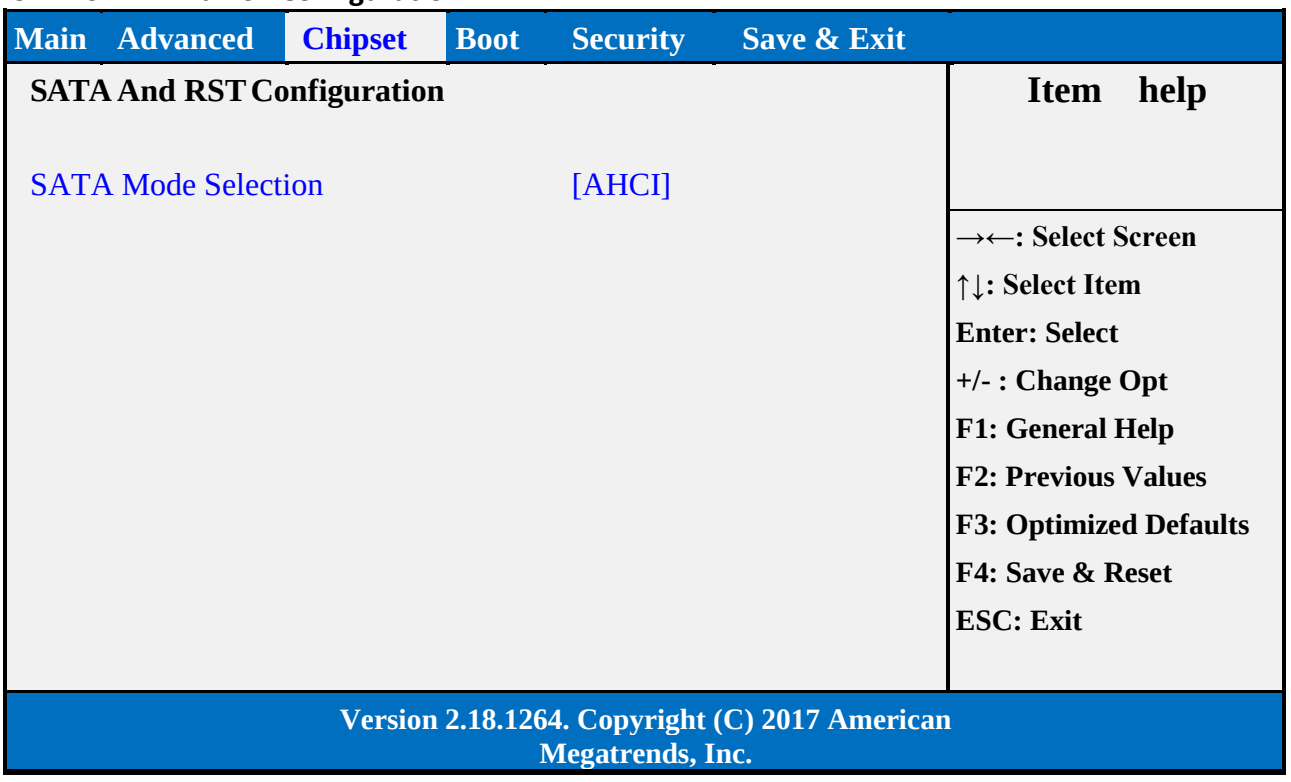
Field Name	**DeepSx Power Policies**
Default Value	[Enabled in S4-S5]
Possible Value	Enabled in S4-S5 Disabled
Help	configure the DeepSx Mode configuration.

Field Name	**Wake On LAN**
Default Value	[Disabled]
Possible Value	Enabled Disabled
Help	Enabled/Disabled integrated LAN to wake the system.

Field Name	**State After G3**
Default Value	[S5 State]
Possible Value	S0 State S5 State
Help	Specify what state to go to when power is re-applied after a power
	failure (G3 state).

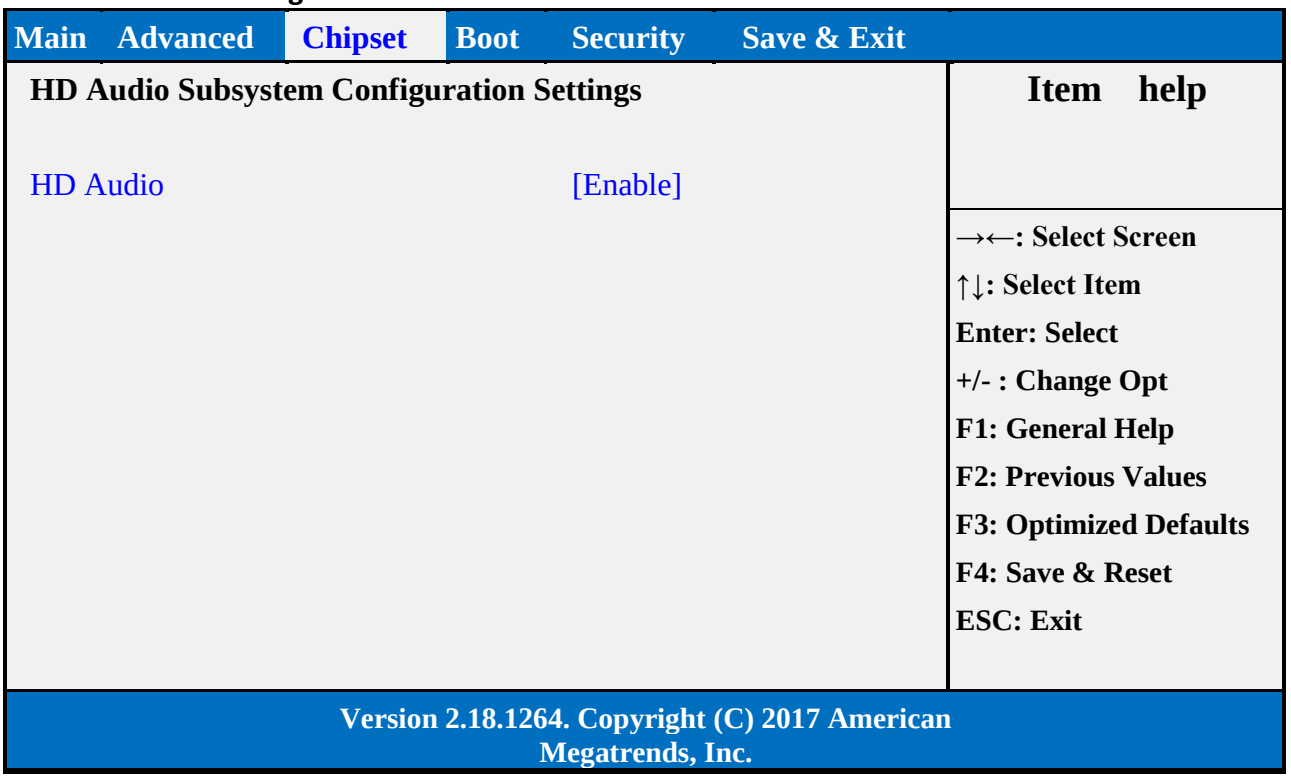
Field Name	**Chassis Intrusion**
Default Value	[Enable]
Possible Value	Disable Enable Reset
Help	Configure Chassis Intrusion.

3.3.2.1 SATA And RST Configuration



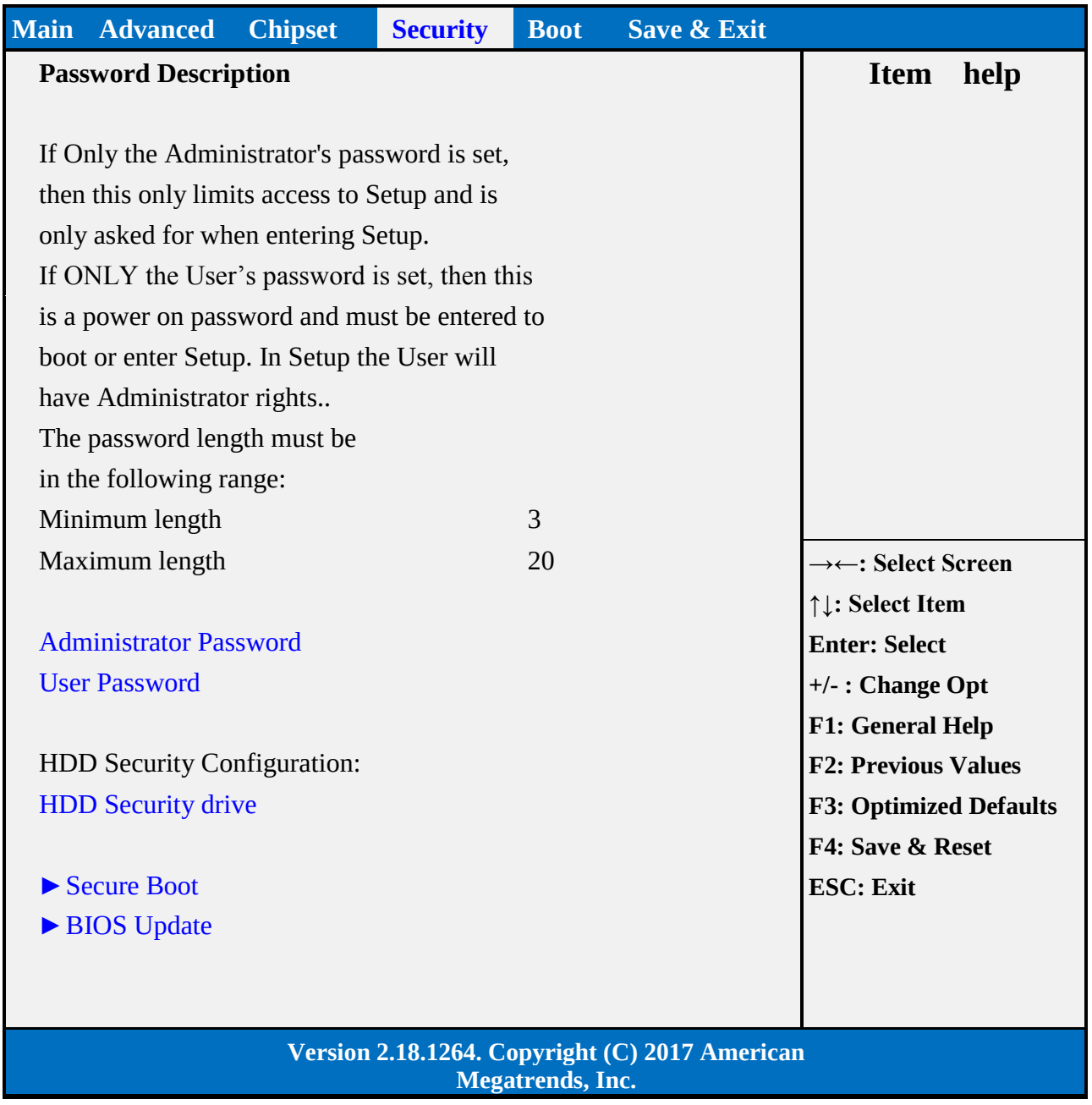
Field Name	**SATA Mode Selection**
Value	[AHCI]
Possible Value	AHCI / Intel RST Premium With Intel Optane System Acceleration
Help	Determines how SATA controller(s) operate.

3.2.2.2 HD Audio Configuration



Field Name	**HD Audio**
Value	[Enable]
Possible Value	Enable / Disable
Help	Control Detection of the HD-Audio device. Disabled = HDA will be unconditionally disabled Enable = HDA will be unconditionally enabled

3.4 SECURITY PAGE



Field Name	**Administrator Password**
Help	Set Administrator Password

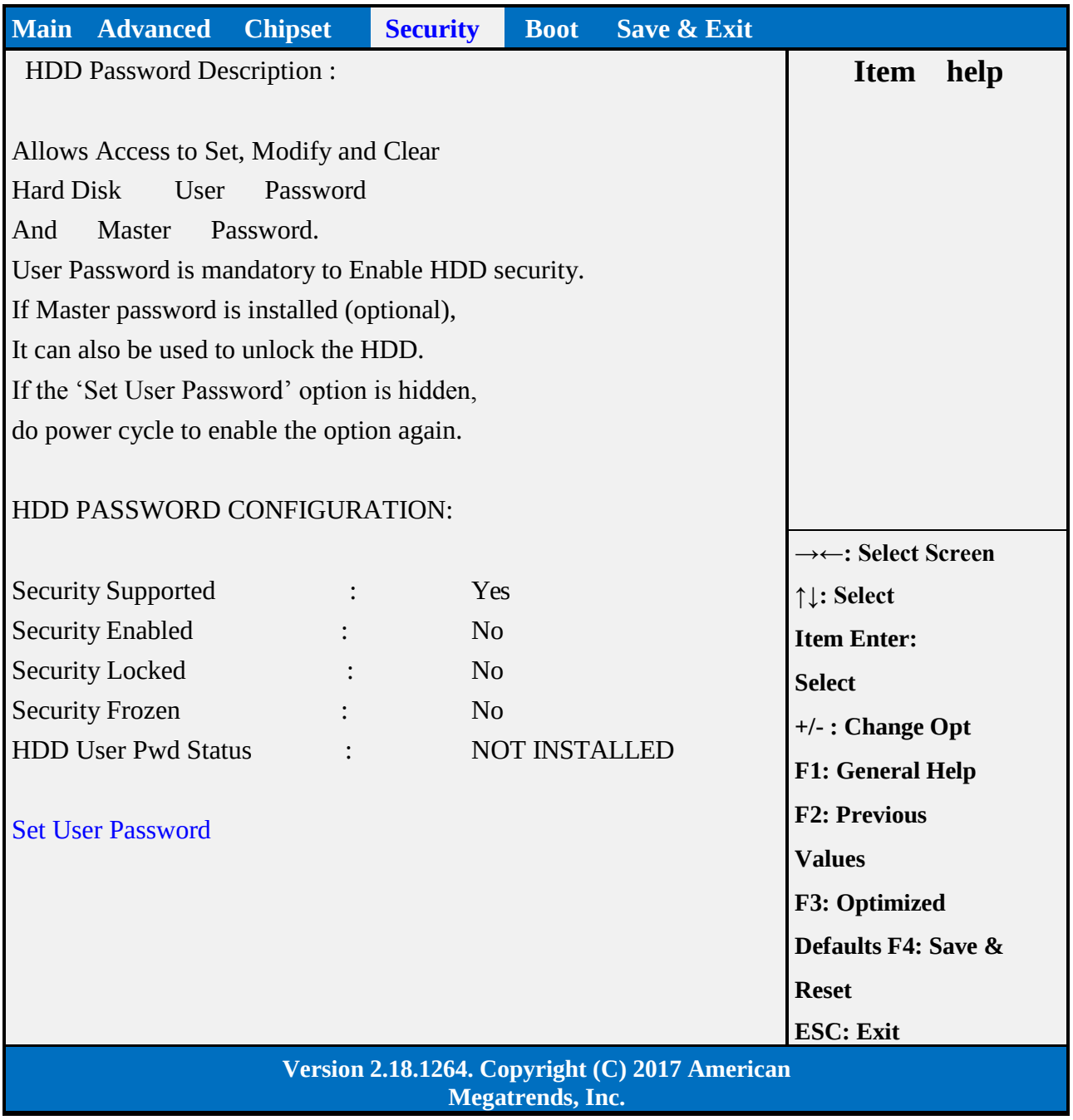
Field Name	**User Password**
Help	Set User Password.

Field Name	**HDD Security drive**
Help	HDD Security Configuration for selected drive
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Secure Boot**
Help	Secure Boot configuration
Comment	Press Enter when selected to go into the associated Sub-Menu.

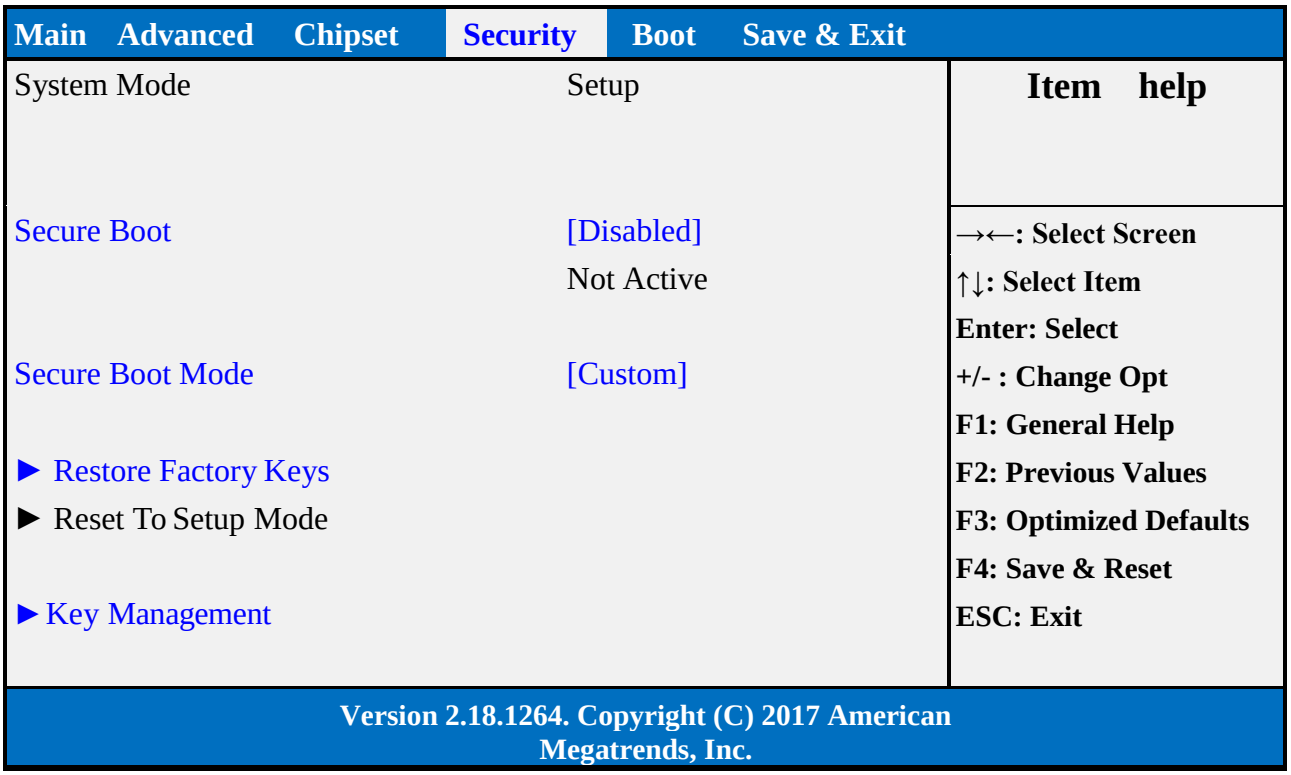
Field Name	**BIOS Update**
Help	BIOS Update support
Comment	Press Enter when selected to go into the associated Sub-Menu.

3.4.1 HDD SECURITY



Field Name	**Set User Password**
Help	Set HDD User Password. *** Advisable to Power Cycle System after Setting Hard Disk Passwords ***.Discard or Save changes option in setup does not have any impac on HDD when password is set or removed. If the 'Set HDD User Password' option is hidden out, do power cycle to enable the option again

3.4.2 SECURE BOOT



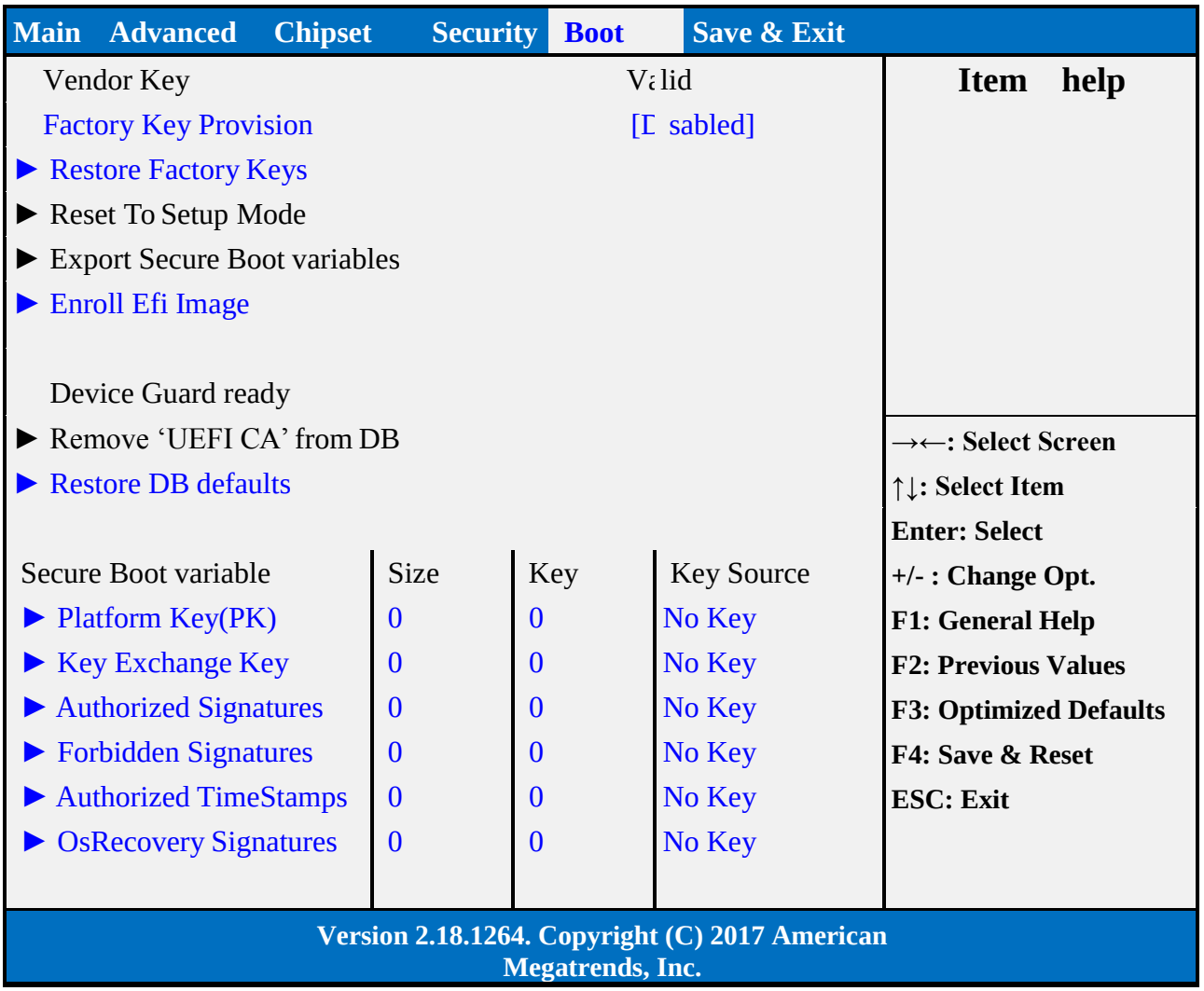
Field Name	**Secure Boot Enable**
Default Value	[Disabled]
Possible Value	Enabled Disabled
Help	Secure Boot feature is active if Secure Boot is Enabled. Platform Key(PK) is enrolled and the System is in User mode. The mode change requires platform reset

Field Name	**Secure Boot Mode**
Default Value	[Custom]
Possible Value	Standard Custom
Help	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

Field Name	**Key Management**
Help	Enables expert users to modify Secure Boot Policy variables without full authentication
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Restore Factory Keys**
Help	Force System to User Mode. Install factory default Secure Boot key databases

3.4.2.1 Key Management



Field Name	**Factory Key Provision**
Default Value	[Disabled]
Possible Value	Enabled Disabled
Help	Install factory default Secure Boot keys after the platform reset and while the System i in Setup mode

Field Name	**Restore Factory Keys**
Help	Force System to User Mode. Install factory default Secure Boot keys databases

Field Name	**Reset to Setup Mode**
Help	Delete all Secure Boot key databases from NVRAM

Field Name	**Export Secure Boot variables**
Help	Copy NVRAM content of Secure Boot variables to files in a root folder on a file
	system device

Field Name	**Enroll Efi Image**
Help	Allow the image to run in Secure Boot mode. Enroll SHA256 Hash certificate of a PE image into Authorized Signature Database (db)

Field Name	**Remove 'UEFI CA' from DB**
Help	Device Guard ready system must not list 'Microsoft UEFI CA' Certificate in Authorized Signature database (db)

Field Name	**Remove DB defaults**
Help	Restore DB variable to factory defaults

Field Name	**Platform Key (PK)**
Default Value	Size:0, Keys, Key source: No Key
Help	Enroll Factory Defaults or load certificates from a file: 1. Public Key Certificate: a)EFI_SIGNATURE_LIST b)EFI_CERT_X509 (DER encoded) c)EFI_CERT_RSA2048 (bin) d)EFI_CERT_SHA256,384,512 2.Authenticated UEFI Variable 3.EFI PE/COFF Image(SHA256) Key Source: Factory,External,Mixed
comment	Press Enter when selected to go into the associated Sub-Menu "Key Management".

Field Name	**Key Exchange Key**
Default Value	Size:0, Keys, Key source: No Key
Help	Enroll Factory Defaults or load certificates from a file: 1. Public Key Certificate: a)EFI_SIGNATURE_LIST b)EFI_CERT_X509 (DER encoded) c)EFI_CERT_RSA2048 (bin) d)EFI_CERT_SHA256,384,512 2.Authenticated UEFI Variable 3.EFI PE/COFF Image(SHA256) Key Source: Factory,External,Mixed
comment	Press Enter when selected to go into the associated Sub-Menu.

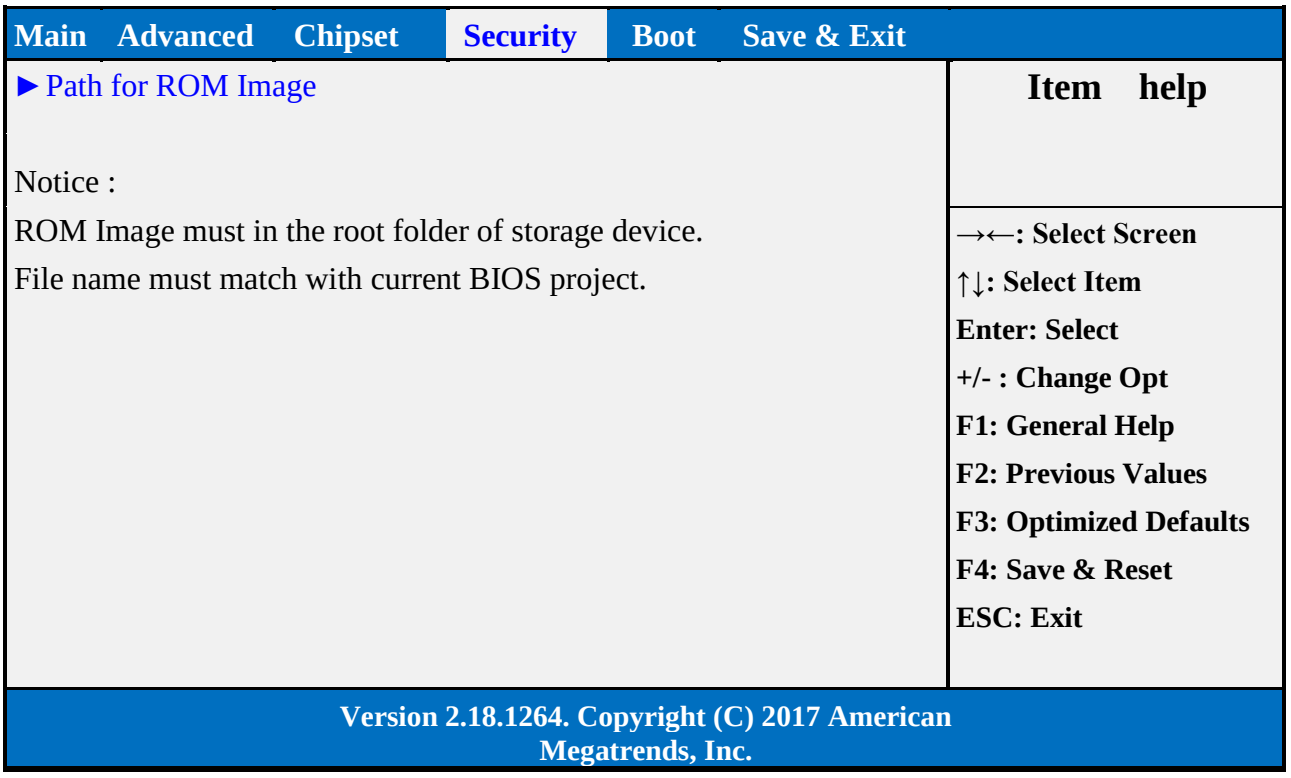
Field Name	**Authorized Signature**
Default Value	Size:0, Keys, Key source: No Key
Help	Enroll Factory Defaults or load certificates from a file: 1. Public Key Certificate: a)EFI_SIGNATURE_LIST b)EFI_CERT_X509 (DER encoded)
	c)EFI_CERT_RSA2048 (bin) d)EFI_CERT_SHA256,384,5 12 2.Authenticated UEFI Variable 3.EFI PE/COFF Image(SHA256) Key Source: Factory,External,Mixed
comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Forbidden Signature**
Default Value	Size:0, Keys, Key source: No Key
Help	Enroll Factory Defaults or load certificates from a file: 1. Public Key Certificate: a)EFI_SIGNATURE_LIST b)EFI_CERT_X509 (DER encoded) c)EFI_CERT_RSA2048 (bin) d)EFI_CERT_SHA256,384,512 2.Authenticated UEFI Variable 3.EFI PE/COFF Image(SHA256) Key Source: Factory,External,Mixed
comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Authorized TimeStamps**
Default Value	Size:0, Keys, Key source: No Key
Help	Enroll Factory Defaults or load certificates from a file: 1. Public Key Certificate: a)EFI_SIGNATURE_LIST b)EFI_CERT_X509 (DER encoded) c)EFI_CERT_RSA2048 (bin) d)EFI_CERT_SHA256,384,512 2.Authenticated UEFI Variable 3.EFI PE/COFF Image(SHA256) Key Source: Factory,External,Mixed
comment	Press Enter when selected to go into the associated Sub-Menu.

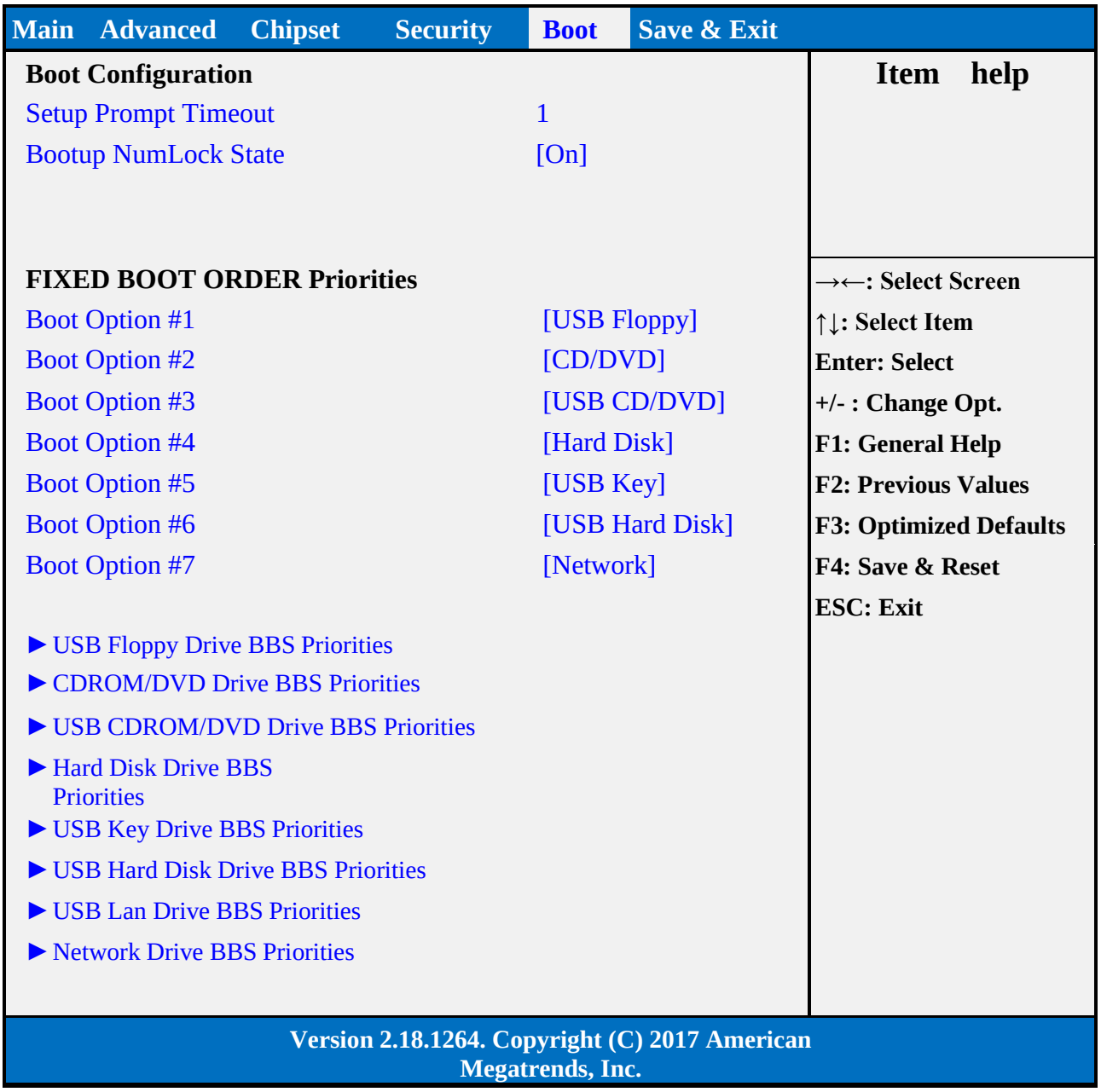
Field Name	**OsRecovery Signatures**
Default Value	Size:0, Keys, Key source: No Key
Help	Enroll Factory Defaults or load certificates from a file: 1. Public Key Certificate: a)EFI_SIGNATURE_LIST b)EFI_CERT_X509 (DER encoded) c)EFI_CERT_RSA2048 (bin) d)EFI_CERT_SHA256,384,512 2.Authenticated UEFI Variable 3.EFI PE/COFF Image(SHA256) Key Source: Factory,External,Mixed
comment	Press Enter when selected to go into the associated Sub-Menu.

3.4.3 bios update



Field Name	**Path for ROM Image**
Help	Enter the path to the Secure flash option

3.5 BOOT PAGE



Field Name	**Setup Prompt Timeout**
Default Value	1
Possible Value	1~65535
Help	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.

Field Name	**Bootup NumLock State**
Default Value	[On]
Possible Value	On Off
Help	Select the keyboard NumLock state

Field Name	**Boot Option #1**
Default Value	[USB Floppy]
Possible Value	USB Floppy, CD/DVD, USB CD/DVD, Hard Disk, USB Key, USB Hard Disk, Network, Disable
Help	Sets the system boot order

Field Name	**Boot Option #2**
Default Value	[CD/DVD]
Possible Value	USB Floppy, CD/DVD, USB CD/DVD, Hard Disk, USB Key, USB Hard Disk, Network, Disable
Help	Sets the system boot order

Field Name	**Boot Option #3**
Default Value	[USB CD/DVD]
Possible Value	USB Floppy, CD/DVD, USB CD/DVD, Hard Disk, USB Key, USB Hard Disk, Network, Disable
Help	Sets the system boot order

Field Name	**Boot Option #4**
Default Value	[Hard Disk]
Possible Value	USB Floppy, CD/DVD, USB CD/DVD, Hard Disk, USB Key, USB Hard Disk, Network, Disable
Help	Sets the system boot order

Field Name	**Boot Option #5**
Default Value	[USB Key]
Possible Value	USB Floppy, CD/DVD, USB CD/DVD, Hard Disk, USB Key, USB Hard Disk, Network, Disable
Help	Sets the system boot order

Field Name	**Boot Option #6**
Default Value	[USB Hard Disk]
Possible Value	USB Floppy, CD/DVD, USB CD/DVD, Hard Disk, USB Key, USB Hard Disk, Network, Disable
Help	Sets the system boot order

Field Name	**Boot Option #7**
Default Value	[Network]
Possible Value	USB Floppy, CD/DVD, USB CD/DVD, Hard Disk, USB Key, USB Hard Disk, Network, Disable
Help	Sets the system boot order

Field Name	**USB Floppy Drive BBS Priorities**
Help	Specifies the Boot Device Priority sequence from available UEFI USB Floppy
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**CDROM/DVD Drive BBS Priorities**
Help	Specifies the Boot Device Priority sequence from available CDROM/DVD
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**USB CD/DVD ROM Drive BBS Priorities**
Help	Specifies the Boot Device Priority sequence from available UEFI USB
Comment	Press Enter when selected to go into the associated Sub-Menu.

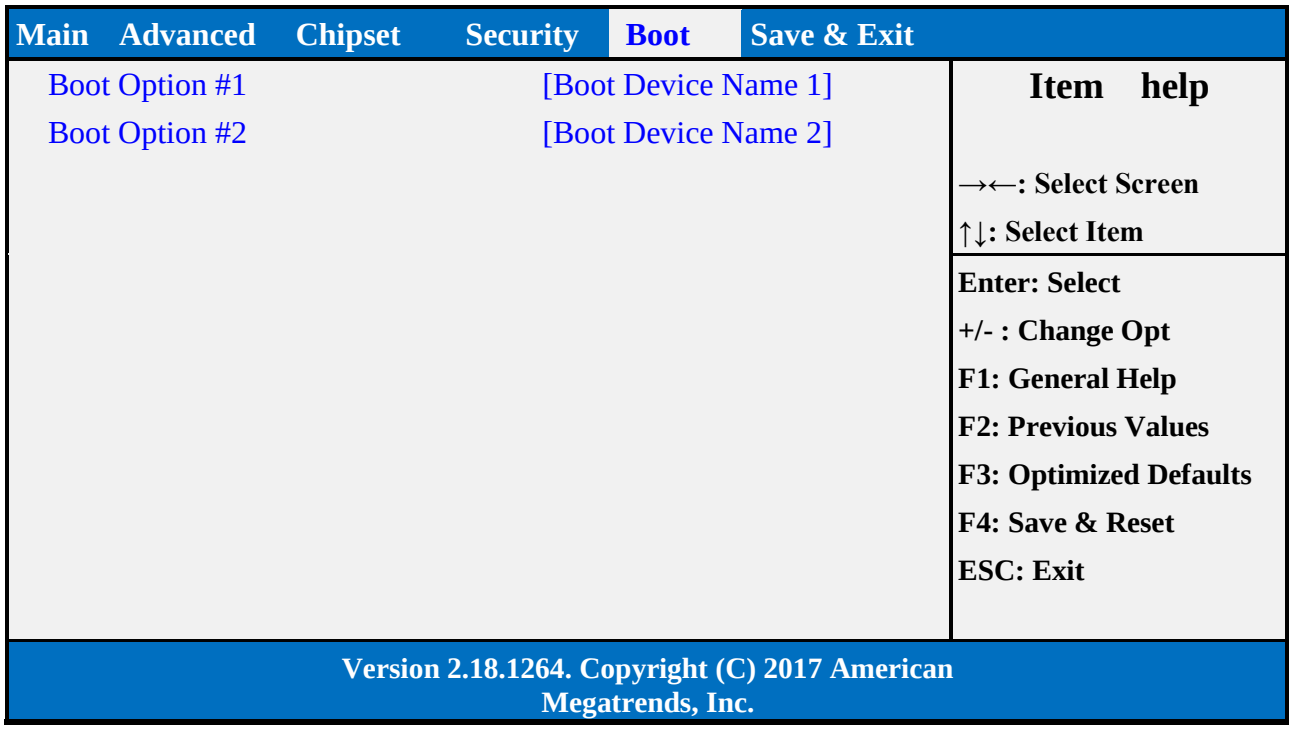
Field Name	**USB Hard Disk Drive BBS Priorities**
Help	Specifies the Boot Device Priority sequence from available UEFI USB Hard Disk
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**USB KEY Drive BBS Priorities**
Help	Specifies the Boot Device Priority sequence from available UEFI USB Key Drives.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Hard Disk Drive BBS Priorities**
Help	Specifies the Boot Device Priority sequence from available UEFI Hard Disk Drives.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**NETWORK Drive BBS Priorities**
Help	Specifies the Boot Device Priority sequence from available UEFI NETWORK.
Comment	Press Enter when selected to go into the associated Sub-Menu.

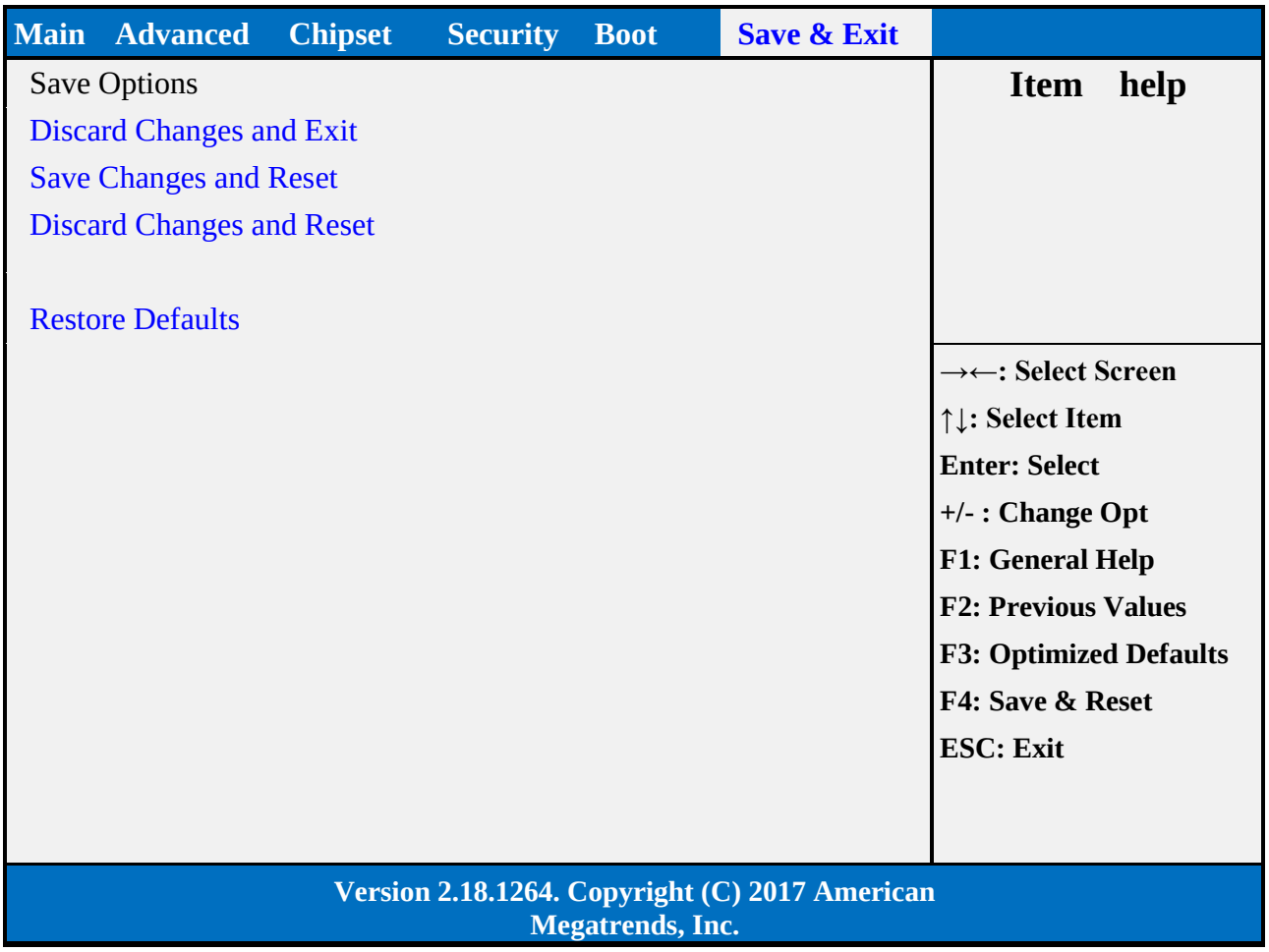
3.5.1 (LIST BOOT DEVICE TYPE) DRIVE BBS PRIORITIES



Field Name	**Boot Option #1**
Default Value	
Possible Value	Boot Device Name 1 of this type
Help	Sets the system boot order

Field Name	**Boot Option #2**
Default Value	
Possible Value	Boot Device Name 2 of this type
Help	Sets the system boot order

3.6 SAVE & EXIT PAGE



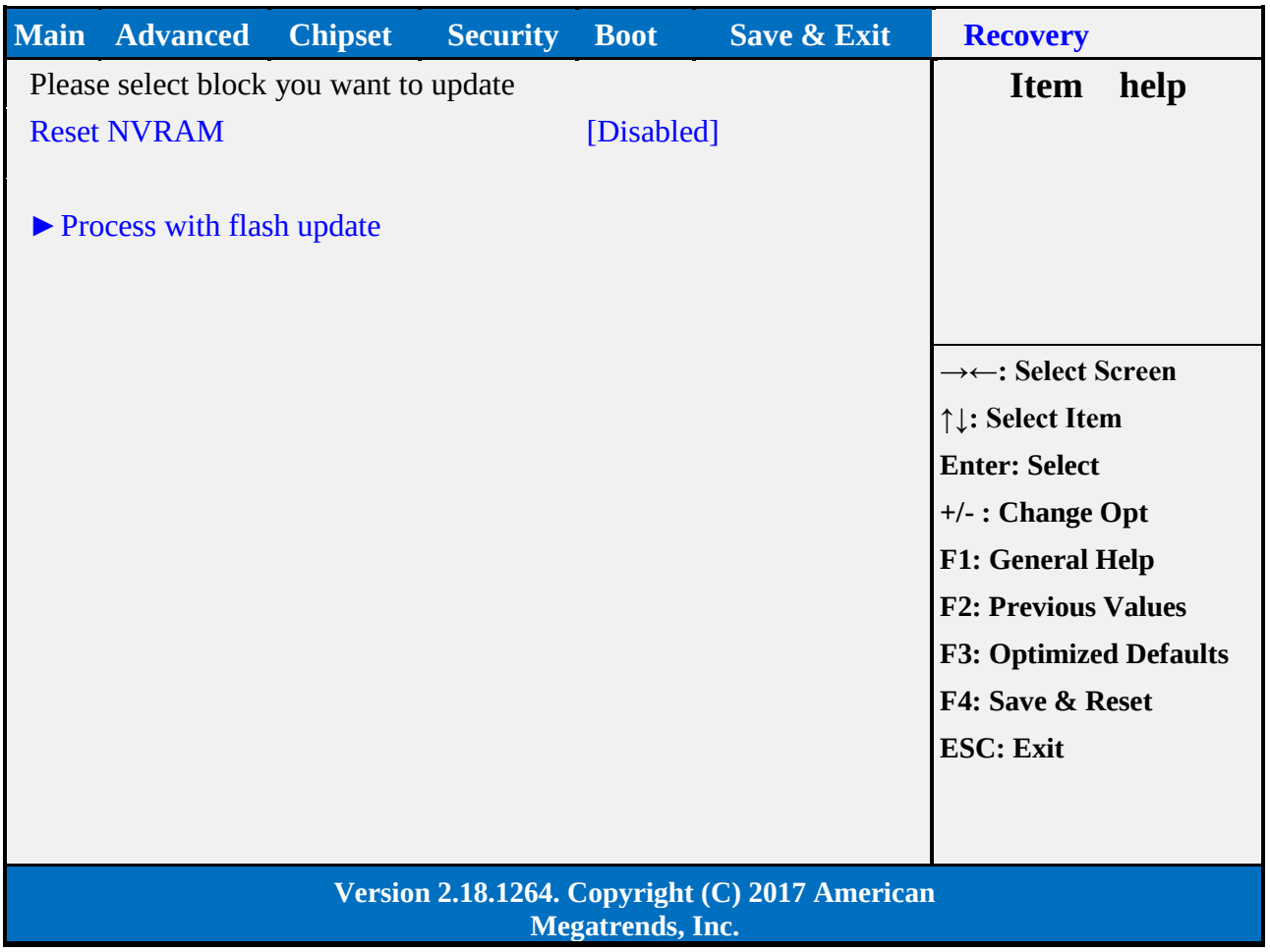
Field Name	**Discard Changes and Exit**
Help	Exit system setup without saving any changes.

Field Name	**Save Changes and Reset**
Help	Reset the system after saving the changes.

Field Name	**Discard Changes and Rest**
Help	Reset system setup without saving any changes.

Field Name	**Restore Defaults**
Help	Restore/Load Default values for all the setup options.

3.7 RECOVERY PAGE (ACTIVE FOR 3.4.3 SECURE FLASH UPDATE ONLY)



Field Name	**Reset NVRAM**
Default Value	[Disabled]
Possible Value	Enabled Disabled
Help	Set this option to reset NVRAM to default values

Field Name	**Process with flash update**
Help	Select this to start flash update