



NEXCOM International Co., Ltd.

Network and Communication Solutions

Telecom Communication Appliance

TCA 5170 Series

User Manual

NEXCOM International Co., Ltd.

Published June 2022

www.nexcom.com

CONTENTS

Preface

Copyright	iv
Disclaimer	iv
Acknowledgements	iv
Regulatory Compliance Statements	iv
Declaration of Conformity	iv
RoHS Compliance	v
Warranty and RMA	vi
Safety Information	viii
Installation Recommendations	viii
Safety Precautions	ix
Technical Support and Assistance	x
Conventions Used in this Manual	x
Global Service Contact Information	xi
Package Contents	xiii
Ordering Information	xiv

Chapter 1: Product Introduction

Overview	1
Key Features	1
Hardware Specifications	2
Knowing Your TCA 5170 Series	3
Front Panel	3
Rear Panel	4

Chapter 2: Jumpers and Connectors

Before You Begin	5
Precautions	5
Jumper Settings	6
Locations of the Jumpers and Connectors	7
Jumpers	8
RTC Clear	8
AT/ATX Mode Select	8
Connector Pin Definitions	9
Internal Connectors	9
Fan Connectors	9
8-pin Internal 12V Power Connector	9
24-pin Internal ATX Power Connector	10
Power Button	10
Reset Button	11
GPIO Pin Header	11
LCM	12
Block Diagram	13

Chapter 3: System Setup

Installing an M.2 2230/3042 Module	14
Installing an M.2 2280 Module	15
Installing a 2.5" SATA Storage Drive	16
Installing DIMM Memory Modules	17



Chapter 4: BIOS Setup

About BIOS Setup 18

When to Configure the BIOS..... 18

Default Configuration 19

Entering Setup 19

Legends 19

BIOS Setup Utility..... 21

 Main 21

 Advanced 22

 Platform Configuration..... 32

 Socket Configuration..... 38

 Security 54

 Boot..... 54

 Save & Exit 55

PREFACE

Copyright

This publication, including all photographs, illustrations and software, is protected under international copyright laws, with all rights reserved. No part of this manual may be reproduced, copied, translated or transmitted in any form or by any means without the prior written consent from NEXCOM International Co., Ltd.

Disclaimer

The information in this document is subject to change without prior notice and does not represent commitment from NEXCOM International Co., Ltd. However, users may update their knowledge of any product in use by constantly checking its manual posted on our website: <http://www.nexcom.com>. NEXCOM shall not be liable for direct, indirect, special, incidental, or consequential damages arising out of the use of any product, nor for any infringements upon the rights of third parties, which may result from such use. Any implied warranties of merchantability or fitness for any particular purpose is also disclaimed.

Acknowledgements

TCA 5170, TCA 5170B and TCA 5170C are trademarks of NEXCOM International Co., Ltd. All other product names mentioned herein are registered trademarks of their respective owners.

Regulatory Compliance Statements

This section provides the FCC compliance statement for Class A devices and describes how to keep the system CE compliant.

Declaration of Conformity

FCC

This equipment has been tested and verified to comply with the limits for a Class A digital device, pursuant to Part 15 of 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 instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area (domestic environment) is likely to cause harmful interference, in which case the user will be required to correct the interference (take adequate measures) at their own expense.

CE

The product(s) described in this manual complies with all applicable European Union (CE) directives if it has a CE marking. For computer systems to remain CE compliant, only CE-compliant parts may be used. Maintaining CE compliance also requires proper cable and cabling techniques.

RoHS Compliance



NEXCOM RoHS Environmental Policy and Status Update

NEXCOM 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.

RoHS restricts the use of Lead (Pb) < 0.1% or 1,000ppm, Mercury (Hg) < 0.1% or 1,000ppm, Cadmium (Cd) < 0.01% or 100ppm, Hexavalent Chromium (Cr6+) < 0.1% or 1,000ppm, Polybrominated biphenyls (PBB) < 0.1% or 1,000ppm, and Polybrominated diphenyl Ethers (PBDE) < 0.1% or 1,000ppm.

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

How to recognize NEXCOM RoHS Products?

For existing products where there are non-RoHS and RoHS versions, the suffix "(LF)" will be added to the compliant product name.

All new product models launched after January 2013 will be RoHS compliant. They will use the usual NEXCOM naming convention.

Warranty and RMA

NEXCOM Warranty Period

NEXCOM manufactures products that are new or equivalent to new in accordance with industry standard. NEXCOM warrants that products will be free from defect in material and workmanship for 2 years, beginning on the date of invoice by NEXCOM.

NEXCOM Return Merchandise Authorization (RMA)

- Customers shall enclose the “NEXCOM RMA Service Form” with the returned packages.
- Customers must collect all the information about the problems encountered and note anything abnormal or, print out any on-screen messages, and describe the problems on the “NEXCOM RMA Service Form” for the RMA number apply process.
- Customers can send back the faulty products with or without accessories (manuals, cable, etc.) and any components from the card, such as CPU and RAM. If the components were suspected as part of the problems, please note clearly which components are included. Otherwise, NEXCOM is not responsible for the devices/parts.
- Customers are responsible for the safe packaging of defective products, making sure it is durable enough to be resistant against further damage and deterioration during transportation. In case of damages occurred during transportation, the repair is treated as “Out of Warranty.”
- Any products returned by NEXCOM to other locations besides the customers’ site will bear an extra charge and will be billed to the customer.

Repair Service Charges for Out-of-Warranty Products

NEXCOM will charge for out-of-warranty products in two categories, one is basic diagnostic fee and another is component (product) fee.

System Level

- Component fee: NEXCOM will only charge for main components such as SMD chip, BGA chip, etc. Passive components will be repaired for free, ex: resistor, capacitor.
- Items will be replaced with NEXCOM products if the original one cannot be repaired. Ex: motherboard, power supply, etc.
- Replace with 3rd party products if needed.
- If RMA goods can not be repaired, NEXCOM will return it to the customer without any charge.

Board Level

- Component fee: NEXCOM will only charge for main components, such as SMD chip, BGA chip, etc. Passive components will be repaired for free, ex: resistors, capacitors.
- If RMA goods can not be repaired, NEXCOM will return it to the customer without any charge.

Warnings

Read and adhere to all warnings, cautions, and notices in this guide and the documentation supplied with the chassis, power supply, and accessory modules. If the instructions for the chassis and power supply are inconsistent with these instructions or the instructions for accessory modules, contact the supplier to find out how you can ensure that your computer meets safety and regulatory requirements.

Cautions

Electrostatic discharge (ESD) can damage system components. Do the described procedures only at an ESD workstation. If no such station is available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the computer chassis.

Safety Information

Before installing and using the device, note the following precautions:

- Read all instructions carefully.
- Do not place the unit on an unstable surface, cart, or stand.
- Follow all warnings and cautions in this manual.
- When replacing parts, ensure that your service technician uses parts specified by the manufacturer.
- Avoid using the system near water, in direct sunlight, or near a heating device.
- The load of the system unit does not solely rely for support from the rackmounts located on the sides. Firm support from the bottom is highly necessary in order to provide balance stability.
- The computer is provided with a battery-powered real-time clock circuit. There is a danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

Installation Recommendations

Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.

Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:

- A Philips screwdriver
- A flat-tipped screwdriver
- A grounding strap
- An anti-static pad

Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nose pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.

Safety Precautions

1. Read these safety instructions carefully.
2. Keep this User Manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a stable surface during installation. Dropping it or letting it fall may cause damage.
7. The openings on the enclosure are for air convection to protect the equipment from overheating. DO NOT COVER THE OPENINGS.
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Place the power cord in a way so that people will not step on it. Do not place anything on top of the power cord. Use a power cord that has been approved for use with the product and that it matches the voltage and current marked on the product's electrical range label. The voltage and current rating of the cord must be greater than the voltage and current rating marked on the product.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
12. Never pour any liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by skilled person.
14. If one of the following situations arises, get the equipment checked by service personnel:
 - a. The power cord or plug is damaged.
 - b. Liquid has penetrated into the equipment.
 - c. The equipment has been exposed to moisture.
 - d. The equipment does not work well, or you cannot get it to work according to the user's manual.
 - e. The equipment has been dropped and damaged.
 - f. The equipment has obvious signs of breakage.
15. Do not place heavy objects on the equipment.
16. The unit uses a three-wire ground cable which is equipped with a third pin to ground the unit and prevent electric shock. Do not defeat the purpose of this pin. If your outlet does not support this kind of plug, contact your electrician to replace your obsolete outlet.
17. CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER. DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.

"ATTENTION: Risque d'explosion si la batterie est remplacée par un type incorrect. Mettre au rebus les batteries usagées selon les instructions."
18. This equipment is not suitable for use in locations where children are likely to be present.

Cet équipement ne convient pas à une utilisation dans des lieux pouvant accueillir des enfants.
19. Suitable for installation in Information Technology Rooms in accordance with Article 645 of the National Electrical Code and NFPA 75.

Peut être installé dans des salles de matériel de traitement de l'information conformément à l'article 645 du National Electrical Code et à la NFPA 75.
20. Use certified and rated Laser Class I for Optical Transceiver product.

Technical Support and Assistance

1. For the most updated information of NEXCOM products, visit NEXCOM's website at www.nexcom.com.
2. For technical issues that require contacting our technical support team or sales representative, please have the following information ready before calling:
 - Product name and serial number
 - Detailed information of the peripheral devices
 - Detailed information of the installed software (operating system, version, application software, etc.)
 - A complete description of the problem
 - The exact wordings of the error messages

Warning!

1. Handling the unit: carry the unit with both hands and handle it with care.
2. Maintenance: to keep the unit clean, use only approved cleaning products or clean with a dry cloth.
3. CompactFlash: Turn off the unit's power before inserting or removing a CompactFlash storage card.

Conventions Used in this Manual



Warning:

Information about certain situations, which if not observed, can cause personal injury. This will prevent injury to yourself when performing a task.



Caution:

Information to avoid damaging components or losing data.



Note:

Provides additional information to complete a task easily.

Global Service Contact Information

Headquarters

NEXCOM International Co., Ltd.

9F, No. 920, Zhongzheng Rd.,
Zhonghe District, New Taipei City, 23586,
Taiwan, R.O.C.
Tel: +886-2-8226-7786
Fax: +886-2-8226-7782
www.nexcom.com

Asia

Taiwan

NexAIoT Headquarters

Industry 4.0 and Cloud Services

13F, No.922, Zhongzheng Rd.,
Zhonghe District, New Taipei City,
23586, Taiwan, R.O.C.
Tel: +886-2-8226-7796
Fax: +886-2-8226-7926
Email: jacobhuang@nexaiot.com
www.nexaiot.com

NexAIoT Co., Ltd.

Taichung Office

16F, No.250, Sec.2, Chongde Rd.,
Beitun District,
Taichung City, 406, Taiwan, R.O.C.
Tel: +886-4-2249-1179
Fax: +886-4-2249-1172
Email: jacobhuang@nexaiot.com
www.nexaiot.com

NexCOBOT Taiwan Co., Ltd.

13F, No.916, Zhongzheng Rd.,
Zhonghe District,
New Taipei City, 23586, Taiwan, R.O.C.
Tel: +886-2-8226-7786
Fax: +886-2-8226-7926
Email: jennyshern@nexcobot.com
www.nexcobot.com

GreenBase Technology Corp.

13F, No.922, Zhongzheng Rd.,
Zhonghe District,
New Taipei City, 23586, Taiwan, R.O.C.
Tel: +886-2-8226-7786
Fax: +886-2-8226-7900
Email: vivianlin@nexcom.com.tw
www.nexcom.com.tw

DivioTec Inc.

19F-1A, No.97, Sec.4, ChongXin Rd.,
Sanchong District,
New Taipei City, 24161, Taiwan, R.O.C.
Tel: +886-2-8976-3077
Email: sales@diviotec.com
www.diviotec.com

AIoT Cloud Corp.

13F, No.922, Zhongzheng Rd.,
Zhonghe District,
New Taipei City, 23586, Taiwan, R.O.C.
Tel: +886-2-8226-7786
Fax: +886-2-8226-7782
Email: alantsai@aiotcloud.net
www.aiotcloud.dev

EMBUX TECHNOLOGY CO., LTD.

13F, No.916, Zhongzheng Rd.,
Zhonghe District,
New Taipei City, 23586, Taiwan, R.O.C.
Tel: +886-2-8226-7786
Fax: +886-2-8226-7782
Email: info@embux.com
www.embux.com

TMR TECHNOLOGIES CO., LTD.

13F, No.916, Zhongzheng Rd.,
Zhonghe District,
New Taipei City, 23586, Taiwan, R.O.C.
Tel: +886-2-8226-7786
Fax: +886-2-8226-7782
Email: services@tmrtek.com
www.tmrtek.com

China NEXSEC Incorporated

201, Floor 2, Unit 2, Building 15, Yard 3,
Gaolizhang Road, Haidian District,
Beijing, 100094, China
Tel: +86-10-5704-2680
Fax: +86-10-5704-2681
Email: marketing@nexsec.cn
www.nexsec.cn

NEXCOM Shanghai

Room 406-407, Building C, No 154, Lane 953,
Jianchuan Road, Minhang District,
Shanghai, 201108, China
Tel: +86-21-5278-5868
Fax: +86-21-3251-6358
Email: sales@nexcom.cn
www.nexcom.cn

NEXCOM Surveillance Technology Corp.

Floor 8, Building B3, Xiufeng Industrial Zone,
GanKeng Community, Buji Street,
LongGang District,
ShenZhen, 518112, China
Tel: +86-755-8364-7768
Fax: +86-755-8364-7738
Email: steveyang@nexcom.com.tw
www.nexcom.cn

NEXGOL Chongqing

1st Building No.999,
Star Boulevard, Yongchuan Dist,
Chongqing City, 402160, China
Tel: +86-23-4960-9080
Fax: +86-23-4966-5855
Email: sales@nexgol.com.cn
www.nexcobot.cn

Beijing NexGemo Technology Co.,Ltd.

Room 205, No.1, Fazhan Road.,
Beijing International Information Industry Base,
Changping District,
Beijing, 102206, China
Tel: +86-10-8072-2025
Fax: +86-10-8072-2022
Email: sales@nexgemo.cn
www.nexgemo.com

Japan

NEXCOM Japan

9F, Tamachi Hara Bldg.,
4-11-5, Shiba Minato-ku,
Tokyo, 108-0014, Japan
Tel: +81-3-5419-7830
Fax: +81-3-5419-7832
Email: sales@nexcom-jp.com
www.nexcom-jp.com

America

USA NEXCOM USA

46665 Fremont Blvd.,
Fremont CA 94538, USA
Tel: +1-510-656-2248
Fax: +1-510-656-2158
Email: sales@nexcom.com
www.nexcomusa.com

Europe

United Kingdom NEXCOM EUROPE

10 Vincent Avenue,
Crownhill Business Centre,
Milton Keynes, Buckinghamshire
MK8 0AB, United Kingdom
Tel: +44-1908-267121
Fax: +44-1908-262042
Email: sales.uk@nexcom.eu
www.nexcom.com

Package Contents

Before continuing, verify that the TCA 5170 series package that you received is complete. Your package should have all the items listed in the following table.

Item	Part Number	Name	Qty
1	19CA0517000X0	TCA 5170	1
2	50311F0100X00	Round Head Screw with Spring for M.2 (3042 & 2230) Device Installation	2
3	50311F0206X00	P Head Screw M2X5L for M.2 (2280) Device Installation	1
4	5040150001X00	Hook Handle (For retrieving LAN module)	1
5	5044440031X00	Rubber Foot Set	4
6	6012200052X00	PE Zipper Bag #8	1
7	6012200053X00	PE Zipper Bag #3	1
8	603USB0082X00	USB Cable	1
9	5040210035X00	Ear Set (2) + Screws	1
10	6014605588X00	Outside Carton Label for TCA 5170	2

Ordering Information

The following below provides ordering information for the TCA 5170 series.

TCA 5170 (P/N: 10CA0517000X0)

1U Intel® Xeon® D-2123IT w/o QAT, w/ 4 x 10GbE & 8 x 1GbE LAN ports,
2 LAN module slots, wo/ LCM

TCA 5170B (P/N: 10CA0517002X0)

1U Intel® Xeon® D-2177NT w/ QAT, w/ 4 x 10GbE & 8 x 1GbE LAN ports,
2 LAN module slots, wo/ LCM

TCA 5170C (P/N: 10CA0517003X0)

1U Intel® Xeon® D-2146NT w/ QAT, w/ 4 x 10GbE & 8 x 1GbE LAN ports,
2 LAN module slots, wo/ LCM

Model	P/N Controller	Interface	Type	Port Number	Bypass/Segment	Expansion Slot	Location Slot
NX 140F	10S20140F01X0	XL710-BM1	PCIe x8	4 SFP+	None	None	All Slot
NI 140F	10SK000NI02X0	i350AM4x1	PCIe x8	4 SFP	None	None	All Slot
NI 180F	10S10180F01X0	i350AM4x2	PCIe x8	8 SFP	None	None	All Slot
NI 142C	10SK000NI03X0	i350AM4x1	PCIe x8	4 Copper	2 bypass	None	All Slot
NI 180C	10S10180C01X0	i350AM4x2	PCIe x8	8 Copper	None	None	All Slot
NI 184C	10S10184C01X0	i350AM4x2	PCIe x8	8 Copper	4 bypass	None	All Slot
NI 142F	10S10142F01X0	i350AM4x1	PCIe x8	4 SFP	2 bypass	None	All Slot
NI 121F	10S10121F01X0	i350AM2x1	PCIe x8	2 SFP	1 bypass	None	All Slot

CHAPTER 1: PRODUCT INTRODUCTION

Overview



Key Features

- Intel® Xeon® D-2123IT SoC, BGA type (TCA 5170)
- Intel® Xeon® D-2177NT SoC, BGA type (TCA 5170B)
- Intel® Xeon® D-2146NT SoC, BGA type (TCA 5170C)
- 8 x DDR4-2400 RDIMM (TCA 5170)
- 8 x DDR4-2666 RDIMM (TCA 5170B)
- 8 x DDR4-2133 RDIMM (TCA 5170C)
- 1 x 2.5 SSD, 1 x M.2 2280
- 8 x GbE RJ45 & 4 x 10GbE Fiber
- 2 x LAN modules
- Redundant power supply
- Supports Intel® QAT (TCA 5170B and TCA 5170C)
- Intel® Select Solution for uCPE with ADVA Ensemble Connector (TCA 5170)
- Intel® Select Solution for uCPE with CentOS (TCA 5170B)

Hardware Specifications

Main Board

TCA 5170

- Intel® Xeon® Skylake-D SoC, BGA type
 - D-2123IT, 4 cores w/ o QAT

TCA 5170B

- Intel® Xeon® Skylake-D SoC, BGA type
 - D-2177NT, 14 cores w/ QAT

TCA 5170C

- Intel® Xeon® Skylake-D SoC, BGA type
 - D-2146NT, 8 cores w/ QAT

Main Memory

TCA 5170

- 8 x DDR4 2400 RDIMM sockets, up to 256GB

TCA 5170B

- 8 x DDR4 2666 RDIMM sockets, up to 256GB

TCA 5170C

- 8 x DDR4 2133 RDIMM sockets, up to 256GB

Storage

- 1 x 2.5" internal SSD/HDD bay
- 1 x M.2 2280 M key, supports SATA and PCIe x4 signal

I/O Interface-External

- Button: power & reset
- LED: power/HDD/2 x GPIO
- 1 x USB 3.0 port

- 1 x Micro USB type console
- 8 x GbE RJ45 ports
 - 2 x LAN bypass pairs (TCA 5170 and TCA 5170B)
- 4 x 10GbE fiber ports
- 2 x PCIe x8 LAN module slots
- 1 x Management port
- 4 x SMA connectors for antennas
- 3 x Fixed smart fans
- 2 x Power inlets
- LCM module (optional)

I/O Interface-Internal

- 1 x M.2 2230 E key
- 1 x M.2 3042 B key with SIM slot

Power

- 450W 1+1 redundant power supply

Dimensions and Weight

- Chassis dimension (mm): 438 x 480 x 44
- Package dimension (mm): 632 x 567 x 203
- Without packing: 8kg
- With packing: 12kg

Environment

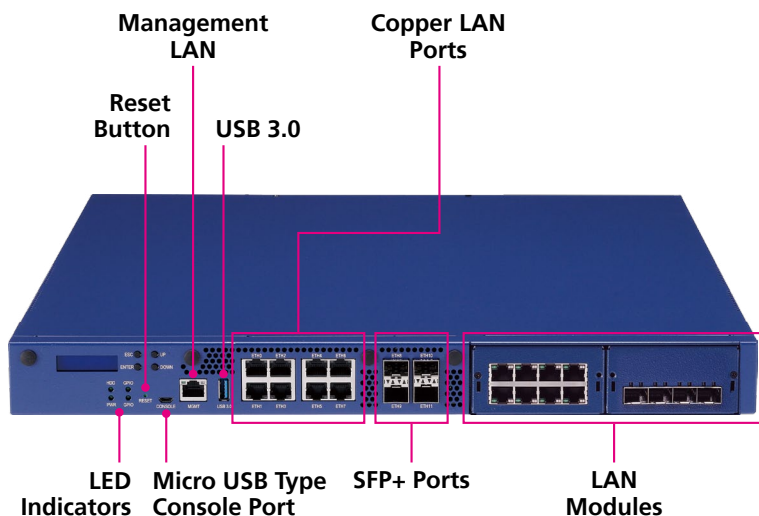
- Operating temperature: 0°C~40°C
- Storage temperature: -20°C~80°C
- Relative humidity: 10%~90%, non-condensing

Certifications

- CE/FCC Class A

Knowing Your TCA 5170 Series

Front Panel



LED Indicators

Indicates the power, storage drive and GPIO activity of the system.

Reset Button

Press to restart the system.

Micro USB Type Console Serial Port

Used to connect Micro USB type console devices.

Management LAN Port

Management LAN port used for managing the system.

USB 3.0 Port

Used to connect USB 3.0/2.0 devices.

Copper LAN Ports

Used to connect network devices.

SFP+ Ports

Used to connect SFP+ modules for connecting fiber optic network devices.

LAN Modules

Two PCIe x8 LAN module bays to install add-on network modules.

Rear Panel



Power Switch

**AC Power Sockets
(Dual Redundant PSU)**

Power Switch

Press to power-on or power-off the system.

AC Power Sockets

Dual redundant power supply sockets, plug an AC power cord here before turning on the system.

CHAPTER 2: JUMPERS AND CONNECTORS

This chapter describes how to set the jumpers and connectors on the TCA 5170 series motherboard.

Before You Begin

- Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.
- Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:
 - A Philips screwdriver
 - A flat-tipped screwdriver
 - A set of jewelers screwdrivers
 - A grounding strap
 - An anti-static pad
- Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nosed pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.
- Before working on internal components, make sure that the power is off. Ground yourself before touching any internal components, by touching a metal object. Static electricity can damage many of the electronic components. Humid environments tend to have less static electricity than

dry environments. A grounding strap is warranted whenever danger of static electricity exists.

Precautions

Computer components and electronic circuit boards can be damaged by discharges of static electricity. Working on computers that are still connected to a power supply can be extremely dangerous.

Follow the guidelines below to avoid damage to your computer or yourself:

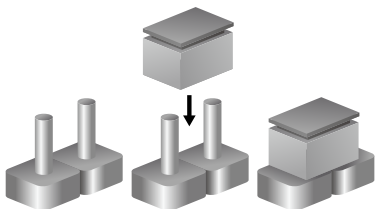
- Always disconnect the unit from the power outlet whenever you are working inside the case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.
- Hold electronic circuit boards by the edges only. Do not touch the components on the board unless it is necessary to do so. Don't flex or stress the circuit board.
- Leave all components inside the static-proof packaging that they shipped with until they are ready for installation.
- Use correct screws and do not over tighten screws.

Jumper Settings

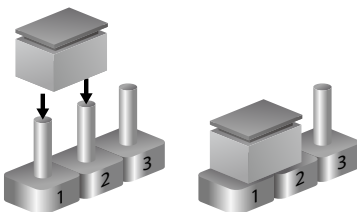
A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is short. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is open.

Refer to the illustrations below for examples of what the 2-pin and 3-pin jumpers look like when they are short (on) and open (off).

Two-Pin Jumpers: Open (Left) and Short (Right)

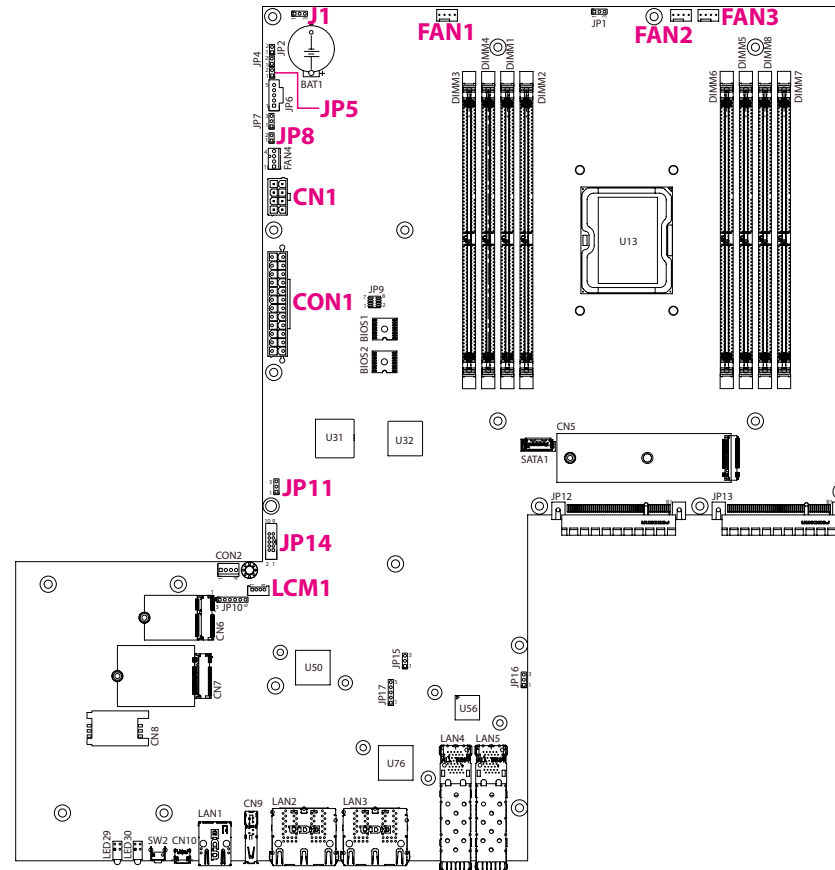


Three-Pin Jumpers: Pins 1 and 2 are Short



Locations of the Jumpers and Connectors

The figure below shows the location of the jumpers and connectors.

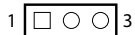




Jumpers

RTC Clear

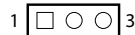
Connector type: 1x3 3-pin header
Connector location: J1



Pin	Definition
1	PU_RST_RTCRST_N
2	RST_RTCRST_N
3	GND

AT/ATX Mode Select

Connector type: 1x3 3-pin header
Connector location: JP11



Pin	Settings
1-2 On	ATX Mode
2-3 On	AT Mode



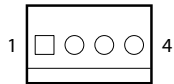


Connector Pin Definitions

Internal Connectors

Fan Connectors

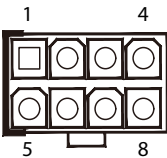
Connector type: 1x4 4-pin wafer header
Connector location: FAN1, FAN2 and FAN3



Pin	Definition
1	GND
2	P12V
3	TACH
4	PWM

8-pin Internal 12V Power Connector

Connector type: 2x4 8-pin boxed header
Connector location: CN1



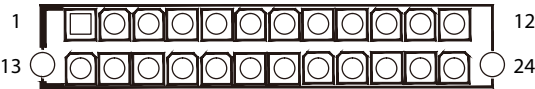
Pin	Definition	Pin	Definition
1	GND	2	GND
3	GND	4	GND
5	P12V	6	P12V
7	P12V	8	P12V





24-pin Internal ATX Power Connector

Connector type: 2x12 24-pin boxed header
Connector location: CON1



Pin	Definition	Pin	Definition
1	+3.3V	2	+3.3V
3	GND	4	+5V
5	GND	6	+5V
7	GND	8	PW-OK
9	+5VSB	10	+12V
11	+12V	12	+3.3V
13	+3.3V	14	-12V
15	GND	16	PS-ON
17	GND	18	GND
19	GND	20	RES/-5V
21	+5V	22	+5V
23	+5V	24	GND

Power Button

Connector type: 1x2 2-pin header
Connector location: JP8



Pin	Definition
1	FP_PWRBTN_R_N
2	GND



Reset Button

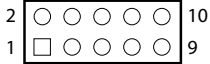
Connector type: 1x2 2-pin header
Connector location: JP5



Pin	Definition
1	PCH_SYS_RESET_N_R
2	GND

GPIO Pin Header

Connector type: 2x5 10-pin header
Connector location: JP14



Pin	Definition	Pin	Definition
1	P5V	2	GND
3	SW_GPIN1	4	SW_GPOUT1
5	SW_GPIN2	6	SW_GPOUT2
7	SW_GPIN3	8	SW_GPOUT3
9	SW_GPIN4	10	SW_GPOUT4



LCM

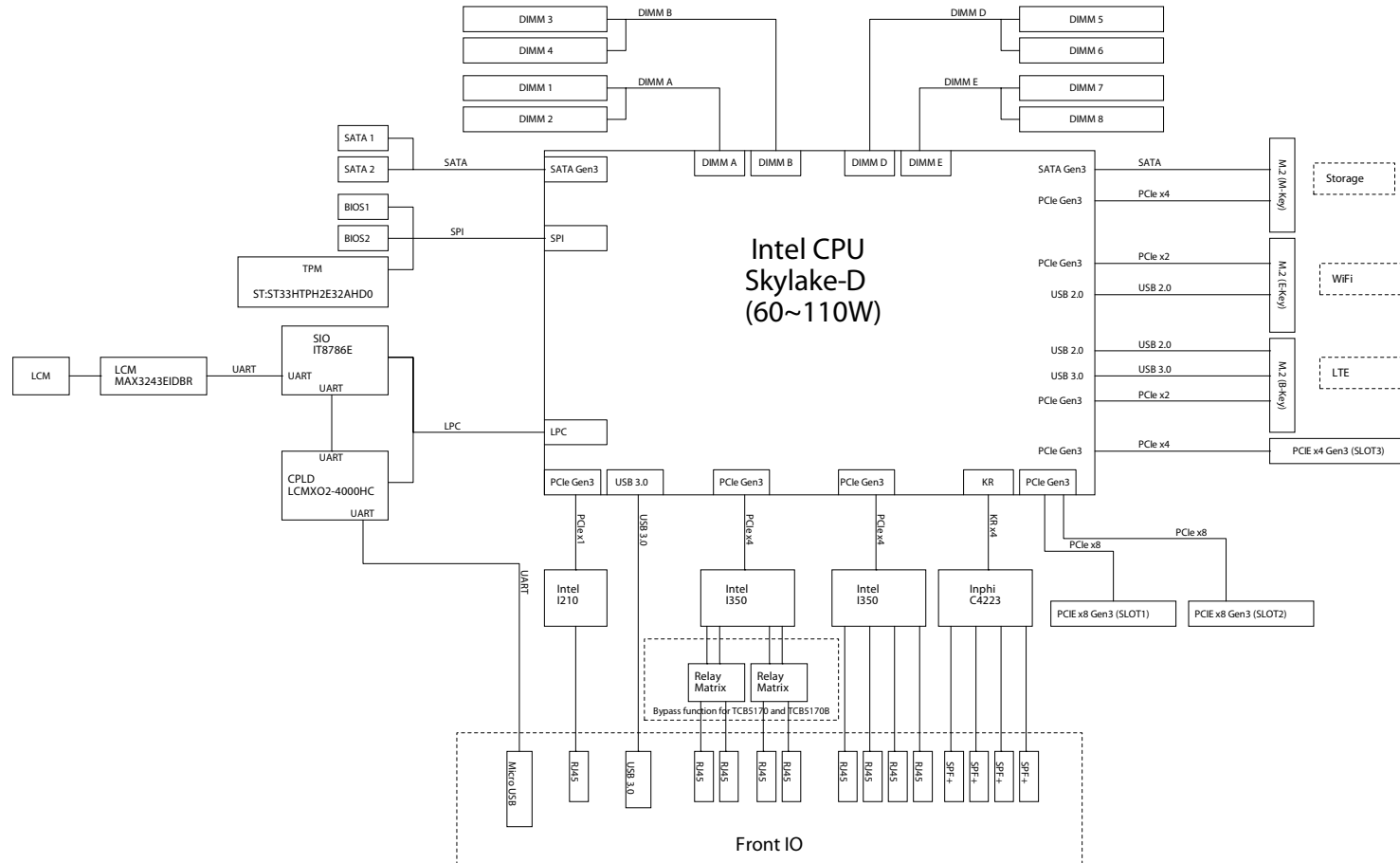
Connector type: 1x4 4-pin header
Connector location: LCM1



Pin	Definition
1	GND
2	SP_UART1_RXD
3	SP_UART1_TXD
4	P3V3

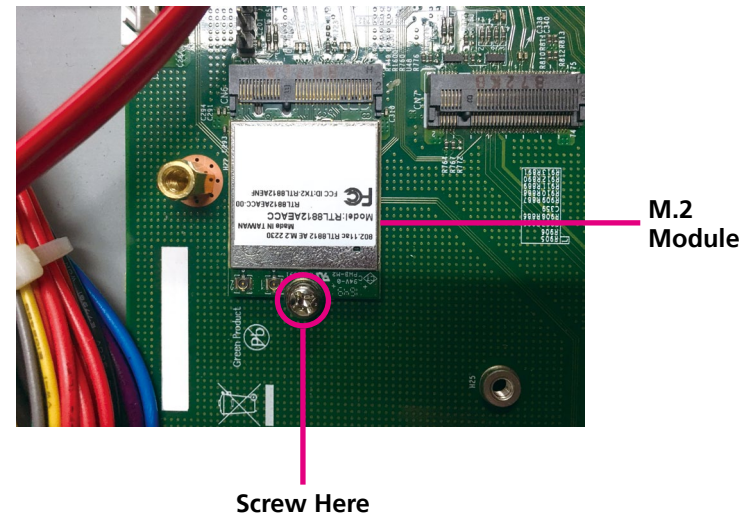
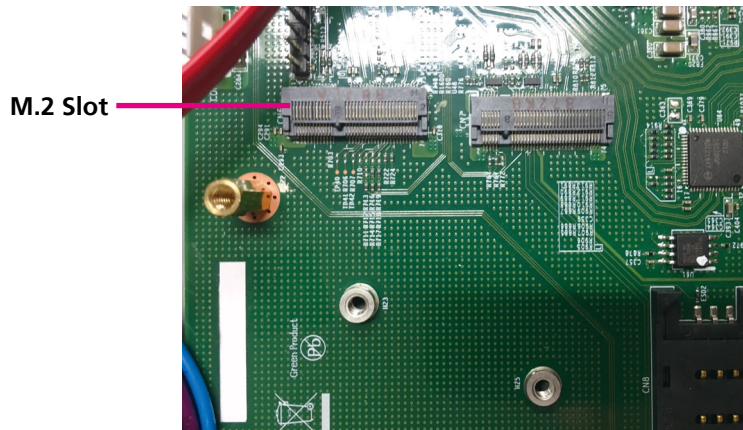


Block Diagram



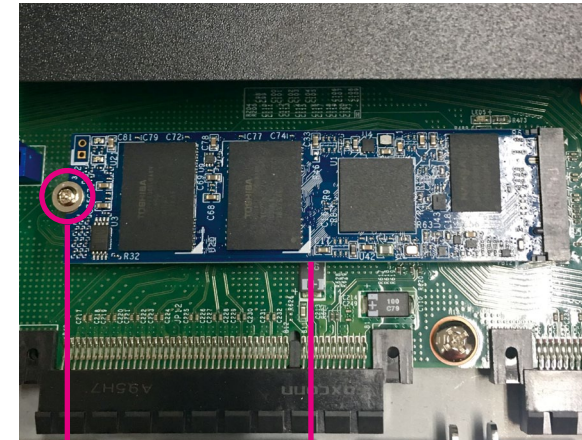
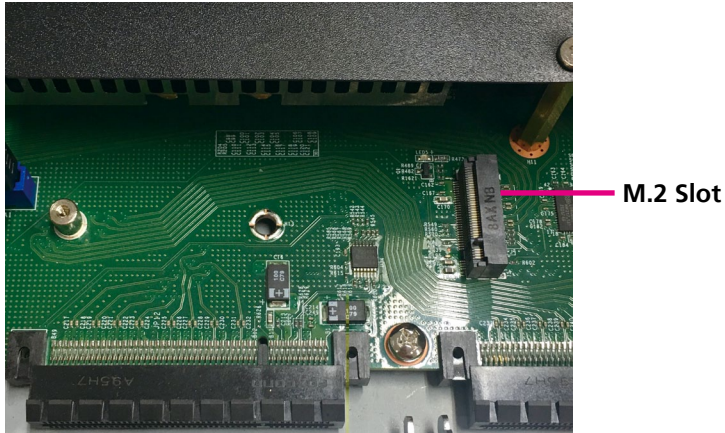
Installing an M.2 2230/3042 Module

1. With the chassis cover removed, locate the M.2 slot on the motherboard.
2. Insert the M.2 module until it is completely seated into the slot and secure the module with a screw.



Installing an M.2 2280 Module

1. With the chassis cover removed, locate the M.2 slot on the motherboard.
2. Insert the M.2 module until it is completely seated into the slot and secure the module with a screw.

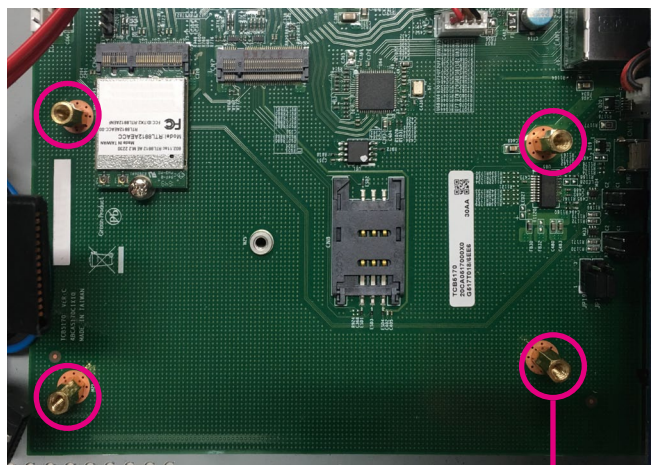


Installing a 2.5" SATA Storage Drive

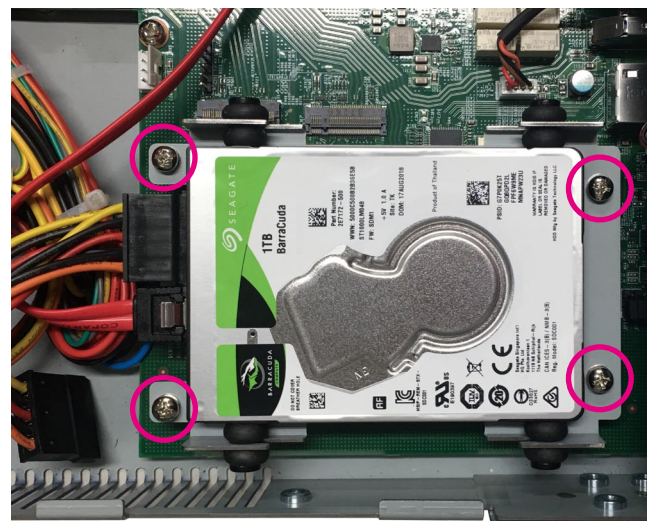


Please correctly follow the below instructions and noted items to avoid making unnecessary damages.

1. Install the SATA storage drive onto the storage drive bracket and align the mounting holes on the bracket to the standoffs in the chassis.
2. With the mounting holes aligned, secure the bracket to the chassis with mounting screws. Connect the SATA data and power cables to the respective connectors on the motherboard and the other ends of the cables to the connectors on the storage drive.

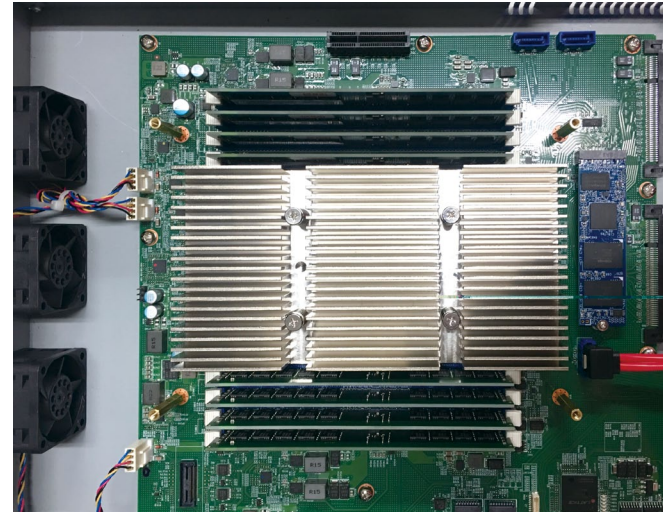
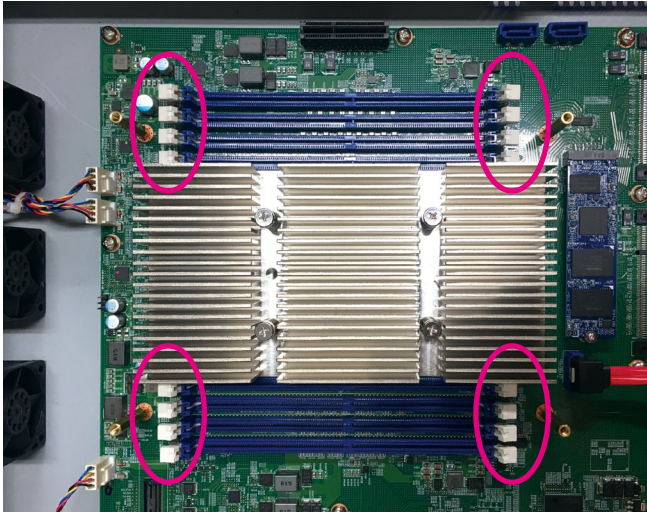


Standoff



Installing DIMM Memory Modules

1. Locate the DIMM sockets on the motherboard and release the locks.
2. Insert the module into the socket at an 90 degree angle. Apply firm even pressure to each end of the module until it slips into the socket. While pushing the module into position, the locks will close automatically.



CHAPTER 4: BIOS SETUP

This chapter describes how to use the BIOS setup program for the TCA 5170 series. The BIOS screens provided in this chapter are for reference only and may change if the BIOS is updated in the future.

To check for the latest updates and revisions, visit the NEXCOM website at www.nexcom.com.tw.

About BIOS Setup

The BIOS (Basic Input and Output System) Setup program is a menu driven utility that enables you to make changes to the system configuration and tailor your system to suit your individual work needs. It is a ROM-based configuration utility that displays the system's configuration status and provides you with a tool to set system parameters.

These parameters are stored in non-volatile battery-backed-up CMOS RAM that saves this information even when the power is turned off. When the system is turned back on, the system is configured with the values found in CMOS.

With easy-to-use pull down menus, you can configure such items as:

- Hard drives, diskette drives, and peripherals
- Video display type and display options
- Password protection from unauthorized use
- Power management features

The settings made in the setup program affect how the computer performs. It is important, therefore, first to try to understand all the setup options, and second, to make settings appropriate for the way you use the computer.

When to Configure the BIOS

- This program should be executed under the following conditions:
- When changing the system configuration
- When a configuration error is detected by the system and you are prompted to make changes to the setup program
- When resetting the system clock
- When redefining the communication ports to prevent any conflicts
- When making changes to the Power Management configuration
- When changing the password or making other changes to the security setup

Normally, CMOS setup is needed when the system hardware is not consistent with the information contained in the CMOS RAM, whenever the CMOS RAM has lost power, or the system features need to be changed.


Default Configuration

Most of the configuration settings are either predefined according to the Load Optimal Defaults settings which are stored in the BIOS or are automatically detected and configured without requiring any actions. There are a few settings that you may need to change depending on your system configuration.











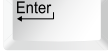
Entering Setup

When the system is powered on, the BIOS will enter the Power-On Self Test (POST) routines. These routines perform various diagnostic checks; if an error is encountered, the error will be reported in one of two different ways:

- If the error occurs before the display device is initialized, a series of beeps will be transmitted.
- If the error occurs after the display device is initialized, the screen will display the error message.

Powering on the computer and immediately pressing  allows you to enter Setup.

Legends


Key	Function
	Moves the highlight left or right to select a menu.
	Moves the highlight up or down between sub-menu or fields.
	Exits the BIOS Setup Utility.
	Scrolls forward through the values or options of the highlighted field.
	Scrolls backward through the values or options of the highlighted field.
	Selects a field.
	Displays General Help.
	Load previous values.
	Load optimized default values.
	Saves and exits the Setup program.
	Press <Enter> to enter the highlighted sub-menu



Scroll Bar


When a scroll bar appears to the right of the setup screen, it indicates that there are more available fields not shown on the screen. Use the up and down arrow keys to scroll through all the available fields.

Submenu

When “▶” appears on the left of a particular field, it indicates that a submenu which contains additional options are available for that field. To display the submenu, move the highlight to that field and press  .



BIOS Setup Utility

Once you enter the AMI BIOS Setup Utility, the Main Menu will appear on the screen. The main menu allows you to select from several setup functions and one exit. Use arrow keys to select among the items and press  to accept or enter the submenu.

Main

The Main menu is the first screen that you will see when you enter the BIOS Setup Utility.



System Date

The date format is <day>, <month>, <date>, <year>. Day displays a day, from Monday to Sunday. Month displays the month, from January to December. Date displays the date, from 1 to 31. Year displays the year, from 1998 to 9999.

System Time

The time format is <hour>, <minute>, <second>. The time is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Hour displays hours from 00 to 23. Minute displays minutes from 00 to 59. Second displays seconds from 00 to 59.



Advanced

The Advanced menu allows you to configure your system for basic operation. Some entries are defaults required by the system board, while others, if enabled, will improve the performance of your system or let you set some features according to your preference.



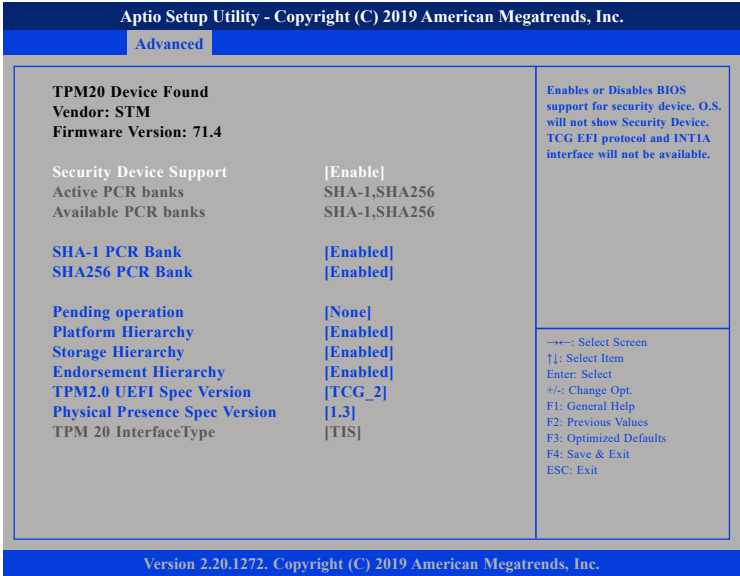
Setting incorrect field values may cause the system to malfunction.



※ TCA 5170C does not support Network Configuration.

Trusted Computing

This section is used to configure Trusted Platform Module (TPM) settings.



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

Enables or disables SHA-1 PCR Bank.

SHA256 PCR Bank

Enables or disables SHA256 PCR Bank.

Pending operation

Schedules an operation for the security device.

Platform Hierarchy

Enables or disables platform hierarchy.

Storage Hierarchy

Enables or disables storage hierarchy.

Endorsement Hierarchy

Enables or disables endorsement hierarchy.

TPM2.0 UEFI Spec Version

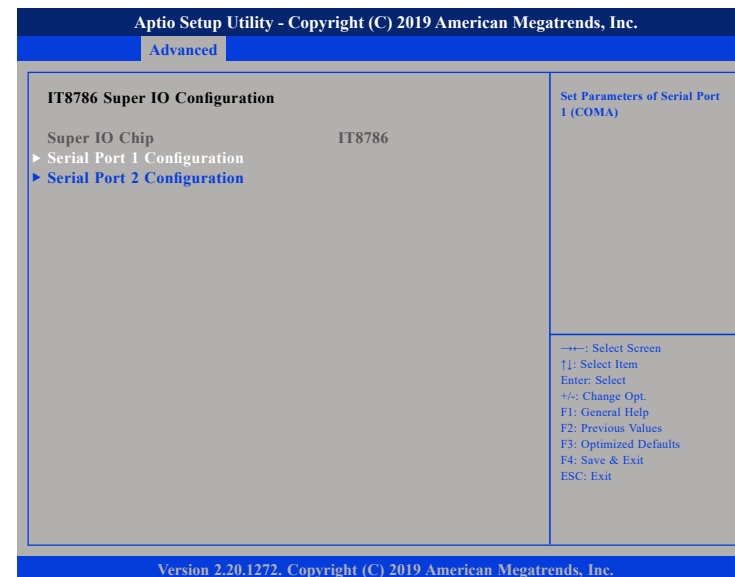
Configures the TPM2.0 UEFI spec version.

Physical Presence Spec Version

Configures the physical presence spec version.

IT8786 Super IO Configuration

This section is used to configure the serial port.

**Super IO Chip**

Displays the Super I/O chip used on the board.

Serial Port 1 Configuration

Configuration settings for serial port 1.

Serial Port 2 Configuration

Configuration settings for serial port 2.



Serial Port 1 Configuration

This section is used to configure serial port 1.

Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.

Advanced

Serial Port 1 Configuration

Serial Port
Device Settings
Change Settings

[Enabled]
IO=3F8h; IRQ=4;
[Auto]

Enable or Disable Serial Port (COM)

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

Version 2.20.1272. Copyright (C) 2019 American Megatrends, Inc.

Serial Port

Enables or disables the serial port.

Change Settings

Selects an optimal setting for the Super IO device.

Serial Port 2 Configuration

This section is used to configure serial port 2.

Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.

Advanced

Serial Port 2 Configuration

Serial Port
Device Settings
Change Settings

[Enabled]
IO=2F8h; IRQ=3;
[Auto]

Enable or Disable Serial Port (COM)

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

Version 2.20.1272. Copyright (C) 2019 American Megatrends, Inc.

Serial Port

Enables or disables the serial port.

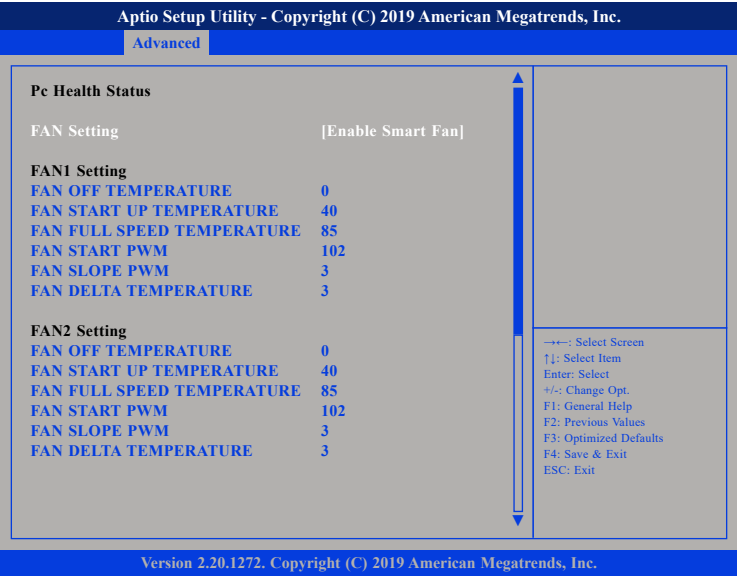
Change Settings

Selects an optimal setting for the Super IO device.



Hardware Monitor

This section is used to monitor hardware status such as temperature, fan speed and voltages.



FAN Setting

Configures the operating mode of the fan.

FAN OFF TEMPERATURE

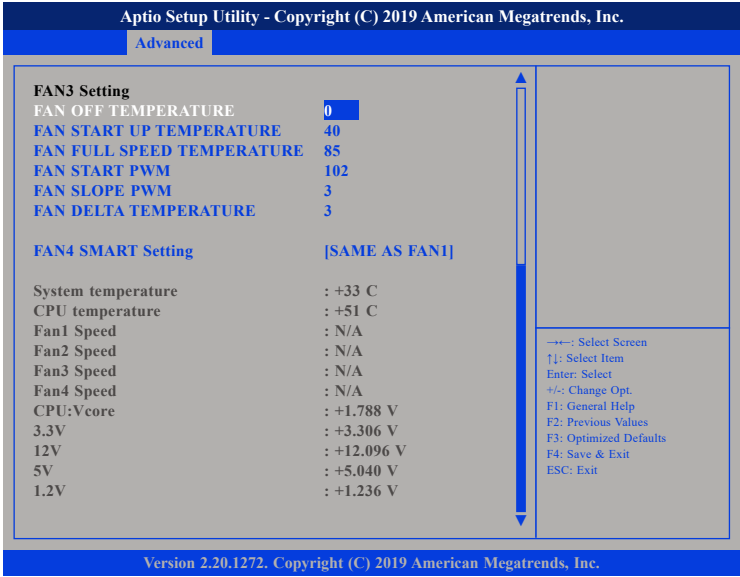
Configures the temperature to turn the fan off.

FAN ON TEMPERATURE

Configures the temperature to turn the fan on.

FAN FULL SPEED

Configures the temperature to run the fan at full speed.



FAN START PWM

Configures the start PWM value of the fan. This is used to set the starting fan speed.

FAN SLOPE PWM

Configures the slope PWM value of the fan. This is used to control the rate of the fan speed based on temperature changes.

FAN DELTA TEMPERATURE

Configures the delta temperature of the fan.

FAN4 SMART Setting

Configures the smart fan setting of FAN4.

Hardware Monitor Cont.

Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.

Advanced

FAN3 Setting	
FAN OFF TEMPERATURE	0
FAN START UP TEMPERATURE	40
FAN FULL SPEED TEMPERATURE	85
FAN START PWM	102
FAN SLOPE PWM	3
FAN DELTA TEMPERATURE	3
FAN4 SMART Setting [SAME AS FAN1]	
System temperature	: +33 C
CPU temperature	: +51 C
Fan1 Speed	: N/A
Fan2 Speed	: N/A
Fan3 Speed	: N/A
Fan4 Speed	: N/A
CPU:Vcore	: +1.788 V
3.3V	: +3.306 V
12V	: +12.096 V
5V	: +5.040 V
1.2V	: +1.236 V

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

Version 2.20.1272. Copyright (C) 2019 American Megatrends, Inc.

System and CPU temperature

Detects and displays the current system and CPU temperature.

Fan1 to Fan4 Speed

Detects and displays the current fan1 to fan4 speed.

CPU:Vcore to 1.2V

Detects and displays the output voltages.

Network Configuration

This section is used to configure the network bypass settings.

Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.

Advanced

Network Configuration		Switch all Bypass Mode to Enable/Disable after power on
Onboard LAN Bypass		
Power_On Bypass Mode	[ALL Disabled]	
Power_OFF Bypass Mode	[ALL Disabled]	
LAN Module Bypass		
Bypass Auto Detect	[Enabled]	
If all the PCIE slots don't insert the Lan Module or all the Lan Modules don't support Bypass function, the options of the bypass will not be shown!!		
→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit		→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Version 2.20.1272. Copyright (C) 2019 American Megatrends, Inc.

Power_ON Bypass Mode

Enables or disables the LAN module bypass mode after the system powers on.

Power_OFF Bypass Mode

Enables or disables the LAN module bypass mode after the system powers off.

Bypass Auto Detect

Enables or disables automatic LAN Bypass function.

※ TCA 5170C does not support Network Configuration.

Serial Port Console Redirection

This section is used to configure the serial port that will be used for console redirection.

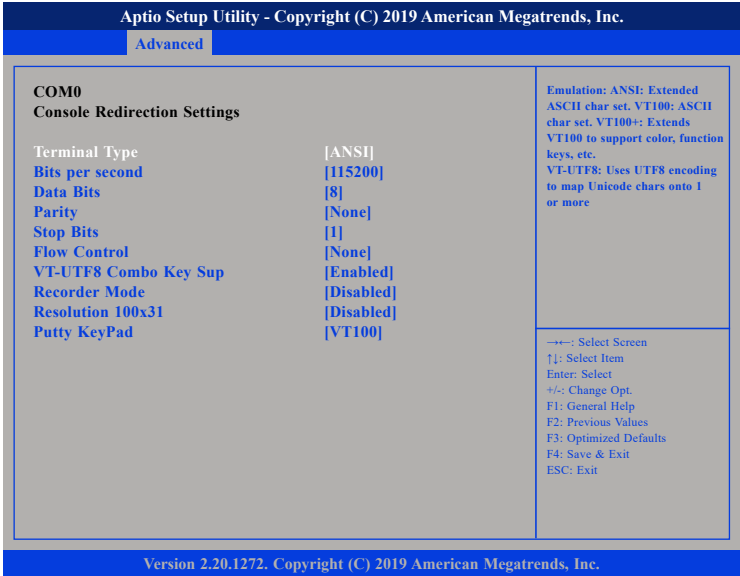


Console Redirection

Enables or disables console redirection for COM0.

Console Redirection Settings (COM0)

Specifies 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.



Terminal Type

- ANSI Extended ASCII character set.
- VT100 ASCII character set.
- VT100+ Extends VT100 to support color, function keys, etc.
- VT-UTF8 Uses UTF8 encoding to map Unicode characters onto 1 or more bytes.

Bits per second

Selects the serial port transmission speed. The speed must match the other side. Long or noisy lines may require a lower speed.

Data Bits

The options are 7 and 8.

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 number of 1's in the data bits is odd.

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 and the receiving buffers are full, a "stop" signal can be sent to stop the data flow.

VT-UTF8 Combo Key Support

Enables or disables VT-UTF8 combo key support.

Recorder Mode

When this field is enabled, only text will be sent. This is to capture the terminal data.

Resolution 100x31

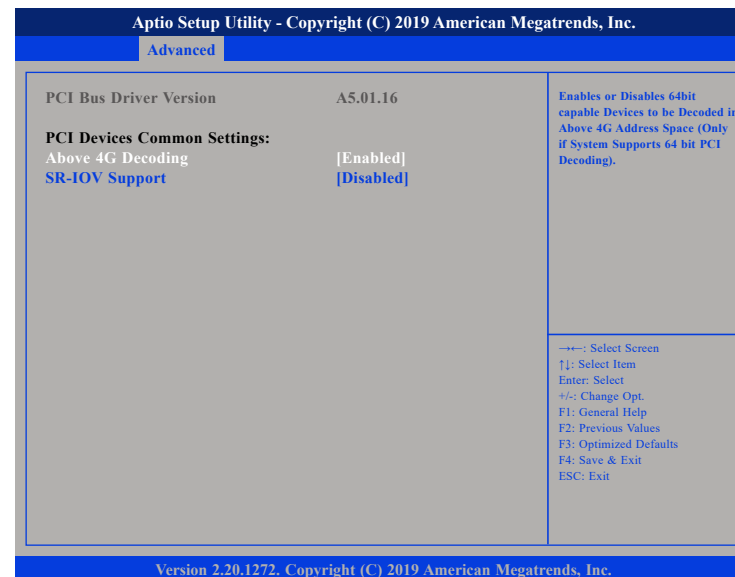
Enables or disables extended terminal resolution.

Putty KeyPad

Selects the Putty keyboard emulation type.

PCI Subsystem Settings

This section is used to configure the PCI.



Above 4G Decoding

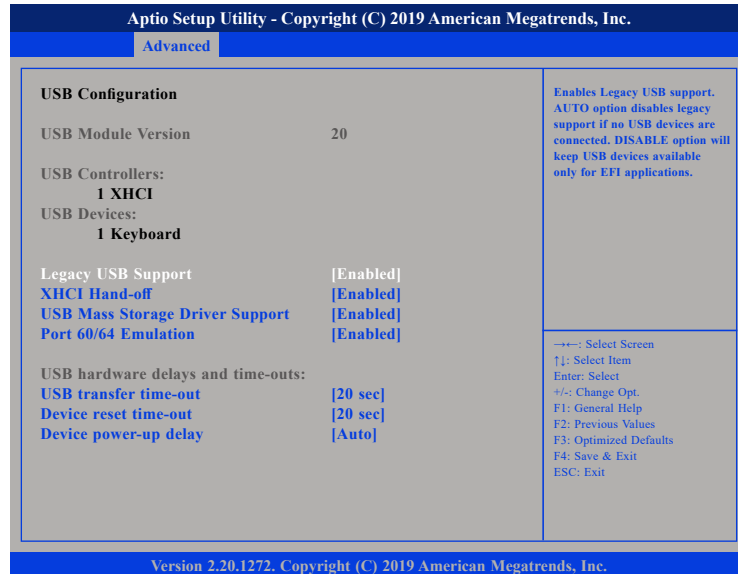
Enables or disables decoding of 64-bit devices in 4G address space. (Only if the system supports 64-bit PCI decoding.)

SR-IOV Support

Enables or disables SR-IOV support.

USB Configuration

This section is used to configure the USB.



Legacy USB Support

Enable Enables Legacy USB.

Auto Disables support for Legacy when no USB devices are connected.

Disable Keeps USB devices available only for EFI applications.

XHCI Hand-off

This is a workaround for OSs that does not support XHCI hand-off. The XHCI ownership change should be claimed by the XHCI driver.

USB Mass Storage Driver Support

Enables or disables USB mass storage device driver support.

Port 60/64 Emulation

Enables I/O port 60h/64h emulation support. This should be enabled for complete USB keyboard legacy support for non-USB aware OS.

USB transfer time-out

The time-out value for control, bulk, and Interrupt transfers.

Device reset time-out

Selects the USB mass storage device's start unit command timeout.

Device power-up delay

Maximum time the value 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.



Network Stack Configuration

This section is used to configure the network stack.

Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.

Advanced

Network Stack	[Disabled]	Enable/Disable UEFI Network Stack
		→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Version 2.20.1272. Copyright (C) 2019 American Megatrends, Inc.

Network Stack

Enables or disables UEFI network stack.

CSM Configuration

This section is used to configure the compatibility support module features.

Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.

Advanced

Compatibility Support Module Configuration		Enable/Disable CSM Support.
CSM Support	[Enabled]	
CSM16 Module Version	07.82	
GateA20 Active	[Upon Request]	
Option ROM Messages	[Force BIOS]	
INT19 Trap Response	[Immediate]	
Option ROM execution		
Network	[Do not launch]	
Storage	[UEFI]	
Video	[Legacy]	
Other PCI devices	[Do not launch]	
		→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Version 2.20.1272. Copyright (C) 2019 American Megatrends, Inc.

CSM Support

This field is used to enable or disable CSM support, if Auto option is selected, based on OS, CSM will be enabled or disabled automatically.

GateA20 Active

Upon Request	GA20 can be disabled using BIOS services.
Always	Do not allow disabling of GA20; this option is useful when any RT code is executed above 1MB.



Option ROM Messages

This field is used to set display mode for Option ROM. The options are Force BIOS and Keep Current.

INT19 Trap Response

Allows Option ROMs to trap Interrupt 19 when enabled.

Immediate	Execute the trap right away.
Postponed	Execute the trap during legacy boot.

Network

Controls the execution of UEFI and Legacy PXE OpROM.

Storage

Controls the execution of UEFI and Legacy Storage OpROM.

Video

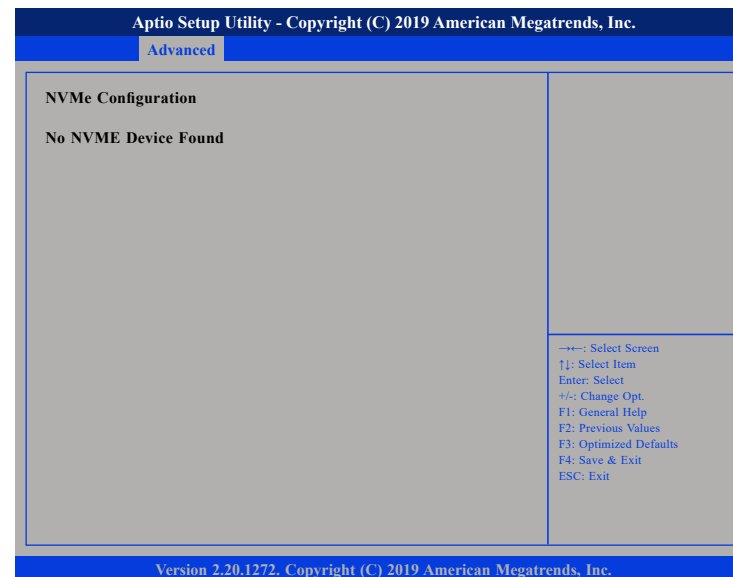
Controls the execution of UEFI and Legacy Video OpROM.

Other PCI Devices

Configures the OpROM execution policy for devices other than Network, Storage or Video.

NVMe Configuration

This section is used to display information on the NVMe devices installed.





Platform Configuration



PCH Configuration

Enters the PCH Configuration submenu.

Server ME Debug Configuration

Enters the Server ME Debug Configuration submenu.

PCH Configuration



PCH Devices

Enters the PCH Devices submenu.

PCI Express Configuration

Enters the PCI Express Configuration submenu.

PCH SATA Configuration

Enters the PCH SATA Configuration submenu.

USB Configuration

Enters the USB Configuration submenu.



PCH Devices

Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.

Platform Configuration

Power Supply Type	[ATX]	Select S0/S5 for ACPI state after a G3
PCH state after G3	[S5]	

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

Version 2.20.1272. Copyright (C) 2019 American Megatrends, Inc.

State After G3

Configures the PCH state after G3.

PCI Express Configuration

Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.

Platform Configuration

Max Read Request Size	[MRRS 1024B]	PCIe Max Read Request Size Selection.
▶ PCI Express Root Port 1		
▶ PCI Express Root Port 3		
▶ PCI Express Root Port 7		
▶ PCI Express Root Port 8		
▶ PCI Express Root Port 19		

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

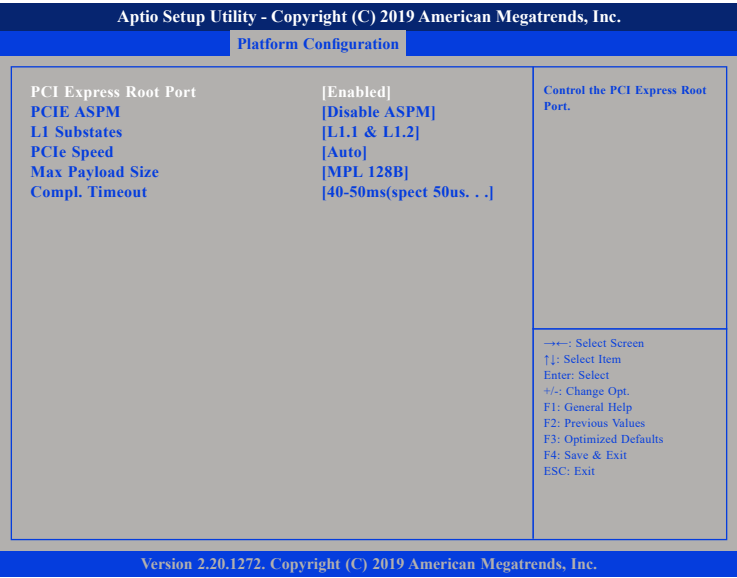
Version 2.20.1272. Copyright (C) 2019 American Megatrends, Inc.

Max Read Request Size

Configures the PCIe max read request size.



PCI Express Root Port 1, 3, 7, 8 and 19



PCI Express Root Port

Enables or disables the PCI Express root port.

PCIE ASPM

Enables or disables PCIe Active State Power Management support.

L1 Substates

Configures the L1 Substates settings.

PCIe Speed

Configures the speed of the PCI Express port.

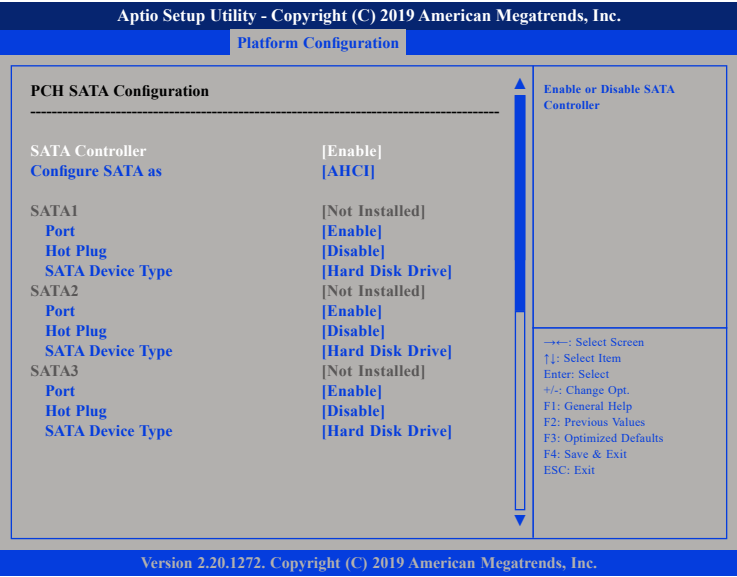
Max Payload Size

Configures the PCIe maximum payload size.

Compl. Timeout

Configures the PCIe Completion Timer timeout setting.

PCH SATA Configuration



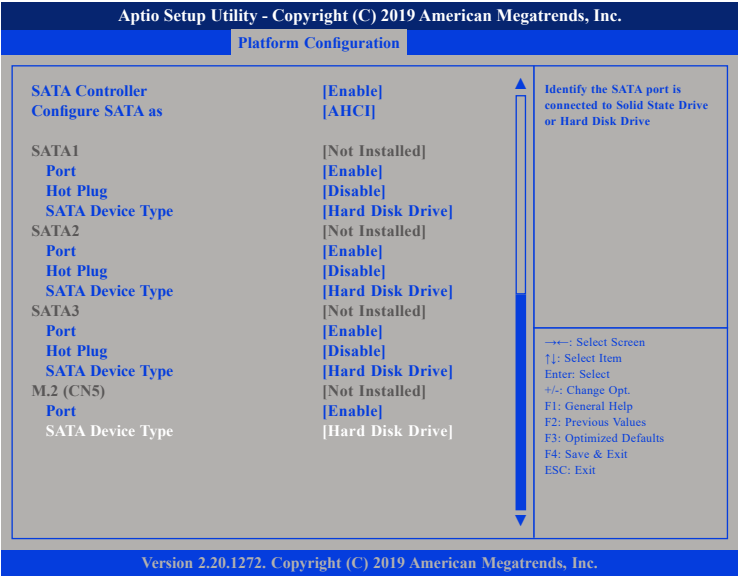
SATA Controller(s)

Enables or disables the SATA controller.

Configure SATA as

Configures the SATA mode.

AHCI This option configures the Serial ATA drives to use AHCI (Advanced Host Controller Interface). AHCI allows the storage driver to enable the advanced Serial ATA features which will increase storage performance.



Port

Enables or disables SATA port 1, 2, 3 or the M.2 port.

Hot Plug

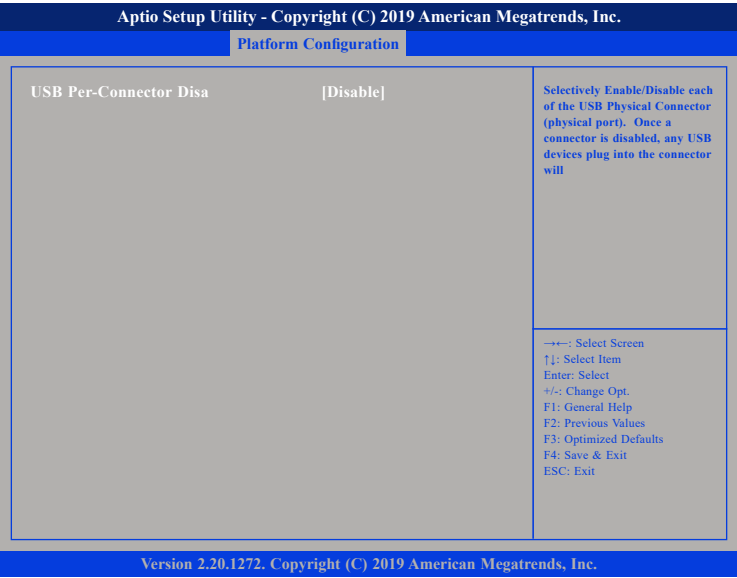
Enables or disables hot plugging feature on SATA port 1 to port 3.

SATA Device Type

Identifies what type of SATA device is connected.



USB Configuration (PCH)



USB Per-Connector Disable

Provides the option to enable or disable each USB connector.

Server ME Debug Configuration

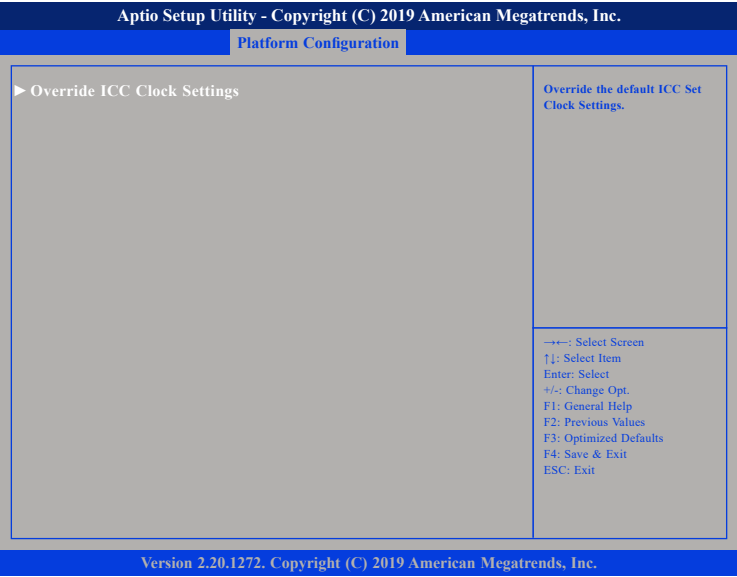


Server ME General Configuration

Enters the Server ME General Configuration submenu.



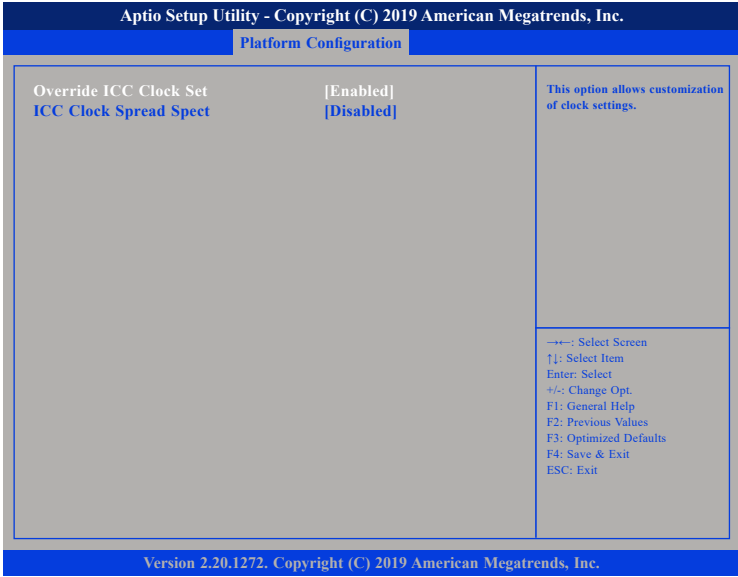
Server ME General Configuration



Override ICC Clock Settings

Enters the Override ICC Clock Settings submenu.

Override ICC Clock Settings



Override ICC Clock Settings

Provides the option to allow customization of clock settings.

ICC Clock Spread Spectrum

Enables or disables ICC Clock Spread Spectrum.

Socket Configuration



Processor Configuration

Enters the Processor Configuration submenu.

Memory Configuration

Enters the Memory Configuration submenu.

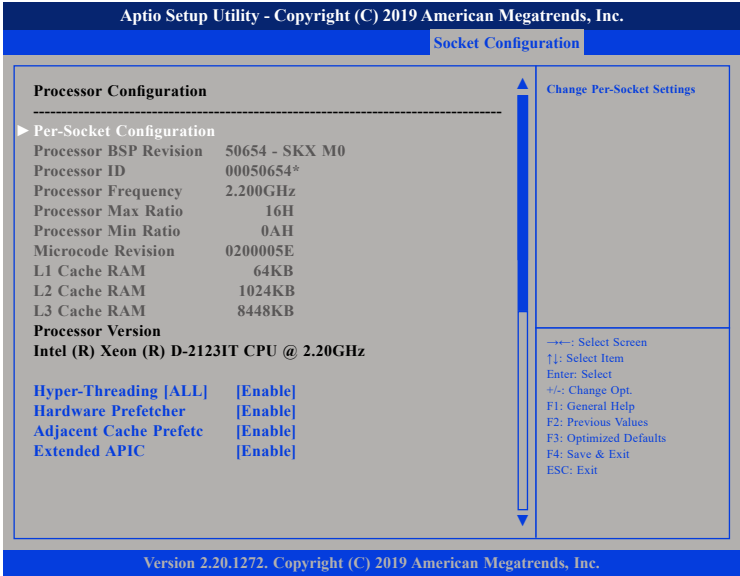
IIO Configuration

Enters the IIO Configuration submenu.

Advanced Power Management Configuration

Enters the Advanced Power Management Configuration submenu.

Processor Configuration (For TCA 5170)



Hyper-Threading [ALL]

Enables or disables hyper-threading technology.

Hardware Prefetcher

Enables or disables the MLC streamer prefetcher.

Adjacent Cache Prefetcher

Enables or disables prefetching of adjacent cache lines.

Extended APIC

Enables or disables extended APIC support.

Processor Configuration (For TCA 5170B)

Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.

Socket Configuration

Processor Configuration

► Per-Socket Configuration

Processor BSP Revision	50654 - SKX M0
Processor ID	00050654*
Processor Frequency	1.900GHz
Processor Max Ratio	16H
Processor Min Ratio	0AH
Microcode Revision	0200005E
L1 Cache RAM	64KB
L2 Cache RAM	1024KB
L3 Cache RAM	19712KB

Processor Version
Intel (R) Xeon (R) D-2177NT CPU @ 1.90GHz

Hyper-Threading [ALL] [Enable]
Hardware Prefetcher [Enable]
Adjacent Cache Prefetcher [Enable]
Extended APIC [Enable]

Change Per-Socket Settings

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

Version 2.20.1272. Copyright (C) 2019 American Megatrends, Inc.

Hyper-Threading [ALL]

Enables or disables hyper-threading technology.

Hardware Prefetcher

Enables or disables the MLC streamer prefetcher.

Adjacent Cache Prefetcher

Enables or disables prefetching of adjacent cache lines.

Extended APIC

Enables or disables extended APIC support.

Processor Configuration (For TCA 5170C)

Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.

Socket Configuration

Processor Configuration

► Per-Socket Configuration

Processor BSP Revision	50654 - SKX M0
Processor ID	00050654*
Processor Frequency	1.900GHz
Processor Max Ratio	16H
Processor Min Ratio	0AH
Microcode Revision	0200005E
L1 Cache RAM	64KB
L2 Cache RAM	1024KB
L3 Cache RAM	19712KB

Processor Version
Intel (R) Xeon (R) D-2146NT CPU @ 2.30GHz

Hyper-Threading [ALL] [Enable]
Hardware Prefetcher [Enable]
Adjacent Cache Prefetcher [Enable]
Extended APIC [Enable]

Change Per-Socket Settings

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

Version 2.20.1272. Copyright (C) 2019 American Megatrends, Inc.

Hyper-Threading [ALL]

Enables or disables hyper-threading technology.

Hardware Prefetcher

Enables or disables the MLC streamer prefetcher.

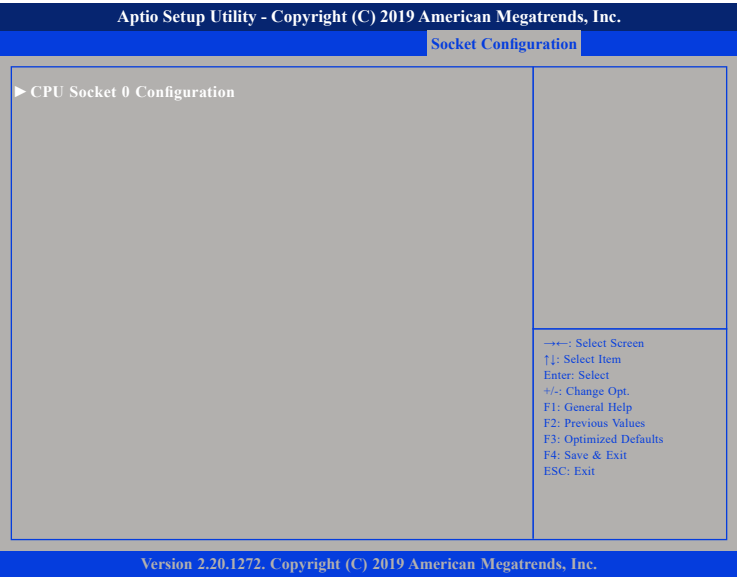
Adjacent Cache Prefetcher

Enables or disables prefetching of adjacent cache lines.

Extended APIC

Enables or disables extended APIC support.

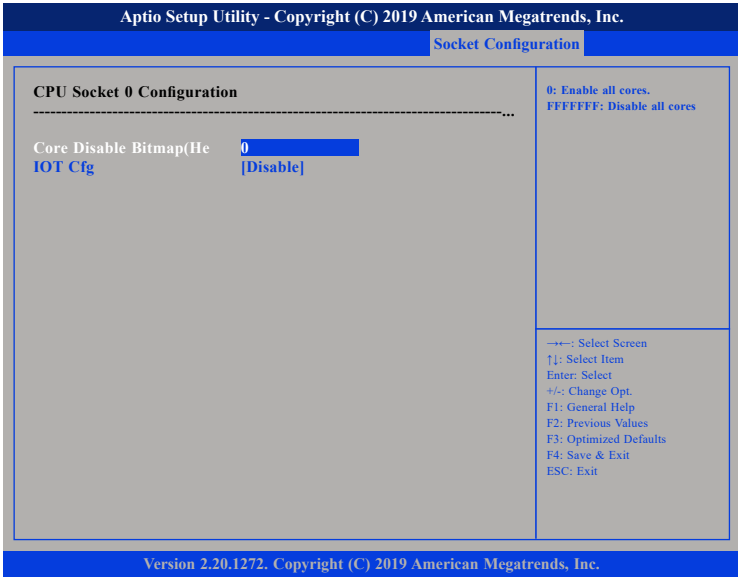
Per-Socket Configuration



CPU Socket 0 Configuration

Processor settings for the CPU on socket 0.

CPU Socket 0 Configuration



Cores Disable Bitmap

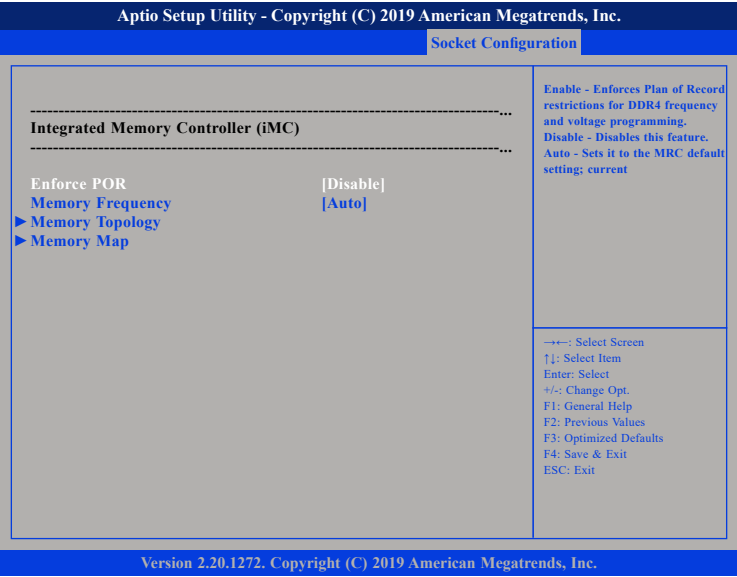
Provides the option to enable or disable all cores. 0 means enable all cores. FFFFFFFF means disable all cores.

IOT Cfg

Enables or disables IOT Cfg.



Memory Configuration



Enforce POR

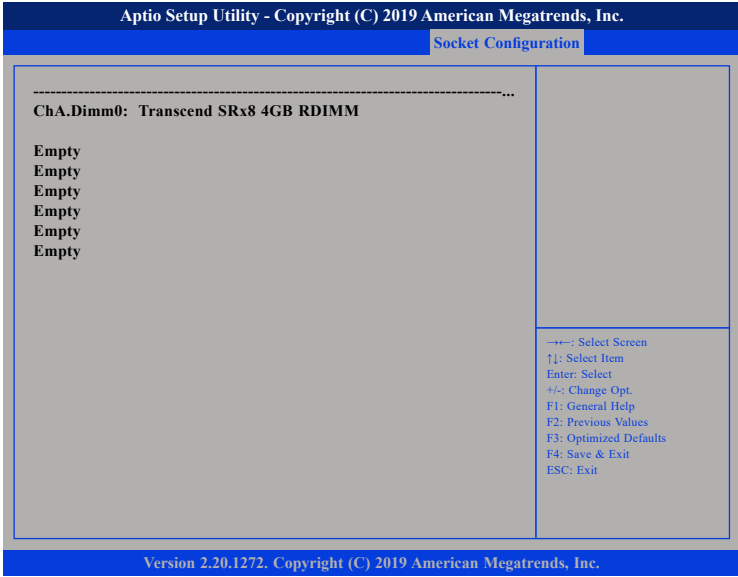
Configures the Enforce Plan of Record options.

Enable	Enforces Plan of Record restrictions for DDR4 frequency and voltage programming.
Disable	Disables this feature.
Auto	Sets it to the MRC default setting. Current default setting is Enable.

Memory Frequency

Configures the maximum frequency of the memory. Do not select Reserved.

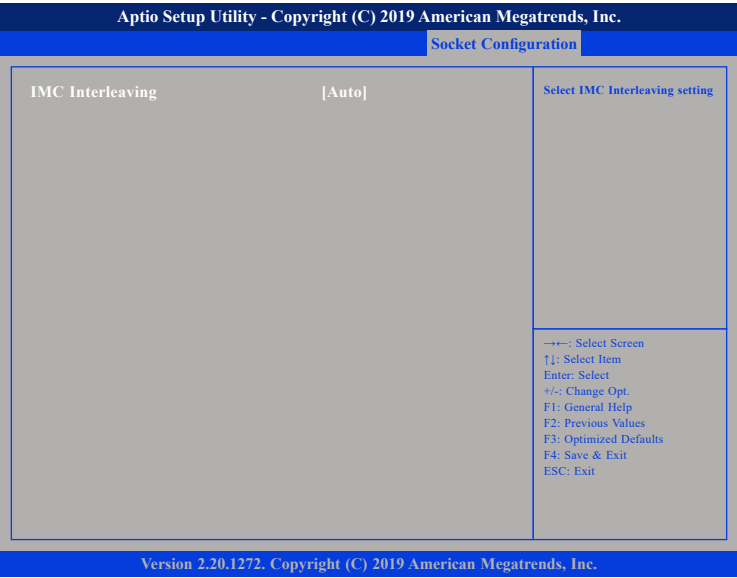
Memory Topology



Detects and displays the information on the memory installed.



Memory Map



IMC Interleaving

Configures the IMC Interleaving setting.

IIO Configuration



Socket0 Configuration

Enters the Socket0 Configuration submenu.

IOAT Configuration

Enters the IOAT Configuration submenu.

IIO General Configuration

Enters the IIO General Configuration submenu.

Intel. VT for Directed I/O (VT-d)

Enters the Intel® VT for Directed I/O (VT-d) submenu.



Socket0 Configuration

Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.		
Socket Configuration		
IOU0 (IIO PCIe Br1)	[x4x4x4x4]	Selects PCIe port Bifurcation for selected slot(s)
IOU1 (IIO PCIe Br2)	[Auto]	
IOU2 (IIO PCIe Br3)	[Auto]	
▶ Socket 0 PCIeBr1D00F0 - Port 1A ▶ Socket 0 PCIeBr1D01F0 - Port 1B ▶ Socket 0 PCIeBr1D02F0 - Port 1C ▶ Socket 0 PCIeBr1D03F0 - Port 1D ▶ Socket 0 PCIeBr2D00F0 - Port 2A ▶ Socket 0 PCIeBr2D02F0 - Port 2C ▶ Socket 0 PCIeBr3D00F0 - Port 3A		
		→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.20.1272. Copyright (C) 2019 American Megatrends, Inc.		

IOU0 (IIO PCIe Br1)

Port Bifurcation settings for IOU 0.

IOU1 (IIO PCIe Br2)

Port Bifurcation settings for IOU 1.

IOU2 (IIO PCIe Br3)

Port Bifurcation settings for IOU 2.

Socket 0 PCIeBr1D00F0 - Port 1A

Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.		
Socket Configuration		
Socket 0 PCIeBr1D00F0 - Port 1A		
PCI-E Port	[Enable]	In auto mode the BIOS will remove the EXP port if there is no device or errors on that device and the device is not HP capable. Disable is used to disable the port and hide its CFG space.
Link Speed	[Auto]	
Override Max Link Width	[Auto]	
PCI-E Port DeEmphasis	[-3.5 dB]	
PCI-E Port Link Status	Linked as x4	
PCI-E Port Link Max	Max Width x4	
PCI-E Port Link Speed	Gen 2 (5.0 GT/s)	
PCI-E Port Max Payload	[Auto]	
		→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.20.1272. Copyright (C) 2019 American Megatrends, Inc.		

PCI-E Port

Enables or disables the PCIe port. In auto mode the BIOS will remove the EXP port if there is no device or errors on that device and the device is not HP capable. Disable is used to disable the port and hide its CFG space.

Link Speed

Configures the link speed for the PCIe port.

Override Max Link Width

Configures the link speed to override the max link width set by bifurcation.

PCI-E Port DeEmphasis

Configures the de-emphasis control for the PCIe port.

PCI-E Port Max Payload

Configures the PCIe port maximum payload size.

Socket 0 PcieBr1D01F0 - Port 1B

Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.	
Socket Configuration	
Socket 0 PcieBr1D01F0 - Port 1B	
PCI-E Port Link Speed Override Max Link Widt PCI-E Port DeEmphasis PCI-E Port Link Status PCI-E Port Link Max PCI-E Port Link Speed PCI-E Port Max Payload	[Enable] [Auto] [Auto] [-3.5 dB] Linked as x4 Max Width x4 Gen 2 (5.0 GT/s) [Auto]
In auto mode the BIOS will remove the EXP port if there is no device or errors on that device and the device is not HP capable. Disable is used to disable the port and hide its CFG space.	
→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.20.1272. Copyright (C) 2019 American Megatrends, Inc.	

PCI-E Port

Enables or disables the PCIe port. In auto mode the BIOS will remove the EXP port if there is no device or errors on that device and the device is not HP capable. Disable is used to disable the port and hide its CFG space.

Link Speed

Configures the link speed for the PCIe port.

Override Max Link Width

Configures the link speed to override the max link width set by bifurcation.

PCI-E Port DeEmphasis

Configures the de-emphasis control for the PCIe port.

PCI-E Port Max Payload

Configures the PCIe port maximum payload size.

Socket 0 PcieBr1D02F0 - Port 1C

Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.	
Socket Configuration	
Socket 0 PcieBr1D02F0 - Port 1C	
PCI-E Port Link Speed Override Max Link Widt PCI-E Port DeEmphasis PCI-E Port Link Status PCI-E Port Link Max PCI-E Port Link Speed PCI-E Port Max Payload	[Enable] [Auto] [Auto] [-3.5 dB] Link Did Not Train Max Width x4 Link Did Not Train [Auto]
In auto mode the BIOS will remove the EXP port if there is no device or errors on that device and the device is not HP capable. Disable is used to disable the port and hide its CFG space.	
→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.20.1272. Copyright (C) 2019 American Megatrends, Inc.	

PCI-E Port

Enables or disables the PCIe port. In auto mode the BIOS will remove the EXP port if there is no device or errors on that device and the device is not HP capable. Disable is used to disable the port and hide its CFG space.

Link Speed

Configures the link speed for the PCIe port.

Override Max Link Width

Configures the link speed to override the max link width set by bifurcation.

PCI-E Port DeEmphasis

Configures the de-emphasis control for the PCIe port.

PCI-E Port Max Payload

Configures the PCIe port maximum payload size.

Socket 0 PcieBr1D03F0 - Port 1D

Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.	
Socket Configuration	
Socket 0 PcieBr1D03F0 - Port 1D	
PCI-E Port Link Speed Override Max Link Widt PCI-E Port DeEmphasis PCI-E Port Link Status PCI-E Port Link Max PCI-E Port Link Speed PCI-E Port Max Payload	[Enable] [Auto] [Auto] [-3.5 dB] Link Did Not Train Max Width x4 Link Did Not Train [Auto]
In auto mode the BIOS will remove the EXP port if there is no device or errors on that device and the device is not HP capable. Disable is used to disable the port and hide its CFG space.	
--- Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.20.1272. Copyright (C) 2019 American Megatrends, Inc.	

PCI-E Port

Enables or disables the PCIe port. In auto mode the BIOS will remove the EXP port if there is no device or errors on that device and the device is not HP capable. Disable is used to disable the port and hide its CFG space.

Link Speed

Configures the link speed for the PCIe port.

Override Max Link Width

Configures the link speed to override the max link width set by bifurcation.

PCI-E Port DeEmphasis

Configures the de-emphasis control for the PCIe port.

PCI-E Port Max Payload

Configures the PCIe port maximum payload size.

Socket 0 PcieBr2D00F0 - Port 2A

Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.	
Socket Configuration	
Socket 0 PcieBr2D00F0 - Port 2A	
PCI-E Port Link Speed Override Max Link Widt PCI-E Port DeEmphasis PCI-E Port Link Status PCI-E Port Link Max PCI-E Port Link Speed PCI-E Port Max Payload	[Enable] [Auto] [Auto] [-3.5 dB] Link Did Not Train Max Width x8 Link Did Not Train [Auto]
In auto mode the BIOS will remove the EXP port if there is no device or errors on that device and the device is not HP capable. Disable is used to disable the port and hide its CFG space.	
--- Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.20.1272. Copyright (C) 2019 American Megatrends, Inc.	

PCI-E Port

Enables or disables the PCIe port. In auto mode the BIOS will remove the EXP port if there is no device or errors on that device and the device is not HP capable. Disable is used to disable the port and hide its CFG space.

Link Speed

Configures the link speed for the PCIe port.

Override Max Link Width

Configures the link speed to override the max link width set by bifurcation.

PCI-E Port DeEmphasis

Configures the de-emphasis control for the PCIe port.

PCI-E Port Max Payload

Configures the PCIe port maximum payload size.

Socket 0 PcieBr2D02F0 - Port 2C

Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.	
Socket Configuration	
Socket 0 PcieBr2D02F0 - Port 2C	
PCI-E Port Link Speed Override Max Link Widt PCI-E Port DeEmphasis PCI-E Port Link Status PCI-E Port Link Max PCI-E Port Link Speed PCI-E Port Max Payload	[Enable] [Auto] [Auto] [-3.5 dB] Link Did Not Train Max Width x8 Link Did Not Train [Auto]
In auto mode the BIOS will remove the EXP port if there is no device or errors on that device and the device is not HP capable. Disable is used to disable the port and hide its CFG space.	
--- Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.20.1272. Copyright (C) 2019 American Megatrends, Inc.	

PCI-E Port

Enables or disables the PCIe port. In auto mode the BIOS will remove the EXP port if there is no device or errors on that device and the device is not HP capable. Disable is used to disable the port and hide its CFG space.

Link Speed

Configures the link speed for the PCIe port.

Override Max Link Width

Configures the link speed to override the max link width set by bifurcation.

PCI-E Port DeEmphasis

Configures the de-emphasis control for the PCIe port.

PCI-E Port Max Payload

Configures the PCIe port maximum payload size.

Socket 0 PcieBr3D00F0 - Port 3A

Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.	
Socket Configuration	
Socket 0 PcieBr3D00F0 - Port 3A	
PCI-E Port Link Speed Override Max Link Widt PCI-E Port DeEmphasis PCI-E Port Link Status PCI-E Port Link Max PCI-E Port Link Speed PCI-E Port Max Payload	[Enable] [Auto] [Auto] [-3.5 dB] Linked as x16 Max Width x16 Gen 3 (8.0 GT/s) [Auto]
In auto mode the BIOS will remove the EXP port if there is no device or errors on that device and the device is not HP capable. Disable is used to disable the port and hide its CFG space.	
--- Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.20.1272. Copyright (C) 2019 American Megatrends, Inc.	

PCI-E Port

Enables or disables the PCIe port. In auto mode the BIOS will remove the EXP port if there is no device or errors on that device and the device is not HP capable. Disable is used to disable the port and hide its CFG space.

Link Speed

Configures the link speed for the PCIe port.

Override Max Link Width

Configures the link speed to override the max link width set by bifurcation.

PCI-E Port DeEmphasis

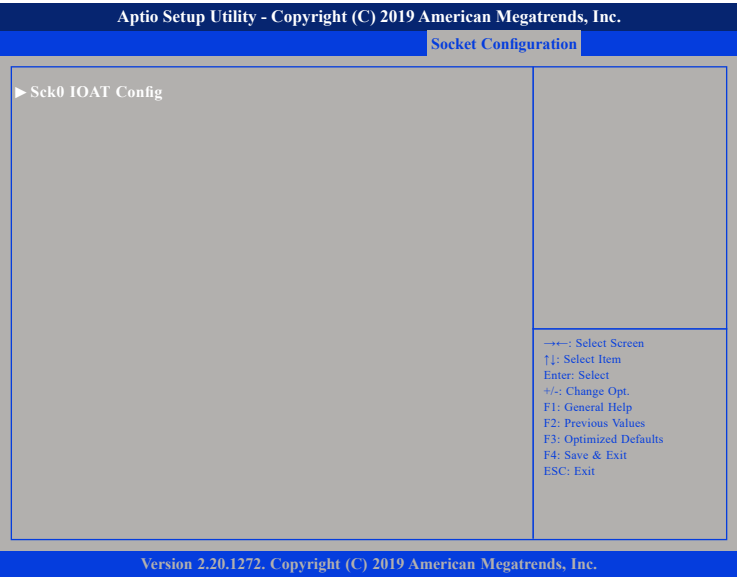
Configures the de-emphasis control for the PCIe port.

PCI-E Port Max Payload

Configures the PCIe port maximum payload size.



IOAT Configuration



Sck0 IOAT Config

Enters the Socket0 IOAT Configuration submenu.



Sck0 IOAT Config

Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.

Socket Configuration

IOAT Function 0 Items

DMA [Enable]

No Snoop [Disable]

IOAT Function 1 Items

DMA [Enable]

No Snoop [Disable]

IOAT Function 2 Items

DMA [Enable]

No Snoop [Disable]

IOAT Function 3 Items

Select Dma Enable/Disable for each CB device

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

Version 2.20.1272. Copyright (C) 2019 American Megatrends, Inc.

DMA
Enables or disables DMA.

No Snoop
Enables or disables No Snoop function for each CB device.

Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.

Socket Configuration

IOAT Function 4 Items

DMA [Enable]

No Snoop [Disable]

IOAT Function 5 Items

DMA [Enable]

No Snoop [Disable]

IOAT Function 6 Items

DMA [Enable]

No Snoop [Disable]

IOAT Function 7 Items

DMA [Enable]

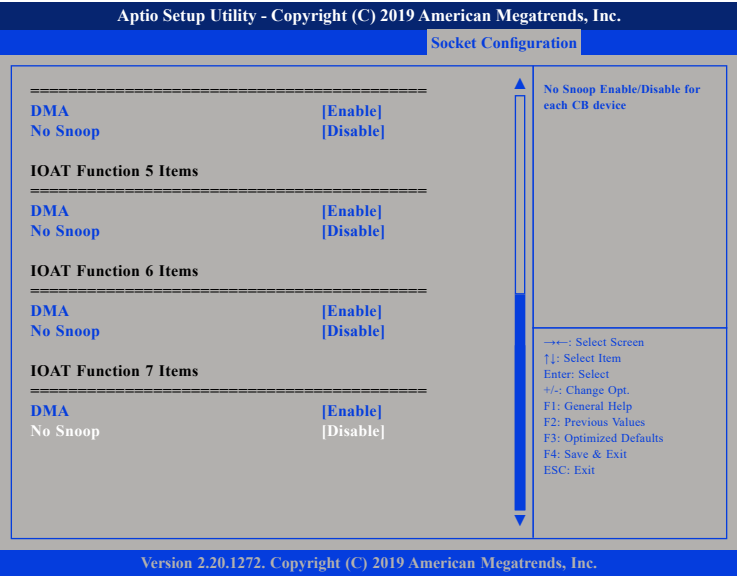
No Snoop Enable/Disable for each CB device

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

Version 2.20.1272. Copyright (C) 2019 American Megatrends, Inc.

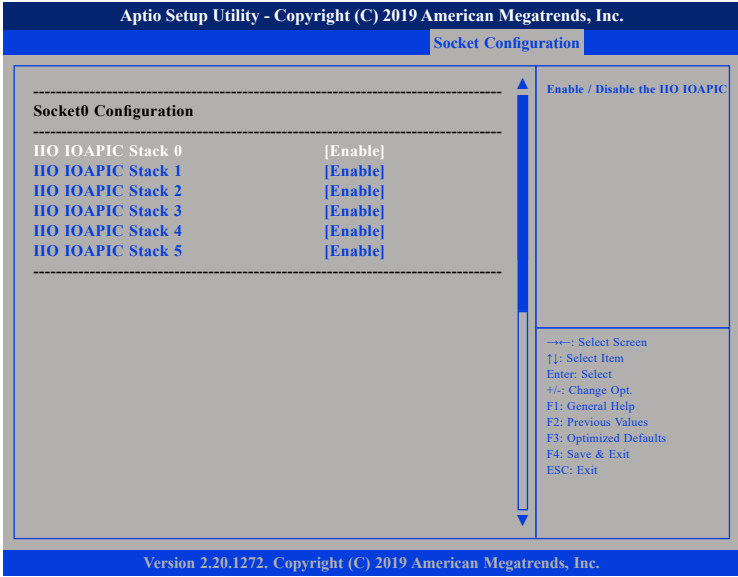


Sck0 IOAT Config Cont.



- DMA**
Enables or disables DMA.
- No Snoop**
Enables or disables No Snoop function for each CB device.

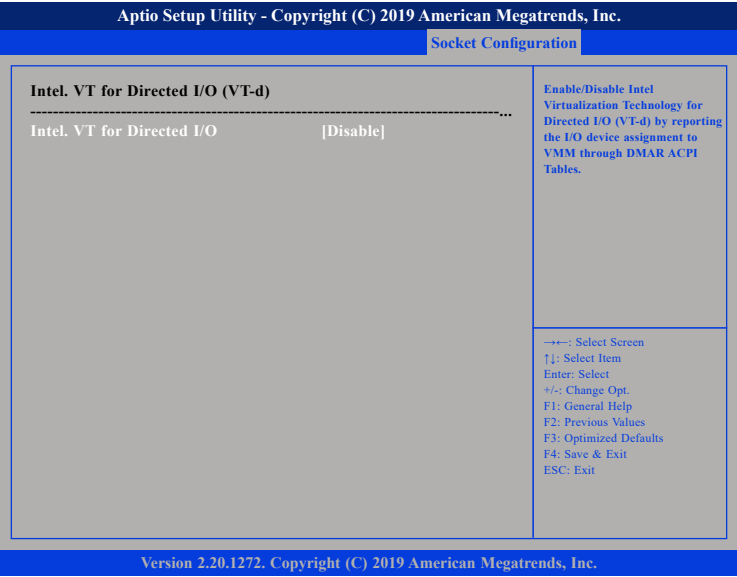
IIO General Configuration



- IIO IOAPIC Stack 0 to IIO IOAPIC Stack 5**
Enables or disables I/O Advanced Power Interface Configuration (IIOAPIC) for Stack 0 to Stack 5 of Socket 0.



Intel. VT for Directed I/O (VT-d)



Intel. VT for Directed I/O
Enables or disables Intel® Virtualization Technology for Directed I/O (VT-d) by reporting the I/O device assignment to VMM through DMAR ACPI tables.

Advanced Power Management Configuration



- CPU P State Control**
Enters the CPU P State Control submenu.
- Hardware PM State Control**
Enters the Hardware PM State Control submenu.
- CPU C State Control**
Enters the CPU C State Control submenu.
- Package C State Control**
Enters the Package C State Control submenu.
- CPU - Advanced PM Tuning**
Enters the CPU - Advanced PM Tuning.





CPU P State Control

Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.

Socket Configuration

CPU P State Control

Uncore Freq Scaling [Disable]
SpeedStep (Pstates) [Disable]
EIST PSD Function [HW_ALL]
Boot performance mode [Max Performance]
Energy Efficient Turbo [Enable]

Enable/Disable autonomous uncore frequency scaling

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

Version 2.20.1272. Copyright (C) 2019 American Megatrends, Inc.

Uncore Freq Scaling

Enables or disables autonomous uncore frequency scaling.

SpeedStep (Pstates)

Enables or disables Intel® SpeedStep technology.

Energy Efficient Turbo

Enables or disables Energy Efficient Turbo.

Hardware PM State Control

Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.

Socket Configuration

Hardware PM State Control

Hardware P-States [Disable]

Disable: Hardware chooses a P-state based on OS Request (Legacy P-States)
Native Mode: Hardware chooses a P-state based on OS guidance
Out of Band

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

Version 2.20.1272. Copyright (C) 2019 American Megatrends, Inc.

Hardware P-States

Disable	Hardware chooses a P-state based on OS Request. (Legacy P-States).
Native Mode	Hardware chooses a P-state based on OS guidance.
Out of Band Mode	Hardware autonomously chooses a P-state (no OS guidance).



CPU C State Control

Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.	
Socket Configuration	
CPU C State Control Autonomous Core C-State [Disable] CPU C6 report [Disable] Enhanced Halt State (C) [Disable]	Autonomous Core C-State Control ---: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.20.1272. Copyright (C) 2019 American Megatrends, Inc.	

Autonomous Core C-State

Enables or disables autonomous core c-state control.

CPU C6 report

Enables or disables C6 report to the operating system.

Enhanced Halt State

Enables or disables Enhanced Halt State for lower power consumption.

Package C State Control

Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.	
Socket Configuration	
Package C State Control Package C State [C0/C1 state]	Package C State limit ---: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.20.1272. Copyright (C) 2019 American Megatrends, Inc.	

Package C State

Selected option will program into C State package limit register.



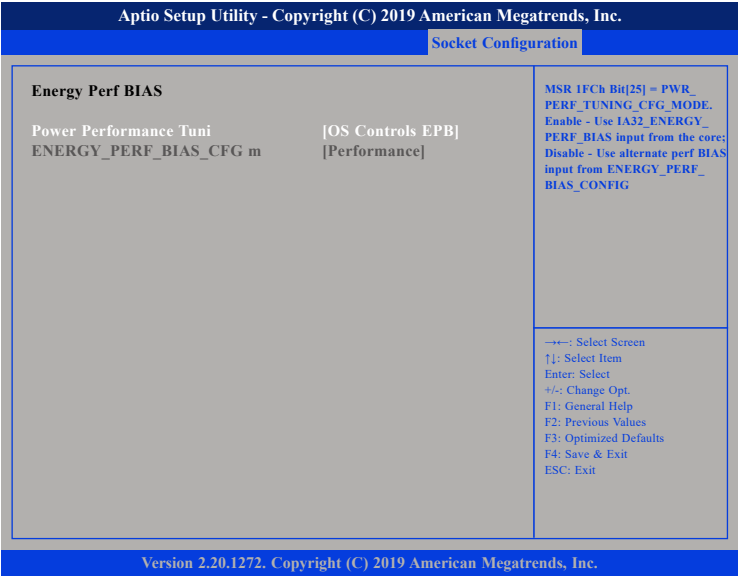
CPU - Advanced PM Tuning



Energy Perf BIAS

Enters the Energy Perf BIAS submenu.

Energy Perf BIAS



Power Performance Tuning

Configures whether to allow the BIOS or OS to control the power performance tuning.

Security

Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.

MainAdvancedPlatform ConfigurationSocket ConfigurationSecurity

Password Description

If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup. The password length must be in the following range:

Minimum length3

Maximum length20

Administrator Password

Set Administrator Password

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

Version 2.20.1272. Copyright (C) 2019 American Megatrends, Inc.

Administrator Password

Select this to reconfigure the administrator's password.

Boot

Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.

BootSave & Exit

Boot Configuration

Setup Prompt Timeout1

Bootup NumLock State[On]

Quiet Boot[Disabled]

Optimized Boot[Disabled]

Boot mode select[LEGACY]

FIXED BOOT ORDER Priorities

Boot Option #1[USB Hard Disk]

Boot Option #2[USB CD/DVD]

Boot Option #3[USB Key]

Boot Option #4[USB Floppy]

Boot Option #5[USB Lan]

Boot Option #6[Hard Disk]

Boot Option #7[CD/DVD]

Boot Option #8[Network]

Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.

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

Version 2.20.1272. Copyright (C) 2019 American Megatrends, Inc.

Setup Prompt Timeout

Configures the number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting.

Bootup NumLock State

This allows you to determine the default state of the numeric keypad. By default, the system boots up with NumLock on wherein the function of the numeric keypad is the number keys. When set to Off, the function of the numeric keypad is the arrow keys.

NEXCOM

Copyright © 2020 NEXCOM International Co., Ltd. All Rights Reserved.

54

TCA 5170 Series User Manual



Quiet Boot

Enabled Displays OEM logo instead of the POST messages.
Disabled Displays normal POST messages.

Optimized Boot

Enables or disables optimized boot.

Boot mode select

Configures the boot mode option.

FIXED BOOT ORDER Priorities

Adjust the boot sequence of the system. Boot Option #1 is the first boot device that the system will boot from, next will be #2 and so forth.

Save & Exit



Save Changes and Reset

To save the changes and reset, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes.

Discard Changes and Reset

To exit the Setup utility and reset without saving the changes, select this field then press <Enter>. You may be prompted to confirm again before exiting.

Restore Defaults

To restore the BIOS to default settings, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes.

Launch EFI Shell from Filesystem Device

To launch EFI shell from a filesystem device, select this field and press <Enter>.

