

User Manual

MIO-2363

Intel[®] Atom[™] x6000E Series 2.5" PICO-ITX SBC



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This manual is for the MIO-2363.

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Product Warranty (2 Years)

Advantech warrants the original purchaser that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products that have been repaired or altered by persons other than repair personnel authorized by Advantech, or products that have been subject to misuse, abuse, accident, or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

Because of Advantech's high quality-control standards and rigorous testing, most customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced free of charge during the warranty period. For out-of-warranty repairs, customers will be billed according to the cost of replacement mate-rials, service time, and freight. Please consult your dealer for more details.

If you believe your product to be defective, follow the steps outlined below.

- 1. Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages displayed when the problem occurs.
- 2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
- If your product is diagnosed as defective, obtain a return merchandise authorization (RMA) number from your dealer. This allows us to process your return more quickly.
- 4. Carefully pack the defective product, a completed Repair and Replacement Order Card, and a proof of purchase date (such as a photocopy of your sales receipt) into a shippable container. Products returned without a proof of purchase date are not eligible for warranty service.
- 5. Write the RMA number clearly on the outside of the package and ship the package prepaid to your dealer.

Declaration of Conformity

CE

This product has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. This type of cable is available from Advantech. Please contact your local supplier for ordering information.

Test conditions for passing also include the equipment being operated within an industrial enclosure. In order to protect the product from damage caused by electrostatic discharge (ESD) and EMI leakage, we strongly recommend the use of CEcompliant industrial enclosure products.

FCC Class B

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for assistance.

Technical Support and Assistance

- 1. Visit the Advantech website at www.advantech.com/support to obtain the latest product information.
- 2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before calling:
 - Product name and serial number
 - Description of your peripheral attachments
 - Description of your software (operating system, version, application software, etc.)
 - A complete description of the problem
 - The exact wording of any error messages

Packing List

Before system installation, check that the items listed below are included and in good condition. If any item does not accord with the list, contact your dealer immediately.

- 1 x MIO-2363 SBC
- 1 x USB cable 20cm (p/n: 1700030406-01)
- 2 x COM port cable 20cm (p/n: 1700030404-01)
- 1 x Audio cable 20cm (p/n: 1700019584-01)
- 1 x ATX power cable 20cm (p/n: 1700019705-01)
- 1 x Passive heatsink (p/n: 1970005240T001)
- Standoff
- 1 x Startup Manual
- 1 x DeviceOn package

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Introduction

1.1 Introduction

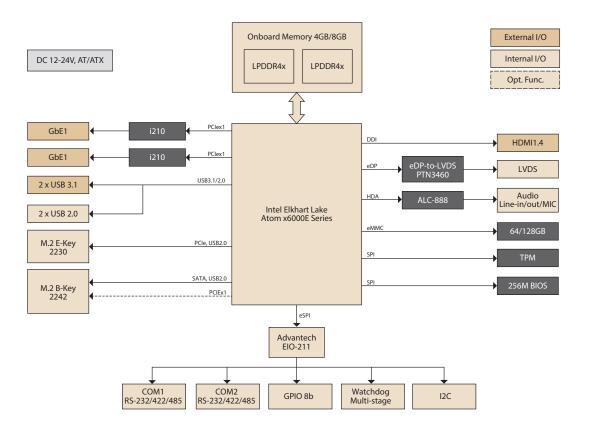
Advantech MIO-2363 is a 2.5" PICO-ITX form factor SBC (compact series, 100 x 72 mm; 3.9 x 2.8 in), powered by an Intel[®] Atom[®] x6000E series processor. It provides embedded iManager 3.0, SUSI 4.0, and Advantech's WISE-DeviceOn to monitor and control system operation effectively and remotely. MIO-2363 comes with onboard LPDDR4x-3733 and eMMC5.1 up to 128GB.

1.2 Specifications

				-		
	Processor	x6211E	x6413E	x6425E		
	Max. Frequency	3.0GHz	3.0GHz	3.0GHz		
	Base Frequency	1.3GHz	1.5GHz	2.0GHz		
Platform	Core/Thread	2/2	4/4	4/4		
	L2 Cache	1.5MB	1.5MB	1.5MB		
	CPU TDP	6W	9W	12W		
	Chipset	Intel [®] Chipset (Sc	C Integrated)			
	BIOS	AMI UEFI 256Mbi	t			
	Technology	LPDDR4x 3200	LPDDR4x 3200	LPDDR4x 3733		
Memory	Max. Capacity	4GB	4GB	8GB		
Memory	Channel/Socket	Dual Channels/Onboard				
	ECC Support	IBECC	IBECC	IBECC		
Storage	eMMC	64GB	64GB	128GB		
	Controller	Intel® UHD Graphics for 10th Gen Intel® Processor				
	Max. Frequency	750MHz	750MHz	750MHz		
Graphics	Base Frequency	350MHz	500MHz	500MHz		
	3D/HW Acceleration	DX12, OGL4.5, OCL1.2, Vulkan 1.1; HW encode HEVC/H.265, MPEG2, JPEG/MJPEG				
	LCD	LVDS Dual Channel 18/24-bit LVDS				
Display I/F	HDMI	Up to 2160 x 3840 @30Hz				
	Multiple Display	LVDS+HDMI				
Ethorpot	Controller	2 x RJ-45, LAN1: Intel i210, LAN2: Intel i210		itel i210		
Ethernet	Speed	10/100/1000 Mbps				
	Ethernet	2 x RJ-45				
External I/O	VGA/HDMI/DP	-/1/-				
External I/O	USB 3.2 / USB 2.0	2/-	2/-			
	Power DC-Jack	Optional				

	CATA				
	SATA	-			
	USB 2.0	2			
	Serial Bus	1x I2C			
	COM Port	2 x RS-232/422/48	35		
Internal I/O	GPIO	8-bit general purpo	ose input output I/C)	
	Audio	Realtek ALC888, L	_ine-in/Line-out/MIC	2	
	Inverter	3.3V/5V/12V			
	LPC/SPI Bus	eSPI for EIO-211/	SPI for TPM/no LP	С	
	Front Panel Control	Power-on, Reset,	Buzzer, SATA LED,	, CaseOpen	
	Watchdog Timer	Programmable 1 ~	~ 65535 sec/min		
Board	ТРМ	TPM2.0 (Infineon	SLB9670)		
Features	iManager 3.0	SW API for Hardw Brightness Contro	are Monitor, Smart I, I2C, GPIO, WDT	Fan Control,	
Expansion	M.2	1x M.2 E-Key for 2230 module (PCIex1, USB 2.0 to support wireless module) 1x M.2 B-Key for 2242 module (SATA, USB 2.0 to sup- port SATA storage; BOM option to PCIex1 to support PCIe storage or RS-232 module			
	Supply Voltage	Vin: DC 12~24V +/- 10%; RTC Battery: Lithium 3V/ 210mAH			
	Connector	2pin Power Connector (180D); Optional: DC-IN Jack			
Power	Power Management	AT, ATX			
	Max. Consumption	TBU	TBU	26.69W (12V); 28.7W (24V)	
	Idle Consumption	TBU	TBU	9.35W (12V); 11.6W (24V)	
		Operating: Standard: 0 ~ 60°C (32 ~ 140°F),			
	Temperature	Operating Extend: $-40 \sim 85^{\circ}C$ ($-40 \sim 185^{\circ}F$)			
		Storage: $-40 \sim 85^{\circ}$ C ($-40 \sim 185^{\circ}$ F)			
Environment	Humidity	Operating: 40°C @ 95% relative humidity, non-con- densing			
		Storage: 60°C @ 95% relative humidity, non-condensing			
	Vibration Resistance	3.5 Grms			
Certification	EMC	CE, FCC Class B			
Maabariaal	Dimensions	100 x 72 mm (3.9"	x 2.8")		
Mechanical	Net Weight	86 g			

1.3 Block Diagram



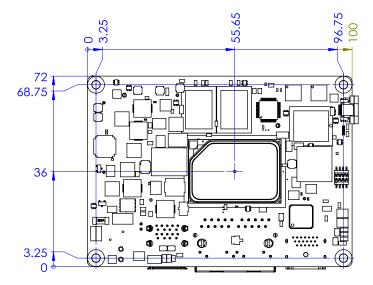


Mechanical Specifications

2.1 Introduction

The MI/O compact form factor SBC is a new-generation SBC designed with a variety of mechanical improvements. This chapter includes board dimensions and assembly instructions for the standard thermal solution.

2.2 Board Layout: Dimensions





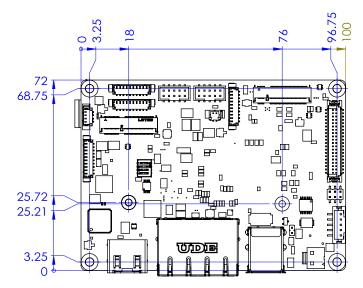


Figure 2.2 MIO-2363 Mechanical Diagram (Bottom Side)

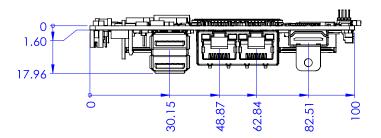


Figure 2.3 MIO-2363 Mechanical Diagram (Coastline)

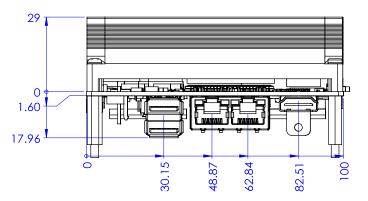


Figure 2.4 MIO-2363 Mechanical Diagram (with Heatsink)

2.3 Quick Installation Guide

This section introduces installation of the heatsink, which is contained in the white box inside the package. Please assemble it as in the following diagram. Remember to remove the plastic from the thermal pad before assembling.

2.3.1 Heatsink

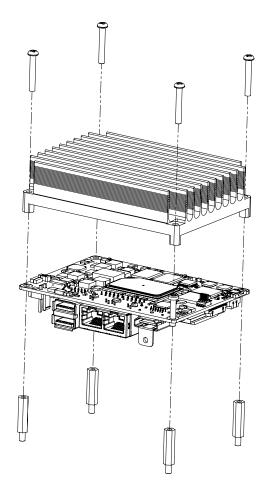


Figure 2.5 MIO-2363 Heatsink Installation

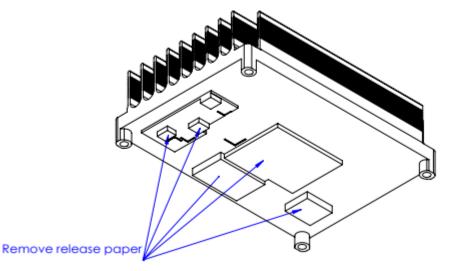


Figure 2.6 MIO-2363 Heatsink Installation



Installation

3.1 Jumpers & Switches

Table 3.1: Jumpers and Switches			
VDD1	Panel Voltage Selection Jumper		
SW1	Miscellaneous Switch		

3.2 Connectors

Table 3.2: Connectors			
Label	Function		
CN1	I ² C Internal Connector		
CN5	Front Panel Internal Connector		
CN7	DC Power Input Connector		
COM1	COM Port Internal Connector 1		
COM2	COM Port Internal Connector 2		
USB1	USB 3.2 Connector		
USB2	USB 2.0 Internal Connector		
LAN1	Dual RJ-45 LAN Ports		
HDMI1	HDMI Connector		
GPIO1	GPIO Internal Connector		
M2_1	M.2 E-Key Connector		
M2_2	M.2 B-Key Connector		
AUDIO1	Audio Internal Connector		
BAT1	RTC battery Connector		
LVDS1	LVDS Connector		
BL1	Panel Inverter Connector		

3.3 Locating Connectors

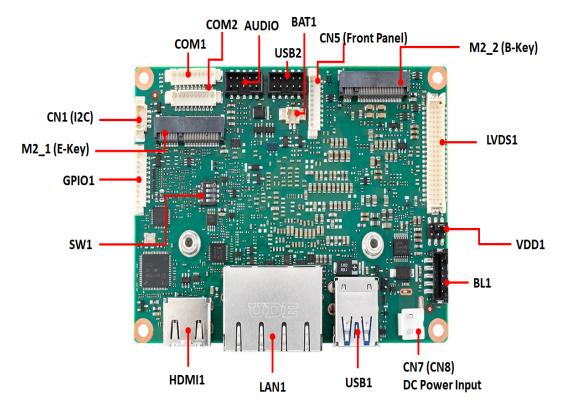
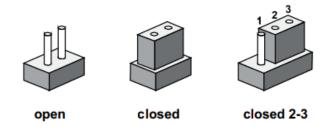


Figure 3.1 MIO-2363 Connector Locations (Bottom Side)

3.4 Setting Jumpers

You may configure your card to match the needs of your application by setting jumpers. A jumper is a metal bridge used to close an electric circuit. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To "close" a jumper, you connect the pins with the clip. To "open" a jumper, you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2, and 3. In this case you would connect either pins 1 and 2, or 2 and 3. The jumper settings are schematically depicted in this manual as follows:



A pair of needle-nose pliers may be helpful when working with jumpers. If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes. Generally, you simply need a standard cable to make most connections.

3.4.1 Miscellaneous Switch (SW1)

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Part Number	160000084
Description	SLIDE SW CHS-04TA (29) SMD 8P 6.6x5.4x2.4mm
Setting	Function
1	ON: AT mode (default) OFF: ATX mode
2	Reserved
3	OFF: Normal (default) ON: Load BIOS (default)
4	ON: Top Swap Override ENABLE OFF: Top Swap Override DISABLE

3.4.2 Panel Voltage Selection (VDD1)



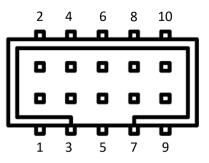
Part Number	1653003260
Description	PIN HEADER 3x2P 2.0mm 180D(M) SMD 21N22050
Jumper Short	Panel Voltage
1-3	3.3V (Default)
3-5 3-4	5V
3-4	12V

3.4.3 DC Power Input Connector (CN7)

Щ	1	
Щ	2	

Part Number	1655003962
Description	WAFER 2P 3.96mm 180D(M) DIP A3963WV2-2P
Pin	Signal Pin Definition
1	GND
2	+V24_V12_DC_IN

3.4.4 Audio Internal Connector: AUDIO1



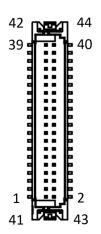
Part Number	1653008214-01
Description	BH 2x5P/2.0/PA6T/G-FL/VA(M)/S/BK/H6.05/C+R
Pin	Signal Pin Definition
1	LOUTR
2	LINR
3	GND
4	GND
5	LOUTL
6	LINL
7	GND
8	FRONT-JD
9	MIC1R
10	MIC1L

3.4.5 USB 2.0 Internal Connector: USB2

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Part Number	1653008214-01
Description	BH 2x5P/2.0/PA6T/G-FL/VA(M)/S/BK/H6.05/C+R
Pin	Signal Pin Definition
1	+USBV3
2	+USBV3
3	USB2_D6-
4	USB2_D5-
5	USB2_D6+
6	USB2_D5+
7	GND
8	GND
9	NC
10	NC

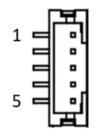
3.4.6 LVDS Connector (LVDS1)



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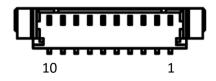
Part Number	1653008443-01
Description	Wafer 2x20P/1.25/PA9T/VA(M)/GFL/S/WH/H4.8/W P
Pin	Signal Pin Definition
1	+V_LCD
2	+V_LCD
3	GND
4	GND
5	+V_LCD
6	+V_LCD
7	LVDS1_0_D0-
8	LVDS1_1_D0-
9	LVDS1_0_D0+
10	LVDS1_1_D0+
11	GND
12	GND
13	LVDS1_0_D1-
14	LVDS1_1_D1-
15	LVDS1_0_D1+
16	LVDS1_1_D1+
17	GND
18	GND
19	LVDS1 0 D2-
20	 LVDS1 1 D2-
21	LVDS1 0 D2+
22	 LVDS1 1 D2+
23	GND
24	GND
25	LVDS1 0 CLK-
26	LVDS1_1_CLK-
27	 LVDS1_0_CLK+
28	LVDS1 1 CLK+
29	GND
30	GND
31	LVDS0 DDCCLK AUX+
32	LVDS0_DDCCLK_AUX-
33	GND
34	GND
35	LVDS1 0 D3-
36	LVDS1 1 D3-
37	LVDS1 0 D3+
38	LVDS1 1 D3+
39	NC
40	LVDS1 VCON
41	NC
42	NC
43	NC
44	NC

3.4.7 Panel Inverter Connector (BL1)



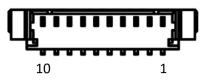
Part Number	1653007905-01
Description	Wafer 1X5P/2.0mm/VA/Sn/BK/S/H6.5/C+R
Pin	Signal Pin Definition
1	+V12_1_INVERTER_0
2	GND
3	LVDS1_z_ENABKL
4	EC_LVDS1_z_PWM
5	+V5_1_INVERTER_0

3.4.8 COM Port Internal Connector 1 (COM1)



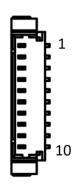
Part Number	1653007728-01
Description	Wafer 1x10P/1.25mm/PA/M/VA/WH/Sn/H4.7mm/WO CAP
Pin	Signal Pin Definition
1	NC
2	COM1_RI#
3	COM1_DTR#
4	COM1_CTS#
5	COM1_TXD
6	COM1_RTS#
7	COM1_RXD
8	COM1_DSR#
9	COM1_DCD#
10	GND

3.4.9 COM Port Internal Connector 2 (COM2)



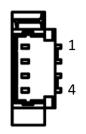
Part Number	1653007728-01
Description	Wafer 1x10P/1.25mm/PA/M/VA/WH/Sn/H4.7mm/WO CAP
Pin	Signal Pin Definition
1	NC
2	COM2_RI#
3	COM2_DTR#
4	COM2_CTS#
5	COM2_TXD
6	COM2_RTS#
7	COM2_RXD
8	COM2_DSR#
9	COM2_DCD#
10	GND

3.4.10 GPIO Internal Connector (GPIO1)



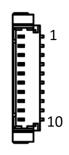
Part Number	1653007728-01
Description	Wafer1x10P/1.25mm/PA/M/VA/WH/Sn/H4.7mm/WO CAP
Pin	Signal Pin Definition
1	GND
2	EC_P1_GPI07
3	EC_P1_GPIO2
4	EC_P1_GPIO6
5	EC_P1_GPIO1
6	EC_P1_GPIO5
7	EC_P1_GPIO0
8	EC_P1_GPIO4
9	+V5A_GPIO
10	EC_P1_GPIO3

3.4.11 I2C Internal Connector (CN1)



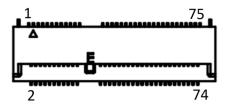
Part Number	1655904020
Description	WAFER 4P 1.25mm 180D(M) SMD 85205-04001
Pin	Signal Pin Definition
1	GND
2	EC_I2C0_z_DAT
3	EC_I2C0_z_CLK
4	+V5_I2CCONN

3.4.12 Front Panel Internal Connector (CN5)



Part Number	1653007728-01
Description	cWafer 1x10P/1.25mm/PA/M/VA/WH/Sn/H4.7mm/WO CAP
Pin	Signal Pin Definition
1	GND
2	BUZZER-
3	BUZZER+
4	RDC_CASEOPEN
5	FP_HDD_a_LED#
6	FP_a_PSIN#
7	FP_a_RST#
8	+V3.3
9	NC
10	+V5

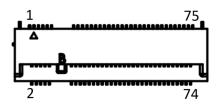
3.4.13 M.2 E-Key Connector (M2_1)



Part Number	1654012663-01
Description	NGFF 75P/0.5mm/(F)/LCP/RA/GFL/S/BK/H8.5mm/E-k
Pin	Signal Pin Definition
1	GND
2	+V3.3SB_M.2_E
3	USB2_z_P9+
4	+V3.3SB_M.2_E
5	USB2_z_P9-
6	NC
7	GND
8	NC
9	NC
10	NC
11	NC
12	NC
13	NC
14	NC
15	NC
16	NC
17	NC
18	GND
19	NC
20	NC
21	NC
22	NC
23	NC
32	NC
33	GND
34	NC
35	M2E1_PCIE_TX+
36	NC
37	M2E1_PCIE_TX-
38	NC
39	GND
40	NC
41	PCIE4_RX+
42	NC
43	PCIE4_RX-

44	NC
45	GND
46	NC
47	CLK_M2E_z_PCIE+
48	NC
49	CLK_M2E_z_PCIE-
50	M2E1_SUSCLK
51	GND
52	PLTRST_BUF#
53	PCIE_a_CLKREQ#
54	BT_DISABLE#
55	PCIE_WAKE#
56	WIFI_DISABLE#
57	GND
58	NC
59	NC
60	NC
61	NC
62	NC
63	GND
64	NC
65	NC
66	NC
67	NC
68	NC
69	GND
70	NC
71	NC
72	+V3.3SB_M.2_E
73	NC
74	+V3.3SB_M.2_E
75	GND
H1	NC
H2	NC
H3	GND
H4	GND

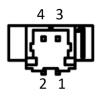
3.4.14 M.2 B-Key Connector (M2_2)



Part Number	1654012087-02	
Description	NGFF 75P/0.5mm/(F)/LCP/RA/GFL/S/BK/H8.50/B-key	
Pin	Signal Pin Definition	
1	+3.3V	
2	+V3.3SB_M.2_B	
3	GND	
4	+V3.3SB_M.2_B	
5	GND	
6	+V1.8_DUAL	
7	USB2_a_P4+	
8	+V3.3SB_M.2_B	
9	USB2_a_P4-	
10	NC	
11	GND	
20	NC	
21	+V3.3SB	
22	NC	
23	NC	
24	NC	
25	+V1.8_DUAL	
26	NC	
27	GND	
28	NC	
29	NC	
30	NC	
31	NC	
32	NC	
33	GND	
34	NC	
35	NC	
36	NC	
37	NC	
38	NC	
39	GND	
40	NC	
41	SATA_PCIE_C_RX+	
42	NC	
43	SATA_PCIE_C_RX-	

45 GND 46 NC 47 SATA_PCIE_C_TX- 48 NC 49 SATA_PCIE_C_TX+ 50 PLTRST_BUF#_M2B1 51 GND 52 PCIE_a_CLKREQ2# 53 CLK100M_M2B1_R_D2- 54 PCIE_WAKE#_M2B1 55 CLK100M_M2B1_R_D2+ 56 NC 57 GND 58 NC 59 NC 60 NC 61 NC 62 NC 63 NC 64 NC 65 NC 66 NC 67 M2B1_RESET#_R 68 M2B1_SUSCLK 69 +V3.3SB 70 +V3.3SB_M2_B 71 GND 72 +V3.3SB_M2_B 73 GND 74 +V3.3SB_M2_B 75 +V3.3SB 74 +V3.3SB_M2_	44	NC
46 NC 47 SATA_PCIE_C_TX- 48 NC 49 SATA_PCIE_C_TX+ 50 PLTRST_BUF#_M2B1 51 GND 52 PCIE_a_CLKREQ2# 53 CLK100M_M2B1_R_D2- 54 PCIE_WAKE#_M2B1 55 CLK100M_M2B1_R_D2+ 56 NC 57 GND 58 NC 60 NC 61 NC 62 NC 63 NC 64 NC 65 NC 66 NC 67 M2B1_RESET#_R 68 M2B1_SUSCLK 69 +V3.3SB 70 +V3.3SB_M.2_B 71 GND 72 +V3.3SB_M.2_B 73 GND 74 +V3.3SB_M.2_B 75 +V3.3SB 74 +V3.3SB 75 +V3.3SB 74 <td< td=""><td>-</td><td></td></td<>	-	
48 NC 49 SATA_PCIE_C_TX+ 50 PLTRST_BUF#_M2B1 51 GND 52 PCIE_a_CLKREQ2# 53 CLK100M_M2B1_R_D2- 54 PCIE_WAKE#_M2B1 55 CLK100M_M2B1_R_D2+ 56 NC 57 GND 58 NC 59 NC 60 NC 61 NC 62 NC 63 NC 64 NC 65 NC 66 NC 67 M2B1_RESET#_R 68 M2B1_SUSCLK 69 +V3.3SB 70 +V3.3SB_M.2_B 71 GND 72 +V3.3SB_M.2_B 73 GND 74 +V3.3SB_M.2_B 75 +V3.3SB H1 NC H2 NC H3 GND	46	
49 SATA_PCIE_C_TX+ 50 PLTRST_BUF#_M2B1 51 GND 52 PCIE_a_CLKREQ2# 53 CLK100M_M2B1_R_D2- 54 PCIE_WAKE#_M2B1 55 CLK100M_M2B1_R_D2+ 56 NC 57 GND 58 NC 60 NC 61 NC 62 NC 63 NC 64 NC 65 NC 66 NC 67 M2B1_RESET#_R 68 M2B1_SUSCLK 69 +V3.3SB 70 +V3.3SB_M2_B 71 GND 72 +V3.3SB_M2_B 73 GND 74 +V3.3SB_M2_B 75 +V3.3SB 75 +V3.3SB 75 +V3.3SB 74 +V3.3SB 75 +V3.3SB 74 +V3.3SB 75	47	SATA_PCIE_C_TX-
50 PLTRST_BUF#_M2B1 51 GND 52 PCIE_a_CLKREQ2# 53 CLK100M_M2B1_R_D2- 54 PCIE_WAKE#_M2B1 55 CLK100M_M2B1_R_D2+ 56 NC 57 GND 58 NC 59 NC 60 NC 61 NC 62 NC 63 NC 64 NC 65 NC 66 NC 67 M2B1_RESET#_R 68 M2B1_SUSCLK 69 +V3.3SB 70 +V3.3SB_M.2_B 71 GND 72 +V3.3SB_M.2_B 73 GND 74 +V3.3SB_M.2_B 75 +V3.3SB 75 +V3.3SB 75 +V3.3SB 74 +V3.3SB 75 +V3.3SB 74 +V3.3SB 75 +V3.3SB <td>48</td> <td>NC</td>	48	NC
51 GND 52 PCIE_a_CLKREQ2# 53 CLK100M_M2B1_R_D2- 54 PCIE_WAKE#_M2B1 55 CLK100M_M2B1_R_D2+ 56 NC 57 GND 58 NC 59 NC 60 NC 61 NC 62 NC 63 NC 64 NC 65 NC 66 NC 67 M2B1_RESET#_R 68 M2B1_SUSCLK 69 +V3.3SB 70 +V3.3SB_M.2_B 71 GND 72 +V3.3SB_M.2_B 73 GND 74 +V3.3SB 75 +V3.3SB H1 NC H2 NC H3 GND	49	SATA_PCIE_C_TX+
52 PCIE_a_CLKREQ2# 53 CLK100M_M2B1_R_D2- 54 PCIE_WAKE#_M2B1 55 CLK100M_M2B1_R_D2+ 56 NC 57 GND 58 NC 59 NC 60 NC 61 NC 62 NC 63 NC 64 NC 65 NC 66 NC 67 M2B1_RESET#_R 68 M2B1_SUSCLK 69 +V3.3SB 70 +V3.3SB_M.2_B 71 GND 72 +V3.3SB_M.2_B 73 GND 74 +V3.3SB_M.2_B 73 GND 74 +V3.3SB_M.2_B 75 +V3.3SB 74 +V3.3SB_M.2_B 75 +V3.3SB 74 +V3.3SB_M.2_B 75 +V3.3SB 74 +V3.3SB 75 +	50	PLTRST_BUF#_M2B1
53 CLK100M_M2B1_R_D2- 54 PCIE_WAKE#_M2B1 55 CLK100M_M2B1_R_D2+ 56 NC 57 GND 58 NC 59 NC 60 NC 61 NC 62 NC 63 NC 64 NC 65 NC 66 NC 67 M2B1_RESET#_R 68 M2B1_SUSCLK 69 +V3.3SB 70 +V3.3SB_M.2_B 71 GND 72 +V3.3SB_M.2_B 73 GND 74 +V3.3SB 75 +V3.3SB 74 +V3.3SB 75 +V3.3SB 74 +V3.3SB 75 +V3.3SB 76 H3	51	GND
54 PCIE_WAKE#_M2B1 55 CLK100M_M2B1_R_D2+ 56 NC 57 GND 58 NC 59 NC 60 NC 61 NC 62 NC 63 NC 64 NC 65 NC 66 NC 67 M2B1_RESET#_R 68 M2B1_SUSCLK 69 +V3.3SB 70 +V3.3SB_M.2_B 71 GND 72 +V3.3SB_M.2_B 73 GND 74 +V3.3SB_M.2_B 75 +V3.3SB H1 NC H2 NC H3 GND	52	PCIE_a_CLKREQ2#
55 CLK100M_M2B1_R_D2+ 56 NC 57 GND 58 NC 59 NC 60 NC 61 NC 62 NC 63 NC 64 NC 65 NC 66 NC 67 M2B1_RESET#_R 68 M2B1_SUSCLK 69 +V3.3SB 70 +V3.3SB_M.2_B 71 GND 72 +V3.3SB_M.2_B 73 GND 74 +V3.3SB_M.2_B 75 +V3.3SB 74 NC 74 NC 74 NC 74 NC 74 NC 74 NC 75 +V3.3SB 74 NC 75 +V3.3SB 76 H3	53	CLK100M_M2B1_R_D2-
56 NC 57 GND 58 NC 59 NC 60 NC 61 NC 62 NC 63 NC 64 NC 65 NC 66 NC 67 M2B1_RESET#_R 68 M2B1_SUSCLK 69 +V3.3SB 70 +V3.3SB_M.2_B 71 GND 72 +V3.3SB_M.2_B 73 GND 74 +V3.3SB 75 +V3.3SB H1 NC H2 NC	54	PCIE_WAKE#_M2B1
57 GND 58 NC 59 NC 60 NC 61 NC 62 NC 63 NC 64 NC 65 NC 66 NC 67 M2B1_RESET#_R 68 M2B1_SUSCLK 69 +V3.3SB 70 +V3.3SB_M.2_B 71 GND 72 +V3.3SB_M.2_B 73 GND 74 +V3.3SB_M.2_B 75 +V3.3SB H1 NC H2 NC H3 GND	55	CLK100M_M2B1_R_D2+
58 NC 59 NC 60 NC 61 NC 62 NC 63 NC 64 NC 65 NC 66 NC 67 M2B1_RESET#_R 68 M2B1_SUSCLK 69 +V3.3SB 70 +V3.3SB_M.2_B 71 GND 72 +V3.3SB_M.2_B 73 GND 74 +V3.3SB_M.2_B 75 +V3.3SB H1 NC H2 NC H3 GND	56	NC
59 NC 60 NC 61 NC 62 NC 63 NC 64 NC 65 NC 66 NC 67 M2B1_RESET#_R 68 M2B1_SUSCLK 69 +V3.3SB 70 +V3.3SB_M.2_B 71 GND 72 +V3.3SB_M.2_B 73 GND 74 +V3.3SB_M.2_B 75 +V3.3SB H1 NC H2 NC H3 GND	57	GND
60 NC 61 NC 62 NC 63 NC 64 NC 65 NC 66 NC 67 M2B1_RESET#_R 68 M2B1_SUSCLK 69 +V3.3SB 70 +V3.3SB_M.2_B 71 GND 72 +V3.3SB_M.2_B 73 GND 74 +V3.3SB_M.2_B 75 +V3.3SB H1 NC H2 NC H3 GND	58	NC
61 NC 62 NC 63 NC 64 NC 65 NC 66 NC 67 M2B1_RESET#_R 68 M2B1_SUSCLK 69 +V3.3SB 70 +V3.3SB_M.2_B 71 GND 72 +V3.3SB_M.2_B 73 GND 74 +V3.3SB_M.2_B 75 +V3.3SB H1 NC H2 NC H3 GND	59	NC
62 NC 63 NC 64 NC 65 NC 66 NC 67 M2B1_RESET#_R 68 M2B1_SUSCLK 69 +V3.3SB 70 +V3.3SB_M2_B 71 GND 72 +V3.3SB_M.2_B 73 GND 74 +V3.3SB_M.2_B 75 +V3.3SB H1 NC H2 NC H3 GND	60	NC
63 NC 64 NC 65 NC 66 NC 67 M2B1_RESET#_R 68 M2B1_SUSCLK 69 +V3.3SB 70 +V3.3SB_M.2_B 71 GND 72 +V3.3SB_M.2_B 73 GND 74 +V3.3SB_M.2_B 75 +V3.3SB H1 NC H2 NC H3 GND	61	NC
64 NC 65 NC 66 NC 67 M2B1_RESET#_R 68 M2B1_SUSCLK 69 +V3.3SB 70 +V3.3SB_M.2_B 71 GND 72 +V3.3SB_M.2_B 73 GND 74 +V3.3SB_M.2_B 75 +V3.3SB H1 NC H2 NC H3 GND	62	NC
65 NC 66 NC 67 M2B1_RESET#_R 68 M2B1_SUSCLK 69 +V3.3SB 70 +V3.3SB_M.2_B 71 GND 72 +V3.3SB_M.2_B 73 GND 74 +V3.3SB_M.2_B 75 +V3.3SB H1 NC H2 NC H3 GND	63	NC
66 NC 67 M2B1_RESET#_R 68 M2B1_SUSCLK 69 +V3.3SB 70 +V3.3SB_M.2_B 71 GND 72 +V3.3SB_M.2_B 73 GND 74 +V3.3SB_M.2_B 75 +V3.3SB H1 NC H2 NC H3 GND	64	NC
67 M2B1_RESET#_R 68 M2B1_SUSCLK 69 +V3.3SB 70 +V3.3SB_M.2_B 71 GND 72 +V3.3SB_M.2_B 73 GND 74 +V3.3SB_M.2_B 75 +V3.3SB H1 NC H2 NC H3 GND	65	NC
68 M2B1_SUSCLK 69 +V3.3SB 70 +V3.3SB_M.2_B 71 GND 72 +V3.3SB_M.2_B 73 GND 74 +V3.3SB_M.2_B 75 +V3.3SB_M.2_B H1 NC H2 NC H3 GND	66	NC
69 +V3.3SB 70 +V3.3SB_M.2_B 71 GND 72 +V3.3SB_M.2_B 73 GND 74 +V3.3SB_M.2_B 75 +V3.3SB H1 NC H2 NC H3 GND	67	M2B1_RESET#_R
70 +V3.3SB_M.2_B 71 GND 72 +V3.3SB_M.2_B 73 GND 74 +V3.3SB_M.2_B 75 +V3.3SB H1 NC H2 NC H3 GND	68	M2B1_SUSCLK
71 GND 72 +V3.3SB_M.2_B 73 GND 74 +V3.3SB_M.2_B 75 +V3.3SB H1 NC H2 NC H3 GND	69	+V3.3SB
72 +V3.3SB_M.2_B 73 GND 74 +V3.3SB_M.2_B 75 +V3.3SB H1 NC H2 NC H3 GND	70	+V3.3SB_M.2_B
73 GND 74 +V3.3SB_M.2_B 75 +V3.3SB H1 NC H2 NC H3 GND		GND
74 +V3.3SB_M.2_B 75 +V3.3SB H1 NC H2 NC H3 GND		+V3.3SB_M.2_B
75 +V3.3SB H1 NC H2 NC H3 GND		GND
H1 NC H2 NC H3 GND	74	
H2 NC H3 GND	75	+V3.3SB
H3 GND		
H4 NC		
	H4	NC

3.4.15 RTC Battery Connector (BAT1)



Part Number	1655902000
Description	WAFER 2P 1.25mm 180D(M) SMD 85205-02001
Pin	Signal Pin Definition
1	+VBAT_R
2	GND

MIO-2363 User Manual



AMI BIOS Setup

With the AMIBIOS Setup program, you can modify BIOS settings and control the various system features. This chapter describes the basic navigation of the MIO-5152 BIOS setup screens.

Main Advanced Chipset	Aptio Setup – AMI Security Boot Save & Exit	
BIOS Vendor Core Version Compliancy Project Version Build Date and Time Access Level Power Type	American Megatrends 5.0.1.9 0.11 x64 UEFI 2.7.0; PI 1.6 MIO 23630000060X009 12/02/2021 10:04:59 Administrator ATX	Set the Date. Use Tab to switch between Date elements. Default Ranges: Year: 1998–9999 Months: 1–12 Days: Dependent on month Range of Years may vary.
Memory Information		
Total Memory	8192 MB	
Memory Frequency	3733 MT/s	
System Date System Time	[Mon 03/01/2021] [10:01:59]	<pre>++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
	Version 2.21.1278 Copyright (C) 202	1 AMI

AMI's BIOS ROM has a built-in setup program that allows users to modify the basic system configuration. This information is stored in battery-backed CMOS so it retains the setup information when the power is turned off.

4.1 Entering Setup

Turn on the computer and check for the patch code. If there is a number assigned to the patch code, it means that the BIOS supports your CPU. If there is no number assigned to the patch code, please contact an Advantech application engineer to obtain an up-to-date patch code file. This will ensure that your CPU's system status is valid. After ensuring that you have a number assigned to the patch code, press and you will immediately be allowed to enter Setup.

When you first enter the BIOS Setup Utility, you will encounter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab. There are two Main Setup options. They are described in this section. The Main BIOS Setup screen is shown below.

Main Advanced Chipset Secur	Aptio Setup – AMI rity Boot Save & Exit	
BIOS Vendor Core Version Compliancy Project Version Build Date and Time Access Level Power Type	American Megatrends 5.0.1.9 0.11 x64 UEFI 2.7.0; PI 1.6 MID 23630000060X009 12/02/2021 10:04:59 Administrator ATX	Set the Date. Use Tab to switch between Date elements. Default Ranges: Year: 1998–9999 Months: 1–12 Days: Dependent on month Range of Years may vary.
Memory Information Total Memory Memory Frequency	8192 MB 3733 MT/s	
System Date System Time	[Mon 03/01/2021] [10:01:59]	<pre>++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
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The Main BIOS setup screen has two main frames. The left frame displays all the options that can be configured. Grayed-out options cannot be configured; options in blue can. The right frame displays the key legend.

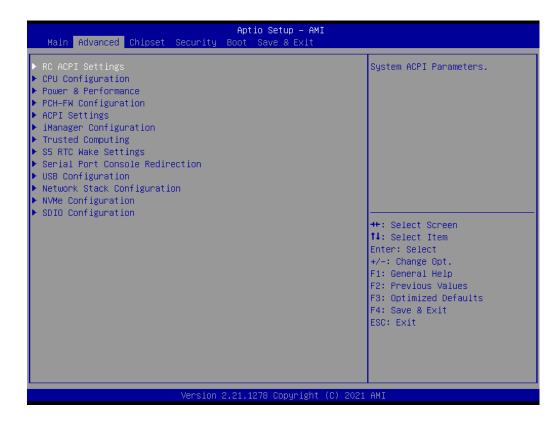
Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it.

System Time / System Date

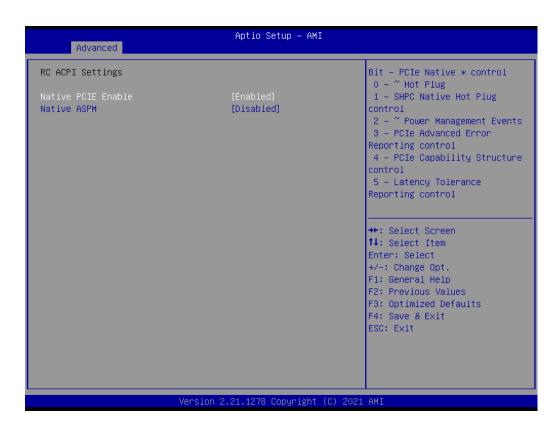
Use this option to change the system time and date. Highlight System Time or System Date using the <Arrow> keys. Enter new values through the keyboard. Press the <Tab> key or the <Arrow> keys to move between fields. The date must be entered in MM/DD/YY format. The time must be entered in HH:MM:SS format.

4.1.1 Advanced BIOS Features Setup

Select the Advanced tab from the MIO-2363 setup screen to enter the Advanced BIOS Setup screen. You can select any of the items in the left frame of the screen, such as CPU Configuration, to go to the sub menu for that item. You can display an Advanced BIOS Setup option by highlighting it using the <Arrow> keys. All Advanced BIOS Setup options are described in this section. The Advanced BIOS Setup screens is shown below. The sub menus are described on the following pages.



4.1.1.1 RC ACPI Settings



- Native PCIE Enable Enable/Disable PCIE Native Control reported in ACPI Table.
- Native ASPM Choose ASPM feature is controlled by OS or BIOS.

4.1.1.2 CPU Configuration

ID Speed Microcode Revision	Intel Atom(R) x6425E Processor @ 2.00GHz 0x90661 2000 MHz 11	Enable∕Disable MonitorMWait
L2 Cache L3 Cache L4 Cache	32 KB x 4 32 KB x 4 1536 KB x 4 4 MB N/A Supported	
SMX/TXT CPU Flex Ratio Override	Not Supported [Disabled] 20 [Enabled] [Enabled] [Enabled]	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

CPU Flex Ratio Override

Enable/Disable CPU Flex Ratio Programming.

Hardware Prefetcher

This item allows users to enable or disable the hardware prefetcher feature.

Adjacent Cache Line Prefetch

This item allows users to enable or disable the adjacent cache line prefetch feature.

Intel (VMX) Virtualization Technology

When Enabled, a VMM can utilize the additional hardware capability provided by Vanderpool Technology.

Active Processor Cores This item allows users to set how many processor cores should be active.

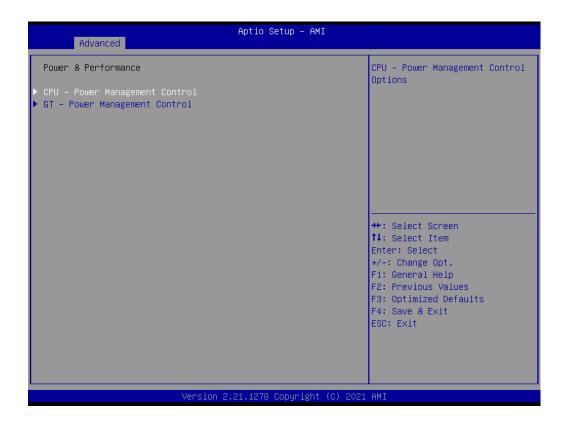
- AP threads Idle Manner
 AP threads Idle Manner for waiting signal to run.
- AES Enable/Disable AES (Advanced Encryption Standard).

MachineCheck

Enable/Disable Machine Check.

MonitorMWait Enable/Disable MonitorMWait.

4.1.1.3 Power & Performance



- CPU Power Management Control
 CPU Power Management Control Options.
- GT Power Management Control
 GT Power Management Control Options.

Chapter 4 AMI BIOS Setup

Power Management Control

Advanced	Aptio Setup – AMI	
CPU – Power Management Control		Select the performance state that the BIOS will set
Boot performance mode Intel(R) SpeedStep(tm) Race To Halt (RTH) Intel(R) Speed Shift Technology	[Max Non-Turbo Performance] [Enabled] [Enabled] [Enabled]	starting from reset vector.
HDC Control Turbo Mode ▶ View/Configure Turbo Options Platform PL1 Enable	[Enabled] [Enabled] [Disabled]	
Platform PL2 Enable Power Limit 4 Override C states ▶ Power Limit 3 Settings	[Disabled] [Disabled] [Disabled]	++: Select Screen 14: Select Item
F TOWER LIMIT & SECTINGS		Enter: Select +/-: Change Opt. F1: General Help
		F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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	Boot Performance mode Select the performance state that the BIOS will set before OS handoff.
•	Intel [®] SpeedStep™ Allows more than two frequency ranges to be supported.
•	Race to Halt (RTH) Enable/Disable Race to Halt feature. RTH will dynamically increase CPU fre- quency in order to enter pkg C-State faster to reduce overall power.
	Intel® Speed Shift Technology
	Enable/Disable Intel [®] Speed Shift Technology support.
1	HDC Control Enable/Disable Intel HDC.
	Turbo Mode Enable/Disable processor turbo mode.
	View/Configure Turbo Options View and Configure Turbo Options.
•	Platform PL1 Enable Enable/Disable Platform Power Limit 1 programming.
•	Platform PL2 Enable Enable/Disable Platform Power Limit 1 programming.
•	Power Limit 4 Override Enable/Disable Power Limit 4 override.
•	C states Enable/Disable CPU power management.
	Power Limit 3 Settings.

View/Configure Turbo Options

Advanced	Aptio Setup — AMI	
Current Turbo Settings		Enable/Disable Energy ▲
Max Turbo Power Limit Min Turbo Power Limit Package TDP Limit Power Limit 1 Power Limit 2 1-core Turbo Ratio 2-core Turbo Ratio 3-core Turbo Ratio 4-core Turbo Ratio	4095.875 0.0 12.0 12.0 20.0 30 30 27 27	When set to 0, will disable access to ENERGY_PERFORMANCE_BIAS MSR and CPUID Function 6 ECX[3] will read 0 indicating no support for Energy Efficient policy setting. When set to 1 will enable access to ENERGY_PERFORMANCE_BIAS MSR ▼
Energy Efficient P-state Package Power Limit MSR Lock Power Limit 1 Override Power Limit 2 Override Power Limit 2 1-Core Ratio Limit Override 2-Core Ratio Limit Override 3-Core Ratio Limit Override 4-Core Ratio Limit Override Energy Efficient Turbo	[Enabled] [Disabled] [Disabled] [Enabled] 0 0 0 0 0 0 [Enabled]	++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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Energy Efficient P-state	
Enable/Disable Energy Efficient P-state feature.	

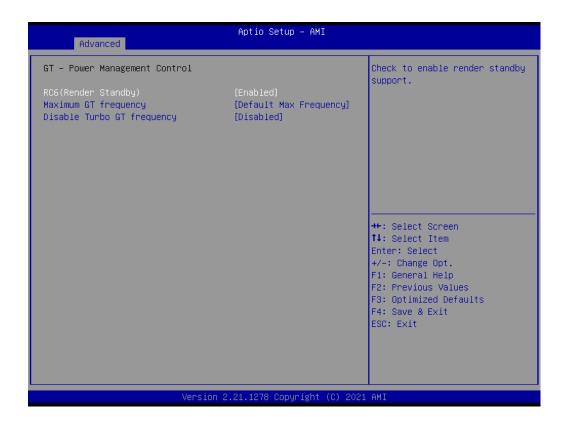
- Package Power Limit MSR Lock
 Enable/Disable locking of Package Power Limit 1 settings.
- Power Limit 1 Override Enable/Disable Power Limit 1 override.
- Power Limit 2 Override Enable/Disable locking of Package Power Limit 2 settings.
- Power Limit 2 Power Limit 2 value in Milli Watts.
- 1-Core Turbo Ratio Limit Ratio (TRLR) Override 1-Core Turbo Ratio Limit Ratio (TRLR).
- 2-Core Turbo Ratio Limit Ratio (TRLR) Override 2-Core Turbo Ratio Limit Ratio (TRLR).
- 3-Core Turbo Ratio Limit Ratio (TRLR) Override 3-Core Turbo Ratio Limit Ratio (TRLR).
- 4-Core Turbo Ratio Limit Ratio (TRLR) Override 4-Core Turbo Ratio Limit Ratio (TRLR).
- Energy Efficient Turbo Enable/Disable Energy Efficient Turbo feature.

Power Limit 3 Settings

Advanced	Aptio Setup – AMI	
Power Limit 3 Override	[Disabled]	Enable/DisablePower Limit 3 override. If this option is disabled, BIOS will leave the hardware default values for Power Limit 3 and Power Limit 3 Time Window. ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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Power Limit 3 Override
 Enable/Disable Power Limit 3 override.

GT - Power Management Control



- RC6 (Render Standby) Check to enable render standby support.
- Maximum GT frequency Maximum GT frequency limited by user.
- Disable Turbo GT frequency Enable/Disable Turbo GT frequency.

4.1.1.4 PCH-FW Configuration

Advanced	Aptio Setup – AMI	
ME Firmware Version ME Firmware Mode ME Firmware SKU ME Firmware Status 1 ME Firmware Status 2 ME State ME Unconfig on RTC Clear Core Bios Done Message Firmware Update Configuration	15.40.10.2252 Normal Mode Consumer SKU 0x90000255 0x89100106 [Enabled] [Enabled] [Enabled]	When Disabled ME will be put into ME Temporarily Disabled Mode.
		<pre>++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
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ME State

When disabled ME will be put ME into temporarily disabled mode.

- ME Unconfig on RTC Clear When disabled, ME will not be unconfigured on RTC Clear.
- Core BIOS Done Message Enable/Disable Core BIOS done message sent to ME.
- Firmware Update Configuration
 Configure management engine technology parameters.

4.1.1.5 ACPI Settings



Enable ACPI Auto Configuration Enable or disable PLOS ACPI oute config

Enable or disable BIOS ACPI auto configuration.

Enable Hibernation

Enables or disables system ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.

ACPI Sleep State

Selects the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.

Chapter 4 AMI BIOS Setup

4.1.1.6 iManager Configuration

EID-211 X00052538 (By EC)	Select the Critical Temperature value that OSPM must shutdown the system.
X00052538	must shutdown the system.
[Normal] [By EC] [By EC] [By EC]	
[Disabled]	++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values
	F3: Optimized Defaults F4: Save & Exit ESC: Exit
	(By EC) (By EC) (By EC) (Disabled) 21.1278 Copyright (C

	CPU Shutdown Temperature Enable/Disable CPU Shutdown Temperature.
•	Power Saving Mode Enable/Disable power saving mode.
	Backlight Enable Polarity Switch Backlight Enable Polarity for Native or Invert.
•	Backlight Control Mode Switch Backlight Control to PWM or DC mode.
•	Brightness PWM Polarity Backlight Control Brightness PWM Polarity for Native or Invert.

- Brightness Control Enable Choose to control LVDS brightness value by EC or user override during POST stage.
- Serial Port 1 Configuration Set Parameters of Serial Port 1.
- Serial Port 2 Configuration Set Parameters of Serial Port 2.
- Hardware Monitor Monitors hardware status.
- Watch Dog Timer Configuration Watch dog timer configuration page.
- Case Open Detection
 Enable or disable case open detect function.
- GPIO Configuration GPIO configuration settings.
- ACPI Report Method Configuration Select ACPI reporting method for EC devices.

Serial Port 1 Configuration



- Serial Port Enable or disable Serial Port (COM).
- Change Settings
 Select an optimal settings for Super IO device.
- COM Port Mode COM Port Mode selection.

Serial Port 2 Configuration

Advanced	Aptio Setup – AMI	
Serial Port 2 Configuration		Enable or Disable Serial Port (COM)
Serial Port Device Settings	[Enabled] IO=2F8h; IRQ=3;	
Change Settings COM Port Mode	[Auto] [RS-232 Mode]	
		<pre>++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
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- Serial Port Enable or disable Serial Port (COM).
- Change Settings
 Select an optimal settings for Super IO device.
- COM Port Mode COM Port Mode selection.

Hardware Monitor

Advanced	Aptio Setup – AMI	
PC Health Status		
CPU Temperature	: +43.7°C∕ +110.6°F	
+12V + 5V VBAT Vcore Current	: +11.99 V : +5.07 V : +3.00 V : +1.66 V : 1041 mA	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
\\	/ersion 2.21.1278 Copyright (C) 2	021 AMI

Watch Dog Timer Configuration

Advanced	Aptio Setup – AMI	
Watch Dog Timer Configuration		Enabled or Disabled Watch Dog Timer function (Start before
Watch Dog Timer	[Disabled]	boot to OS and must stop by self)
		++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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Watch Dog Timer Enable or disable watch dog timer function.

GPIO Configuration

Advanced	Aptio Setup — AMI	
GPIO Configuration		Choose to control GPIO by EC or user override during POST
GPIO Control Enable		stage.
		†↓: Select Item Enter: Select +/-: Change Opt.
		F1: General Help F2: Previous Values
		F3: Optimized Defaults F4: Save & Exit ESC: Exit
		Lag. Exit
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- GPIO Control Enable Choose to control GPIO by EC or user override during POST stage.
 GPIO0/1/2/3/4/5/6/7
 - Configure GPIO0/1/2/3/4/5/6/7.

ACPI Report Method Configuration



- ACPI Report Method Control Select ACPI reporting method for EC Devices.
- Active High-Speed COM Port Select to Enable High-Speed COM Port or Standard COM Port.
- ACPI Report Method for I2C Bus Select ACPI reporting method for EC I2C Bus.
- ACPI Report Method for SMBus Select ACPI reporting method for EC SMBus.
- ACPI Report Method for GPIO Select ACPI reporting method for EC GPIO.

4.1.1.7 NCT6126D HW Monitor

Advanced	Aptio Setup – AMI	
PC Health Status		Enable or Disable Smart Fan
System Temperature CPU Temperature SYS FAN1 Speed VOORE +5VSB +5V +12V AVCC 3VSB 3VVCC VBAT Smart Fan Function	: +32 °C / +89.6 °F : +36 °C / +96.8 °F : 0 RPM : +1.640 V : +5.088 V : +4.978 V : +12.192 V : +3.312 V : +3.312 V : +3.312 V : +3.040 V [Enabled]	++: Select Screen 14: Select Item
 Smart Fan Function Digital I/O Configuration ACPI CPU Shutdown Temperature Case Open Detection Watch Dog Timer 	[Disabled] [Disabled] [Disabled]	Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Versio	n 2.21.1278 Copyright (C) 2	021 AMI

- Smart Fan Function Enable or disable Smart Fan.
- Smart Fan Function Enable or disable Smart Fan.
- Digital I/O Configuration Configure the digital I/O pins.
- ACPI CPU Shutdown Temperature Select the critical temperature value that OSPM must shutdown the system.
- Case Open Detection
 Enable or disable Case Open Detect Function.
- Watch Dog Timer
 Enable or disable Watch Dog Timer Function.

4.1.1.8 Trusted Computing

TPM 2.0 Device Found Firmware Version:	7.63	Enables or Disables BIOS support for security device.
Vendor:	IFX	0.S. will not show Security
		Device. TCG EFI protocol and
Security Device Support	[Enable]	INT1A interface will not be
Active PCR banks Available PCR banks	SHA256 SHA-1,SHA256	available.
AVAILABLE FOR DAILOS	300-1,300230	
SHA-1 PCR Bank	[Disabled]	
SHA256 PCR Bank	[Enabled]	
Pending operation	[None]	
Platform Hierarchy	[Enabled]	
Storage Hierarchy	[Enabled]	++: Select Screen
Endorsement Hierarchy TPM 2.0 UEFI Spec Version	[Enabled] [TCG_2]	↑↓: Select Item Enter: Select
Physical Presence Spec Version	[1.3]	+/-: Change Opt.
TPM 2.0 InterfaceType	[TIS]	F1: General Help
Device Select	[Auto]	F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit ESC: Exit
		200. EXIC

Security Device Support
Enable or disable BIOS support for security device.
SHA-1 PCR Bank
Enable or disable SHA-1 PCR Bank.
SHA256 PCR Bank
Enable or disable SHA256 PCR Bank.
SHA384 PCR Bank
Enable or disable SHA384 PCR Bank.
Pending operation
Schedule an operation for a security device.
Platform Hierarchy
Enable or disable Platform Hierarchy.
Storage Hierarchy
Enable or disable Storage Hierarchy.

- Endorsement Hierarchy Enable or disable Endorsement Hierarchy.
- TPM 2.0 UEFI Spec Version Select the TCG2 Spec Version support.
- Physical Presence Spec Version Select to Tell O.S. to support PPI Spec Version 1.2 or 1.3.
- Device Select TPM 1.2 will restrict support to TPM 1.2 devices, TPM 2.0 will restrict support to TPM 2.0 devices.

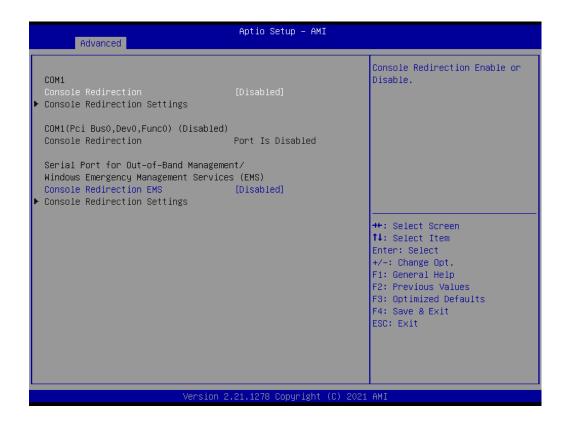
4.1.1.9 S5 RTC Wake Settings

Advanced	Aptio Setup – AMI	
Wake system from S5	[Disabled]	Enable or disable System wake on alarm event. Select FixedTime, system will wake on the hr::min::sec specified. Select DynamicTime , System will wake on the current time + Increase minute(s) ++: Select Screen fl: Select Item
		Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
v	ersion 2.21.1278 Copyright (

Wake system from S5

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

4.1.1.10 Serial Port Console Redirection



Console Redirection

This item allows users to enable or disable console redirection for Microsoft Windows Emergency Management Services (EMS).

Console Redirection This item allows users to configuration console redirection detail settings.

4.1.1.11 USB Configuration

Advanced	Aptio Setup — AMI	
USB Configuration		Enables Legacy USB support. AUTO option disables legacy
USB Module Version	25	support if no USB devices are connected. DISABLE option will
USB Controllers: 1 XHCI		keep USB devices available
USB Devices:		only for EFI applications.
1 Drive, 2 Keyboards, 1 Mouse,	1 Hub	
Legacy USB Support	[Enabled]	
XHCI Hand-off USB Mass Storage Driver Support	[Enabled] [Enabled]	
USB hardware delays and time–outs:		++: Select Screen
USB transfer time-out	[20 sec]	f∔: Select Item
Device reset time-out	[20 sec]	Enter: Select
Device power–up delay	[Auto]	+/−: Change Opt. F1: General Help
Mass Storage Devices:		F2: Previous Values
TOSHIBA	[Auto]	F3: Optimized Defaults F4: Save & Exit
		ESC: Exit
	04 4070 0-mm (abt. (a) -000	4 0WT
Version 2	2.21.1278 Copyright (C) 202	I HMI

Legacy USB Support

Enables Legacy USB Support. AUTO option disables legacy support if no USB devices are connected. Disable option will keep USB devices available only for EFI applications.

XHCI Hand-off

This is a workaround for OS without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.

- USB Mass Storage Driver Support Enable/disable USB Mass Storage Driver support.
- USB transfer time-out
 Time-out value for control, bulk, and interrupt transfers.

Device reset time-out

USB mass storage device start unit command time-out.

Device power-up delay

Maximum time the device will take before it properly reports itself to the Host Controller. 'Auto' uses default value: for a root port it is 100 ms, for a hub port the delay is taken from hub descriptor.

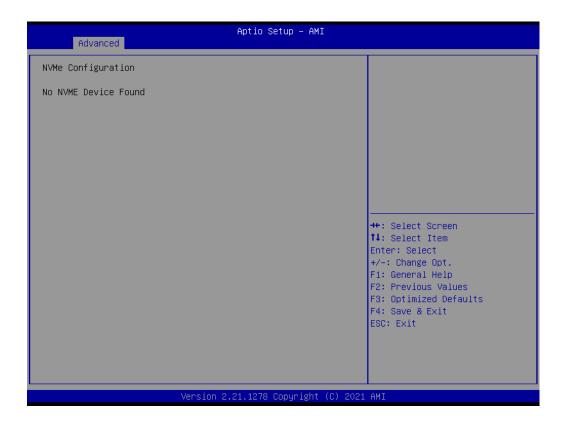
4.1.1.12 Network Stack Configuration

Advanced	Aptio Setup – AMI	
Network Stack	[Disabled]	Enable/Disable UEFI Network Stack ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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Network Stack Finishing LIFEL Networks

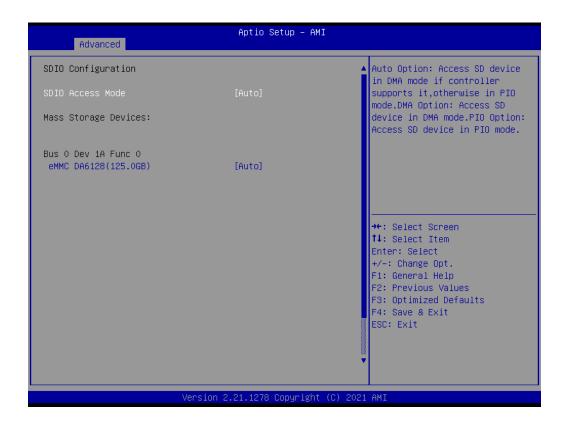
Enable/disable UEFI Network Stack.

4.1.1.13 NVMe Configuration



Chapter 4 AMI BIOS Setup

4.1.1.14 SDIO Configuration



SDIO Access Mode

Select SD Device access mode in Auto/DMA/PIO.

4.1.2 Chipset Configuration

Select the Chipset tab from the MIO-2363 setup screen to enter the Chipset BIOS Setup screen. You can display a Chipset BIOS Setup option by highlighting it using the <Arrow> keys. All Plug and Play BIOS Setup options are described in this section. The Plug and Play BIOS Setup screen is shown below.

Main Advanced Ch	Apti ipset Security Boot	o Setup – AMI Save & Exit	
▶ System Agent (SA) C ▶ PCH-IO Configuratio			System Agent (SA) Parameters
			<pre>++: Select Screen tl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
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Chapter 4 AMI BIOS Setup

4.1.2.1 System Agent (SA) Configuration

Chipset	Aptio Setup – AMI	
System Agent (SA) Configuration		Memory Configuration Parameters
VT-d	Supported	
 Memory Configuration Graphics Configuration VT-d X2APIC Opt Out IGD VTD Enable Above 4GB MMIO BIOS assignment 	[Enabled] [Enabled] [Enabled] [Enabled]	
		<pre> ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
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- Memory Configuration Memory configuration parameters.
- Graphics Configuration Graphics configuration parameters.
- VT-d
 VT-D capability.
- X2APIC Opt Out Enable/Disable X2APIC opt out bit.
- IGD VTD Enable Enable/Disable IGD VTD.
- Above 4GB MMIO BIOS assignment Enable/Disable above 4GB Memory Mapped IO BIOS assignment.

Memory Configuration

Memory Configuration		Maximum Value of TOLUD.
Memory RC Version Memory Frequency Memory Timings (tCL-tRCD-tRP-tRAS)	0.0.4.104 3733 MT/s 32-34-34-79	Dynamic assignment would adjust TOLUD automatically based on largest MMID length of installed graphic controller
DIMM#B1 Size Number of Ranks Manufacturer	Populated & Enabled 8192 MB (LPDDR4) 1 Micron Technology	
Max TOLUD SA GV Enable RH Prevention Power Down Mode Page Close Idle Timeout Memory Scrambler Force ColdReset In-Band ECC Memory Remap	[Dynamic] [Enabled] [Disabled] [Auto] [Enabled] [Enabled] [Disabled] [Disabled] [Enabled]	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
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- Max TOLUD Maximum Value of TOLUD.
- System Agent Geyserville.
- Enable RH Prevention Actively prevent row hammer attacks.
- Power Down Mode CKE Power Down Mode control.
- Page Close Idle Timeout
 Page Close Idle Timeout Control.
- Memory Scrambler Enable/Disable Memory Scrambler support.
- Force ColdReset
 Force ColdReset or choose MrcColdBoot mode.
- In-Band ECC Enable/Disable In-Band ECC.
- Memory Remap Enable/Disable memory remap above 4GB.

Graphics Configuration

Chipset	Aptio Setup – AMI	
Graphics Configuration Graphics Turbo IMON Current GTT Size Aperture Size PSMI SUPPORT DVMT Pre-Allocated DVMT Total Gfx Mem ▶ Boot Display Control	31 [8MB] [256MB] [Disabled] [60M] [256M]	Graphics turbo IMON current values supported (14–31)
		<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
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- Graphics Turbo IMON Current Graphics turbo IMON current values supported.
 GTT Size
 - Select the GTT size.
- Aperture Size Select the aperture size.
- PSMI Support Enable/Disable PSMI.
- DVMT Pre-Allocated Select DVMT 5.0 Pre-Allocated (fixed) graphics memory size used by the internal graphics device.
 DVMT Total Gfx Mem
- DVMT Total Gfx Mem Select DVMT 5.0 total graphic memory size used by the internal graphics device.
- Boot Display Control Boot display control.

Boot Display Control

Chipset	Aptio Setup – AMI	
Boot Display Control		NXP Non-EDID Support. Enabled:EDID is by internal
NXP Non-EDID Support Color depth & data packing format Dual LVDS mode LVDS Panel Type	[Enabled] [VESA and JEIDA 18 bpp] [Single LVDS Bus Mode] [Disabled]	EDID table. Disabled:EDID is from DDC bus.
		++: Select Screen
		11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit
Version 2	2.21.1278 Copyright (C) 2021	ESC: Exit

- NXP Non-EDID Support Non-EDID support.
- Color Depth & Data Packing
 Color depth and data packing format for Non-EDID support.
- Dual LVDS Mode Select LVDS bus to single bus mode or dual bus mode.

LVDS Panel Type

This item allow user to select LVDS panel resolution type.

Chapter 4 AMI BIOS Setup

4.1.2.2 PCH-IO Configuration

Aptio Setup Chipset	- AMI
PCH-IO Configuration SATA Configuration SATA Configuration USB Configuration Security Configuration HD Audio Configuration SCS Configuration Onboard LAN1 Controller [Enabled] LAN1 PXE OpROM [Disabled] Onboard LAN2 Controller [Enabled] LAN2 PXE OpROM [Disabled] PCIE Wake [Disabled] Restore AC Power Loss [Power Off]	PCI Express Configuration settings

- PCI Express Configuration PCI Express configuration settings.
- SATA Configuration SATA device options settings.
- USB Configuration USB configuration settings.
- Security Configuration Security configuration settings.
- HD Audio Configuration HD Audio subsystem configuration settings.
- SCS Configuration
 Storage and communication subsystem (SCS) configuration.
- Onboard LAN1 Controller Select to enable or disable Onboard LAN1 controller.
- LAN1 PXE ROM Enable or disable onboard LAN1's PXE option ROM.
- Onboard LAN2 Controller Select to enable or disable Onboard LAN2 controller.
- LAN2 PXE ROM Enable or disable onboard LAN2's PXE option ROM.
- PCIE Wake
 Final-la and final-la DOIE to wake the
 - Enable or disable PCIE to wake the system from S5.
- Restore AC Power Loss Specify what state to go to when power is re-applied after a power failure (G3 state).

PCI Express Configuration

Chipset	Aptio Setup – AMI	
PCI Express Configuration DMI Link ASPM Control PCIE Port assigned to LAN Port8xh Decode Peer Memory Write Enable Compliance Test Mode PCH PCI Express Clock Gating PCIe function swap ► PCI Express Root Port 5	[Auto] Disabled [Disabled] [Disabled] [Disabled] [Platform-POR] [Enabled]	The control of Active State Power Management of the DMI Link.
▶ PCI Express Root Port 7		<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Versid	on 2.21.1278 Copyright (C) (2021 AMI

- DMI Link ASPM Control This item controls Active State Power Management of the DMI link.
- Port8xh Decode PCI Express Port8xh decode enable/disable.
- Peer Memory Write Enable
 Peer memory write enable/disable.
- PCH PCI Express Clock Gating Enable/Disable PCH PCI Express clock gating for each root port.

PCIe function swap

When disabled, prevents PCIE root port function swap. If any function other than 0 is enabled, 0 will become visible.

PCI Express Root Port 5/7

PCI Express Port 5/7 settings.

SATA Configuration

Chipset	Aptio Setup — AMI	
SATA Configuration		Enable/Disable SATA Device.
SATA Controller(s) SATA Mode Selection Aggressive LPM Support SATA Controller Speed M.2 SATA Software Preserve Port 1 SATA Device Type	[Enabled] [AHCI] [Disabled] [Default] Empty Unknown [Enabled] [Solid State Drive]	
		<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
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- SATA Controller(s) Enable/disable SATA device.
- SATA Mode Selection Determine how SATA controllers operate.
- Aggressive LPM Support Enabled PCH to aggressively enter link power state.
- SATA Controller Speed Indicates the maximum speed the SATA controller can support.

USB Configuration

Chipset	Aptio Setup – AMI	
USB Configuration		Option to enable Compliance Mode. Default is to disable
XHCI Compliance Mode	[Disabled]	Compliance Mode. Change to
USB3 Link Speed Selection	[GEN2]	enabled for Compliance Mode testing.
USB PDO Programming	[Enabled]	
USB Overcurrent	[Enabled]	
USB Overcurrent Lock	[Enabled]	
USB Port Disable Override	[Select Per-Pin]	
USB SS Physical Connector #1	[Enabled]	
USB SS Physical Connector #2	[Enabled]	
USB SS Physical Connector #3	[Enabled]	→+: Select Screen
USB SS Physical Connector #4	[Enabled]	↑↓: Select Item
USB HS Physical Connector #1	[Enabled]	Enter: Select
USB HS Physical Connector #2	[Enabled]	+/-: Change Opt.
USB HS Physical Connector #3	[Enabled]	F1: General Help
USB HS Physical Connector #4	[Enabled]	F2: Previous Values
USB HS Physical Connector #5	[Enabled]	F3: Optimized Defaults
USB HS Physical Connector #6	[Enabled]	F4: Save & Exit
USB HS Physical Connector #7	[Enabled]	ESC: Exit
USB HS Physical Connector #10	[Enabled]	
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XHCI Compliance Mode	
Option to enable compliance mode.	
USB3 Link Speed Selection	

- This option is to select USB3 Link Speed GEN1 or GEN2.
- USB PDO Programming Select "Enabled" if Port Disable Override functionality is used.
- USB Overcurrent
 Select "Disabled" for pin-based debug.

USB Overcurrent Lock

Select "Enabled" if overcurrent functionality is used.

- USB Port Disable Override Selectively Enable/Disable the corresponding USB Port from reporting a device connection to the controller.
- USB SS Physical Connector #1/2/3/4 Enable/disable this USB Physical Connector.
- USB HS Physical Connector #1/2/3/4/5/6/7/10 Enable/disable this USB Physical Connector.

Security Configuration

Chipset	Aptio Setup – AMI	
Security Configuration RTC Memory Lock BIOS Lock Force unlock on all GPIO pads	[Enabled] [Disabled] [Disabled]	Enable will lock bytes 38h–3Fh in the lower/upper 128–byte bank of RTC RAM
		++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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RTC Memory Lock

Enable will lock bytes 38h-3Fh in the lower/upper 128-byte bank of RTC RAM.

- BIOS Lock Enable or disable the PCH BIOS Lock Enable feature.
- Force unlock on all GPIO pads If Enabled BIOS will force all GPIO pads to be in an unlock state.

HD Audio Configuration



HD Audio

Control detection of the HD-Audio device. Disabled = HDA will be unconditionally disabled. Enabled = HDA will be unconditionally Enabled.

SCS Configuration

Chipset	Aptio Setup – AMI	
eMMC 5.1 Controller eMMC 5.1 HS400 Mode Enable HS400 software tuning Driver Strength	[Enabled] [Enabled] [Disabled] [40 Ohm]	Enable or Disable SCS eMMC 5.1 Controller
		<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
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- eMMC 5.1 Controller
 Enable or disable SCS eMMC 5.1 controller.
- eMMC 5.1 HS400 Mode Enable or disable SCS eMMC 5.1 HS400 mode.
- Enable HS400 software tuning Software tuning should improve eMMC HS400 stability at the expense of boot time.
- Driver Strength Sets I/O driver strength.

4.1.3 Security



Select Security Setup from the MIO-2363 Setup main BIOS setup menu. All Security Setup options, such as password protection and virus protection are described in this section. To access the sub menu for the following items, select the item and press <Enter>:

Change Administrator/User Password

Select this option and press <ENTER> to access the sub menu, then type in the password.

Secure Boot Secure boot configurations.

4.1.4 Boot

Main Advanced Chipset Secu	Aptio Setup – AMI rity Boot Save & Exit	
Boot Configuration Setup Prompt Timeout Bootup NumLock State Quiet Boot	<mark>1</mark> [On] [Disabled]	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
Boot Option Priorities Boot Option #1 Boot Option #2 Boot Option #3	[Windows Boot Manager (eMMC DA6128)] [UEFI: TOSHIBA, Partition 1 (TOSHIBA)] [UEFI: Built-in EFI Shell]	
Fast Boot	[Disabled]	<pre>++: Select Screen 1↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
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Setup Prompt Timeout

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

 Bootup NumLock State Select the keyboard NumLock state.

Quiet Boot

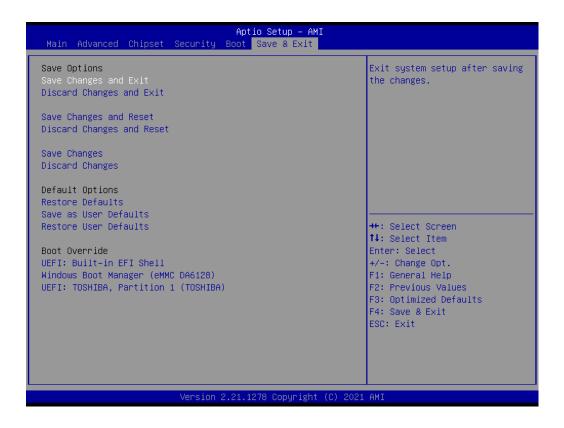
Enables or disables Quiet Boot option.

Boot Option #1
 Sets the system boot order.

Fast Boot

Enables or disables boot with initialization of a minimal set of devices required to launch active boot option. Has no effect for BBS boot options.

4.1.5 Save & Exit



- Save Changes and Exit
 This item allows you to exit system setup after saving the changes.

 Discard Changes and Exit
- This item allows you to exit system setup without saving any changes.
- Save Changes and Reset This item allows you to reset the system after saving the changes.
- Discard Changes and Reset This item allows you to rest system setup without saving any changes.
- Save Changes
 This item allows you to save changes done so far to any of the options.

 Discard Changes
- Discard Changes This item allows you to discard changes done so far to any of the options.
- Restore Defaults This item allows you to restore/load default values for all the options.
- Save as User Defaults This item allows you to save the changes done so far as user defaults.
- Restore User Defaults
 This item allows you to restore the user defaults to all the options.
- Boot Override Boot device select can override your boot priority.



System I/O Ports

A.1 System I/O Ports

Addr. Range (Hex) Device 00h-1Fh DMA Controller 20h-2Dh Interrupt Controller 2Eh–2Fh Motherboard resources 30h-3Dh Interrupt Controller 40h-43h Timer/Counter 4Eh–4Fh Motherboard resources 50h-53h Timer/Counter 60h-6Fh 8042 (keyboard controller)/NMI Controller/Microcontroller 70h-7Fh Real-time Controller 80h-8Fh Debug Port/Reserved 90h-9Fh Debug Port/Reset Generator A0h-ADh Interrupt Controller **B0h-B1h Interrupt Controller B4h-BDh Power Management** 280h-28Fh I2C Controller 290h-29Fh EC Index port and Data port 2A0h-2BFh GPIO Controller 2C0h-2DFh SMBus Controller 2F0h-2F7h EC/PMC Controller 2F8h-2FFh Communications Port (COM2) 3F8h-3FFh Communications Port (COM1) 480h-4CFh Motherboard resources 4D0h-4D1h Interrupt Controller 680h-69Fh Motherboard resources A00h-AFFh Motherboard resources 164Eh-164Fh Motherboard resources 1800h-18FFh Motherboard resources CF9h-CF9h Reset Generator

A.2 DMA Channel Assignments

Channel Function

- 0 Available
- 1 Available
- 2 Available
- 3 Available
- 4 Direct memory access controller
- 5 Available
- 6 Available
- 7 Available

A.3 1st MB Memory Map

Addr. Range (Hex) Device

E0000h - FFFFFh System board

D0000h - DFFFFh PCI Bus

C0000h - CFFFFh System board

- A0000h BFFFFh PCI Bus
- A0000h BFFFFh Intel® HD Graphic
- 00000h 9FFFFh System board

A.4 Interrupt Assignments

Interrupt# Interrupt source NMI Parity error detected IRQ0 System timer IRQ1 Using SERIRQ, Keyboard Emulation IRQ2 Interrupt from controller 2 (cascade) IRQ3 Communications Port (COM2) IRQ4 Communications Port (COM1) IRQ5 EC Watch Dog **IRQ6 CANBus Controller IRQ7** Available IRQ8 System CMOS/real time clock IRQ9 Microsoft ACPI-Compliant System **IRQ10** Available **IRQ11** Display Controller **IRQ12** Available IRQ13 Numeric data processor **IRQ14** Reserved **IRQ15** Reserved



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