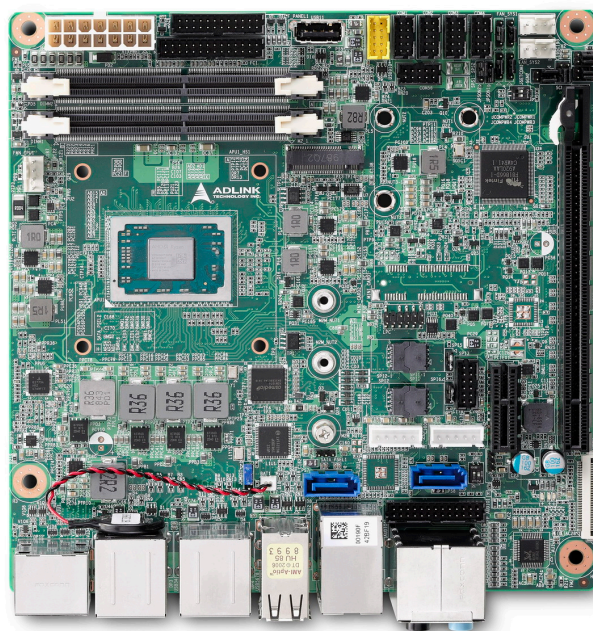


AmITX-RZ-G

User's Manual

Mini-ITX Embedded Motherboard with
AMD® Embedded V1000/R1000 Series APU



Manual Rev.: 2.0
Revision Date: July 16, 2021
Part Number: 50M-00035-1010

Preface

Copyright

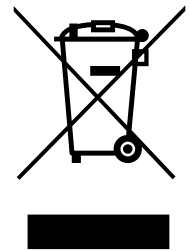
Copyright © 2021 ADLINK Technology, Inc. This document contains proprietary information protected by copyright. All rights are reserved. No part of this manual may be reproduced by any mechanical, electronic, or other means in any form without prior written permission of the manufacturer.

Disclaimer

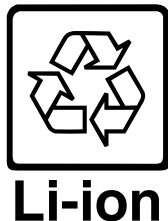
The information in this document is subject to change without prior notice in order to improve reliability, design, and function and does not represent a commitment on the part of the manufacturer. In no event will the manufacturer be liable for direct, indirect, special, incidental, or consequential damages arising out of the use or inability to use the product or documentation, even if advised of the possibility of such damages.

Environmental Responsibility

ADLINK is committed to fulfill its social responsibility to global environmental preservation through compliance with the European Union's Restriction of Hazardous Substances (RoHS) directive and Waste Electrical and Electronic Equipment (WEEE) directive. Environmental protection is a top priority for ADLINK. We have enforced measures to ensure that our products, manufacturing processes, components, and raw materials have as little impact on the environment as possible. When products are at their end of life, our customers are encouraged to dispose of them in accordance with the product disposal and/or recovery programs prescribed by their nation or company.



Battery Labels (for products with battery)



California Proposition 65 Warning



WARNING: This product can expose you to chemicals including acrylamide, arsenic, benzene, cadmium, Tris(1,3-dichloro-2-propyl)phosphate (TDCPP), 1,4-Dioxane, formaldehyde, lead, DEHP, styrene, DINP, BBP, PVC, and vinyl materials, which are known to the State of California to cause cancer, and acrylamide, benzene, cadmium, lead, mercury, phthalates, toluene, DEHP, DIDP, DnHP, DBP, BBP, PVC, and vinyl materials, which are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Trademarks

Product names mentioned herein are used for identification purposes only and may be trademarks and/or registered trademarks of their respective companies.

Revision History

Revision	Description	Date
1.0	Initial release	March 18, 2020
2.0	General update, added support for further processors	July 16, 2021

Table of Contents

Preface	ii
Table of Contents.....	iii
List of Figures	v
List of Tables.....	vi
1. Introduction.....	1
1.1. Packing List.....	1
1.2. Optional Accessories	1
2. Specifications	3
2.1. Core System	3
2.2. Rear I/O Connectors	3
2.3. Internal Headers and Connectors	3
2.4. Form Factor.....	4
2.5. Board Management Controller	4
2.6. Debug Header.....	4
2.7. Video	4
2.8. Audio	4
2.9. LAN	4
2.10. Trusted Platform Module (TPM).....	4
2.11. Power Specifications.....	5
2.12. Power Consumption.....	5
2.13. Temperatures.....	7
2.14. Environmental	7
2.15. Operating Systems.....	7
2.16. Functional Block Diagram	8
3. Mechanical Layout	9
3.1. Rear I/O Connectors	9
3.2. Component-Side Connectors.....	10
3.3. Mechanical Dimensions	11
3.4. Thermal Solutions	12
4. Connectors and Jumpers	13
4.1. Rear IO Connectors	13
4.2. Internal Connectors.....	15
4.3. Jumper and Switch Settings.....	25
4.4. Onboard Connector Information.....	28
5. Driver Installation	29
6. Smart Embedded Management Agent (SEMA)	31
6.1. Board Specific SEMA Functions	31
7. System Resources	35
7.1. System Memory Map	35

7.2. I/O Map	35
7.3. Interrupt Request (IRQ) Lines	36
7.4. PCI Configuration Space Map.....	38
7.5. PCI Interrupt Routing Map	39
7.6. SMBus Slave Address	39
8. BIOS Setup.....	41
8.1. Menu Structure.....	41
8.2. Main	42
8.3. Advanced	44
8.4. Security	58
8.5. Boot.....	58
8.6. Save & Exit	61
Safety Instructions.....	62
Getting Service.....	63

List of Figures

Figure 1: AmITX-RZ-G Functional Block Diagram	8
Figure 2: AmITX-RZ-G with V1000 Series Processor Rear I/O	9
Figure 2: AmITX-RZ-G with R1000 Series Processor Rear I/O	9
Figure 3: AmITX-RZ-G Component-Side Connectors.....	10
Figure 4: AmITX-RZ-G Mechanical Dimensions	11
Figure 5: AmITX-RZ-G Jumper and Switch Locations	25

List of Tables

Table 1: Available Models	1
Table 2: AmITX-RZ-G Onboard Connector Information.....	28
Table 3: SEMA Onboard Voltage Monitor.....	31
Table 4: SEMA BMC Status	32
Table 5: SEMA Exception Codes	33
Table 6: SEMA BMC Flags.....	33
Table 7: System Memory Map	35
Table 8: I/O Map.....	35
Table 9: IRQ Lines PIC Mode.....	36
Table 10: IRQ Lines APIC Mode	37
Table 11: PCI Configuration Space Map.....	38
Table 12: PCI Interrupt Routing Map.....	39
Table 13: SMBus Slave Address.....	39

1. Introduction

The AmITX-RZ-G is a Mini-ITX motherboard supporting the AMD Ryzen™ Embedded V1000/R1000 processor family, bringing together the breakthrough performance of the pioneering AMD “Zen” APU and “Vega” GPU architectures in a seamlessly integrated SoC solution that sets a new standard in processing power for next-generation embedded designs. Delivering superior graphics and multimedia processing, and compute performance up to 3.6 TFLOPS with thermal design power (TDP) as low as 12W and as high as 54W, AMD Ryzen™ Embedded V1000/R1000 SoCs achieve new levels of processing efficiency and design versatility. With a comprehensive set of advanced, integrated security features, AMD Ryzen™ Embedded V1000/R1000 SoCs enable sophisticated system protections complemented by an expansive breadth of I/O interconnect options.

The AmITX-RZ-G features four DisplayPorts, dual Gigabit Ethernet port, USB 3.0 ports, USB 2.0 ports, SATA 6 Gb/s ports, and High Definition Audio with 7.1 channels. Support is provided for one PCIe x16, one PCIe x1, one Mini PCIe slot and one M.2 (M Key) socket. A feature connector provides access to GPIO, SMBus, and I2C signals. The board is equipped with dual SPI AMI EFI BIOS sockets, supporting embedded features such as hardware monitor and watchdog timer.

Table 1: Available Models

Model Number	Core Speed	TDP
AmITX-RZ-G-V1202B	2.3GHz	12-25W
AmITX-RZ-G-V1605B	2.0GHZ	12-25W
AmITX-RZ-G-V1756B	3.25GHz	35-54W
AmITX-RZ-G-V1807B	3.35GHz	35-54W
AmITX-RZ-G-R1505G	2.4GHz	12-25W
AmITX-RZ-G-R1606G	2.6GHz	12-25W
AmITX-RZ-G-R1305G	1.5GHz	8-10W
AmITX-RZ-G-R1102G	1.2GHz	6W

1.1. Packing List

- AmITX-RZ-G Mini-ITX motherboard
- ATX/AT power cable (P/N: 30-20872-1000)
- SATA dual power cable (P/N: 30-20875-0000)
- SATA cable (P/N: 30-10057-0600)
- Rear I/O shield
 - V1000 processors rear I/O shield (P/N: 34-25329-0000-A0)
 - R1000 processors rear I/O shield (P/N: 34-25329-0100-A0)

1.2. Optional Accessories

- COM port cable, 1 port (P/N: 30-20876-0000)
- USB 2.0 cable, 2 ports (P/N: 30-20874-1000)

This page intentionally left blank.

2. Specifications

2.1. Core System

Processor	AMD® Ryzen™ Embedded V1000/R1000 Processors - AMD® Ryzen™ Embedded V1807B 3.33GHz (3.8GHz Boost), 54W (4C/11CU) - AMD® Ryzen™ Embedded V1756B 3.25GHz (3.6GHz Boost), 54W (4C/8CU) - AMD® Ryzen™ Embedded V1605B 2.0GHz (3.6GHz Boost), 25W (4C/8CU) - AMD® Ryzen™ Embedded V1202B 2.3GHz (3.2GHz Boost), 25W (2C/3CU) - AMD® Ryzen™ Embedded R1606G 2.6GHz (3.5GHz Boost), 25W (2C/3CU) - AMD® Ryzen™ Embedded R1505G 2.4GHz (3.3GHz Boost), 25W (2C/3CU) - AMD® Ryzen™ Embedded R1305G 1.5GHz (2.8GHz Boost), 8-10W (2C/3CU) - AMD® Ryzen™ Embedded R1102G 1.2GHz (2.6GHz Boost), 6W (2C/3CU)
Memory	Dual channel ECC 3200/2400MHz DDR4 memory up to 32 GB in dual vertical SODIMM sockets
Embedded BIOS	AMI EFI in 16MB SPI BIOS

2.2. Rear I/O Connectors

Display	DisplayPort with resolution up to 4096 x 2160 @ 60Hz - V1000 processors: 4x DisplayPort - R1000 processors: 3x DisplayPort
Ethernet	GbE RJ-45 - V1000 processors: 2x GbE - R1000 processors: 1x GbE
USB	4x USB 3.0; 4x USB 2.0
Audio	7.1 channel audio via 5 jacks and S/PDIF output on rear I/O

2.3. Internal Headers and Connectors

PCI Express Slots	1x PCIe x16 Gen3 slot (PCIe x8 signal) 1x PCIe x1 Gen3 slot (PCIe 3.0) 1x full-size Mini PCIe slot (for MSATA device, V1000 processors only)
USB	2x USB 2.0 on header 1x USB 2.0 on vertical connector with space for dongle
SATA	2x SATA 6 Gbps ports Ports 0 and 1 provide clearance for SATADOMs
Serial	1x RS-232/422/485 on internal header 3x RS-232 on internal headers 1x CCTALK x2
Other	1x M.2 (M key, 2242/2260/2280) - V1000 processors: supports NVMe, PCIe x2 signal, SATA x1 signal - R1000 processors: supports NVMe, PCIe x2 signal Audio Header SPI Header for external BIOS Front Panel Header Feature Connector Header ATX Power Connector (14-pin)

2.4. Form Factor

Mini-ITX: 170mm x 170mm

2.5. Board Management Controller

Supports:

- voltage monitoring
- system and CPU temperature monitoring
- smart fan control
- logistics and forensic information
- general purpose I2C
- watchdog timer

2.6. Debug Header

40-pin Multipurpose Flat Cable Connector: used in combination with DB-40 debug module providing BIOS POST code LED, BMC access, SPI BIOS flashing, Power Testpoints, Debug LEDs

2.7. Video

Graphics Core	"Vega" GPU with up to 11 Compute Units
Display Interface Support	DisplayPort with resolution up to 4096 x 2160 @ 60Hz • V1000 processors: 4x DisplayPort • R1000 processors: 3x DisplayPort

2.8. Audio

Audio Codec	Realtek ALC892 / 888S
Interfaces	• 7.1 channel audio via 5 jacks and S/PDIF output on rear I/O • 7.1 channel audio signals and S/PDIF output via internal header

2.9. LAN

Controller	2x Intel® i211AT Ethernet controller, supports Wake On LAN
Interface	PCI Express x1 Bus
Connector	GbE RJ-45 • V1000 processors: 2x GbE • R1000 processors: 1x GbE

2.10. Trusted Platform Module (TPM)

TPM 2.0	TPM 2.0: Infineon SLB9665
---------	---------------------------

2.11. Power Specifications

Power Modes	AT and ATX mode (AT mode start controlled by BMC)
Standard Voltage Input	ATX: 12VDC $\pm 5\%$, 5Vsb $\pm 5\%$ from internal header AT: 12V $\pm 5\%$ from internal header
Power Management	ACPI 4.0 compliant
Power States	Supports S0, S4, S3, S5, (Wake-on-USB S3/S4, WoL S3/S4/S5)

2.12. Power Consumption

AMD® Ryzen™ Embedded Processor	V1202B 2.3GHz	V1605B 2.0GHz	V1756B 3.25GHz	V1605B 2.0GHz	R1606G 2.6GHz	R1505B 2.4GHz
Memory	Transcend TS1GSH64V6B 8BG DDR4 2666 (x2)					
Graphics	NVIDIA Quadro P1000 PCIe graphics card					
SSD	Phison 2.5"SSD 128GB S11 C-TEMP					
BIOS	1.01.10 (1V7)					
OS	Windows 10					
Windows Idle mode/Enable PSS Support (wait 60s, no fan turn on)						
3.3A(A)	0.09	0.09	0.11	0.11	0.11	0.12
5V(A)	0.12	0.15	0.15	0.15	0.15	0.15
12V(A)	2.31	1.87	1.86	1.48	1.47	1.95
5VSB(A)	0.03	0.03	0.03	0.04	0.04	0.03
Power Cons. (W)	28.77	23.64	23.58	19.073	18.95	24.7
Windows Idle mode/Disable PSS Support (wait 60s, no fan turn on)						
3.3A(A)	0.1	0.1	0.09	0.1	0.11	0.1
5V(A)	0.12	0.15	0.15	0.16	0.15	0.15
12V(A)	2.33	1.59	1.56	1.85	1.82	1.67
5VSB(A)	0.03	0.03	0.03	0.04	0.04	0.04
Power Cons. (W)	29.04	20.31	19.92	23.53	23.15	21.32
Windows Typical mode / Enable PSS Support						
3.3A(A)	0.1	0.1	0.11	0.12	0.11	0.12
5V(A)	0.16	0.15	0.16	0.17	0.16	0.16
12V(A)	10.36	9.11	6.83	5.65	7.82	7.28
5VSB(A)	0.03	0.04	0.04	0.05	0.04	0.05
Power Cons. (W)	125.6	110.6	83.32	69.3	95.2	88.81

AMD® Ryzen™ Embedded Processor	V1202B 2.3GHz	V1605B 2.0GHz	V1756B 3.25GHz	V1605B 2.0GHz	R1606G 2.6GHz	R1505B 2.4GHz
Windows Typical mode / Disable PSS Support (wait 180s)						
3.3A(A)	0.09	0.1	0.12	0.11	0.12	0.12
5V(A)	0.14	0.14	0.15	0.16	0.16	0.18
12V(A)	10.7	9.25	7.62	6.33	6.89	7.25
5VSB(A)	0.03	0.03	0.04	0.05	0.04	0.06
Power Cons. (W)	129.55	112.18	92.79	77.37	84.08	88.6
Windows Max mode / Enable PSS Support						
3.3A(A)	0.11	0.11	0.11	0.12	0.11	0.13
5V(A)	0.16	0.16	0.16	0.16	0.15	0.22
12V(A)	11.37	8.98	6.67	5.36	6.42	7.11
5VSB(A)	0.04	0.04	0.04	0.05	0.04	0.05
Power Cons. (W)	137.8	109.12	81.4	65.77	78.35	87.09
Windows Max mode / Disable PSS Support						
3.3A(A)	0.11	0.11	0.12	0.11	0.12	1.2
5V(A)	0.16	0.17	0.16	0.16	0.16	0.17
12V(A)	11.43	9.03	6.57	5.37	6.41	6.3
5VSB(A)	0.04	0.05	0.04	0.05	0.04	0.05
Power Cons. (W)	138.52	109.82	80.24	65.85	78.32	80.66
System S3 mode						
3.3A(A)	0	0	0	0.01	0	0
5V(A)	0	0	0	0	0	0
12V(A)	0	0	0	0.01	0	0.04
5VSB(A)	0.43	0.42	0.41	0.45	0.39	0.4
Power Cons. (W)	2.15	2.1	2.05	2.4	1.95	2.48
System S4 mode						
3.3A(A)	0	0	0	0.02	0	0
5V(A)	0	0	0	0.01	0	0
12V(A)	0.01	0	0	0.02	0	0.05
5VSB(A)	0.36	0.37	0.37	0.41	0.35	0.2
Power Cons. (W)	1.92	1.85	1.85	2.41	1.75	1.6

AMD® Ryzen™ Embedded Processor	V1202B 2.3GHz	V1605B 2.0GHz	V1756B 3.25GHz	V1605B 2.0GHz	R1606G 2.6GHz	R1505B 2.4GHz
System S5 mode with ECO disabled						
3.3A(A)	0	0	0	0	0	0
5V(A)	0	0	0	0	0	0
12V(A)	0	0	0	0	0	0.05
5VSB(A)	0.35	0.37	0.37	0.4	0.33	0.22
Power Cons. (W)	1.75	1.85	1.85	2	1.65	1.7
System S5 mode with ECO Enabled						
3.3A(A)	0	0	0	0	0	0
5V(A)	0	0	0	0	0	0
12V(A)	0	0	0	0	0	0.02
5VSB(A)	0.03	0.03	0.03	0.04	0.04	0.03
Power Cons. (W)	0.15	0.15	0.15	0.2	0.2	0.39

2.13. Temperatures

Standard Operating Temperature	0°C to 60°C
Storage Temperature	-40°C to 90°C

2.14. Environmental

Humidity	40° C @ 95% RH non-condensing
Shock and Vibration	IEC 60068-2-64 and IEC-60068-2-27 Vibration: 1Grms(5~500Hz)/OP. 3Grms(5~500Hz)/NON-OP Shock: 20G (with 11 ms duration, half sine wave) operating, 20G(with 11 ms duration, half sine wave) non-operating
HALT	Thermal Stress, Vibration Stress, Thermal Shock and Combined Test

2.15. Operating Systems

Standard Support	Linux 64-bit, Windows10 64-bit
Extended Support (BSP)	Windows 10, Ubuntu 16.04.4

2.16. Functional Block Diagram

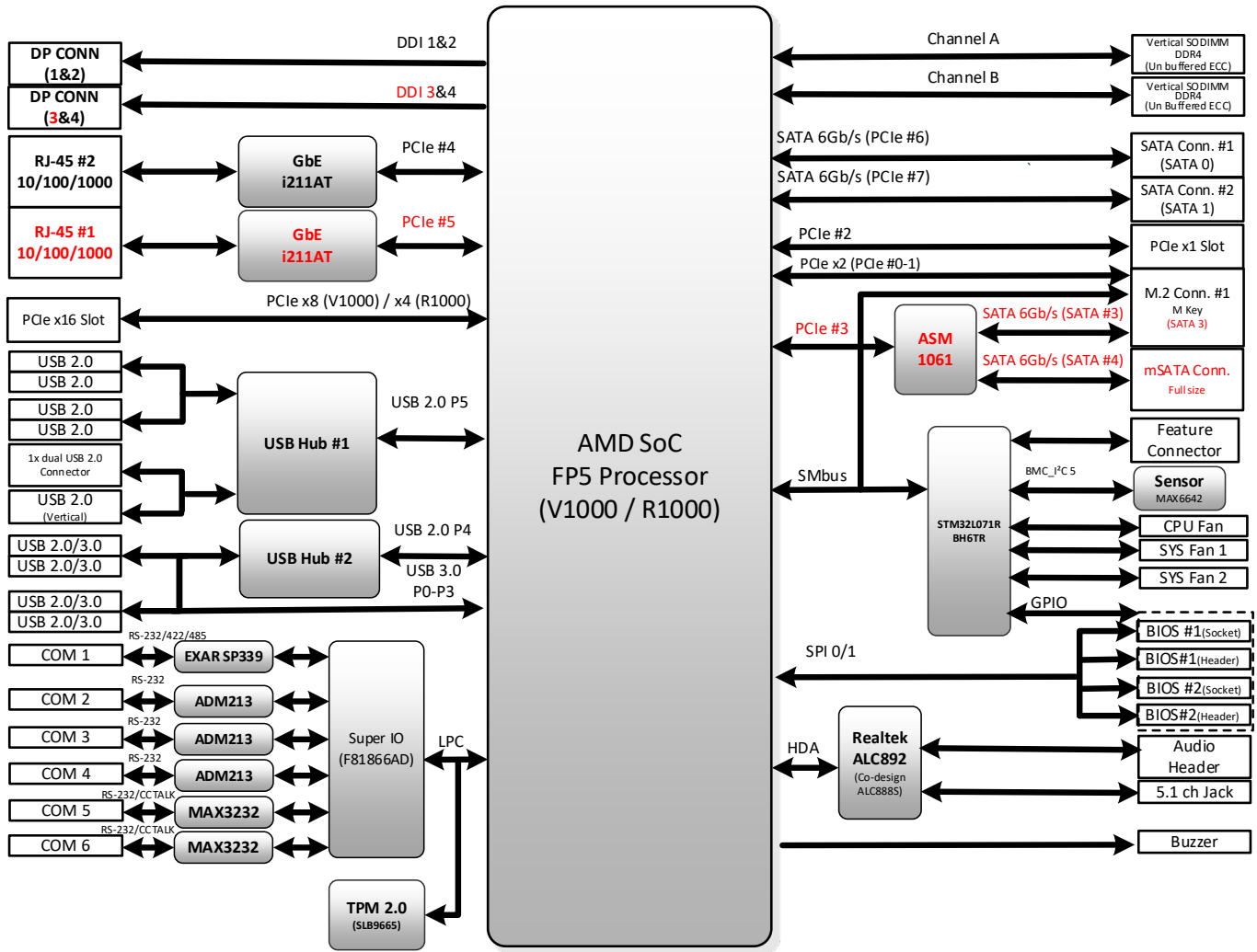


Figure 1: AMITX-RZ-G Functional Block Diagram

Note: Items in red are not supported by R1000 Series SKUs.

3. Mechanical Layout

3.1. Rear I/O Connectors

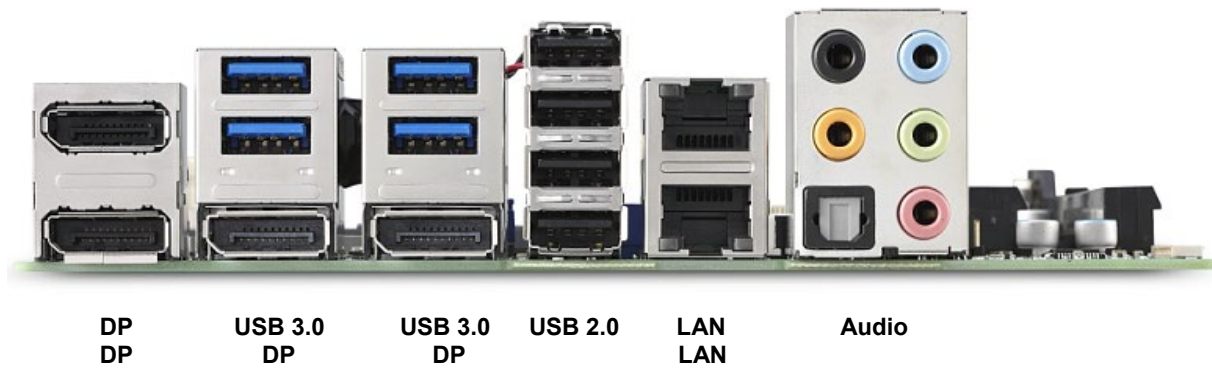


Figure 2: AmITX-RZ-G with V1000 Series Processor Rear I/O

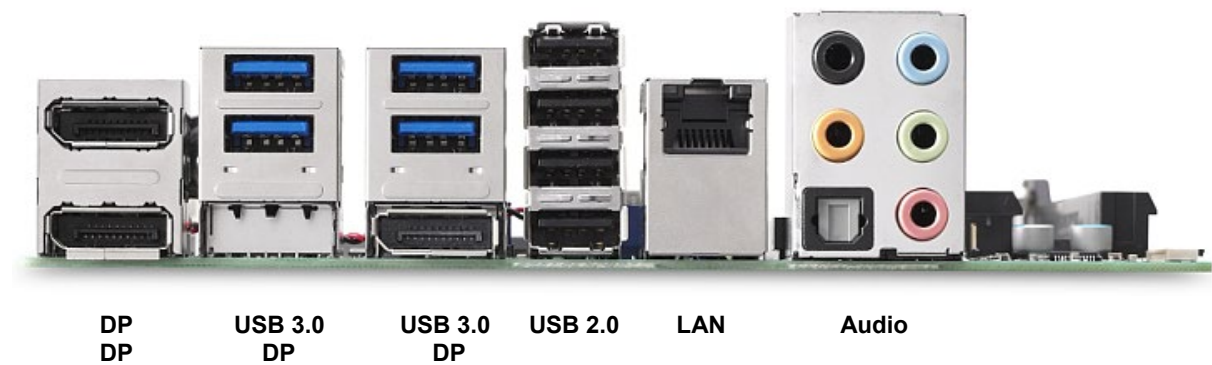


Figure 3: AmITX-RZ-G with R1000 Series Processor Rear I/O

3.2. Component-Side Connectors

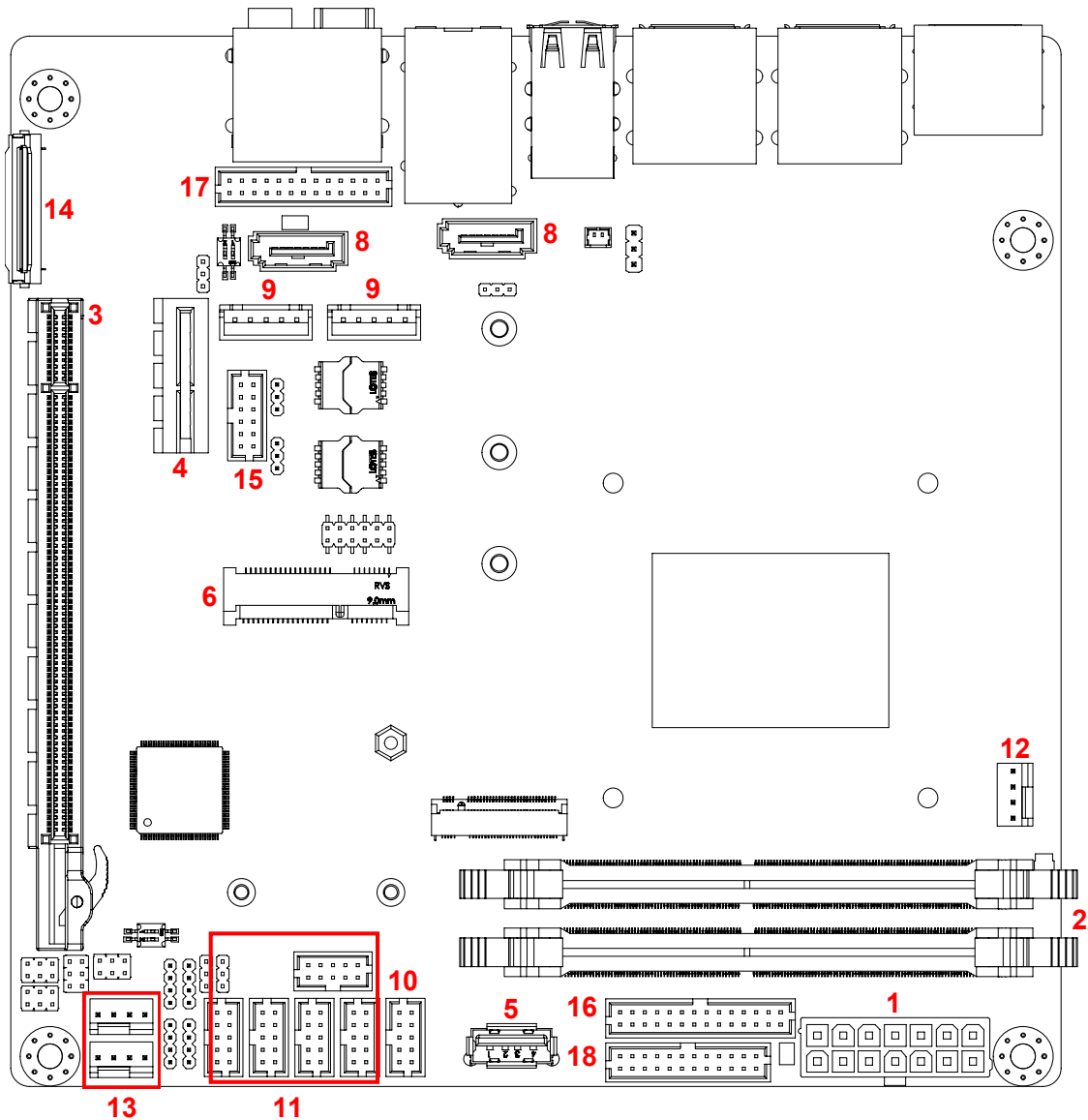
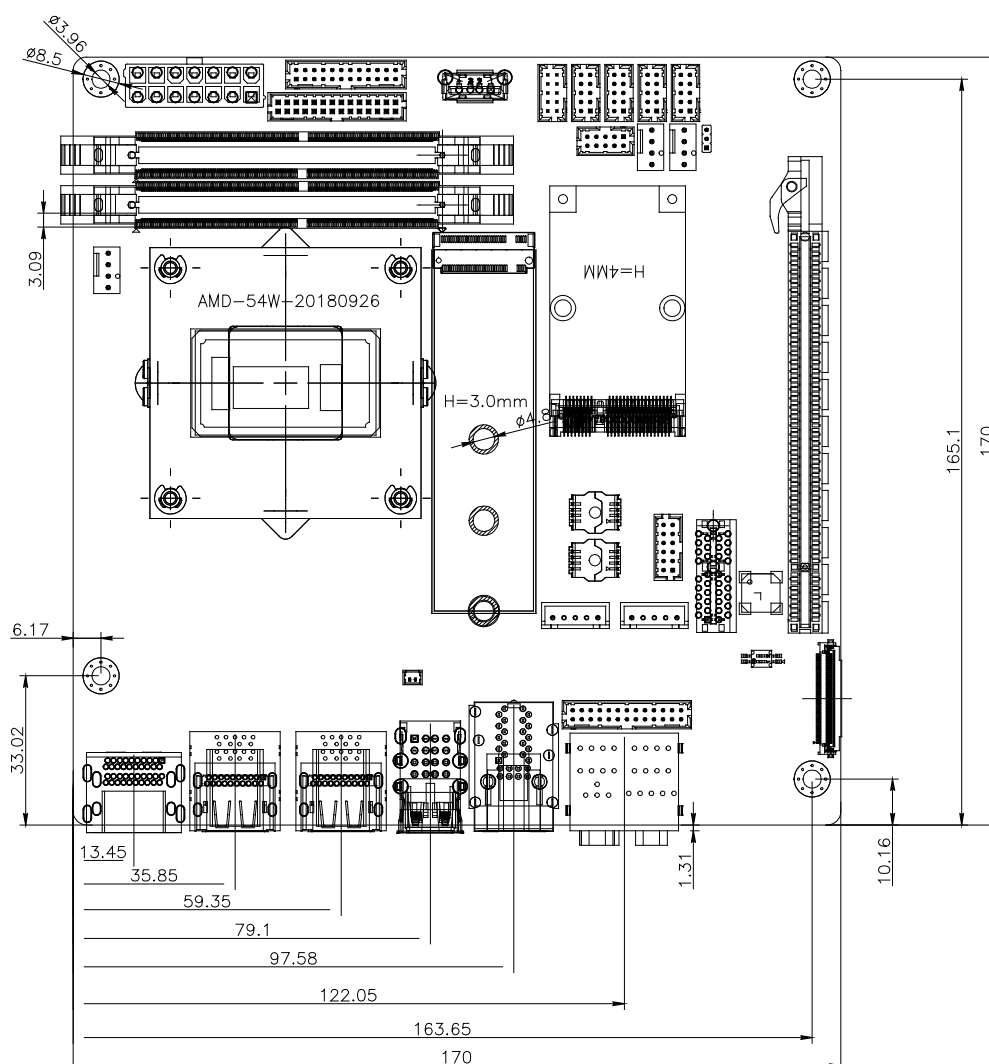


Figure 4: AmITX-RZ-G Component-Side Connectors

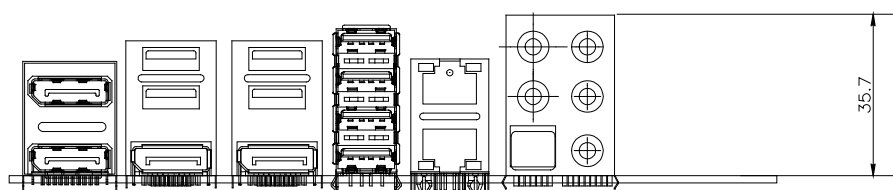
Item	Description	Item	Description
1	ATX Power Connector	10	USB 2.0 Header
2	2x SODIMM DDR4 Sockets	11	5x Serial Port Headers
3	PCIe x16 slot	12	1x CPU Fan Connector
4	PCIe x1 slot	13	2x SYS Fan Connector
5	USB 2.0 Type A Connector	14	DB-40 Debug Header
6	Mini PCIe Socket (mSATA)	15	SPI Header
7	M.2 Socket (M key)	16	Feature Connector
8	2x SATA 3.0 Connector	17	Audio Header
9	2x SATA Power Connector	18	Front Panel Header

3.3. Mechanical Dimensions

Top View



Side View



Dimensions: mm

Figure 5: AmlTX-RZ-G Mechanical Dimensions

3.4. Thermal Solutions

AMD APU Cooler, H=35mm, 35W

Standard Temp.: 0°C to 60°C

P/N: 32-20583-1010



AMD APU Cooler, H=64.4mm, 54W

Standard Temp.: 0°C to 60°C

P/N: 32-20809-0000-A0



4. Connectors and Jumpers

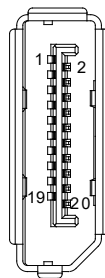
See 3.1 Rear I/O Connectors.

4.1. Rear IO Connectors

4.1.1. DisplayPort Connectors

Three DisplayPort ports up to 4096 x 2160 @24Hz

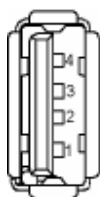
Pin #	Signal	Pin #	Signal
1	CN_DP0_P	2	Ground
3	CN_DP0_N	4	CN_DP1_P
5	Ground	6	CN_DP1_N
7	CN_DP2_P	8	Ground
9	CN_DP2_N	10	CN_DP3_P
11	Ground	12	CN_DP3_N
13	CN_CAD-L	14	CN_CEC
15	CN_AUX_P	16	Ground
17	CN_AUX_N	18	DDP_HPD
19	Ground	20	P3V3



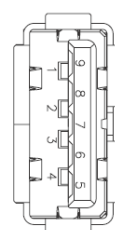
4.1.2. USB Connectors

- 5Vsb is supplied during power down to allow wakeup on USB device activity during S3~S4 state
- 1.5A for device power supply protected by a resettable 2A fuse

Pin #	Signal
1	VCC
2	UV0-
3	UV0+
4	GND



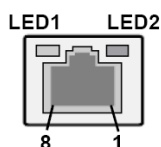
Pin #	Signal
1	USB3.0_P5VA
2	USB2_CMAN
3	USB2_CMAP
4	GND
5	USB3A_CM_RXN
6	USB3A_CM_RXP
7	GND
8	USB3A_CM_TXN
9	USB3A_CM_TXP



4.1.3. Ethernet Connectors (LAN1, LAN2)

Dual 10/100/1000Mbit/s Ethernet ports based on 2x Intel® i211AT, supporting PXE and WOL over both LANs.

Pin #	10BASE-T/100BASE-TX	1000BASE-T
1	TX+	LAN_MDIO+
2	TX-	LAN_MDIO-
3	RX+	LAN_MDIO1+
4	--	LAN_MDIO2+
5	--	LAN_MDIO2-
6	RX-	LAN_MDIO1-
7	--	LAN_MDIO3+
8	--	LAN_MDIO3-



LED Behavior

Position	Function	Color	LED State	NIC State
LED1	Link Speed	Green/ Orange	Orange	1000 Mbps
			Green	100 Mbps
			Off	10 Mbps
LED2	Link/ Activity	Orange	On	Active Connection
			Blinking	Data Activity
			Off	LAN link is not established

4.1.4. Audio Connectors

- 7.1 channel audio via 5 jacks and S/PDIF output on rear I/O
- Realtek ALC892 / 888S codec

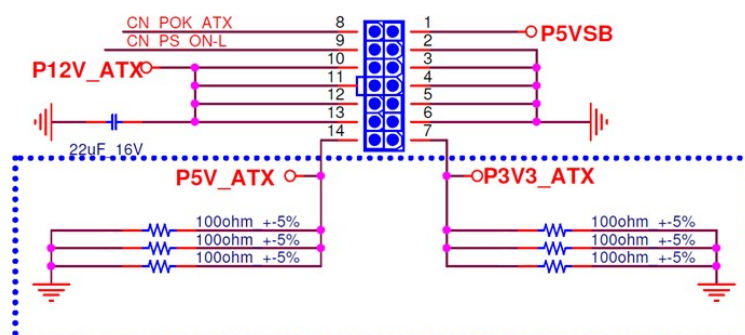
4.2. Internal Connectors

See 3.2 Component-Side Connectors, Jumpers and Switches on page 10.

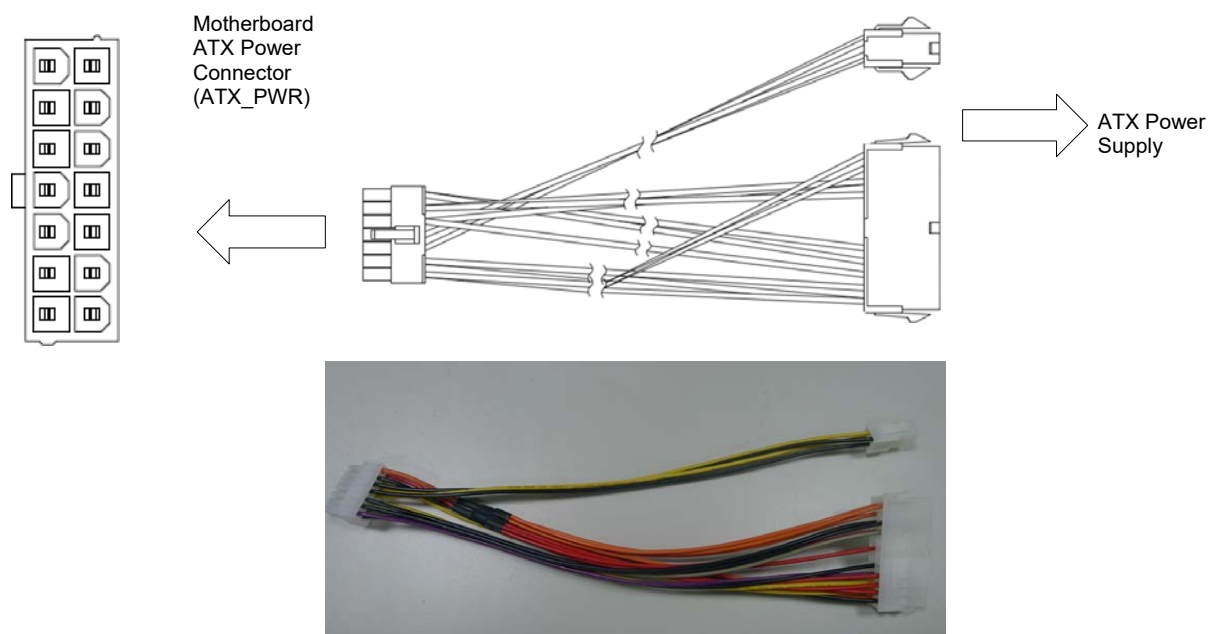
4.2.1. ATX Power Connector (ATXPWR1s, proprietary)

AmITX-RZ-G supports a proprietary internal ATX Power Connector (ATX_PWR). An adapter cable is provided for connection to a standard ATX power supply.

Pin #	Signal	Pin #	Signal
8	P_OK	1	SB5V
9	PS_ON#	2	GND
10	+12V	3	GND
11	+12V	4	GND
12	+12V	5	GND
13	+12V	6	GND
14	+5V	7	3.3V



ATX Adapter Cable: ADLINK Part. No. 30-20872-1000 (length 250 mm)



4.2.2. SATA Connectors (SATA1/2)

Two SATA 6 Gbps ports are available on the board (supports locking cable or locking SATA DOM).

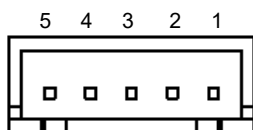
Note: Pin 7 on SATA1/2 can deliver power (None/3.3V/5V), Default is None. See 4.3.9 SATA1/2 Power Selection (SATA_PSEL1/2) on 27 for jumper settings.

Pin #	Signal
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND/PWR

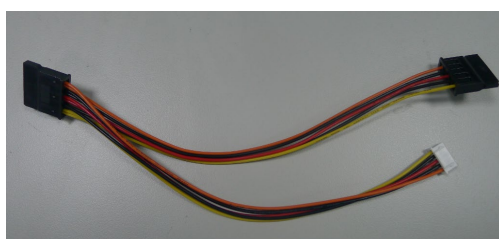
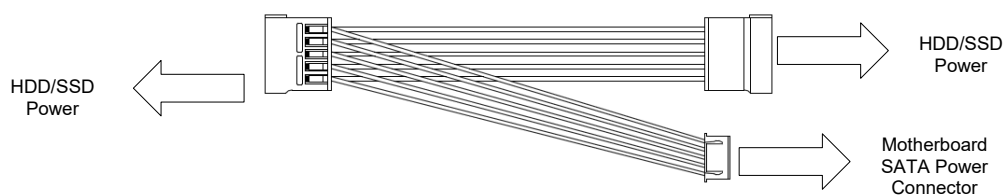


4.2.3. SATA Power Connector (SATAPW1/2)

Pin #	Signal
1	12V
2	GND
3	5V
4	GND
5	3.3V



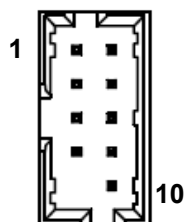
SATA Power Cable: ADLINK Part. No.: 30-20875-0000 (length 200 mm)



4.2.4. USB Header (USB910)

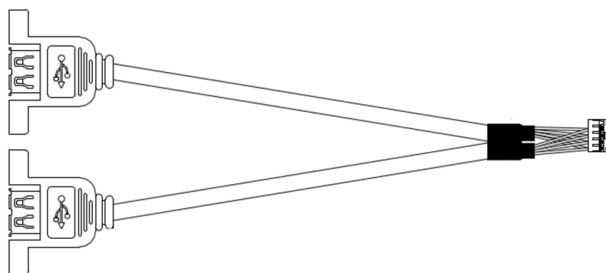
5V/SB5V: 5V supplies for external devices. SB5V is supplied during power down to allow wakeup on USB device activity during S3~S4 state.

Pin #	Signal	Pin #	Signal
1	P5V_USB	2	P5V_USB
3	P9_DN_R-	4	P10_DN_R
5	P9_DP_R	6	P10_DP_R
7	GND	8	GND
9	KEY	10	GND



USB Cable (optional):

USB 2.0 Header to 2x Female Type-A Cable (length 200mm), P/N: 30-20874-1000

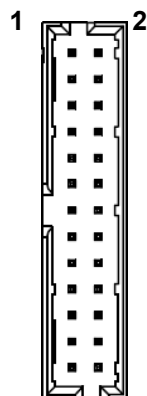


4.2.5. Internal Audio Connector (FP_AUDIO1)

2x13-pin 2.0 pitch standard wafer connector

Note: Signals shared with Audio Connector on Rear I/O

Signal	Pin #	Pin #	Signal
LFE-OUT	1	2	CEN-OUT
AAGND	3	4	AAGND
FRONT-OUT-L	5	6	FRONT-OUT-R
AAGND	7	8	AAGND
REAR-OUT-L	9	10	REAR-OUT-R
SIDE-OUT-L	11	12	SIDE-OUT-R
AAGND	13	14	AAGND
MIC1-L	15	16	MIC1-R
AAGND	17	18	AAGND
LINE1-L	19	20	LINE1-R
MUTE	21	22	AAGND
GND	23	24	NC
SPDIF-OUT	25	26	GND



4.2.6. CPU Fan and System Fan Connectors (FAN_CPU1, FAN_SYS1, FAN_SYS2)

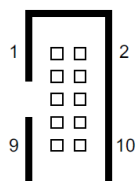
Pin 3 and 4 are connected (monitored and managed) to the SEMA controller.

Pin #	Signal
1	GND
2	Fan Power (+12V)
3	Fan Sense
4	Fan Speed Control



4.2.7. Serial COM Port Connectors (COM1-6)

Serial Port	Functions
COM1	Supports RS-232 / RS-422 / RS-485, 5V/12V power support by jumper select (JPS3P, default NC). SWS1M: Switch for mode selection of COM1 (default RS-232).
COM2-4	Support only RS-232
COM5-6	Support RS-232/ccTALK



RS-232 (COM1-5)

Pin #	Signal	Pin #	Signal
1	DCD	2	DSR
3	RxD	4	RTS
5	TxD	6	CTS
7	DTR	8	RI
9	GND	10	5V / 12V

RS-422 (COM1 only)

Pin #	Signal	Pin #	Signal
1	Tx-	2	—
3	Tx+	4	—
5	R+	6	—
7	Rx-	8	—
9	GND	10	5V / 12V

RS-485 (COM1 only)

Pin #	Signal	Pin #	Signal
1	Tx/Rx-	2	—
3	Tx/Rx+	4	—
5	—	6	—
7	—	8	—
9	GND	10	5V / 12V

Note: See 4.3.3 COM1 Mode Selection Switch (JSETCOM1) and COM1-4 Power Selection Jumper (JCOMPWR1-4) on page 26.

RS-232/ccTALK (COM5-6 only)

Pin #	Signal	Pin #	Signal
1	RS232_RX5_CCTalk	2	COM5_RTS#
3	RS232_TX5_CCTalk	4	COM5_CTS#
5	GND	6	GND
7	RS232_RX6_CCTalk	8	COM6_RTS#
9	RS232_TX6_CCTalk	10	COM6_CTS#

Note: See 4.3.5 COM5/6 Mode Selection Switch (SCN 1&2 / 3&4) on page 26.

COM Cable (optional):

COM Port Cable (length 250mm), P/N: 30-20876-0000

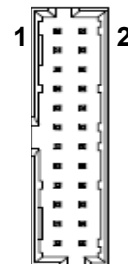


4.2.8. Front Panel Connector (F_PANEL1)

2x12-pin 2.0 pitch standard wafer connector

The front panel connector provides Audio Mic-In / Line Out, ATX power switch, Reset, HDD LED, and SUS LED (System Power LED).

Pin #	Signal	IOH/IOL	Type	Note	Pin #	Signal	Type	IOH/IOL	Note
1	N/A	-			2	N/A		-	
3	N/A	-			4	N/A		-	
5	N/A	-			6	N/A		-	
7	GND	-	PWR		8	GND	PWR	-	
9	Mute	-	Mute		10	LINE2-L		-	
11	+5V	-	PWR	1	12	+5V	PWR	-	1
13	SATA_LED#	25/25mA	O		14	SUS_LED	O		2
15	GND	-	PWR		16	PWRBTN_IN#	I		
17	RSTIN#	-	I		18	GND	PWR	-	
19	SB3V3	-	PWR		20	LINE2-R		-	
21	AGND	-	PWR		22	AGND	PWR	-	
23	MIC2-L	-	AI		24	MIC2-R	AI	-	



Note 1: Maximum load is 1A.

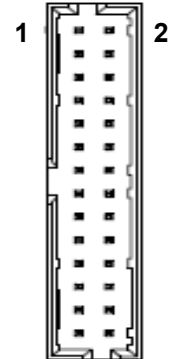
Note 2: Connect SUS_LED (System Power LED) to the power status indicator on the chassis front panel. The LED is on when the system is operating. The LED keeps blinking when the system is in S1/S3 sleep state. The LED is off when the system is in S4 sleep state or powered off (S5).

4.2.9. Feature Connector (FC1)

2x14-pin 2.0 pitch standard wafer connector

The feature connector provides Case Open, I2C, SMBus, and GPIO (10pin).

Signal	Description
TEMPS	Analogue temp sensor, connect to analog input of BMC
EXT_BAT	Connect to RTC power
CASE_OPEN#	Any time case open occurs, system will notice/show case open alert in POST during the next boot.
I2CC / I2CD	Connect to BMC (I2C Master)
I2C	SEMA



Pin #	Signal	IOH/IOL	Pull U/D	Type	Note	Pin #	Signal	Type	IOH/IOL	Pull U/D	Note
1	CASE_OPEN#	-	PU 2M	I		2	SMBC	OT	/4mA	PU 2.2K SB3V3	1
3	GND	-	-	PWR		4	SMBD	OT	/4mA	PU 2.2K SB3V3	1
5	TEMPS	-	-	I	2	6	I2CC	OT	-	PU 2.2K 3V3	1
7	EXT_BAT	-	-	PWR		8	I2CD	OT	-	PU 2.2K 3V3	1
9	SB3V3	-	-	PWR		10	5V	PWR	-	-	
11	GND	-	-	PWR		12	GND	PWR	-	-	
13	GPIO0	-	PU 10K SB3V3	IOT		14	GPIO1	IOT		PU 10K SB3V3	
15	GPIO2	-	PU 10K SB3V3	IOT		16	GPIO3	IOT		PU 10K SB3V3	
17	GPIO4	-	PU 10K SB3V3	IOT		18	GPIO5	IOT		PU 10K SB3V3	
19	GPIO6	-	PU 10K SB3V3	IOT		20	GPIO7	IOT		PU 10K SB3V3	
21	N/C	-	-	-		22	N/C	-	-	-	
23	GND	-		PWR		24	SUS_S3#	O	25/25mA	-	
25	12V	-	-	PWR		26	SUS_S4#	O	25/25mA	-	
27	PWR_OK	-	25/25mA	O		28	SUS_S5#	O	25/25mA	-	

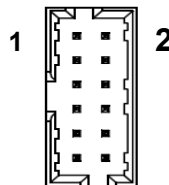
Note 1: Pull-up to +3V3Dual (+3V3 or SB3V3).

Note 2: Input to SEMA.

4.2.10. SPI Header (SPI3)

2x6-pin 2.0 pitch standard wafer connector

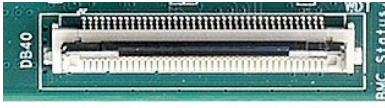
Type	Signal	Pin #	Pin #	Signal	Type
	CLK	1	2	SB3V3	PWR
I	CS0#	3	4	ADDIN	IO
I	CS1#	5	6	NC	-
I	MOSI	7	8	ISOLATE	IO
O	MISO	9	10	GND	PWR
IO	SPI_IO2_#WP	11	12	SPI_IO3_#HOLD	IO



Signal	Description
CLK	Serial Clock
SB3V3	3.3V Standby Voltage power line. Normally output power, but when Motherboard is turned off then the on-board SPI Flash can be 3.3V power sourced via this pin.
CS0#	CS0# Chip Select 0, active low.
ADDIN	ADDIN input signal must be NC.
MOSI	Master Output, Slave Input
ISOLATE#	The ISOLATE# input, active low, is normally NC, but must be connected to GND when loading SPI flash. Power Supply to the Motherboard must be turned off when loading SPI flash. The pull up resistor is connected via diode to 5VSB.
MISO	Master Input, Slave Output
SPI_IO2_#WP	SPI Data I/O: A bidirectional signal used to support the new Dual IO Fast Read, Quad IO Fast Read and Quad Output Fast Read modes. This signal is not used in Dual Output Fast Read mode.
SPI_IO3_#HOLD	SPI Data I/O: A bidirectional signal used to support the new Dual IO Fast Read, Quad IO Fast Read and Quad Output Fast Read modes. This signal is not used in Dual Output Fast Read mode.

4.2.11. DB40 Debug Board Connector

FPC Connector Type: FCI 59GF Flex 10042867



1

40

Pin	Interface	Signal	Remark	Pin	Interface	Signal	Remark
40	SPI Program interface	VCC_SPI_IN	SPI Power Input from flash tool to module. HW need add MOS FET to switch SPI power for SPI ROM	20	BMC Program interface (continued)	TXD6	
39		GND		19		RXD6	
38		SPI_BIOS_CS0#		18		FUMD0	
37		SPI_BIOS_CS1#		17		RESET_IN#	
36		SPI_BIOS_MISO		16		DATA	
35		SPI_BIOS_MOSI		15		CLK	
34		SPI_BIOS_CLK		14		OCD0A	Include a jumper to connect OCD0A via 1K0 pull-up to 3.3V_BMC
33	LPC Bus	3V3_LPC		13	Test points	OCD0B	Include a jumper to connect OCD0A via 1K0 pull-up to 3.3V_BMC
32		GND		12		PWRBTN#	
31		CB_RESET#	Platform Reset	11		SYS_RESET#	
30		RST#		10		CB_RESET#	
29		CLK33_LPC		9		CB_PWROK	
28		LPC_FRAME#		8		SUS_S3#	
27		LPC_AD3		7		SUS_S4#	
26		LPC_AD2		6		SUS_S5#	
25		LPC_AD1		5	BMC Debug signals	POSTWDT_DIS#	Connect to Jumper for Debug
24		LPC_AD0		4		SEL_BIOS	Connect to Jumper for Debug
23	BMC Program interface	3.3V_BMC		3	BMC Program interface	BIOS_MODE	Connect to Jumper for Debug
22		3.3V_BMC		2		BMC_STATUS	
21		GND		1	Reserved		

Note: The pin description on the Debug Module is the inverse of that on the motherboard.

4.3. Jumper and Switch Settings

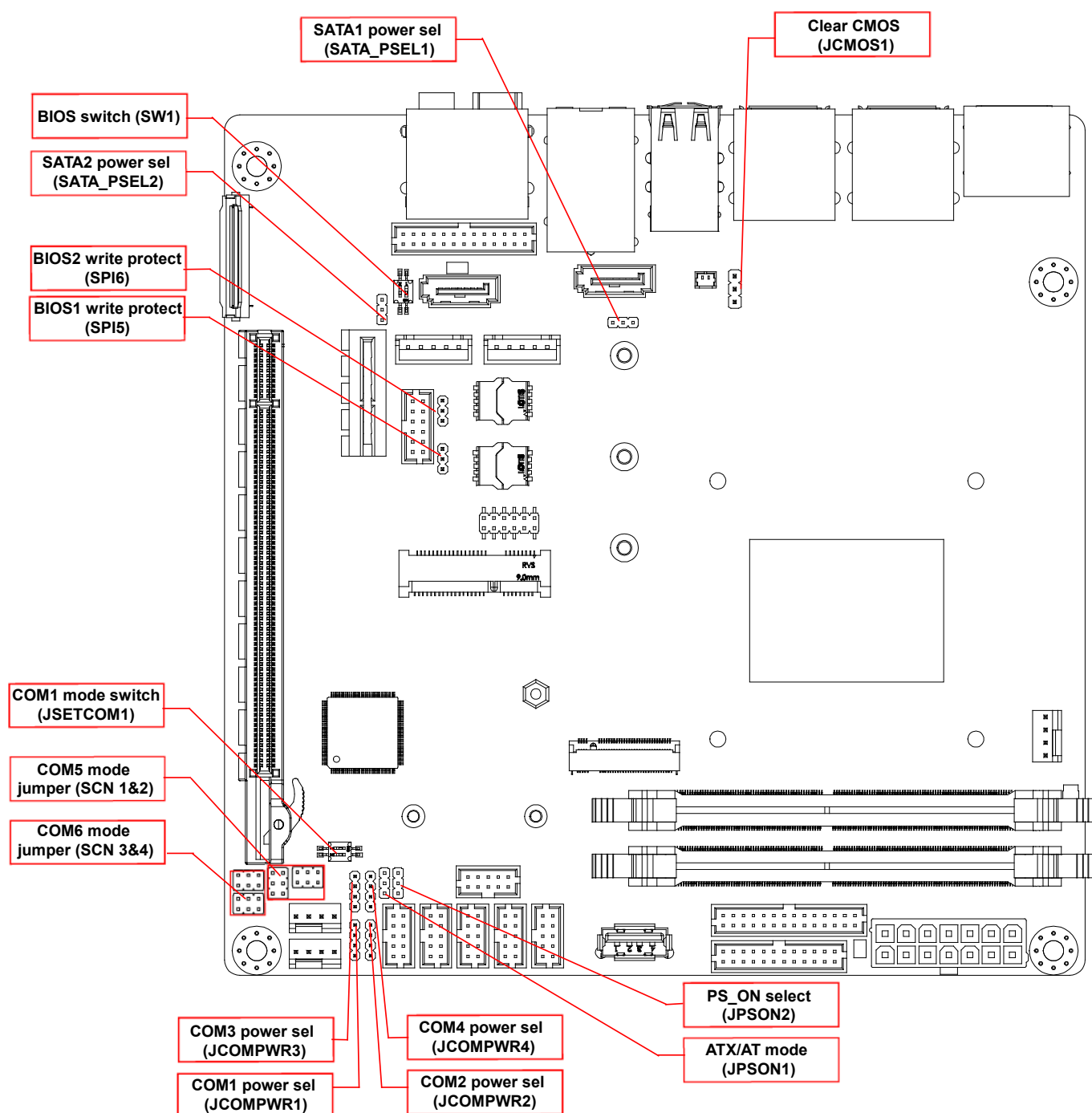


Figure 6: AmITX-RZ-G Jumper and Switch Locations

4.3.1. ATX/AT Mode Jumper Selection (JPSON1)

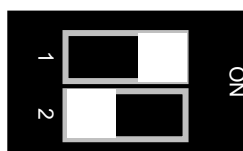
JPSON1	ATX/AT Mode
1-2 shorted	ATX (default)
2-3 shorted	AT

4.3.2. Clear CMOS (JCMOS1)

JCMOS1	Clear CMOS
1-2 shorted	Normal (default)
2-3 shorted	Clear CMOS

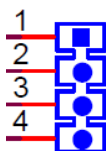
4.3.3. COM1 Mode Selection Switch (JSETCOM1)

Pin	RS-232 (default)	RS-422	RS-485
1	ON	ON	OFF
2	OFF	ON	ON



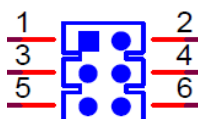
4.3.4. COM1-4 Power Selection Jumper (JCOMPWR1-4)

JCOMPWR1-4	COM1 Power
1-2	5V
2-3	NC (default)
3-4	12V



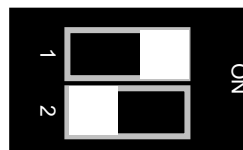
4.3.5. COM5/6 Mode Selection Switch (SCN 1&2 / 3&4)

(SCN 1&2 / 3&4)	Mode
1-3 shorted	RS-232 (default)
2-4 shorted	
3-5 shorted	ccTalk
4-6 shorted	



4.3.6. BIOS Switch Setting (SW1)

Switch	ON	OFF
1	Boot from SPI0 (default)	Boot from SPI1
2	Normal BIOS Mode	Failsafe BIOS Mode (default)

**4.3.7. BIOS Write protect Selection (SPI5, SPI6)**

Pin	Mode
1-2 shorted	BMC control (default)
2-3 shorted	Enable

4.3.8. SATA1/2 Power Selection (SATA_PSEL1/2)

Pin	Mode
1-2 shorted	5V
2-3 shorted	3.3V
Open	Default

4.3.9. PS_ON Select (JPSON2)

Mode	Jumper Setting
PS_ON	1-2 Short (for 5VA_ATX wire cut use)
NA	2-3 Short (default)

4.4. Onboard Connector Information

Table 2: AmITX-RZ-G Onboard Connector Information

Connector	CN#	Onboard Connector Manufacturer Part No.		Mating Connector Manufacturer Part No.		ADLINK Cable
COM Port	COM1-6	JVE	23N6850-10S10B-01G-B-01	YOUNG YAK	YY-1970H-2*5P (PH2.0)	30-20876-0000 (optional)
ATX power	ATX_PW	Molex	39-28-1143	E.C.I	E.C.I 5016H-2*7P (PH4.2)	30-20872-0000 (standard)
USB	USB910	CST	CBF-2000-1009	YOUNG YAK	YY-1970H-2*5P (PH2.0)	30-20874-1000 (optional)
SATA Power	ST_PW1-2	JVE	24W1170-05S10-01T-3.4-CS01	YOUNG YAK	YY-1970H-2*5P (PH2.0)	30-20875-0000 (standard)
SATA	SATA1-3	WIN WIN	WATM-07ABN4B3B8UW4			30-10057-0600 (standard)
DB-40	DB1	Molex	502790-4091			30-30016-0000 (optional)
Feature	FC1	JVE	23N6851-28S10B-01G-2.5-GR01	JWT	JWT A2005H00-2C*14 (PH2.0)	
Audio	AUDIO1	JVE	23N6851-26S10B-01G-2.5-GR01	JWT	JWT A2005H00-2CX13P (PH2.0)	
Front Panel	FPANEL1	JVE	23N6851-24S10B-01G-2.5-GR01	YY	YY-1970H-2*12P (PH2.0)	

5. Driver Installation

Drivers can be downloaded through the following link.

https://www.adlinktech.com/Products/Industrial_Motherboards_SBCs/Mini-ITXEmbeddedBoards/AmITX-RZ-G?lang=en

This page intentionally left blank.

6. Smart Embedded Management Agent (SEMA)

The onboard microcontroller (BMC) implements power sequencing and Smart Embedded Management Agent (SEMA) functionality.

The microcontroller communicates via the System Management Bus with the CPU/chipset. The following functions are implemented.

- Total operating hours counter. Counts the number of hours the module has been run in minutes.
- On-time minutes counter. Counts the seconds since last system start.
- Temperature monitoring of CPU and board temperature. Minimum and maximum temperature values of CPU and board are stored in flash.
- Power cycles counter
- Boot counter. Counts the number of boot attempts.
- Watchdog Timer (Type-II). Set / Reset / Disable Watchdog Timer. Features auto-reload at power-up.
- System Restart Cause. Power loss / BIOS Fail / Watchdog / Internal Reset / External Reset
- Fail-safe BIOS support. In case of a boot failure, hardware signals tell external logic to boot from fail-safe BIOS.
- Flash area. 1kB Flash area for customer data
- 128 Bytes Protected Flash area. Keys, IDs, etc. can be stored in a write- and clear-protectable region.
- Board Identify. Vendor / Board / Serial number / Production Date
- Main-current & voltage. Monitors drawn current and main voltages

For a detailed description of SEMA features and functionality, please refer to the **SEMA Technical Manual** and **SEMA Software Manual**, downloadable on the ADLINK web site: www.adlinktech.com.

6.1. Board Specific SEMA Functions

6.1.1. Voltages

The BMC implements a voltage monitor and samples several onboard voltages. The voltages can be read by calling the SEMA function "Get Voltages". The function returns a 16-bit value divided into high-byte (MSB) and low-byte (LSB).

Table 3: SEMA Onboard Voltage Monitor

ADC Channel	Voltage Name
1	VIN(12V)
2	5VSB
3	RTC

6.1.2. Main Current

The BMC implements a current monitor. The current can be read by calling the SEMA function “Get Main Current”. The function returns four 16-bit values divided in high-byte (MSB) and low-byte (LSB). These 4 values represent the last 4 currents drawn by the board. The values are sampled every 250ms. The order of the 4 values is NOT in chronological order. Access by the BMC may increase the drawn current of the whole system. In this case, there are still 3 samples not influenced by the read access.

$$\text{Main Current} = (\text{MSB_n} \ll 8 + \text{LSB_n}) \times 8.06\text{mA}$$

6.1.3. BMC Status

This register shows the status of BMC controlled signals on the AmITX-SL.

Table 4: SEMA BMC Status

Status Bit	Signal
0	WDT_OUT
3	POSTWDT_DISn
5	SEL_BIOS
6	SPI0_WPn
7	SPI1_WPn

6.1.4. Exception Codes

In case of an error, the BMC drives a blinking code on the blue Status LED (LED1). The same error code is also reported by the BMC Flags register. The Exception Code is not stored in the Flash Storage and is cleared when the power is removed. Therefore, a "Clear Exception Code" command is not needed or supported.

Table 5: SEMA Exception Codes

Exception Code	Error Message
0	NOERROR
2	NO_SUSCLK
3	NO_SLP_S5
4	NO_RSMRST
5	NO_SLP_S3
6	BIOS_FAIL
7	PLTRST_FAIL
8	NO_SYS_PWRGD
9	NO_VCORE_PWRGD
10	CRITICAL_TEMP
11	NO_V12
12	NO_VRTC
13	NO_V5SBY

6.1.5. BMC Flags

The BMC Flags register returns the last detected Exception Code since power-up and shows the BIOS in use and the power mode.

Table 6: SEMA BMC Flags

Bit	Description
[0 ~ 4]	Exception Code
[6]	0 = AT mode 1 = ATX mode
[7]	0 = Standard BIOS 1 = Fail-safe BIOS.

This page intentionally left blank.

7. System Resources

7.1. System Memory Map

Table 7: System Memory Map

Address Range (decimal)	Address Range (hex)	Size	Description
(4GB - 2MB)	FFE00000 - FFFFFFFF	2 MB	High BIOS Area
(4GB - 18MB) - (4GB - 17MB - 1)	FEE00000 - FEEFFFFF	1 MB	MSI Interrupt
(4GB - 20MB) - (4GB - 19MB - 1)	FEC00000 - FECFFFFF	1 MB	APIC Configuration Space
15MB - 16MB	00F00000 - 00FFFFFF	1 MB	ISA Hole
1MB - 15MB	00100000 - 00EFFFFF	14 MB	Main Memory
0MB - 1MB	00000000 - 000FFFFF	1 MB	DOS Compatibility Memory

7.2. I/O Map

Table 8: I/O Map

Hex Range	Device
020h - 02Dh 030h - 03Dh	Interrupt controller 1, 8259 equivalent
02Eh - 02Fh	SIO F81866
040h - 042h 050h - 052h	System Timer
060h, 062h, 064h, 066h	8042 equivalent (keyboard)
061h	NMI control and status
070h - 077h	Real Time Clock Controller
092h	Reset Generator
0A0h - 0B1h 0B4h - 0BDh	Interrupt Controller 2, 8259 equivalent
0B2h, 0B3h	APM control and status port respectively
220h - 227h	Serial Port 6
260h - 267h	Serial Port 5
2E8h - 2EFh	Serial Port 4
2F8h - 2FFh	Serial Port 2
3E8h - 3EFh	Serial Port 3
3F8h - 3FFh	Serial Port 1
800h	PM (ACPI) Base Address
0CF9h	Reset Controller register (8 bit I/O)

7.3. Interrupt Request (IRQ) Lines

7.3.1. IRQ Lines PIC Mode

Table 9: IRQ Lines PIC Mode

IRQ#	Typical Interrupt Resource	Connected to Pin	Available
0	Counter 0	N/A	No
1	Keyboard Controller	N/A	No
2	Cascade Interrupt	N/A	No
3	Serial Port 2 (COM2)	IRQ3 via SERIRQ/PIRQ	Note (1)
4	Serial Port 1 (COM1)	IRQ4 via SERIRQ/PIRQ	Note (1)
5	Generic	N/A	No
6	Serial Port 3/4/5/6 (COM3/4/5/6)	IRQ6 via SERIRQ/PIRQ	Note (1)
7	Generic	N/A	No
8	Real-Time clock	N/A	No
9	Cascade Interrupt	N/A	No
10	Generic	N/A	No
11	Generic	N/A	No
12	PS/2 Mouse	IRQ12 via SERIRQ/PIRQ	No
13	Math Processor	N/A	No
14	Generic	N/A	No
15	Generic	N/A	No

Note (1): These IRQs can be used for PCI devices when onboard device is disabled.

7.3.2. IRQ Lines APIC Mode

Table 10: IRQ Lines APIC Mode

IRQ#	Typical Interrupt Resource	Connected to Pin	Available
0	Counter 0	N/A	No
1	Keyboard Controller	N/A	No
2	Cascade Interrupt	N/A	No
3	Serial Port 2 (COM2)	IRQ3 via SERIRQ/PIRQ	No
4	Serial Port 1 (COM1)	IRQ4 via SERIRQ/PIRQ	No
5	Generic	N/A	No
6	Serial Port 3/4/5/6 (COM3/4/5/6)	IRQ6 via SERIRQ/PIRQ	No
7	Generic	N/A	No
8	Real-Time clock	N/A	No
9	Cascade Interrupt	N/A	No
10	Generic	N/A	No
11	Generic	N/A	No
12	PS/2 Mouse	IRQ12 via SERIRQ/PIRQ	No
13	Math Processor	N/A	No
14	Generic	N/A	No
15	Generic	N/A	No
16	ACPI-Compliant System	N/A	Yes

Note (1): These IRQs can be used for PCI devices when onboard device is disabled.

7.4. PCI Configuration Space Map

Table 11: PCI Configuration Space Map

Bus Number	Device Number	Function Number	Routing	Description
00h	00h	00h	N/A	Host Bridge
00h	00h	02h	N/A	IOMMU
00h	01h	00h	N/A	PCIe Dummy Host Bridge
00h	01h	02h	Internal	PCIe Bridge 2
00h	08h	00h	N/A	PCIe Dummy Host Bridge
00h	08h	01h	Internal	PCIe GPP Bridge 1
00h	08h	02h	Internal	PCIe GPP Bridge 2
00h	14h	00h	Internal	SMBus Controller
00h	14h	03h	Internal	LPC Bridge
00h	18h	00h	N/A	Data Fabric
00h	18h	01h	N/A	Data Fabric
00h	18h	02h	N/A	Data Fabric
00h	18h	03h	N/A	Data Fabric
00h	18h	04h	N/A	Data Fabric
00h	18h	05h	N/A	Data Fabric
00h	18h	06h	N/A	Data Fabric
00h	18h	07h	N/A	Data Fabric
01h	00h	00h	Internal	Intel LAN
04h	00h	00h	Internal	ATI VGA controller
04h	00h	01h	Internal	ATI HD AUDIO
04h	00h	02h	Internal	AMD En/ Decryption Controller
04h	00h	03h	Internal	XHCI USB controller 1
04h	00h	04h	Internal	XHCI USB controller 2
04h	00h	05h	Internal	Multimedia Device
04h	00h	06h	Internal	AMD HD AUDIO Device
04h	00h	07h	Internal	AMD Controller
05h	00h	00h	Internal	SATA Controller

Note: The bus number will be changed if the PEG/PCIE port has device.

7.5. PCI Interrupt Routing Map

Table 12: PCI Interrupt Routing Map

INT Line	PCIe Bridge 2	PCIe GPP Bridge 1	PCIe GPP Bridge 2	SMBus Controller	LPC Bridge	Intel LAN	ATI VGA Controller	ATI HD Audio
Int0	INTE: 28	INTE: 52	INTG: 54	INTA: 16	INTA: 16	INTE: 28	INTE: 52	INTE: 52
Int1	INTF: 29	INTF: 53	INTH: 55	INTB: 17	INTB: 17	INTF: 29	INTF: 53	INTF: 53
Int2	INTG: 30	INTG: 54	INTE: 52	INTC: 18	INTC: 18	INTG: 30	INTG: 54	INTG: 54
Int3	INTH: 31	INTH: 55	INTF: 53	INTD: 19	INTD: 19	INTH: 31	INTH: 55	INTH: 55

INT Line	AMD En/Decryption Controller	XHCI USB controller 1	XHCI USB controller 2	Multimedia Device	AMD HD Audio Device	AMD Controller	SATA Controller
Int0	INTE: 52	INTE: 52	INTE: 52	INTE: 52	INTE: 52	INTE: 52	INTG: 54
Int1	INTF: 53	INTF: 53	INTF: 53	INTF: 53	INTF: 53	INTF: 53	INTH: 55
Int2	INTG: 54	INTG: 54	INTG: 54	INTG: 54	INTG: 54	INTG: 54	INTE: 52
Int3	INTH: 55	INTH: 55	INTH: 55	INTH: 55	INTH: 55	INTH: 55	INTF: 53

7.6. SMBus Slave Address

Table 13: SMBus Slave Address

Device	Address
DIMM A	A0h
DIMM B	A4h
BMC	50h
PCA9535	42h

This page intentionally left blank.

8. BIOS Setup

8.1. Menu Structure

This section presents the six primary menus of the BIOS Setup Utility. Use the following table as a quick reference for the contents of the BIOS Setup Utility. The subsections in this section describe the submenus and setting options for each menu item. The default setting options are presented in **bold**, and the function of each setting is described in the right hand column of the respective table.

Main	Advanced	Security	Boot	Save & Exit
▪ BIOS Information ▪ System Information ▪ Board Information ► ▪ System Date ▪ System Time ▪ Access Level	▪ CPU Configuration ► ▪ Power Management ► ▪ System Management ► ▪ Thermal Management ► ▪ Watchdog Timer ► ▪ CSM Configuration ► ▪ SATA Configuration ► ▪ Super IO Configuration ► ▪ Serial Console Redirection ► ▪ Network Stack Configuration ► ▪ USB Configuration ► ▪ TPM 2.0 Configuration ► ▪ NVMe Configuration ► ▪ Miscellaneous ► ▪ AMD CBS ► ▪ AMD PBS ►	▪ Password Description ▪ Secure Boot menu ►	▪ Boot Configuration ▪ Boot Configuration	▪ Save Options ▪ Boot Override

Notes:

► indicates a submenu

Gray text indicates info only

8.2. Main

The Main Menu provides read-only information about your system and also allows you to set the System Date and Time. Refer to the tables below for details of the submenus and settings.

8.2.1. Main > BIOS Information

Feature	Options	Description
BIOS Vendor	Info only	BIOS vendor
BIOS Version	Info only	BIOS version.
Build Date	Info only	BIOS build date.
AGESA Version	Info only	AMD AGESA version.
GOP Version	Info only	AMD GOP version.

8.2.2. Main > System Information

Feature	Options	Description
Project Name	Info only	Project name.
CPU Board Version	Info only	CPU board version.
CPU Brand String	Info only	CPU brand string.
CPU Frequency	Info only	Standard CPU frequency.
Total Memory	Info only	Total memory size.
Memory Frequency	Info only	Memory frequency.

8.2.3. Main > Board Information

Feature	Options	Description
Board Information	Info only	
Serial Number	Info Only	Display SEMA serial number
Manufacturing Date	Info Only	Display SEMA manufacturing date
Last Repair Date	Info Only	Display SEMA last repair date
MAC ID	Info Only	Display SEMA MAC ID
Runtime Statistics	Info only	
Total Runtime	Info Only	The returned value specifies the total time in minutes the system is running in S0 state.

Feature	Options	Description
Current Runtime	Info Only	The returned value specifies the time in seconds the system is running in S0 state. This counter is cleared when the system is removed from the external power supply.
Power Cycles	Info Only	The returned value specifies the number of times the external power supply has been shut down
Boot Cycles	Info Only	The Boot counter is increased after a HW- or SW-Reset or after a successful power-up.
Boot Reason	Info Only	The boot reason is the event which causes the reboot of the system.

8.2.4. Main > System Date and Time

Feature	Options	Description
System Date	Weekday, MM/DD/YYYY	Requires the alpha-numeric entry of the day of the week, day of the month, calendar month, and all 4 digits of the year, indicating the century and year (Fri XX/XX/20XX)
System Time	HH/MM/SS	Presented as a 24-hour clock setting in hours, minutes, and seconds

8.2.5. Main > Access Level

Feature	Options	Description
Access Level	Info Only	BIOS setup utility access level

8.3. Advanced

This menu contains the settings for most of the user interfaces in the system.

8.3.1. Advanced > CPU Configuration

Feature	Options	Description
CPU Configuration	Info only	
CPU Brand String	Info only	Display CPU brand string
Processor Family	Info only	Display CPU family
Processor Model	Info only	Display CPU model
CPUID	Info only	Display CPU ID
Max Speed	Info only	Display CPU Max frequency
Min Speed	Info only	Display CPU Min frequency
Microcode Patch Level	Info only	Display CPU Microcode version
L1 Instruction Cache	Info only	Display L1 Instruction cache size
L1 Data Cache	Info only	Display L1 data cache size
L2 Cache	Info only	Display L2 cache size
Total L3 Cache per Socket	Info only	Display L3 cache size
PSS Support	Disabled Enabled	Enable/disable the generation of ACPI _PPC, _PSS, and _PCT objects.
PPC Adjustment	PState 0 PState 1 PState 2	Provide to adjust _PPC object.
NX Mode	Disabled Enabled	Enable/disable No-execute page protection Function
SVM Mode	Disabled Enabled	Enable/disable CPU Virtualization

8.3.2. Advanced > Power Management

Feature	Options	Description
Power Management	Info only	
Enable ACPI Auto Configuration	Disabled Enabled	Enables or Disables BIOS ACPI Auto Configuration.

Feature	Options	Description
ACPI Sleep State	Suspend Disabled S3 (Suspend to RAM)	Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.
Lock Legacy Resources	Disabled Enabled	Enables or Disables Lock of Legacy Resources
Power Supply Unit	Emulate AT Mode ATX Mode	ATX: OS will turn off system power when shutdown. NOTE: AT mode will not support S3 & S4 & S5, so it will change Power Loss State to Power On
Restore On AC Power Loss	Power On Power Off Last State	Restore Status On AC Power Loss
LAN #1 (Intel I211)	Disabled Enabled	Enable/Disable
PCIe wake up from S5	Disabled Enabled	Disable/Enable PCI device wake up from S5
ECO Mode	Disabled Enabled	Reduces the power consumption of the system, but after a shut down, you have to wait at least 5 seconds before you can restart the system.
Power Consumption ►	Submenu	Power Consumption

8.3.2.1. Advanced > Power Management > Power Consumption

Feature	Options	Description
Power Consumption	Info only	
Current Input Current	Info only	Display actual input current
Current Input Power	Info only	Display actual input power
VIN(12V)	Info only	Display actual VIN(12V) voltage
5VSB	Info only	Display actual 5VSB voltage
RTC	Info only	Display actual RTC voltage
VCORE	Info only	Display actual VCORE voltage
VMEM	Info only	Display actual VMEM voltage
5V	Info only	Display actual 5V voltage
VGFX	Info only	Display actual VGFX voltage
3.3V	Info only	Display actual 3.3V voltage
3.3VSB	Info only	Display actual 3.3VSB voltage

8.3.3. Advanced > System Management

Feature	Options	Description
System Management	Info only	
Version:	Info only	
SEMA Firmware	Info only	Display SEMA firmware
Build Date	Info only	Display SEMA firmware build date
SEMA Bootloader	Info only	Display SEMA boot loader
Build Date	Info only	Display SEMA boot loader build date
SEMA Features ►	Submenu	
Flags ►	Submenu	

8.3.3.1. Advanced > System Management > SEMA Features

Feature	Options	Description
SEMA Features:	Info only	Display SEMA features

8.3.3.2. Advanced > System Management > Flags

Feature	Options	Description
Flags	Info only	
BMC Flags	Info only	Display BMC flags.
BIOS Select	Info only	Display the selection of current BIOS ROM.
ATX/AT-Mode	Info only	Display ATX/AT-Mode.
Exception Code	Info only	System exception reason.

8.3.4. Advanced > Thermal Management

Feature	Options	Description
Temperatures and Fan Speed	Info only	
CPU Temperature	Info only	
Current	Info only	Display current CPU temperature
Startup	Info only	Display CPU startup temperature
Min	Info only	Display CPU min. temperature
Max	Info only	Display CPU max. temperature
Board Temperatures	Info only	
Current	Info only	Display current board temperature
Startup	Info only	Display board startup temperature
Min	Info only	Display board min. temperature
Max	Info only	Display board max. temperature
CPU Fan Speed	Info only	Display CPU fan speed
System Fan1 Speed	Info only	Display system fan 1 speed
System Fan2 Speed	Info only	Display system fan 2 speed
Smart Fan ►	Submenu	Smart Fan
Passive Cooling Trip Point	Disabled 70 C 80 C 90 C	This value is the temperature threshold of the Passive Cooling Trip Point.
Active Cooling Trip Point	40 C 50 C 60 C 70 C Refer to BMC	This value is the temperature threshold of the Active Cooling Trip Point.

8.3.4.1. Advanced > Thermal Management > Smart Fan

Feature	Options	Description
Smart Fan	Info only	
CPU Smart FanTemperature Source	CPU Sensor Board Sensor	CPU Smart FanTemperature Source
CPU Fan Mode	AUTO (Smart Fan) Fan On	CPU Fan Mode
Trigger Point 1	Info only	

Feature	Options	Description
Trigger Temperature	40	Trigger Temperature
PWM Level	30	PWM Level
Trigger Point 2	Info only	
Trigger Temperature	50	Trigger Temperature
PWM Level	50	PWM Level
Trigger Point 3	Info only	
Trigger Temperature	80	Trigger Temperature
PWM Level	60	PWM Level
Trigger Point 4	Info only	
Trigger Temperature	90	Trigger Temperature
PWM Level	100	PWM Level
System Smart Fan1Temperature Source	CPU Sensor Board Sensor	System Smart Fan1Temperature Source
System Fan1 Mode	AUTO (Smart Fan) Fan On	System Fan1 Mode
Trigger Point 1	Info only	
Trigger Temperature	40	Trigger Temperature
PWM Level	30	PWM Level
Trigger Point 2	Info only	
Trigger Temperature	50	Trigger Temperature
PWM Level	50	PWM Level
Trigger Point 3	Info only	
Trigger Temperature	80	Trigger Temperature
PWM Level	70	PWM Level
Trigger Point 4	Info only	
Trigger Temperature	90	Trigger Temperature
PWM Level	100	PWM Level
System Smart Fan2Temperature Source	CPU Sensor Board Sensor	System Smart Fan2Temperature Source
System Fan2 Mode	AUTO (Smart Fan) Fan On	System Fan2 Mode
Trigger Point 1	Info only	
Trigger Temperature	40	Trigger Temperature

Feature	Options	Description
PWM Level	30	PWM Level
Trigger Point 2	Info only	
Trigger Temperature	50	Trigger Temperature
PWM Level	50	PWM Level
Trigger Point 3	Info only	
Trigger Temperature	80	Trigger Temperature
PWM Level	70	PWM Level
Trigger Point 4	Info only	
Trigger Temperature	90	Trigger Temperature
PWM Level	100	PWM Level

8.3.5. Advanced > Watchdog Timer

Feature	Options	Description
Watchdog Timer	Info only	
Power-Up Watchdog ATTENTION: Pressing F12 during start up disables the Power Up Watchdog.	Disabled Enabled	The Power Up Watchdog resets the system after a certain amount of time after power up.
RunTime Watchdog	Disabled Enabled	The RunTime Watchdog resets the system after a certain amount of time after power up.

8.3.6. Advanced > CSM Configuration

Feature	Options	Description
Compatibility Support Module Configuration	Info only	
CSM Support	Disabled Enabled	Enable/Disable CSM Support.

8.3.7. Advanced > SATA Configuration

Feature	Options	Description
SATA Configuration	Info only	
SATA Port 1	Disabled Enabled	SATA Port Enabled/Disabled
SATA Port 2	Disabled Enabled	SATA Port Enabled/Disabled

8.3.8. Advanced > Super IO Configuration

Feature	Options	Description
Serial Port 1 Configuration ►	Submenu	Set Parameters of Serial Port 1 (COM1).
Serial Port 2 Configuration ►	Submenu	Set Parameters of Serial Port 2 (COM2).
Serial Port 3 Configuration ►	Submenu	Set Parameters of Serial Port 3 (COM3).
Serial Port 4 Configuration ►	Submenu	Set Parameters of Serial Port 4 (COM4).
Serial Port 5 Configuration ►	Submenu	Set Parameters of Serial Port 5 (COM5).
Serial Port 6 Configuration ►	Submenu	Set Parameters of Serial Port 6 (COM6).

8.3.8.1. Advanced > Super IO Configuration > Serial Port 1 Configuration

Feature	Options	Description
Serial Port 1 Configuration	Info only	
Serial Port	Disabled Enabled	Enable or Disable Serial Port
Device Settings	Info only	
Serial Port Mode	Info only	

8.3.8.2. Advanced > Super IO Configuration > Serial Port [2-6] Configuration

Feature	Options	Description
Serial Port [2-6] Configuration	Info only	
Serial Port	Disabled Enabled	Enable or Disable Serial Port
Device Settings	Info only	

8.3.9. Advanced > Serial Console Redirection

Feature	Options	Description
Serial Console Redirection	Info only	
COM1	Info only	
Console Redirection	Disabled Enabled	Console Redirection Enable or Disable.
Console Redirection Settings ▶	Submenu	The settings specify how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compatible settings.
Legacy Console Redirection	Info only	
Legacy Console Redirection Settings ▶	Submenu	Legacy Console Redirection Settings
Serial Port for Out-of-Band Management/ Windows Emergency Management Services (EMS)	Info only	
Console Redirection	Disabled Enabled	Console Redirection Enable or Disable.
Console Redirection Settings ▶	Submenu	The settings specify how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compatible settings.

8.3.9.1. Advanced > Serial Console Redirection > Console Redirection Settings [COM1]

Feature	Options	Description
COM1 Console Redirection Settings	Info only	
Terminal Type	VT100 VT100+ VT-UTF8 ANSI	Emulation: ANSI: Extended ASCII char set. VT100: ASCII char set. VT100+: Extends VT100 to support color, function keys, etc. VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.
Bits per second	9600 19200 38400 57600 115200	Selects serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.
Data Bits	7 8	Data Bits
Parity	None Even Odd Mark Space	A parity bit can be sent with the data bits to detect some transmission errors. Even: parity bit is 0 if the num of 1's in the data bits is even. Odd: parity bit is 0 if num of 1's in the data bits is odd. Mark: parity bit is always 1. Space: Parity bit is always 0. Mark and Space Parity do not allow for error detection. They can be used as an additional data bit.
Stop Bits	1 2	Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard

Feature	Options	Description
		setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.
Flow Control	None Hardware RTS/CTS	Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.
VT-UTF8 Combo Key Support	Disabled Enable	Enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals
Recorder Mode	Disabled Enabled	With this mode enabled only text will be sent. This is to capture Terminal data.
Resolution 100x31	Disabled Enabled	Enables or disables extended terminal resolution
Putty KeyPad	VT100 LINUX XTERMR6 SCO ESCN VT400	Select FunctionKey and KeyPad on Putty.

8.3.9.2. Advanced > Serial Console Redirection > Legacy Console Redirection Settings

Feature	Options	Description
Legacy Console Redirection Settings	Info only	
Resolution	80x24 80x25	On Legacy OS, the Number of Rows and Columns supported redirection
Redirect After POST	Always Enable BootLoader	When Bootloader is selected, then Legacy Console Redirection is disabled before booting to legacy OS. When Always Enable is selected, then Legacy Console Redirection is enabled for legacy OS. Default setting for this option is set to Always Enable.

8.3.9.3. Advanced > Serial Console Redirection > Console Redirection Settings [EMS]

Feature	Options	Description
Out-of-Band Mgmt Port	COM1	Microsoft Windows Emergency Management Services (EMS) allows for remote management of a Windows Server OS through a serial port.
Terminal Type	VT100 VT100+ VT-UTF8 ANSI	VT-UTF8 is the preferred terminal type for out-of-band management. The next best choice is VT100+ and then VT100. See above, in Console Redirection Settings page, for more Help with Terminal Type/Emulation.

Feature	Options	Description
Bits per second	9600 19200 57600 115200	Selects serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.
Flow Control	None Hardware RTS/CTS Software Xon/Xoff	Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.
Data Bits	Info only	
Parity	Info only	
Stop Bits	Info only	

8.3.10. Advanced > Network Stack Configuration

Feature	Options	Description
Network Stack Configuration	Info only	
Network Stack	Disabled Enabled	Enable/Disable UEFI Network Stack

8.3.11. Advanced > USB Configuration

Feature	Options	Description
USB Configuration	Info only	
USB Module version	Info only	
USB Controllers:	Info only	
USB Devices:	Info only	
Legacy USB Support	Enabled Disabled Auto	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	Disabled Enabled	This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.
USB Mass Storage Driver Support	Enabled Disabled	Enable/Disable USB Mass Storage Driver Support.
Port 60/64 Emulation	Enabled Disabled	Enables I/O port 60h/64h emulation support. This should be enabled for the complete USB keyboard legacy support for non-USB aware OSes.
USB hardware delays and time-outs:	Info only	

Feature	Options	Description
USB transfer time-out	1 sec 5 sec 10 sec 20 sec	The time-out value for Control, Bulk, and Interrupt transfers.
Device reset time-out	10 sec 20 sec 30 sec 40 sec	USB mass storage device Start Unit command time-out.
Device power-up delay	Auto Manual	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.
USB2 Port 1	Enabled Disabled	USB2 Port 1
USB2 Port 2	Enabled Disabled	USB2 Port 2
USB2 Port 3	Enabled Disabled	USB2 Port 3
USB2 Port 4	Enabled Disabled	USB2 Port 4
USB2 Port 5	Enabled Disabled	USB2 Port 5
USB2 Port 6	Enabled Disabled	USB2 Port 6
USB2 Port 7	Enabled Disabled	USB2 Port 7
USB3 Port 1 & Port 2	Enabled Disabled	USB3 Port 1 & Port 2
USB3 Port 3 & Port 4	Enabled Disabled	USB3 Port 3 & Port 4

8.3.12. Advanced > TPM 2.0 Configuration

Feature	Options	Description
TPM 2.0 Configuration	Info only	
Firmware Version:	Info only	
Vendor:	Info only	
Security Device Support	Disable Enable	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.
Active PCR banks	Info only	
Available PCR banks	Info only	

Feature	Options	Description
Pending operation	None TPM Clear	Schedule an Operation for the Security Device. NOTE: Your Computer will reboot during restart in order to change State of Security Device.
Platform Hierarchy	Enabled Disabled	Enable or Disable Platform Hierarchy
Storage Hierarchy	Enabled Disabled	Enable or Disable Storage Hierarchy
Endorsement Hierarchy	Enabled Disabled	Enable or Disable Endorsement Hierarchy
TPM 2.0 InterfaceType	CRB TIS	Select the Communication Interface to TPM 2.0 Device.
Device Select	TPM 1.2 TPM 2.0 Auto	TPM 1.2 will restrict support to TPM 1.2 devices, TPM 2.0 will restrict support to TPM 2.0 devices, Auto will support both with the default set to TPM 2.0 devices if not found, TPM 1.2 devices will be enumerated

8.3.13. Advanced > NVMe Configuration

Feature	Options	Description
NVMe controller and Drive information	Info only	

8.3.14. Advanced > Miscellaneous

Feature	Options	Description
Miscellaneous	Info only	
RTC Wake system from S5	Disabled Fixed Time Dynamic Time	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)
Beep Control	Enabled Disabled	Onboard Beep Enabled/Disabled (not including DRAM error)
SPI ROM Write Protect	Enabled Disabled	Enable/Disable SPI ROM Write Protect
AD7.1 for Audio Jack	Enabled Disabled	Disable/Enable AD7.1 for Audio Jack
Chassis Intrusion Support	Enabled Disabled	Chassis Intrusion Support

8.3.15. Advanced > AMD CBS

Feature	Options	Description
AMD CBS	Info only	
Zen Common Options ►	Submenu	Zen Common Options
NBIO Common Options ►	Submenu	NBIO Common Options

8.3.15.1. Advanced > AMD CBS > Zen Common Options

Feature	Options	Description
Zen Common Options	Info only	
Core Performance Boost	Auto Disabled	Disable CPB
Global C-state Control	Auto Enabled Disabled	Controls IO based C-state generation and DF C-states.
Core/Thread Enablement ►	Submenu	Core/Thread Enablement

8.3.15.2. Advanced > AMD CBS > Zen Common Options > Core/Thread Enablement

Feature	Options	Description
Core/Thread Enablement	Info only	
Disagree ►	Submenu	Disagree
Agree ►	Submenu	Agree

8.3.15.3. Advanced > AMD CBS > Zen Common Options > Core/Thread Enablement > Agree

Feature	Options	Description
Agree	Info only	
Downcore control	ONE TWO THREE Auto	Sets the number of cores to be used. Once this option has been used to remove any cores, a POWER CYCLE is required in order for future selections to take effect.

8.3.15.4. Advanced > AMD CBS > NBIO Common Options

Feature	Options	Description
NBIO Common Options	Info only	
GFX Configuration ►	Submenu	GFX Configuration
NB Configuration ►	Submenu	NB Configuration
PCIe Configuration ►	Submenu	PCIe Configuration

8.3.15.5. Advanced > AMD CBS > NBIO Common Options > GFX Configuration

Feature	Options	Description
GFX Configuration	Info only	
Integrated Graphics Controller	Disabled Forces Auto	Enable Integrated Graphics controller

8.3.15.6. Advanced > AMD CBS > NBIO Common Options > NB Configuration

Feature	Options	Description
NB Configuration	Info only	
IOMMU	Disabled Enabled Auto	Enable/Disable IOMMU

8.3.15.7. Advanced > AMD CBS > NBIO Common Options > PCIe Configuration

Feature	Options	Description
PCIe Configuration	Info only	
Pcie Dxio Timing Control	Disabled Enabled	

8.3.16. Advanced > AMD PBS

Feature	Options	Description
Primary Video Adaptor	Int Graphics (IGD) Ext Graphics (PEG)	Select Internal/External Graphics

8.4. Security

8.4.1. Security > Password Description

Feature	Options	Description
Administrator Password	Enter password	
User Password	Enter password	
Secure Boot menu ►	Submenu	Customizable Secure Boot settings

8.4.2. Security > Secure Boot menu

Feature	Options	Description
Secure Boot	Info only	
System Mode	Info only	
Secure Boot	Info only	
Secure Boot Control	Disabled Enabled	Secure Boot activated when: Secure Boot is enabled Platform Key(PK) is enrolled, System mode is User/Deployed, and CSM is disabled

8.5. Boot

Feature	Options	Description
Boot Configuration	Info only	
Setup Prompt Timeout	1	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
Bootup NumLock State	On Off	Select the keyboard NumLock state.
Quiet Boot	Disabled Enabled	Enable or disables Quiet Boot option.
Boot mode select	LEGACY UEFI	Select boot mode LEGACY/UEFI
Boot Configuration	Info only	
Boot Option #1	Hard Disk CD/DVD SD USB Hard Disk USB CD/DVD USB Key USB Floppy USB Lan	Sets the system boot order

Feature	Options	Description
	Network Disabled	
Boot Option #2	Hard Disk CD/DVD SD USB Hard Disk USB CD/DVD USB Key USB Floppy USB Lan Network Disabled	Sets the system boot order
Boot Option #3	Hard Disk CD/DVD SD USB Hard Disk USB CD/DVD USB Key USB Floppy USB Lan Network Disabled	Sets the system boot order
Boot Option #4	Hard Disk CD/DVD SD USB Hard Disk USB CD/DVD USB Key USB Floppy USB Lan Network Disabled	Sets the system boot order
Boot Option #5	Hard Disk CD/DVD SD USB Hard Disk USB CD/DVD USB Key USB Floppy USB Lan Network Disabled	Sets the system boot order
Boot Option #6	Hard Disk CD/DVD SD USB Hard Disk USB CD/DVD USB Key USB Floppy USB Lan Network Disabled	Sets the system boot order

Feature	Options	Description
Boot Option #7	Hard Disk CD/DVD SD USB Hard Disk USB CD/DVD USB Key USB Floppy USB Lan Network Disabled	Sets the system boot order
Boot Option #8	Hard Disk CD/DVD SD USB Hard Disk USB CD/DVD USB Key USB Floppy USB Lan Network Disabled	Sets the system boot order
Boot Option #9	Hard Disk CD/DVD SD USB Hard Disk USB CD/DVD USB Key USB Floppy USB Lan Network Disabled	Sets the system boot order

8.6. Save & Exit

Feature	Options	Description
Save Changes and Exit	Yes No	Exit system setup after saving the changes.
Discard Changes and Exit	Yes No	Exit system setup without saving any changes.
Save Changes and Reset	Yes No	Reset the system after saving the changes.
Discard Changes and Reset	Yes No	Reset system setup without saving any changes.
Save Options	Info only	
Save Changes	Yes No	Save Changes done so far to any of the setup options.
Discard Changes	Yes No	Discard Changes done so far to any of the setup options.
Restore Defaults	Yes No	Restore/Load Default values for all the setup options.
Save as User Defaults	Yes No	Save the changes done so far as User Defaults.
Restore User Defaults	Yes No	Restore the User Defaults to all the setup options.
Boot Override	Info only	
Launch EFI Shell from filesystem device	Enter	Attempts to Launch EFI Shell application (Shell.efi) from one of the available filesystem devices

Safety Instructions

Read and follow all instructions marked on the product and in the documentation before you operate your system. Retain all safety and operating instructions for future use.

- Please read these safety instructions carefully.
- Please keep this User's Manual for later reference.
- Read the specifications section of this manual for detailed information on the operating environment of this equipment.
- When installing/mounting or uninstalling/removing equipment, turn off the power and unplug any power cords/cables.
- To avoid electrical shock and/or damage to equipment:
 - Keep equipment away from water or liquid sources.
 - Keep equipment away from high heat or high humidity.
 - Keep equipment properly ventilated (do not block or cover ventilation openings).
 - Make sure to use recommended voltage and power source settings.
 - Always install and operate equipment near an easily accessible electrical socket-outlet.
 - Secure the power cord (do not place any object on/over the power cord).
 - Only install/attach and operate equipment on stable surfaces and/or recommended mountings.
 - If the equipment will not be used for long periods of time, turn off and unplug the equipment from its power source.
- Never attempt to fix the equipment. Equipment should only be serviced by qualified personnel.

Getting Service

Ask an Expert: <http://askanexpert.adlinktech.com>

ADLINK Technology, Inc.

Address: 9F, No.166 Jian Yi Road, Zhonghe District
New Taipei City 235, Taiwan
Tel: +886-2-8226-5877
Fax: +886-2-8226-5717
Email: service@adlinktech.com

Ampro ADLINK Technology, Inc.

Address: 5215 Hellyer Avenue, #110, San Jose, CA 95138, USA
Tel: +1-408-360-0200
Toll Free: +1-800-966-5200 (USA only)
Fax: +1-408-360-0222
Email: info@adlinktech.com

ADLINK Technology (China) Co., Ltd.

Address: 300 Fang Chun Rd., Zhangjiang Hi-Tech Park, Pudong New Area
Shanghai, 201203 China
Tel: +86-21-5132-8988
Fax: +86-21-5132-3588
Email: market@adlinktech.com

ADLINK Technology GmbH

Address: Hans-Thoma-Straße 11, D-68163, Mannheim, Germany
Tel: +49-621-43214-0
Fax: +49-621 43214-30
Email: emea@adlinktech.com

Please visit the Contact page at www.adlinktech.com for information on how to contact the ADLINK regional office nearest you.