AVA-5500

AI-Enabled Video Analytics Platform

User's Manual



Manual Rev.: 1.1

Revision Date: March 31, 2020

Part No: 50-1Z294-2010

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Leading EDGE COMPUTING

Revision History

Revision	Release Date	Description of Change(s)
1.0	2019-09-09	Initial release
1.1	2020-03-31	SIM card slots moved to front panel; add optional 4x isolated DIO; add AVA-5520 content

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Preface

Copyright © 2020 ADLINK Technology Inc.

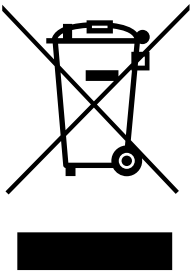
This document contains proprietary information protected by copyright. All rights are reserved. No part of this manual may be reproduced by any mechanical, electronic, or other means in any form without prior written permission of the manufacturer.

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.

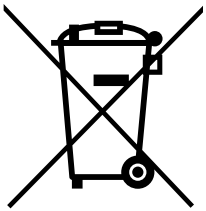
In no event will the manufacturer be liable for direct, indirect, special, incidental, or consequential damages arising out of the use or inability to use the product or documentation, even if advised of the possibility of such damages.

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









LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

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**.**

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

Conventions

Take note of the following conventions used throughout this manual to make sure that users perform certain tasks and instructions properly.

NOTE: Additional information, aids, and tips that help users perform tasks.

CAUTION: Information to prevent ***minor*** physical injury, component damage, data loss, and/or program corruption when trying to complete a task.

WARNING: Information to prevent ***serious*** physical injury, component damage, data loss, and/or program corruption when trying to complete a specific task.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Table of Contents

Revision History ii

Preface iii

List of Figures ix

List of Tables xi

1 Introduction 1

1.1 Overview 1
1.2 Features 2
1.3 Package Contents 3

2 System Description 5

2.1 AVA-5500/5510 Specifications 5
2.2 DisplayPort Feature Support 8
2.3 Block Diagram 9
2.4 Mechanical Dimensions 10
2.5 Mechanical Layout 12
2.6 Power Specifications 14
2.6.1 Power Consumption 14
2.6.2 System Power Features 15
2.7 Mini PCIe CAN Bus Module (optional) 16

3 Getting Started 17

3.1 Removing the Bottom Cover 17
3.2 Installing Wi-Fi or Cellular Modules (optional) 18
3.3 Installing a M.2 2280 SATA Module (optional) 19
3.4 Installing micro-USIM Cards (optional) 20
3.5 Mounting 21
3.6 CFast Card Installation 22
3.7 SATA Drive Installation 23

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

3.8 Connections 24
3.9 Starting Up the System 26

4 Interfaces 27
4.1 Pin Definitions 27
4.2 Status LEDs 37
4.3 Power Button 38
4.4 Reset Button 38

5 BIOS Setup 39
5.1 Introduction 39
5.2 Entering BIOS Setup 39
5.3 Main Setup 43
5.3.1 BIOS Information 43
5.3.2 System Information 44
5.3.3 System Time/System Date 44
5.3.4 Board Information 45
5.4 Advanced Menu 46
5.4.1 CPU Configuration 47
5.4.2 Graphics Configuration 49
5.4.3 Power Management 49
5.4.4 System Management 50
5.4.5 Thermal Management 52
5.4.6 Watchdog Timer 52
5.4.7 CSM Configuration 53
5.4.8 Super IO Configuration 54
5.4.9 Serial Port x Configuration 54
5.4.10 Serial Console Redirection 55
5.4.11 Miscellaneous 57
5.4.12 Network Stack Configuration 59
5.4.13 Trusted Computing 59
5.4.14 IntelEthernet Connection (2) I210-LM 60

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

5.5 Security Menu 61
5.5.1 Secure Boot 61
5.6 Boot Menu 62
5.7 Save & Exit Menu 63
5.8 BIOS Beep Codes 63

Important Safety Instructions 65

Getting Service 67

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

This page intentionally left blank.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

List of Figures

Figure 2-1: AVA-5500 Block Diagram 9
Figure 2-2: AVA-5500/5520 Dimensions 10
Figure 2-3: AVA-5510 Dimensions 11
Figure 2-4: AVA-5500 Series Front Layout 12
Figure 2-5: AVA-5500/5200 Rear I/O Layout 13
Figure 2-6: AVA-5510 Rear I/O Layout 13

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

This page intentionally left blank.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

List of Tables

Table 2-1: AVA-5500/5510 Specifications 5
Table 2-2: DisplayPort Feature Support 8
Table 2-3: AVA-5500/5510 Power Consumption 14
Table 2-4: AVA-5200 Power Consumption 15
Table 4-1: GbE M12 A-code Pin Definition 27
Table 4-2: GbE M12 X-code Pin Definition 27
Table 4-3: USB 3.0 Pin Definition 28
Table 4-4: COM Port Pin Definition 28
Table 4-5: RJ-45 GbE Pin Definitions 29
Table 4-6: LAN LED Status Definitions 29
Table 4-7: DVI-I Connector Pin Definition 30
Table 4-8: DisplayPort Pin Definition 31
Table 4-9: PS/2 Keyboard/Mouse Pin Definition 31
Table 4-10: DC Power Input Pin Definition 31
Table 4-11: USB 2.0 M12 Connector Pin Definition 32
Table 4-12: CAN Bus Male DB9 Connector Pin Definition 32
Table 4-13: DIO DB9 Connector Pin Definition 33
Table 4-14: Mini PCI Express Connector Pin Definition 34
Table 4-15: M.2 Connector Pin Definition 36
Table 4-16: Status LED Definitions 37

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

This page intentionally left blank.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

1 Introduction

1.1 Overview

The AVA-5500 Series is a high performance fanless AI-Enabled Video Analytics Platform equipped with the 6th/7th Gen Intel® Core™ i7 Processor and integrated NVIDIA Quadro GPGPU module. This EN50155 certified AIoT Platform is not only ruggedized for both wayside and onboard deployment with its wide range DC input and isolated I/O design, but also provides an ideal edge solution for real-time video/graphic analysis applications that are vital to today's increasingly complex railroad operations. The target applications include but are not limited to:

- Passenger Information Systems
- Railroad Intrusion Detection
- Train Station Surveillance
- Onboard Video Security
- Railroad Hazard Detection

The AVA-5510 version features an additional 2x USB 2.0 via M12 connectors and 2 additional 2.5" SATA 6.0 Gb/s drive bays.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

1.2 Features

- 6th/7th Gen Intel® Core. i7 Processor
- Supports Type A and B MXM on PCI Express x16 for add-on GPU module
  - EGX-MXM-P1000: 512 CUDA cores, 1.8 TFLOPS peak, 4GB GDDR5 memory
  - EGX-MXM-P2000: 768 CUDA cores, 2.3 TFLOPS peak, 4GB GDDR5 memory
  - EGX-MXM-P3000: 1280 CUDA cores, 3.9 TFLOPS peak, 6GB GDDR5 memory
  - EGX-MXM-P5000: 2048 CUDA cores, 6.4 TFLOPS peak, 16GB GDDR5 memory (supported by AVA-5520 only)
- Rich I/O: 8x M12 GbE (4 support 7W PoE), 4x RS-422, 4x USB 3.0, 1x DVI-I, 4x DisplayPort with lockable connectors
  - AVA-5510: additional 2x USB 2.0 via M12 connectors
- Rich Storage Options: 1x M.2 SATA slot, 1x CFast socket
  - AVA-5500/5520: 2x 2.5" SATA 6.0 Gb/s drive bays
  - AVA-5510: 4x 2.5" SATA 6.0 Gb/s drive bays
- GNSS/3G/4G/WLAN support via 2x Mini PCIe slots and 2x externally accessible USIM slots
- MVB/CAN bus support by Mini PCIe add-on module
- Input Voltage:
  - AVA-5500/5510: Nominal Voltage: 24VDC, 36VDC, 72VDC and 110VDC (EN50155 compliant)
  - AVA-5520: 12VDC only

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

1.3 Package Contents

Please check that your package contains the items below. If you discover damaged or missing items, please contact your vendor.

- AVA-5500 Series AI-Enabled Video Analytics Platform
- Wall-mount bracket
- Screw pack for wall-mounting and SSD drives



DO NOT install or apply power to equipment that is damaged or if there is missing/incomplete equipment. Retain the shipping carton and packing materials for inspection. Please contact your ADLINK dealer/vendor immediately for assistance. Obtain authorization from your dealer before returning any product to ADLINK.

Optional Accessories

Starter Cable Kit for AVA-5500/5520 (P/N: 91-95247-000E)

- 1x S-coded M12 power supply cable
- 4x PoE X-coded M12 to RJ45 Ethernet cable
- 4x A-coded M12 to RJ-45 cable
- 1x Y cable for PS/2 KB/MS

Starter Cable Kit for AVA-5510 (P/N: 91-95247-100E)

- 1x S-coded M12 power supply cable
- 4x PoE X-coded M12 to RJ45 Ethernet cable
- 4x A-coded M12 to RJ-45 cable
- 1x Y cable for PS/2 KB/MS
- 2x A-coded M12 to USB 2.0 type A cable



The Starter Cable Kits are for evaluation purposes only, and not recommend for field use.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

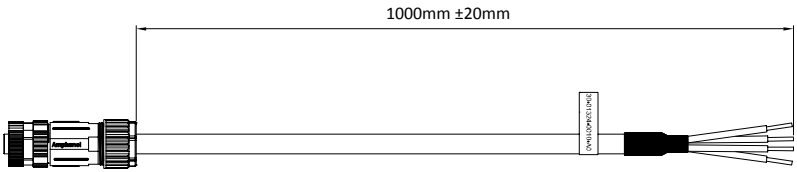
Mini PCIe Cellular Kit for Taiwan, China (P/N: 91-95247-400E)

- 1x Mini PCIe Cellular module (SIMCOM SIM7100C-PCIE, GSM/TD-SCDMA/CDMA/WCDMA/LTE/GNSS)
- 2x external antennas
- 2x internal RF cables

Mini PCIe Cellular Kit for Europe (P/N: 91-95247-500E)

- 1x Mini PCIe Cellular module (SIMCOM SIM7100C-PCIE, GSM/TD-SCDMA/CDMA/WCDMA/LTE/GNSS)
- 2x external antennas
- 2x internal RF cables

S-coded M12 Power Supply Cable (P/N: 30-01324-0010-A0)



Mini PCIe Cellular Module for Taiwan, China
(SIMCOM SIM7100C-PCIE, GSM/TD-SCDMA/CDMA/WCDMA/LTE/GNSS, P/N:29-D0023-F000)

Mini PCIe Cellular Module for Europe
(SIMCOM SIM7100C-PCIE, GSM/TD-SCDMA/CDMA/WCDMA/LTE/GNSS, P/N:29-D0012-F000)

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

2 System Description

2.1 AVA-5500/5510 Specifications

Model	AVA-5500	AVA-5510	AVA-5520
System Core			
Processor	Intel® Core™ i7-6820EQ, 2.8GHz Intel® Core™ i7-7820EQ, 3.0GHz		
Memory	DDR4 2133 8GB by SODIMM, up to 32GB		
Graphics Outputs			
DisplayPort	2x DisplayPort by integrated Intel graphics (DP1-DP2) 4x DisplayPort by MXM GPU module: NVIDIA Quadro P1000/P2000/P3000 (DP3-DP6; DP3 output is eDP only, no DP++ support)		Same as AVA-5500, additional support for NVIDIA Quadro P5000
DVI	1x DVI-I port		
External I/O Interfaces			
Ethernet	2x GbE via RJ-45 4x M12 X-code 1000BASE-T Ethernet ports supporting PoE Class 2 (7W) and 1.5kV isolation 4x M12 A-coded 1000BASE-T Ethernet ports, 1.5kV isolation		
Serial Port	4x COM (RS232/422/485), 2kVrms isolation		
CAN	2x DB-9 cutouts reserved for CAN bus outputs		
USB 2.0	N/A	2x USB 2.0 via M12 connectors	N/A
USB 3.0	4x USB 3.0 host port		
Audio	Mic-in / Line-out		
PS/2	Keyboard / Mouse		
Digital I/O (optional)	4x isolated DI and 4x isolated DO via two DB-9 connectors, supported by add-on module occupying one 2.5” drive space (pre-installed at factory) DI: 0-24V input voltage with 1500VDC isolation DO: 3.3V-35VDC output voltage, 250mA/ch sink current, 1500VDC isolation		

Table 2-1: AVA-5500/5510 Specifications

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Model	AVA-5500	AVA-5510	AVA-5520
USIM	2x micro-SIM card slots (accessible on the front panel)		
Buttons	Power button, reset button		
Status LEDs	1x Diagnostic, 1x Storage,1x WDT, 3x User Defined		
Camera Interfaces			
PoE	4x M12 Class 2 (7W)		
Internal I/O Interfaces			
Slots	1x M.2 2280 SATA 2x Full-size Mini PCIe slots		
USB	1x lockable USB 2.0 box header		
Security			
TPM	Intel® PTT (fTPM)		
Storage Support			
M.2	1x M.2 2280 SATA		
CFast	1x CFast socket (external)		
SATA	2x 2.5” SATA (external)	4x 2.5” SATA (external)	2x 2.5” SATA (external)
Power Requirements			
DC Input	1x 4-pin S-coded M12 connector		
	+24V/+36V/+72V/+110VDC nominal power input (16.8V to 137.5V, EN50155 compliant)		12V input (w/o wide voltage powerboard)
Grounding	Digital/chassis ground		
Mechanical			
Dimensions	360mm x 225.1mm x 88.8mm	360mm x 225.1mm x 105.4mm	360mm x 225.1mm x 88.8mm
IP Rating	IP4X		
Antennas	4 connection plug holes reserved		
Mounting	Wall mount		
Cooling	Fanless, passive convection		

Table 2-1: AVA-5500/5510 Specifications

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Model	AVA-5500	AVA-5510	AVA-5520
CMOS Battery			
Model	BR-2032		
Protection	Reverse charge protection		
Firmware/Software Support			
SEMA	SEMA support with BMC		
WDT	Watch Dog Timer support		
Operating Systems			
Windows	Windows 7 Professional, Windows 8, Windows 10		
Linux	Ubuntu 16.04		
Environmental & Safety			
Operating Temperature	Convection cooled Class OT1: -25°C to 55°C with NVIDIA P3000 GPU module Class OT3: -25°C to 70°C with NVIDIA P1000/P2000 GPU module		0°C to 55°C with P3000/P5000 GPU module
Operating Humidity	EN 50125-1: compliant with EN 60068-2-30, Test Db, 2 cycles at 55 °C		
Storage Temperature	-40°C to 85°C		
Vibration	EN50155 standard, method EN61373:2010, Category 1 Class B		
Shock	EN50155 standard, method EN61373:2010, Category 1 Class B		
ESD	EN50153 EN50124-1		
EMC	EN50155:2017 standard EN50121-3-2:2015		
Safety	EN50153 EN50124-1		

Table 2-1: AVA-5500/5510 Specifications

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

NOTE:

The MXM module must be installed at the factory. Please contact your local ADLINK representative for more information.

When an MXM graphics module is installed, the default Primary Display BIOS setting (Auto) will send bootup display output to DP3-DP6 (MXM graphics). To send bootup display output to DP1-DP2 (integrated Intel graphics), go to BIOS setup and change *Advanced* > *Graphics Configuration* > *Primary Display* to *IGFX* (see 5.4.2 Graphics Configuration on p. 49).

NOTE:

M.2 and Mini PCIe modules may require an additional thermal solution when operated above 60 °C. Please contact your local ADLINK representative for more information.

2.2 DisplayPort Feature Support

GPU	DVI-I	DP++	eDP only
Intel	1920x1080 @ 60Hz	4096x2160 @ 60Hz (DP1, DP2)	—
P1000 P2000 P3000 P5000	—	3840x2160 @60Hz (DP4, DP5, DP6)	3840x2160 @60Hz (DP3)

Table 2-2: DisplayPort Feature Support

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

2.3 Block Diagram

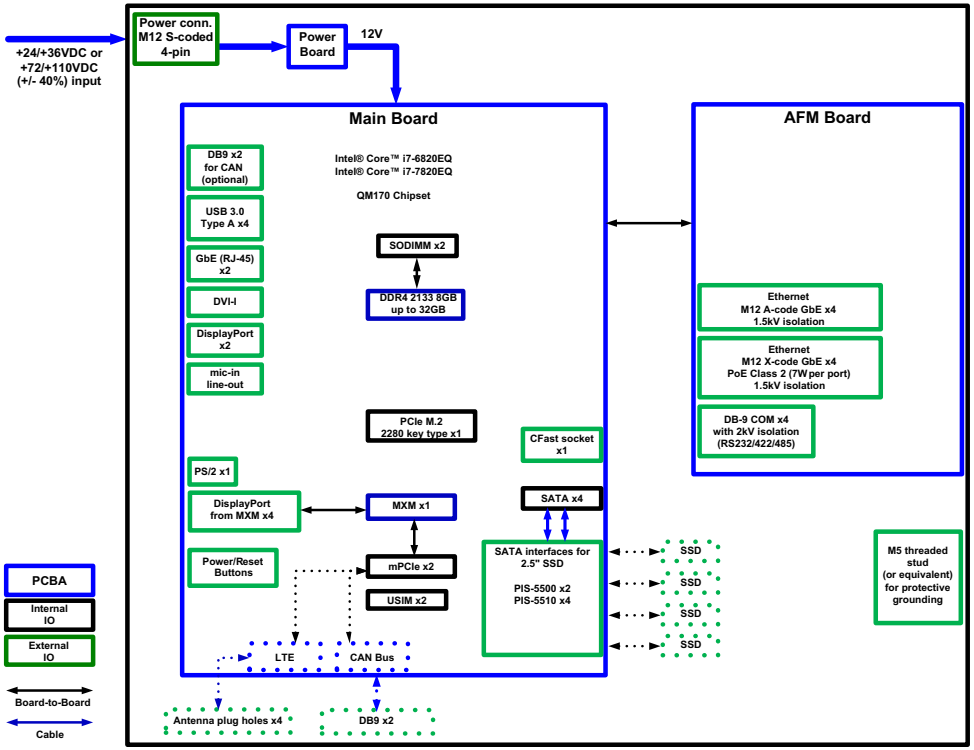


Figure 2-1: AVA-5500 Block Diagram

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

2.4 Mechanical Dimensions

AVA-5500/5520 **(units: mm)**

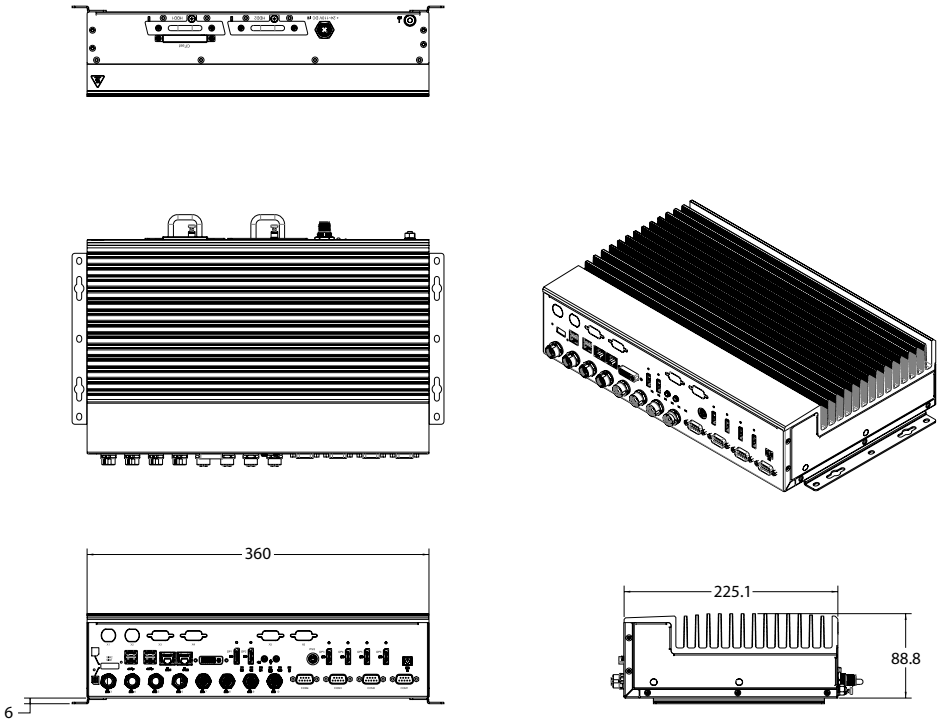


Figure 2-2: AVA-5500/5520 Dimensions

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

AVA-5510

(units: mm)

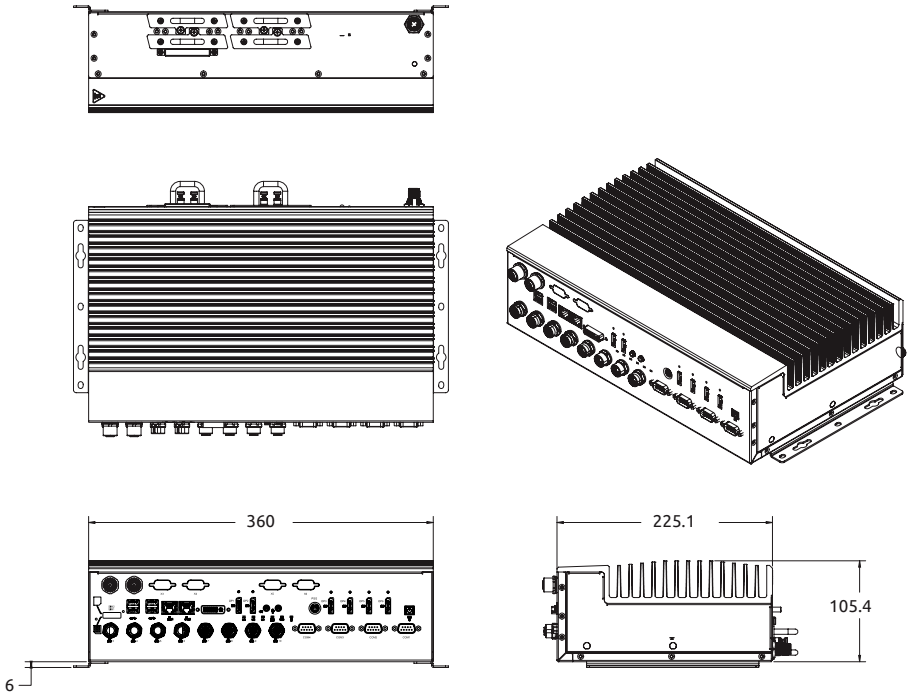


Figure 2-3: AVA-5510 Dimensions

2.5 Mechanical Layout

Front View

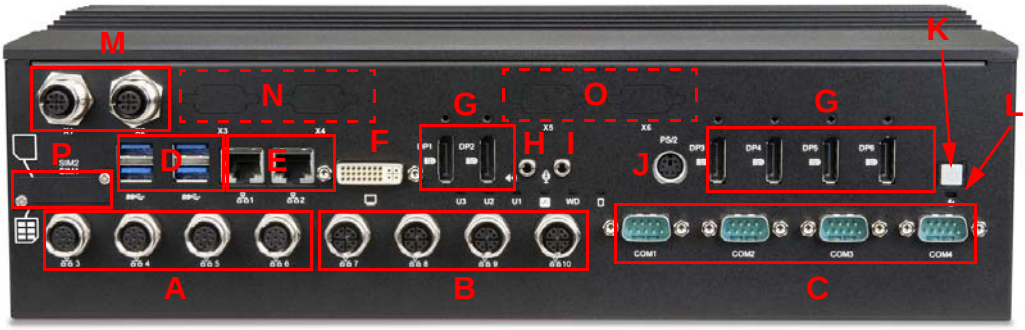


Figure 2-4: AVA-5500 Series Front Layout
(AVA-5510 shown)

A	M12 A-code GbE
B	M12 X-code GbE with PoE Class 2
C	RS232/422/485
D	USB 3.0
E	RJ-45 GbE
F	DVI-I
G	DisplayPort*
H	Mic-in
I	Line-out
J	PS/2
K	Power On/Off button
L	System Reset button
M	M12 USB 2.0 (AVA-5510 only)
N	Reserved for DIO
O	Reserved for CAN bus
P	USIM card slots

NOTE:

*DP3 output is eDP only, no DP++ support.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Rear View



Figure 2-5: AVA-5500/5200 Rear I/O Layout



Figure 2-6: AVA-5510 Rear I/O Layout

Q	2.5” SATA Drive Bays
R	CFast Slot
S	DC Input
T	Ground Stud

Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

2.6 Power Specifications

2.6.1 Power Consumption

The following table presents the AVA-5500 Series power consumption data at room temperature under the following test conditions.

- Intel® Core™ i7-6820EQ
- Memory:
  - NVIDIA P1000 GPU: 8GB
  - NVIDIA P3000/P5000 GPU: 32GB
- Storage: M.2 SATA 64GB
- Hyper Threading Support enabled
- TurboBoost Support enabled
- EIST enabled
- cTDP Setting: Normal
- PoE full loading (4x 7W)
- BurnInTest Revision: 8.1.1025
- TAT Revision: 6.0.1011
- Windows 10 Enterprise 64-bit v1809

Input Voltage	Loading	Setup	Current	Power Consumption
24VDC	Stress: Windows typical mode, (Burnintest tool & GPU Heater)	GPU: P1000	5.99A	143.9W
		GPU: P3000	6.77A	162.6W
	Stress: Windows MAX mode, (Intel TAT & GPU Heater)	GPU: P1000	7.91A	190W
		GPU: P3000	7.97A	191.4W
	S3 mode	-	470mA	11.28W
	S4 mode	-	430mA	10.32W
	S5 mode	-	450mA	10.8W

Table 2-3: AVA-5500/5510 Power Consumption

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Input Voltage	Loading	Setup	Current	Power Consumption
12VDC	Stress: Windows typical mode, (Burnintest tool & GPU Heater)	GPU: P5000	14.75A	177W
	Stress: Windows MAX mode, (Intel TAT & GPU Heater)		17.15A	205.8W
	S3 mode	-	450mA	5.4W
	S4 mode	-	400mA	4.8W
	S5 mode	-	380mA	4.56W

Table 2-4: AVA-5200 Power Consumption

2.6.2 System Power Features

Operating Voltage Range

The system is equipped with a wide DC input range from 16.8V to 137.5V.

- Input range: 16.8V to 137.5V (AVA-5520 supports 12V only)
- Max. input current:
  - 110V: 3A
  - 24V: 8.3A
  - 16.8V: 15A
  - 12V: 20A (AVA-5520 only)

Input Over-Voltage Protection

When the input voltage exceeds the 161V, the module will shut down, and try to restart every 9 seconds until the over current condition is corrected.

Input Over-Temperature Protection

Power will automatically shut down when the operating temperature of the power module sensor exceeds 125°C.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Under Voltage Lockout (UVLO)

The under voltage lockout feature will shut down the power if the input voltage is below 14V+/- 0.4V and automatically restart when the input voltage is above 16+/- 0.4V.

2.7 Mini PCIe CAN Bus Module (optional)

An optional Mini PCIe Card CAN Bus Kit consisting of an Innodisk EMUC-B202 Mini PCIe CAN bus module and cable can be installed at the factory. The module features are:

- CAN 2.0B backward compatible with 2.0A
- Supports baud rates 100/125/250/500(default)/800/1000 kbps
- Supports CAN message acceptance filter
- Configuration retained after hardware reboot
- Up to 6000 CAN messages per second (receive data)
- Supports Listen-only mode
- Additional driver to support Linux SocketCAN
- Supports SAE J1939 high layer protocol (optional)
- Termination resistor enabled/disabled by jumper
- Complies with EN61000-4-5 2.5kV surge protection
- Complies with IEC 60950-1:2005 + A1: 2009 + A2:2013 2.5kV Hipot protection
- Complies with EN61000-4-2 (ESD); air: 15kV, contact: 8kV

AVA-5500 Mini PCIe Card CAN Bus Kit (P/N: 91-95247-300E)

- 1x Mini PCIe Innodisk EMUC-B202-W2 CAN bus module (P/N: 92-97138-0010)
- 1x CAN bus cable (P/N: 30-21558-0000-A0)


NOTE:

It is strongly recommended that the CAN bus module be installed at the factory. If you wish to use a different module or install it yourself, please contact your local ADLINK representative for more information.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

3 Getting Started

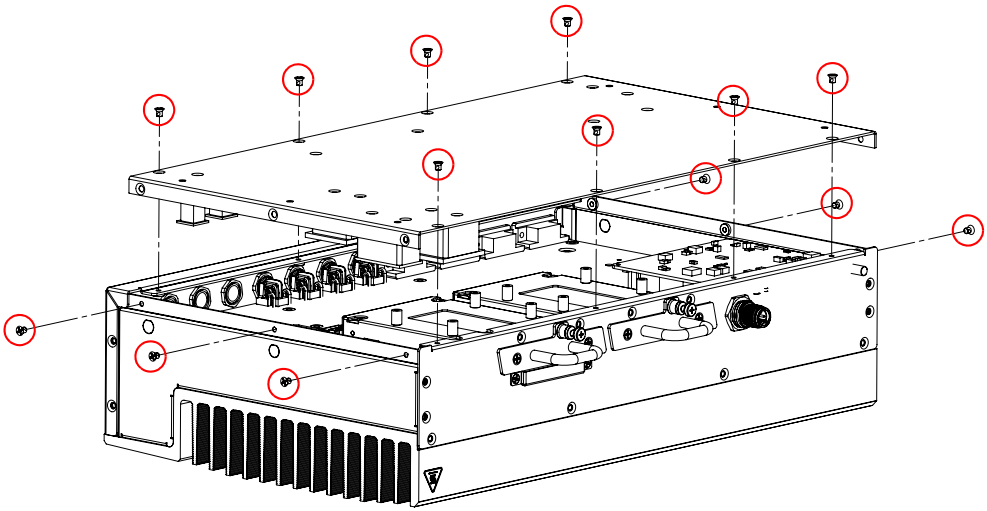
Follow the instructions in this chapter to install USIM cards; Wi-Fi, cellular and M.2 SATA modules; mounting brackets; CFast card; 2.5” SATA drives; ground cable; and DC power supply.

NOTE: MXM and CAN bus modules must be installed at the factory. Please contact your local ADLINK representative for more information.

3.1 Removing the Bottom Cover

To install the optional modules, first remove the bottom cover as described below.

1. Place the box PC on a suitable surface with the bottom side facing up. Remove the 8 screws from the bottom side and 3 screws each from the left and right side as indicated below.



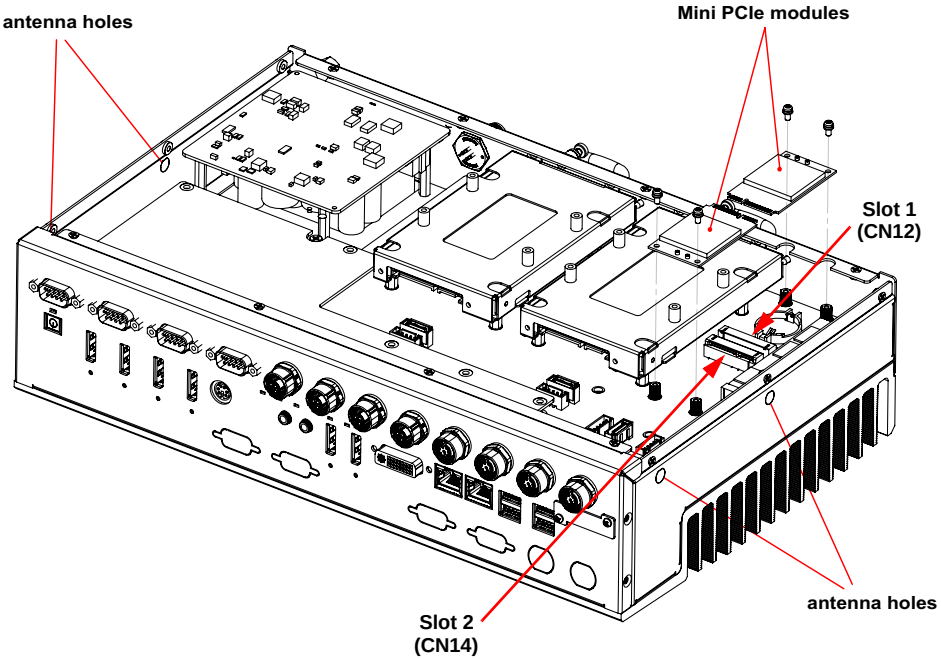
2. Lift the rear cover off of the box PC chassis.
3. To install the bottom cover, place it in its original location and replace the 8 screws removed above.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

3.2 Installing Wi-Fi or Cellular Modules (optional)

Follow the instructions below to install a Mini PCIe Wi-Fi or cellular module.

1. Insert the Mini PCIe LTE or Wi-Fi module into one of the slots as shown and secure it using two M2.5 screws.



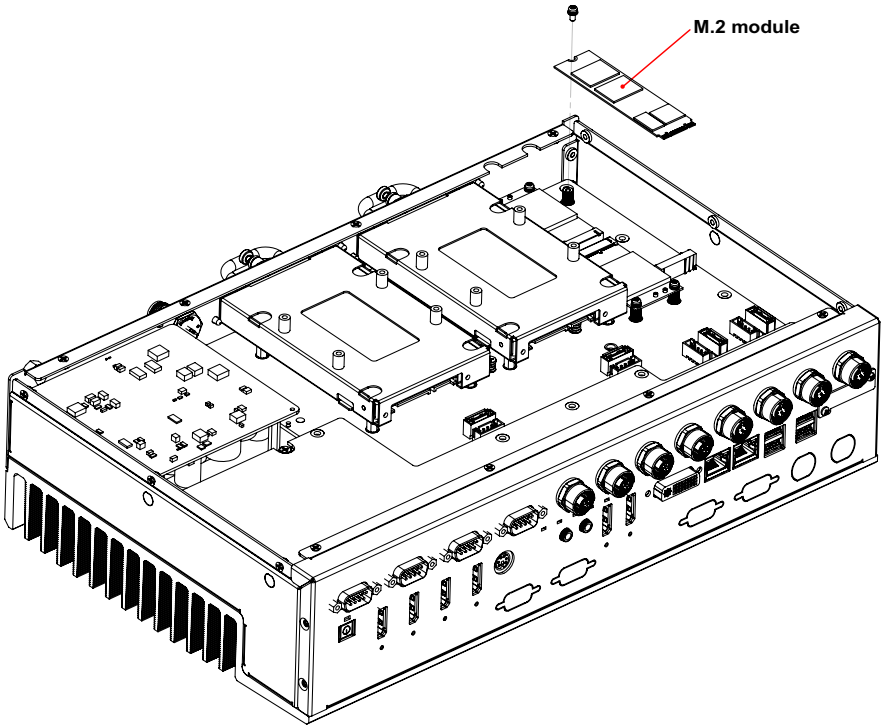
2. Connect the internal RF cables to the module and install the SMA connectors into the antenna openings indicated above.

NOTE: Mini PCIe modules may require an additional thermal solution when operated above 60 °C. Please contact your local ADLINK representative for more information.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

3.3 Installing a M.2 2280 SATA Module (optional)

To install an M.2 2280 SATA module, insert the module into the slot and secure it with one M2.5 screw as shown.



NOTE:

M.2 modules may require an additional thermal solution when operated above 60 °C. Please contact your local ADLINK representative for more information.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

3.4 Installing micro-USIM Cards (optional)

The micro-USIM card slots are located at the left of the front panel. Open the USIM card slot cover by removing the 2 screws indicated below. Insert the USIM cards into the slots using the orientations indicated on the front panel (SIM2 contacts facing down, SIM1 contacts facing up) with the beveled (cut) corner facing outwards. SIM1 corresponds to Mini PCIe slot 1 (CN12), and SIM2 corresponds to Mini PCIe slot 2 (CN14). See 3.2 Installing Wi-Fi or Cellular Modules (optional) on pg. 18 for Mini PCIe slot locations

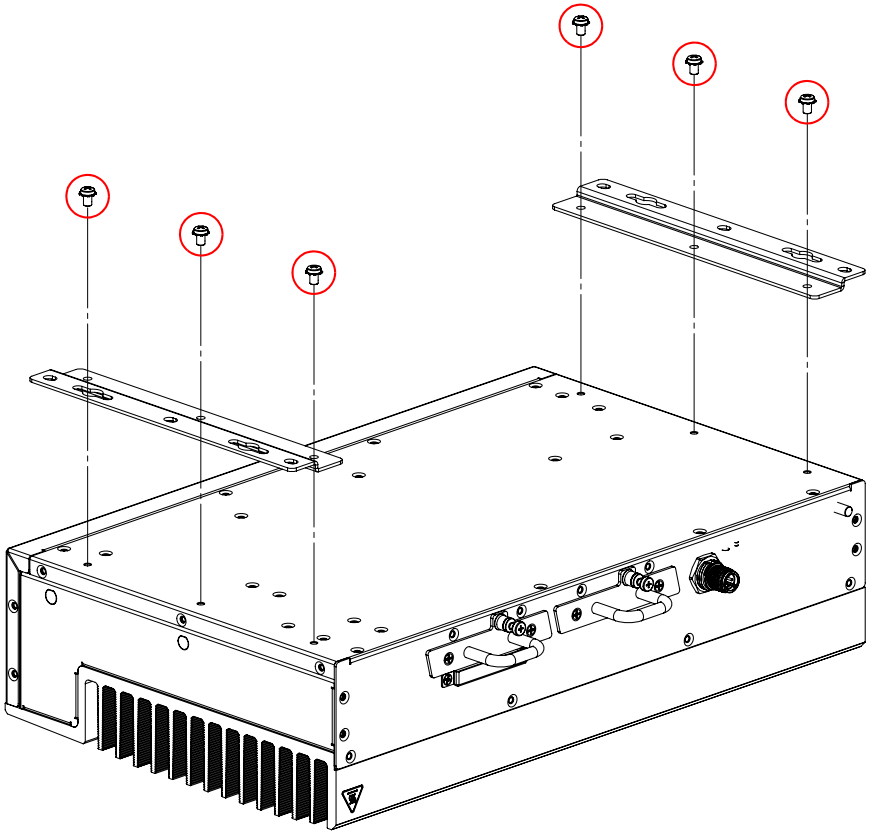


NOTE: The SIM card must be inserted with beveled (cut) corner facing outwards. This is contrary to to the standard method of inserting SIM cards.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

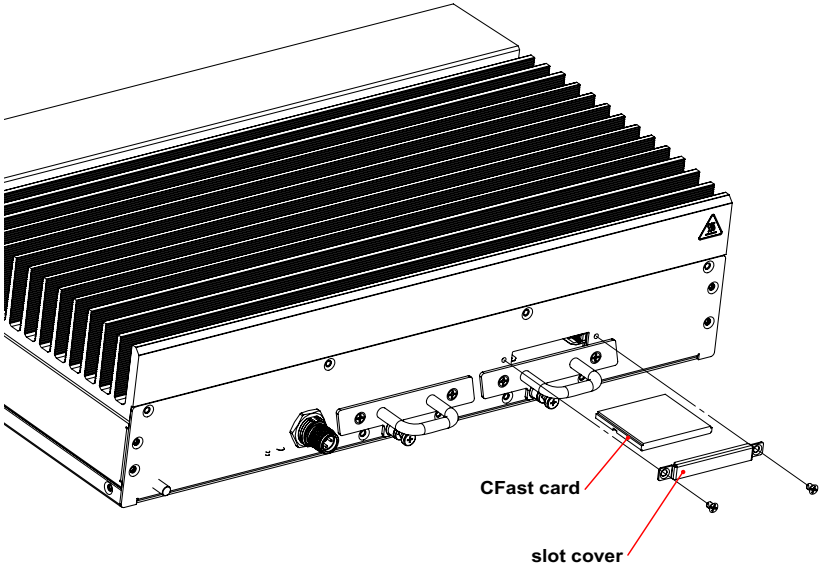
3.5 Mounting

The AVA-5500 can be wall or surface mounted using the wall mount brackets and screws provided. If wall mounting, make sure the wall can support the weight of the device. Secure the brackets to the chassis using the 6 screws provided as shown.



3.6 CFast Card Installation

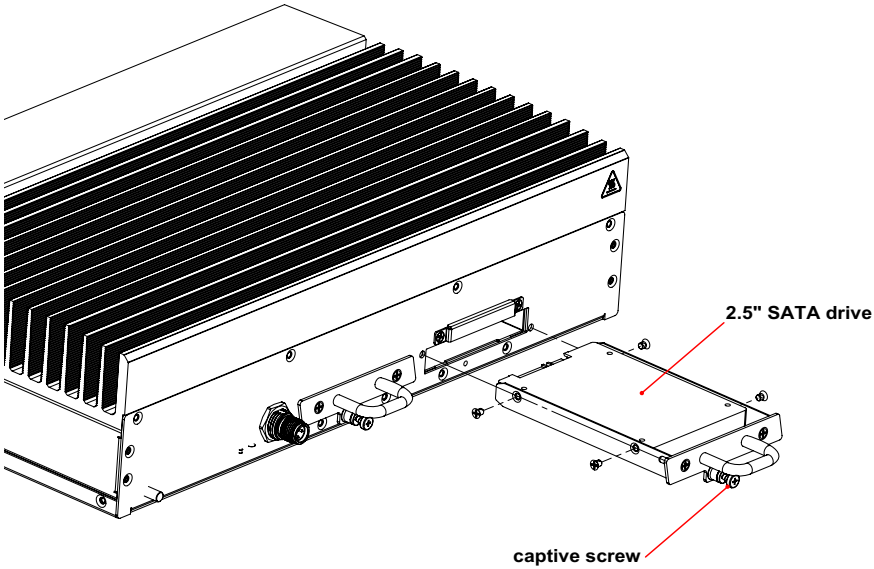
To install or remove the CFast card, remove the screws securing the CFast slot cover and remove the cover. Insert the CFast card and secure the cover.



LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

3.7 SATA Drive Installation

To install a 2.5” SATA drive, loosen the captive screw securing the drive bay cover and remove the drive bracket. Install the 2.5” SATA drive into the bracket and secure with four screws. Insert the drive bracket assembly into the drive bay and secure the cover with the captive screw.



Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

3.8 Connections

Connecting a Ground Cable

CAUTION:

Connect the ground cable before making any other connections. When disassembling the system, always detach the ground cable last.

- Use a ground cable with a cross section of at least 0.823mm^2 (18AWG) and an M5 size ring terminal.
- Slide the ring terminal onto the ground stud and secure it with the locking M5 nut.



ground stud

Connecting Peripherals

Connect all the peripheral devices needed for your system to function.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

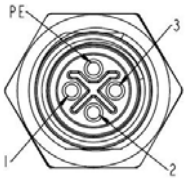
Connecting the Power Supply

WARNING:

- ▷ Work on the computer system may only be carried out by personnel qualified for the specific task and who have the training and experience to identify risks and avoid potential hazards.
- ▷ Make sure that a ground cable has been connected to the system before connecting an external power supply and switching on the system.
- ▷ Make sure that the voltage supplied by the external power supply conforms with specifications of the system

Connect the power supply to the 4-pin M12 connector on the rear of the chassis (Pantron Z07M12S-4PMS-SF8B15). The device will power up when the power supply is turned on.

Pin #	Signal
1	Vin
2	GND
3	Vin
4(PE)	GND



LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

3.9 Starting Up the System

Upon startup, the system will auto-detect storage devices and boot from the operating system, if found. To change the boot device order, press <Del> or <Esc> to enter BIOS setup menu and change the Boot Option settings. If no operating system is found, the system will enter the BIOS setup menu automatically.

The AVA-5500 is delivered without an operating system installed.


NOTE:

When an MXM graphics module is installed, the default Primary Display BIOS setting (Auto) will send bootup display output to DP3-DP6 (MXM graphics). To send bootup display output to DP1-DP2 (integrated Intel graphics), go to BIOS setup and change *Advanced* > *Graphics Configuration* > *Primary Display* to *IGFX* (see 5.4.2 Graphics Configuration on pg. 49).

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

4 Interfaces

4.1 Pin Definitions

Please refer to Figure 2-4 AVA-5500 Series Front Layout on page 12 for connector locations.

GbE M12 A-code Connectors

Pin #	Signal Name
1	MDO0P
2	MDO0N
3	MDO1P
4	MDO1N
5	MDO3P
6	MDO3N
7	MDO2N
8	MDO2P

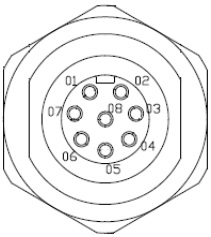


Table 4-1: GbE M12 A-code Pin Definition

GbE M12 X-code Connectors

Pin #	Signal Name
1	MDI_T_P0
2	MDI_T_N0
3	MDI_T_P1
4	MDI_T_N1
5	MDI_T_P3
6	MDI_T_N3
7	MDI_T_N2
8	MDI_T_P2

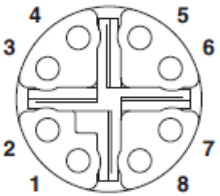


Table 4-2: GbE M12 X-code Pin Definition

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

USB 3.0 Connector

Pin #	Signal Name
1	+5V_USB3
2	USB2_P0_DN
3	USB2_P0_DP
4	GND
5	USB3_P0_RXN
6	USB3_P0_RXP
7	GND
8	USB3_P0_TXN
9	USB3_P0_TXP

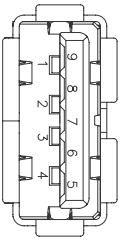
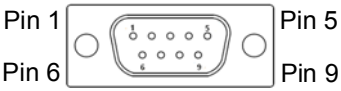


Table 4-3: USB 3.0 Pin Definition

COM DB9 Connectors



Pin #	RS-232	RS-422	RS-485
Pin1	DCD	TXD-	D-
Pin2	RXD	TXD+	D+
Pin3	TXD	RXD+	NA
Pin4	DTR	RXD-	NA
Pin5	GND	NA	NA
Pin6	DSR	NA	NA
Pin7	RTS	NA	NA
Pin8	CTS	NA	NA
Pin9	RI	NA	NA

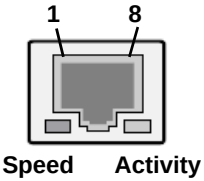
Table 4-4: COM Port Pin Definition

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

RJ-45 GbE Connectors

Pin #	10BASE-T/ 100BASE-TX	1000BASE-T
1	TX+	LAN_TX0+
2	TX-	LAN_TX0-
3	RX+	LAN_TX1+
4	—	LAN_TX2+
5	—	LAN_TX2-
6	RX-	LAN_TX1-
7	—	LAN_TX3+
8	—	LAN_TX3-

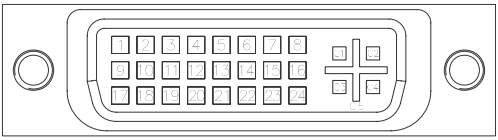
Table 4-5: RJ-45 GbE Pin Definitions



Status		Speed LED (Green/Amber)	Activity LED (Yellow)
Network link is not established or system powered off		OFF	OFF
10 Mbps	Link	OFF	ON
	Active		Blinking
100 Mbps	Link	Green	ON
	Active		Blinking
1000 Mbps	Link	Yellow	ON
	Active		Blinking

Table 4-6: LAN LED Status Definitions

DVI-I Connector



Pin #	Signal	Pin #	Signal
1	TMDS Data2-	16	Hot Plug Detect
2	TMDS Data2+	17	TMDS Data0-
3	GND	18	TMDSData0+
4	NC	19	GND
5	NC	20	NC
6	DDC Clock [SCL]	21	NC
7	DDC Data [SDA]	22	GND
8	Analog vertical sync	23	TMDS Clock +
9	TMDS Data1-	24	TMDS Clock -
10	TMDS Data1+	C1	Analog Red
11	GND	C2	Analog Green
12	NC	C3	Analog Blue
13	NC	C4	Analog Horizontal Sync
14	+5 V Power	C5	Analog GND Return
15	GND		

Table 4-7: DVI-I Connector Pin Definition

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

DisplayPort Connectors

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

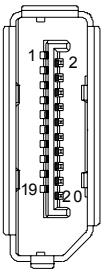


Table 4-8: DisplayPort Pin Definition

PS/2 Keyboard/Mouse Connector

Pin #	Signal	Function
1	KBDATA	Keyboard Data
2	MSDATA	Mouse Data
3	GND	Ground
4	+5V	Power
5	KBCLK	Keyboard Clock
6	MSCLK	Mouse Clock

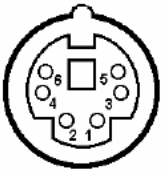


Table 4-9: PS/2 Keyboard/Mouse Pin Definition

DC power Input M12 Connector

Pin #	Signal
1	Vin
2	GND
3	Vin
4(PE)	GND

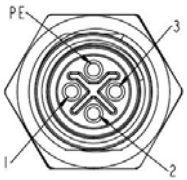


Table 4-10: DC Power Input Pin Definition

USB 2.0 M12 Connector (AVA-5510 only)

Pin #	Signal
1	Data -
2	+5V
3	NC
4	Data +
5	GND

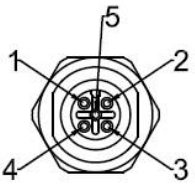
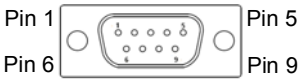


Table 4-11: USB 2.0 M12 Connector Pin Definition

CAN Bus DB9 Connectors (optional)

The location and pin definitions of Port 0 and Port 1 of the optional CAN Bus module are as shown below.





Pin #	Port 0	Port 1
1	NC	NC
2	Port 0 CAN L	Port 1 CAN L
3	GND	GND
4	NC	NC
5	NC	NC
6	NC	NC
7	Port 0 CAN H	Port 1 CAN H
8	NC	NC
9	NC	NC

Table 4-12: CAN Bus Male DB9 Connector Pin Definition

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

DIO DB9 Connectors (optional)

The location and pin definitions of the optional DIO connectors are as shown below.

Pin #	Port 0/1
1	DI0
2	DI1
3	-
4	DO0
5	DO1
6	DI_COM0/1
7	P_+VD0_EXT1
8	-
9	P-+3V3_Do_GND



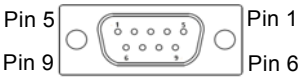


Table 4-13: DIO DB9 Connector Pin Definition

Optical Isolated Input Channel

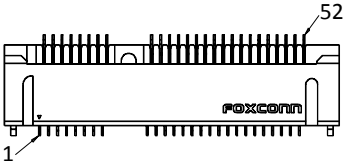
Number of Channel	2 DI
Input Voltage	0–24V dc logic H: 3.3–24V logic L: 0–1.5V
Input Resistance	2.4kΩ @ 0.5W
Isolated Voltage	1500VDC

Optical Isolated Output Channel

Number of Channel	2 DO
Output Voltage	3.3VDC min, 35VDC maximum
Sink Current	250mA/Ch
Isolated Voltage	1500VDC
Onboard Isolated 3.3V Output Power	200mA

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Mini PCIe Connector

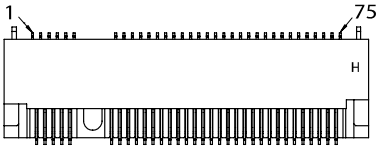


Pin	Signal Name	Pin	Signal Name
1	PCIE_WAKE#	2	P_+3V3_MPCIE
3	N/C	4	GND
5	N/C	6	P_+1V5_S
7	MPCIE0_CLKREQ#	8	P_+3V3_UIM
9	GND	10	UIM_DATA
11	REFCLK_MPCIE_N	12	UIM_CLK
13	REFCLK_MPCIE_P	14	UIM_RST
15	GND	16	UIM_VPP
17	N/C	18	GND
19	N/C	20	N/C
21	GND	22	PLTRST_MINIPCIE-L
23	MPCIE_RXN	24	P_+3V3_MPCIE
25	MPCIE_RXP	26	GND
27	GND	28	P_+1V5_S
29	GND	30	MPCIE_CLK
31	MPCIE_TXN	32	MPCIE_DAT
33	MPCIE_TXP	34	GND
35	GND	36	MPCIE_USB_N
37	GND	38	MPCIE_USB_P
39	P_+3V3_MPCIE	40	GND
41	P_+3V3_MPCIE	42	N/C
43	GND	44	N/C
45	N/C	46	N/C
47	N/C	48	P_+1V5_S
49	N/C	50	GND
51	N/C	52	P_+3V3_MPCIE

Table 4-14: Mini PCI Express Connector Pin Definition

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

M.2 Connector



Pin	Signal Name	Pin	Signal Name
1	N/C	2	P_+3V3_NGFF
3	GND	4	P_+3V3_NGFF
5	GND	6	N/C
7	N/C	8	N/C
9	N/C	10	N/C
11	GND		
KEY-B			
21	GND	20	N/C
23	N/C	22	N/C
25	N/C	24	N/C
27	GND	26	N/C
29	N/C	28	N/C
31	N/C	30	N/C
33	GND	32	N/C
35	N/C	34	N/C
37	N/C	36	N/C
39	GND	38	NGFF_DEVSLP
41	NGFF_SATA_RXP	40	N/C
43	NGFF_SATA_RXN	42	N/C
45	GND	44	N/C
47	NGFF_SATA_TXN	46	N/C
49	NGFF_SATA_TXP	48	N/C
51	GND	50	N/C
53	N/C	52	N/C
55	N/C	54	N/C
57	GND	56	N/C

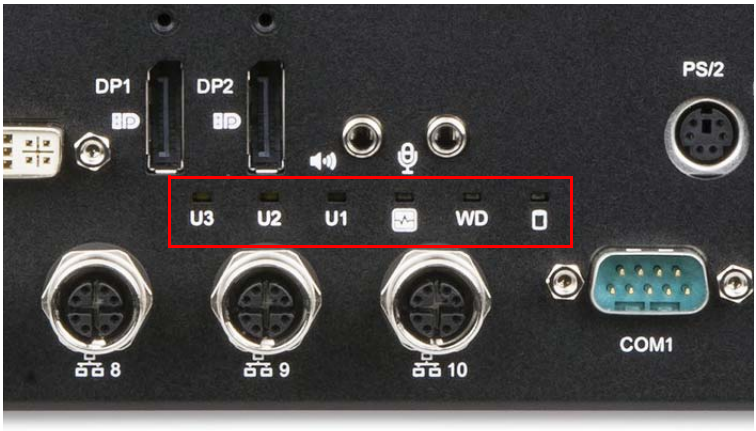
LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Pin	Signal Name	Pin	Signal Name
59	N/C	58	N/C
61	N/C	60	N/C
63	N/C	62	N/C
65	N/C	64	N/C
67	N/C	66	N/C
69	N/C	68	NGFF_SUSCLK
71	GND	70	P_+3V3_NGFF
73	GND	72	P_+3V3_NGFF
75	GND	74	P_+3V3_NGFF

Table 4-15: M.2 Connector Pin Definition

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

4.2 Status LEDs



LED indicator	Color	Description
SATA Drive	Red	When blinking, indicates the SATA drive is active.
Watchdog (WD)	Amber	Indicates watchdog timer status. When watchdog timer starts, the LED flashes. When the timer is expired, the system will auto reboot.
Diagnostic	Green	If lit continuously, indicates no physical storage is connected. If blinking, indicates no memory is installed on either SO-DIMM socket.
U1	White	Programmable LED: user defined. Controlled by GPP_A21 on PCH.
U2	White	Programmable LED: user defined. Controlled by GPP_A22 on PCH.
U3	White	Programmable LED: user defined. Controlled by GPP_A23 on PCH.

Table 4-16: Status LED Definitions

Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

4.3 Power Button

The power button is non-latched, with a blue LED indicator. System is turned on when the button is depressed, and the power LED lights. If the system hangs, depressing the button for 5 seconds to turn off the system completely.

System status	Power Button LED
Idle on OS	On
Suspend	Blinking (1Hz)
Hibernation	Blinking (1Hz)
Power Off	Off

4.4 Reset Button

The reset button is a non-latched. The system is restarted when the button is depressed. If the system hangs, press the button to restart the system.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

5 BIOS Setup

5.1 Introduction

The following chapter describes basic navigation for the AMI EFI BIOS setup utility.

5.2 Entering BIOS Setup

To enter the setup screen, follow these steps:

1. Power on the motherboard
2. Press the < Delete > key on your keyboard when you see the following text prompt:
   < Press DEL to run Setup >
3. After you press the < Delete > key, the main BIOS setup menu displays. You can access the other setup screens from the main BIOS setup menu, such as Chipset and Power menus.



In most cases, the < Delete > key is used to invoke the setup screen. There are several cases that use other keys, such as < F1 >, < F2 >, and so on.

Setup Menu

The main BIOS setup menu is the first screen that you can navigate. Each main BIOS setup menu option is described in this user's guide.

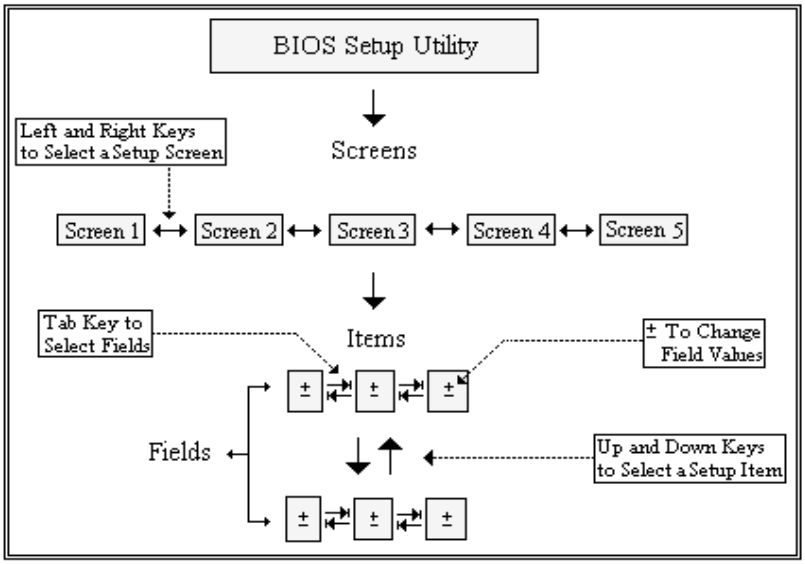
The Main BIOS setup menu screen has two main frames. The left frame displays all the options that can be configured. "Grayed" options cannot be configured, "Blue" options can be.

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.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Navigation

The BIOS setup/utility uses a key-based navigation system called hot keys. Most of the BIOS setup utility hot keys can be used at any time during the setup navigation process.

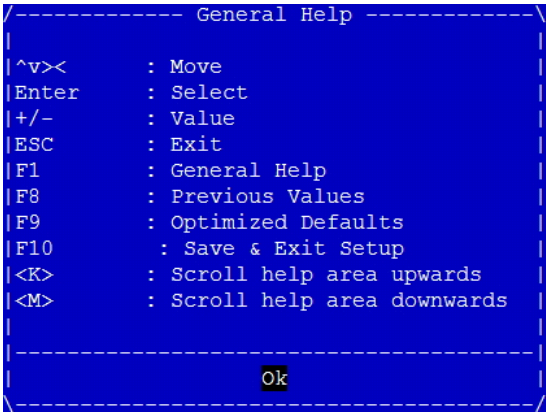


NOTE: There is a hot key legend located in the right frame on most setup screens.

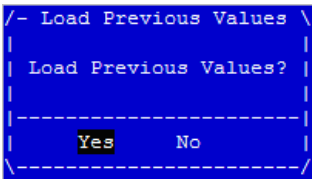
Hotkey Descriptions

Enter The < Enter > key allows you to display or change the setup option listed for a particular setup item. The < Enter > key can also allow you to display the setup sub-screens.

F1 The < F1 > key allows you to display the General Help screen. Press the < F1 > key to open the General Help screen.

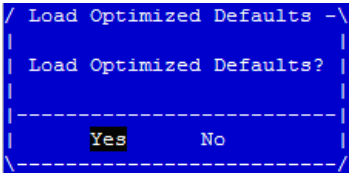


F8 The < F8 > key on your keyboard is the previous values key. It is not displayed on the key legend by default. To set the previous values settings of the BIOS, press the < F8 > key on your keyboard. It is located on the upper row of a standard 101 keyboard. The previous values settings allow the motherboard to boot up with the least amount of options set. This can lessen the probability of conflicting settings.

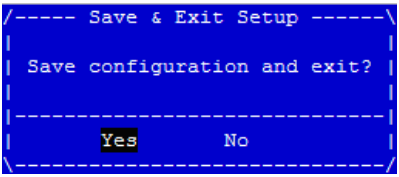


Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

F9 The < F9 > key on your keyboard is the optimized defaults key. To set the optimized defaults settings of the BIOS, press the < F9 > key on your keyboard. It is located on the upper row of a standard 101 keyboard. The optimized defaults settings allow the motherboard to boot up with the optimized defaults of options set. This can lessen the probability of conflicting settings.

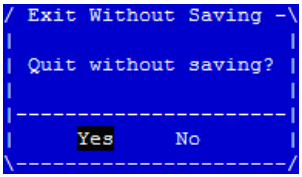


F10 The < F10 > key allows you to save any changes you have made and exit Setup. Press the < F10 > key to save your changes. The following screen will appear:



Press the < Enter > key to save the configuration and exit. You can also use the < Arrow > key to select Cancel and then press the < Enter > key to abort this function and return to the previous screen.

ESC The < Esc > key allows you to discard any changes you have made and exit the Setup. Press the < Esc > key to exit the setup without saving your changes. The following screen will appear:



Press the < Enter > key to discard changes and exit. You can also use the < Arrow > key to select Cancel and then press the < Enter > key to abort this function and return to the previous screen.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

5.3 Main Setup

The Main Menu provides read-only information about system and also allows to set system's date and time.

5.3.1 BIOS Information

BIOS Item	Options	Description
BIOS Vendor	**Info only** American Megatrends	Display vendor name of system BIOS.
BIOS Version	**Info only** x.yy.zz	Display version of booting BIOS.
Build Date	**Info only** MM/DD/YYYY	Display the date that the BIOS was built.
MRC Version	**Info only** w.x.y.z	Display the revision of MRC code which is implemented in BIOS.
VBIOS Version	**Info only** x.y.zzzz	*VBIOS Version:* When video option ROM is set to “Legacy Only”, this will display. *GOP Version:* When video option ROM is set to “UEFI Only”, this will display.
ME FW Version	**Info only** ww.x.yy.zzzz	Display the version of Intel manageability firmware which is implemented in BIOS.
BIOS Boot Source	**Info only** Primary BIOS/ Backup BIOS	Display which BIOS flash boots the system. *Primary BIOS:* usually means that boots from SPI0 *Backup BIOS:* usually means that boots from SPI1

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

5.3.2 System Information

BIOS Item	Options	Description
Project Name	**Info only** AVA-5500	Display the project name.
CPU Board Version	**Info only** A1/A2/A3/…	Display the CPU board HW version.
CPU Brand String	**Info only** Intel(R) Core, …	Display what CPU is booting the system.
CPU Frequency	**Info only** XXXX MHz	Display CPU frequency.
Total Memory	**Info only** XXXX MB (DDRx)	Display total memory size used on the motherboard and memory type.
Memory Frequency	**Info only** XXXX MHz	Display memory's frequency.
SOC SKU	**Info only** xx	Display what PCH SKU is designed on motherboard.

5.3.3 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 using 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 is entered in HH:MM:SS format.

BIOS Item	Options	Description
System Date	MM/DD/YYYY	For configuring/showing system date. When setting the Date, use <Tab> key to switch between Date elements.
System Time	HH:MM:SS	For configuring/showing system time. When setting the Time, use <Tab> key to switch between Time elements.
Access Level	**Info only** Administrator/User	Display what access level is used to enter BIOS setup menu.

NOTE: The time is in 24-hour format. For example, 5:30 A.M. appears as 05:30:00, and 5:30 P.M. as 17:30:00.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

5.3.4 Board Information

BIOS Item	Options	Description
Serial Number	**Info only**	Display board's serial number.
Manufacturing Date	**Info only**	Display manufacturing date.
Last Repair Date	**Info only**	Display Last Repair Date.
MAC ID	**Info only**	Display onboard Ethernet MAC ID.
Total Runtime	**Info only**	The returned value specifies the total time in minutes the system is running in S0 state.
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 Cycle	**Info only**	The returned value specifies the number of times the external power supply has been shut down.
Boot Cycles	**Info only**	The boot cycle 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.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

5.4 Advanced Menu

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

BIOS Item	Options	Description
CPU Configuration	**Submenu**	For configuring CPU features/ functions.
Graphic Configuration	**Submenu**	For setting graphic controller parameters.
Power Management	**Submenu**	
System Management	**Submenu**	
Thermal Management	**Submenu**	
Watchdog Timer	**Submenu**	
CSM Configuration	**Submenu**	
Super IO Configuration	**Submenu**	
Serial Console Redirection	**Submenu**	
Miscellaneous	**Submenu**	
Network Stack Configuration	**Submenu**	
Trusted Configuration	**Submenu**	
Intel(R) Ethernet Connection (2) I219-LM- 88:88:88:88:87:88	**Submenu**	

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

5.4.1 CPU Configuration

BIOS Item	Options	Description
Active Processor Cores	**All** 1 2 3	Number of cores to enable in each processor package
Hyper-Threading	Disable **Enable**	Enabled for Windows XP and Linux (OS optimized for Hyper-Threading Technology) and Disabled for other OS (OS not optimized for Hyper-Threading Technology).
Turbo Mode	Disable **Enable**	Enable/Disable processor Turbo Mode
Config TDP Configurations	**Submenu**	Config TDP Configuration
Intel (VMX) Virtualization Technology	Disable **Enable**	When enabled, VMM can utilize the additional hardware capabilities provided by Vanderpool Technology
C-States	Disable **Enable**	Enables/disables C-States

Config TDP Configurations

BIOS Item	Options	Description
Configurable TDP Boot Mode	**Nominal** Down Deactivate	Configure TDP Mode as Nominal/ Down/Deactivate. Deactivate option will set MSR to Nominal and MMIO to Zero.
Configurable TDP Lock	**Disabled** Enabled	Configurable TDP Mode Lock sets the Lock bits on TURBO_ACTIVATION_RATIO and CONFIG_TDP_CONTROL. Note: When CTDP Lock is enabled Custom ConfigTDP Count will be forced to 1 and Custom ConfigTDP Boot Index will be forced to 0.
CTDP BIOS control	**Disable** Enabled	Enables CTDP control via runtime ACPI BIOS methods.
ConfigTDP Levels	Info-only.	

Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

BIOS Item	Options	Description
ConfigTDP Turbo	**Info-only.**	
Power Limit 1	**Info-only.**	
Power Limit 2	**Info-only.**	
Custom Settings Nominal Config TDP Nominal	**Info-only.**	
Power Limit 1	45000	Power Limit 1 in milliwatts. Overclocking SKU: Value must be between Max and Min Power Limits (specified by PACKAGE_POWER_SKU_MSR). Other SKUs: This value must be between Min Power Limit and TDP Limit.
Power Limit 2	60000	Power Limit 2 in milliwatts. Overclocking SKU: Value must be between Max and Min Power Limits (specified by PACKAGE_POWER_SKU_MSR). Other SKUs: This value must be between Min Power Limit and TDP Limit.
Power Limit 1 Time Window	[0]	Platform Power Limit 1 Time Window value in seconds. The value may vary from 0 to 128. 0 = default values. Indicates the time window over which Platform TDP value should be maintained.
ConfigTDP Turbo Activation Ratio	0	Custom value for Turbo Activation Ratio

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

5.4.2 Graphics Configuration

BIOS Item	Options	Description
Primary Display	**Auto** IGFX PEG PCI SG	Select which of IGFX/PEG/PCI Graphics device should be Primary Display Or select SG for Switchable Gfx.
Internal Graphics	**Auto** Disable Enable	Keep IGFX enabled based on the setup options.

5.4.3 Power Management

BIOS Item	Options	Description
Enable ACPI Auto Configuration	**Disabled** Enabled	Enable/disable BIOS ACPI auto configuration function.
Enable Hibernation	Disabled **Enabled**	Enable/disable system ability to hibernate. This option may be not effective with some OSes.
ACPI Sleep State	**S3 (Suspend to RAM)** Suspend Disabled	Select ACPI sleep state the system will enter when the “suspend” button is pressed.
Lock Legacy Resources	**Disabled** Enabled	Enables or disables lock of legacy resource.
Power Consumption	**Submenu**	

Power Consumption

BIOS Item	Options	Description
Voltage	**Read only**	Display the sensed voltage based on hardware design.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

5.4.4 System Management

BIOS Item	Options	Description
Version xxx	**Info only**	Show the BIOS design of system management.
SEMA Firmware	**Read only**	Show SEMA firmware version installed on system.
Build Date	**Read only**	Show when SEMA firmware was built.
SEMA Bootloader	**Read only**	Show SEMA bootloader's version.
Build Date	**Read only**	Show when SEMA bootloader was built.
SEMA Features	**Submenu**	
Flags	**Submenu**	

SEMA Features

BIOS Item	Options	Description
SEMA Supported Features	**Info only**	SEMA provides many features for selection. Following reported feature is to indicate that the feature is implemented on system.
Uptime & Power Cycles Counter	**Info only**	If this item is shown, it means SEMA supports "Uptime & Power Cycles counter".
System Reset Event	**Info only**	If this item is shown, it means SEMA supports "System Reset Event".
User-Flash size	**Info only**	It will show 512 bytes or 1024 bytes depends on the design.
Watchdog	**Info only**	If this item is shown, it means SEMA supports "Watchdog".
Temperatures	**Info only**	If this item is shown, it means SEMA supports "Temperature".
Voltage Monitor	**Info only**	If this item is shown, it means SEMA supports "Voltage Monitor".
Power-up Watchdog	**Info only**	If this item is shown, it means SEMA supports "Power-up Watchdog".
Power Monitor (current sense)	**Info only**	If this item is shown, it means SEMA supports "Power Monitor (current sense)".

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

BIOS Item	Options	Description
Boot Counter	**Info only**	If this item is shown, it means SEMA supports “Boot Counter”.
TVIA BMC	**Info only**	If this item is shown, it means SEMA supports “TVIA BMC”.

Flags

BIOS Item	Options	Description
BMC Flags	**Read only**	Show current BMC settings.
BMC Select	**Read only**	Display current boot BIOS ROM chip.
ATX/AT-Mode	**Read only**	Display current power mode setting, AT or ATX mode.
Exception Code	**Read only**	Display system exception reason.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

5.4.5 Thermal Management

BIOS Item	Options	Description
CPU Temperature		
Current	**Read only**	Show current CPU temperature gotten from sensor.
Startup	**Read only**	Show the CPU temperature at system power up.
Min	**Read only**	Show the minimum CPU temperature after system boot.
Max	**Read only**	Show the maximum CPU temperature after system boot.
Board Temperature		
Current	**Read only**	Show current board temperature gotten from sensor.
Startup	**Read only**	Show the board temperature at system power up.
Min	**Read only**	Show the minimum board temperature after system boot.
Max	**Read only**	Show the maximum board temperature after system boot.
Passive Cooling Trip Point	**Disabled** Enabled	Temperature threshold of passive cooling trip point.

5.4.6 Watchdog Timer

BIOS Item	Options	Description
Power-Up Watchdog	Enabled **Disabled**	The Power-Up Watchdog resets the system after a certain amount of time after power-up. Pressing F12 key during startup will disable the power-up watchdog timer.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

5.4.7 CSM Configuration

BIOS Item	Options	Description
CSM Support	**Enabled** Disable	This option controls if CSM will be launched.
CSM16 Module Version	Info only	
Boot Option filter	UEFI and Legacy Legacy only UEFI only	This option controls what devices system can to boot.
Option ROM execution	Info only	
Network	**Do not launch** Legacy UEFI	Controls the execution of UEFI and Legacy PXE OpROM.
Storage	Do not launch UEFI **Legacy**	Controls the execution of UEFI and Legacy Storage OpROM.
Video	Do not launch UEFI **Legacy**	Controls the execution of UEFI and Legacy Video OpROM.
Other PCI devices	Do not launch UEFI **Legacy**	For PCI devices other than Network, Mass storage or Video defines which OpROM to launch.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

5.4.8 Super IO Configuration

BIOS Item	Options	Description
Serial Port 1 Configuration	**Submenu**	
Serial Port 2 Configuration	**Submenu**	
Serial Port 3 Configuration	**Submenu**	
Serial Port 4 Configuration	**Submenu**	

5.4.9 Serial Port x Configuration

BIOS Item	Options	Description
Serial Port	Disabled **Enabled**	Enable or disable serial port (COMx).
Device Setting	**Info only**	It will show current resource assignment of serial port (COMx).
Change Settings	**Auto** IO=3F8;IRQ=4; IO=3F8;IRQ=3,4,5,7,9,10,11,12 IO=2F8;IRQ=3,4,5,7,9,10,11,12 IO=3E8;IRQ=3,4,5,7,9,10,11,12 IO=2E8;IRQ=3,4,5,7,9,10,11,12	Select an optimal setting for Super IO device.
COMx Control	**RS232** RS422 RS485	Select serial port mode

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

5.4.10 Serial Console Redirection

BIOS Item	Options	Description
COMx Console Redirection	**Disabled** Enabled	To enable or disable console redirection of COMx.
COMx 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.
COMx Legacy Console Redirection Settings	**Submenu**	The settings for Legacy OSes.

COMx Console Redirection Settings

BIOS Item	Options	Description
Terminal Type	**VT100** VT100+ VT-UTF8 ANSI	Configure the type of console emulation. 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 speed.
Data Bits	7 **8**	Configure the number of data bits in each transmitted or received serial character for both serial ports.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

BIOS Item	Options	Description
Parity	**None** Even Odd	Configures if parity bit is generated (transmit data) or checked. 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	Configures the number of stop bits transmitted and received in each serial character for both serial ports. Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.
Flow Control	**None** Hardware Software	Configures flow control for console redirection. Hardware flow control uses RTC/CTS. Software flow control uses XON/XOFF.
VT-UTF8 Combo Key Support	Disabled **Enabled**	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 Function Keys and Key Pad on Putty.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

COMx Legacy Console Redirection Settings

BIOS Item	Options	Description
Redirection COM Port	**COM1** COM2 COM3 COM4	Select a COM port to display redirection of Legacy OS and Legacy OPROM Messages
Redirection	**80x24** 80x25	Set console display resolution.
Redirection After POST	**Always Enabled** BootLoader	The setting specifyies if BootLoader is selected, then legacy console redirection is disabled before booting to legacy OS.

5.4.11 Miscellaneous

BIOS Item	Options	Description
PEG Port Configuration	**Submenu**	PEG Port Options
SATA And RTS Configuration	**Submenu**	SATA Device Options Setting
State After G3	**S0 State** S5 State	Specify what state to go to when power is re-applied after a power failure (G3 state)

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

PEG Port Configuration

BIOS Item	Options	Description
Enable Root Port	Disable Enable **Auto**	Enable or Disable the root port
Max Link Speed	**Auto** Gen1 Gen2 Gen3	Configure PEG 0:1:0 Max Speed

SATA and RTS Configuration

BIOS Item	Options	Description
SATA Controller(s)	**Enabled** Disabled	Enable/Disable SATA Device.
SATA Mode Selection	**AHCI** Intel RST Premium	Determines how SATA controller(s) operate.
SATA Test Mode	Enabled **Disabled**	Test Mode Enable/Disable (Loop Back)
Aggressive LPM Support	**Enabled** Disabled	Enable PCH to aggressively enter link power state.
SATA Controller Speed	**Default** Gen1 Gen2 Gen3	Indicates the maximum speed the SATA controller can support.
Serial ATA Port 0	Info only	
Software Preserve	Info only	
Port X	Disabled **Enabled**	Enable/Disable SATA Port.
Hot Plug	**Disabled** Enabled	Designates this port as Hot Pluggable.
Configured as eSATA	Info only	
Spin up Device	**Disabled** Enabled	If enabled for any port, Staggered Spin Up will be performed and only the drives which have this option enabled will spin up at boot. Otherwise all drives spin up at boot.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

BIOS Item	Options	Description
SATA Device Type	**Hard Disk Drive** Solid State Drive	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.
Topology	Unknown ISATA Direct Connect Flex **M2**	Identify the SATA Topology if it is Default, ISATA, Flex, DirectConnect or M2.
SATA Port 0 DevSlp	**Disabled** Enabled	Enable/Disable SATA Port 0 DevSlp. Board rework for LP needed before enable.
DITO Configuration	**Disable** Enable	Enable/Disable DITO Configuration.
DITO Value	Info only	
DM Value	Info only	

5.4.12 Network Stack Configuration

BIOS Item	Options	Description
Network Stack	Disabled **Enabled**	To enable or disable network stack.
Ipv4 PXE Support	**Disabled** Enabled	To enable or disable Ipv4 PXE boot.
Ipv6 PXE Support	**Disabled** Enabled	To enable or disable Ipv6 PXE boot.
PXE boot wait time	**Value Range**	Set wait time to press ESC key to abort the PXE boot

5.4.13 Trusted Computing

BIOS Item	Options	Description
Security Device Support	Disabled **Enabled**	Enables/disables BIOS support for security device. When enabled, OS will not show the security device, and TCG EFI protocol and INT1A interface will not be available.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

5.4.14 IntelEthernet Connection (2) I210-LM

BIOS Item	Options	Description
NIC Configuration	**Submenu**	For configuring link speed and wake function.
Blink LEDs	**Value Range**	Identifies the physical network port by blinking the associated LED.

NIC Configuration

BIOS Item	Options	Description
Link Speed	**Auto Negotiated** 10 Mbps Half 10 Mbps Full 100 Mbps Half 100 Mbps Full	For setting link speed of Ethernet.
Wake On LAN	**Enabled** Disabled	For enabling/disabling wake on LAN function.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

5.5 Security Menu

This menu contains the settings for security in the system.

BIOS Item	Options	Description
Administrator Password	**Enter to set password**	Configure/Clear Administrator Password. When pressing enter, a menu will be popped up for creating new password. When password installed, press enter without inputting password, it will clear password.
User Password	**Enter to set password**	Configure/Clear User Password. When pressing enter, a menu will be popped up for creating new password. When password installed, press enter without inputting password, it will clear password.
Secure Boot menu	**Submenu**	

5.5.1 Secure Boot

BIOS Item	Options	Description
System Mode	**Info only**	
Secure Boot	**Info only**	
Secure Boot Control	**Disabled** Enabled	Secure Boot can be enabled if: 1. System running in User mode with enrolled Platform Key (PK) 2. CSM function is disabled.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

5.6 Boot Menu

This menu contains the settings for bootable devices in the system.

BIOS Item	Options	Description
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 after system boot.
Quiet Boot	Disabled **Enabled**	**Enabled:** will show splash screen during POST. **Disabled:** will show boot message during POST.
Fast Boot	**Disabled** Enabled	Enable or disabled Fast boot feature. Most probes are skipped to reduce time cost during boot.
Boot Option #1~#8	Hard Disk CD/DVD USB Hard Disk USB CD/DVD USB Key USB Floppy USB Lan Network Disabled	Set system boot order.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

5.7 Save & Exit Menu

BIOS Item	Options	Description
Save Changes and Exit	**Enter**	Save changed settings and exit BIOS setup utility.
Discard Changes and Exit	**Enter**	Skip changed setting and exit BIOS setup utility.
Save Changes and Reset	**Enter**	Save all changed settings and let system do reset to boot system.
Discard Changes and Reset	**Enter**	Discard all changed settings and let system do reset to boot system.
Save Changes	**Enter**	Save all changed settings.
Discard Changes	**Enter**	Discard changes done so far to any of the setup options.
Restore Default	**Enter**	Load the default made when BIOS was built.
Save as User Default	**Enter**	Save all changed done so far as User Defaults.
Restore User Default	**Enter**	Load the default that user save as user defaults.
Boot Override	**Info only**	

5.8 BIOS Beep Codes

Number of Beeps	Description
2 beeps	Boot up
5 beeps	Keyboard, Mouse, or Monitor not detected
1 long, 3 short beeps	Memory failure

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

This page intentionally left blank.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Important Safety Instructions

For user safety, please read and follow all **instructions**, **WARNINGS**, **CAUTIONS,** and **NOTES** marked in this manual and on the associated equipment before handling/operating the equipment.

- Read these safety instructions carefully.
- Keep this user's manual for future 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 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; and,
  - If the equipment will not be used for long periods of time, turn off and unplug the equipment from its power source.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

A Lithium-type battery may be provided for backup power.



Risk of explosion if battery is replaced with one of an incorrect type. Dispose of used batteries appropriately.

- Never attempt to fix the equipment. Equipment should only be serviced by qualified personnel.
- Equipment must be serviced by authorized technicians when:
  - The power cord or plug is damaged;
  - Liquid has penetrated the equipment;
  - It has been exposed to high humidity/moisture;
  - It is not functioning or does not function according to the user's manual;
  - It has been dropped and/or damaged; and/or,
  - It has an obvious sign of breakage.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Getting Service

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

ADLINK Technology, Inc.
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.
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.
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
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.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000