AMC-7100

AdvancedMC™ SAS Hard Drive Module

User's Manual



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Revision History

Revision	Release Date	Description of Change(s)
2.00	2010/02/01	Initial Release

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Preface

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Using this Manual

Audience and Scope

The AMC-7100 User's Manual is intended for hardware technicians and systems operators with knowledge of installing, configuring and operating industrial grade CompactPCI modules.

Manual Organization

This manual is organized as follows:

Chapter 1, Overview: Introduces the AMC-7100, its features, and package contents.

Chapter 2, Installation: Provides detailed instructions for installing the AMC-7100.

Chapter 3, Functional Description: Describes the major functional features and capabilities of the AMC-7100

Chapter 4, Connector Pin Assignments: Describes the connector pin assignments of the AMC-7100.

Chapter 5, Specifications: Describes the environmental and mechanical specifications of the AMC-7100.

Chapter 6, Front Panel Indicators: Describes the the Front Panel LED indicators.

Chapter 7, IPMI Function List: Contains a listing of IPMI functions supported by the AMC-7100, including and Standard and OEM commands.

Important Safety Instructions: Presents safety instructions all users must follow for the proper setup, installation and usage of equipment and/or software.

Getting Service: Contact information for ADLINK's worldwide offices.

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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.

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1 Overview

1.1 Introduction

The AMC-7100 is an Advanced Mezzanine Card (AMC) module which provides embedded systems designers with an in-chassis storage solution that utilizes a SAS hard disk (HD). SAS technology generally boasts the greatest reliability and performance needed by mission critical enterprise applications. The Module is as single-width AMC with mid-size panel and hard drive in 2.5” small form factor, to provide the greatest spindle density for your ATCA or MicroTCA application. The AMC-7100 also includes a modular management controller (MMC).

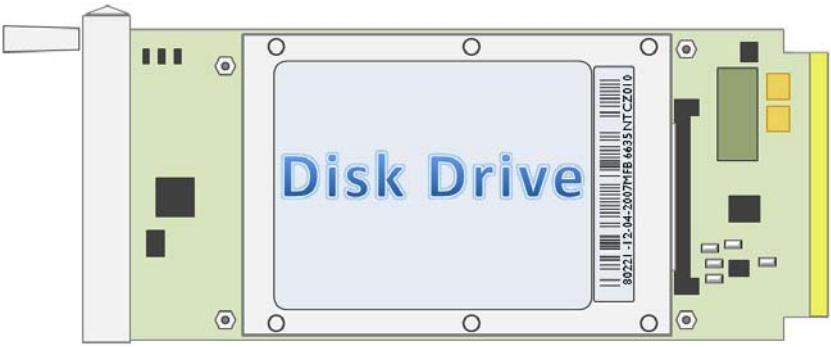


Figure 1-1: AMC-7100 Assembly Diagram

1.2 Features

The AMC-7100 is a single-width mid-size AMC Module with the following features:

- Accommodates a single 2.5" SAS 146GB hard drive
- Supports both Port 2 and Port 3 via switch setting or IPMI control
- Drive over-current protection
- General Advanced Mezzanine Card Features
- Ejector switches for hot swap
- One blue hot swap LED

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- OOS (Out-of-Service) LED
- Bi-color LED for Port 2/3 designation, and activity

Refer to *Chapter 5: Specifications* for additional details regarding environmental, mechanical, power specifications, as well as reliability and compliance statements.

1.3 PICMG Standards Compliance

The AMC-7100 is fully compliant with the following PCI Industrial Computer Manufacturers Group (PICMG) specifications:

- PICMG AMC.0 R2.0
- PICMG AMC.3 R1.0 storage signaling option

1.4 Package Contents

The AMC-7100 is packaged with the following components. If any of the items on the contents list are missing or damaged, retain the shipping carton and packing material and contact the dealer for inspection. Please obtain authorization before returning any product to ADLINK.

- AMC-7100 AdvancedMC™ SAS 146GB Hard Drive Module
- User's manual



This product must be protected from static discharge and physical shock. Never remove any of the components except at a static-free workstation. Use the anti-static bag shipped with the product when putting the board on a surface. Wear an anti-static wrist strap properly grounded on one of the system's ESD ground jacks when installing or servicing system components.

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2 Installation

This chapter contains the procedures for installing and removing the AMC-7100 AMC module.

The AMC-7100 Module can be installed into an ATCA AdvancedMC carrier board or MicroTCA chassis with slots designed to accept AMC.3 installations. The module slot height must properly match the panel height fitted to the AMC.

2.1 Important Information about Your Chassis

The AMC-7100 is designed to PICMG specifications and is a general-purpose Advanced Mezzanine Card. Before using this board, review the specifications of the chassis and backplane that will house the module to determine the presence of, and any limitations of, chassis, IPMI bus, and user defined pin outs. For example, some chassis backplanes route certain I/O pins to internal resources such as alarm cards and drive resources. The AMC-7100 is intended for an Advanced TCA AMC carrier card or MicroTCA chassis/backplanes/slots that are AMC.3 compliant. It is your responsibility to verify this system compatibility. Failure to do so could result in improper operation or equipment damage.

UL-Listed Accessory – For Use Statement

The AMC-7100 is a UL-Listed “accessory” and CUL-Listed “accessory” for use with UL-Listed AdvancedTCA and MicroTCA products that have a user’s guide detailing user installation of AMC module accessories.

Maximum Module Current Requirements

Be sure to validate the host chassis, and the intended AMC slot is cable of meeting the AMC modules with maximum current requirements.

AMC-7100 Max. Current Draw: 1.41 A

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2.2 Before Installing or Removing the AMC

Boards may be damaged if improperly installed or handled. Please read and follow the guidelines in this section to protect your equipment.

ESD Precautions

ADLINK strongly recommends that you use an antistatic wrist strap and a conductive foam pad when installing or upgrading a system. Electronic components, such as disk drives, computer boards, and memory modules, can be extremely sensitive to electrostatic discharge (ESD). After removing the component from its protective wrapper or from the system, place the component flat on a grounded, static-free surface (and, in the case of a board, component side up). Do not slide the component over any surface.

If an ESD station is not available, you can avoid damage resulting from ESD by wearing an antistatic wrist strap (available at electronics stores) that is attached to an active electrical ground. Note that a system chassis may not be grounded if it is unplugged.

Bent Pins or Other Damage

Bent pins or loose components can cause damage to the board, the backplane, or other system components. Carefully inspect your board and the backplane for both pin and component integrity before installation. Our suppliers take significant steps to ensure there are no bent pins on the backplane or connector damage to the boards prior to leaving our factory. Bent pins caused by improper installation or by boards with damaged connectors could void the warranty for the backplane or boards.

If a system contains one or more crushed pins, power off the system and contact your local sales representative to schedule delivery of a replacement chassis assembly.

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Caution Areas



When first installing boards in an empty chassis or onto a carrier board, we recommend that you start at the left of the card cage and work to the right.

When inserting or removing a board in a slot adjacent to other boards, use extra caution to avoid damage to the pins and components located on the primary or secondary sides of the boards.

Preserving EMI Compliance

To preserve compliance with applicable standards and regulations for electromagnetic interference (EMI), during operation all front and rear openings on the chassis or board faceplates must be filled with an appropriate card or covered with a filler panel. If the EMI barrier is open, devices may cause or be susceptible to excessive interference.

Understanding Hot Swap

Your AMC-7100 is electrically designed for hot swap within a fully powered chassis. To facilitate hot swap, there is a blue LED on the front faceplate. This LED is under software control.

If your system is using software that provides full hot swap capabilities, the software will illuminate the blue hot swap LED on the AMC faceplate when software has stopped and it is safe to remove the AMC module.

If your system does not have hot-swap aware software running, behavior of the blue LED is indeterminate. In this case, you may need to manually shut down applications or operating systems running on the board prior to board removal, even if the blue LED is lit.

Powering down or removing a board before the operating system or other software running on the board has been properly shut down may cause corruption of data or file systems.

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2.3 Verify Slot Usage



Prevent possible damage to module components by verifying the proper slot usage for your configuration. In most cases, electronic keying (E-keying) will prevent powering on of a board installed in an incompatible slot. However, as an extra precaution, you should be familiar with the slot purpose.

2.4 Module Hot Swap

This section describes a recommended procedure for installing a board module in a chassis. The AMC-7100 module has a latching mechanism. The Latch Mechanism includes the module handle with an integrated multi-position shaft and micro-switch (see figure below).

The module handle is held in place by the faceplate, while the micro-switch is mounted on the module printed circuit board. The module handle is used to activate the micro-switch, which allows for Hot Swap switch as well as for extracting the module out of the connector and the AMC bay.

There are 3 positions of the Module Handle:

1. Pushed all the way in (IN) - When IN the module sends a signal to the Shelf Manager that the module is not in the Hot Swap state and the Shelf Manager will communicate with the MMC. This is the position that the Module Handle should be in during normal operation.
2. Half Way (HW) - When the Module Handle is in the HW position, the Hot Swap switch is open and the MMC will send a Hot Swap event to the Shelf manager.
3. Out (OUT) - When the Module Handle is in the OUT position the latching mechanism is released and the module can be extracted.

The use of the Module Handle is used in conjunction with the Blue LED. Please refer to the text below for more detailed instructions on insertion and extraction.

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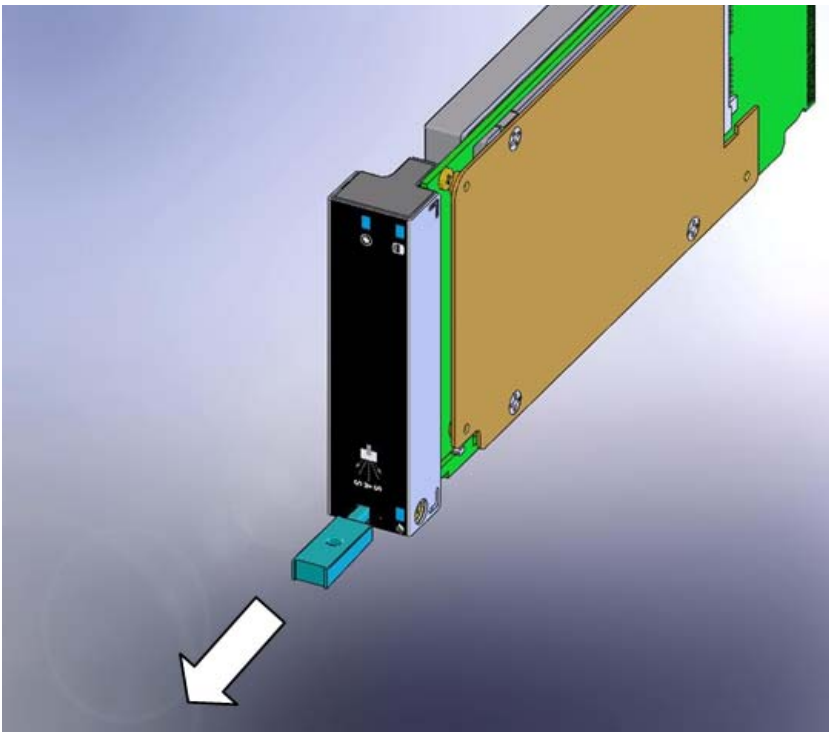


Figure 2-1: AMC Module Handle

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2.5 Installing the AMC-7100 Module

This section describes a recommended procedure for installing a board module in a chassis.

Before you install your module, please read all cautions, warnings, and instructions presented in this section.



Handling modules and peripherals can result in static damage. Use a grounded wrist strap, static-dissipating work surface, and antistatic containers when handling and storing components.

Insert the board by holding the Module Handle—do not exert unnecessary pressure on the faceplate.



Hot swap compliant modules may be installed while the system is powered on. If a module is not hot swap compliant (or the system does not support hot swap), you should remove power to the slot or system before installing the module.

1. Verify that you have taken the necessary antistatic precautions.
2. Inspect the ATCA carrier board or MicroTCA chassis, and locate the desired AMC slot.
3. Remove the slot filler panel from the selected AMC slot, if necessary.
4. Carefully align the edges of the module with the rail guides in the appropriate slot or carrier card.
5. Taking care to keep the module aligned in the guides, apply equal and steady pressure and slide the module in until the fingers of the module snap into the internal AMC connector.
6. DO NOT FORCE THE BOARD INTO THE SLOT.
7. Push the Module Handle to the IN position.
8. Power on the system, if necessary. Refer to your system manual for instructions on correctly powering on the system. Once power is applied to the chassis, the internal MMC controller runs a self-test that runs for approximately 10 seconds. Upon a successful power up self-test, the blue hot swap LED will blink and then turn off, indicating that the module has been placed in operation.

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2.6 Removing the AMC Module

The AMC-7100 is hot-swappable and can be removed from the chassis without powering down the associated host carrier or chassis. This section describes the recommended procedure for removing an AMC module.



Before you remove your module, please read all cautions, warnings, and instructions presented in this section. Hot swap compliant modules may be removed while the system is powered on. If the chassis is not hot swap compliant, you should remove power to the slot or system before removing the module.

To remove the AMC module, follow these steps:

1. Begin to remove your module by pulling the Module Handle to the half way (HW) position. Do not remove the module immediately.
2. Powering down or removing a board before the operating system or other software running on the board has been properly shut down may cause corruption of data or file systems.
3. If your module is hot swap compliant and you are running fully functional hot swap-aware software, unlatching this ejector lever will start the shutdown process on the board. The software will slowly blink the blue hot swap LED indicating the module is in the process of being de-activated.
4. Once the module has been de-activated, the Blue LED will solidly illuminate. Once this is done you can extract the module by pulling on the module handle.
5. **WARNING:** Some AMC-7100 models may display this symbol to indicate the possible presence of a hot surface or component reaching up to 85C. To reduce the risk of injury from a hot component when servicing, allow the surface to cool before touching.



6. If your board or system is not running hot swap-aware software, the blue LED may illuminate without regard to software processes still running on the board. Be sure to manually shut down applications or operating systems running on the board prior to board removal.

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7. Carefully pull the module from the chassis. If the card slot is to remain empty, install a filler panel in the slot.

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3 Functional Description

This chapter provides a functional description of the major components and devices on the AMC-7100.

3.1 Overview

The AMC-7100 contains three major functional blocks. These are:

1. The Serial Storage interface
2. The Power Regulator, and
3. The IPMI subsystem (Module Management Controller - MMC)

The following block diagram illustrates the major components and switch locations on the AMC-7100.

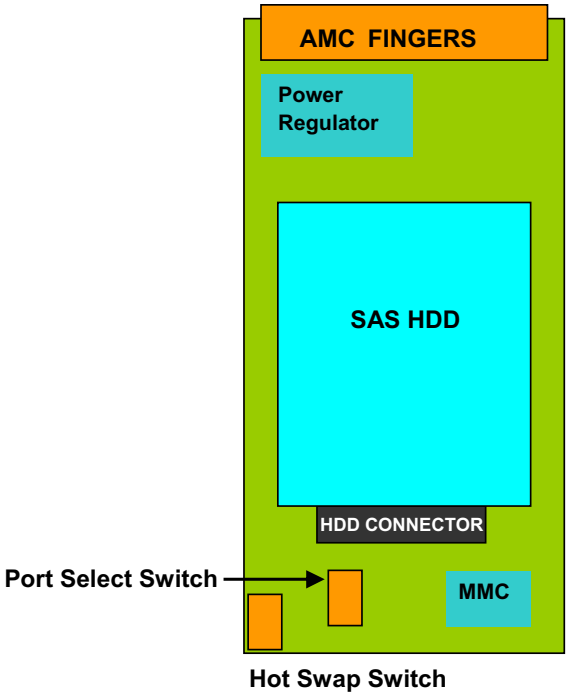


Figure 3-1: AMC-7100 Functional Blocks

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3.2 Serial Storage I/O Interfaces

The AMC-7100 AMC modules plug into ATCA carrier boards which support AMC.3 storage signaling.

AMC I/O	Description
Port 2	3Gb SAS, Receive and transmit pairs
Port 3	3Gb SAS, Receive and transmit pairs
MMC Device	Serial IPMI management bus

Table 3-1: I/O Ports Available on AMC Connector

AMC Serial Storage Port Assignments

The AMC-7100 supports SAS DUAL PORT hard disk. Port 2 is always the SAS primary port and Port 3 is always the SAS secondary port.

Serial Storage Port Selection via IPMI

The MMC firmware allows the selection of an alternate port by use of the “Set AMC Port State” command to first disable the enabled port, followed by a “Set AMC Port State” command to enable the alternate port.

If the MMC firmware receives a “Set AMC Port State” to enable the other port while the current port is already enabled, the command will respond with 0xD5, Cannot Execute Command completion code.

In order for the MMC to change ports, the Port Select Switch (SW1/POS1) setting must be in the OFF position (see Figure 3-1: AMC-7100 Functional Blocks on Page 11).

3.3 Power Regulator

The Power Regulator is the part of the module that generates the required power from the payload power (+12V) that is delivered to the module through the AMC connector. This power is current limited by the onboard regulator.

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3.4 IPMI Subsystem

The IPMI subsystem provides management control for the board. It is based on an Atmel microcontroller (Module Management Controller - MMC). Its function is to monitor module functions such as power, temperature, and hot swap requests via the ejector handle and report these to the base controller in the enclosure. It also stores information about the module including serial number and E-Keying.

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4 Connector Pin Assignments

This chapter provides connector pin assignments for AMC-7100. This module is AMC.3 compliant and uses Ports 2 and 3 as defined in the AMC.3 specification.

4.1 AMC-7100 Port Assignments

Below are the specific ports that are used by the AMC-7100. All other pins match the AMC.0 specification.

Port	Signal
2	AMC.3 Serial Storage Port 2
3	AMC.3 Serial Storage Port 3

Table 4-1: AMC-7100 AMC Port Assignments

AMC-7100 Card-edge Interface Pin Assignments

The AMC-7100 includes an AMC connector which conforms to the single slot B+ extended connector, with 170 signal contacts. The pin assignments are as follows.

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Pin#	Signal	Pin#	Signal
1	GND	86	GND
2	12V	87	No Connect
3	'PRSNT1_L'	88	No Connect
4	'AMC_VCC3'	89	GND
5	GA0	90	No Connect
6	No Connect	91	No Connect
7	GND	92	GND
8	No Connect	93	No Connect
9	12V	94	No Connect
10	GND	95	GND
11	No Connect	96	No Connect
12	No Connect	97	No Connect
13	GND	98	GND
14	No Connect	99	No Connect
15	No Connect	100	No Connect
16	GND	101	GND
17	GA1	102	No Connect
18	12V	103	No Connect
19	GND	104	GND
20	No Connect	105	No Connect
21	No Connect	106	No Connect
22	GND	107	GND
23	No Connect	108	No Connect
24	No Connect	109	No Connect
25	GND	110	GND
26	GA2	111	No Connect
27	12V	112	No Connect
28	GND	113	GND
29	'TX_SATA_2+'	114	No Connect
30	'TX_SATA_2-'	115	No Connect

Table 4-2: AMC Module Card-edge Interface Pin Assignment

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Pin#	Signal	Pin#	Signal
31	GND	116	GND
32	'RX_SATA_2+'	117	No Connect
33	'RX_SATA_2-'	118	No Connect
34	GND	119	GND
35	'TX_SATA_3+'	120	No Connect
36	'TX_SATA_3-'	121	No Connect
37	GND	122	GND
38	'RX_SATA_3+'	123	No Connect
39	'RX_SATA_3-'	124	No Connect
40	GND	125	GND
41	'AMC_ENABLE_L'	126	No Connect
42	12V	127	No Connect
43	GND	128	GND
44	No Connect	129	No Connect
45	No Connect	130	No Connect
46	GND	131	GND
47	No Connect	132	No Connect
48	No Connect	133	No Connect
49	GND	134	GND
50	No Connect	135	No Connect
51	No Connect	136	No Connect
52	GND	137	GND
53	No Connect	138	No Connect
54	No Connect	139	No Connect
55	GND	140	GND
56	'IPMI_SCL_L'	141	No Connect
57	12V	142	No Connect
58	GND	143	GND
59	No Connect	144	No Connect
60	No Connect	145	No Connect

Table 4-7: AMC Module Card-edge Interface Pin Assignment (cont'd)

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Pin#	Signal	Pin#	Signal
61	GND	146	GND
62	No Connect	147	No Connect
63	No Connect	148	No Connect
64	GND	149	GND
65	No Connect	150	No Connect
66	No Connect	151	No Connect
67	GND	152	GND
68	No Connect	153	No Connect
69	No Connect	154	No Connect
70	GND	155	GND
71	'IPMI_SDA_L'	156	No Connect
72	12V	157	No Connect
73	GND	158	GND
74	No Connect	159	JTAG- TCK
75	No Connect	160	JTAG- TDI
76	GND	161	GND
77	No Connect	162	JTAG - TMS
78	No Connect	163	JTAG- TDO
79	GND	164	GND
80	No Connect	165	No Connect
81	No Connect	166	No Connect
82	GND	167	No Connect
83	'PRSNT0_L'	168	No Connect
84	12V	169	No Connect
85	GND	170	GND

Table 4-7: AMC Module Card-edge Interface Pin Assignment (cont'd)

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5 Specifications

This chapter contains the environmental and mechanical specifications for the AMC-7100. The environmental specifications relate to and vary with the Hard Drive that the AMC-7100 is configured with.

5.1 Hard Drive Operation and Storage Specifications

Specification		Enterprise SAS
Temperature	Operating (ambient)	5ºC to 55ºC
	Disk enclosure surface	5ºC to 60ºC (operating)
	Non-operating	-40ºC to 70ºC
	Gradient	3ºC/min – (20ºC/hour)
Relative humidity	Operating	5% to 95%
	Non-operating	5% to 95%
	Maximum wet bulb	29ºC (operating)
Vibration	Operating	1G (20 to 300Hz)
	Non-operating	5G (20 to 300Hz)
Shock	Operating	100 G / 1ms duration
	Non-operating	400 G / 1ms duration
Altitude	Operating	–1,000 to +10,000 feet
	Non-operating	–1,000 to +40,000 feet
Performance	RPM	10,000
	Seek time Avg	Read/write 4.5 ms (typical)
	Seek time Max	Read/write 9.0ms (typical)
	Interface	SAS 3.0Gb
	MTBF	280,000H

Table 5-1: AMC-7100 Environmental Specifications, Hard Disk Drives

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5.2 Power Requirements

The AMC-7100 shall consume no more than the following from the system supplies under normal operating conditions

Power Source	Current
Management Power (MP)	100 mA
+12V (spin up < 8secs)	1.41 A (17 W)
+12V normal operating	0.65 A (7.8 W)
+12V (idle)	0.51 A (6.12 W)
Off State	less than 0.4 W

Table 5-2: AMC-7100 Power Requirements

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5.3 EMC Compliance

This product was tested in an EMC-compliant chassis and meets the requirements for EN55022 Class A equipment. Compliance was achieved under the following conditions:

- Conductive chassis rails connected to earth ground, providing the path for connecting shields to earth ground
- Front panel screws properly tightened

For minimum RF emissions, it is essential that the conditions above be implemented. Failure to do so could compromise the EMC compliance of the equipment containing the module.

Standard	Description
US: FCC 47 CFR Part 15 Class A	Yes, Class A emissions requirements (USA)
Canada: ICES 003 Class A	Yes Class A Digital Apparatus emissions (Canada)
Japan: VCCI Class A	Yes Class A ITE emissions requirements (Japan)
Europe Commercial: EN 55022:1994 Class A	Yes, Class A ITE emissions requirements (EU)
Europe Commercial: EN 55024:1998 Class A	Immunity for ITE equipment
Europe Commercial: EN 61000-4-2,3,5,6,8,11: 2001	EMC Electrostatic discharge immunity
Europe Commercial: EN 61000-4-4: 2000 (Limits for harmonic current emissions)	Yes
Europe Commercial: EN 61000-3-2,3	Yes, Limits for harmonic current emissions
Europe Telecom Carrier: EN 300-386 v1.3.3 April 2005	Requirements for Telecom Network Equipment – Non-Telco Centers
Europe CE Mark	Yes
Australia: AS/NZS 3548 C-Tick	Yes, Class A ITE emissions requirements (Australia)

Table 5-3: AMC-7100 EMC Emission Compliancy

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6 Front Panel Indicators

The faceplate of the AMC-7100 module has 3 LED indicators. The figure and table below describe their functions.



Figure 6-1: AMC-7100 Front Panel Indicators

Indicator	Color	State	Function
Hot Swap (**HS**)	Blue	On	Management power available to the module and the module can safely be extracted
		Off	The module is operational and is unsafe for extraction
		Long Blink	Delay before module is activated
		Short Blink	Delay before module is deactivated
Fault or “Out of Service” (**OOS**)	Red	On	Module Fault set by Shelf Manager or 12V payload power not detected
		Off	No module fault; 12V payload power is being supplied to board
Module Active (**ACT**) and “in service”	Green	On	12V payload power is being supplied to board
		Off	12V payload power is not detected

Table 6-1: AMC-7100 LED Functions

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7 IPMI Function List

The AMC-7100 module employs a Module Management Controller (MMC) as specified in the AMC.0 R2.0 specification. The MMC provides an Intelligent Platform Management Interface (IPMI) which will communicate with the AdvancedTCA and µTCA shelf managers. This MMC controls and monitors the following:

- Hot Swap communication with the shelf manager
- Inlet air temperature
- Voltage monitoring
- Electronic Keying as described in the AMC.0 specification
- FRU information
- Drives LED indicators for Hot Swap. OOS (out of service), and Port selection

7.1 Sensor Data Records

The MMC monitors the status of the module and provides this data so it can be read by the shelf manager. Below are the Sensor Data Records (SDRs) that the AMC-7100 module creates.

Signal Type	Item Monitored
Event	Hot Swap Switch
Threshold	+1.2V Payload Power
Threshold	+3.3V Payload Power
Threshold	+12V Payload Power
Threshold	Inlet Air Temperature
Threshold	Exit Air Temperature over HDD

Table 7-1: Sensor Data Records

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The AMC-7100 includes the standard FRU data records per the IPMI Platform Management FRU Information Storage Definition, Board Info Area. The AMC-7100 includes additional FRU records as defined in the PICMG 2.9 specification.

Board Info	
Manufacturer	ADLINK Technology, Inc.
Product Name	AMC-7100/146G
Part Number	AMC-7100/146G
Serial Number	048LYMMSSSS (Note 1)
Product Info	
Manufacturer	ADLINK Technology, Inc.
Product Name	AMC-7100/146G
Part/Model Number	AMC-7100/146G
Product Version	##
Serial Number	048LYMMSSSS (Note 1)

Table 7-2: Standard FRU Data Records

Note 1: Serial Number format: 048LYMMSSSS

L = location of manufacture, YMM = year and month of manufacture, SSSS = quantity sequence (resets monthly)

048 = part code (denotes AMC-7100)
L = location of manufacture
Y = year (hex: 4=2004 A=2010)
MM = month
SSSS = sequence number (0-9999)

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AMC Port Assignments

The AMC-7100 connects up to two ports on the AMC connector. These are defined by the AMC.3 specification for serial storage. The link type and link type extension are defined in the table below.

Port #	Port Name	Link type	AMC port map region
0	unused		
1	unused		
2	Channel 0	Link type 7 = AMC.3 Storage, Link type extension = 2 (SAS/SATA) AMC Asymmetric Match = 00b (SAS)	Common Options
3	Channel 1	Link type 7 = AMC.3 Storage, Link type extension = 2 (SAS/SATA) AMC Asymmetric Match = 00b (SAS)	Common Options
4-20	unused		

Table 7-3: AMC-7100 E-Key Port Assignments

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7.2 Supported IPMI Commands

The MMC communicates with the carrier controller through the local IPMB-L bus of the carrier and responds to all mandatory commands for AMC Module Management Controllers (as defined in the AMC Specification), as well as some optional ones.

Command	IPMI/PICMG/ AMC Spec	NetFn	CMD	MMC Req
IPM Device "Global" Commands				
Get Device ID	17.1	App	01h	Mandatory
Broadcast "Get Device ID"	17.9	App	01h	Mandatory
Messaging Commands				
Send Message	18.7	App	34h	Optional
Event Commands				
Platform Event	23.3	S/E	02h	Mandatory
Sensor Device Commands				
Get Device SDR Info	29.2	S/E	20h	Mandatory
Get Device SDR	29.3	S/E	21h	Mandatory
Reserve Device SDR Repository	29.4	S/E	22h	Mandatory
Get Sensor Reading Factors	29.5	S/E	23h	Optional
Set Sensor Hysteresis	29.6	S/E	24h	Optional
Get Sensor Hysteresis	29.7	S/E	25h	Optional
Set Sensor Threshold	29.8	S/E	26h	Optional
Get Sensor Threshold	29.9	S/E	27h	Optional
Set Sensor Event Enable	29.10	S/E	28h	Optional
Get Sensor Event Enable	29.11	S/E	29h	Optional
Rearm Sensor Events	29.12	S/E	2Ah	Optional
Get Sensor Event Status	29.13	S/E	2Bh	Optional
Get Sensor Reading	29.14	S/E	2Dh	Mandatory
FRU Device Commands				
Get FRU Inventory Area Info	28.1	Storage	10h	Mandatory
Read FRU Data	28.2	Storage	11h	Mandatory
Write FRU Data	28.3	Storage	12h	Mandatory

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Command	IPMI/PICMG/ AMC Spec	NetFn	CMD	MMC Req
AdvancedTCA™ Commands				
Get PICMG Properties	3-9	PICMG	00h	Mandatory
FRU Control	3-22	PICMG	04h	Mandatory
Get FRU LED Properties	3-24	PICMG	05h	Mandatory
Get LED Color Capabilities	3-25	PICMG	06h	Mandatory
Set FRU LED State	3-26	PICMG	07h	Mandatory
Get FRU LED State	3-27	PICMG	08h	Mandatory
Get Device Locator Record ID	3-29	PICMG	0Dh	Mandatory
AMC® Commands				
Set AMC Port State	3-27	PICMG	19h	Mandatory
Get AMC Port State	3-28	PICMG	1Ah	Mandatory

Table 7-4: Supported IPMI Commands

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Important Safety Instructions

Please read and follow all instructions marked on the product and in the documentation before operating the system. Retain all safety and operating instructions for future use.

- Please read these safety instructions carefully.
- Please keep this User's Manual for future reference.
- The equipment should be operated within the recommended operating temperature.
- The equipment should be operated only from the type of power source indicated on the rating label. Make sure the voltage of the power source is correct when connecting the equipment to the power outlet.
- If the user's equipment has a voltage selector switch, make sure that the switch is set to the proper position for the area. The voltage selector switch is set at the factory to the correct voltage.
- For pluggable equipment, ensure they are installed near a socket-outlet that is easily accessible.
- Secure the power cord to prevent unnecessary accidents. Do not place anything over the power cord.
- If the equipment will not be in use for long periods of time, disconnect the equipment from mains to avoid being damaged by transient overvoltage.
- All cautions and warnings on the equipment should be noted.
- Please keep this equipment away from humidity.
- Do not use this equipment near water or a heat source.
- Place this equipment on a reliable surface when installing. A drop or fall could cause injury.
- Never pour any liquid into the opening, this could cause fire or electrical shock.

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- Openings in the case are provided for ventilation. Do not block or cover these openings. Make sure there is adequate space around the system for ventilation when setting up the work area. Never insert objects of any kind into the ventilation openings.
- To avoid electrical shock, always unplug all power and modem cables from the wall outlets before removing covers.
- Lithium Battery provided (real time clock battery)

  "CAUTION - Risk of explosion if battery is replaced by an incorrect type. Dispose used batteries as instructed in the instructions"
- The equipment should be checked by service personnel if one of the following situation arises:
  - The power cord or plug is damaged.
  - Liquid has penetrated the equipment.
  - The equipment has been exposed to moisture.
  - The equipment is not functioning or does not function according to the user's manual.
  - The equipment has been dropped and damaged.
  - If the equipment has obvious sign of breakage.
- Never open the equipment. For safety reasons, the equipment should only be opened by qualified service personnel.

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Getting Service

Contact us should you require any service or assistance.

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