aTCA-8214 Series

12U 14-slot Dual Dual-Star AdvancedTCA Shelf

User's Manual



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Revision History

Revision	Release Date	Description of Change(s)
2.00	2008/08/13	Initial Release

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Preface

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Using this Manual

Audience and Scope

The aTCA-8214 User's Manual is intended for hardware technicians and systems operators with knowledge of installing, configuring and operating ATCA systems.

Manual Organization

This manual is organized as follows:

Chapter 1, Introduction: Introduces the aTCA-8214 Series, its features, and package contents.

Chapter 2, Hardware Information: Provides information on the physical features, dimensions, and pre-installed hardware components of the aTCA-8214 Series.

Chapter 3, Getting Started: Provides information on the physical features and pre-installed hardware components of aTCA-8214 Series.

Chapter 4, Chassis Maintenance: Provides information on how to remove and replace defective components and maintain the aTCA-8214 Series chassis.

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 Introduction

The aTCA-8214 Series is a 12U AdvancedTCA rackmount shelf with five slots that support AdvancedTCA modules and two slots that support two shelf management modules. Equipped with a 14-slot Dual-Dual Star topology fabric interface and standard rear transition module (RTM) slots, the aTCA-8214 Series comes with triple, hot-swappable fan tray modules and dual -48V DC power entry modules capable of filtering and monitoring up to 3000 watts of power.

Providing robust control, monitoring, and management of the aTCA-8214 Series is the optional aCMM-2100 module, a dual Pigeon Point Systems shelf manager (ShMC) that is designed to work in active or standby mode for efficient redundancy. With dual-IPMB buses and I^2C in system buses, the aCMM-2100 can control all installed AdvancedTCA blades and fan trays based on temperature and other built-in sensor readings.

1.1 Features

- 19" rackmount with 12U height and 15.3" depth
- 14-slot dual dual-star topology fabric interface
- 14-slot standard rear transition module (RTM)
- Dual-IPMB bus
- Three I^2C-controlled hot-swappable fan trays
- Two shelf manager slots for PPS-based ShMC
- Two power entry modules with -48V DC

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1.2 Ordering Information

aTCA-8214: 12U 14-slot Rackmount AdvancedTCA Shelf

aTCA-8214A: 12U 14-slot Rackmount AdvancedTCA Shelf with single aCMM-2100 Shelf Management Module

aTCA-8214AA: 12U 14-slot Rackmount AdvancedTCA Shelf with two aCMM-2100 Shelf Management Module**s**



Figure 1-1: aTCA-8214AA Rackmount AdvancedTCA Shelf

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1.3 Package Contents

Before unpacking, check the shipping carton for any damage. If the shipping carton and/or contents are damaged, inform your dealer immediately. Retain the shipping carton and packing materials for inspection. Obtain authorization from the dealer before returning any product to ADLINK.

The following contents are included in the shipping carton:

- aTCA-8214 Series Rackmount AdvancedTCA Shelf
- One/Two aCMM-2100 shelf management modules (or aTCA-8214A and aTCA-8214AA models only)
- 19" rackmount brackets (pre-mounted)
- Accessory package
  - One RJ-45 to DB9 cable (available with aTCA-8214A and aTCA-8214AA models only)



The aTCA-8214 Series is shipped with protective front and rear panels. They **DO NOT** include front or rear slot filler panels. Front and rear slot filler panels are commercially available and may be purchased separately



DO NOT install or apply power to equipment that is damaged or if there is missing/incomplete equipment. Doing so may cause damage to equipment or bodily harm.

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2 Hardware Information

This chapter provides information on the physical features, dimensions, and pre-installed hardware components of the aTCA-8214 Series.

2.1 Physical Features

NOTE:

The following illustrations present an aTCA-8214AA Series shelf and are intended only for reference. The figures below may differ from your actual shelf configuration

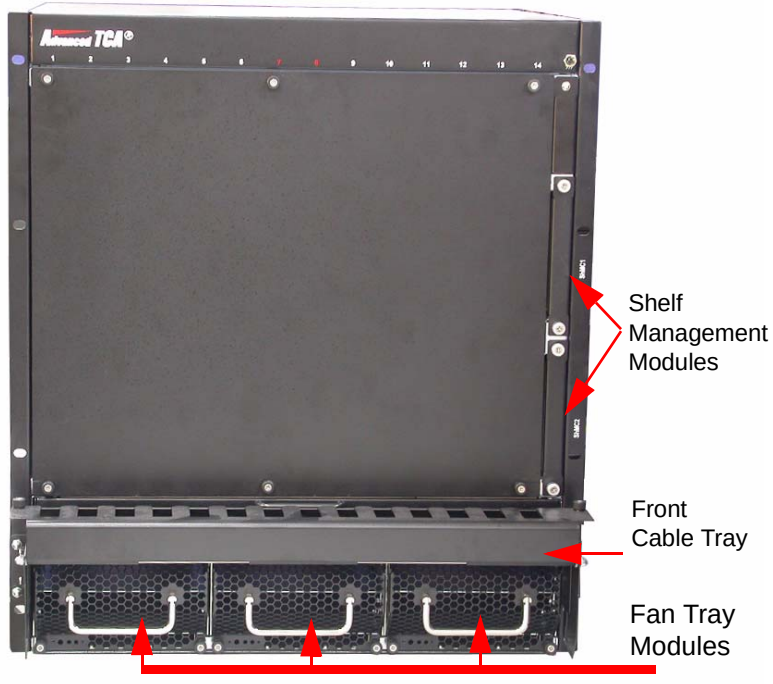


Figure 2-1: aTCA-8214AA Shelf Front Panel

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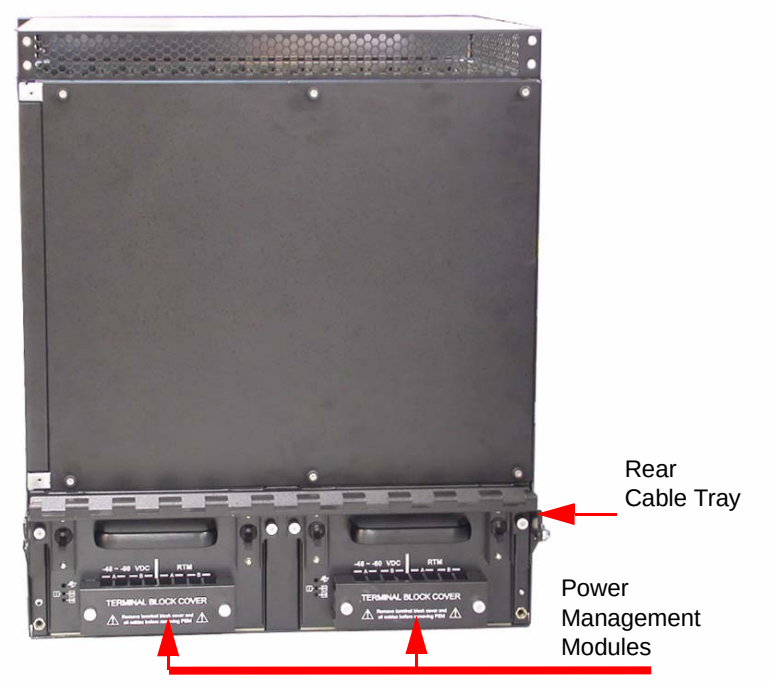
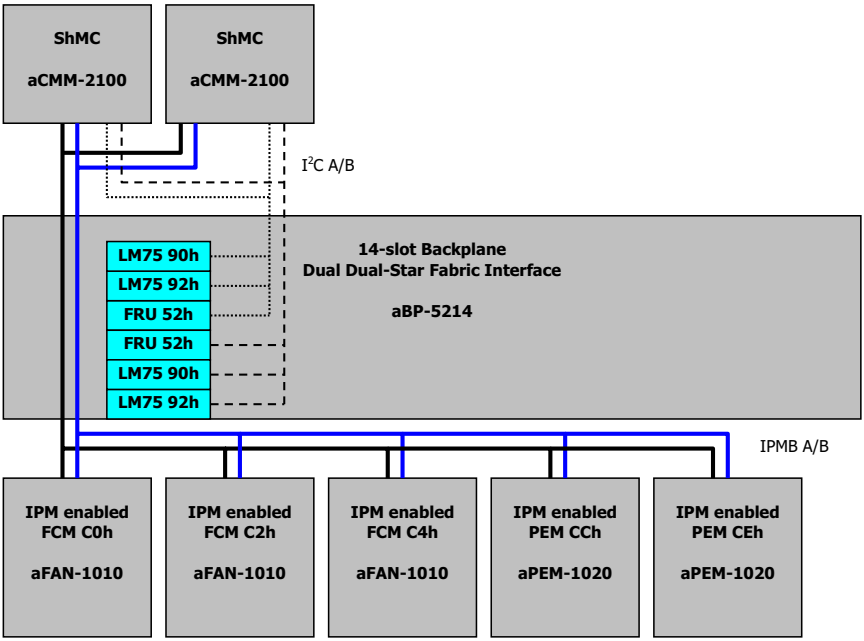


Figure 2-2: aTCA-8214AA Shelf Rear Panel

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2.2 System Block Diagram



IPMB Address Assignment

PHY	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	9Ah	96h	92h	8Eh	8Ah	86h	82h	84h	88h	8Ch	90h	94h	98h	9Ch
Intelligent Devices														
Fan tray 1	C0h		**Fan tray 2**	C2h		**Fan tray 3**	C4h		**PEM 1**	CCh		**PEM 2**		CEh

Figure 2-3: aTCA-8214 System Block Diagram

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2.3 Backplane: aBP-5214

The aTCA-8214 Series shelf comes with the cBP-5214 backplane featuring 14 AdvancedTCA® slots that support rear I/O functionality.

Features:

- 14-slot dual dual-star fabric interface
- Dual bussed IPMB
- Redundant ShMC slots for aCMM-2100
- Triple fan tray bays for aFAN-1010
- Redundant PEM bays for aPEM-1020
- Dual socket I^2C FRU EEPROM
- Four I^2C LM75CIMM sensors

aBP-5214 is a 14-slot PICMG® 3.0 R2.0 ECN002 compliant backplane. It provides dual dual-star fabric interface and dual-star base interface data connection. The channel mapping is listed in **Table 2-1 on page 9** and **Table 2-2 on page 9**. The base interface channel 1 of slot 1 and slot 2 are split into two 10/100M Fast Ethernet ports connected to shelf managers, compliant to ECN001.

Three redundant synchronous clock busses and update channels are designed on J20/P20 Zone 2 connectors, and the update channel pairing information is listed in **Table 2-3 on page 10**.

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	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Ch15														
Ch14														
Ch13	14-1	14-2	14-3	14-4										
Ch12	13-1	13-2	13-3	13-4										
Ch11	12-1	12-2	12-3	12-4										
Ch10	11-1	11-2	11-3	11-4										
Ch9	10-1	10-2	10-3	10-4										
Ch8	9-1	9-2	9-3	9-4										
Ch7	8-1	8-2	8-3	8-4										
Ch6	7-1	7-2	7-3	7-4										
Ch5	6-1	6-2	6-3	6-4										
Ch4	5-1	5-2	5-3	5-4	4-4	4-5	4-6	4-7	4-8	4-9	4-10	4-11	4-12	4-13
Ch3	4-1	4-2	4-3	3-3	3-4	3-5	3-6	3-7	3-8	3-9	3-10	3-11	3-12	3-13
Ch2	3-1	3-2	2-2	2-3	2-4	2-5	2-6	2-7	2-8	2-9	2-10	2-11	2-12	2-13
Ch1	2-1	1-1	1-2	1-3	1-4	1-5	1-6	1-7	1-8	1-9	1-10	1-11	1-12	1-13

Table 2-1: Fabric Interface Channel Port Mapping

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Ch1	Sh1/2	Sh2/1	1-3	1-4	1-5	1-6	1-7	1-8	1-9	1-10	1-11	1-12	1-13	1-14
Ch2	2-2	1-2	2-3	2-4	2-5	2-6	2-7	2-8	2-9	2-10	2-11	2-12	2-13	2-14
Ch3	3-1	3-2												
Ch4	4-1	4-2												
Ch5	5-1	5-2												
Ch6	6-1	6-2												
Ch7	7-1	7-2												
Ch8	8-1	8-2												
Ch9	9-1	9-2												
Ch10	10-1	10-2												
Ch11	11-1	11-2												
Ch12	12-1	12-2												
Ch13	13-1	13-2												
Ch14	14-1	14-2												

Table 2-2: Base Interface Channel Port Mapping

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1	2	3	4	5	6	7	8	9	10	11	12	13	14
2	1	4	3	6	5	9	10	7	8	13	14	11	12

Table 2-3: Update Channel Pairing

Each slot requires 200 Watt redundant DC 48V nominal power feeds (A, B). Plus the power consumption for the fan trays and shelf managers, the 14-slot backplane dispatches 3200 Watt maximum across its slots and devices. To balance and optimize power loading, physical slot numbers 1-7 feed A will tie to slot number 8-14 feed B, and slot number 1-7 feed B will tie to slot number 8-14 feed A, as shown in **Table 2-4**. The physical to logical slot number conversion is listed in **Table 2-5**.

PHY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
DCA		A		A	A	A	A				A		A		PEM
DCB	B		B					B	B	B		B		B	
DCA		A		A	A	A	A				A		A		PEM
DCB	B		B					B	B	B		B		B	

Table 2-4: Power Distribution

PHY	1	2	3	4	5	6	7	8	9	10	11	12	13	14
LOG	13	11	9	7	5	3	1	2	4	6	8	10	12	14

Table 2-5: Logical vs. Physical Slot Number Mapping

Redundant IPMB busses (IPMB_A, IPMB_B) are designed across slots and intelligent devices, such as fan trays and power entry modules (PEM). The IPMB address assignment for the slots and intelligent devices is listed in **Table 2-6 on page 11**. Two I^2C bussed FRU EEPROM sockets are designed for non-volatile, field replaceable system configuration data storage accessible by shelf managers via legacy I^2C busses.

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PHY	1	2	3	4	5	6	7	8	9	10	11	12	13	14
IPMB Address (Hex)	9a	96	92	8e	8a	86	82	84	88	8c	90	94	98	9c
LOG	13	11	9	7	5	3	1	2	4	6	8	10	12	14

Table 2-6: Logical, IPMB, & Physical Slot Number Mapping

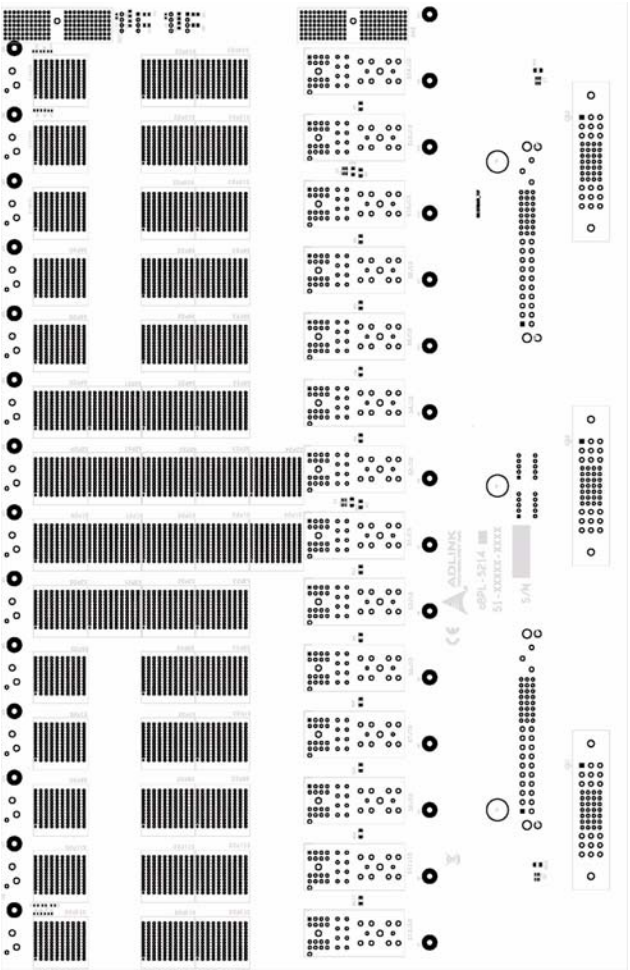


Figure 2-4: Backplane Layout

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2.4 Shelf Management Module, aCMM-2100

The aCMM-2100 is an ATCA shelf management controller (ShMC). The purpose of the ShMC is to monitor, control, and assure proper operation of ATCA blades and other shelf components. It watches over the basic health of the shelf, reports anomalies, and takes corrective action when needed. The ShMC can retrieve inventory information and sensor readings as well as receive event reports and failure notifications from blades and other intelligent FRUs. It can also perform basic recovery operations such as power cycle or reset of managed entities.

Features:

- Pigeon Point Systems SHM-500 based
- Dual bussed IPMB
- Dual I^2C busses for FRU EEPROM and thermal sensors
- Redundant DC 48V powered

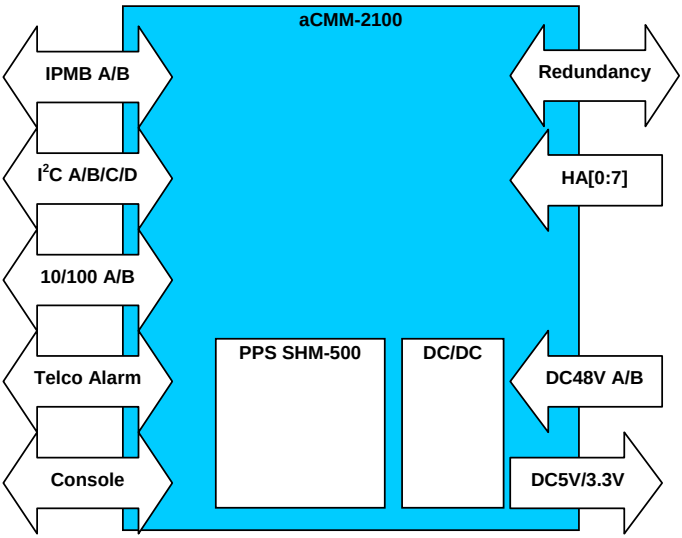


Figure 2-5: aCMM-2100 Block Diagram

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aCMM-2100	
Form Factor	• Dimensions: 104 mm x 280 mm
Specifications	• PICMG 3.0 R2.0 AdvancedTCA® Specification
Core Module	• SHMM-500 Connector 144-pin socket Pigeon Point System ShMM-500 SOM (system on module) with built-in 333 MHz MIPS processor
LAN Interface	• Two 10/100Mbps Ethernet port cross connected to backplane switch to support remote login from LAN • Ethernet port can be redirected to RJ-45 on front faceplate
Serial Interface	• Standard RS-232 interface with DB-9 connector on front panel
Telco Interface	• Mini DB-15 connector • Cut-off button and 3 LED indicators on faceplate
IPMB Interface	• Direct IPMB A/B bus
JTAG Interface	• JTAG interface
Redundancy Control	• Redundant signals via backplane private pins using USB
Offboard I2C	• Supports 2 off-board I2C for SEEPROM on the shelf
Hardware Monitoring	• Board temperature monitoring

Figure 2-6: aCMM-2100 Specifications

Hotswap

The aCMM-2100 is based on the Pigeon Point Systems SHM-500 Shelf Management Mezzanine. It is fully hot swappable and supports Active/Standby redundant mode when two aCMM-2100 are populated in the shelf.

Power Interface

The aCMM-2100 uses a -48V DC to 12V converter module to generate 12V power, and PWM to produce 3.3V, 5V for board circuit power.

The aCMM-2100 requires redundant DC 48V nominal feeds, and its on-board DC/DC circuit generates DC 5V back to the backplane to power the FRU EEPROM and IPMC controllers on the fan tray.

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Front Panel

The external I/O interfaces of the aCMM-2100 are as follows:

- Redundant IPMB (IPMB_A, IPMB_B)
- Four I^2C busses
- Dual 10/100BASE-T fast Ethernet ports
- Serial console port
- Telco interface
- Telco alarm LED indicator
- Activity LED

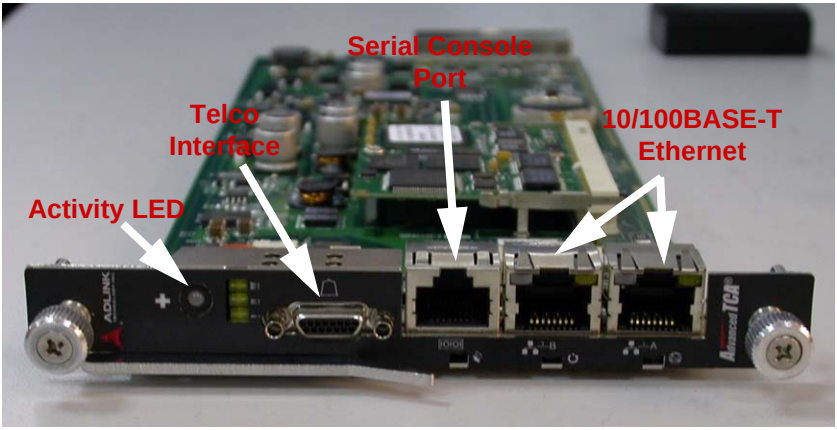


Figure 2-7: aCMM-2100 Face Plate Layout

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Board Architecture

The aCMM-2100 provides an interface to the AdvancedTCA Zone1, remote management, fan tray, and alarm connections. An I^2C bus is provide to connect to chassis mounted devices. The following sub-section introduces the aCMM-2100 connectors, pin assignments and select switches and jumpers.

- CN1 - Battery
- CN2 - ShMM-500 connector
- CN3 - JTAG
- CN4 - Activity LED connector
- CN5 - Telco Alarm
- CN6 - UART / RS-232
- CN7 - LAN
- CN8 - LAN
- J1 - Data connector
- LED1 - Telco LED1
- SW1 - LAN port setting

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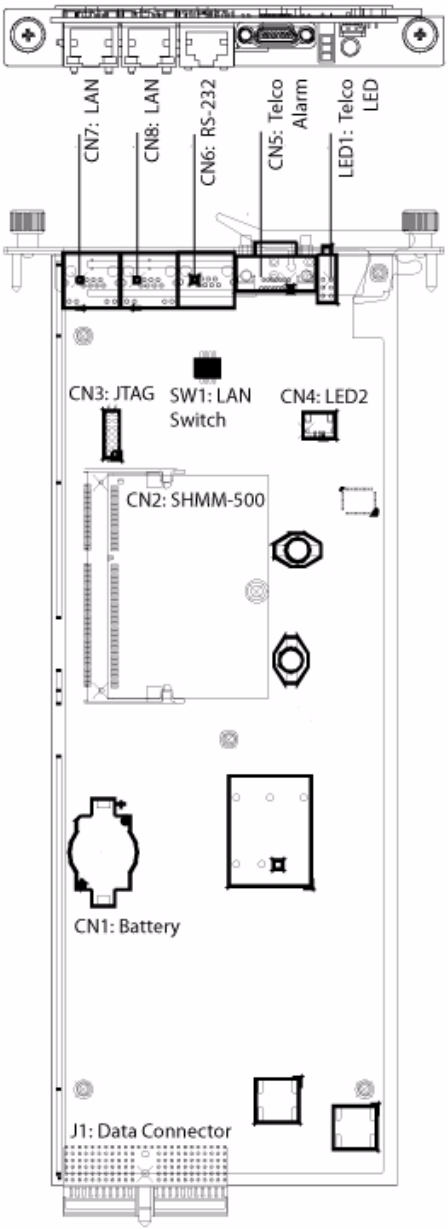


Figure 2-8: Board Connectors & Jumpers Layout

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IPMB Interface

The aCMM-2100 supports bussed IPMB interfaces. Two IPMBs are combined as IPMB-0, which is routed directly to the backplane. IPMB signals are connected to backplane via J1.

Telco Interface

The aCMM-2100 use a PCA9555 16 bits SMbus GPIO to support Telco interface which includes:

- Telco Alarm Connector
- Telco Alarm LED
- Telco Alarm Cut-off Button

CN5: Telco Alarm Connector

The aCMM-2100 provides a standard front-panel Telco Alarm interface on the mini DB-15 connector. The aCMM-2100 alarm relay circuits are capable of carrying 72VDC or 1A, with a maximum rating of 30VAC. The aCMM-2100 accepts timed pulse inputs for clearing Minor and Major alarm states. (There is no reset for the Critical state.) Reset is accomplished by asserting a voltage differential from 3.3V to 48V for between 200 and 300ms. The acceptance voltage range is from 0 to 48VDC continuous (handles up to 60VDC at a 50% duty cycle). The current drawn by a reset input does not exceed 12mA.

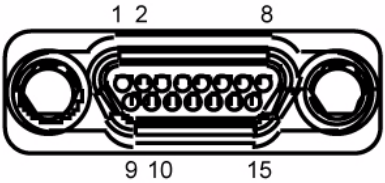


Figure 2-9: CN5: Telco Alarm

The alarm outputs are implemented using the AXICOM, IM02GR relays, driven by the GPO of the PCA9555 GPIO port. The alarm reset circuitry includes input filters and protection diodes. The output of this circuitry drives the LED-side of an

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ultra-low power HP opto-coupler. The receiving side of the opto-coupler is connected to the pins of the PCA9555, configured as inputs.

Pin#	Function	Description	Signal Level
1	MNRRES+	Minor Reset +	-48VDC, 12mA
2	MNRRES-	Minor Reset -	-48VDC, 12mA
3	MJRRES+	Major Reset +	-48VDC, 12mA
4	MJRRES-	Major Reset -	-48VDC, 12mA
5	CRTALRM_NO	Critical Alarm NO	72VDC, 1A, or 30VA
6	CRTALRM_NC	Critical Alarm NC	72VDC, 1A, or 30VA
7	CRTALRM_COM	Critical Alarm COM	72VDC, 1A, or 30VA
8	MNRALRM_NO	Minor Alarm NO	72VDC, 1A, or 30VA
9	MNALRM_NC	Minor Alarm NC	72VDC, 1A, or 30VA
10	MNALRM_COM	Minor Alarm COM	72VDC, 1A, or 30VA
11	MJRALRM_NO	Major Alarm NO	72VDC, 1A, or 30VA
12	MJRALRM_NC	Major Alarm NC	72VDC, 1A, or 30VA
13	MJRALRM_COM	Major Alarm COM	72VDC, 1A, or 30VA
14	PWRALM_NO	Power Alarm NO	72VDC, 1A, or 30VA
15	PWRALM_COM	Power Alarm COM	72VDC, 1A, or 30VA

Table 2-7: CN5: Telco Alarm Pin Assignment

LED1: Telco Alarm LED

The aCMM-2100 provides Telco Alarm LED via LED1 located next to the Telco Alarm connector. These yellow LEDs are used to indicate the presence of Critical, Major, and Minor alarms, respectively.

State	Description
Off	No alarm triggered
On	Alarm triggered
Blinking	Alarm Cutoff (ACO) is activated

Table 2-8: Telco LED States

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Telco Alarm Cut-off Button

The aCMM-2100 provides a Telco Alarm Cutoff function via the Front Panel push button switch SW3. This push button activates the Alarm Cut-off (ACO) state. When ACO is activated, the active Alarm LEDs blinks and all of the alarm relays are deactivated. This button does not clear alarms. Any necessary de-bouncing of this switch input is the responsibility of the ShMM-500 software.

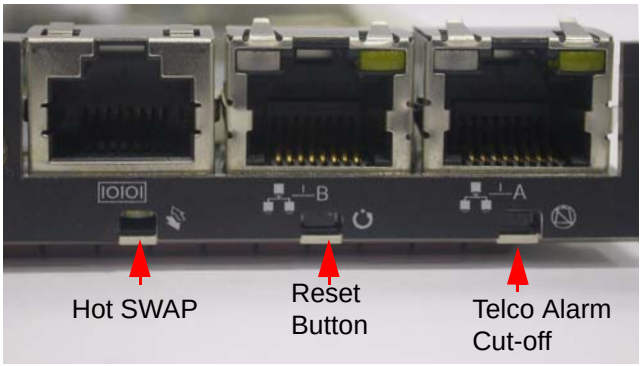


Figure 2-10: aCMM-2100 Face Plate

Hot Swap LED

A blue LED is used to indicate hot-swap status. Different states indicate different conditions.

Status	Condition
Off	The aCMM-2100 is not ready to be removed/disconnected from the shelf
Blue	The aCMM-2100 is ready to be removed/disconnected from the shelf
Long-blink	The ShMM-500 is activating itself
Short-blink	Deactivation has been requested

Table 2-9: Hot-SWAP LED Status

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Hot-Swap Function

The hot-swap includes three components:

1. Ejector/Injector switch
2. Presence
3. LED

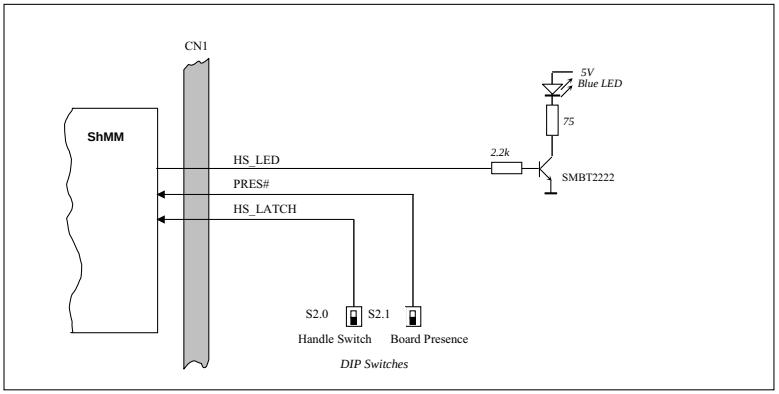


Figure 2-11: Hot Swap Function Layout

Ejector Switch

This signal reflects the input signals of the panel switch SW2.

Presence

This signal indicates the presence of other boards on the back-plane. It is used to signal that a board is fully installed on the backplane. It is used for ShMM-500 CPLD to determine the proper hot-swap action.

Activity LED

The aCMM-2100 supports active-backup redundant operations. An Activity LED on the front panel is used to display the current status.

Status	Description
Blinking Green	Standby or Handshaking
Green	Active
Red	Failed

Table 2-10: Redundant LED Status

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Hardware Address

The aCMM-2100 reads 8-bit hardware addresses from the backplane via PCA9554. Hardware address signals are connected to the backplane via J1. Please see **Table 2-12 on page 30** for details.

Off Board I^{2}C Bus

The aCMM-2100 provides 4 I^{2}C bus by PCA9545APW. Off-board I^{2}C signals are connected to backplane via J1. Please see **Table 2-12 on page 30** for details.

Thermal Detect

There is a thermal sensor LM75 on the CMM. It detects board temperature. The aCMM-2100 reads those messages via the I^{2}C Bus.

I^{2}C Switch

The aCMM-2100 uses PCA9545 to switch the OFF Board I^{2}C Bus from 1 to 4.

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Connector Descriptions

CN2: ShMM-500 Connector

The aCMM-2100 provides a ShMM-500 connector socket for ShMM-500. The socket is 144 pin connector (CN2).

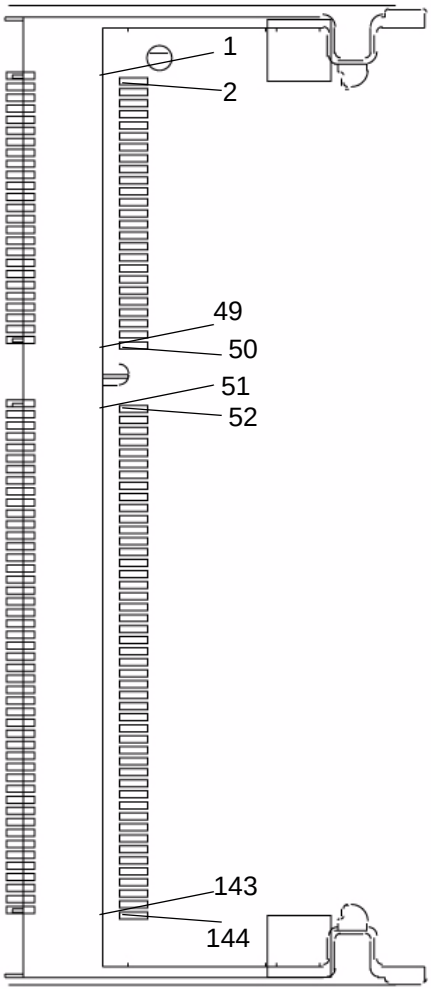


Figure 2-12: CN2: ShMM-500 Connector

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Pin	Name	Type	Description	ShMM-300 / ShMM-500 Compatibility Comments
Power Supply (43)				
1, 2, 13, 14, 30, 31, 32, 34, 49, 50, 55, 56, 71, 72, 85, 86, 103, 104, 119, 120, 139, 140	Gnd		Ground	
63, 64, 75, 76, 93, 94, 113, 114, 129, 130, 143, 144	VCC		3.3V power supply	
109	Vbat		External Battery	
19, 20, 21, 22, 41, 42, 43, 44	C_Gnd		Chassis Ground	
Pin	**Name**	**Type**	**Description**	**ShMM-300 / ShMM-500 Compatibility Comments**
JTAG Interface (5)				
3	TRST	In	Test Port Reset	
5	TMS	In	Test Mode Select	
4	TCK	In	Test Clock	
7	TDI	In	Test Data Input	
6	TDO	Out	Test Data Output	
Pin	**Name**	**Type**	**Description**	**ShMM-300 / ShMM-500 Compatibility Comments**
Master-Only I2C (2)				
141	SDA	I/O	Serial Data, Master-Only I2C Bus	
142	SCL	I/O	Serial Clock, Master-Only I2C Bus	
Pin	**Name**	**Type**	**Description**	**ShMM-300 / ShMM-500 Compatibility Comments**
Serial Interface 0 (11)				
73	Ser_En0	In	Enable On-Board RS-232 Transceivers	
77	RD0	In	CMOS Receive Data 0	
78	TD0	Out	CMOS Transmit Data 0	
38	CD	In	Carrier Detect	ShMM-500: no CMOS level option
36	RxD0	In	Receive Data 0	ShMM-500: no CMOS level option
24	TxD0	Out	Transmit Data 0	ShMM-500: no CMOS level option
28	DTR	Out	Data Terminal Ready	ShMM-500: no CMOS level option
46	DSR	In	Data Set Ready	ShMM-500: no CMOS level option
26	RTS	Out	Request To Send	ShMM-500: no CMOS level option
40	CTS	In	Clear To Send	ShMM-500: no CMOS level option
48	RI	In	Ring Indicator	ShMM-500: no CMOS level option
Pin	**Name**	**Type**	**Description**	**ShMM-300 / ShMM-500 Compatibility Comments**
Serial Interface 1 (5)				
10	Ser_En1	In	Enable On-Board RS-232/485 Transceivers	
11	RD1	In	CMOS Receive Data 1	
12	TD1	Out	CMOS Transmit Data 1	
16	RxD1	I/O	Receive Data 1	ShMM-500: no CMOS level option; no RS-485 option
18	TxD1	I/O	Transmit Data 1	ShMM-500: no CMOS level option; no RS-485 option

Table 2-11: CN2: ShMM-500 Connector Pin Assignment

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Pin	Name	Type	Description	ShMM-300 / ShMM-500 Compatibility Comments
IPMB0 (10)				
133	IPMB_A_Enable	In	IPMB-A Enable input	
134	IPMB_A_Ready	Out	IPMB-A Ready output	
121	IPMB_A_Enable_Soft	Out	This signal must be routed back to the IPMB_A_Enable (pin 133) signal for software control of the on-board IPMB buffer.	
131	SDA_A	I/O	Serial Data, IPMB-A	
132	SCL_A	I/O	Serial Clock, IPMB-A	
137	IPMB_B_Enable	In	IPMB-B Enable input	
138	IPMB_B_Ready	Out	IPMB-B Ready output	
127	IPMB_B_Enable_Soft	Out	This signal must be routed back to the IPMB_B_Enable (pin 137) signal for software control of the on-board IPMB buffer.	
135	SDA_B	I/O	Serial Data, IPMB-B	
136	SCL_B	I/O	Serial Clock, IPMB-B	
Pin	**Name**	**Type**	**Description**	**ShMM-300 / ShMM-500 Compatibility Comments**
Ethernet (12)				
17	Tx0-P			
15	Tx0-N			
25	Rx0-P			
23	Rx0-N			
27	LED1A	Out	Ethernet1 10/100 Mbit link status	
29	LED1B	Out	Ethernet2 10/100 Mbit link status	
39	Tx1-P			
37	Tx1-N			
47	Rx1-P			
45	Rx1-N			
33	A	Out	Ethernet1 Rx activity	ShMM Rx/Tx activity; ShMM-500 Rx activity only
35	B	Out	Ethernet2 Rx activity	ShMM Rx/Tx activity; ShMM-500 Rx activity only
Pin	**Name**	**Type**	**Description**	**ShMM-300 / ShMM-500 Compatibility Comments**
Hardware Redundancy Interface (8)				
107	PRES_R-L	In	Presence of the other ShMM-500	
112	HLY_L-L	Out	Health of this ShMM-500	
110	HLY_R-L	In	Health of the other ShMM-500	
106	SWR_L-L	Out	Switchover signal to the other ShMM-500	
108	SWR_R-L	In	Switchover signal from the other ShMM-500	
111	ACTIVE-L	Out	This ShMM-500 is in active mode	
123	SWS_LED_R-L	Out	Switchover status LED (Red)	
124	SWS_LED_G-L	Out	Switchover status LED (Green)	

Table 2-7: CN2: ShMM-500 Pin Connector Assignments (cont'd)

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Pin	Name	Type	Description	ShMM-300 / ShMM-500 Compatibility Comments
Hot Swap Interface (3)				
126	HS_LATCH	In	Handle switch signal	
128	PRES-L	In	Board presence signal	
125	HS_LED	Out	Hot swap (Blue) LED signal	
Pin	**Name**	**Type**	**Description**	**ShMM-300 / ShMM-500 Compatibility Comments**
System Control (5)				
61	MR	In	Master Reset Input	
62	Reset	Out	Peripheral Reset Output	
74	INT#	In	External interrupt request	
80	UM	In	User mode input	
92	SW_RST-L	In	Software Reset Input	
Pin	**Name**	**Type**	**Description**	**ShMM-300 / ShMM-500 Compatibility Comments**
SPI (5)				
65	SPI_MOSI_PSC1_SDA	Out		
66	SPI_MISO_PSC1_D1	In		
67	SPI_CLK_PSC1_SCL	Out		
68	SPI_EN_PSC1_SYNC1	Out		SPI enable
69	PSC0_SYNC0	I/O		SPI enable on ShMM; SMbus/SPI on ShMM-500
Pin	**Name**	**Type**	**Description**	**ShMM-300 / ShMM-500 Compatibility Comments**
LPC (8)				
54	LAD3	No connect		Reserved for LPC
53	LAD2	No connect		Reserved for LPC
52	LAD1	No connect		Reserved for LPC
51	LAD0	No connect		Reserved for LPC
57	LFRAME-L	No connect		Reserved for LPC
59	LRESET-L	No connect		Reserved for LPC
58	LCLK	No connect		Reserved for LPC
60	SERIRQ-L	No connect		Reserved for LPC
Pin	**Name**	**Type**	**Description**	**ShMM-300 / ShMM-500 Compatibility Comments**
GPIO(9)				
89	GPIO-E0	I/O		
81	GPIO-E1	I/O		
82	GPIO-E2	I/O		
90	GPIO-E3	I/O		
83	GPIO-E4	I/O		
84	GPIO-E5	I/O		
87	GPIO-E6	I/O		
88	GPIO-E7	I/O		
91	GPIO-E8	I/O		

Table 2-7: CN2: ShMM-500 Connector Pin Assignment (cont'd)

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Pin	Name	Type	Description	ShMM-300 / ShMM-500 Compatibility Comments
Emulation Support (3)				
8	EMU0_CID2	I/O		JTAG on ShMM; Carrier ID on ShMM-500
9	EMU1_CID1	I/O		JTAG on ShMM; Carrier ID on ShMM-500
79	JTAG_Sel_ SEEPROM_WEN	In		JTAG select on ShMM-300; EEPROM unlock input on ShMM-500
Pin	**Name**	**Type**	**Description**	**ShMM-300 / ShMM-500 Compatibility Comments**
McBSP0 (5)				
118	CLKX0_PSC2_SDA	I/O		DSP on ShMM; SMbus/SPI on ShMM-500
122	FSX0_PSC0_SYNC1	I/O		DSP on ShMM; SMbus/SPI on ShMM-500
115	CLKR0_PSC2_SCL	I/O		DSP on ShMM; SMbus/SPI on ShMM-500
117	FSR0_PSC0_D1	I/O		DSP on ShMM; SMbus/SPI on ShMM-500
116	DR0_PSC0_SDA	I/O		DSP on ShMM; SMbus/SPI on ShMM-500
Pin	**Name**	**Type**	**Description**	**ShMM-300 / ShMM-500 Compatibility Comments**
McBSP1(5)				
105	CLKX1_PSC3_SDA	I/O		DSP on ShMM; SMBus/SPI on ShMM-500
96	FSX1_PSC1_SYNC0	I/O		DSP on ShMM; SMBus/SPI on ShMM-500
98	CLKR1_PSC3_SCL	I/O		DSP on ShMM; SMBus/SPI on ShMM-500
100	FSR1_CID0	I/O		DSP on ShMM; Carrier ID on ShMM-500
102	DR1_PSC0_SCL	I/O		DSP on ShMM;on ShMM-500 SMbus/SPI
Pin	**Name**	**Type**	**Description**	**ShMM-300 / ShMM-500 Compatibility Comments**
CPLD Reserved for Future Use RFU Pins (4)				
95	RFU1/USB0P	I/O		USB on ShMM-500
97	RFU2/USB0M	I/O		USB on ShMM-500
99	RFU3/USBDP	I/O		USB on ShMM-500
101	RFU4/USBDM	I/O		USB on ShMM-500
Pin	**Name**	**Type**	**Description**	**ShMM-300 / ShMM-500 Compatibility Comments**
Uncommitted Pins (1)				
70		No connect		SPI enable on ShMM, reserved on ShMM-500

Table 2-7: CN2: ShMM-500 Connector Pin Assignment (cont'd)

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CN6: UART/RS-232 Interface

The aCMM-2100 provides an RS-232 (CN6) on the front panel for console management.

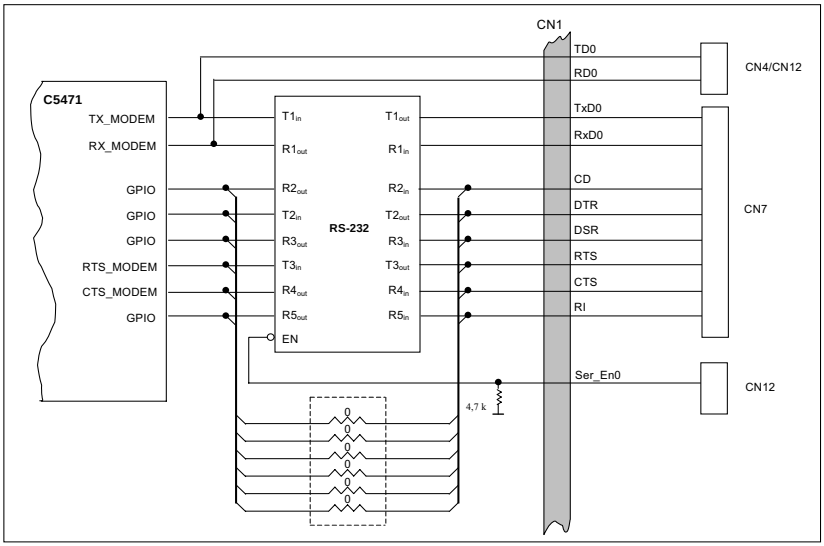


Figure 2-13: CN6: UART/RS-232 Interface

Pin	Name	Description
1	RTS	Request to Send
2	DTR	Data Terminal Ready
3	TXD	Transmit Data
4	GND	Signal GND
5	GND	Signal GND
6	RXD	Receive Data
7	DSR	Data Set Ready
8	CTS	Clear to Send

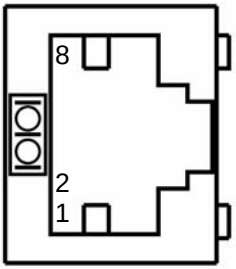


Figure 2-14: CN6: UART/RS-232 Port & Pin Assignment

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CN7/CN8: LAN Interface

The aCMM-2100 provides two Ethernet ports for console management. Users can choose a single LAN port on the front panel or utilize the backplane base interface via jumper settings. The aCMM-2100 routes LAN functionality to the backplane by default.

Pin	10Base-T/100Base-TX
1	TX+
2	TX-
3	RX+
4	No connection
5	No connection
6	RX-
7	No connection
8	No connection

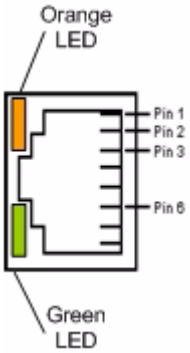
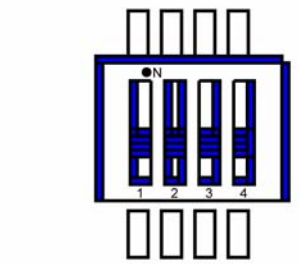


Figure 2-15: CN7/CN8: LAN Port & Pin Assignment



Jumper	Description
1 ON	LAN 1 redirect to front panel
1 OFF*	LAN 1 redirect to backplane
2 ON	LAN 2 redirect to front panel
2 OFF*	LAN 2 redirect to backplane

Figure 2-16: SW1: LAN Port Settings

NOTE:

*The default Jumper Settings are “OFF“.

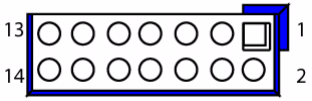
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CN1: Battery

The aCMM-2100 includes a lithium battery to maintain the RTC on ShMM-500.

CN3: JTAG Debug Interface

The aCMM-2100 provides a JTAG interface for debugging and manufacturing of the C5471 and manufacturing of the on-ShMM-500 CPLD using the CN3 connector. CN3 is a standard 14-pin JTAG port. The JTAG connector pin definition is shown below.



Pin	Signal	Type	Description
1	NC	NC	
3	TRST	In	Test port reset. Open drain output from the ARM Injector to the Reset signal on the target JTAG port. This pin should be pulled up on the target.
5	TDI	In	Test Data In signal from the ARM Injector to the target JTAG port. It is recommended that this pin be pulled to a defined state on the target.
7	TMS	In	Test Mode Select signal from the Injector to the target JTAG port. This pin should be pulled up on the target.
9	TCK	In	Test Clock signal from the Injector to the target JTAG port. This pin should be pulled to a defined state on the target.
11	TDO	Out	Test Data Out signal from the target JTAG port to the ARM Injector.
13	NC	NC	
2, 4, 6, 8, 10, 12, 14	Gnd	Power	Ground

Figure 2-17: CN3: JTAG Connector & Pin Assignment

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J1 Data Connector Pin Assignment

No.	Name	Description
A1	TX0_BA-P	Fast Ethernet 0, TX, positive
B1	TX0_BA-N	Fast Ethernet 0, TX, negative
C1	GND	Logic ground for reference
D1	PRESCN_R-L	Presence of the other ShMM-500
E1	PRESCN_L-L	Connect to GND
F1	GND	Logic ground for reference
A2	RX0_BA-P	Fast Ethernet 0, RX, positive
B2	RX0_BA-N	Fast Ethernet 0, RX, negative
C2	GND	Logic ground for reference
D2	HLYCN_R-L	Health of the other ShMM-500
E2	HLYCN_L-L	Health of this ShMM-500
F2	GND	Logic ground for reference
A3	TX1_BA-P	Fast Ethernet 1, TX, positive
B3	TX1_BA-N	Fast Ethernet 1, TX, negative
C3	GND	Logic ground for reference
D3	GND	Logic ground for reference
E3	HA0	Hardware Address 7
F3	GND	Logic ground for reference
A4	RX1_BA-P	Fast Ethernet 1, RX, positive
B4	RX1_BA-N	Fast Ethernet 1, RX, negative
C4	GND	Logic ground for reference
D4	USB0-P_CN	Redundancy USB0, positive
E4	USB0-N_CN	Redundancy USB0, negative
F4	GND	Logic ground for reference
A5	HA3	Hardware Address 4
B5	HA4	Hardware Address 3
C5	SWRCN_L-L	Switchover signal to the other ShMM-500
D5	HA7	Hardware Address 0
E5	HA2	Hardware Address 5
F5	GND	Logic ground for reference

Table 2-12: J1 Data Connector Pin Assignment

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No.	Name	Description
A6	SHM_IPMBDAT_B	IPMB B Data
B6	HA5	Hardware Address 2
C6	GND	Logic ground for reference
D6	USBD-P_CN	Redundancy USBD, positive
E6	USBD-N_CN	Redundancy USBD, negative
F6	GND	Logic ground for reference
A7	SHM_IPMBCLK_B	IPMB B Clock
B7	HA6	Hardware Address 1
C7	SWRCN_R-L	Switchover signal from the other ShMM-500
D7	HA1	Hardware Address 6
E7	TEM_ALERT-L	Backplane Temperature Alert.
F7	GND	Logic ground for reference
A8	NC	No Connect
B8	NC	No Connect
C8	NC	No Connect
D8	REARVCC1	5V to Backplane
E8	EEPRON1_SCL	Backplane EEPRON1 I2C Clock
F8	GND	Logic ground for reference
A9	NC	No Connect
B9	POWEREN_B	Power B enable
C9	NC	No Connect
D9	GND	Logic ground for reference
E9	EEPRON1_SDA	Backplane EEPRON1 I2C Data
F9	GND	Logic ground for reference
A10	NC	No Connect
B10	NC	No Connect
C10	NC	No Connect
D10	REARVCC2	5V to Backplane
E10	EEPRON2_SCL	Backplane EEPRON2 I2C Clock
F10	GND	Logic ground for reference

Table 2-12: J1 Data Connector Pin Assignment (cont'd)

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No.	Name	Description
A11	SHM_IPMBCLK_A	IPMB A Clock
B11	NC	No Connect
C11	SHM_IPMBDAT_A	IPMB A Data
D11	GND	Logic ground for reference
E11	EEPRON2_SDA	Backplane EEPRON2 I2C Data
F11	GND	Logic ground for reference
A15	PSU1_SDACN	PSU1 I2C Data
B15	PSU_P5V	PSU 5V Power
C15	NC	No Connect
D15	POWEREN_A	Power A enable
E15	NC	No Connect
F15	GND	Logic ground for reference
A16	PSU1_SCLCN	PSU1 I2C Clock
B16	PSU_GND	PSU ground
C16	NC	No Connect
D16	NC	No Connect
E16	NC	No Connect
F16	GND	Logic ground for reference
A17	PSU2_SDACN	PSU2 I2C Data
B17	PSU_P5V	PSU 5V Power
C17	NC	No Connect
D17	N48VCC_B	-48V Power B
E17	N48VCC_B	-48V Power B
F17	GND	Logic ground for reference
A18	PSU2_SCLCN	PSU2 I2C Clock
B18	PSU_GND	PSU ground
C18	NC	No Connect
D18	NC	No Connect
E18	NC	No Connect
F18	GND	Logic ground for reference

Table 2-12: J1 Data Connector Pin Assignment (cont'd)

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No.	Name	Description
A19	NET_DET	Chassis airflow net detection
B19	NC	No Connect
C19	NC	No Connect
D19	N48VCC_B_RTN	-48V Power B Return
E19	N48VCC_B_RTN	-48V Power B Return
F19	GND	Logic ground for reference
A20	NC	No Connect
B20	NC	No Connect
C20	NC	No Connect
D20	NC	No Connect
E20	NC	No Connect
F20	GND	Logic ground for reference
A21	NC	No Connect
B21	NC	No Connect
C21	N48VCC_A	-48V Power A
D21	NC	No Connect
E21	CH_GND_BACK	Chassis ground
F21	GND	Logic ground for reference
A22	NC	No Connect
B22	NC	No Connect
C22	N48VCC_A	-48V Power A
D22	NC	No Connect
E22	CH_GND_BACK	Chassis ground
F22	GND	Logic ground for reference
A23	NC	No Connect
B23	NC	No Connect
C23	NC	No Connect
D23	NC	No Connect
E23	NC	No Connect
F23	GND	Logic ground for reference

Table 2-12: J1 Data Connector Pin Assignment (cont'd)

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No.	Name	Description
A24	NC	No Connect
B24	NC	No Connect
C24	N48VCC_A_RTN	-48V Power A Return
D24	NC	No Connect
E24	NC	No Connect
F24	GND	Logic ground for reference
A25	NC	No Connect
B25	NC	No Connect
C25	N48VCC_A_RTN	-48V Power A Return
D25	NC	No Connect
E25	NC	No Connect
F25	GND	Logic ground for reference

Table 2-12: J1 Data Connector Pin Assignment (cont'd)

I^2C Bus Devices

Address	Device	Description
0x40	PCA9555	Telco Alarm
0x46	PCA9554	Hardware Address
0x90	LM75	Thermal Detector
0xE0	PCA9545	I2C Bus Switch

Table 2-13: I^2C Bus Device List

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Telco Alarm Interface: PCA9555

Pin	Name	Direction	Description
2	A1	Input	Set to logic 0
3	A2	Input	Set to logic 0
21	A0	Input	Set to logic 0
4	I/O 0.0	Output	Power Alarm
5	I/O 0.1	Output	Minor Alarm
6	I/O 0.2	Output	Major Alarm
7	I/O 0.3	Output	Critical Alarm
8	I/O 0.4	Output	Minor Alarm LED
9	I/O 0.5	Output	Major Alarm LED
10	I/O 0.6	Output	Critical Alarm LED
11	I/O 0.7		Reserved
13	I/O 1.0	Input	Cut-off Switch
14	I/O 1.1	Input	Minor Clear
15	I/O 1.2	Input	Major Clear
16	I/O 1.3		Reserved
17	I/O 1.4		Reserved
18	I/O 1.5		Reserved
19	I/O 1.6		Reserved
20	I/O 1.7		Reserved
22	SCL	I/O	I2C Clock
23	SDA	I/O	I2C Data

Table 2-14: PCA9555@0x40 Pin Definitions

Hardware Address: PCA9554

Pin	Name	Direction	Description
1	A0	Input	Set to logic 1
2	A1	Input	Set to logic 1
3	A2	Input	Set to logic 0
4	I/O 0	Input	Hardware Address 0
5	I/O 1	Input	Hardware Address 1
6	I/O 2	Input	Hardware Address 2
7	I/O 3	Input	Hardware Address 3
9	I/O 4	Input	Hardware Address 4
10	I/O 5	Input	Hardware Address 5
11	I/O 6	Input	Hardware Address 6
12	I/O 7	Input	Hardware Address 7/Parity
14	SCL	I/O	I2C Clock
15	SDA	I/O	I2C Data

Table 2-15: PCA9554@0x46 Pin Definitions

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I²C Bus Switch: PCA9545

Pin	Name	Direction	Description
1	A0	Input	Set to logic 0
2	A1	Input	Set to logic 0
3	Reset	Input	I2C Switch Reset
5	SD0	I/O	OFF Board I2C 1 Data
6	SC0	I/O	OFF Board I2C 1 Clock
8	SD1	I/O	OFF Board I2C 2 Data
9	SC1	I/O	OFF Board I2C 2 Clock
12	SD2	I/O	EEPRON I2C 2 Data
13	SC2	I/O	EEPRON I2C 2 Clock
15	SD3	I/O	EEPRON I2C 1 Data
16	SC3	I/O	EEPRON I2C 1 Clock
18	SCL	I/O	I2C Clock
19	SDA	I/O	I2C Data
20	VDD	Power	PCA9545 Power

Table 2-16: PCA9545@0xE0 Pin Definitions

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2.5 Intelligent Fan Tray, aFAN-1010

The aFAN-1010 is an intelligent, fully hot-swappable fan controller. It supports three channels of built-in 14-bit PWM timers to control fan speed, and built-in Free Running Timer (FRT) to monitor the rotation speeds of the fans. The on-board DC/DC circuit converts DC 48V nominal to DC 12V to power each fan.

Features:

- Pigeon Point Systems BMR-H8S IPMC
- Dual bussed IPMB
- Redundant DC 48V powered

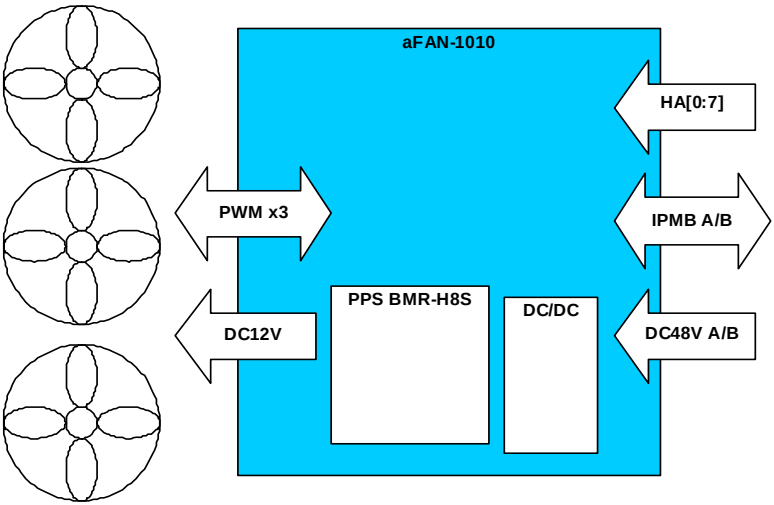


Figure 2-18: aFAN-1010 Block Diagram

NOTE: Without an installed aCMM-2100 module, all fans on left, center and right fan tray modules will rotate at full speed.

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Figure 2-19: aFAN-1010 Tray

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2.6 Intelligent Power Entry Module, aPEM-1020

The aPEM-1020 is an intelligent power entry module for over-current protection, EMC filtering and IPMB interfaced shelf management. An onboard IPMC monitors DC 48V A/B conditions and circuit breaker status via I^2C interfaced TI ADS1000 A/D converter and GPI pins.

Features:

- Pigeon Point Systems BMR-H8S IPMC
- Dual bussed IPMB
- Redundant DC 48V powered

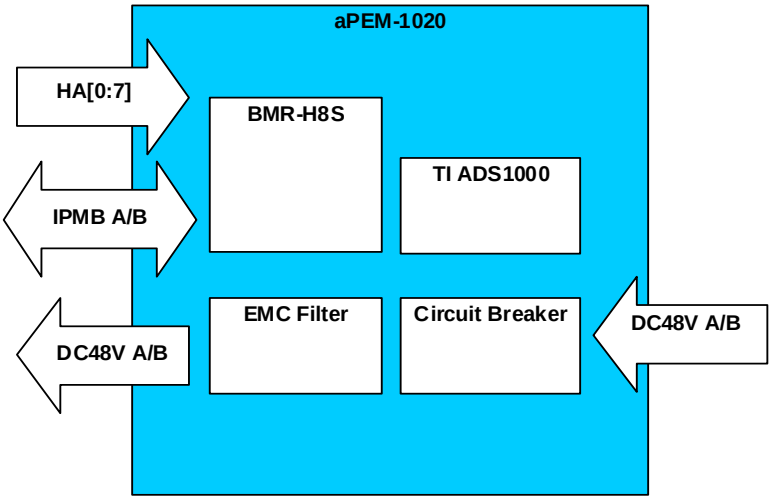


Figure 2-20: aPEM-1020 Block Diagram

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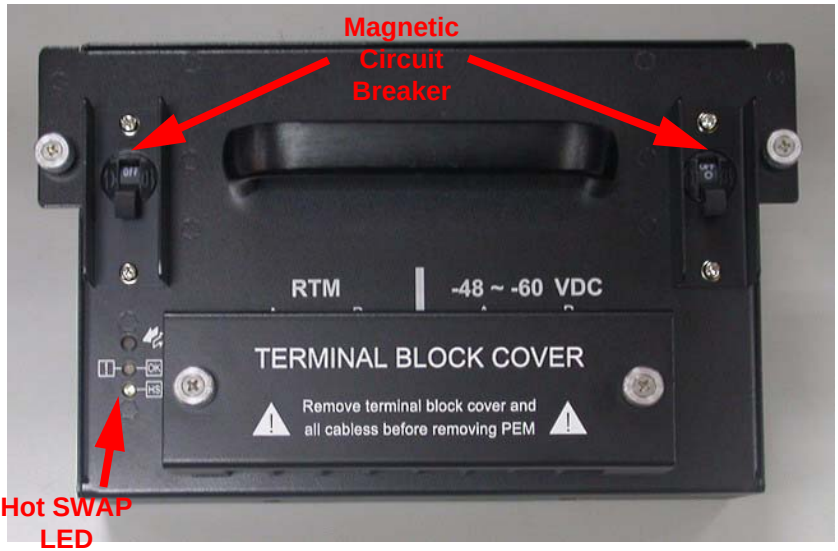


Figure 2-21: aPEM-1020 Layout

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3 Getting Started

This chapter provides information on the physical features and pre-installed hardware components of aTCA-8214 Series.



The labelling on chassis, modules, and other components in this chapter may differ slightly from those on the actual product.

3.1 Installation Environment

Whenever unpacking and preparing to install any equipment described in this manual, please refer to the ***Important Safety Instructions*** chapter of this manual.

Only install equipment in well lit areas on flat, sturdy surfaces with access to basic tools such as flat and cross head screwdrivers, preferably with magnetic heads as screws are small and easily misplaced.

Recommended Installation Tools

- Phillips (cross-head) screwdriver
- Flat-head screwdriver
- Anti-static Wrist Strap
- Anti-static mat

The aTCA-8214 Series contains electro-static sensitive equipment that can be easily damaged by static electricity and must be handled on a grounded anti-static mat. The operator must wear an anti-static wristband, grounded at the same point as the anti-static mat.

Inspect the carton and packaging for damage. Shipping and handling could cause damage to the equipment inside. Make sure that the equipment and its associated components have no damage before installing.



The equipment must be protected from static discharge and physical shock. Never remove any of the socketed parts except at a static-free workstation. Use the anti-static bag shipped with the product to handle the equipment and wear a grounded wrist strap when servicing.

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3.2 Installing ATCA® Boards

The aTCA-8214 Series is designed with 14 slots that support ATCA® boards, modules, and controllers. ATCA® connectors are rigid and require careful handling and proper installation. ATCA® boards are equipped with locking handles and retention screws for easy installation and removal.

WARNING:

Improper installation of ATCA® boards may damage the back-plane.

To install an ATCA® controller board follow these steps:

1. Check if all components are properly installed on the ATCA® controller board including the CPU, heatsink, and memory modules, if any.

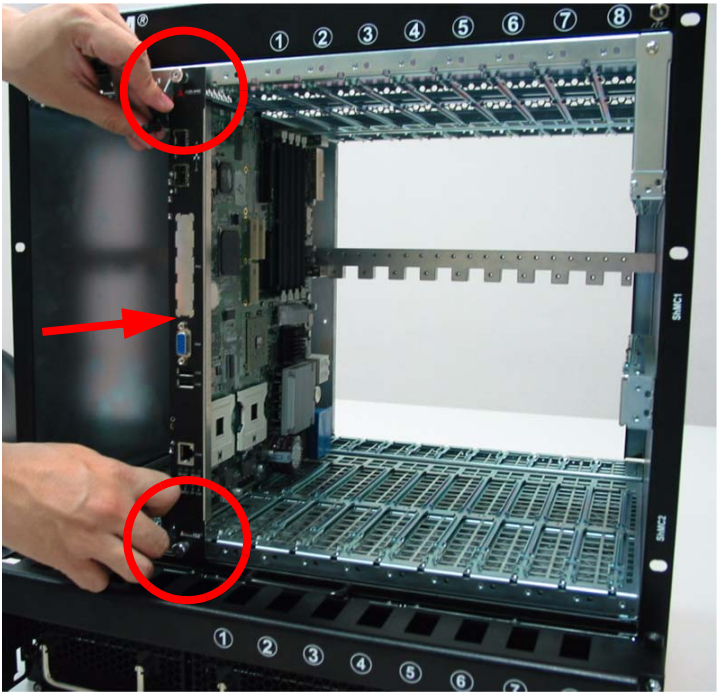


2. Remove any cover plates from the face of the aTCA-8214 chassis to expose the guide rails inside the chassis housing.

3. Position the ATCA® board into the slot, then carefully slide its edges into the board guide rail. Make sure that

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the board is correctly aligned with the chassis to prevent damage to the board and/or backplane.



4. Push the board into the slot until the handles come in contact with the chassis and the metal tacks insert into the chassis holes.
5. Push the handles inward until they 'click' in place
6. Fasten the retention screws (turning in a clock-wise direction) at both ends of the board to secure it in place.

NOTE:

To remove and replace an ATCA® board, refer to **Section 4.1 Removing ATCA® Boards and RTMs**.

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3.3 Installing Rear Transition Modules (RTMs)

Due to the short depth of RTMs, take extreme care when inserting or removing them from the chassis.

NOTE:

RTMs have an "R" at the beginning of the model number. The ADLINK RTM (aTCA-**R**6890) shown below is used for illustration purposes only. The aTCA-8214 Series chassis is **NOT** shipped with RTMs. RTMs must be purchased separately.

1. At the rear of the aTCA-8214 Series, access the RTM slots and remove any cover plates.

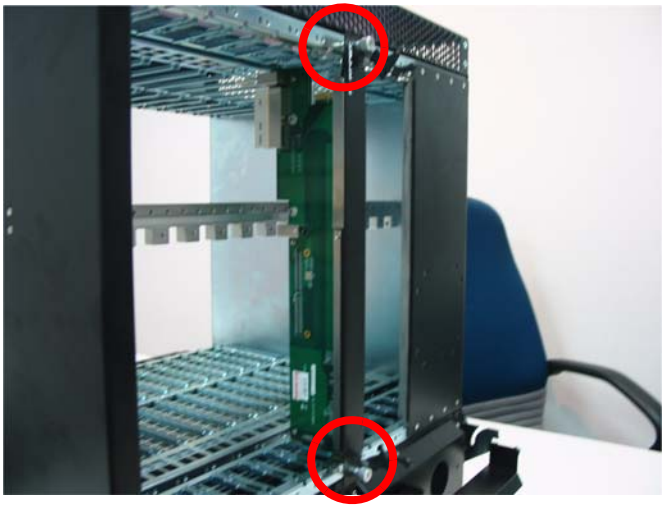


2. Check if all components are properly installed on the RTM.



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3. Position the RTM into the slot, then carefully slide its edges along the slot guide rail. Make sure that the module is correctly aligned with the chassis to prevent damage to the module and/or backplane.



4. Push the module into the slot until the handles come in contact with the chassis and the metal tacks insert into the chassis holes.
5. Push the handles inward until they 'click' in place. Fasten the retention screws (turning in a clock-wise direction) at both ends of the board to secure it in place.

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3.4 Installing Shelf Management Modules

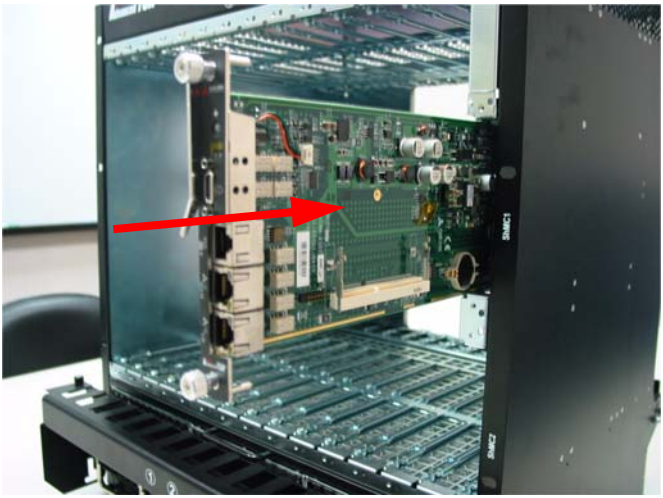
The aCMM-2100 module facilitates tool-less installation with built-in retention screws and a handle.

NOTE:

The aTCA-8214 **DOES NOT** come with aCMM-2100 modules. This product has two shelf management module slot covers. To install aCMM-2100 modules, the slot covers must first be removed by locating and turning its retention screws counter-clockwise.
The aTCA-8214A comes with one aCMM-2100 module installed in ShMC slot 1 and a module slot cover installed in ShMC slot 2.
The aTCA-8214AA comes with two aCMM-2100 pre-installed in ShMC slots 1 and 2.
When installing an aCMM-2100 module, carefully hold the module by its edges and do not force the module into the slot to avoid component damage.

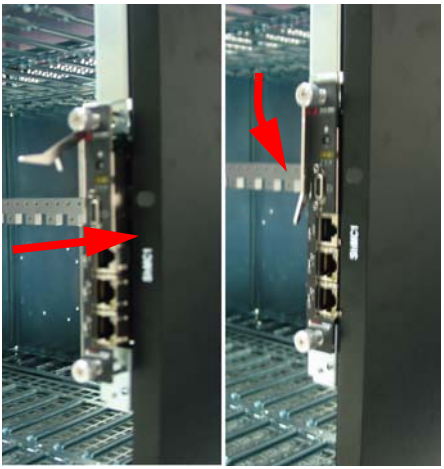
To install an aCMM-2100 module:

1. Locate the shelf management module slot.
2. Carefully insert the aCMM-2100 module into the slot as shown.



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3. Push the module into the slot until the module metal tacks are engaged with the chassis holes.
4. Gently lift the handle upward as you push it flush to the chassis front panel.
5. Once the face plate of the module is flush to the chassis face front, push the handle inward to lock the module in place.



6. Turn the retention screws in a clockwise direction to tighten and secure the module.

The aCMM-2100 powers up instantly and the ACT LED lights up green. When two aCMM-2100 modules are installed, the ACT LED of the backup module blinks.

NOTE:

To remove and replace a shelf management module, refer to **Section 4.2 Removing Shelf Management Modules**.

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3.5 Powering Up the System

After installing all necessary components, connecting cables, and peripherals, you are now ready to power up the system. The aTCA-8214 Series comes with two aPEM-1020 intelligent power entry modules that connect to the ADLINK aPRS-1120 (AC-DC Power Converter Equipment), or to your own DC power supply.



NOTE:

The ADLINK aPRS-1120 (AC-DC Power Converter Equipment) is purchased separately.

ADLINK recommends the use of approximately 3600 W power for the aTCA-8214 Series under full loading.

Purchasing Information:
aPRS-1120: 19" Rackmount Power Rack w/ 3 power unit slots (one aPRS-91120/48 1200 W power unit included)
aPRS-91120/48: 1200 W AC/DC-48 output power unit

The ADLINK aPRS-1120 accessory package includes two color-coded, one-meter length terminal wires. You will use these wires to connect the PEMs to the power converter.



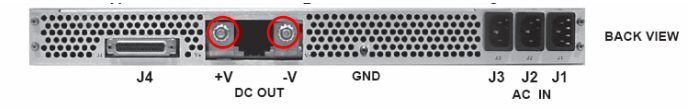
WARNING:

Before connecting the PEMs to the power converter, make sure that the PEMs are properly installed in the chassis, the PEM circuit breakers are turned "OFF", and the AC power cords of the power converter are disconnected. If you are using your own DC power supply, make sure the power is turned off before connecting the wires to the PEMs.

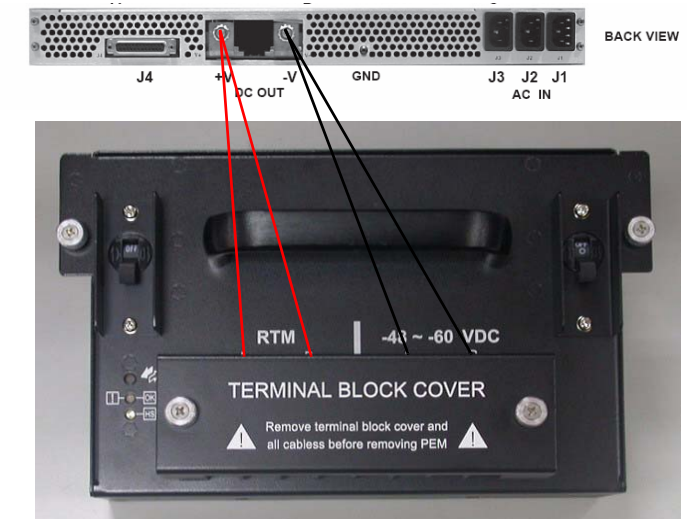
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To connect the aTCA-8214 Series PEM to the power converter:

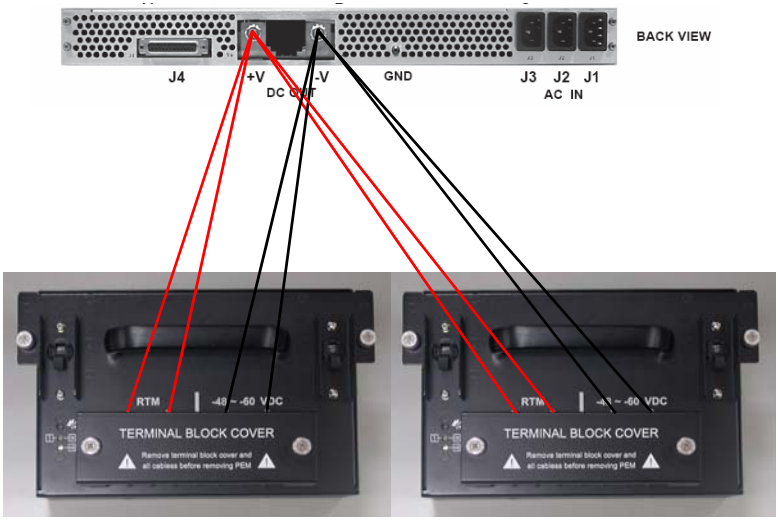
1. Loosen the aPRS-1120 DC OUT +V and -V terminal screws.



2. Connect one end of the red wire to the +V terminal the other end of the red wire to the RTN terminal of the PEM.
3. Connect one end of the black wire to the -V terminal and the other end of the black wire to the -48 VDC terminal of the PEM. Refer to the following illustration.



When using dual-PEMs, use two sets of red and black wires to connect the power converter to the PEMs. Refer to the illustration below:



4. Check the aPRS-1120 configuration. If the power converter comes in default configuration (single 1200 W power unit, middle slot populated), connect the AC power cord to the J2 connector.
5. Connect the other end of the AC power cord to a wall socket or power strip, then turn on the PEM circuit breakers and all required peripherals.

NOTE:

Before powering up the chassis, make sure that the circuit breakers are in the "ON" position (2 per module).

To remove and replace a PEM, refer to **Section 4.5**

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3.6 Managing the Chassis

aCMM-2100 Shelf Management Module

The aTCA-8214A/aTCA-8214AA come with one/two aCMM-2100 shelf management module(s). The aTCA-8214AA is capable of providing redundant chassis management functions.



Without an installed aCMM-2100 module, all fans on fan tray modules rotate at full speed (Level 15).

Table 3-1: aCMM-2100 Specifications

Dimensions	• 104 mm x 280 mm
Specification Compliance	• PICMG® 3.0 R2.0 AdvancedTCA Specification
Core Module	• ShMM-500 Connector 144-pin socket Pigeon Point Systems ShMM-500 SOM (System On Module) with built-in 333 MHz MIPS processor
LAN Interface	• Two 10/100Mbps Ethernet ports cross connected to backplane switch supporting remote login from LAN • Ethernet port can be re-directed to RJ-45 on front faceplate
Serial Interface	• Standard RS-232 interface with DB-9 connector on front panel
Telco Interface	• Mini DB-15 connector • Cut-off button and 3 LED indicatiors on faceplate

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To access fan, temperature, ATCA® board FRU (field replaceable unit), and power information, the installed aCMM-2100 must be connected to a host computer:

- serially using an RJ-45 to DB9 cable (bundled in the aCMM-2100 package),
- over a LAN using a standard RJ-45 cable, or
- via network switch or hub.

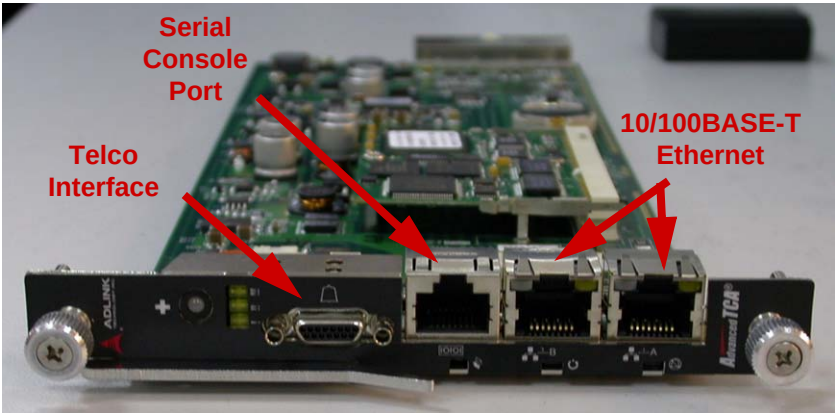


Figure 3-1: aCMM-2100 Face Plate Layout

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aCMM-2100 SW1 DIP Switch

The aCMM-2100 is equipped with a SW1 DIP switch. The default setting for the switch is “ON“ and users can access the LAN port for remote host, etc. Switching DIP 1 and 2 to the “OFF“ position will allow the ShMC LAN port to access the backplane connection via physical Slot 7 and 8 switch board. If there is no physical switch board, please keep the SW1 DIP set to ON for LAN use.

	Slot 7 (aTCA-3100)	**Slot 8 (aTCA-3100)**
aCMM-2100 SW1 No1 “ON“ No2 “ON“	No Connection with aTCA-8214 aCMM-2100 LANx Front Side	No Connection with aTCA-8214 aCMM-2100 LANx Front Side
aCMM-2100 SW1 No1 “OFF“ No2 “OFF“	 ShMC 1 / Sh1 ShMC 2 / Sh2	 ShMC 1 / Sh2 ShMC 2 / Sh1

Table 3-2: aCMM-2100 SW1 DIP Configuration Example

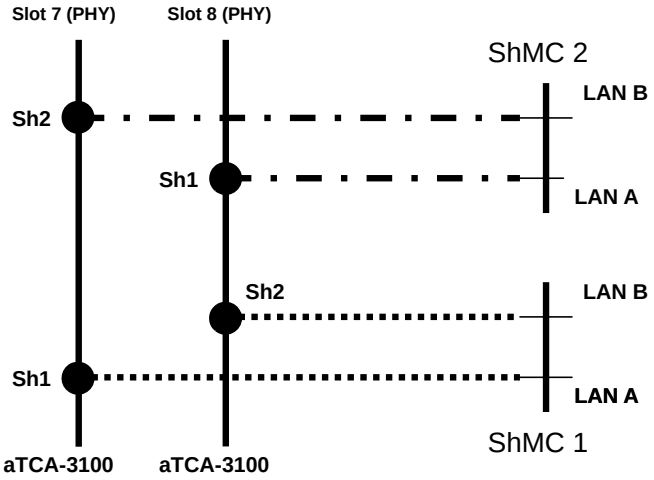
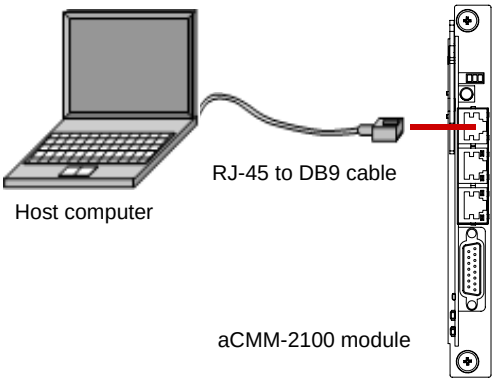


Figure 3-2: aCMM-2100 SW1 DIP Configuration Diagram

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Serial Connection

You may use the bundled RJ-45 to DB9 cable to connect the chassis serially to a host computer. Refer to the illustration below.



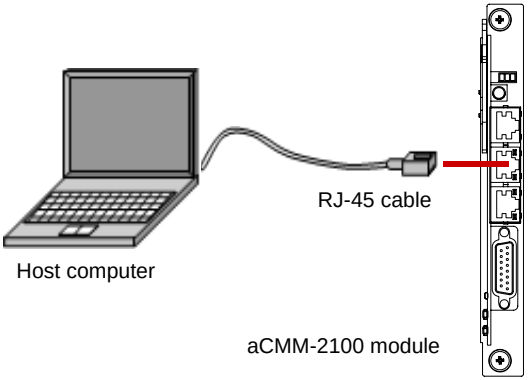
The aCMM-2100 COM port is offers the following default parameters:

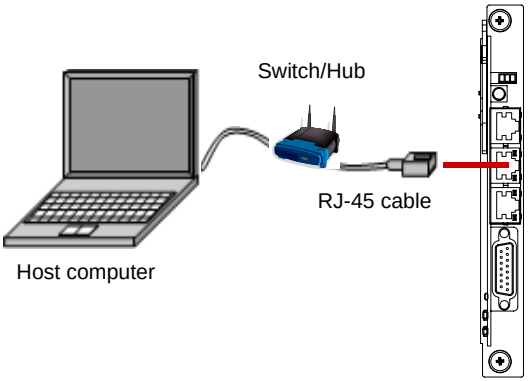
Type	RS232 (COM)
Baud Rate	115200bps
Data Bits	8
Parity	None
Stop Bits	1
Flow Control	None

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LAN Connection

With Fast Ethernet bandwidth, you may connect the aCMM-2100 directly to a notebook or PC using an RJ-45 cable or to a network switch or router for high-speed remote management. Refer to the following illustrations.





By default, the LAN1 port has the following settings:

IP	172.16.13.209
Login name	root
Password	None

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Thermal Sensors

The aTCA-8214 Series comes with four thermal sensors (LM75CIMM) U1 - U4 installed on the backplane of the chassis. The aCMM-2100 automatically detects these sensors and dynamically adjusts fan speed depending on the chassis temperature conditions. If any fan should go offline or malfunction, the remaining functioning fan tray modules will speed up to level 15 and only reduce operating speed upon replacement of the malfunctioning fan tray module. The aCMM-2100 also detects individual ATCA board CPU temperatures and functions, and will adjust fan speed accordingly for proper temperature control.

The thermal sensors have three temperature thresholds, Non-Critical, Critical, and Non-Recoverable (see Table 3-3 below). If the aCMM-2100 receives a reported temperature of 40°C or higher from any ATCA board CPU or any of the chassis thermal sensors, the fan speed of the fan tray modules will automatically be raised one level every 30 seconds to maintain a temperature below Non-Critical status. If the temperature continues to increase, the fan tray modules will speed up to the maximum speed (level 15). The shelf will only reduce fan speed if the temperature drops below 40°C (Non-Critical status) for 30 seconds and will continue to decrease by one level every 30 seconds until the default speed (level 7) is reached.

Non-Recoverable	65°C
Critical	50°C
Non-Critical	45°C

Table 3-3: aTCA-8214 Backplane Thermal Sensor Thresholds


NOTE:

If an ATCA board CPU temperature threshold is lower than that of the aTCA-8214, the board's threshold temperature will be used to control the fan tray modules. Consult the user's manual for your ATCA board.

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Fan Speed Verification

System administrators may use the ***clia*** command (e.g. *clia fans*) to verify the fan speeds detected and adjusted by the aCMM-2100 module. The location of two of the aTCA-8214 Series thermal sensors is shown below. The remaining two are not externally visible.



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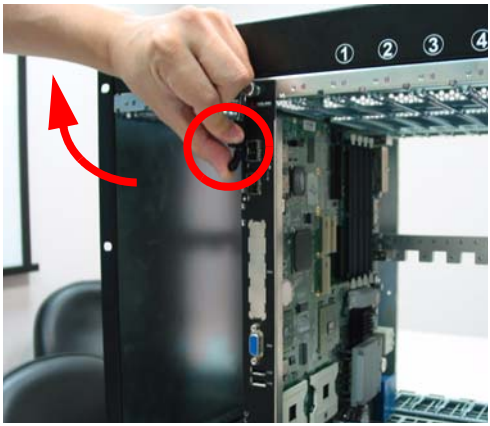
4 Chassis Maintenance

This chapter provides information on how to remove and replace defective components and maintain the chassis to keep the aTCA-8214 Series in best working condition.

4.1 Removing ATCA® Boards and RTMs

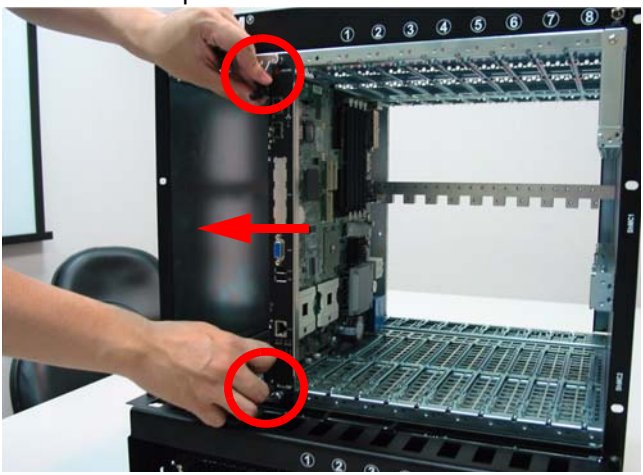
This section describes how to remove ATCA® boards and RTMs from the aTCA-8214 Series:

1. Loosen the retention screws at both ends of the board/ module.
2. Unlatch the ATCA® board/RTM handles by pulling them outward until the board/RTM disengages from the chassis.



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3. Carefully pull the board/RTM out from the chassis, then store in a safe place.



NOTE: Refer to the user's manual for your specific board for hotswap removal and installation instructions.

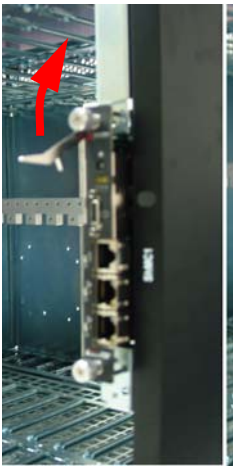
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4.2 Removing Shelf Management Modules

This section provides information on how to remove and replace a aCMM-2100 Shelf Management Module. The modules are hot-swappable and may be replaced while the chassis is operating.

To remove the aCMM-2100:

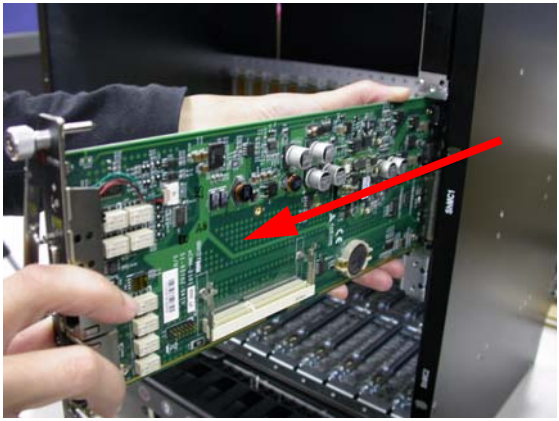
1. Loosen the retention screws located at both ends of the module.
2. Pull the module handle upward. If the system is powered on, the blue Hot Swap LED will change from “OFF” to “Short-blink”, and then to “ON”. The steady “ON” indicates that the module can be safely removed (see “Hot Swap LED” on page 19).



3. Pull the module handle outward until the card disengages from the chassis.

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4. Pull the module out from the slot, and store in a safe place.



NOTE:

If both Shelf Management Modules slots are populated for redundant operation, the remaining module will automatically switch over to Active if necessary, and the Activity LED will indicate any change in status (see “Activity LED” on page 20).

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4.3 Removing and Replacing a FAN Tray Module

This section provides information on how to remove and replace chassis fan trays which can be accessed from the chassis front panel. The fan trays are hot-swappable and may be replaced while the chassis is operating.

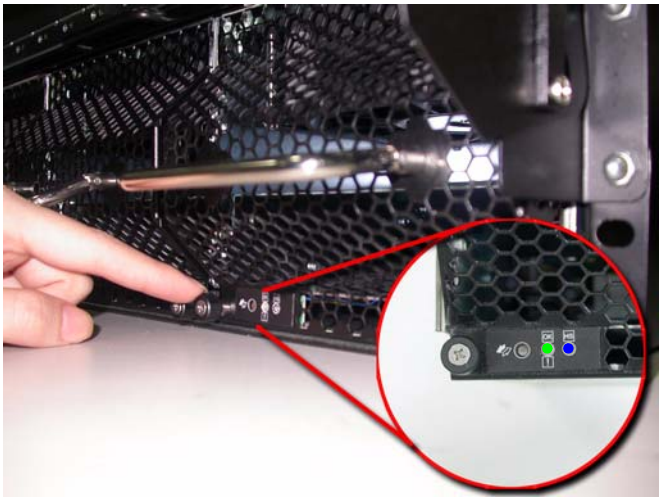
NOTE: To purchase individual fan modules, contact ADLINK or your local distributor.



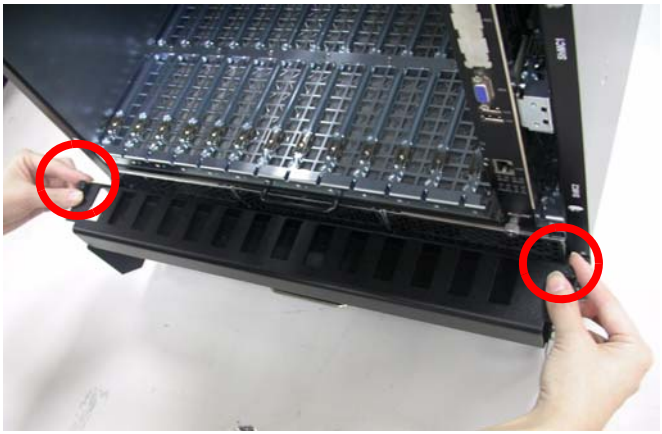
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Removing a fan tray module

1. Deactivate the fan tray module by locating the Hot Swap Button at the lower left corner as shown below.
2. Press the Hot Swap Button (Red). It will flash Red and the OK LED will change to static Green. The HS LED will then change to static blue “ON”. The module is now ready to be removed.

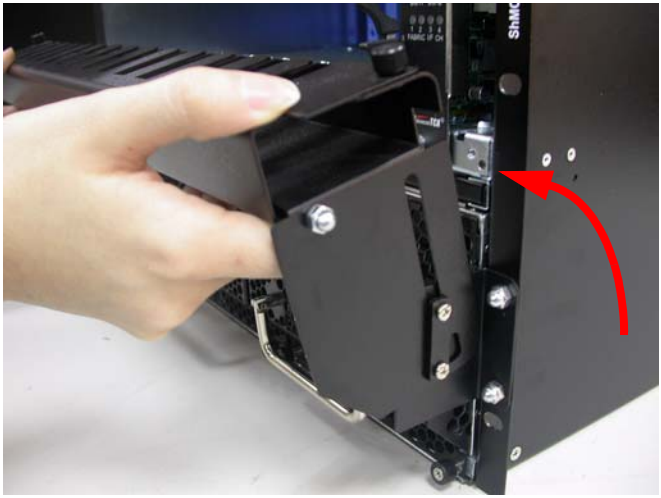


3. Locate the retention screws on the front cable tray and unscrew them by turning in a counter-clockwise direction.



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4. Lift up the front cable tray and pull it forward so that it rests on its hinges.

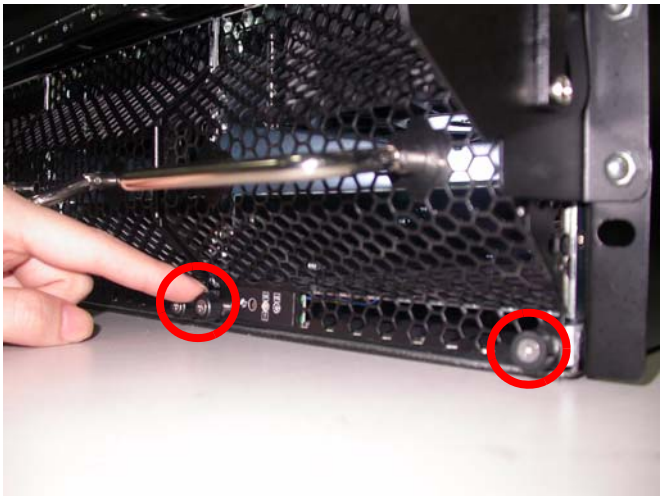


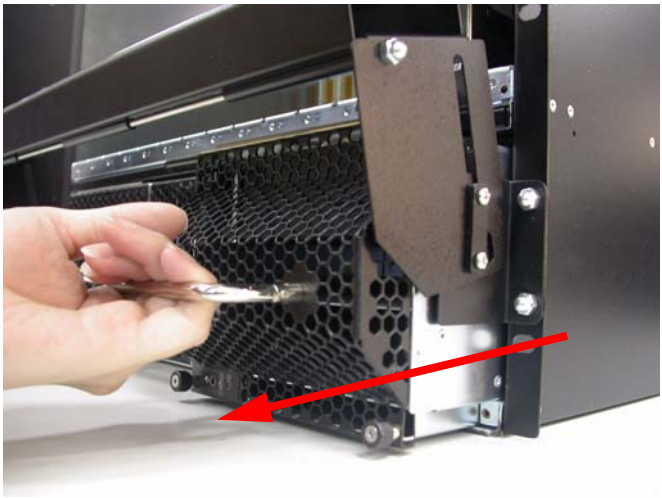
WARNING:

Wait at least five seconds or until all fans stop rotating before removing fan trays to avoid injury.

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5. Loosen the retention screws holding the fan tray in place, then pull the tray handle until the fan tray disengages from the fan board and chassis.



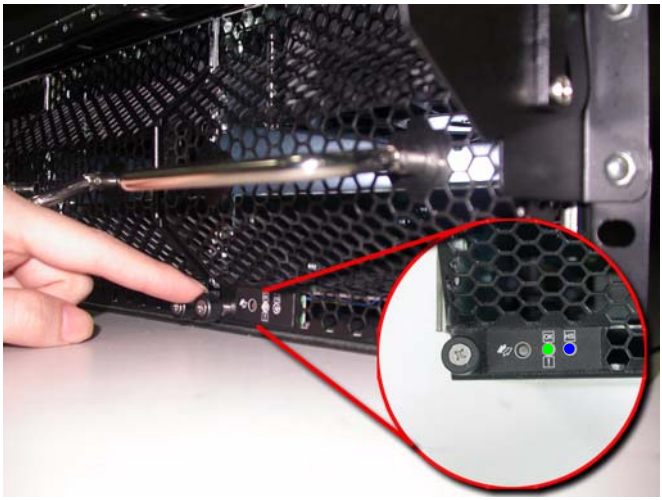


6. Store fan tray in a safe place.

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Replacing a fan tray module

1. Align the module in the fan tray opening.
2. Insert the module and push it in until it is completely flush to the slot opening and the connector is properly seated. The fan tray module HS LED will light up blue to confirm proper installation. The OK LED will then turn Red to confirm proper operation. Finally, the OK LED will change to static Green.



3. Tighten the retention screws at the bottom of the module to secure it to the chassis.
4. The HS LED will turn off and the fan will start to rotate.
5. Return the cable tray to its down position and tighten its retention screws.

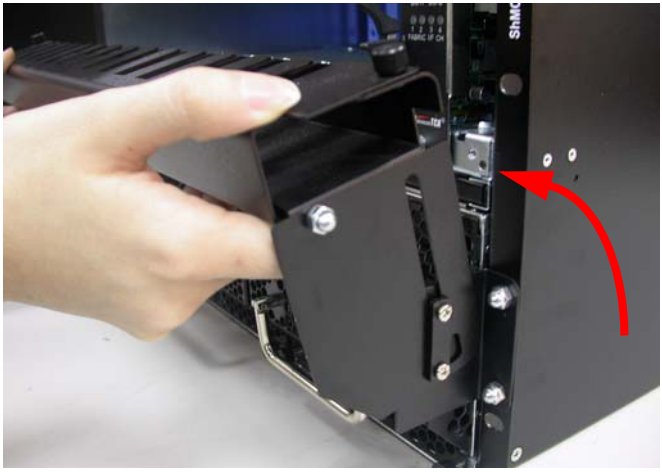
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4.4 Removing and Replacing the Air Filter

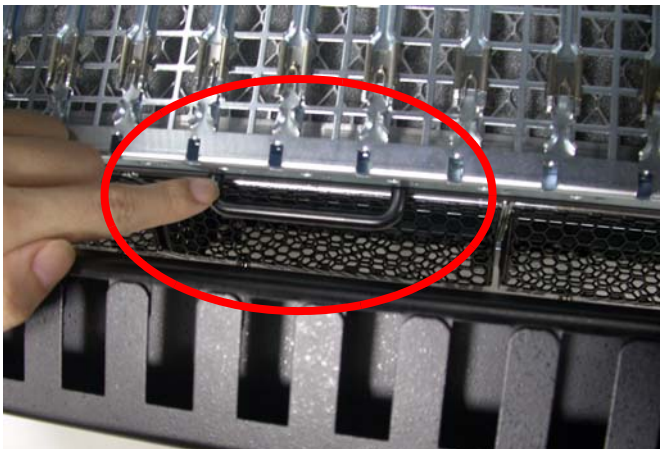
The intake fan tray modules are equipped with a replaceable air filter to keep dust and moisture from entering the chassis. The air filter must be cleaned or replaced regularly.

To remove and replace the air filter:

1. Lift the cable tray following the instructions from Section 4.3.

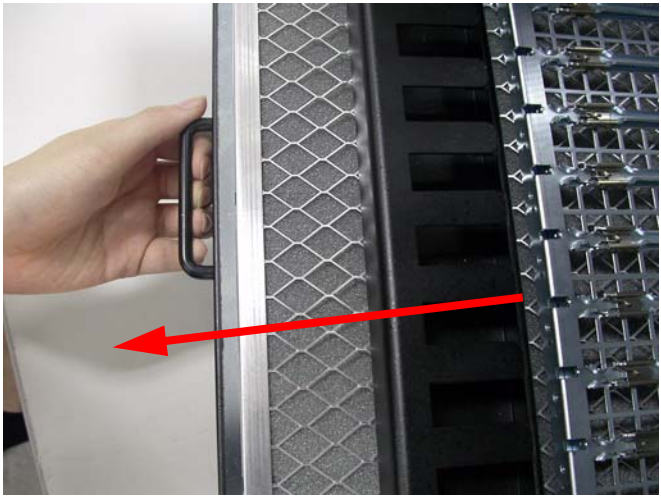


2. Locate the air filter handle below the cable tray and above the center fan tray module



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3. Slowly pull out air filter screen.



4. Detach the air filter element from the screen, and clean it by vacuuming away any dust or particles. Replace it by reversing the steps above.



NOTE: ADLINK recommends that the air filter element be cleaned or replaced every 4 months, depending on the operating environment.

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4.5 Removing and Replacing Power Entry Modules

Removing a Power Entry Module

Removal of one Power Entry Module (PEM) can be performed while the system is still operating, if each PEM is supplied by independent DC power sources.

1. Locate the PEM at the rear of the chassis.
2. Press the Hot Swap Button (Red) at the lower left of the PEM to deactivate it. It will flash Red and the OK LED will change to static Green. The HS LED will then change to static blue “ON”. The PEM is now ready to be removed.



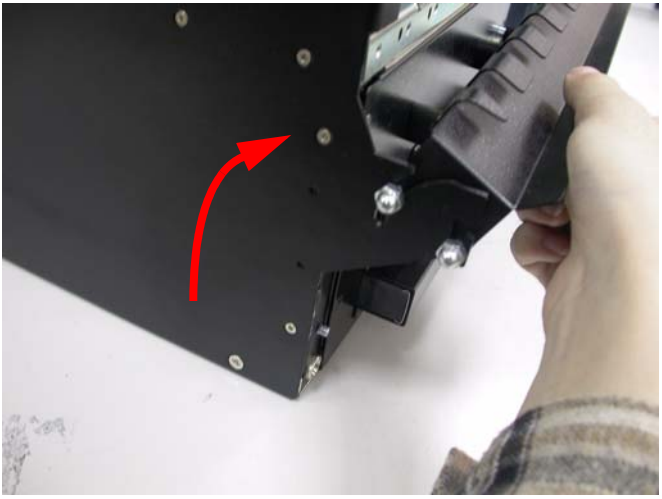
3. Power off the unit by setting both circuit breakers to “OFF”, unplug the AC power cord(s) of the AC-DC Power Converter (or turn off your DC power supply), remove the terminal block cover, and disconnect all power cables.

WARNING:

Before disconnecting the PEMs from the power converter, make sure that the PEM circuit breakers are turned “OFF”, and the AC power cords of the power converter are disconnected. If you are using your own DC power supply, make sure the power is turned off before disconnecting the wires from the PEMs.

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4. Lift up the rear cable tray and remove it from its hinge.



5. Loosen the retention screws holding the PEM in place, then pull the tray handle until the module disengages from the chassis .



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6. Store power module in a safe place. Never carry the PEM only by its handle. Alway transport it in a secure manner using two hands or place it in an electro-statically safe recepticle.

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Replacing a Power Entry Module



PEMs cannot be installed while the system is operating. Shut down all components and set the circuit breakers of all PEMS to “OFF” before installing/replacing a PEM.

1. Line up the PEM at the power entry module slot.
2. Insert the power module and push it in until it is completely flush to the slot opening and the connector is properly seated. Follow the instructions for connecting the PEM to the power converter (or other DC power source) in **Section 3.5 Powering Up the System** on page 48.
3. Tighten the retention screws on the power module to secure it.
4. Replace the rear cable tray and return it to its lowered position.

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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.

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- Never attempt to fix the equipment. Equipment should only be serviced by qualified personnel.
- A Lithium-type battery may be provided for uninterrupted, backup or emergency power.



Risk of explosion if battery is replaced with one of an incorrect type. Dispose of used batteries according to their instructions.

- 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.

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Getting Service

Contact us should you require any service or assistance.

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