



# **AXP1406/AXP1600 Subsystem IPMI**

## **Programmer's Reference**

**6806800B66C**

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# About this Manual

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## Overview of Contents

The information in this reference guide support both Centellis 3406 and Centellis 3600 platforms. The differences between the two platforms are:

- The AXP1406 is a 14-slot shelf with 2 PEMs, 2 SAMs, and 8 FTMs.
- The AXP1600 is a 16-slot shelf with 2 PEMs, 2 SAMs, and 9 FTMs.

This guide provides FRU data and SDR for each AXP shelf. On the AXP1600 platform, additional sensors are described for FTM FRU 9. All AXP1600 FRU data and sensor information is clearly identified throughout this guide.

The AXP1406 and AXP1600 both have an Intelligent Peripheral Management Controller (IPMC) which is fully compliant to the IPMI V1.5 specification. The IPMC provides access to on-board Sensor Data Records (SDRs), Field Replaceable Unit (FRU) data, and furthermore contains an event generator. Within this document you find a description of:

- Supported IPMI commands
- FRU States
- SDRs
- FRU data

For the last two items in the list, the default values are given for reference purposes if you want to restore the factory values.

This manual is divided into the following chapters and appendices.

[Chapter 1, \*Supported IPMI Commands\*](#), lists IPMI commands supported by the IPMC.

[Chapter 2, \*FRU Information and Sensor Data Records\*](#), lists the PEM, FTM, and SAM1000 Shelf Manager FRU information, as well as sensors that are accessible via IPMI for both the AXP1406 and AXP1600 shelves.

[Chapter 3, \*OEM Sensors\*](#), lists the additional OEM sensors that are accessible via IPMI for both the AXP1406 and AXP1600 shelves.

[Appendix A, \*System Behavior in Response to Sensor Events\*](#), describes the shelf manager's cooling management and FRU state management for nonrecoverable threshold events.

[Appendix B, \*Related Documentation\*](#), lists publications for blade and software products used with the Centellis 3406 and 3600 platforms.

## Abbreviations

This document uses the following terms and abbreviations:

Term	Definition
FRU	Field Replaceable Unit. A module or component which will typically be replaced in its entirety as part of a field service repair operation.
FTM	Fan Tray Module. An FRU that provides cooling to the shelf.
IPMB	Intelligent Platform Management Bus. Name for the architecture, protocol, and implementation of a special bus that interconnects the baseboard and chassis electronics and provides a communications media for system platform management information. The bus is built on I <sup>2</sup> C and provides a communications path between “management controllers” such as the BMC, FPC, and HSC.
LPMI	Local Peripheral Manager Interface.
LUN	Logical Unit Number. In the context of the Intelligent Platform Management Bus protocol, this is a subaddress that allows messages to be routed to different ‘logical units’ that reside behind the same I <sup>2</sup> C slave address.
PEM	Power Entry Module. An FRU that introduces power to the shelf.
SAM	Shelf Manager. An FRU that provides system management functions for shelf components.
SDR	Sensor Data Record. A data record that provides platform management sensor type, locations, event generation, and access information.
SEL	System Event Log. A non-volatile storage area and associated interfaces for storing system platform event information for later retrieval.

## Conventions

The following table describes the conventions used throughout this manual.

Notation	Description
0x00000000	Typical notation for hexadecimal numbers (digits are 0 through F), for example used for addresses and offsets
0b0000	Same for binary numbers (digits are 0 and 1)
<b>bold</b>	Used to emphasize a word
Screen	Used for on-screen output and code related elements or commands in body text
<b>Courier + Bold</b>	Used to characterize user input and to separate it from system output
<i>Reference</i>	Used for references and for table and figure descriptions
File > Exit	Notation for selecting a submenu
<text>	Notation for variables and keys
[text]	Notation for software buttons to click on the screen and parameter description



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## 1.1 Introduction

This chapter describes the different commands supported by the Centellis 3000 series platforms. Command categories are as follows:

- *Standard IPMI Commands*
- *PICMG 3.0 Commands*
- *Emerson and Pigeon Point OEM Commands*

## 1.2 Standard IPMI Commands

The IPMC is fully compliant to the Intelligent Platform Management Interface v.1.5. This section provides information on which IPMI commands are supported. Table entries marked with an “x” indicate which FRU or ATCA blade supports a listed command.

### 1.2.1 Global IPMI Commands

The IPMC supports the following global IPMI commands.

Table 1-1 Supported Global IPMI Commands

NetFn Rq/Rs	Command	CMD	Active ShelfMgr	Physical ShelfMgr	PEMs	FTMs	ATCA Blades
Get Device ID	0x06/0x07	0x01	X	X	X	X	X
Cold Reset	0x06/0x07	0x02	X		X	X	X
Warm Reset	0x06/0x07	0x03			X	X	X
Get Self Test Result	0x06/0x07	0x04	X	X	X	X	X
Set ACPI Power State	0x06/0x07	0x06	X	X			*
Get ACPI Power State	0x06/0x07	0x07	X	X			*
Get Device GUID	0x06/0x07	0x08	X	X	X	X	X

## 1.2.2 BMC WatchDog Timer Commands

The IPMC supports the following BMC WatchDog Timer commands.

Table 1-2 Supported BMC WatchDog Timer Commands

Command	NetFn R1/Rs	CMD	Active ShelfMgr	Physical ShelfMgr	PEMs	FTMs	ATCA Blades
Reset Watchdog Timer	0x06/0x07	0x22	X	X			X
Set Watchdog Timer	0x06/0x07	0x24	X	X			X
Get Watchdog Timer	0x06/0x07	0x25	X	X			X

## 1.2.3 BMC Device and Messaging Commands

The IPMC supports the following BMC device and messaging commands.

Table 1-3 Supported BMC Device and Messaging Commands

Command	NetFn Rq/Rs	CMD	Active ShelfMgr	Physical ShelfMgr	PEMs	FTMs	ATCA Blades
Set BMC Global Enables	0x06/0x07	0x2E	X	X	X	X	X
Get BMC Global Enables	0x06/0x07	0x2F	X	X	X	X	X
Clear Message Flags	0x06/0x07	0x30	X	X	X	X	X
Get Message Flags	0x06/0x07	0x31	X	X	X	X	X
Send Message	0x06/0x07	0x34	X	X	X	X	X
Get System GUID	0x06/0x07	0x37	X	X	X	X	X
Get Channel Authentication Capabilities	0x06/0x07	0x38	X	X	X	X	X
Get Session Challenge	0x06/0x07	0x39	X	X	X	X	X
Activate Session	0x06/0x07	0x3A	X	X	X	X	X
Set Session Privilege Level	0x06/0x07	0x3B	X	X	X	X	X
Close Session	0x06/0x07	0x3C	X	X	X	X	X
Get Session Info	0x06/0x07	0x3D	X	X	X	X	X
Get AuthCode	0x06/0x07	0x3F	X	X	X	X	X
Set Channel Access	0x06/0x07	0x40	X	X	X	X	X
Get Channel Access	0x06/0x07	0x41	X	X	X	X	X
Get Channel Info Command	0x06/0x07	0x42	X	X	X	X	X
Set User Access Command	0x06/0x07	0x43	X	X	X	X	X
Get User Access Command	0x06/0x07	0x44	X	X	X	X	X
Set User Name	0x06/0x07	0x45	X	X	X	X	X
Get User Name Command	0x06/0x07	0x46	X	X	X	X	X
Set User Password Command	0x06/0x07	0x47	X	X	X	X	X



## 1.2.4 Chassis Device Commands

The IPMC supports the following chassis device commands.

Table 1-4 Supported Chassis Device Commands

Command	NetFn Rq/Rs	CMD	Active ShelfMgr	Physical ShelfMgr	PEMs	FTMs	ATCA Blades
Get Chassis Capabilities	0x00/0x01	0x00	X	X			
Get Chassis Status	0x00/0x01	0x01	X	X			
Chassis Control	0x00/0x01	0x02	X	X			
Set Chassis Capabilities	0x00/0x01	0x05	X	X			
Set System Boot Options*	0x00/0x01	0x08					X
Get System Boot Options*	0x00/0x01	0x09					X

\*The data portion of these commands are blade-specific. Refer to the respective blade specification.

## 1.2.5 Event Commands

The IPMC supports the following event commands.

Table 1-5 Supported Event Commands

Command	NetFn Rq/Rs	CMD	Active ShelfMgr	Physical ShelfMgr	PEMs	FTMs	ATCA Blades
Set Event Receiver	0x04/0x05	0x00	X	X	X	X	X
Get Event Receiver	0x04/0x05	0x01	X	X	X	X	X
Platform Event (a.k.a. "Event Message")	0x04/0x05	0x02	X	X			*

\*ATCA-F101 supports this command.

## 1.2.6 PEF and Alerting Commands

The IPMC supports the following PEF and alerting commands.

Table 1-6 Supported PEF and Alerting Commands

Command	NetFn Rq/Rs	CMD	Active ShelfMgr	Physical ShelfMgr	PEMs	FTMs	ATCA Blades
Get PEF Capabilities	0x04/0x05	0x10	X	X			
Arm PEF Postpone Timer	0x04/0x05	0x11	X	X			
Set PEF Configuration Parameters	0x04/0x05	0x12	X	X			
Get PEF Configuration Parameters	0x04/0x05	0x13	X	X			

Table 1-6 Supported PEF and Alerting Commands (continued)

Command	NetFn Rq/Rs	CMD	Active ShelfMgr	Physical ShelfMgr	PEMs	FTMs	ATCA Blades
Set Last Processed Event ID	0x04/0x05	0x14	X	X			
Get Last Processed Event ID	0x04/0x05	0x15	X	X			
Alert Immediate	0x04/0x05	0x16	X	X			
PET Acknowledge	0x04/0x05	0x17	X	X			

## 1.2.7 Sensor Device Commands

The IPMC supports the following sensor device commands.

Table 1-7 Supported Sensor Device Commands

Command	NetFn Rq/Rs	CMD	Active ShelfMgr	Physical ShelfMgr	PEMs	FTMs	ATCA Blades
Get Device SDR Info	0x04/0x05	0x20	X	X	X	X	X
Get Device SDR	0x04/0x05	0x21	X	X	X	X	X
Reserve Device SDR Repository	0x04/0x05	0x22	X	X	X	X	X
Get Sensor Reading Factors	0x04/0x05	0x23	X	X	X	X	X
Set Sensor Hysteresis	0x04/0x05	0x24	X	X	X	X	X
Get Sensor Hysteresis	0x04/0x05	0x25	X	X	X	X	X
Set Sensor Threshold	0x04/0x05	0x26	X	X	X	X	X
Get Sensor Threshold	0x04/0x05	0x27	X	X	X	X	X
Set Sensor Event Enable	0x04/0x05	0x28	X	X	X	X	X
Get Sensor Event Enable	0x04/0x05	0x29	X	X	X	X	X
Re-arm Sensor Events	0x04/0x05	0x2a	X	X			*
Get Sensor Event Status	0x04/0x05	0x2b	X	X	X	X	X
Get Sensor Reading	0x04/0x05	0x2d	X	X	X	X	X
Set Sensor Type	0x04/0x05	0x2e	X	X			*
Get Sensor Type	0x04/0x05	0x2f	X	X	X	X	X
<b>*ATCA-F101 Supports this command.</b>							

## 1.2.8 FRU Device Commands

The IPMC supports the following FRU device commands.

Table 1-8 Supported FRU Commands

Command	NetFn Rq/Rs	CMD	Active ShelfMgr	Physical ShelfMgr	PEMs	FTMs	ATCA Blades
Get FRU Inventory Area Info	0x0A/0x0B	0x10	X	X	X	X	X
Read FRU Data	0x0A/0x0B	0x11	X	X	X	X	X
Write FRU Data	0x0A/0x0B	0x12	X	X	X	X	X

## 1.2.9 SDR Device Commands

The IPMC supports the following SDR device commands.

Table 1-9 Supported SDR Device Commands

Command	NetFn Rq/Rs	CMD	Active ShelfMgr	Physical ShelfMgr	PEMs	FTMs	ATCA Blades
Get SDR Repository Info	0x0A/0x0B	0x20	X				
Get SDR Repository Allocation Info	0x0A/0x0B	0x21					
Reserve SDR Repository	0x0A/0x0B	0x22	X				
Get SDR	0x0A/0x0B	0x23	X				
Add SDR	0x0A/0x0B	0x24	X				
Partial Add SDR	0x0A/0x0B	0x25	X				
Delete SDR	0x0A/0x0B	0x26	X				
Clear SDR Repository	0x0A/0x0B	0x27	X				
Get SDR Repository Time	0x0A/0x0B	0x28	X				
Set SDR Repository Time	0x0A/0x0B	0x29	X				

## 1.2.10 SEL Device Commands

The IPMC supports the following SEL device commands.

Table 1-10 Supported SEL Commands

Command	NetFn Rq/Rs	CMD	Active ShelfMgr	Physical ShelfMgr	PEMs	FTMs	ATCA Blades
Get SEL Info	0x0A/0x0B	0x40	X				
Get SEL Allocation Info	0x0A/0x0B	0x41	X				
Reserve SEL	0x0A/0x0B	0x42	X				
Get SEL Entry	0x0A/0x0B	0x43	X	X			

Table 1-10 Supported SEL Commands (continued)

Command	NetFn Rq/Rs	CMD	Active ShelfMgr	Physical ShelfMgr	PEMs	FTMs	ATCA Blades
Add SEL Entry	0x0A/0x0B	0x44	X	X			
Partial Add SEL Entry	0x0A/0x0B	0x45	X	X			
Delete SEL Entry	0x0A/0x0B	0x46	X	X			
Clear SEL	0x0A/0x0B	0x47	X	X			
Get SEL Time	0x0A/0x0B	0x48	X				
Set SEL Time	0x0A/0x0B	0x49	X	X			

## 1.2.11 LAN Device Commands

The IPMC supports the following LAN device commands.

Table 1-11 Supported LAN Device Commands

Command	NetFn Rq/Rs	CMD	Active ShelfMgr	Physical ShelfMgr	PEMs	FTMs	ATCA Blades
Set LAN Configuration Parameters	0x0C/0x0D	0x01	X				
Get LAN Configuration Parameters	0x0C/0x0D	0x02	X				
Suspend BMC ARPs	0x0C/0x0D	0x03	X				

## 1.2.12 Serial/Modem Device Commands

The IPMC supports the following serial/modem device commands.

Table 1-12 Supported Serial/Modem Device Commands

Command	NetFn Rq/Rs	CMD	Active ShelfMgr	Physical ShelfMgr	PEMs	FTMs	ATCA Blades
Set User Callback Options	0x0C/0x0D	0x1A	X				
Get User Callback Options	0x0C/0x0D	0x1B	X				

## 1.3 PICMG 3.0 Commands

The Emerson IPMC is a fully compliant AdvancedTCA Intelligent Platform Management Controller. For example, it supports all required and mandatory AdvancedTCA commands as defined in the PICMG 3.0 specification.

Table 1-13 Supported PICMG 3.0 Commands

Command	NetFn Rq/Rs	CMD	Active ShelfMgr	Physical ShelfMgr	PEMs	FTMs	ATCA Blades
Get PICMG Properties	0x2C/0x2D	0x00	X	X	X	X	X
Get Address Info	0x2C/0x2D	0x01	X	X	X	X	X
Get Shelf Address Info	0x2C/0x2D	0x02	X	X			
Set Shelf Address Info	0x2C/0x2D	0x03	X	X			
FRU Control	0x2C/0x2D	0x04	X	X	X	X	X
Get FRU LED Properties	0x2C/0x2D	0x05			X	X	X
Get LED Color Capabilities	0x2C/0x2D	0x06			X	X	X
Set FRU LED State	0x2C/0x2D	0x07			X	X	X
Get FRU LED State	0x2C/0x2D	0x08			X	X	X
Set IPMB State	0x2C/0x2D	0x09	X	X	X	X	X
Set FRU Activation Policy	0x2C/0x2D	0x0A	X	X	X	X	X
Get FRU Activation Policy	0x2C/0x2D	0x0B	X	X	X	X	X
Set FRU Activation	0x2C/0x2D	0x0C	X	X	X	X	X
Get Device Locator Record ID	0x2C/0x2D	0x0D	X	X	X	X	X
Set Port State	0x2C/0x2D	0x0E	X	X			X
Get Port State	0x2C/0x2D	0x0F	X	X			X
Compute Power Properties	0x2C/0x2D	0x10	X	X	X	X	X
Set Power Level	0x2C/0x2D	0x11	X	X	X	X	X
Get Power Level	0x2C/0x2D	0x12	X	X	X	X	X
Renegotiate Power	0x2C/0x2D	0x13		X			
Get Fan Speed Properties	0x2C/0x2D	0x14				X	
Set Fan Level	0x2C/0x2D	0x15				X	
Get Fan Level	0x2C/0x2D	0x16				X	
Bused Resource	0x2C/0x2D	0x17		X			X
Get IPMB Link Info	0x2C/0x2D	0x18	X	X			

## 1.4 Emerson and Pigeon Point OEM Commands

These commands can only be sent to the Emerson AXP1406 and AXP1600 Shelf Managers, sending these commands to other shelf managers or IPMCs will result in error responses or undefined behavior.

The SAM supports these OEM IPMI commands that are not defined in the IPMI 1.5 or PICMG 3.0 specifications.

*Table 1-14 OEM Command Summary*

IPMI NetFn (Request/Response)	Emerson OEM Command	IPMI Cmd
Get Shelf Configuration Record	0x2E / 0x2F	0x01
Shelf Manager Switchover	0x2E / 0x2F	0x02
Set FRU Extracted	0x2E / 0x2F	0x03

This command gets the shelf configuration for the AXP1600.

*Table 1-15 Get Shelf Configuration Record (Cmd = 0x01)*

	Byte	Data field	
Request data	1	Pigeon Point Systems IANA Enterprise number, LSB first	
	2	0x0A	
	3	0x40 0x00	
	4	IANA enterprise number for the desired record, LSB first	
	5		
	6		
	7	Record Type	
	8	Record Number	
	9	Offset within record	
	10	Count of bytes to retrieve	
Response data	1	Completion Code	
	2	Pigeon Point Systems IANA Enterprise number, LSB first	
	3		0x0A
	4		0x40
	5		Requested bytes from the specified Shelf FRU record
	...		
	n		

This command requests a SAM switchover.

*Table 1-16 Shelf Manager Switchover (Cmd = 0x02)*

	Byte	Data field
Request data	1	Pigeon Point Systems IANA Enterprise number, LSB first
	2	0x0A
	3	0x40 0x00
	4	Flags 0x00 Switchover, but do not reboot the active Shelf Manager 0x01 Switchover, and reboot the active Shelf Manager
Response data	1	Completion Code
	2	0x0A
	3	0x40
	4	0x00

This command instructs the SAM to transition a FRU to the M0 (not installed) state.

*Table 1-17 Set FRU Extracted (Cmd = 0x03)*

	Byte	Data field
Request data	1	Pigeon Point Systems IANA Enterprise number, LSB first
	2	0x0A
	3	0x40 0x00
	4	IPMB address
	5	FRU Id
	6	Force option 0x00 Only extract specified FRU if it is in M7 state 0x01 Extract the specified FRU regardless of its current state
Response data	1	Completion Code
	2	Pigeon Point Systems IANA Enterprise number, LSB first
	3	0x0A
	4	0x40 0x00





## 2.1 Introduction

This chapter introduces FRU information, e-keying, sensor overviews, and power configuration data for each subcomponent of the AXP1406 and AXP1600 shelf. Information in this chapter also includes:

- *Total Power Consumption*
- *SAM1000 Physical Shelf Manager*
- *SAM1000 Active (Virtual) Shelf Manager*
- *Power Entry Module Sensor Data Records*

Subcomponents include the Power Entry Modules (PEMs), upper and lower Fan Tray Modules (FTMs), and the SAM1000 Shelf Management Alarm Module (SAMs), both physical and active.



**All fan tray sensors are exposed by the Active SAM.**

## 2.2 Total Power Consumption

The following table shows the total power requirements for the shelf. Power consumption breakdown is shown in the next table.

*Table 2-1 Total Power Consumption for AXP 1406 and AXP1600 Shelves*

<b>Amps per Fan</b>	<b>Maximum Total Watts</b>
AXP1406 Shelf 8 FTMs without AdvancedTCA Blades	400 Watts
AXP1600 Shelf 9 FTMs without AdvancedTCA Blades	400 Watts
<b>Assumes the shelf is configured with 2 SAMs, 2 PEMs, and all FTMs running at full speed.</b>	

## 2.3 SAM1000 Physical Shelf Manager

This section describes in detail the physical SAM Shelf Manager, FRU data, power configuration and sensors at IPMB addresses 0xFC and 0xFE. The information in this section supports the SAM on both the AXP1406 and AXP1600 shelves. The AXP1600 FRU and sensor data is highlighted and marked for ease of use.

### 2.3.1 SAM Physical FRU Information

The following tables provides the FRU information for the physical SAM on the AXP1406 and AXP1600 shelves.

#### 2.3.1.1 Physical Shelf Manager FRU Data, AXP1406

Common Header:      Format Version = 1

Internal Use Area:

    Version = 1

Board Info Area:

    Version        = 1

    Language Code                = 25

    Mfg Date/Time                = Mar 30 23:00:00 2005 (4862820 minutes since 1996)

    Board Manufacturer           = Pigeon Point Systems

    Board Product Name          = IPM Sentry ShMM-500

    Board Serial Number         = PPS0000000

    Board Part Number           = A

    FRU Programmer File ID      =

Product Info Area:

    Version        = 1

    Language Code                = 25

    Manufacturer Name           = Pigeon Point Systems

    Product Name                = IPM Sentry Shelf Manager

    Product Part / Model#       = 000000

    Product Version             = Rev 1.00

    Product Serial Number       = PPS0000000

    Asset Tag                    =

FRU Programmer File ID =

Multi Record Area:

PICMG Board Point-to-Point Connectivity Record (ID=0x14)

Version = 0

### 2.3.1.2 Physical Shelf Manager FRU Data, AXP1600

Common Header: Version = 1

Language Code = 25

Mfg Date/Time = Jan 1 00:00:00 2006 (5260320 minutes since 1996)

Board Manufacturer = Pigeon Point Systems

Board Product Name = IPM Sentry ShMM-500

Board Serial Number = 08000000

Board Part Number = 01-W3911F11B

FRU Programmer File ID = SAM1000R.inf

Product Info Area:

Version = 1

Language Code = 25

Manufacturer Name = Motorola

Product Name = SAM1000

Product Part / Model# = 01-W2313F11A

Product Version = Rev 1.00

Product Serial Number = 12345678901

Asset Tag =

FRU Programmer File ID = SAM1000R.inf

Multi Record Area:

PICMG Board Point-to-Point Connectivity Record (ID=0x14)

Version = 0

## 2.3.2 E-Keying

The **physical** SAMs (IPMB 0xfc and 0xfe) each contain the following Point-to-Point Connectivity Record:

```
PICMG Board Point-to-Point Connectivity Record (ID=0x14)

Version = 0

OEM GUID Count          = 0

Link Descriptor:

Link Grouping ID        = 0x00

Link Type                = 0x01  PICMG@3.0 Base 10/100/1000 Base-T

Link Type Extension     = 0x0 10/100/1000BASE-T Link (four-pair)

Link Designator         = 0x101 Channel1/BaseInterface/Ports0

Link Descriptor:

Link Grouping ID        = 0x00

Link Type                = 0x01  PICMG@3.0 Base 10/100/1000 Base-T

Link Type Extension     = 0x0 10/100/1000BASE-T Link (four-pair)

Link Designator         = 0x102 Channel2/BaseInterface/Ports0
```

## 2.3.3 Power Configuration

The following table describes the power configuration for the Physical SAM.

*Table 2-2 SAM Physical Power Configuration*

Item	Value	Meaning
Dynamic power reconfiguration support	No	Possibility to change FRU power consumption without switching it off, according to ATCA
Dynamic power configuration	No	Are the Power Draw levels fixed or these may vary if additional components are hot inserted or onboard components power consumption is changing dynamically
Number of Power Draw Levels	1	The amount of possible power levels, normally 1
Early Power Draw Levels, Watt	20	Complete early power consumption including IPMC
Steady state Power Draw Levels, Watt	20	Complete steady power consumption including IPMC
Transition from Early to Steady levels, sec	0	How long does board consumes early power. Early power is normally bigger than steady

## 2.3.4 Sensor Overview

The following table lists all IPMI sensors available on the physical SAM at IPMB addresses 0xFC and 0xFE. The information in this section supports the SAM on both the AXP1406 and AXP1600 shelves. The AXP1600 FRU and sensor data is highlighted and marked for ease of use.

Table 2-3 Sensor Overview

Sensor No.	Sensor Name	Type of Measurement	What does it measure?	Sensor Type	Availability
0	FRU 0 HOT_SWAP	Status	State of FRU	Discrete	Always
1	IPMB LINK	Status	State of IPMB link	Discrete	Always
2	Vbat	Voltage		Analog	Always
3	Vcc 3.3 V voltage	Voltage		Analog	Always
4	+12 V voltage	Voltage		Analog	Always
5	+1.8 V	Voltage		Analog	Always
6	MAX6656 INT @1A	Temperature		Analog	Always
7	MAX6656 EXT1 @1A	Temperature		Analog	Always
8	MAX6656 EXT2 @1A	Temperature		Analog	Always
9	PEM A	Status	PEM A Presence	Discrete	Always
10	PEM B	Status	PEM B Presence	Discrete	Always
11	NSC A <sup>1</sup>	Status	NSC Board Presence	Discrete	Always
12	NSC B <sup>1</sup>	Status	NSC Board Presence	Discrete	Always
13	AXP Backplane ID	OEM	Backplane Bus Type	Discrete	Always
14	12 V In B Valid	Status	Power Unit	Discrete	Always
15	12 V In A Valid	Status	Power Unit	Discrete	Always
16	Fault Event	OEM	Shelf Manager Rebooting Notifier	Discrete	Always
17	POST Results	Status	Management Subsystem Health	Discrete	Always
18	Shelf FRU Info	OEM	Shelf Fru Info Validity	Discrete	Always
128	CPLD State	OEM	Master and Backup Shelf Manager State	Discrete	Always

1. These are additional sensors on the SAM1000 for the AXP1600.

## 2.3.5 SAM Physical Shelf Manager Analog Sensors

The physical shelf managers at IPMB addresses 0xFC and 0xFE present the following analog sensors:

- *Voltage Sensors*
- *Temperature Sensors*

The following tables describe the analog sensors available on the physical SAM. The information in this section supports the SAM on both the AXP1406 and AXP1600 shelves. The AXP1600 FRU and sensor data is highlighted and marked for ease of use.

### 2.3.5.1 Voltage Sensors

The following table describes the analog voltage sensors on the physical SAM.

*Table 2-4 Sensor No. 2 Vbat*

Feature	Raw Value/Description	Interpreted Value
Sensor Name	Vbat	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0xF0	PICMG Shelf Management Controller
Entity Instance	0x60	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable threshold mask,		
Settable threshold mask (bytes 19, 20)	0x12, 0x12	Upper and Lower Critical Thresholds are Readable and Settable
Reading Type		Unsigned
Lower critical threshold	0x00	0 Volts
Upper critical threshold	0xFF	3.315 Volts

Table 2-5 Sensor No. 3 3.3 V Voltage

Feature	Raw Value/Description	Interpreted Value
Sensor Name	Vcc 3.3 V voltage	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0xF0	PICMG Shelf Management Controller
Entity Instance	0x60	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable threshold mask,		
Settable threshold mask (bytes 19, 20)	0x12, 0x12	Upper and Lower Critical Thresholds are Readable and Settable
Reading Type		Unsigned
Lower critical threshold	0x73	3.0245 Volts
Upper critical threshold	0x88	3.5768 Volts

Table 2-6 Sensor No. 4 +12 V Voltage

Feature	Raw Value/Description	Interpreted Value
Sensor Name	+12 V voltage	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0xF0	PICMG Shelf Management Controller
Entity Instance	0x60	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable threshold mask,		

Table 2-6 Sensor No. 4 +12 V Voltage (continued)

Feature	Raw Value/Description	Interpreted Value
Settable threshold mask (bytes 19, 20)	0x12, 0x12	Upper and Lower Critical Thresholds are Readable and Settable
Reading Type		Unsigned
Lower critical threshold	0x00	0 Volts
Upper critical threshold	0xFF	15.81 Volts

Table 2-7 Sensor No. 5 +1.8 V

Feature	Raw Value/Description	Interpreted Value
Sensor Name	+1.8 V	
Type of measurement		Voltage
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0xF0	PICMG Shelf Management Controller
Entity Instance	0x60	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable threshold mask,		
Settable threshold mask (bytes 19, 20)	0x10, 0x10	Upper Critical Threshold is Readable and Settable
Reading Type		Unsigned
Upper critical threshold	0xFF	2.499 Volts

### 2.3.5.2 Temperature Sensors

The following tables describe the analog temperature sensors available on the physical SAM.

Table 2-8 Sensor No. 6 MAX6656 INT@1A

Feature	Raw Value/Description	Interpreted Value
Sensor Name	MAX6656 INT @1A	
Device		
Sensor Type	0x01	Temperature
Class	0x01	Threshold



Table 2-8 Sensor No. 6 MAX6656 INT@1A (continued)

Feature	Raw Value/Description	Interpreted Value
Sensor Owner LUN	0x00	
Entity ID	0xF0	PICMG Shelf Management Controller
Entity Instance	0x60	
Rearm mode		Auto
Hysteresis support		Readable and Settable
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable threshold mask,		
Settable threshold mask (bytes 19, 20)	0x38, 0x38	Upper Non-Critical, Critical and Non-Recoverable Thresholds are Readable and Settable
Reading Type		2's Complement
Upper Non-Critical, Critical and Non-Recoverable threshold	0x50, 0x5A, 0x64	(80, 90, 100) Centigrade

Table 2-9 Sensor No. 7 MAX6656 EXT1@1A

Feature	Raw Value/Description	Interpreted Value
Sensor Name	MAX6656 EXT1 @1A	
Device		
Sensor Type	0x01	Temperature
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0xF0	PICMG Shelf Management Controller
Entity Instance	0x60	
Rearm mode		Auto
Hysteresis support		Readable and Settable
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable threshold mask,		
Settable threshold mask (bytes 19, 20)	0x38, 0x38	Upper Non-Critical, Critical and Non-Recoverable Thresholds are Readable and Settable
Reading Type		2's Complement
Upper Non-Critical, Critical and Non-Recoverable threshold	0x50, 0x5A, 0x64	(80, 90, 100) Centigrade

Table 2-10 Sensor No. 8 MAX6656 EXT2@1A

Feature	Raw Value/Description	Interpreted Value
Sensor Name	MAX6656 EXT2 @1A	
Device		
Sensor Type	0x01	Temperature
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0xF0	PICMG Shelf Management Controller
Entity Instance	0x60	
Rearm mode		Auto
Hysteresis support		Readable and Settable
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable threshold mask,		
Settable threshold mask (bytes 19, 20)	0x38, 0x38	Upper Non-Critical, Critical and Non-Recoverable Thresholds are Readable and Settable
Reading Type		2's Complement
Upper Non-Critical, Critical and Non-Recoverable threshold	0x50, 0x5A, 0x64	(80, 90, 100) Centigrade

## 2.3.6 SAM Module Discrete Sensors

The physical shelf managers at IPMB addresses 0xFC and 0xFE present the following discrete sensors:

- *Hot Swap Sensor*
- *IPMB Link Sensor*
- *PEM A Sensor*
- *PEM B Sensor*
- *AXP Backplane ID Sensor*
- *+12 V B Valid Sensor*
- *+12 V A Valid Sensor*
- *Fault Event Sensor*
- *POST Results Sensor*
- *Shelf FRU Info Sensor*
- *CPLD State Sensor*

### 2.3.6.1 Hot Swap Sensor

The following table describes the discrete hot swap sensor available on the physical SAM.

Table 2-11 Sensor No. 0 FRU 0 HOT\_SWAP

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FRU 0 HOT_SWAP	
Type of Measurement		Hot Swap State
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0xF0	Hot Swap
Sensor Owner LUN	0x00	
Entity ID	0xF0	PICMG Shelf Management Controller
Entity Instance	0x60	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15, 16)	0xFF, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0xFF, 0x00	Supports 8 Successive States
Reading Definition		According to PICMG 3.0

### 2.3.6.2 IPMB Link Sensor

The following table describes the discrete IPMB link sensor available on the physical SAM.

Table 2-12 Sensor No. 1 IPMB Link

Feature	Raw Value/Description	Interpreted Value
Sensor Name	IPMB LINK	
Type of Measurement		IPMB Link State
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0xF1	IPMB Link
Sensor Owner LUN	0x00	
Entity ID	0xF0	PICMG Shelf Management Controller
Entity Instance	0x60	
Rearm mode		Auto

Table 2-12 Sensor No. 1 IPMB Link (continued)

Feature	Raw Value/Description	Interpreted Value
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0x0F, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x0F, 0x00	Supports 4 Successive States
Reading Definition		According to PICMG 3.0

### 2.3.6.3 PEM A Sensor

The following table describes the discrete PEM A sensor available on the physical SAM.

Table 2-13 Sensor No. 9 PEM A

Feature	Raw Value/Description	Interpreted Value
Sensor Name	PEM A	
Type of Measurement		Presence
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0x25	Entity Presence
Sensor Owner LUN	0x00	
Entity ID	0x0A	Power Supply
Entity Instance	0x00	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0x03, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x03, 0x00	Supports 2 Successive States
Reading Definition		According to IPMI 1.5

### 2.3.6.4 PEM B Sensor

The following table describes the discrete PEM B sensor available on the physical SAM.

Table 2-14 Sensor No. 10 PEM B

Feature	Raw Value/Description	Interpreted Value
Sensor Name	PEM B	
Type of Measurement		Presence
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0x25	Entity Presence
Sensor Owner LUN	0x00	
Entity ID	0x0A	Power Supply
Entity Instance	0x01	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0x03, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x03, 0x00	Supports 2 Successive States
Reading Definition		According to IPMI 1.5



Two additional NSC Presence sensor support the SAM used in the AXP1600 shelf.

Table 2-15 Sensor No. 11 NSC A (AXP1600 Only)

Feature	Raw Value/Description	Interpreted Value
Sensor Name	NSC A	
Type of Measurement		Presence
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0x25	Entity Presence
Sensor Owner LUN	0x00	
Entity ID	0x0B (add-in card)	Power Supply

Table 2-15 Sensor No. 11 NSC A (AXP1600 Only) (continued)

Feature	Raw Value/Description	Interpreted Value
Entity Instance	0x00	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0x03, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x03, 0x00	Supports 2 Successive States
Reading Definition		According to IPMI 1.5

Table 2-16 Sensor No. 12 NSC B (AXP1600 Only)

Feature	Raw Value/Description	Interpreted Value
Sensor Name	NSC B	
Type of Measurement		Presence
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0x25	Entity Presence
Sensor Owner LUN	0x00	
Entity ID	0x0B (add-in card)	Power Supply
Entity Instance	0x01	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0x03, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x03, 0x00	Supports 2 Successive States
Reading Definition		According to IPMI 1.5

### 2.3.6.5 AXP Backplane ID Sensor

The following table describes the discrete AXP backplane ID sensor available on the physical SAM. For more detail on this sensor, refer to [AXP Backplane ID \(Emerson OEM\)](#) on page 138.

Table 2-17 Sensor No. 13 AXP Backplane ID

Feature	Raw Value/Description	Interpreted Value
Sensor Name	AXP Backplane ID	
Type of Measurement		Specifies Bus Type of the Backplane
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0xDB	OEM-reserved
Sensor Owner LUN	0x00	
Entity ID	0xF0	PICMG Shelf Management Controller
Entity Instance	0x60	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0x01, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x01 0x00	Supports 1 Successive State
Reading Definition		According to Motorola XXXX

### 2.3.6.6 +12 V B Valid Sensor

The following table describes the discrete +12 V B valid sensor available on the physical SAM.

Table 2-18 Sensor No. 14 12 V B Valid

Feature	Raw Value/Description	Interpreted Value
Sensor Name	12 V In B Valid	
Type of Measurement		State of Power Unit B
Class		Discrete
Event/Reading Type	0x03	'digital' Discrete
Sensor Type	0x09	Power Unit
Sensor Owner LUN	0x00	
Entity ID	0xF0	PICMG Shelf Management Controller
Entity Instance	0x60	

Table 2-18 Sensor No. 14 12 V B Valid (continued)

Feature	Raw Value/Description	Interpreted Value
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0x03, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x03, 0x00	Supports 2 Successive States
Reading Definition		According to IPMI 1.5

### 2.3.6.7 +12 V A Valid Sensor

The following table describes the discrete +12V A valid sensor available on the physical SAM.

Table 2-19 Sensor No. 15 12 V A Valid

Feature	Raw Value/Description	Interpreted Value
Sensor Name	12 V In A Valid	
Type of Measurement		State of Power Unit A
Class		Discrete
Event/Reading Type	0x03	'digital' Discrete
Sensor Type	0x09	Power Unit
Sensor Owner LUN	0x00	
Entity ID	0xF0	PICMG Shelf Management Controller
Entity Instance	0x60	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0x03, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x03, 0x00	Supports 2 Successive States
Reading Definition		According to IPMI 1.5



### 2.3.6.8 Fault Event Sensor

The following table describes the discrete fault event sensor available on the physical SAM.

Table 2-20 Sensor No. 16 Fault Event

Feature	Raw Value/Description	Interpreted Value
Sensor Name	Fault Event	
Type of Measurement		Reports that the Shelf Manager has Rebooted.
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0xDC	OEM-reserved
Sensor Owner LUN	0x00	
Entity ID	0xF0	PICMG Shelf Management Controller
Entity Instance	0x60	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0x01, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x01, 0x00	Supports 1 State
Reading Definition		According to Motorola XXX

### 2.3.6.9 POST Results Sensor

The following table describes the discrete POST results sensor available on the physical SAM. For more information on this sensor, refer to [POST Results \(Emerson OEM\) on page 138](#).

Table 2-21 Sensor No. 17 POST Results

Feature	Raw Value/Description	Interpreted Value
Sensor Name	POST Results	
Type of Measurement		POST Results
Class		Discrete
Event/Reading Type	0x06	'digital' Discrete
Sensor Type	0x28	Management Subsystem Health
Sensor Owner LUN	0x00	
Entity ID	0xF0	PICMG Shelf Management Controller
Entity Instance	0x60	

Table 2-21 Sensor No. 17 POST Results (continued)

Feature	Raw Value/Description	Interpreted Value
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0x02, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x03, 0x00	Supports 2 Successive States
Reading Definition		According to IPMI 1.5

### 2.3.6.10 Shelf FRU Info Sensor

The following table describes the discrete shelf FRU info sensor available on the physical SAM. For more information on this sensor, refer to [Shelf FRU Info \(Emerson OEM\) on page 139](#).

Table 2-22 Sensor No. 18 Shelf FRU Info

Feature	Raw Value/Description	Interpreted Value
Sensor Name	Shelf FRU Info	
Type of Measurement		Basic validation of the Shelf FRU Info
Class		Discrete
Event/Reading Type	0x09	'digital' Discrete
Sensor Type	0xDD	OEM-reserved
Sensor Owner LUN	0x00	
Entity ID	0xF0	PICMG Shelf Management Controller
Entity Instance	0x60	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0x03, 0x00	
Deassertion Event Mask(bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x03, 0x00	Supports 2 Successive States
Reading Definition		According to Motorola XXX

### 2.3.6.11 CPLD State Sensor

The following table describes the discrete CPLD state sensor available on the physical SAM.

Table 2-23 Sensor No. 128 CPLD State

Feature	Raw Value/Description	Interpreted Value
Sensor Name	CPLD State	
Type of Measurement		States of the Master and Backup Shelf Managers
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0xDE	OEM-reserved
Sensor Owner LUN	0x00	
Entity ID	0xF0	PICMG Shelf Management Controller
Entity Instance	0x60	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0xF7, 0x07	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0xF7, 0x07	Supports 10 States
Reading Definition		According to Motorola XXX

## 2.4 SAM1000 Active (Virtual) Shelf Manager

This section describes in detail all available IPMI sensors of the Active SAM1000 at IPMB address 0x20. The information in this section supports the SAM on both the AXP1406 and AXP1600 shelves. The AXP1600 FRU and sensor data is highlighted and/or marked for ease of use.

### 2.4.1 FRU Information

FRU 0 of address 0x20 corresponds to the main FRU information of the respective Physical SAM that is running as the Active SAM; it could be either FRU 0 of IPMB address 0xFC or FRU 0 of IPMB address 0xFE.

#### *Active Shelf Manager FRU Data, AXP1406*

There are an additional eight managed FRUs (FRUs 1 to 8) that correspond to each of the eight fan trays that cool the chassis. The Active SAM FRU information is addressed as FRU 254 which is cached information from data stored as a FRU 1 in each of the PEMs (IPMB addresses 0x66 and 0x68).

### *Active Shelf Manager FRU Data, AXP1600*

There are an additional nine managed FRUs (FRUs 1 to 9) that correspond to each of the nine fan trays that cool the chassis. The Active SAM FRU information is addressed as FRU 254 which is cached information from data stored as a FRU 1 in each of the PEMs (IPMB addresses 0x66 and 0x68).

The following tables show an example of the output obtained when retrieving FRU information using the CLIA tool of the Active SAM.

#### **2.4.1.1 Active Shelf Manager FRU Data, AXP1406**

```
# clia fruinfo 20 254
```

```
Pigeon Point Shelf Manager Command Line Interpreter
```

```
66: FRU # 1, FRU Info
```

```
Common Header:      Format Version = 1
```

```
Chassis Info Area:
```

```
Version      = 1
```

```
Chassis Type          = (2)
```

```
Chassis Part Number   = CHS1406
```

```
Chassis Serial Number = 0000001
```

```
Board Info Area:
```

```
Version      = 1
```

```
Language Code          = 25
```

```
Mfg Date/Time          = Mar 29 00:00:00 2006 (5385600 minutes since 1996)
```

```
Board Manufacturer     = Motorola
```

```
Board Product Name     = CHS1406
```

```
Board Serial Number    = 0000001
```

```
Board Part Number      = CHS1406
```

```
FRU Programmer File ID = CHS1406.inf
```

```
Product Info Area:
```

```
Version      = 1
```

Language Code = 25  
Manufacturer Name = Motorola  
Product Name = CHS1406  
Product Part / Model# = CHS1406  
Product Version = Rev. 1  
Product Serial Number = 0000001  
Asset Tag =  
FRU Programmer File ID = CHS1406.inf

## Multi Record Area:

PICMG Shelf Manager IP Connection Record (ID=0x13)

Version = 1

Record Type = Management Access Record

Version = 2

Sub-Record Type: Component Name (0x05)

PICMG Address Table Record (ID=0x10)

Version = 0

PICMG Backplane Point-to-Point Connectivity Record (ID=0x04)

Version = 0

PICMG Backplane Point-to-Point Connectivity Record (ID=0x04)

Version = 0

PICMG Shelf Power Distribution Record (ID=0x11)

Version = 0

PICMG Radial IPMB-0 Link Mapping Record (ID=0x15)

Version = 0

PICMG Shelf Activation And Power Management Record (ID=0x12)

Version = 0

Record Type = 0xc0 OEM Record

Version = 2

Manufacturer ID = 0x0000A1 MOTOROLA

Record ID = 0x02

### 2.4.1.2 Active Shelf Manager FRU Data, AXP1600

Pigeon Point Shelf Manager Command Line Interpreter

20: FRU # 254, FRU Info

Common Header: Format Version = 1

Chassis Info Area:

Version = 1

Chassis Type = (1)

Chassis Part Number = 01-W1055C12B

Chassis Serial Number = 00001

Board Info Area:

Version = 1

Language Code = 25

Mfg Date/Time = Jan 1 00:00:00 2006 (5260320 minutes since 1

996)

Board Manufacturer = Motorola

Board Product Name = CHS1600

Board Serial Number = 1234567890

Board Part Number = CHS1600

FRU Programmer File ID = CHS1600R\_ShelfFru.inf

## Product Info Area:

Version = 1  
Language Code = 25  
Manufacturer Name = Motorola  
Product Name = CHS1600  
Product Part / Model# = CHS1600  
Product Version = Rev. 1  
Product Serial Number = 00001  
Asset Tag =  
FRU Programmer File ID = CHS1600R\_ShelfFru.inf

## Multi Record Area:

PICMG Shelf Manager IP Connection Record (ID=0x13)

Version = 1

Record Type = Management Access Record

Version = 2

Sub-Record Type: Component Name (0x05)

PICMG Address Table Record (ID=0x10)

Version = 0

PICMG Backplane Point-to-Point Connectivity Record (ID=0x04)

Version = 0

PICMG Backplane Point-to-Point Connectivity Record (ID=0x04)

Version = 0

PICMG Backplane Point-to-Point Connectivity Record (ID=0x04)

Version = 0

PICMG Shelf Power Distribution Record (ID=0x11)

Version = 0

PICMG Radial IPMB-0 Link Mapping Record (ID=0x15)

Version = 0

PICMG Shelf Activation And Power Management Record (ID=0x12)

Version = 1

Record Type = 0xc0 OEM Record

Version = 2

Manufacturer ID = 0x0000A1 MOTOROLA

Record ID = 0x02

### 2.4.1.3 SAM1000 Shelf Manager FRU Data

Pigeon Point Shelf Manager Command Line Interpreter

fc: FRU # 0, FRU Info

Common Header: Format Version = 1

Internal Use Area:

Version = 1

Board Info Area:

Version = 1

Language Code = 25

Mfg Date/Time = Jan 1 00:00:00 2006 (5260320 minutes since 1996)

Board Manufacturer = Pigeon Point Systems

Board Product Name = IPM Sentry ShMM-500

Board Serial Number = 08000000

Board Part Number = 01-W3911F11B

FRU Programmer File ID = SAM1000R.inf

Product Info Area:

Version = 1



```

Language Code           = 25
Manufacturer Name       = Motorola
Product Name           = SAM1000
Product Part / Model#   = 01-W2313F11A
Product Version         = Rev 1.00
Product Serial Number   = 12345678901
Asset Tag               =
FRU Programmer File ID = SAM1000R.inf

```

Multi Record Area:

```

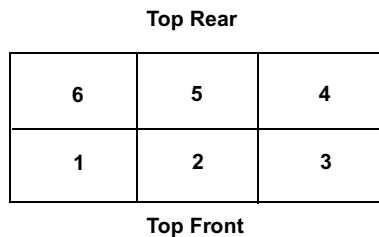
PICMG Board Point-to-Point Connectivity Record (ID=0x14)
Version = 0

```

#### 2.4.1.4 Fan Tray FRU Data, AXP1406

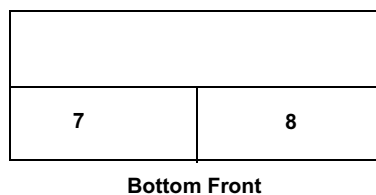
There are eight fan trays in the AXP1406 shelf, six of them are located at the top of the shelf and two are located in the bottom. Looking at the shelf from the top; the location of the fan tray FRUs 1 through 6 looks like this:

Figure 2-1 Upper Fan Tray Locations, AXP1406



The bottom fan tray are FRU 7 (left side) and FRU 8 (right side) looking at the shelf from the front.

Figure 2-2 Lower Fan Tray Locations, AXP1406



The FRU information for fan trays 1, 2 and 3 is the same (except serial numbers); similarly for fan trays 4, 5 and 6; and for fan trays 7 and 8. This information follows:

### 2.4.1.5 Fan Tray FRUs 1,2, and 3 Data

Pigeon Point Shelf Manager Command Line Interpreter

20: FRU # 1, FRU Info

Common Header:     Format Version = 1

Board Info Area:

Version            = 1

Language Code           = 25

Mfg Date/Time           = Jan 10 00:00:00 2006 (5273280 minutes since 1996)

Board Manufacturer       = Motorola

Board Product Name       = CHS1406 Fan Tray

Board Serial Number      = AA123456

Board Part Number        = 0106876A01B

FRU Programmer File ID   = CHS1406R\_FT\_UpperFront.inf

Product Info Area:

Version            = 1

Language Code           = 25

Manufacturer Name        = Motorola

Product Name             = CHS1406 Fan Tray

Product Part / Model#    = TFT-F-1406

Product Version          = Rev. 1.00

Product Serial Number    = AA123456

Asset Tag                =

FRU Programmer File ID   = CHS1406R\_FT\_UpperFront.inf

### 2.4.1.6 Fan Tray FRUs 4, 5, and 6 Data

Pigeon Point Shelf Manager Command Line Interpreter

20: FRU # 4, FRU Info

Common Header: Format Version = 1

Board Info Area:

Version = 1

Language Code = 25

Mfg Date/Time = Jan 1 00:00:00 2006 (5260320 minutes since 1996)

Board Manufacturer = Motorola

Board Product Name = CHS1406 Fan Tray

Board Serial Number = AA123456

Board Part Number = 0106877A01B

FRU Programmer File ID = CHS1406R\_FT\_UpperRear.inf

Product Info Area:

Version = 1

Language Code = 25

Manufacturer Name = Motorola

Product Name = CHS1406 Fan Tray

Product Part / Model# = TFT-R-1406

Product Version = Rev. 1.00

Product Serial Number = AA123456

Asset Tag =

FRU Programmer File ID = CHS1406R\_FT\_UpperRear.inf

### 2.4.1.7 Fan Tray FRUs 7 and 8 Data

Pigeon Point Shelf Manager Command Line Interpreter

20: FRU # 7, FRU Info

Common Header: Format Version = 1

Board Info Area:

Version = 1

Language Code = 25

```

Mfg Date/Time          = Jan 10 00:00:00 2006 (5273280 minutes since 1996)
Board Manufacturer     = Motorola
Board Product Name    = CHS1406 Fan Tray
Board Serial Number    = AA123456
Board Part Number     = 0106878A01B
FRU Programmer File ID = CHS1406R_FT_LowerFront.inf

```

Product Info Area:

```

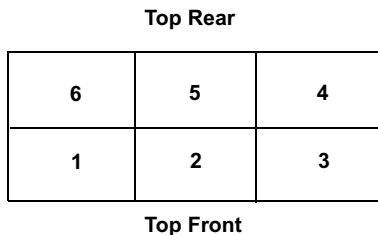
Version      = 1
Language Code      = 25
Manufacturer Name  = Motorola
Product Name     = CHS1406 Fan Tray
Product Part / Model# = BFT-F-1406
Product Version   = Rev. 1.00
Product Serial Number = AA123456
Asset Tag        =
FRU Programmer File ID = CHS1406R_FT_LowerFront.inf

```

### 2.4.1.8 Fan Tray FRU Data, AXP1600

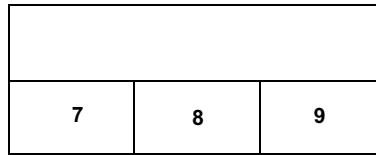
There are nine fan trays in the AXP1600 shelf, six of them are located at the top of the shelf and three are located in the bottom. Looking at the shelf from the top; the location of the fan tray FRUs 1 through 6 looks like this:

Figure 2-3 Upper Fan Tray Locations, AXP1600



The bottom three fan trays are FTM 7 (left side) and FTM 8 (center), and FTM 9 (right side) looking at the shelf from the front.

Figure 2-4 Lower Fan Tray Locations, AXP1600



Bottom Front

The FRU information for fan trays 1, 2 and 3 is the same (except serial numbers); similarly for fan trays 4, 5 and 6; and for fan trays 7, 8 and 9. This information follows:

### 2.4.1.9 Fan Tray FRUs 1, 2, and 3 Data, AXP1600

Pigeon Point Shelf Manager Command Line Interpreter

20: FRU # 1, FRU Info

Common Header:      Format Version = 1

Board Info Area:

Version            = 1

Language Code            = 25

Mfg Date/Time            = Jan 1 00:00:00 2006 (5260320 minutes since 1996)

Board Manufacturer        = Motorola

Board Product Name        = CHS1600 Fan Tray

Board Serial Number        = 1234567890

Board Part Number        = 01-W2327F12A

FRU Programmer File ID    = CHS1600R\_FT\_UpperFront.inf

Product Info Area:

Version            = 1

Language Code            = 25

Manufacturer Name        = Motorola

Product Name            = CHS1600 Fan Tray

```
Product Part / Model#    = TFT-F-1600
Product Version          = Rev. 1.00
Product Serial Number    = 1234567890
Asset Tag                =
FRU Programmer File ID   = CHS1600R_FT_UpperFront.inf
```

#### 2.4.1.10 Fan Tray FRUs 4, 5, and 6 Data, AXP1600

Pigeon Point Shelf Manager Command Line Interpreter

20: FRU # 4, FRU Info

Common Header: Format Version = 1

Board Info Area:

```
Version      = 1
Language Code      = 25
Mfg Date/Time    = Jan  1 00:00:00 2006 (5260320 minutes since 1996)
Board Manufacturer    = Motorola
Board Product Name    = CHS1600 Fan Tray
Board Serial Number   = 1234567890
Board Part Number     = 01-W2328F12A
FRU Programmer File ID = CHS1600R_FT_UpperRear.inf
```

Product Info Area:

```
Version      = 1
Language Code      = 25
Manufacturer Name   = Motorola
Product Name       = CHS1600 Fan Tray
Product Part / Model# = TFT-R-1600
Product Version    = Rev. 1.00
Product Serial Number = 1234567890
Asset Tag         =
FRU Programmer File ID = CHS1600R_FT_UpperRear.inf
```

### 2.4.1.11 Fan Tray FRUs 7, 8 and 9 Data, AXP1600

Pigeon Point Shelf Manager Command Line Interpreter

20: FRU # 7, FRU Info

Common Header:      Format Version = 1

Board Info Area:

```
Version            = 1
Language Code            = 25
Mfg Date/Time            = Jan 1 00:00:00 2006 (5260320 minutes since 1996)
Board Manufacturer        = Motorola
Board Product Name        = CHS1600 Fan Tray
Board Serial Number       = 1234567890
Board Part Number        = 01-W2329F12A
FRU Programmer File ID   = CHS1600R_FT_LowerFront.inf
```

Product Info Area:

```
Version            = 1
Language Code            = 25
Manufacturer Name        = Motorola
Product Name            = CHS1600 Fan Tray
Product Part / Model#    = BFT-F-1600
Product Version         = Rev. 1.00
Product Serial Number    = 1234567890
Asset Tag                =
FRU Programmer File ID   = CHS1600R_FT_LowerFront.inf
```

## 2.4.2 E-Keying

The **active** (virtual) SAM does not have e-keyed backplane interfaces, and hence the FRU information for it does not contain a PICMG Point-to-Point Connectivity Record.

### 2.4.3 Power Configuration

The following table describes the power configuration for the Active SAM.

Table 2-24 SAM1000 Active Power Configuration

Item	Value	Meaning
Dynamic power reconfiguration support	No	Possibility to change FRU power consumption without switching it off, according to AdvancedTCA
Dynamic power configuration	No	Are the power draw levels fixed or these may vary if additional components are hot inserted or onboard components' power consumption is changing dynamically
Number of power draw levels	1	The amount of possible power levels, normally 1
Early power draw levels, Watt	5	Complete early power consumption including IPMC
Steady state power draw levels, Watt	5	Complete steady power consumption including IPMC
Transition from Early to Steady levels, sec	0	How long does board consumes early power. Early power is normally bigger than steady

### 2.4.4 Active SAM1000 Sensor Overview

The following table lists the discrete and analog sensors that reside on the Active SAM. The information in this section supports the SAM on both the AXP1406 and AXP1600 shelves. The AXP1600 FRU and sensor data is highlighted and/or marked for ease of use.

Rows that are highlighted in blue provide information for the additional sensors on the SAM1000 for the AXP1600.

Table 2-25 Active SAM1000 Sensor Overview

Sensor No.	Sensor Name	Type of Measurement	What does it measure?	Sensor Type	Availability
0	FRU 0 HOT_SWAP	Status	State of FRU	Discrete	Always
2	FRU 1 HOT_SWAP	Status	State of FRU	Discrete	Always
3	FRU 2 HOT_SWAP	Status	State of FRU	Discrete	Always
4	FRU 3 HOT_SWAP	Status	State of FRU	Discrete	Always
5	FRU 4 HOT_SWAP	Status	State of FRU	Discrete	Always
6	FRU 5 HOT_SWAP	Status	State of FRU	Discrete	Always



Table 2-25 Active SAM1000 Sensor Overview (continued)

Sensor No.	Sensor Name	Type of Measurement	What does it measure?	Sensor Type	Availability
7	FRU 6 HOT_SWAP	Status	State of FRU	Discrete	Always
8	FRU 7 HOT_SWAP	Status	State of FRU	Discrete	Always
9	FRU 8 HOT_SWAP	Status	State of FRU	Discrete	Always
10	FRU9 HOT_SWAP	Status	State of FRU	Discrete	Always
11	SHM FAULT EVENT	Status	State of SHM	Discrete	Always
12	IPMB LINK 1	Status	State of IPMB link	Discrete	Always
13	IPMB LINK 2	Status	State of IPMB link	Discrete	Always
14	IPMB LINK 3	Status	State of IPMB link	Discrete	Always
15	IPMB LINK 4	Status	State of IPMB link	Discrete	Always
16	IPMB LINK 5	Status	State of IPMB link	Discrete	Always
17	IPMB LINK 6	Status	State of IPMB link	Discrete	Always
18	IPMB LINK 7	Status	State of IPMB link	Discrete	Always
19	IPMB LINK 8	Status	State of IPMB link	Discrete	Always
20	IPMB LINK 9	Status	State of IPMB link	Discrete	Always
21	IPMB LINK 10	Status	State of IPMB link	Discrete	Always
22	IPMB LINK 11	Status	State of IPMB link	Discrete	Always
23	IPMB LINK 12	Status	State of IPMB link	Discrete	Always
24	IPMB LINK 13	Status	State of IPMB link	Discrete	Always
25	IPMB LINK 14	Status	State of IPMB link	Discrete	Always
26	IPMB LINK 15	Status	State of IPMB link	Discrete	Always
27	IPMB LINK 16	Status	State of IPMB link	Discrete	Always

Table 2-25 Active SAM1000 Sensor Overview (continued)

Sensor No.	Sensor Name	Type of Measurement	What does it measure?	Sensor Type	Availability
28	IPMB LINK 17	Status	State of IPMB link	Discrete	Always
29	IPMB LINK 18	Status	State of IPMB link	Discrete	Always
30	IPMB LINK 19	Status	State of IPMB link	Discrete	Always
31	IPMB LINK 20	Status	State of IPMB link	Discrete	Always
32	IPMB LINK 21	Status	State of IPMB link	Discrete	Always
131	TELCO Alarms	Status	State of TELCO Alarms	Discrete	Always
132	BMC Watchdog	Status	State of BMC Watchdog on active SAM	Discrete	Always
133	SYSTEM EVENT	Status	State of PEF actions, system reconfigured events, etc.	Discrete	Always
141	FT 1 Fan 1	Fan Speed	RPM of Fan 1	Analog	Always
142	FT 1 Fan 2	Fan Speed	RPM of Fan 2	Analog	Always
143	FT 2 Fan 1	Fan Speed	RPM of Fan 1	Analog	Always
144	FT 2 Fan 2	Fan Speed	RPM of Fan 2	Analog	Always
145	FT 3 Fan 1	Fan Speed	RPM of Fan 1	Analog	Always
146	FT 3 Fan 2	Fan Speed	RPM of Fan 2	Analog	Always
147	FT 4 Fan 1	Fan Speed	RPM of Fan 1	Analog	Always
148	FT 4 Fan 2	Fan Speed	RPM of Fan 2	Analog	Always
149	FT 5 Fan 1	Fan Speed	RPM of Fan 1	Analog	Always
150	FT 5 Fan 2	Fan Speed	RPM of Fan 2	Analog	Always
151	FT 6 Fan 1	Fan Speed	RPM of Fan 1	Analog	Always
152	FT 6 Fan 2	Fan Speed	RPM of Fan 2	Analog	Always
153	FT 7 Fan 1	Fan Speed	RPM of Fan 1	Analog	Always
154	FT 7 Fan 2	Fan Speed	RPM of Fan 2	Analog	Always
155	FT 8 Fan 1	Fan Speed	RPM of Fan 1	Analog	Always
156	FT 8 Fan 2	Fan Speed	RPM of Fan 2	Analog	Always
157	FT 9 Fan 1	Fan Speed	RPM of Fan 1	Analog	Always
158	FT 9 Fan 2	Fan Speed	RPM of Fan 2	Analog	Always
171	FT 1 Fan 1 12 V	Voltage		Analog	Always

Table 2-25 Active SAM1000 Sensor Overview (continued)

Sensor No.	Sensor Name	Type of Measurement	What does it measure?	Sensor Type	Availability
172	FT 1 Fan 1 VBias	Voltage		Analog	Always
173	FT 1 Fan 2 12 V	Voltage		Analog	Always
174	FT 1 Fan 2 VBias	Voltage		Analog	Always
175	FT 2 Fan 1 12 V	Voltage		Analog	Always
176	FT 2 Fan 1 VBias	Voltage		Analog	Always
177	FT 2 Fan 2 12 V	Voltage		Analog	Always
178	FT 2 Fan 2 VBias	Voltage		Analog	Always
179	FT 3 Fan 1 12 V	Voltage		Analog	Always
180	FT 3 Fan 1 VBias	Voltage		Analog	Always
181	FT 3 Fan 2 12 V	Voltage		Analog	Always
182	FT 3 Fan 2 VBias	Voltage		Analog	Always
183	FT 4 Fan 1 12 V	Voltage		Analog	Always
184	FT 4 Fan 1 VBias	Voltage		Analog	Always
185	FT 4 Fan 2 12 V	Voltage		Analog	Always
186	FT 4 Fan 2 VBias	Voltage		Analog	Always
187	FT 5 Fan 1 12 V	Voltage		Analog	Always
188	FT 5 Fan 1 VBias	Voltage		Analog	Always
189	FT 5 Fan 2 12 V	Voltage		Analog	Always
190	FT 5 Fan 2 VBias	Voltage		Analog	Always
191	FT 6 Fan 1 12 V	Voltage		Analog	Always
192	FT 6 Fan 1 VBias	Voltage		Analog	Always
193	FT 6 Fan 2 12 V	Voltage		Analog	Always
194	FT 6 Fan 2 VBias	Voltage		Analog	Always
195	FT 7 Fan 1 12 V	Voltage		Analog	Always
196	FT 7 Fan 1 VBias	Voltage		Analog	Always
197	FT 7 Fan 2 12 V	Voltage		Analog	Always
198	FT 7 Fan 2 VBias	Voltage		Analog	Always
199	FT 8 Fan 1 12 V	Voltage		Analog	Always
200	FT 8 Fan 1 VBias	Voltage		Analog	Always
201	FT 8 Fan 2 12 V	Voltage		Analog	Always
202	FT 8 Fan 2 VBias	Voltage		Analog	Always
203	FT 9 Fan 1 12 V	Voltage		Analog	Always
204	FT 9 Fan 1 VBias	Voltage		Analog	Always
205	FT 9 Fan 2 12 V	Voltage		Analog	Always
206	FT 9 Fan 2 VBias	Voltage		Analog	Always

Table 2-25 Active SAM1000 Sensor Overview (continued)

Sensor No.	Sensor Name	Type of Measurement	What does it measure?	Sensor Type	Availability
220	Fan Tray 1	Status	Fan Tray 1 Presence	Discrete	Always
221	Fan Tray 2	Status	Fan Tray 2 Presence	Discrete	Always
222	Fan Tray 3	Status	Fan Tray 3 Presence	Discrete	Always
223	Fan Tray 4	Status	Fan Tray 4 Presence	Discrete	Always
224	Fan Tray 5	Status	Fan Tray 5 Presence	Discrete	Always
225	Fan Tray 6	Status	Fan Tray 6 Presence	Discrete	Always
226	Fan Tray 7	Status	Fan Tray 7 Presence	Discrete	Always
227	Fan Tray 8	Status	Fan Tray 8 Presence	Discrete	Always
228	Fan Tray 9	Status	Fan Tray 9 Presence	Discrete	Always
230	FT 1 -48 V Fuse	Status	OEM-reserved	Discrete	Always
231	FT 2 -48 V Fuse	Status	OEM-reserved	Discrete	Always
232	FT 3 -48 V Fuse	Status	OEM-reserved	Discrete	Always
233	FT 4 -48 V Fuse	Status	OEM-reserved	Discrete	Always
234	FT 5 -48 V Fuse	Status	OEM-reserved	Discrete	Always
235	FT 6 -48 V Fuse	Status	OEM-reserved	Discrete	Always
236	FT 7 -48 V Fuse	Status	OEM-reserved	Discrete	Always
237	FT 8 -48 V Fuse	Status	OEM-reserved	Discrete	Always
238	FT 9 -48 V Fuse	Status	OEM-reserved	Discrete	Always

## 2.4.5 Active SAM1000 Analog Sensors

The Active SAM at IPMB address 0x20 presents the following analog sensors:

All fan sensors are exposed by the Active SAM.

- *Fan Speed Sensors*
- *Fan Voltage Sensors*

### 2.4.5.1 Fan Speed Sensors

The following tables describe the analog fan speed sensors available on the Active SAM.

Table 2-26 Sensor No. 141 (0x8D) FT 1 Fan 1

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 1 Fan 1	
Device		
Sensor Type	0x04	Fan Speed
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x60	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x02, 0x00	Lower Critical Threshold is Readable
Reading Type		Unsigned
Lower critical threshold	0x23	1190 RPM

Table 2-27 Sensor No. 142 (0x8E) FT 1 Fan 2

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 1 Fan 2	
Device		
Sensor Type	0x04	Fan Speed
Class	0x01	Threshold
0x00	Sensor Owner LUN	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x60	
Rearm mode		Auto

Table 2-27 Sensor No. 142 (0x8E) FT 1 Fan 2 (continued)

Feature	Raw Value/Description	Interpreted Value
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x02, 0x00	Lower Critical Threshold is Readable
Reading Type		Unsigned
Lower critical threshold	0x23	1190 RPM

Table 2-28 Sensor No. 143 (0x8F) FT 2 Fan 1

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 2 Fan 1	
Device		
Sensor Type	0x04	Fan Speed
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x61	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x02, 0x00	Lower Critical Threshold is Readable
Reading Type		Unsigned
Lower critical threshold	0x23	1190 RPM

Table 2-29 Sensor No. 144 (0x90) FT2 Fan 2

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 2 Fan 2	
Device		
Sensor Type	0x04	Fan Speed
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x61	
Rearm mode		Auto

Table 2-29 Sensor No. 144 (0x90) FT2 Fan 2 (continued)

Feature	Raw Value/Description	Interpreted Value
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x02, 0x00	Lower Critical Threshold is Readable
Reading Type		Unsigned
Lower critical threshold	0x23	1190 RPM

Table 2-30 Sensor No. 145 (0x91) FT 3 Fan 1

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 3 Fan 1	
Device		
Sensor Type	0x04	Fan Speed
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x62	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x02, 0x00	Lower Critical Threshold is Readable
Reading Type		Unsigned
Lower critical threshold	0x23	1190 RPM

Table 2-31 Sensor No. 146 (0x92) FT 3 Fan 2

Raw Value/Description	Feature	Interpreted Value
Sensor Name	FT 3 Fan 2	
Device		
Sensor Type	0x04	Fan Speed
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x62	
Rearm mode		Auto

Table 2-31 Sensor No. 146 (0x92) FT 3 Fan 2 (continued)

Raw Value/Description	Feature	Interpreted Value
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x02, 0x00	Lower Critical Threshold is Readable
Reading Type		Unsigned
Lower critical threshold	0x23	1190 RPM

Table 2-32 Sensor No. 147 (0x93) FT 4 Fan 1

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 4 Fan 1	
Device		
Sensor Type	0x04	Fan Speed
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x63	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x02, 0x00	Lower Critical Threshold is Readable
Reading Type		Unsigned
Lower critical threshold	0x23	1190 RPM

Table 2-33 Sensor No. 148 (0x94) FT 4 Fan 2

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 4 Fan 2	
Device		
Sensor Type	0x04	Fan Speed
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x63	
Rearm mode		Auto



Table 2-33 Sensor No. 148 (0x94) FT 4 Fan 2 (continued)

Feature	Raw Value/Description	Interpreted Value
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x02, 0x00	Lower Critical Threshold is Readable
Reading Type		Unsigned
Lower critical threshold	0x23	1190 RPM

Table 2-34 Sensor No. 149 (0x95) FT 5 Fan 1

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 5 Fan 1	
Device		
Sensor Type	0x04	Fan Speed
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x64	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x02, 0x00	Lower Critical Threshold is Readable
Reading Type		Unsigned
Lower critical threshold	0x23	1190 RPM

Table 2-35 Sensor No. 150 (0x96) FT 5 Fan 2

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 5 Fan 2	
Device		
Sensor Type	0x04	Fan Speed
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x64	
Rearm mode		Auto

Table 2-35 Sensor No. 150 (0x96) FT 5 Fan 2 (continued)

Feature	Raw Value/Description	Interpreted Value
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x02, 0x00	Lower Critical Threshold is Readable
Reading Type		Unsigned
Lower critical threshold	0x23	1190 RPM

Table 2-36 Sensor No. 151 (0x97) FT 6 Fan 1

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 6 Fan 1	
Device		
Sensor Type	0x04	Fan Speed
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x65	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x02, 0x0	Lower Critical Threshold is Readable
Reading Type		Unsigned
Lower critical threshold	0x23	1190 RPM

Table 2-37 Sensor No. 152 (0x98) FT 6 Fan 2

Raw Value/Description	Feature	Interpreted Value
Sensor Name	FT 6 Fan 2	
Device		
Sensor Type	0x04	Fan Speed
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x65	
Rearm mode		Auto

Table 2-37 Sensor No. 152 (0x98) FT 6 Fan 2 (continued)

Raw Value/Description	Feature	Interpreted Value
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x02, 0x0	Lower Critical Threshold is Readable
Reading Type		Unsigned
Lower critical threshold	0x23	1190 RPM

Table 2-38 Sensor No. 153 (0x99) FT 7 Fan 1

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 7 Fan 1	
Device		
Sensor Type	0x04	Fan Speed
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x66	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x02, 0x00	Lower Critical Threshold is Readable
Reading Type		Unsigned
Lower critical threshold	0x83	5895 RPM

Table 2-39 Sensor No. 154 (0x9A) FT 7 Fan 2

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 7 Fan 2	
Device		
Sensor Type	0x04	Fan Speed
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x66	
Rearm mode		Auto

Table 2-39 Sensor No. 154 (0x9A) FT 7 Fan 2 (continued)

Feature	Raw Value/Description	Interpreted Value
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x02, 0x00	Lower Critical Threshold is Readable
Reading Type		Unsigned
Lower critical threshold	0x83	5895 RPM

Table 2-40 Sensor No. 155 (0x9B) FT 8 Fan 1

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 8 Fan 1	
Device		
Sensor Type	0x04	Fan Speed
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x67	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x02, 0x00	Lower Critical Threshold is Readable
Reading Type		Unsigned
Lower critical threshold	0x83	5895 RPM

Table 2-41 Sensor No. 156 (0x9C) FT 8 Fan 2

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 8 Fan 2	
Device		
Sensor Type	0x04	Fan Speed
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x67	
Rearm mode		Auto

Table 2-41 Sensor No. 156 (0x9C) FT 8 Fan 2 (continued)

Feature	Raw Value/Description	Interpreted Value
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x02, 0x00	Lower Critical Threshold is Readable
Reading Type		Unsigned
Lower critical threshold	0x83	5895 RPM



Two additional Fan Speed sensors support the SAM used in the AXP1600 shelf.

Table 2-42 Sensor No. 157 (0x9D) FT 9 Fan 1, AXP1600

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 9 Fan 1	
Device		
Sensor Type	0x04	Fan Speed
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x68	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x02, 0x00	Lower Critical Threshold is Readable
Reading Type		Unsigned
Lower critical threshold	0x83	5895 RPM

Table 2-43 Sensor No. 158 (0x9E) FT 9 Fan 2, AXP1600

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 9 Fan 2	
Device		
Sensor Type	0x04	Fan Speed
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x68	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x02, 0x00	Lower Critical Threshold is Readable
Reading Type		Unsigned
Lower critical threshold	0x83	5895 RPM

### 2.4.5.2 Fan Voltage Sensors

The following tables describe the analog fan voltage sensors available on the Active SAM.

Table 2-44 Sensor No. 171 (0xAB) FT 1 Fan 1 12 V

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 1 Fan 1 12 V	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x60	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only

Table 2-44 Sensor No. 171 (0xAB) FT 1 Fan 1 12 V (continued)

Feature	Raw Value/Description	Interpreted Value
Readable and Settable threshold mask (bytes 19, 20)	0x36, 0x00	Upper and Lower Critical and Non-recoverable Thresholds are Readable
Reading Type		Unsigned
Lower critical and non-recoverable thresholds	0x50, 0x4c	(6.88, 6.536) Volts
Upper critical and non-recoverable thresholds	0x9F, 0xA0	(13.674, 13.76) Volts

Table 2-45 Sensor No. 172 (0xAC) FT 1 Fan 1 V Bias

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 1 Fan 1 V Bias	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x60	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x36, 0x00	Upper and Lower Critical and Non-recoverable Thresholds are Readable
Reading Type		Unsigned
Lower critical and non-recoverable thresholds	0x73, 0x71	(9.89, 9.718) Volts
Upper critical and non-recoverable thresholds	0x87, 0xA5	(11.61, 14.19) Volts

Table 2-46 Sensor No. 173 (0xAD) FT 1 Fan 2 12 V

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 1 Fan 2 12 V	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	

Table 2-46 Sensor No. 173 (0xAD) FT 1 Fan 2 12 V (continued)

Feature	Raw Value/Description	Interpreted Value
Entity ID	0x1E	Cooling Unit
Entity Instance	0x60	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x36, 0x00	Upper and Lower Critical and Non-recoverable Thresholds are Readable
Reading Type		Unsigned
Lower critical and non-recoverable thresholds	0x50, 0x4c	(6.88, 6.536) Volts
Upper critical and non-recoverable thresholds	0x9F, 0xA0	(13.674, 13.76) Volts

Table 2-47 Sensor No. 174 (0xAE) FT 1 Fan 2 VBIAS

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 1 Fan 2 VBIAS	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x60	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x36, 0x00	Upper and Lower Critical and Non-recoverable Thresholds are Readable
Reading Type		Unsigned
Lower critical and non-recoverable thresholds	0x73, 0x71	(9.89, 9.718) Volts
Upper critical and non-recoverable thresholds	0x87, 0xA5	(11.61, 14.19) Volts



Table 2-48 Sensor No. 175 (0xAF) FT 2 Fan 1 12 V

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 2 Fan 1 12 V	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x61	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x36, 0x00	Upper and Lower Critical and Non-recoverable Thresholds are Readable
Reading Type		Unsigned
Lower critical and non-recoverable thresholds	0x50, 0x4c	(6.88, 6.536) Volts
Upper critical and non-recoverable thresholds	0x9F, 0xA0	(13.674, 13.76) Volts

Table 2-49 Sensor No. 176 (0xB0) FT 2 Fan 1 VBIAS

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 2 Fan 1 VBIAS	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x61	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only

Table 2-49 Sensor No. 176 (0xB0) FT 2 Fan 1 VBIAS (continued)

Feature	Raw Value/Description	Interpreted Value
Readable and Settable threshold mask (bytes 19, 20)	0x36, 0x00	Upper and Lower Critical and Non-recoverable Thresholds are Readable
Reading Type		Unsigned
Lower critical and non-recoverable thresholds	0x73, 0x71	(9.89, 9.718) Volts
Upper critical and non-recoverable thresholds	0x87, 0xA5	(11.61, 14.19) Volts

Table 2-50 Sensor No. 177 (0xB1) FT 2 Fan 2 12 V

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 2 Fan 2 12 V	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x61	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x36, 0x00	Upper and Lower Critical and Non-recoverable Thresholds are Readable
Reading Type		Unsigned
Lower critical and non-recoverable thresholds	0x50, 0x4c	(6.88, 6.536) Volts
Upper critical and non-recoverable thresholds	0x9F, 0xA0	(13.674, 13.76) Volts

Table 2-51 Sensor No. 178 (0xB2) FT 2 Fan 2 VBIAS

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 2 Fan 2 VBIAS	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	

Table 2-51 Sensor No. 178 (0xB2) FT 2 Fan 2 VBias (continued)

Feature	Raw Value/Description	Interpreted Value
Entity ID	0x1E	Cooling Unit
Entity Instance	0x61	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x36, 0x00	Upper and Lower Critical and Non-recoverable Thresholds are Readable
Reading Type		Unsigned
Lower critical and non-recoverable thresholds	0x73, 0x71	(9.89, 9.718) Volts
Upper critical and non-recoverable thresholds	0x87, 0xA5	(11.61, 14.19) Volts

Table 2-52 Sensor No. 179 (0xB3) FT 3 Fan 1 12 V

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 3 Fan 1 12 V	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x62	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x36, 0x00	Upper and Lower Critical and Non-recoverable Thresholds are Readable
Reading Type		Unsigned
Lower critical and non-recoverable thresholds	0x50, 0x4c	(6.88, 6.536) Volts
Upper critical and non-recoverable thresholds	0x9F, 0xA0	(13.674, 13.76) Volts

Table 2-53 Sensor No. 180 (0xB4) FT 3 Fan 1 VBIAS

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 3 Fan 1 VBIAS	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x62	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x36, 0x00	Upper and Lower Critical and Non-recoverable Thresholds are Readable
Reading Type		Unsigned
Lower critical and non-recoverable thresholds	0x73, 0x71	(9.89, 9.718) Volts
Upper critical and non-recoverable thresholds	0x87, 0xA5	(11.61, 14.19) Volts

Table 2-54 Sensor No. 181 (0xB5) FT 3 Fan 2 12 V

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 3 Fan 2 12 V	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x62	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only

Table 2-54 Sensor No. 181 (0xB5) FT 3 Fan 2 12 V (continued)

Feature	Raw Value/Description	Interpreted Value
Readable and Settable threshold mask (bytes 19, 20)	0x36, 0x00	Upper and Lower Critical and Non-recoverable Thresholds are Readable
Reading Type		Unsigned
Lower critical and non-recoverable thresholds	0x50, 0x4c	(6.88, 6.536) Volts
Upper critical and non-recoverable thresholds	0x9F, 0xA0	(13.674, 13.76) Volts

Table 2-55 Sensor No. 182 (0xB6) FT 3 Fan 2 V Bias

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 3 Fan 2 V Bias	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x62	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x36, 0x00	Upper and Lower Critical and Non-recoverable Thresholds are Readable
Reading Type		Unsigned
Lower critical and non-recoverable thresholds	0x73, 0x71	(9.89, 9.718) Volts
Upper critical and non-recoverable thresholds	0x87, 0xA5	(11.61, 14.19) Volts

Table 2-56 Sensor No. 183 (0xB7) FT 4 Fan 1 12 V

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 4 Fan 1 12 V	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	

Table 2-56 Sensor No. 183 (0xB7) FT 4 Fan 1 12 V (continued)

Feature	Raw Value/Description	Interpreted Value
Entity ID	0x1E	Cooling Unit
Entity Instance	0x63	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x36, 0x00	Upper and Lower Critical and Non-recoverable Thresholds are Readable
Reading Type		Unsigned
Lower critical and non-recoverable thresholds	0x50, 0x4c	(6.88, 6.536) Volts
Upper critical and non-recoverable thresholds	0x9F, 0xA0	(13.674, 13.76) Volts

Table 2-57 Sensor No. 184 (0xB8) FT 4 Fan 1 VBIAS

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 4 Fan 1 VBIAS	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x63	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x36, 0x00	Upper and Lower Critical and Non-recoverable Thresholds are Readable
Reading Type		Unsigned
Lower critical and non-recoverable thresholds	0x73, 0x71	(9.89, 9.718) Volts
Upper critical and non-recoverable thresholds	0x87, 0xA5	(11.61, 14.19) Volts

Table 2-58 Sensor No. 185 (0xB9) FT 4 Fan 2 12 V

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 4 Fan 2 12 V	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x63	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x36, 0x00	Upper and Lower Critical and Non-recoverable Thresholds are Readable
Reading Type		Unsigned
Lower critical and non-recoverable thresholds	0x50, 0x4c	(6.88, 6.536) Volts
Upper critical and non-recoverable thresholds	0x9F, 0xA0	(13.674, 13.76) Volts

Table 2-59 Sensor No. 186 (0xBA) FT 4 Fan 2 VBIAS

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 4 Fan 2 VBIAS	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x63	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only

Table 2-59 Sensor No. 186 (0xBA) FT 4 Fan 2 VBIAS (continued)

Feature	Raw Value/Description	Interpreted Value
Readable and Settable threshold mask (bytes 19, 20)	0x36, 0x00	Upper and Lower Critical and Non-recoverable Thresholds are Readable
Reading Type		Unsigned
Lower critical and non-recoverable thresholds	0x73, 0x71	(9.89, 9.718) Volts
Upper critical and non-recoverable thresholds	0x87, 0xA5	(11.61, 14.19) Volts

Table 2-60 Sensor No. 187 (0xBB) FT 5 Fan 1 12 V

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 5 Fan 1 12 V	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x64	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x36, 0x00	Upper and Lower Critical and Non-recoverable Thresholds are Readable
Reading Type		Unsigned
Lower critical and non-recoverable thresholds	0x50, 0x4c	(6.88, 6.536) Volts
Upper critical and non-recoverable thresholds	0x9F, 0xA0	(13.674, 13.76) Volts

Table 2-61 Sensor No. 188 (0xBC) FT 5 Fan 1 VBIAS

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 5 Fan 1 VBIAS	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	



Table 2-61 Sensor No. 188 (0xBC) FT 5 Fan 1 VBIAS (continued)

Feature	Raw Value/Description	Interpreted Value
Entity ID	0x1E	Cooling Unit
Entity Instance	0x64	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x36, 0x00	Upper and Lower Critical and Non-recoverable Thresholds are Readable
Reading Type		Unsigned
Lower critical and non-recoverable thresholds	0x73, 0x71	(9.89, 9.718) Volts
Upper critical and non-recoverable thresholds	0x87, 0xA5	(11.61, 14.19) Volts

Table 2-62 Sensor No. 189 (0xBD) FT 5 Fan 2 12 V

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 5 Fan 2 12 V	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x64	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x36, 0x00	Upper and Lower Critical and Non-recoverable Thresholds are Readable
Reading Type		Unsigned
Lower critical and non-recoverable thresholds	0x50, 0x4c	(6.88, 6.536) Volts
Upper critical and non-recoverable thresholds	0x9F, 0xA0	(13.674, 13.76) Volts

Table 2-63 Sensor No. 190 (0xBE) FT 5 Fan 2 VBIAS

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 5 Fan 2 VBIAS	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x64	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x36, 0x00	Upper and Lower Critical and Non-recoverable Thresholds are Readable
Reading Type		Unsigned
Lower critical and non-recoverable thresholds	0x73, 0x71	(9.89, 9.718) Volts
Upper critical and non-recoverable thresholds	0x87, 0xA5	(11.61, 14.19) Volts

Table 2-64 Sensor No. 191 (0xBF) FT 6 Fan 1 12 V

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 6 Fan 1 12 V	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x65	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only

Table 2-64 Sensor No. 191 (0xBF) FT 6 Fan 1 12 V (continued)

Feature	Raw Value/Description	Interpreted Value
Readable and Settable threshold mask (bytes 19, 20)	0x36, 0x00	Upper and Lower Critical and Non-recoverable Thresholds are Readable
Reading Type		Unsigned
Lower critical and non-recoverable thresholds	0x50, 0x4c	(6.88, 6.536) Volts
Upper critical and non-recoverable thresholds	0x9F, 0xA0	(13.674, 13.76) Volts

Table 2-65 Sensor No. 192 (0xC0) FT 6 Fan 1 V Bias

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 6 Fan 1 V Bias	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x65	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x36, 0x00	Upper and Lower Critical and Non-recoverable Thresholds are Readable
Reading Type		Unsigned
Lower critical and non-recoverable thresholds	0x73, 0x71	(9.89, 9.718) Volts
Upper critical and non-recoverable thresholds	0x87, 0xA5	(11.61, 14.19) Volts

Table 2-66 Sensor No. 193 (0xC1) FT 6 Fan 2 12 V

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 6 Fan 2 12 V	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	

Table 2-66 Sensor No. 193 (0xC1) FT 6 Fan 2 12 V (continued)

Feature	Raw Value/Description	Interpreted Value
Entity ID	0x1E	Cooling Unit
Entity Instance	0x65	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x36, 0x00	Upper and Lower Critical and Non-recoverable Thresholds are Readable
Reading Type		Unsigned
Lower critical and non-recoverable thresholds	0x50, 0x4c	(6.88, 6.536) Volts
Upper critical and non-recoverable thresholds	0x9F, 0xA0	(13.674, 13.76) Volts

Table 2-67 Sensor No. 194 (0xC2) FT 6 Fan 2 VBIAS

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 6 Fan 2 VBIAS	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x65	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x36, 0x00	Upper and Lower Critical and Non-recoverable Thresholds are Readable
Reading Type		Unsigned
Lower critical and non-recoverable thresholds	0x73, 0x71	(9.89, 9.718) Volts
Upper critical and non-recoverable thresholds	0x87, 0xA5	(11.61, 14.19) Volts

Table 2-68 Sensor No. 195 (0xC3) FT 7 Fan 1 +12V

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 7 Fan 1 12 V	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x66	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x36, 0x00	Upper and Lower Critical and Non-recoverable Thresholds are Readable
Reading Type		Unsigned
Lower critical and non-recoverable thresholds	0x50, 0x4c	(6.88, 6.536) Volts
Upper critical and non-recoverable thresholds	0x9F, 0xA0	(13.674, 13.76) Volts

Table 2-69 Sensor No. 196 (0xC4) FT 7 Fan 1 VBias

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 7 Fan 1 VBias	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x66	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only

Table 2-69 Sensor No. 196 (0xC4) FT 7 Fan 1 VBIAS (continued)

Feature	Raw Value/Description	Interpreted Value
Readable and Settable threshold mask (bytes 19, 20)	0x36, 0x00	Upper and Lower Critical and Non-recoverable Thresholds are Readable
Reading Type		Unsigned
Lower critical and non-recoverable thresholds	0x73, 0x71	(9.89, 9.718) Volts
Upper critical and non-recoverable thresholds	0x87, 0xA5	(11.61, 14.19) Volts

Table 2-70 Sensor No. 197 (0xC5) FT 7 Fan 2 12 V

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 7 Fan 2 12 V	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x66	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x36, 0x00	Upper and Lower Critical and Non-recoverable Thresholds are Readable
Reading Type		Unsigned
Lower critical and non-recoverable thresholds	0x50, 0x4c	(6.88, 6.536) Volts
Upper critical and non-recoverable thresholds	0x9F, 0xA0	(13.674, 13.76) Volts

Table 2-71 Sensor No. 198 (0xC6) FT 7 Fan 2 VBIAS

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 7 Fan 2 VBIAS	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	

Table 2-71 Sensor No. 198 (0xC6) FT 7 Fan 2 VBias (continued)

Feature	Raw Value/Description	Interpreted Value
Entity ID	0x1E	Cooling Unit
Entity Instance	0x66	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x36, 0x00	Upper and Lower Critical and Non-recoverable Thresholds are Readable
Reading Type		Unsigned
Lower critical and non-recoverable thresholds	0x73, 0x71	(9.89, 9.718) Volts
Upper critical and non-recoverable thresholds	0x87, 0xA5	(11.61, 14.19) Volts

Table 2-72 Sensor No. 199 (0xC7) FT 8 Fan 1 12 V

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 8 Fan 1 12 V	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x67	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x36, 0x00	Upper and Lower Critical and Non-recoverable Thresholds are Readable
Reading Type		Unsigned
Lower critical and non-recoverable thresholds	0x50, 0x4c	(6.88, 6.536) Volts
Upper critical and non-recoverable thresholds	0x9F, 0xA0	(13.674, 13.76) Volts

Table 2-73 Sensor No. 200 (0xC8) FT 8 Fan 1 VBias

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 8 Fan 1 VBias	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x67	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x36, 0x00	Upper and Lower Critical and Non-recoverable Thresholds are Readable
Reading Type		Unsigned
Lower critical and non-recoverable thresholds	0x73, 0x71	(9.89, 9.718) Volts
Upper critical and non-recoverable thresholds	0x87, 0xA5	(11.61, 14.19) Volts

Table 2-74 Sensor No. 201 (0xC9) FT 8 Fan 2 12 V

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 8 Fan 2 12 V	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x67	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only



Table 2-74 Sensor No. 201 (0xC9) FT 8 Fan 2 12 V (continued)

Feature	Raw Value/Description	Interpreted Value
Readable and Settable threshold mask (bytes 19, 20)	0x36, 0x00	Upper and Lower Critical and Non-recoverable Thresholds are Readable
Reading Type		Unsigned
Lower critical and non-recoverable thresholds	0x50, 0x4c	(6.88, 6.536) Volts
Upper critical and non-recoverable thresholds	0x9F, 0xA0	(13.674, 13.76) Volts

Table 2-75 Sensor No. 202 (0xCA) FT 8 Fan 2 VBIAS

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 8 Fan 2 VBIAS	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x67	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x36, 0x00	Upper and Lower Critical and Non-recoverable Thresholds are Readable
Reading Type		Unsigned
Lower critical and non-recoverable thresholds	0x73, 0x71	(9.89, 9.718) Volts
Upper critical and non-recoverable thresholds	0x87, 0xA5	(11.61, 14.19) Volts



**Additional Fan Voltage sensors support the SAM used in the AXP1600 shelf.**

Table 2-76 Sensor No. 203 (0xCB) FT 9 Fan 1 12 V, AXP1600

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 9 Fan 1 12 V	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x68	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x36, 0x00	Upper and Lower Critical and Non-recoverable Thresholds are Readable
Reading Type		Unsigned
Lower critical and non-recoverable thresholds	0x50, 0x4c	(6.88, 6.536) Volts
Upper critical and non-recoverable thresholds	0x9F, 0xA0	(13.674, 13.76) Volts

Table 2-77 Sensor No. 204 (0xCC) FT 9 Fan 1 VBias, AXP1600

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 9 Fan 1 VBias	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x68	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only

Table 2-77 Sensor No. 204 (0xCC) FT 9 Fan 1 VBIAS, AXP1600 (continued)

Feature	Raw Value/Description	Interpreted Value
Readable and Settable threshold mask (bytes 19, 20)	0x36, 0x00	Upper and Lower Critical and Non-recoverable Thresholds are Readable
Reading Type		Unsigned
Lower critical and non-recoverable thresholds	0x73, 0x71	(9.89, 9.718) Volts
Upper critical and non-recoverable thresholds	0x87, 0xA5	(11.61, 14.19) Volts

Table 2-78 Sensor No. 205 (0xCD) FT 9 Fan 2 12 V, AXP1600

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 9 Fan 2 12 V	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x68	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x36, 0x00	Upper and Lower Critical and Non-recoverable Thresholds are Readable
Reading Type		Unsigned
Lower critical and non-recoverable thresholds	0x50, 0x4c	(6.88, 6.536) Volts
Upper critical and non-recoverable thresholds	0x9F, 0xA0	(13.674, 13.76) Volts

Table 2-79 Sensor No. 206 (0xCE) FT 9 Fan 2 VBIAS, AXP1600

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 9 Fan 2 VBIAS	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	

Table 2-79 Sensor No. 206 (0xCE) FT 9 Fan 2 VBIAS, AXP1600 (continued)

Feature	Raw Value/Description	Interpreted Value
Entity ID	0x1E	Cooling Unit
Entity Instance	0x68	
Rearm mode		Auto
Hysteresis support		No
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable and Settable threshold mask (bytes 19, 20)	0x36, 0x00	Upper and Lower Critical and Non-recoverable Thresholds are Readable
Reading Type		Unsigned
Lower critical and non-recoverable thresholds	0x73, 0x71	(9.89, 9.718) Volts
Upper critical and non-recoverable thresholds	0x87, 0xA5	(11.61, 14.19) Volts

## 2.4.6 SAM Active Shelf Manager Discrete Sensors

The active shelf managers at IPMB address 0x20 present the following discrete sensors:

- *Hot Swap Sensors*
- *Shm Fault Event Sensor*
- *IPMB Link Sensor*
- *Telco Alarm Sensor*
- *BMC Watchdog Sensor*
- *System Event*
- *Fan Tray Presence Sensor*
- *Fan Tray -48 V Fuse Sensor*

The following tables describe the discrete sensors available on the active SAM.

### 2.4.6.1 Hot Swap Sensors

The following table describes the discrete hot swap sensors available on the Active SAM.

*Table 2-80 Sensor No. 0 (0x00) FRU 0 HOT\_SWAP*

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FRU 0 HOT_SWAP	
Type of Measurement		Hot Swap State of Main FRU
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0xF0	Hot Swap
Sensor Owner LUN	0x00	
Entity ID	0xF0	PICMG Shelf Management Controller
Entity Instance	0x01	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0xFF, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0xFF, 0x00	Supports 8 Successive States
Reading Definition		According to PICMG 3.0

*Table 2-81 Sensor No. 2 (0x02) FRU 1 HOT\_SWAP*

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FRU 1 HOT_SWAP	
Type of Measurement		Hot Swap State of Fan Tray 1
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0xF0	Hot Swap
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x60	
Rearm mode		Auto
Event message control		Entire Sensor only

Table 2-81 Sensor No. 2 (0x02) FRU 1 HOT\_SWAP (continued)

Feature	Raw Value/Description	Interpreted Value
Assertion Event Mask (bytes 15,16)	0xFF, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0xFF, 0x00	Supports 8 Successive States
Reading Definition		According to PICMG 3.0

Table 2-82 Sensor No. 3 (0x03) FRU 2 HOT\_SWAP

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FRU 2 HOT_SWAP	
Type of Measurement		Hot Swap State of Fan Tray 2
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0xF0	Hot Swap
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x61	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0xFF, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0xFF, 0x00	Supports 8 Successive States
Reading Definition		According to PICMG 3.0

Table 2-83 Sensor No. 4 (0x04) FRU 3 HOT\_SWAP

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FRU 3 HOT_SWAP	
Type of Measurement		Hot Swap State of Fan Tray 3
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0xF0	Hot Swap
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit

Table 2-83 Sensor No. 4 (0x04) FRU 3 HOT\_SWAP (continued)

Feature	Raw Value/Description	Interpreted Value
Entity Instance	0x62	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0xFF, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0xFF, 0x00	Supports 8 Successive States
Reading Definition		According to PICMG 3.0

Table 2-84 Sensor No. 5 (0x05) FRU 4 HOT\_SWAP

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FRU 4 HOT_SWAP	
Type of Measurement		Hot Swap State of Fan Tray 4
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0xF0	Hot Swap
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x63	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0xFF, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0xFF, 0x00	Supports 8 Successive States
Reading Definition		According to PICMG 3.0

Table 2-85 Sensor No. 6 (0x06) FRU 5 HOT\_SWAP

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FRU 5 HOT_SWAP	
Type of Measurement		Hot Swap State of Fan Tray 5
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific

Table 2-85 Sensor No. 6 (0x06) FRU 5 HOT\_SWAP (continued)

Feature	Raw Value/Description	Interpreted Value
Sensor Type	0xF0	Hot Swap
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x64	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0xFF, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0xFF, 0x00	Supports 8 Successive States
Reading Definition		According to PICMG 3.0

Table 2-86 Sensor No. 7 (0x07) FRU 6 HOT\_SWAP

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FRU 6 HOT_SWAP	
Type of Measurement		Hot Swap State of Fan Tray 6
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0xF0	Hot Swap
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x65	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0xFF, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0xFF, 0x00	Supports 8 Successive States
Reading Definition		According to PICMG 3.0



Table 2-87 Sensor No. 8 (0x08) FRU 7 HOT\_SWAP

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FRU 7 HOT_SWAP	
Type of Measurement		Hot Swap State of Fan Tray 7
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0xF0	Hot Swap
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x66	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0xFF, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0xFF, 0x00	Supports 8 Successive States
Reading Definition		According to PICMG 3.0

Table 2-88 Sensor No. 9 (0x09) FRU 8 HOT\_SWAP

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FRU 8 HOT_SWAP	
Type of Measurement		Hot Swap State of Fan Tray 8
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0xF0	Hot Swap
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x67	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0xFF, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0xFF, 0x00	Supports 8 Successive States
Reading Definition		According to PICMG 3.0



A FRU 9 Hot Swap sensor supports the SAM used in the AXP1600 shelf.

Table 2-89 Sensor No. 10 (0x0A) FRU 9 HOT\_SWAP, AXP1600

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FRU 8 HOT_SWAP	
Type of Measurement		Hot Swap State of Fan Tray 8
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0xF0	Hot Swap
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x68	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0xFF, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0xFF, 0x00	Supports 8 Successive States
Reading Definition		According to PICMG 3.0

### 2.4.6.2 Shm Fault Event Sensor

The following table describes the discrete Shm Fault Event sensor available on the Active SAM.

Table 2-90 Sensor No. 11 (0x20) Fault Event Sensor

Feature	Raw Value/Description	Interpreted Value
Sensor Name	Shm Fault Event	
Type of Measurement		Status of various classes of software discovered faults in the Shm
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0xDE	OEM-reserved
Sensor Owner LUN	0x00	

Table 2-90 Sensor No. 11 (0x20) Fault Event Sensor (continued)

Feature	Raw Value/Description	Interpreted Value
Entity ID	0xF0	PICMG Shelf Management Controller
Entity Instance	0x01	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0xFE 0x01	
Deassertion Event Mask (bytes 17,18)	0xFE 0x01	
Discrete Reading Mask (bytes 19, 20)	0xFE 0x01	
Reading Definition		According to Motorola XXX

### 2.4.6.3 IPMB Link Sensor

The following table describes the discrete IPMB link sensors available on the Active SAM.

Table 2-91 Sensor No. 12 (0x0B) IPMB LINK 1

Feature	Raw Value/Description	Interpreted Value
Sensor Name	IPMB LINK 1	
Type of Measurement		IPMB Link 1 State
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0xF1	IPMB Link
Sensor Owner LUN	0x00	
Entity ID	0xF0	PICMG Shelf Management Controller
Entity Instance	0x01	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0x0F, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x0F, 0x00	Supports 4 Successive States
Reading Definition		According to PICMG 3.0

Table 2-92 Sensor No. 13 (0x0C) IPMB LINK 2

Feature	Raw Value/Description	Interpreted Value
Sensor Name	IPMB LINK 2	
Type of Measurement		IPMB Link 2 State
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0xF1	IPMB Link
Sensor Owner LUN	0x00	
Entity ID	0xF0	PICMG Shelf Management Controller
Entity Instance	0x01	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0x0F, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x0F, 0x00	Supports 4 Successive States
Reading Definition		According to PICMG 3.0

Table 2-93 Sensor No. 14 (0x0D) IPMB LINK 3

Feature	Raw Value/Description	Interpreted Value
Sensor Name	IPMB LINK 3	
Type of Measurement		IPMB Link 3 State
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0xF1	IPMB Link
Sensor Owner LUN	0x00	
Entity ID	0xF0	PICMG Shelf Management Controller
Entity Instance	0x01	
Rearm mode		Auto
Event message control		Entire Sensor only

Table 2-93 Sensor No. 14 (0x0D) IPMB LINK 3 (continued)

Feature	Raw Value/Description	Interpreted Value
Assertion Event Mask (bytes 15,16)	0x0F, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x0F, 0x00	Supports 4 Successive States
Reading Definition		According to PICMG 3.0

Table 2-94 Sensor No. 15 (0x0E) IPMB LINK 4

Feature	Raw Value/Description	Interpreted Value
Sensor Name	IPMB LINK 4	
Type of Measurement		IPMB Link 4 State
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0xF1	IPMB Link
Sensor Owner LUN	0x00	
Entity ID	0xF0	PICMG Shelf Management Controller
Entity Instance	0x01	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0x0F, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x0F, 0x00	Supports 4 Successive States
Reading Definition		According to PICMG 3.0

Table 2-95 Sensor No. 16 (0x0F) IPMB LINK 5

Feature	Raw Value/Description	Interpreted Value
Sensor Name	IPMB LINK 5	
Type of Measurement		IPMB Link 5 State
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0xF1	IPMB Link
Sensor Owner LUN	0x00	

Table 2-95 Sensor No. 16 (0x0F) IPMB LINK 5 (continued)

Feature	Raw Value/Description	Interpreted Value
Entity ID	0xF0	PICMG Shelf Management Controller
Entity Instance	0x01	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0x0F, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x0F, 0x00	Supports 4 Successive States
Reading Definition		According to PICMG 3.0

Table 2-96 Sensor No. 17 (0x10) IPMB LINK 6

Feature	Raw Value/Description	Interpreted Value
Sensor Name	IPMB LINK 6	
Type of Measurement		IPMB Link 6 State
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0xF1	IPMB Link
Sensor Owner LUN	0x00	
Entity ID	0xF0	PICMG Shelf Management Controller
Entity Instance	0x01	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0x0F, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x0F, 0x00	Supports 4 Successive States
Reading Definition		According to PICMG 3.0

Table 2-97 Sensor No. 18 (0x11) IPMB LINK 7

Feature	Raw Value/Description	Interpreted Value
Sensor Name	IPMB LINK 7	
Type of Measurement		IPMB Link 7 State
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0xF1	IPMB Link
Sensor Owner LUN	0x00	
Entity ID	0xF0	PICMG Shelf Management Controller
Entity Instance	0x01	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0x0F, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x0F, 0x00	Supports 4 Successive States
Reading Definition		According to PICMG 3.0

Table 2-98 Sensor No. 19 (0x12) IPMB LINK 8

Feature	Raw Value/Description	Interpreted Value
Sensor Name	IPMB LINK 8	
Type of Measurement		IPMB Link 8 State
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0xF1	IPMB Link
Sensor Owner LUN	0x00	
Entity ID	0xF0	PICMG Shelf Management Controller
Entity Instance	0x01	
Rearm mode		Auto
Event message control		Entire Sensor only

Table 2-98 Sensor No. 19 (0x12) IPMB LINK 8 (continued)

Feature	Raw Value/Description	Interpreted Value
Assertion Event Mask (bytes 15,16)	0x0F, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x0F, 0x00	Supports 4 Successive States
Reading Definition		According to PICMG 3.0

Table 2-99 Sensor No. 20 (0x14) IPMB LINK 9

Feature	Raw Value/Description	Interpreted Value
Sensor Name	IPMB LINK 9	
Type of Measurement		IPMB Link 9 State
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0xF1	IPMB Link
Sensor Owner LUN	0x00	
Entity ID	0xF0	PICMG Shelf Management Controller
Entity Instance	0x01	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0x0F, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x0F, 0x00	Supports 4 Successive States
Reading Definition		According to PICMG 3.0

Table 2-100 Sensor No. 21 (0x14) IPMB LINK 10

Feature	Raw Value/Description	Interpreted Value
Sensor Name	IPMB LINK 10	
Type of Measurement		IPMB Link 10 State
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0xF1	IPMB Link
Sensor Owner LUN	0x00	



Table 2-100 Sensor No. 21 (0x14) IPMB LINK 10 (continued)

Feature	Raw Value/Description	Interpreted Value
Entity ID	0xF0	PICMG Shelf Management Controller
Entity Instance	0x01	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0x0F, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x0F, 0x00	Supports 4 Successive States
Reading Definition		According to PICMG 3.0

Table 2-101 Sensor No. 22 (0x15) IPMB LINK 11

Feature	Raw Value/Description	Interpreted Value
Sensor Name	IPMB LINK 11	
Type of Measurement		IPMB Link 11 State
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0xF1	IPMB Link
Sensor Owner LUN	0x00	
Entity ID	0xF0	PICMG Shelf Management Controller
Entity Instance	0x01	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0x0F, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x0F, 0x00	Supports 4 Successive States
Reading Definition		According to PICMG 3.0

Table 2-102 Sensor No. 23 (0x16) IPMB LINK 12

Feature	Raw Value/Description	Interpreted Value
Sensor Name	IPMB LINK 12	
Type of Measurement		IPMB Link 12 State
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0xF1	IPMB Link
Sensor Owner LUN	0x00	
Entity ID	0xF0	PICMG Shelf Management Controller
Entity Instance	0x01	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0x0F, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x0F, 0x00	Supports 4 Successive States
Reading Definition		According to PICMG 3.0

Table 2-103 Sensor No. 24 (0x17) IPMB LINK 13

Feature	Raw Value/Description	Interpreted Value
Sensor Name	IPMB LINK 13	
Type of Measurement		IPMB Link 13 State
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0xF1	IPMB Link
Sensor Owner LUN	0x00	
Entity ID	0xF0	PICMG Shelf Management Controller
Entity Instance	0x01	
Rearm mode		Auto
Event message control		Entire Sensor only

Table 2-103 Sensor No. 24 (0x17) IPMB LINK 13 (continued)

Feature	Raw Value/Description	Interpreted Value
Assertion Event Mask (bytes 15,16)	0x0F, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x0F, 0x00	Supports 4 Successive States
Reading Definition		According to PICMG 3.0

Table 2-104 Sensor No. 25 (0x18) IPMB LINK 14

Feature	Raw Value/Description	Interpreted Value
Sensor Name	IPMB LINK 14	
Type of Measurement		IPMB Link 14 State
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0xF1	IPMB Link
Sensor Owner LUN	0x00	
Entity ID	0xF0	PICMG Shelf Management Controller
Entity Instance	0x01	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0x0F, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x0F, 0x00	Supports 4 Successive States
Reading Definition		According to PICMG 3.0



**Additional IPMB LINK sensors support the SAM used in the AXP1600 shelf.**

Table 2-105 Sensor No. 26 (0x19) IPMB LINK 15, AXP1600

Feature	Raw Value/Description	Interpreted Value
Sensor Name	IPMB LINK 15	
Type of Measurement		IPMB Link 14 State
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0xF1	IPMB Link
Sensor Owner LUN	0x00	
Entity ID	0xF0	PICMG Shelf Management Controller
Entity Instance	0x01	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0x0F, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x0F, 0x00	Supports 4 Successive States
Reading Definition		According to PICMG 3.0

Table 2-106 Sensor No. 27 (0x1A) IPMB LINK 16, AXP1600

Feature	Raw Value/Description	Interpreted Value
Sensor Name	IPMB LINK 16	
Type of Measurement		IPMB Link 14 State
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0xF1	IPMB Link
Sensor Owner LUN	0x00	
Entity ID	0xF0	PICMG Shelf Management Controller
Entity Instance	0x01	
Rearm mode		Auto
Event message control		Entire Sensor only

Table 2-106 Sensor No. 27 (0x1A) IPMB LINK 16, AXP1600 (continued)

Feature	Raw Value/Description	Interpreted Value
Assertion Event Mask (bytes 15,16)	0x0F, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x0F, 0x00	Supports 4 Successive States
Reading Definition		According to PICMG 3.0

Table 2-107 Sensor No. 28 (0x1B) IPMB LINK 17

Feature	Raw Value/Description	Interpreted Value
Sensor Name	IPMB LINK 17	
Type of Measurement		IPMB Link 17 State
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0xF1	IPMB Link
Sensor Owner LUN	0x00	
Entity ID	0xF0	PICMG Shelf Management Controller
Entity Instance	0x01	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0x0F, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x0F, 0x00	Supports 4 Successive States
Reading Definition		According to PICMG 3.0

Table 2-108 Sensor No. 29 (0x1C) IPMB LINK 18, AXP1600

Feature	Raw Value/Description	Interpreted Value
Sensor Name	IPMB LINK 18	
Type of Measurement		IPMB Link 17 State
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0xF1	IPMB Link
Sensor Owner LUN	0x00	

Table 2-108 Sensor No. 29 (0x1C) IPMB LINK 18, AXP1600 (continued)

Feature	Raw Value/Description	Interpreted Value
Entity ID	0xF0	PICMG Shelf Management Controller
Entity Instance	0x01	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0x0F, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x0F, 0x00	Supports 4 Successive States
Reading Definition		According to PICMG 3.0

Table 2-109 Sensor No. 30 (0x1D) IPMB LINK 19, AXP1600

Feature	Raw Value/Description	Interpreted Value
Sensor Name	IPMB LINK 19	
Type of Measurement		IPMB Link 17 State
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0xF1	IPMB Link
Sensor Owner LUN	0x00	
Entity ID	0xF0	PICMG Shelf Management Controller
Entity Instance	0x01	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0x0F, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x0F, 0x00	Supports 4 Successive States
Reading Definition		According to PICMG 3.0

Table 2-110 Sensor No. 31 (0x1E) IPMB LINK 20, AXP1600

Feature	Raw Value/Description	Interpreted Value
Sensor Name	IPMB LINK 20	
Type of Measurement		IPMB Link 17 State
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0xF1	IPMB Link
Sensor Owner LUN	0x00	
Entity ID	0xF0	PICMG Shelf Management Controller
Entity Instance	0x01	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0x0F, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x0F, 0x00	Supports 4 Successive States
Reading Definition		According to PICMG 3.0

Table 2-111 Sensor No. 32 (0x1F) IPMB LINK 21, AXP1600

Feature	Raw Value/Description	Interpreted Value
Sensor Name	IPMB LINK 21	
Type of Measurement		IPMB Link 17 State
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0xF1	IPMB Link
Sensor Owner LUN	0x00	
Entity ID	0xF0	PICMG Shelf Management Controller
Entity Instance	0x01	
Rearm mode		Auto
Event message control		Entire Sensor only

Table 2-111 Sensor No. 32 (0x1F) IPMB LINK 21, AXP1600 (continued)

Feature	Raw Value/Description	Interpreted Value
Assertion Event Mask (bytes 15,16)	0x0F, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x0F, 0x00	Supports 4 Successive States
Reading Definition		According to PICMG 3.0

#### 2.4.6.4 Telco Alarm Sensor

The following table describes the discrete Telco alarm sensor available on the Active SAM. Further information on this sensor can be found at [Telco Alarms \(Pigeon Point OEM\)](#) on page 137.

Table 2-112 Sensor No. 131 (0x83) TELCO Alarms

Feature	Raw Value/Description	Interpreted Value
Sensor Name	TELCO Alarms	
Type of Measurement		State of the TELCO Alarms
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0xDF	OEM-reserved
Sensor Owner LUN	0x00	
Entity ID	0xF0	PICMG Shelf Management Controller
Entity Instance	0x01	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0x00, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x07, 0x00	OEM States
Reading Definition		According to Pigeon Point



### 2.4.6.5 BMC Watchdog Sensor

The following table describes the discrete BMC Watchdog sensor available on the Active SAM.

Table 2-113 Sensor No. 132 (0x84) BMC Watchdog

Feature	Raw Value/Description	Interpreted Value
Sensor Name	BMC Watchdog	
Type of Measurement		State of the BMC Watchdog on the Active SAM
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0x23	IPMI Watchdog 2
Sensor Owner LUN	0x00	
Entity ID	0xF0	PICMG Shelf Management Controller
Entity Instance	0x01	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0x0F, 0x01	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x0F, 0x01	Supports 5 States
Reading Definition		According to IPMI 1.5

### 2.4.6.6 System Event

The following table describes the discrete system event sensor available on the Active SAM.

Table 2-114 Sensor No. 133 (0x85) SYSTEM EVENT

Feature	Raw Value/Description	Interpreted Value
Sensor Name	System Event	
Type of Measurement		Presence
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0x12	System Event
Sensor Owner LUN	0x00	
Entity ID	0xF0	PICMG Shelf Management Controller
Entity Instance	0x01	
Rearm mode		Auto

Table 2-114 Sensor No. 133 (0x85) SYSTEM EVENT (continued)

Feature	Raw Value/Description	Interpreted Value
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0x1F, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x1F, 0x00	Supports 5 Successive States
Reading Definition		According to IPMI 1.5

### 2.4.6.7 Fan Tray Presence Sensor

The following table describes the discrete fan tray presence sensor available on the Active SAM.

Table 2-115 Sensor No. 220 (0xDC) Fan Tray 1

Feature	Raw Value/Description	Interpreted Value
Sensor Name	Fan Tray 1	
Type of Measurement		Fan Tray 1 Presence
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0x25	Entity Presence
Sensor Owner LUN	0x00	
Entity ID	0x1E	0x1E
Entity Instance	0x60	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask(bytes 15,16)	0x03, 0x00	
Deassertion Event Mask(bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x03, 0x00	Supports 2 Successive States
Reading Definition		According to IPMI 1.5

Table 2-116 Sensor No. 221 (0xDD) Fan Tray 2

Feature	Raw Value/Description	Interpreted Value
Sensor Name	Fan Tray 2	
Type of Measurement		Fan Tray 2 Presence
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0x25	Entity Presence
Sensor Owner LUN	0x00	
Entity ID	0x1E	0x1E
Entity Instance	0x61	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask(bytes 15,16)	0x03, 0x00	
Deassertion Event Mask(bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x03, 0x00	Supports 2 Successive States
Reading Definition		According to IPMI 1.5

Table 2-117 Sensor No. 222 (0xDE) Fan Tray 3

Feature	Raw Value/Description	Interpreted Value
Sensor Name	Fan Tray 3	
Type of Measurement		Fan Tray 3 Presence
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0x25	Entity Presence
Sensor Owner LUN	0x00	
Entity ID	0x1E	0x1E
Entity Instance	0x62	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask(bytes 15,16)	0x03, 0x00	
Deassertion Event Mask(bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x03, 0x00	Supports 2 Successive States
Reading Definition		According to IPMI 1.5

Table 2-118 Sensor No. 223 (0xDF) Fan Tray 4

Feature	Raw Value/Description	Interpreted Value
Sensor Name	Fan Tray 4	
Type of Measurement		Fan Tray 4 Presence
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0x25	Entity Presence
Sensor Owner LUN	0x00	
Entity ID	0x1E	0x1E
Entity Instance	0x63	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask(bytes 15,16)	0x03, 0x00	
Deassertion Event Mask(bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x03, 0x00	Supports 2 Successive States
Reading Definition		According to IPMI 1.5

Table 2-119 Sensor No. 224 (0xE0) Fan Tray 5

Feature	Raw Value/Description	Interpreted Value
Sensor Name	Fan Tray 5	
Type of Measurement		Fan Tray 5 Presence
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0x25	Entity Presence
Sensor Owner LUN	0x00	
Entity ID	0x1E	0x1E
Entity Instance	0x64	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask(bytes 15,16)	0x03, 0x00	
Deassertion Event Mask(bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x03, 0x00	Supports 2 Successive States
Reading Definition		According to IPMI 1.5

Table 2-120 Sensor No. 225 (0xE1) Fan Tray 6

Feature	Raw Value/Description	Interpreted Value
Sensor Name	Fan Tray 6	
Type of Measurement		Fan Tray 6 Presence
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0x25	Entity Presence
Sensor Owner LUN	0x00	
Entity ID	0x1E	0x1E
Entity Instance	0x65	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask(bytes 15,16)	0x03, 0x00	
Deassertion Event Mask(bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x03, 0x00	Supports 2 Successive States
Reading Definition		According to IPMI 1.5

Table 2-121 Sensor No. 226 (0xE2) Fan Tray 7

Feature	Raw Value/Description	Interpreted Value
Sensor Name	Fan Tray 7	
Type of Measurement		Fan Tray 7 Presence
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0x25	Entity Presence
Sensor Owner LUN	0x00	
Entity ID	0x1E	0x1E
Entity Instance	0x66	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask(bytes 15,16)	0x03, 0x00	
Deassertion Event Mask(bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x03, 0x00	Supports 2 Successive States
Reading Definition		According to IPMI 1.5

Table 2-122 Sensor No. 227 (0xE3) Fan Tray 8

Feature	Raw Value/Description	Interpreted Value
Sensor Name	Fan Tray 8	
Type of Measurement		Fan Tray 8 Presence
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0x25	Entity Presence
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x67	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0x03, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x03, 0x00	Supports 2 Successive States
Reading Definition		According to IPMI 1.5



An additional Fan Tray Presence sensor supports the SAM used in the AXP1600 shelf.

Table 2-123 Sensor No. 228 (0xE4) Fan Tray 9, AXP1600

Feature	Raw Value/Description	Interpreted Value
Sensor Name	Fan Tray 9	
Type of Measurement		Fan Tray 8 Presence
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0x25	Entity Presence
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x68	
Rearm mode		Auto
Event message control		Entire Sensor only

Table 2-123 Sensor No. 228 (0xE4) Fan Tray 9, AXP1600 (continued)

Feature	Raw Value/Description	Interpreted Value
Assertion Event Mask (bytes 15,16)	0x03, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x03, 0x00	Supports 2 Successive States
Reading Definition		According to IPMI 1.5

### 2.4.6.8 Fan Tray -48 V Fuse Sensor

The following tables describes the discrete fan tray -48 V fuse sensors available on the Active SAM. For further information on these sensors, refer to [FT -48 V Fuse \(Emerson OEM\)](#) on page 139.

Table 2-124 Sensor No. 230 (0xE6) FT 1 -48 V Fuse

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 1 -48V Fuse	
Type of Measurement		State of Fuse
Class		Discrete
Event/Reading Type	0x03	'digital' Discrete
Sensor Type	0xC0	OEM-reserved
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x60	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0x02, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x03, 0x00	Supports 2 Successive States
Reading Definition		According to Pigeon Point

Table 2-125 Sensor No. 231 (0xE7) FT 2 -48 V Fuse

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 2 -48 V Fuse	
Type of Measurement		State of Fuse
Class		Discrete
Event/Reading Type	0x03	'digital' Discrete
Sensor Type	0xC0	OEM-reserved
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x61	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0x02, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x03, 0x00	Supports 2 Successive States
Reading Definition		According to Pigeon Point

Table 2-126 Sensor No. 233 (0xE9) FT 4 -48 V Fuse

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 4 -48 V Fuse	
Type of Measurement		State of Fuse
Class		Discrete
Event/Reading Type	0x03	'digital' Discrete
Sensor Type	0xC0	OEM-reserved
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x63	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0x02, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x03, 0x00	Supports 2 Successive States
Reading Definition		According to Pigeon Point



Table 2-127 Sensor No. 232 (0xE8) FT 3 -48 V Fuse

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 3 -48 V Fuse	
Type of Measurement		State of Fuse
Class		Discrete
Event/Reading Type	0x03	'digital' Discrete
Sensor Type	0xC0	OEM-reserved
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x62	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0x02, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x03, 0x00	Supports 2 Successive States
Reading Definition		According to Pigeon Point

Table 2-128 Sensor No. 234 (0xEA) FT 5 -48 V Fuse

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 5 -48 V Fuse	
Type of Measurement		State of Fuse
Class		Discrete
Event/Reading Type	0x03	'digital' Discrete
Sensor Type	0xC0	OEM-reserved
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x64	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0x02, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x03, 0x00	Supports 2 Successive States
Reading Definition		According to Pigeon Point

Table 2-129 Sensor No. 235 (0xEB) FT 6 -48 V Fuse

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 6 -48 V Fuse	
Type of Measurement		State of Fuse
Class		Discrete
Event/Reading Type	0x03	'digital' Discrete
Sensor Type	0xC0	OEM-reserved
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x65	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0x02, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x03, 0x00	Supports 2 Successive States
Reading Definition		According to Pigeon Point

Table 2-130 Sensor No. 236 (0xEC) FT 7 -48 V Fuse

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 7 -48 V Fuse	
Type of Measurement		State of Fuse
Class		Discrete
Event/Reading Type	0x03	'digital' Discrete
Sensor Type	0xC0	OEM-reserved
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x66	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0x02, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x03, 0x00	Supports 2 Successive States
Reading Definition		According to Pigeon Point

Table 2-131 Sensor No. 237 (0xED) FT 8 -48 V Fuse

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 8 -48 V Fuse	
Type of Measurement		State of Fuse
Class		Discrete
Event/Reading Type	0x03	'digital' Discrete
Sensor Type	0xC0	OEM-reserved
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x67	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0x02, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x03, 0x00	Supports 2 Successive States
Reading Definition		According to Pigeon Point



An additional -48 V Fuse sensor supports the SAM used in the AXP1600 shelf.

Table 2-132 Sensor No. 238 (0xEE) FT9 -48 V Fuse, AXP1600

Feature	Raw Value/Description	Interpreted Value
Sensor Name	FT 9 -48 V Fuse	
Type of Measurement		State of Fuse
Class		Discrete
Event/Reading Type	0x03	'digital' Discrete
Sensor Type	0xC0	OEM-reserved
Sensor Owner LUN	0x00	
Entity ID	0x1E	Cooling Unit
Entity Instance	0x68	
Rearm mode		Auto
Event message control		Entire Sensor only

Table 2-132 Sensor No. 238 (0xEE) FT9 -48 V Fuse, AXP1600 (continued)

Feature	Raw Value/Description	Interpreted Value
Assertion Event Mask (bytes 15,16)	0x02, 0x00	
Deassertion Event Mask (bytes 17,18)	0x00, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x03, 0x00	Supports 2 Successive States
Reading Definition		According to Pigeon Point

## 2.5 Power Entry Module Sensor Data Records

This section describes in detail all available IPMI sensors of the Power Entry Module.

### 2.5.1 PEM FRU Information

There are two PEMs; one at IPMB address 0x66 and another at IPMB address 0x68. The main FRU (FRU 0) contains the FRU information of the PEM and it is the same for both PEMs (except for the serial number). FRU 1 contains the FRU information that the Active SAM caches as FRU 254 of IPMB address 0x20.

The FRU 0 information in a PEM1000 is represented in the next table.

Pigeon Point Shelf Manager Command Line Interpreter

```
66: FRU # 0, FRU Info
```

```
Common Header:   Format Version = 1
```

```
Board Info Area:
```

```
Version         = 1
```

```
Language Code   = 25
```

```
Mfg Date/Time   = Jan 1 00:00:00 2006 (5260320 minutes since 1996)
```

```
Board Manufacturer = Motorola
```

```
Board Product Name = PEM1000
```

```
Board Serial Number = 1234567890
```

```
Board Part Number = 01-W2330F11A
```

```
FRU Programmer File ID = PEM1000R.inf
```

```
Product Info Area:
```

```
Version         = 1
```

```
Language Code   = 25
```

```

Manufacturer Name      = Motorola
Product Name          = AXP Power Entry Module
Product Part / Model# = PEM1000
Product Version       = Rev. 01
Product Serial Number = 1234567890
Asset Tag              =
FRU Programmer File ID = PEM1000R.inf

```

## 2.5.2 E-Keying

The Power Entry Module does not have e-keyed backplane interfaces, and as a result the FRU information for the PEM does not contain a PICMG Point-to-Point Connectivity Record.

## 2.5.3 Power Configuration

The next table describes the power configuration for the PEMs.

*Table 2-133 Power Configuration for PEMs*

Item	Value	Description
Dynamic power reconfiguration support	No	Possibility to change FRU power consumption without switching it off, according to AdvancedTCA
Dynamic power configuration	No	Are the power draw levels fixed or these may vary if additional components are hot inserted or onboard component power consumption is changing dynamically
Number of power draw levels	1	The amount of possible power levels, normally 1
Early power draw levels, watt	0.1	Complete early power level including IPMC
Steady state power draw levels, watt	0.1	Complete steady power consumption including IPMC
Transition from early to steady levels in seconds	0	How long does board consume early power. Early power is normally bigger than steady power

## 2.5.4 Power Entry Module Sensor Overview

The following table lists all IPMI sensors available on the Power Entry Module.

Table 2-134 IPMI Sensors on the PEM

Sensor No.	Sensor Name	Type of Measurement	What does it measure?	Sensor Type	Availability
0	Hot Swap	Status	State of FRU	Discrete	Always
1	IPMB Physical	Status	State of IPMB link	Discrete	Always
2	+3.3 V	Voltage		Analog	Always
3	+8 V Backup Out	Voltage		Analog	Always
4	+12 V Backplane	Voltage		Analog	Always
5	CB 1	Status	Circuit Breaker fuse state	OEM-reserved	Always
6	CB 2	Status	Circuit Breaker fuse state	OEM-reserved	Always
7	CB 3	Status	Circuit Breaker fuse state	OEM-reserved	Always
8	CB 4	Status	Circuit Breaker fuse state	OEM-reserved	Always
9	CB 5	Status	Circuit Breaker fuse state	OEM-reserved	Always
10	DS75 Temp	Temperature		Analog	Always
11	+48.0 V FEED	Voltage		Analog	Always
12	+7.5 V PEM	Voltage		Analog	Always
13	+8 V PEM Feed 2	Voltage		Analog	Always
14	+12 V Current	Current		Analog	Always
15	+8 V PEM Feed 1	Voltage		Analog	Always

## 2.5.5 Power Entry Module Analog Sensors

The analog sensors available on the PEM can be divided into the following four categories:

- *Voltage Sensors*
- *Current Sensor*
- *Temperature Sensor*

### 2.5.5.1 Voltage Sensors

The following sensors measure voltages of the PEM.

Table 2-135 Sensor No. 2 +3.3 V

Feature	Raw Value/Description	Interpreted Value
Sensor Name	+3.3 V	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x0A	Power Supply
Entity Instance	0x60	
Rearm mode		Auto
Hysteresis support		Readable/Settable
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable threshold mask, Settable threshold mask (bytes 19, 20)	0x3F, 0x3F	Upper and Lower Non-Critical, Critical and Non-Recoverable Thresholds are Readable and Settable
Reading Type		Unsigned
Lower Non-Critical, Critical and Non-Recoverable thresholds	0xD8, 0xD4, 0xD1	(3.1104, 2.0528, 3.0096) Volts
Upper Non-Critical, Critical and Non-Recoverable thresholds	0xF4, 0xF7, 0xFA	(3.5136, 3.5568, 3.6) Volts

Table 2-136 Sensor No. 3 +8 V

Feature	Raw Value/Description	Interpreted Value
Sensor Name	+8 V Backup Out	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x0A	Power Supply
Entity Instance	0x60	
Rearm mode		Auto
Hysteresis support		Readable/Settable
Threshold access support		Readable/Settable
Event message control		Entire Sensor only

Table 2-136 Sensor No. 3 +8 V (continued)

Feature	Raw Value/Description	Interpreted Value
Readable threshold mask, Settable threshold mask (bytes 19, 20)	0x3F, 0x3F	Upper and Lower Non-Critical, Critical and Non-Recoverable Thresholds are Readable and Settable
Reading Type		Unsigned
Lower Non-Critical, Critical and Non-Recoverable thresholds	0x87, 0x7D, 0x74	(7.02, 6.5, 6.032) Volts
Upper Non-Critical, Critical and Non-Recoverable thresholds	0xAE, 0xB7, 0xC1	(0.048, 9.516, 10.036) Volts

Table 2-137 Sensor No. 4 +12 V Backplane

Feature	Raw Value/Description	Interpreted Value
Sensor Name	+12 V Backplane	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x0A	Power Supply
Entity Instance	0x60	
Rearm mode		Auto
Hysteresis support		Readable/Settable
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable threshold mask, Settable threshold mask (bytes 19, 20)	0x3F, 0x3F	Upper and Lower Non-Critical, Critical and Non-Recoverable Thresholds are Readable and Settable
Reading Type		Unsigned
Lower Non-Critical, Critical and Non-Recoverable thresholds	0xD4, 0xCA, 0xC1	(11.024, 10.504, 10.036) Volts
Upper Non-Critical, Critical and Non-Recoverable thresholds	0xFA, 0xFF, 0xFF	(13, 13.26, 13.26) Volts

Table 2-138 Sensor No. 11 +48.0 V Feed

Feature	Raw Value/Description	Interpreted Value
Sensor Name	+48.0 V FEED	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold



Table 2-138 Sensor No. 11 +48.0 V Feed (continued)

Feature	Raw Value/Description	Interpreted Value
Sensor Owner LUN	0x00	
Entity ID	0x0A	Power Supply
Entity Instance	0x60	
Rearm mode		Auto
Hysteresis support		Readable/Settable
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable threshold mask, Settable threshold mask (bytes 19, 20)	0x3F, 0x3F	Upper and Lower Non-Critical, Critical and Non-Recoverable Thresholds are Readable and Settable
Reading Type		Unsigned
Lower Non-Critical, Critical and Non-Recoverable thresholds	0x86, 0x7A, 0x73	(42.076, 38.308, 36.11) Volts
Upper Non-Critical, Critical and Non-Recoverable thresholds	0xE6, 0xEF, 0xF3	(72.22, 75.046, 76.302) Volts

Table 2-139 Sensor No. 12 +7.5 V PEM

Feature	Raw Value/Description	Interpreted Value
Sensor Name	+7.5 V PEM	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x0A	Power Supply
Entity Instance	0x60	
Rearm mode		Auto
Hysteresis support		Readable/Settable
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable threshold mask, Settable threshold mask (bytes 19, 20)	0x3F, 0x3F	Upper and Lower Non-Critical, Critical and Non-Recoverable Thresholds are Readable and Settable
Reading Type		Unsigned
Lower Non-Critical, Critical and Non-Recoverable thresholds	0x7D, 0x74, 0x6A	(6.5, 6.032, 5.512) Volts
Upper Non-Critical, Critical and Non-Recoverable thresholds	0xA4, 0xAE, 0xB7	(8.528, 9.048, 9.516) Volts

Table 2-140 Sensor No. 13 +8 V PEM Feed 2

Feature	Raw Value/Description	Interpreted Value
Sensor Name	+8 V PEM Feed 2	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x0A	Power Supply
Entity Instance	0x60	
Rearm mode		Auto
Hysteresis support		Readable/Settable
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable threshold mask, Settable threshold mask (bytes 19, 20)	0x3F, 0x3F	Upper and Lower Non-Critical, Critical and Non-Recoverable Thresholds are Readable and Settable
Reading Type		Unsigned
Lower Non-Critical, Critical and Non-Recoverable thresholds	0x87, 0x7D, 0x74	(7.02, 6.5, 6.032) Volts
Upper Non-Critical, Critical and Non-Recoverable thresholds	0xAE, 0xB7, 0xC1	(9.048, 9.516, 10.036) Volts

Table 2-141 Sensor No. 15 +8 V PEM Feed 1

Feature	Raw Value/Description	Interpreted Value
Sensor Name	+8 V PEM Feed 1	
Device		
Sensor Type	0x02	Voltage
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x0A	Power Supply
Entity Instance	0x60	
Rearm mode		Auto
Hysteresis support		Readable/Settable
Threshold access support		Readable/Settable
Event message control		Entire Sensor only

Table 2-141 Sensor No. 15 +8 V PEM Feed 1 (continued)

Feature	Raw Value/Description	Interpreted Value
Readable threshold mask, Settable threshold mask (bytes 19, 20)	0x3F, 0x3F	Upper and Lower Non-Critical, Critical and Non-Recoverable Thresholds are Readable and Settable
Reading Type		Unsigned
Lower Non-Critical, Critical and Non-Recoverable thresholds	0x87, 0x7D, 0x74	(7.02, 6.5, 6.032) Volts
Upper Non-Critical, Critical and Non-Recoverable thresholds	0xAE, 0xB7, 0xC1	(9.048, 9.516, 10.036) Volts

### 2.5.5.2 Current Sensor

The following table describes the sensor that measures the +12V current on the PEM.

Table 2-142 Sensor No. 14 +12 V Current

Feature	Raw Value/Description	Interpreted Value
Sensor Name	+12 V Current	
Device		
Sensor Type	0x03	Current
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x0A	Power Supply
Entity Instance	0x60	
Rearm mode		Auto
Hysteresis support		Readable/Settable
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable threshold mask, Settable threshold mask (bytes 19, 20)	0x38, 0x38	Upper Non-Critical, Critical and Non-Recoverable Thresholds are Readable and Settable
Reading Type		Unsigned
Upper Non-Critical, Critical and Non-Recoverable thresholds	0x4A, 0x4E, 0x52	(9.028, 9.516, 10.004) Amps

### 2.5.5.3 Temperature Sensor

The following tables describe the temperature sensors available on the PEMs.

Table 2-143 Sensor No. 10 DS75 Temp

Feature	Raw Value/Description	Interpreted Value
Sensor Name	DS75 Temp	
Device		
Sensor Type	0x01	Temperature
Class	0x01	Threshold
Sensor Owner LUN	0x00	
Entity ID	0x0A	Power Supply
Entity Instance	0x60	
Rearm mode		Auto
Hysteresis support		Readable/Settable
Threshold access support		Readable/Settable
Event message control		Entire Sensor only
Readable threshold mask, Settable threshold mask (bytes 19, 20)	0x38, 0x38	Upper Non-Critical, Critical and Non-Recoverable Thresholds are Readable and Settable
Reading Type		Unsigned
Upper Non-Critical, Critical and Non-Recoverable thresholds	0x28, 0x3C, 0x50	(40, 60, 80) Centigrades

## 2.5.6 Power Entry Module Discrete Sensors

The following tables describe these discrete sensors available on the PEM:

- [Hot Swap Sensor](#)
- [IPMB Link Sensor](#)
- [Circuit Breaker State Sensors](#)

### 2.5.6.1 Hot Swap Sensor

The following table describes the discrete hot swap sensor available on the PEM.

Table 2-144 Sensor #0, Hot Swap

Feature	Raw Value/Description	Interpreted Value
Sensor Name	Hot Swap	
Type of Measurement	Hot Swap State	
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific

Table 2-144 Sensor #0, Hot Swap (continued)

Feature	Raw Value/Description	Interpreted Value
Sensor Type	0xF0	Hot Swap
Sensor Owner LUN	0x00	
Entity ID	0x0A	Power Supply
Entity Instance	0x60	
Rearm Mode		Auto
Event Message Control		Entire Sensor Only
Assertion Event Mask (byte 15, 16)	0xFF, 0x00	
Deassertion Event Mask (byte 17, 18)	0x00, 0x00	
Discrete Reading Mask (byte 19, 20)	0xFF, 0x00	Supports 8 Successive States
Reading Definition		According to PICMG 3.0

### 2.5.6.2 IPMB Link Sensor

The following table describes the IPMB link sensor on the PEMs.

Table 2-145 Sensor #1, IPMB Physical

Feature	Raw Value/Description	Interpreted Value
Sensor Name	IPMB Physical	
Type of Measurement		IPMB Link State
Class		Discrete
Event/Reading Type	0x6F	Sensor-specific
Sensor Type	0xF1	IPMB Link
Sensor Owner LUN	0x00	
Entity ID	0x0A	
Entity Instance	0x60	
Rearm Mode		Auto
Event Message Control		Entire Sensor Only
Assertion Event Mask (byte 15, 16)	0x0F, 0x00	
Deassertion Event Mask (byte 17, 18)	0x00, 0x00	
Discrete Reading Mask (byte 19, 20)	0x0F, 0x00	Supports 4 Successive States
Reading Definition		According to PICMG 3.0

## 2.5.7 Circuit Breaker State Sensors

The following tables describe the OEM circuit breaker state sensors available on the PEM.

Table 2-146 Sensor #5, CB 1

Feature	Raw Value/Description	Interpreted Value
Sensor Name	CB 1	
Type of Measurement		Monitors if the circuit breaker has been opened.I
Class		Discrete
Event/Reading Type	0x03	Digital Discrete
Sensor Type	0xC0	OEM-reserved
Sensor Owner LUN	0x00	
Entity ID	0x0A	Power Supply
Entity Instance	0x60	
Rearm Mode		Auto
Event Message Control		Entire Sensor only
Assertion Event Mask (byte 15, 16)	0x02, 0x00	
Deassertion Event Mask (byte 17, 18)	0x02, 0x00	
Discrete Reading Mask (byte 19, 20)	0x03, 0x00	Supports 2 States
Reading Definition		According to Pigeon Point

Table 2-147 Sensor #6 CB 2

Feature	Raw Value/Description	Interpreted Value
Sensor Name	CB 2	
Type of Measurement		Monitors if the circuit breaker has been opened.I
Class		Discrete
Event/Reading Type	0x03	Digital Discrete
Sensor Type	0xC0	OEM-reserved
Sensor Owner LUN	0x00	
Entity ID	0x0A	Power Supply
Entity Instance		
Rearm Mode		Auto
Event Message Control		Discrete State Event Enable/Disable

Table 2-147 Sensor #6 CB 2 (continued)

Feature	Raw Value/Description	Interpreted Value
Assertion Event Mask (byte 15, 16)	0x02, 0x00	State Deasserted State Asserted
Deassertion Event Mask (byte 17, 18)	0x02, 0x00	State Deasserted State Asserted
Discrete Reading Mask (byte 19, 20)	0x03, 0x00	Supports 2 Successive States
Reading Definition		According to IPMI 1.5

Table 2-148 Sensor No. 7 CB 3

Feature	Raw Value/Description	Interpreted Value
Sensor Name	CB 3	
Type of Measurement		Monitors if the Circuit Breaker has been opened.
Class		Discrete
Event/Reading Type	0x03	'digital' Discrete
Sensor Type	0xC0	OEM-reserved
Sensor Owner LUN	0x00	
Entity ID	0x0A	Power Supply
Entity Instance	0x60	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0x02, 0x00	
Deassertion Event Mask (bytes 17,18)	0x02, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x03, 0x00	Supports 2 States
Reading Definition		According to Pigeon Point

Table 2-149 Sensor No. 8 CB 4

Feature	Raw Value/Description	Interpreted Value
Sensor Name	CB 4	
Type of Measurement		Monitors if the Circuit Breaker has been opened.
Class		Discrete
Event/Reading Type	0x03	'digital' Discrete
Sensor Type	0xC0	OEM-reserved
Sensor Owner LUN	0x00	

Table 2-149 Sensor No. 8 CB 4 (continued)

Feature	Raw Value/Description	Interpreted Value
Entity ID	0x0A	Power Supply
Entity Instance	0x60	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0x02, 0x00	
Deassertion Event Mask (bytes 17,18)	0x02, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x03, 0x00	Supports 2 States
Reading Definition		According to Pigeon Point

Table 2-150 Sensor No. 9 CB 5

Feature	Raw Value/Description	Interpreted Value
Sensor Name	CB 5	
Type of Measurement		Monitors if the Circuit Breaker has been opened.
Class		Discrete
Event/Reading Type	0x03	'digital' Discrete
Sensor Type	0xC0	OEM-reserved
Sensor Owner LUN	0x00	
Entity ID	0x0A	Power Supply
Entity Instance	0x60	
Rearm mode		Auto
Event message control		Entire Sensor only
Assertion Event Mask (bytes 15,16)	0x02, 0x00	
Deassertion Event Mask (bytes 17,18)	0x02, 0x00	
Discrete Reading Mask (bytes 19, 20)	0x03, 0x00	Supports 2 States
Reading Definition		According to Pigeon Point



## 3.1 OEM Sensors

This section describes the various OEM sensors provided by Emerson and Pigeon Point Systems that are located on the SAM.

- *Telco Alarms (Pigeon Point OEM)*
- *AXP Backplane ID (Emerson OEM)*
- *POST Results (Emerson OEM)*
- *Shelf FRU Info (Emerson OEM)*
- *FT -48 V Fuse (Emerson OEM)*
- *Shm Fault Event (Emerson OEM)*

### 3.1.1 Telco Alarms (Pigeon Point OEM)

The ShM implements the alarm generation mechanism as part of the platform event filtering (PEF) framework. An OEM action in PEF is implemented as alarm generation. The ShM implements the alarm sensor in its own sensor space. The sensor type for this sensor is OEM specific, currently chosen to be DFh. The sensor is a discrete sensor with three states:

- State 0 reflects the presence of the Critical alarm
- State 1 reflects the presence of the Major alarm
- State 2 reflects the presence of the Minor alarm

Changes in the states of this sensor may be mapped to events using regular IPMI mechanisms.

Subsequently, platform event filtering may be used to specify actions, such as chassis reset or power cycle, that should be invoked for these events, or alerts to be sent to remote destinations (including the System Manager).

The alarm sensor is recorded in the device SDR repository maintained by the ShM. The command Re-Arm Sensor Events can be used by the ShM to clear active Major and Minor alarms.

The ShM tracks the current state of alarms and the alarm cutoff input line and modifies the state of alarm LEDs accordingly. When the alarm cutoff signal gets activated, the ShM stops generating the alarms to the external output, but maintains the alarm state internally. The alarm LED(s) is (are) left blinking during that time. When the alarm cutoff signal gets deactivated, the state of external outputs and LEDs is restored according to the current state of the alarms (Minor and Major alarms may still be cleared while alarm cutoff is active).

Alarm cutoff is deactivated automatically after a timeout defined as a configuration parameter (see PPS user guide for the Shmm 500 for more details about TELCO Alarms configuration parameters).

### 3.1.2 AXP Backplane ID (Emerson OEM)

This sensor reports the ID number of the IPMB backplane type. The 1406 and 1600 contain a readable value which reports a unique identifier of the backplane type. While the main purpose of this sensor is to report the unique ID of the backplane, it can also be used to determine if a SAM has connectivity problems to the backplane. This sensor is available on each physical ShMM controller.

- Sensor Reading - Unique identification number of the backplane
- Current State Mask - 0x00 = No failure reading ID  
0x01 = ECC check failed on read value
- Events - No events are generated by this sensor.

### 3.1.3 POST Results (Emerson OEM)

This sensor reports the results of the U-Boot POST tests. This sensor is available on each physical ShMM controller. POST results are reported in an 8-bit bit-field. Any bit that is set (set to 1) indicates that the respective POST failure occurred.

- Sensor Reading - POST State in a 8-bit value according to the following mask definition:

```
Bit 7 - RTC
Bit 6 - Watchdog
Bit 5 - CRC
Bit 4 - Ethernet
Bit 3 - UART
Bit 2 - I2C
Bit 1 - Memory
Bit 0 - IPMB
```

- Current State Mask - 0x01 = POST Passed  
0x02 = POST Failed
- Events - Events are generated at shelf manager start up that will report failure events for each individual test that fails as follows:

```
Event Data Byte 1 = 0x61
```

```
Event Data Byte 2 = 0x3F
```

```
POST Sensor Reading = Bit 0 (IPMB)
```

```
Bit 1 (Memory)
```

```
Bit 2 (I2C)
```

```
Bit 3 (UART)
```

```
Bit 4 (Ethernet)
```

Bit 5 (CRC)

Bit 6 (Watchdog)

Bit 7 (RTC)

### 3.1.4 Shelf FRU Info (Emerson OEM)

This sensor reports the validity of the Shelf FRU Information. This sensor is available on each physical ShMM controller. The check it performs is basic checksum and length checks based on information of previous sections of the FRU area; and key bytes that are expected to have certain values.

- Sensor Reading - 0x00 (meaningless since discrete sensor reading)
- Current State Mask - 0x01 Shelf FRU Info not found (Disabled)  
0x02 Shelf FRU Info found (Enabled)
- Events - Events are generated when the state of the FRU Info found state changes.

Event Data Byte 1 = 0x01 Shelf FRU Info not found (Disabled)  
0x02 Shelf FRU Info found (Enabled)

Event Data Byte 2 = 0xFF (Unspecified)

Event Data Byte 3 = 0xFF (Unspecified)

### 3.1.5 FT -48 V Fuse (Emerson OEM)

This sensor reads the System Status Register of the respective Fan Tray and verifies if the bit for 48 V input power OK is set. The 48 V input power ok bit is set if all input fuses are intact.

- Sensor Reading - 0x00 (NULL Discrete sensor reading)
- Current State Mask - 0x01 (State Deasserted, all input fuses are intact)  
0x02 (State Asserted, not all input fuses are intact)
- Events - No events are generated by this sensor.

### 3.1.6 Shm Fault Event (Emerson OEM)

This sensor reports the status of Fault Classes on the Active shelf. When the value is read it indicates the presence or absence of each fault class. Currently defined fault classes relate to the health of the FTMs in the shelf.

- **Sensor Reading** - This is a 2-byte bit mask of active fault conditions detected by the sensor. A '1' in any bit indicates the specified fault is active. Refer to the following table for fault classes.
- **Current State Mask** - 0x1FE - mask of possible fault event bits
- **Events** - For FTM-related faults, an event is generated when any FTM transitions into or out of a fault condition. An event is flagged as an assertion event when at least one FTM exhibits the fault class. It is flagged as a deassertion event when no FTMs remain with the fault class.

Table 3-1 Shm Fault Classes

Fault Class	Meaning
0	Not used.
1	One or more fan trays are missing.
2	One or more fan trays' speed sensors are below critical threshold. By default, all of a FTM's speed sensors must be below critical speed in order to declare a fault at that FTM; however through a new configuration option in shelfman.conf, the administrator can change the behavior to declare a fault if any speed sensor is critical.
3	One or more fan trays' speed sensors do not show significant increase when the active shelf manager asserts FULL_SPEED signal as part of the Fan Tray Latent Fault Check algorithm. (Active FULL_SPEED test)
4	One or more fan trays' speed sensors do not return to a normal speed following the release of FULL_SPEED signal by the active shelf manager, as part of the Fan Tray Latent Fault Check algorithm. (Active FULL_SPEED test)
5	One or more fan trays' speed sensors do not show significant increase when the redundant shelf manager asserts FULL_SPEED signal as part of the Fan Tray Latent Fault Check algorithm. (Redundant FULL_SPEED test)
6	One or more fan trays' speed sensors do not return to a normal speed following the release of FULL_SPEED signal by the active shelf manager, as part of the Fan Tray Latent Fault Check algorithm. (Redundant FULL_SPEED test)
7	One or more fan trays' speed sensors do not show significant increase when the active shelf manager increases the speed level to its maximum value as part of the Fan Tray Latent Fault Check algorithm. (PSOC LFC test)
8	One or more fan trays' speed sensors do not return to a normal speed following the lowering of the speed level by the active shelf manager, as part of the Fan Tray Latent Fault Check algorithm. (PSOC test)

# System Behavior in Response to Sensor Events



## A.1 Introduction

This chapter introduces important information for those who are developing their own applications code, based on how the Centellis 3406 and 3600 system behaves to different events.

## A.2 Cooling Management in Normal Operation Mode

The Shelf Manager operates in normal mode with respect to cooling if no temperature sensor in the shelf reports crossing of one of the upper thresholds (noncritical, critical or nonrecoverable). In that case, there is no need to accelerate the fan speed.

On the contrary, the Shelf Manager in normal mode periodically reduces the fan speed by `FAN_LEVEL_STEP_DOWN*` levels (once per `COOLING_FAN_DECREASE_TIMEOUT*` seconds) until the fan speed reaches the minimum fan level or the shelf goes to abnormal mode (with at least one of the temperature sensors reporting one of its upper thresholds crossed). The minimum fan level is initially specified as a configuration parameter, but its value is adjusted if the transition to the abnormal mode happens, in order to prevent subsequent recurrence of the thermal alert.

## A.3 Cooling Management in Abnormal Operation Mode

The Shelf Manager operates in abnormal mode with respect to cooling if at least one temperature sensor in the shelf reports crossing of one of the upper thresholds (noncritical, critical or nonrecoverable). In that case, the Shelf Manager takes over the control of all fan trays, including those that support local control mode, but excluding any fans for which the **Get Fan Level** command reports that the fan is in 'Emergency Shut Down' mode. The Shelf Manager raises the fan speed by `FAN_LEVEL_STEP_UP*` levels for every fan tray every `COOLING_FAN_INCREASE_TIMEOUT*` seconds until the temperature reported by all temperature sensors falls below the thresholds.

Additionally, when at least one critical temperature threshold has been exceeded, the Shelf Manager starts reducing the power level of FRUs one level each `COOLING_POLL_TIMEOUT*` seconds, if possible. FRUs are not powered down in that case, for example, `SetPowerLevel(0)` is not issued. In that state, the Shelf Manager also immediately raises the level of all fans to the maximum level and keeps it at maximum.

When at least one nonrecoverable temperature threshold has been exceeded on a FRU, the Shelf Manager powers down the FRU (sending them the SetPowerLevel(0) command) and refuses to power the FRU back up for COOLING\_POLL\_TIMEOUT\* seconds. In that state, the Shelf Manager also immediately raises the level of all fans to the maximum level and keeps it at maximum.

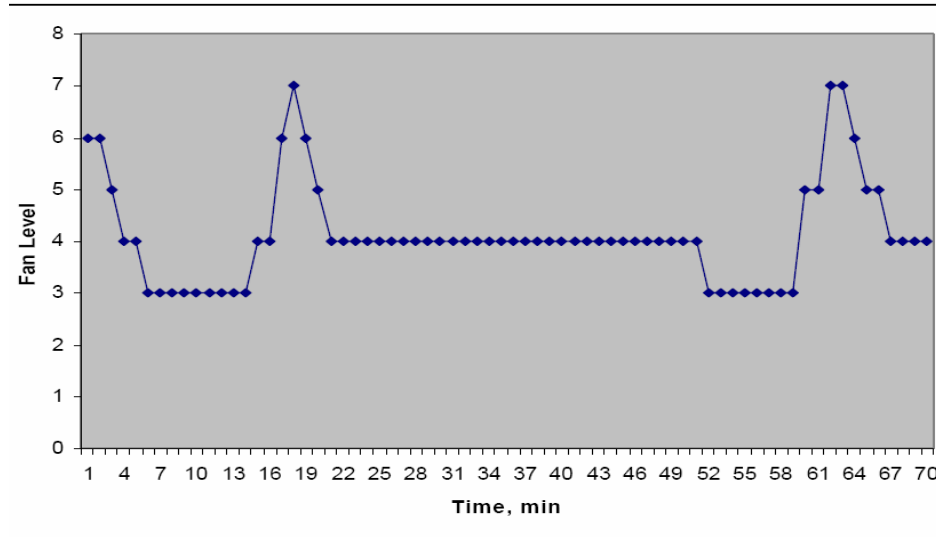
## A.4 Adaptive Adjustment of the Minimum Fan Level

The Shelf Manager changes the minimum fan level over time to prevent oscillations of the shelf between normal and abnormal cooling mode. When the shelf transitions from normal to abnormal cooling mode, this means that the current fan level is insufficient for effective cooling of the shelf. In that case, the Shelf Manager dynamically changes the minimum fan level to the current level + 1, so that next time in normal mode the Shelf Manager will not try to decrease the fan level so low. (In the case of multiple fans and different fan levels, the Shelf Manager chooses the maximum current fan level.) This makes the algorithm to converge to a certain fan level after several oscillations; at that level, the shelf operates in normal cooling mode and this is the minimum possible fan level at which the shelf can operate in normal cooling mode.

To accommodate for possible changes in the thermal load in the shelf in a long run, an additional enhancement is implemented. After the shelf stays in normal cooling mode at a stable fan level for a substantial period of time (specified as a configuration parameter NORMAL\_STABLE\_TIME\*, with a default of 1 hour), the minimum fan level is decreased by one and the current fan level is allowed to drop to the new minimum. If the thermal load in the shelf has decreased, the shelf will continue to operate at the reduced fan level. Otherwise, the shelf will transition to the abnormal cooling state and the fan level will converge to a new stable value after several oscillations.

The following graph illustrates the behavior of the above cooling algorithm in finding a stable fan level in real shelf, in the presence of a substantial thermal load in the shelf. The configuration parameter `NORMAL_STABLE_TIME*` is set to 30 minutes. The graph presents the fan speed changes over a period of 70 minutes. The horizontal axis has time scaled from 0 to 70 minutes.

Figure A-1 Cooling Algorithm



The fan speed is initially lowered to 3. This causes a thermal alert and after a single increase in fan speed, during the subsequent fan speed reduction, the level stabilizes at 4. After the expiration of a period defined by the parameter `NORMAL_STABLE_TIME*` (which is equal to 30 minutes) the level is lowered to 3 which again causes a thermal alert, an increase in fan speed with subsequent reductions, and the fan level again stabilizes at 4.

\* These are configurable options in `/etc/shelfman.conf`. If these values are not defined in `shelfman.conf`, default levels are used.

## A.5 FRU State Management

The following table provides the SAM action, FRU status, hot swap state for each FRU temperature sensor in the shelf.

Table A-1 FRU State Table for Nonrecoverable Threshold Events from Temperature Sensors

FRU	Temperature Sensor	SAM Action		FRU Status		
		Step-1	Step-2	Operation	Hot Swap State	H/S LED
Active SAM	Sensor # 6("MAX6656 INT @1A") Sensor # 7("MAX6656 EXT1 @1A") Sensor # 8("MAX6656 EXT2 @1A")	Set all FAN-module speed MAX		H/S LED ON. Still working as Active.	M6->M1 (Logical SAM (0x20) will show M4 state)	Turn ON
Standby SAM	Sensor # 6("MAX6656 INT @1A") Sensor # 7("MAX6656 EXT1 @1A") Sensor # 8("MAX6656 EXT2 @1A")	Set all FAN-module speed MAX		H/S LED ON.	M6->M1	Turn ON
PEM	Sensor # 12 ("DS75 Temp")	Set all FAN-module speed MAX	Issue "deactivate" command to PEM	Still working.	M6 > M1	Turn ON
ATCA-F101	Sensor # 8 ("Inlet Temp")	Set all FAN-module speed MAX	Issue "deactivate" command to F101	Payload powered down by the SAM.	M6 > M1	Turn ON
	Sensor # 9 ("Outlet Temp")	Set all FAN-module speed MAX	Issue "deactivate" command to F101	Payload powered down by the SAM.	M6 > M1	Turn ON
	Sensor # 10 ("PMC Temp")	Set all FAN-module speed MAX	Issue "deactivate" command to F101	Payload powered down by the SAM.	M6 > M1	Turn ON
	Sensor # 20 ("Artesyn Temp")	Set all FAN-module speed MAX	Issue "deactivate" command to F101	Payload powered down by the SAM.	M6 > M1	Turn ON



Table A-1 FRU State Table for Nonrecoverable Threshold Events from Temperature Sensors (continued)

FRU	Temperature Sensor	SAM Action		FRU Status		
		Step-1	Step-2	Operation	Hot Swap State	H/S LED
ATCA-7221	Sensor # 0 ("BrdTempNearPMC")	Set all FAN-module speed MAX	Issue "deactivate" command to 7221	Payload powered down by the SAM.	M6 > M1	Turn ON
	Sensor # 1 ("Temp Near Mem ")	Set all FAN-module speed MAX	Issue "deactivate" command to 7221	Payload powered down by the SAM.	M6 > M1	Turn ON
	Sensor # 2 ("Temp CPU 0")	Set all FAN-module speed MAX	Issue "deactivate" command to 7221	Payload powered down by the SAM.	M6 > M1	Turn ON
	Sensor # 3 ("Temp CPU 1")	Set all FAN-module speed MAX	Issue "deactivate" command to 7221	Payload powered down by the SAM.	M6 > M1	Turn ON
	Sensor # 6 ("Die Temp CPU 0")	Set all FAN-module speed MAX	Issue "deactivate" command to 7221	Payload powered down by the SAM.	M6 > M1	Turn ON
	Sensor # 7 ("Die Temp CPU 1")	Set all FAN-module speed MAX	Issue "deactivate" command to 7221	Payload powered down by the SAM.	M6 > M1	Turn ON
	Sensor # 10 ("12V DCDC Temp.")	Set all FAN-module speed MAX	Issue "deactivate" command to 7221	Payload powered down by the SAM.	M6 > M1	Turn ON





## B.1 Emerson Network Power - Embedded Computing Documents

The Emerson Network Power - Embedded Computing publications listed below are referenced in this manual. You can obtain electronic copies of Emerson Network Power - Embedded Computing publications by contacting your local Emerson sales office. For documentation of final released (GA) products, you can also visit the following website:

<http://www.emersonnetworkpowerembeddedcomputing.com> > Solution Services> Technical Documentation Search. This site provides the most up-to-date copies of Emerson Network Power - Embedded Computing product documentation.

*Table B-1 Emerson Network Power - Embedded Computing Documents*

<b>Document Title</b>	<b>Publication Number</b>
AXP1406/AXP1600 Subsystem IPMI Programmer's Reference	6806800B66
Centellis R2 (AXP1405) to R3 (AXP1406/AXP1600) Porting Reference	6806800C31
ATCA-F101-5E System Controller and Switching Blade Installation and Use	6806800C15
ATCA-7221 Reference Guide	6806800A50
ATCA-7107 Reference Guide	6806800A48
ATCA-S100 Reference Guide	6806800A36
ATCA-F101 Basic Blade Service Software Release 3	6806800C12
ATCA-7221 Basic Blade Service Software Release 3	6806800C14
ATCA-F101 Basic Blade Service Software Release 3	6806800C13
Centellis 3406/3600 Release 3.0 Document Collection	6806800C29
Pigeon Point Shelf Manager External Interface Reference, Release 2.1.1	DOCSTMEXTINT
Pigeon Point IPM Sentry Shelf Manager User Guide, 2.1.1	DOCSTMUG

## B.2 Manufacturers' Documents

For additional information, refer to the following table for manufacturers' data sheets or user's manuals. As an additional help, a source for the listed document is provided. Please note that, while these sources have been verified, the information is subject to change without notice.

Table B-2 Manufacturers Documents

Document Title	Web Site Source
IPM Sentry Shelf Manager User Guide	<a href="http://www.emersonnetworkpowerembeddedcomputing.com">http://www.emersonnetworkpowerembeddedcomputing.com</a> P/N DOCSHMUG
IPM Sentry Shelf - External Interface Reference, Release	<a href="http://www.emersonnetworkpowerembeddedcomputing.com">http://www.emersonnetworkpowerembeddedcomputing.com</a> P/N DOCSHMEXTINT

## B.3 Related Specifications

For additional information, refer to the following table for related specifications. As an additional help, a source for the listed document is provided. Please note that, while these sources have been verified, the information is subject to change without notice.

Table B-3 Related Specifications

Document Title	Source
<b>IPMI Specifications</b> , <a href="http://www.intel.com/design/servers/ipmi">http://www.intel.com/design/servers/ipmi</a>	
IPMI Spec v1.5, Document Revision 1.1, February 20, 2002	Intel Corporation, Hewlett-Packard, DEC, NEC
IPMI v1.5 Addenda, Errata, and Clarifications, Addendum Document Revision 5, January 29, 2004	Intel Corporation, Hewlett-Packard, DEC, NEC
Intelligent Platform Management Interface Specification v1.0, Document Revision 1.1, November 15 1999	Intel Corporation, Hewlett-Packard, NEC, Dell
IPMI Implementer's Guide, Draft Version 0.7, September 16, 1998	Intel Corporation
IPMI Platform Management FRU Information Storage Definition V1.0, September 27, 1999	Intel Corporation
<b>PCI Industrial Manufacturers Group (PICMG)</b> <a href="http://www.picmg.com/">http://www.picmg.com/</a>	
AdvancedTCA Base 3.0 Specification, Revision 2.0	PICMG 3.0 R 2.0, Dated 03/18/05