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Penguin Edge™ ATCA-F140

Control via IPMI Programmer's Reference

P/N: 6806800R08H

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PENGUIN™
EDGE

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SMART Embedded Computing, Inc., dba Penguin Solutions

2900 S. Diablo Way, Suite 190

Tempe, Arizona 85282

USA

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About this Manual

Overview of Contents

This manual provides information on how to control and monitor the functionality of the ATCA-F140 via Intelligent Platform Management Interface (IPMI).

This manual is intended for users qualified in software development. Users must have a working understanding of IPMI.

This manual is divided into the following chapters and appendices.

Chapter 1, Introduction on page 11 gives a short overview on the ATCA-F140.

Chapter 2, Supported IPMI Commands on page 13 lists IPMI commands supported by the IPMC.

Chapter 3, FRU Information and Sensor Data Records on page 25 provides FRU information and sensors that are accessible via IPMI for ATCA-F140.

Chapter 4, OEM Sensors on page 61 provides additional information about OEM sensors that are accessible via IPMI for ATCA-F140.

Appendix A, Related Documentation on page 65 lists publications for blade and software products used with the ATCA-F140 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^2C 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^2C slave address.
PEM	Power Entry Module. An FRU that introduces power to the shelf.

Term	Definition
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)
bold	Used to emphasize a word
`Screen`	Used for on-screen output and code related elements or commands. `Sample of Programming used in a table (9pt)`
`Courier + Bold`	Used to characterize user input and to separate it from system output
Reference	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
...	Repeated item for example node 1, node 2, ..., node 12
. . .	Omission of information from example/command that is not necessary at the time
..	Ranges, for example: 0..4 means one of the integers 0,1,2,3, and 4 (used in registers)
|	Logical OR

Notation	Description
	Indicates a hazardous situation which, if not avoided, could result in death or serious injury
	Indicates a hazardous situation which, if not avoided, may result in minor or moderate injury
	Indicates a property damage message
	Indicates a hot surface that could result in moderate or serious injury
	Indicates an electrical situation that could result in moderate injury or death
	Indicates that when working in an ESD environment care should be taken to use proper ESD practices
	No danger encountered, pay attention to important information

Summary of Changes

See the table below for manual revisions and changes.

Document Number	Date	Description
6806800R08H	August 2022	Rebrand to Penguin Solutions.
6806800R08G	November 2019	Rebrand to SMART Embedded Computing template. Updated Freescale to NXP.
6806800R08F	December 2017	Updated copyrights page.
6806800R08E	June 2016	Re-branded to new template.
6806800R08D	April 2015	Updated *Appendix A, Related Documentation on page 75*.
6806800R08C	March 2014	Updated Chapter 2, Supported IPMI Commands, and Re-branded to Artestyn template.
6806800R08B	November 2013	Updated *IPMI Sensors Overview on page 34* and *Penguin Edge Documentation on page 65*
6806800R08A	February 2013	First Version

Introduction

1.1 Features

The ATCA-F140 is a hub board as defined *in PICMG 3.0 Revision 3.0 Advanced TCA Base Specification* and *PICMG 3.1 Revision 1.0 Specification Ethernet/Fiber Channel for AdvancedTCA Systems*.

It supports several Base and Fabric Channel Ethernet interfaces to the Zone 2 backplane. It also supports 1Gb, 10Gb, and 40Gb Ethernet uplinks to the front panel and to a Rear Transition Module (RTM) through the Zone 3 connector.

Broadcom Ethernet switches and PHYs are used for the base and fabric channels. The entire board is managed by a NXP P2020 QorIQ Integrated Processor.

The ATCA-F140 provides one AMC bay. This bay is designed to support a processor AMC module for additional applications processing capabilities on the board.

See the list below for the key features of the ATCA-F140:

- Single slot ATCA form factor (280 mm x 322 mm)
- NXP P2020 QorIQ Integrated Processor for the on board service processor functions
- Two DDR3 memory DIMM slots; each of which can support up to 2 GB of DDR3 SDRAM with ECC for a total memory capacity of 4 GB
- Two redundant banks of 32 MB Boot Flash memory
- 2 GB embedded USB Flash module for User Flash memory
- On-board SATA connector for a 2.5" SATA drive with selectable interface to either the service processor or the processor AMC
- Real time clock
- RJ-45 UART Console interface to service processor on front panel
- RJ-45 10/100/1000 BaseTx Ethernet Management port on the front panel for P2020 QorIQ Integrated Processor
- Broadcom BCM56334 managed switch device for the Base Channel (24 1G-SGMII and four 10G-XAUI ports)
- Two Fabric Channel 40G (QSFP+) uplink ports on the front panel
- Multiple 1 GbE SGMII and 10 GbE XAUI ports routed to Zone 3 connectors for base and fabric uplink channels on RTM
- Two 40G ports routed to Zone 3 connectors for fabric uplink on RTM
- Stratum 3 Telco clock option with master/slave sync and 5 inter-shelf sync connectors on front panel along with 2 BITS/SSU front panel connectors

- Synchronous Ethernet support
- One AMC bay for application processor support
- IPMC functionality for the board management by the Shelf Management Controller

Supported IPMI Commands

2.1 Introduction

This chapter describes the different commands supported by the ATCA-F140 series platforms.

2.2 Standard IPMI Commands

The IPMC is fully compliant to the Intelligent Platform Management Interface v.1.5. This section provides information about the supported IPMI commands.

2.2.1 Global IPMI Commands

The IPMCs support the following global IPMI commands.

Table 2-1 Supported Global IPMI Commands

Command Name	NetFn	CMD
Get Device ID	App	01h
Cold Reset	App	02h
Warm Reset	App	03h
Get Self Test Results	App	04h
Get Device GUID	App	08h
Broadcast "Get Device ID"	App	01h

2.2.2 BMC Device and Messaging Commands

The IPMCs support the following BMC Device and Messaging Timer commands.

Table 2-2 BMC Device and Messaging Commands

Command Name	NetFn	CMD
Set BMC Global Enables	App	2Eh
Get BMC Global Enables	App	2Fh
Clear Message Flags	App	30h
Get Message Flags	App	31h
Get Message	App	33h

Table 2-2 BMC Device and Messaging Commands (continued)

Command Name	NetFn	CMD
Send Message	App	34h
Master Write-Read	App	52h
Get Channel Info	App	42h

2.2.3 BMC Watchdog Timer Commands

The IPMCs support the following BMC Watchdog Timer commands.

Table 2-3 Supported BMC Watchdog Timer Commands

Command Name	NetFn	CMD
Reset Watchdog Timer	App	22h
Set Watchdog Timer	App	24h
Get Watchdog Timer	App	25h

2.2.4 Chassis Device Commands

The IPMC supports the following chassis device commands.

Table 2-4 Supported Chassis Device Commands

Command Name	NetFn	CMD
Set System Boot Options	Chassis	08h
Get System Boot Options	Chassis	09h

These commands are supported only by certain OEM boot options. The standard boot options are not supported.

2.2.5 Event Commands

The IPMC supports the following event commands.

Table 2-5 Supported Event Commands

Command Name	NetFn	CMD
Set Event Receiver	S/E	00h
Get Event Receiver	S/E	01h
Platform Event (a.k.a. “Event Message”)	S/E	02h

2.2.6 Sensor Device Commands

The IPMCs support the following sensor device commands.

Table 2-6 Supported Sensor Device Commands

Command Name	NetFn	CMD
Get Device SDR Info	S/E	20h
Get Device SDR	S/E	21h
Reserve Device SDR Repository	S/E	22h
Set Sensor Hysteresis	S/E	24h
Get Sensor Hysteresis	S/E	25h
Set Sensor Threshold	S/E	26h
Get Sensor Threshold	S/E	27h
Set Sensor Event Enable	S/E	28h
Get Sensor Event Enable	S/E	29h
Get Sensor Event Status	S/E	2Bh
Get Sensor Reading	S/E	2Dh
Get Sensor Type	S/E	2Fh

2.2.7 FRU Inventory Commands

The IPMCs support the following FRU inventory commands.

Table 2-7 Supported FRU Commands

Command Name	NetFn	CMD
Get FRU Inventory Area Info	Storage	10h
Read FRU Data	Storage	11h
Write FRU Data	Storage	12h

2.2.8 SEL Device Commands

The IPMC supports the following SEL device commands.

Table 2-8 Supported SEL Commands

Command Name	NetFn	CMD
Get SEL Info	Storage	40h
Reserve SEL	Storage	42h
Get SEL Entry	Storage	43h
Add SEL Entry	Storage	44h
Clear SEL	Storage	47h
Get SEL Time	Storage	48h
Set SEL Time	Storage	49h

2.2.9 Serial/Modem Device Commands

The IPMC supports the following serial/modem device commands.

Table 2-9 Supported Serial/Modem Device Commands

Command Name	NetFn	CMD
Set Serial/Modem Configuration	Transport	10h
Get Serial/Modem Configuration	Transport	11h

2.3 PICMG 3.0 Commands

The Penguin Solutions IPMC is a fully compliant AdvancedTCA Intelligent Platform Management Controller. It supports all required and mandatory AdvancedTCA commands as defined in the PICMG 3.0 specification.

Table 2-10 Supported PICMG 3.0 Commands

Command Name	NetFn	CMD
Get PICMG Properties	PICMG	00h
Get Address Info	PICMG	01h
FRU Control	PICMG	04h
Get FRU LED Properties	PICMG	05h
Get LED Color Capabilities	PICMG	06h
Set FRU LED State	PICMG	07h
Get FRU LED State	PICMG	08h
Set IPMB State	PICMG	09h
Set FRU Activation Policy	PICMG	0Ah
Get FRU Activation Policy	PICMG	0Bh
Set FRU Activation	PICMG	0Ch
Get Device Locator Record ID	PICMG	0Dh
Set Port State	PICMG	0Eh
Get Port State	PICMG	0Fh
Compute Power Properties	PICMG	10h
Set Power Level	PICMG	11h
Get Power Level	PICMG	12h
Bused Resource	PICMG	17h
Get IPMB Link Info	PICMG	18h
FRU Control Capabilities	PICMG	1Eh

2.4 PICMG AMC.0 Commands

Following are the PICMG AMC.0 commands. These commands are supported to comply with the PICMG AMC.0 specification as an AMC carrier.

Table 2-11 PICMG AMC.0 Commands

Command Name	NetFn	CMD
Set AMC Port State	PICMG	19h
Get AMC Port State	PICMG	1Ah

2.5 Firmware Upgrade Commands

Following are the firmware upgrade commands.These commands are used to support the PICMG HPM.1 firmware upgrade protocol.

Table 2-12 Firmware Upgrade Commands

Command Name	NetFn	CMD
Get Target Upgrade Capabilities	PICMG	2Eh
Get Component Properties	PICMG	2Fh
Abort Firmware Upgrade	PICMG	30h
Initiate Upgrade Action	PICMG	31h
Upload Firmware Block	PICMG	32h
Finish Firmware Upload	PICMG	33h
Get Upgrade Status	PICMG	34h
Activate Firmware	PICMG	35h
Query Self-test Results	PICMG	36h
Query Rollback Status	PICMG	37h
Initiate Manual Rollback	PICMG	38h

2.6 Penguin Edge OEM Commands

The Penguin Edge IPMC supports several commands which are not defined in the IPMI or PICMG 3.0 specification but are introduced by Penguin Edge.

Table 2-13 Penguin Edge OEM Commands

Command Name	NetFn	CMD	Detailed Description
Set Feature Configuration	EMR	1Eh	See *Section 2.6.1 on page 19*
Get Feature Configuration	EMR	1Fh	See *Section 2.6.2 on page 22*
Get Upgrade Flag	OEM_0	E2h	See *Section 2.6.3 on page 23*
Set Upgrade Flag	OEM_0	E3h	See *Section 2.6.4 on page 23*
Get Swap Flag	OEM_0	E4h	See *Section 2.6.5 on page 24*
Set Swap Flag	OEM_0	E5h	See *Section 2.6.6 on page 24*

2.6.1 Set Feature Configuration (NetFn = 0x2E/0x2F, CMD = 0x1E)

This command can be used to enable/disable or configure features implemented on the blade at runtime.

Table 2-14 Set Feature Configuration

	Byte	Data Field
Request Data	1	LSB of Penguin Edge IANA Enterprise Number. A value of CDh shall be used.
	2	2nd byte of Penguin Edge IANA Enterprise Number. A value of 65h shall be used.
	3	MSB of Penguin Edge IANA Enterprise Number. A value of 00h shall be used.
	4	Feature Selector.E0h - FFh = product specific feature for details, please see *Table 2-15 on page 21*.
	5	Feature Configuration. Please see *Table 2-15 on page 21*.

Table 2-14 Set Feature Configuration (continued)

	Byte	Data Field
	(6)	Persistency/Duration. Not all values are valid for a particular feature or product. 00h = volatile. Actual duration depends on implementation. 01h - FAh = duration in 100ms. Previous State is restored after expiration. FBh = not take effect until next cold reset or warm reset depending on implementation FCh = not take effect until next hard reset or power cycle FDh = till cold reset or warm reset depending on implementation FEh = till hard reset or power cycle FFh = persistent over power cycle (default)
	(7)	Feature Configuration Modifier. Omitted if not used or default to 00h. Refer to *Table 2-15 on page 21*
Response Data	1	Completion Code. Generic plus the following command-specific completion codes: 80h = feature selector not supported. 81h = feature configuration not supported 82h = configuration persistency / duration not supported 83h = feature configuration modifier not supported
	2	LSB of Penguin Edge IANA Enterprise Number. A value of CDh shall be used.
	3	2nd byte of Penguin Edge IANA Enterprise Number. A value of 65h shall be used.
	4	MSB of Penguin Edge IANA Enterprise Number. A value of 00h shall be used.

Table 2-15 Feature Selector Assignments

Feature Selector	Description & Configuration Modifier	Configuration Modifier	Feature Configuration
2	System Status Manager	00h = System Status Manager	00h = disabled 01h = enabled 02h = restore factory default (including the max message interval and the max startup delay) 03h - FFh reserved
		01h = Monitor Central heartbeat interval timer (in 1 second)	00h = disabled. Timer setting not changed. 01h = enabled. Timer setting not changed. 02h = restore factory default timer setting 03h - FFh: timer value in 1 second (3 ~ 255 seconds)
		02h = Monitor Central startup delay timer (in 10 seconds)	00h = disabled. Timer setting not changed. 01h = enabled. Timer setting not changed. 02h = restore factory default timer setting 03h - FFh: timer value in 10 second (30~ 2550 seconds)
		03h - FFh: reserved	N/A
3	Handle Switch De-bounce	FRU Device ID. 00h = Front blade 01h = RTM 02h - FFh: reserved	00h = disabled (may not be valid, or implementation defined) 01h = enabled (may be ignored or implementation defined) 02h = restore factory default merge the two to be: 03h - FFh = De-bounce timer timeout value in 100ms.

2.6.2 Get Feature Configuration (NetFn = 0x2E/0x2F, CMD = 0x1F)

This command retrieves the configuration of the feature implemented on the blade.

Table 2-16 Get Feature Configuration Command

	Byte	Data Field
Request Data	1	LSB of Penguin Edge IANA Enterprise Number. A value of CDh shall be used.
	2	2nd byte of Penguin Edge IANA Enterprise Number. A value of 65h shall be used.
	3	MSB of Penguin Edge IANA Enterprise Number. A value of 00h shall be used.
	4	Feature Selector, for details see *Table 2-15 on page 21*.
	(5)	Feature Configuration Modifier. Omitted if not used. For details see *Table 2-15 on page 21*.
Response Data	1	Completion Code. Generic plus the following command-specific completion codes: 80h = feature selector not supported. 83h = feature configuration modifier not supported
	2	LSB of Penguin Edge IANA Enterprise Number. A value of CDh shall be used.
	3	2nd byte of Penguin Edge IANA Enterprise Number. A value of 65h shall be used.
	4	MSB of Penguin Edge IANA Enterprise Number. A value of 00h shall be used.
	5	Feature Configuration
	6	Persistency / Duration

2.6.3 Get Payload Upgrade Flag (NetFn = 0x30/0x31, CMD = 0xE2)

This command retrieves the Payload Upgrade Flag. When the Payload Upgrade Flag is set, it overrides the boot bank swap control setting, and force the boot bank swap feature to be enabled upon the BMC Watchdog Timer expiration.

Table 2-17 Get Payload Upgrade Flag

	Byte	Data Field
Request Data	-	-
Response Data	1	Completion Code.
	2	Upgrade Flag. 0 = Payload not in upgrade mode. 1 = Payload in upgrade mode. Boot bank will be swapped upon BMC Watchdog Timer expiration.

2.6.4 Set Payload Upgrade Flag (NetFn = 0x30/0x31, CMD = 0xE3)

This command sets the Payload Upgrade Flag. This command should be used only by the payload upgrade script or utilities.

Table 2-18 Set Payload Upgrade Flag Command

	Byte	Data Field
Request Data	1	Upgrade Flag. 0 = Not in upgrade mode. 1 = Payload in upgrade mode. Override boot bank swap control to be enabled.
Response Data	1	Completion Code.

2.6.5 Get Boot Bank Swap Control (NetFn = 0x30/0x31, CMD = 0xE4)

This command retrieves the Boot Bank Swap Control setting. When Boot Bank Swap Control is set, it disables the boot bank swap upon the BMC Watchdog Timer expiration. By default, the Boot Bank Swap Control is cleared, and boot bank will be swapped if BMC Watchdog Timer becomes expired (with action to be “hard reset”).

Table 2-19 Get Boot Bank Swap Control Command

	Byte	Data Field
Request Data	-	-
Response Data	1	Completion Code.
	2	Boot Bank Swap Control. 0 = Boot bank swap enabled 1 = Boot bank swap disabled

2.6.6 Set Boot Bank Swap Control (NetFn = 0x30/0x31, CMD = 0xE5)

This command sets the Boot Bank Swap Control setting.

Table 2-20 Set Boot Bank Swap Control Command

	Byte	Data Field
Request Data	1	Boot Bank Swap Control. 0 = Enable boot bank swap 1 = Disable boot bank swap
Response Data	1	Completion Code.

FRU Information and Sensor Data Records

3.1 FRU Data

Following is an example of FRU Data, actual data is entered at the time of manufacturing.

```
[Common Header]
Format Version = 1

[Board Info]
Format Version = 1
Language Code = en
Mfg Date/Time = <manufacturing time>
Manufacturer = Emerson
Product Name = ATCA-F140
Serial Number = <serial number>
Part Number = <part number>
Fru File Id = 9806808E08B

[Product Info]
Format Version = 1
Language Code = en
Manufacturer = Emerson
Product Name = ATCA-F140
Part/Model Number = <serial number>
Product Version = R1.01
Serial Number = <part number>
Asset Tag =
Fru File Id = 9806808E08B

[Board Connectivity]
Format Version = 2
Vendor Format Version = 0
Group = 0
Base,1,0 = Base,0x1
Base,2,0 = Base,0x1
Base,2,0 = Base
Base,3,0 = Base
```

```
Base,4,0 = Base
Base,5,0 = Base
Base,6,0 = Base
Base,7,0 = Base
Base,8,0 = Base
Base,9,0 = Base
Base,10,0 = Base
Base,11,0 = Base
Base,12,0 = Base
Base,13,0 = Base
Base,14,0 = Base
Base,15,0 = Base
Base,16,0 = Base
Update,2,0 = {9B372D9C-7BFE-4D22-B9AD-11ABD7777CD7}
Update,2,1 = {9B372D9C-7BFE-4D22-B9AD-11ABD7777CD7}
Update,2,2 = {9B372D9C-7BFE-4D22-B9AD-11ABD7777CD7}
Update,2,3 = {9B372D9C-7BFE-4D22-B9AD-11ABD7777CD7}
Update,3,0 = {9B372D9C-7BFE-4D22-B9AD-11ABD7777CD7}

[Board Connectivity]
Format Version = 2
Vendor Format Version = 0
Group = 0
Fabric,1,0 = Ethernet
Fabric,2,0 1 2 3 = Ethernet,0x4
Fabric,2,0 1 2 3 = Ethernet,0x1
Fabric,2,0 1 2 3 = Ethernet,0x3
Fabric,2,0 1 2 3 = Ethernet
Fabric,2,0 1 = Ethernet,0x3
Fabric,2,0 1 = Ethernet
Fabric,2,0 = Ethernet,0x3
Fabric,2,0 = Ethernet
Fabric,2,0 1 2 3 = Ethernet-10Gbd,0x1
Fabric,2,0 1 2 3 = Ethernet-10Gbd
Fabric,2,0 1 = Ethernet-10Gbd
Fabric,2,0 = Ethernet-10Gbd
```

```
Fabric,3,0 1 2 3 = Ethernet,0x4
Fabric,3,0 1 2 3 = Ethernet,0x1
Fabric,3,0 1 2 3 = Ethernet,0x3
Fabric,3,0 1 2 3 = Ethernet
Fabric,3,0 1 = Ethernet,0x3
Fabric,3,0 1 = Ethernet
Fabric,3,0 = Ethernet,0x3
Fabric,3,0 = Ethernet
Fabric,3,0 1 2 3 = Ethernet-10Gbd,0x1
Fabric,3,0 1 2 3 = Ethernet-10Gbd
Fabric,3,0 1 = Ethernet-10Gbd
Fabric,3,0 = Ethernet-10Gbd
Fabric,4,0 1 2 3 = Ethernet,0x4
Fabric,4,0 1 2 3 = Ethernet,0x1
Fabric,4,0 1 2 3 = Ethernet,0x3
Fabric,4,0 1 2 3 = Ethernet
Fabric,4,0 1 = Ethernet,0x3
Fabric,4,0 1 = Ethernet
Fabric,4,0 = Ethernet,0x3
Fabric,4,0 = Ethernet
Fabric,4,0 1 2 3 = Ethernet-10Gbd,0x1
Fabric,4,0 1 2 3 = Ethernet-10Gbd
Fabric,4,0 1 = Ethernet-10Gbd
Fabric,4,0 = Ethernet-10Gbd
Fabric,5,0 1 2 3 = Ethernet,0x4
Fabric,5,0 1 2 3 = Ethernet,0x1
Fabric,5,0 1 2 3 = Ethernet,0x3
Fabric,5,0 1 2 3 = Ethernet
Fabric,5,0 1 = Ethernet,0x3
Fabric,5,0 1 = Ethernet
Fabric,5,0 = Ethernet,0x3
Fabric,5,0 = Ethernet
Fabric,5,0 1 2 3 = Ethernet-10Gbd,0x1
Fabric,5,0 1 2 3 = Ethernet-10Gbd
Fabric,5,0 1 = Ethernet-10Gbd
Fabric,5,0 = Ethernet-10Gbd

[Board Connectivity]
Format Version = 2
```

```
Vendor Format Version = 0
Group = 0
Fabric,6,0 1 2 3 = Ethernet,0x4
Fabric,6,0 1 2 3 = Ethernet,0x1
Fabric,6,0 1 2 3 = Ethernet,0x3
Fabric,6,0 1 2 3 = Ethernet
Fabric,6,0 1 = Ethernet,0x3
Fabric,6,0 1 = Ethernet
Fabric,6,0 = Ethernet,0x3
Fabric,6,0 = Ethernet
Fabric,6,0 1 2 3 = Ethernet-10Gbd,0x1
Fabric,6,0 1 2 3 = Ethernet-10Gbd
Fabric,6,0 1 = Ethernet-10Gbd
Fabric,6,0 = Ethernet-10Gbd
Fabric,7,0 1 2 3 = Ethernet,0x4
Fabric,7,0 1 2 3 = Ethernet,0x1
Fabric,7,0 1 2 3 = Ethernet,0x3
Fabric,7,0 1 2 3 = Ethernet
Fabric,7,0 1 = Ethernet,0x3
Fabric,7,0 1 = Ethernet
Fabric,7,0 = Ethernet,0x3
Fabric,7,0 = Ethernet
Fabric,7,0 1 2 3 = Ethernet-10Gbd,0x1
Fabric,7,0 1 2 3 = Ethernet-10Gbd
Fabric,7,0 1 = Ethernet-10Gbd
Fabric,7,0 = Ethernet-10Gbd
Fabric,8,0 1 2 3 = Ethernet,0x4
Fabric,8,0 1 2 3 = Ethernet,0x1
Fabric,8,0 1 2 3 = Ethernet,0x3
Fabric,8,0 1 2 3 = Ethernet
Fabric,8,0 1 = Ethernet,0x3
Fabric,8,0 1 = Ethernet
Fabric,8,0 = Ethernet,0x3
Fabric,8,0 = Ethernet
Fabric,8,0 1 2 3 = Ethernet-10Gbd,0x1
Fabric,8,0 1 2 3 = Ethernet-10Gbd
Fabric,8,0 1 = Ethernet-10Gbd
```

```
Fabric,8,0 = Ethernet-10Gbd
Fabric,9,0 1 2 3 = Ethernet,0x4
Fabric,9,0 1 2 3 = Ethernet,0x1
Fabric,9,0 1 2 3 = Ethernet,0x3
Fabric,9,0 1 2 3 = Ethernet
Fabric,9,0 1 = Ethernet,0x3
Fabric,9,0 1 = Ethernet
Fabric,9,0 = Ethernet,0x3
Fabric,9,0 = Ethernet
Fabric,9,0 1 2 3 = Ethernet-10Gbd,0x1
Fabric,9,0 1 2 3 = Ethernet-10Gbd
Fabric,9,0 1 = Ethernet-10Gbd
Fabric,9,0 = Ethernet-10Gbd
Fabric,10,0 1 2 3 = Ethernet,0x4
Fabric,10,0 1 2 3 = Ethernet,0x1
Fabric,10,0 1 2 3 = Ethernet,0x3
Fabric,10,0 1 2 3 = Ethernet
Fabric,10,0 1 = Ethernet,0x3
Fabric,10,0 1 = Ethernet
Fabric,10,0 = Ethernet,0x3
Fabric,10,0 = Ethernet
Fabric,10,0 1 2 3 = Ethernet-10Gbd,0x1
Fabric,10,0 1 2 3 = Ethernet-10Gbd
Fabric,10,0 1 = Ethernet-10Gbd
Fabric,10,0 = Ethernet-10Gbd

[Board Connectivity]
Format Version = 2
Vendor Format Version = 0
Group = 0
Fabric,11,0 1 2 3 = Ethernet,0x4
Fabric,11,0 1 2 3 = Ethernet,0x1
Fabric,11,0 1 2 3 = Ethernet,0x3
Fabric,11,0 1 2 3 = Ethernet
Fabric,11,0 1 = Ethernet,0x3
Fabric,11,0 1 = Ethernet
```

```
Fabric,11,0 = Ethernet,0x3
Fabric,11,0 = Ethernet
Fabric,11,0 1 2 3 = Ethernet-10Gbd,0x1
Fabric,11,0 1 2 3 = Ethernet-10Gbd
Fabric,11,0 1 = Ethernet-10Gbd
Fabric,11,0 = Ethernet-10Gbd
Fabric,12,0 1 2 3 = Ethernet,0x4
Fabric,12,0 1 2 3 = Ethernet,0x1
Fabric,12,0 1 2 3 = Ethernet,0x3
Fabric,12,0 1 2 3 = Ethernet
Fabric,12,0 1 = Ethernet,0x3
Fabric,12,0 1 = Ethernet
Fabric,12,0 = Ethernet,0x3
Fabric,12,0 = Ethernet
Fabric,12,0 1 2 3 = Ethernet-10Gbd,0x1
Fabric,12,0 1 2 3 = Ethernet-10Gbd
Fabric,12,0 1 = Ethernet-10Gbd
Fabric,12,0 = Ethernet-10Gbd
Fabric,13,0 1 2 3 = Ethernet,0x4
Fabric,13,0 1 2 3 = Ethernet,0x1
Fabric,13,0 1 2 3 = Ethernet,0x3
Fabric,13,0 1 2 3 = Ethernet
Fabric,13,0 1 = Ethernet,0x3
Fabric,13,0 1 = Ethernet
Fabric,13,0 = Ethernet,0x3
Fabric,13,0 = Ethernet
Fabric,13,0 1 2 3 = Ethernet-10Gbd,0x1
Fabric,13,0 1 2 3 = Ethernet-10Gbd
Fabric,13,0 1 = Ethernet-10Gbd
Fabric,13,0 = Ethernet-10Gbd
Fabric,14,0 = Ethernet
Fabric,15,0 = Ethernet

[Carrier Info]
Format Version = 2
Vendor Format Version = 0
```

```
Extension Version = 2.0
Site Numbers = 5

[Carrier Power]
Format Version = 2
Vendor Format Version = 0
Maximum Internal Current = 8.0 8.0 Amps, 96.0 Watts
Readiness = 5 5 seconds
0x7A = 5.0 5.0 Amps, 60.0 Watts

[Carrier Connectivity]
Format Version = 2
Vendor Format Version = 0
Resource = AMC 5
0 = 0, Switch 1
1 = 1, Switch 1
2 = 2, Switch 1
4 = 4, Switch 1
5 = 5, Switch 1
6 = 6, Switch 1
7 = 7, Switch 1
8 = 8, Switch 1
9 = 9, Switch 1
10 = 10, Switch 1
11 [Amc Connectivity]
Format Version = 2
Vendor Format Version = 0
Resource = Switch 1
Channels = 0, 1, 2, 4 5 6 7, 8 9 10 11
0,0 = AMC.2 Ethernet, 1000Base-BX
1,0 = AMC.2 Ethernet, 1000Base-BX
2,0 = AMC.3 Storage, SATA, asymm:1
3,0 1 2 3 = AMC.1 PCI Express, Gen2, asymm:1
3,0 1 2 3 = AMC.1 PCI Express, Gen1, asymm:1
3,0 1 = AMC.1 PCI Express, Gen2, asymm:1
3,0 1 = AMC.1 PCI Express, Gen1, asymm:1
```

```
3,0 = AMC.1 PCI Express, Gen2, asymm:1
3,0 = AMC.1 PCI Express, Gen2, asymm:1
4,0 1 2 3 = AMC.1 PCI Express, Gen2, asymm:1
4,0 1 2 3 = AMC.1 PCI Express, Gen1, asymm:1
4,0 1 = AMC.1 PCI Express, Gen2, asymm:1
4,0 1 = AMC.1 PCI Express, Gen1, asymm:1
4,0 = AMC.1 PCI Express, Gen2, asymm:1
4,0 = AMC.1 PCI Express, Gen1, asymm:1

[Emerson OEM Type 0x01]
Type = 0xc0
Manufacturer Id = 0x65cd
Data = 0x01 0x00 0x02 0x10 0x00 0x01 0x02 0x03 0x04 0x05 0x03 0x06 0x07
0x08 0x09 0x0A 0x0B= 11, Switch 1
```

3.2 MAC Address Record

The blade provides one OEM FRU record which contains information about on-board MAC addresses. The MAC address information is stored in either of the following two ways:

- The MAC address record holds the total number of on-board MAC addresses and the base MAC address
- The MAC address record holds all on-board MAC addresses

The format of the record is described in the following table.

Table 3-1 Penguin Edge MAC Addresses Record

Offset	Length	Description
0	1	Record Type ID. A value of C0h (OEM) shall be used for Penguin Edge OEM records.
1	1	End of List / Version [7] End of List. Set to 1b for the last record [6:4] Reserved. Write as 000b. [3:0] Record format version. Write as 2h.
2	1	Record Length
3	1	Record Checksum (zero checksum)

Table 3-1 Penguin Edge MAC Addresses Record (continued)

Offset	Length	Description
4	1	Header Checksum (zero checksum)
5	1	LSB of Manufacturer ID. Write as CDh.
6	1	Second Byte of Manufacturer ID. Write as 65h.
7	1	MSB of Manufacturer ID. Write as 00h.
8	1	Penguin Edge Record ID. 01h for Penguin Edge MAC Address Record.
9	1	Record Format Version. 00h for this specification.
10	1	Number of MAC (x)
11	N=(x*7)	Penguin Edge MAC Address Descriptors. See *Table 3-2 on page 33*

Table 3-2 Penguin Edge MAC Address Descriptor

Offset	Length	Description
0	1	Interface Type. Refer to the following table for Interface Type Assignments.
1	6	MAC Address. First Octet comes first.

Table 3-3 Interface Type Assignments

Interface Type	Description
03h	Front Panel
10h	ATCA Update Channel

3.3 Power Configuration

Following are the power configuration details:

```
[Carrier Power]
Format Version = 2
Vendor Format Version = 0
Maximum Internal Current = 8.0          8.0 Amps, 96.0 Watts
Readiness = 5                           5 seconds
0x7A = 5.0                              5.0 Amps, 60.0 Watts
```

3.4 Sensor Overview

The following table lists all IPMI sensors available on the ATCA-F140. .

Table 3-4 IPMI Sensors Overview

Sensor Number	Sensor Name	Sensor Type	Detailed SDR Description
0	Hot Swap Carrier	(PICMG) FRU Hot Swap	See *Table 3-5 on page 35*
1	ATCA-F140 HS RTM	(PICMG) FRU Hot Swap	See *Table 3-6 on page 36*
2	Hotswap AMC 5	(PICMG) FRU Hot Swap	See *Table 3-7 on page 36*
3	Version change	Version Change	See *Table 3-8 on page 37*
4	IPMB Physical	(PICMG) IPMB-0 Physical Link	See *Table 3-9 on page 38*
5	BMC Watchdog	Watchdog2	See *Table 3-10 on page 38*
6	12.0V	Voltage	See *Table 3-11 on page 39*
7	3.3V	Voltage	See *Table 3-12 on page 39*
8	1.0V FIX VDDC	Voltage	See *Table 3-13 on page 40*
8	1.0V FIX VDDC	Voltage	See*Table 3-14 on page 41*
9	1.0V FIX AVDD	Voltage	See*Table 3-15 on page 41*
10	1.5V	Voltage	See*Table 3-16 on page 42*
11	1.2V BIX	Voltage	See*Table 3-17 on page 43*
12	1.05V	Voltage	See*Table 3-18 on page 43*
13	1.0V	Voltage	See*Table 3-19 on page 44*
14	Inlet Temp	Temperature	See*Table 3-20 on page 45*
15	BIX Temp	Temperature	See*Table 3-21 on page 45*
16	FIX Temp	Temperature	See*Table 3-22 on page 46*
17	SP Temp	Temperature	See*Table 3-23 on page 47*
18	Clock Temp	Temperature	See*Table 3-24 on page 47*
19	RTM Top Temp	Temperature	See*Table 3-25 on page 48*
20	RTM Mid Temp	Temperature	See*Table 3-26 on page 49*
21	RTM Bottom Temp	Temperature	See*Table 3-27 on page 49*

Table 3-4 IPMI Sensors Overview (continued)

Sensor Number	Sensor Name	Sensor Type	Detailed SDR Description
22	IPMC Post	Management Subsystem Health	See *Table 3-28 on page 50*
23	Boot Bank	(Penguin Edge) OEM Type D2	See *Table 3-29 on page 51*
24	SYSSTAT	(Penguin Edge) OEM Type CE	See *Table 3-30 on page 51*
25	Fw Progress	System Firmware Progress	See *Table 3-31 on page 52*
26	OS Boot	OS Boot	See *Table 3-32 on page 52*
27	Boot Error	Boot Error	See *Table 3-33 on page 53*
28	Boot Initiated	System Boot/Restart Initiated	See *Table 3-34 on page 53*
29	ATCA-F140 IPMC	(Penguin Edge) OEM Type D5	See *Table 3-35 on page 54*
30	Power Good	Entity Presence	See *Table 3-36 on page 54*
31	-48V A Volts	Voltage	See *Table 3-37 on page 55*
32	-48V B Volts	Voltage	See *Table 3-38 on page 55*
33	-48V Amps	Current	See *Table 3-39 on page 56*
34	Holdup Cap Volts	Voltage	See *Table 3-40 on page 57*
35	iQor Temp	Temperature	See *Table 3-41 on page 57*
36	iQor Status	(Penguin Edge) OEM Type D7	See *Table 3-42 on page 58*
37	Reset Source	(Penguin Edge) OEM Type D2	See *Table 3-43 on page 59*
38	POST Code	(Penguin Edge) OEM Reserved Type FF	See *Table 3-44 on page 59*
39	RTM Power Good	Power Supply	See *Table 3-45 on page 60*

Table 3-5 Hot Swap Carrier

Feature	Raw Value	Description
Sensor Name	Hot Swap Carrier	
Sensor Number	0	
Sensor Description	Front Blade M-State	
Sensor Type Code	0xF0	(PICMG) FRU Hot Swap

Table 3-5 Hot Swap Carrier

Feature	Raw Value	Description
Sensor Event Reading Type Code	0x6F	Sensor Specific
Assertion Event Mask	0x00FF	Assertion Event Mask: Offset 7 through 0
De-assertion Event Mask	0x0000	De-assertion Event Mask: None
Discrete Reading Mask	0x00FF	Discrete Reading Mask: State bits 0 through 7
Unit	Discrete	

Table 3-6 ATCA-F125 HS RTM

Feature	Raw Value	Description
Sensor Name	ATCA-F140 HS RTM	
Sensor Number	1	
Sensor Description	RTM M-State	
Sensor Type Code	0xF0	(PICMG) FRU Hot Swap
Sensor Event Reading Type Code	0x6F	Sensor Specific
Assertion Event Mask	0x00FF	Assertion Event Mask: Offset 7 through 0
De-assertion Event Mask	0x0000	De-assertion Event Mask: None
Discrete Reading Mask	0x00FF	Discrete Reading Mask: State bits 0 through 7
Unit	Discrete	

Table 3-7 Hotswap AMC 5

Feature	Raw Value	Description
Sensor Name	Hotswap AMC 5	
Sensor Number	2	

Table 3-7 Hotswap AMC 5 (continued)

Feature	Raw Value	Description
Sensor Description	AMC (Site 5) M-State	
Sensor Type Code	0xF0	(PICMG) FRU Hot Swap
Sensor Event Reading Type Code	0x6F	Sensor Specific
Assertion Event Mask	0x00FF	Assertion Event Mask: Offset 7 through 0
De-assertion Event Mask	0x0000	De-assertion Event Mask: None
Discrete Reading Mask	0x00FF	Discrete Reading Mask: State bits 0 through 7
Unit	Discrete	

Table 3-8 Version Change

Feature	Raw Value	Description
Sensor Name	Version change	
Sensor Number	3	
Sensor Description	IPMC Firmware Version Change	
Sensor Type Code	0x2B	Version Change
Sensor Event Reading Type Code	0x6F	Sensor Specific
Assertion Event Mask	0x00FF	Assertion Event Mask: Offset 7 through 0
De-assertion Event Mask	0x0000	De-assertion Event Mask: None
Discrete Reading Mask	0x00FF	Discrete Reading Mask: State bits 0 through 7
Unit	Discrete	

Table 3-9 IPMB Physical

Feature	Raw Value	Description
Sensor Name	IPMB Physical	
Sensor Number	4	
Sensor Description	IPMB-0 Link State	
Sensor Type Code	0xF1	(PICMG) IPMB-0 Physical Link
Sensor Event Reading Type Code	0x6F	Sensor Specific
Assertion Event Mask	0x000F	Assertion Event Mask: Offset 3 through 0
De-assertion Event Mask	0x0000	De-assertion Event Mask: None
Discrete Reading Mask	0x000F	Discrete Reading Mask: State bits 0 through 3
Unit	Discrete	

Table 3-10 BMC Watchdog

Feature	Raw Value	Description
Sensor Name	BMC Watchdog	
Sensor Number	5	
Sensor Description	BMC Watchdog	
Sensor Type Code	0x23	Watchdog2
Sensor Event Reading Type Code	0x6F	Sensor Specific
Assertion Event Mask	0x0000	Assertion Event Mask: None
De-assertion Event Mask	0x0000	De-assertion Event Mask: None
Discrete Reading Mask	0x010F	Discrete Reading Mask: State bit 0, 1, 2, 3, and 8
Unit	Discrete	

Table 3-11 12.0V Sensor

Feature	Raw Value	Description
Sensor Name	12.0V	
Sensor Number	6	
Sensor Description	Main Payload Power	
Sensor Type Code	0x02	Voltage
Sensor Event Reading Type Code	0x01	Threshold
Lower Threshold Reading Mask Code	0x6A14	Lower Threshold Reading Mask: LNR, LC Assertion Event Mask: UNR-GH, UC-GH, LNR-GL, LC-GL
Upper Threshold Reading Mask Code	0x6A14	Upper Threshold Reading Mask: UNR, UC De-assertion Event Mask: UNR-GH, UC-GH, LNR-GL, LC-GL
Settable Threshold Mask, Readable Threshold Mask Code	0x3636	Settable Threshold Mask: UNR, UC, LNR, LC Readable Threshold Mask: UNR, UC, LNR, LC
Unit	Volts	

Table 3-12 3.3V Sensor

Feature	Raw Value	Description
Sensor Name	3.3V	
Sensor Number	7	
Sensor Description	Internal Voltage	
Sensor Type Code	0x02	Voltage
Sensor Event Reading Type Code	0x01	Threshold
Lower Threshold Reading Mask Code	0x6A14	Lower Threshold Reading Mask: LNR, LC Assertion Event Mask: UNR-GH, UC-GH, LNR-GL, LC-GL

Table 3-12 3.3V Sensor (continued)

Feature	Raw Value	Description
Upper Threshold Reading Mask Code	0x6A14	Upper Threshold Reading Mask: UNR, UC De-assertion Event Mask: UNR-GH, UC-GH, LNR-GL, LC-GL
Settable Threshold Mask, Readable Threshold Mask Code	0x3636	Settable Threshold Mask: UNR, UC, LNR, LC Readable Threshold Mask: UNR, UC, LNR, LC
Unit	Volts	

Table 3-13 1.0V FIX VDCC

Feature	Raw Value	Description
Sensor Name	1.0V FIX VDCC	
Sensor Number	8	
Sensor Description	Internal Voltage (Trident AVS status = 0x01, ROV = 1.025V	
Sensor Type Code	0x02	Voltage
Sensor Event Reading Type Code	0x01	Threshold
Lower Threshold Reading Mask Code	0x6A14	Lower Threshold Reading Mask: LNR, LC Assertion Event Mask: UNR-GH, UC-GH, LNR-GL, LC-GL
Upper Threshold Reading Mask Code	0x6A14	Upper Threshold Reading Mask: UNR, UC De-assertion Event Mask: UNR-GH, UC-GH, LNR-GL, LC-GL
Settable Threshold Mask, Readable Threshold Mask Code	0x3636	Settable Threshold Mask: UNR, UC, LNR, LC Readable Threshold Mask: UNR, UC, LNR, LC
Unit	Volts	

Table 3-14 1.0V FIX VDCC

Features	Raw Value	Description
Sensor Name	1.0V FIX VDCC	
Sensor Number	8	
Sensor Description	Internal Voltage (Trident AVS status = 0x02, ROV = 0.90V)	
Sensor Type Code	0x02	Voltage
Sensor Event Reading Type Code	0x01	Threshold
Lower Threshold Reading Mask Code	0x6A14	Lower Threshold Reading Mask: LNR, LC Assertion Event Mask: UNR-GH, UC-GH, LNR-GL, LC-GL
Upper Threshold Reading Mask Code	0x6A14	Upper Threshold Reading Mask: UNR, UC De-assertion Event Mask: UNR-GH, UC-GH, LNR-GL, LC-GL
Settable Threshold Mask, Readable Threshold Mask Code	0x3636	Settable Threshold Mask: UNR, UC, LNR, LC Readable Threshold Mask: UNR, UC, LNR, LC
Units	Volts	

Table 3-15 1.0V FIX AVDD

Features	Raw Value	Description
Sensor Name	1.0V FIX AVDD	
Sensor Number	9	
Sensor Description	Internal voltage	
Sensor Type Code	0x02	Voltage
Sensor Event Reading Type Code	0x01	Threshold

Table 3-15 1.0V FIX AVDD (continued)

Features	Raw Value	Description
Lower Threshold Reading Mask Code	0x6A14	Lower Threshold Reading Mask: LNR, LC Assertion Event Mask: UNR-GH, UC-GH, LNR-GL, LC-GL
Upper Threshold Reading Mask Code	0x6A14	Upper Threshold Reading Mask: UNR, UC De-assertion Event Mask: UNR-GH, UC-GH, LNR-GL, LC-GL
Settable Threshold Mask, Readable Threshold Mask Code	0x3636	Settable Threshold Mask: UNR, UC, LNR, LC Readable Threshold Mask: UNR, UC, LNR, LC
Unit	Volts	

Table 3-16 1.5V

Features	Raw Value	Description
Sensor Name	1.5V	
Sensor Number	10	
Sensor Description	Internal Voltage	
Sensor Type Code	0x02	Voltage
Sensor Event Reading Type Code	0x01	Threshold
Lower Threshold Reading Mask Code	0x6A14	Lower Threshold Reading Mask: LNR, LC Assertion Event Mask: UNR-GH, UC-GH, LNR-GL, LC-GL
Upper Threshold Reading Mask Code	0x6A14	Upper Threshold Reading Mask: UNR, UC De-assertion Event Mask: UNR-GH, UC-GH, LNR-GL, LC-GL
Settable Threshold Mask, Readable Threshold Mask Code	0x3636	Settable Threshold Mask: UNR, UC, LNR, LC Readable Threshold Mask: UNR, UC, LNR, LC
Units	Volts	

Table 3-17 1.2V BIX

Features	Raw Value	Description
Sensor Name	1.2V BIX	
Sensor Number	11	
Sensor Description	Internal Voltage	
Sensor Type Code	0x02	Voltage
Sensor Event Reading Type Code	0x01	Threshold
Lower Threshold Reading Mask Code	0x6A14	Lower Threshold Reading Mask: LNR, LC Assertion Event Mask: UNR-GH, UC-GH, LNR-GL, LC-GL
Upper Threshold Reading Mask Code	0x6A14	Upper Threshold Reading Mask: UNR, UC De-assertion Event Mask: UNR-GH, UC-GH, LNR-GL, LC-GL
Settable Threshold Mask, Readable Threshold Mask Code	0x3636	Settable Threshold Mask: UNR, UC, LNR, LC Readable Threshold Mask: UNR, UC, LNR, LC
Units	Volts	

Table 3-18 1.05V

Features	Raw Value	Description
Sensor Name	1.05V	
Sensor Number	12	
Sensor Description	Internal Voltage	
Sensor Type Code	0x02	Voltage
Sensor Event Reading Type Code	0x01	Threshold
Lower Threshold Reading Mask Code	0x6A14	Lower Threshold Reading Mask: LNR, LC Assertion Event Mask: UNR-GH, UC-GH, LNR-GL, LC-GL

Table 3-18 1.05V (continued)

Features	Raw Value	Description
Upper Threshold Reading Mask Code	0x6A14	Upper Threshold Reading Mask: UNR, UC De-assertion Event Mask: UNR-GH, UC-GH, LNR-GL, LC-GL
Settable Threshold Mask, Readable Threshold Mask Code	0x3636	Settable Threshold Mask: UNR, UC, LNR, LC Readable Threshold Mask: UNR, UC, LNR, LC
Units	Volts	

Table 3-19 1.0V

Features	Raw Value	Description
Sensor Name	1.0V	
Sensor Number	13	
Sensor Description	Internal Voltage	
Sensor Type Code	0x02	Voltage
Sensor Event Reading Type Code	0x01	Threshold
Lower Threshold Reading Mask Code	0x6A14	Lower Threshold Reading Mask: LNR, LC Assertion Event Mask: UNR-GH, UC-GH, LNR-GL, LC-GL
Upper Threshold Reading Mask Code	0x6A14	Upper Threshold Reading Mask: UNR, UC De-assertion Event Mask: UNR-GH, UC-GH, LNR-GL, LC-GL
Settable Threshold Mask, Readable Threshold Mask Code	0x3636	Settable Threshold Mask: UNR, UC, LNR, LC Readable Threshold Mask: UNR, UC, LNR, LC
Unit	Volts	

Table 3-20 Inlet Temp

Features	Raw Value	Description
Sensor Name	Inlet Temp	
Sensor Number	14	
Sensor Description	Inlet Air Temperature	
Sensor Type Code	0x01	Temperature
Sensor Event Reading Type Code	0x01	Threshold
Lower Threshold Reading Mask Code	0x0A80	Lower Threshold Reading Mask: None Assertion Event Mask: UNR-GH, UC-GH, UNC-GH
Upper Threshold Reading Mask Code	0x7A80	Upper Threshold Reading Mask: UNR, UC, UNC Assertion Event Mask: UNR-GH, UC-GH, UNC-GH
Settable Threshold Mask, Readable Threshold Mask Code	0x3838	Settable Threshold Mask: UNR, UC, UNC Readable Threshold Mask: UNR, UC, UNC
Unit	degrees C	

Table 3-21 BIX Temp

Features	Raw Value	Description
Sensor Name	BIX Temp	
Sensor Number	15	
Sensor Description	BIX Temperature	
Sensor Type Code	0x01	Temperature
Sensor Event Reading Type Code	0x01	Threshold
Lower Threshold Reading Mask Code	0x0A80	Lower Threshold Reading Mask: None Assertion Event Mask: UNR-GH, UC-GH, UNC-GH

Table 3-21 BIX Temp (continued)

Features	Raw Value	Description
Upper Threshold Reading Mask Code	0x7A80	Upper Threshold Reading Mask: UNR, UC, UNC Assertion Event Mask: UNR-GH, UC-GH, UNC-GH
Settable Threshold Mask, Readable Threshold Mask Code	0x3838	Settable Threshold Mask: UNR, UC, UNC Readable Threshold Mask: UNR, UC, UNC
Unit	degrees C	

Table 3-22 FIX Temp

Features	Raw Value	Description
Sensor Name	FIX Temp	
Sensor Number	16	
Sensor Description	FIX Temperature	
Sensor Type Code	0x01	Temperature
Sensor Event Reading Type Code	0x01	Threshold
Lower Threshold Reading Mask Code	0x0A80	Lower Threshold Reading Mask: None Assertion Event Mask: UNR-GH, UC-GH, UNC-GH
Upper Threshold Reading Mask Code	0x7A80	Upper Threshold Reading Mask: UNR, UC, UNC Assertion Event Mask: UNR-GH, UC-GH, UNC-GH
Settable Threshold Mask, Readable Threshold Mask Code	0x3838	Settable Threshold Mask: UNR, UC, UNC Readable Threshold Mask: UNR, UC, UNC
Unit	degrees C	

Table 3-23 SP Temp

Features	Raw Value	Description
Sensor Name	SP Temp	
Sensor Number	17	
Sensor Description	SP Temperature	
Sensor Type Code	0x01	Temperature
Sensor Event Reading Type Code	0x01	Threshold
Lower Threshold Reading Mask Code	0x0A80	Lower Threshold Reading Mask: None Assertion Event Mask: UNR-GH, UC-GH, UNC-GH
Upper Threshold Reading Mask Code	0x7A80	Upper Threshold Reading Mask: UNR, UC, UNC Assertion Event Mask: UNR-GH, UC-GH, UNC-GH
Settable Threshold Mask, Readable Threshold Mask Code	0x3838	Settable Threshold Mask: UNR, UC, UNC Readable Threshold Mask: UNR, UC, UNC
Unit	degrees C	

Table 3-24 Clock Temp

Features	Raw Value	Description
Sensor Name	Clock Temp	
Sensor Number	18	
Sensor Description	Clock Temperature	
Sensor Type Code	0x01	Temperature
Sensor Event Reading Type Code	0x01	Threshold
Lower Threshold Reading Mask Code	0x0A80	Lower Threshold Reading Mask: None Assertion Event Mask: UNR-GH, UC-GH, UNC-GH

Table 3-24 Clock Temp (continued)

Features	Raw Value	Description
Upper Threshold Reading Mask Code	0x7A80	Upper Threshold Reading Mask: UNR, UC, UNC Assertion Event Mask: UNR-GH, UC-GH, UNC-GH
Settable Threshold Mask, Readable Threshold Mask Code	0x3838	Settable Threshold Mask: UNR, UC, UNC Readable Threshold Mask: UNR, UC, UNC
Unit	degrees C	

Table 3-25 RTM Top Temp

Features	Raw Value	Description
Sensor Name	RTM Top Temp	
Sensor Number	19	
Sensor Description	RTM Top Area Temperature	
Sensor Type Code	0x01	Temperature
Sensor Event Reading Type Code	0x01	Threshold
Lower Threshold Reading Mask Code	0x0A80	Lower Threshold Reading Mask: None Assertion Event Mask: UNR-GH, UC-GH, UNC-GH
Upper Threshold Reading Mask Code	0x7A80	Upper Threshold Reading Mask: UNR, UC, UNC Assertion Event Mask: UNR-GH, UC-GH, UNC-GH
Settable Threshold Mask, Readable Threshold Mask Code	0x3838	Settable Threshold Mask: UNR, UC, UNC Readable Threshold Mask: UNR, UC, UNC
Unit	degrees C	

Table 3-26 RTM Mid Temp

Features	Raw Value	Description
Sensor Name	RTM Mid Temp	
Sensor Number	20	
Sensor Description	RTM Middle Area Temperature	
Sensor Type Code	0x01	Temperature
Sensor Event Reading Type Code	0x01	Threshold
Lower Threshold Reading Mask Code	0x0A80	Lower Threshold Reading Mask: None Assertion Event Mask: UNR-GH, UC-GH, UNC-GH
Upper Threshold Reading Mask Code	0x7A80	Upper Threshold Reading Mask: UNR, UC, UNC Assertion Event Mask: UNR-GH, UC-GH, UNC-GH
Settable Threshold Mask, Readable Threshold Mask Code	0x3838	Settable Threshold Mask: UNR, UC, UNC Readable Threshold Mask: UNR, UC, UNC
Unit	degrees C	

Table 3-27 RTM Bottom Temp

Features	Raw Value	Description
Sensor Name	RTM Bottom Temp	
Sensor Number	21	
Sensor Description	RTM Bottom Inlet Air Temperature	
Sensor Type Code	0x01	Temperature
Sensor Event Reading Type Code	0x01	Threshold

Table 3-27 RTM Bottom Temp (continued)

Features	Raw Value	Description
Lower Threshold Reading Mask Code	0x0A80	Lower Threshold Reading Mask: None Assertion Event Mask: UNR-GH, UC-GH, UNC-GH
Upper Threshold Reading Mask Code	0x7A80	Upper Threshold Reading Mask: UNR, UC, UNC Assertion Event Mask: UNR-GH, UC-GH, UNC-GH
Settable Threshold Mask, Readable Threshold Mask Code	0x3838	Settable Threshold Mask: UNR, UC, UNC Readable Threshold Mask: UNR, UC, UNC
Unit	degrees C	

Table 3-28 IPMC POST

Features	Raw Value	Description
Sensor Name	IPMC POST	
Sensor Number	22	
Sensor Description	IPMC Firmware POST	
Sensor Type Code	0x28	Management Subsystem Health
Sensor Event Reading Type Code	0x06	Discrete Performance
Assertion Event Mask	0x0003	Assertion Event Mask: Offset 1 and 0
De-assertion Event Mask	0x0000	De-assertion Event Mask: None
Discrete Reading Mask	0x0003	Discrete Reading Mask: State bit 0 and 1
Unit	Discrete	

Table 3-29 Boot Bank

Features	Raw Value	Description
Sensor Name	Boot Bank	
Sensor Number	23	
Sensor Description	Boot Firmware Flash Bank Selection and FPGA Bank Selection	
Sensor Type Code	0xD2	(Penguin Edge) OEM Type D2
Sensor Event Reading Type Code	0x6F	Sensor Specific
Assertion Event Mask	0x0003	Assertion Event Mask: Offset 1 and 0
De-assertion Event Mask	0x0003	De-assertion Event Mask: Offset 1 and 0
Discrete Reading Mask	0x0003	Discrete Reading Mask: State bit 0 and 1
Unit	Discrete	

Table 3-30 Reserved

Features	Raw Value	Description
Sensor Name	SYSSTAT	
Sensor Number	24	
Sensor Description	Reserved	System Status
Sensor Type Code	0xCE	(Penguin Edge) OEM Type CE.
Sensor Event Reading Type Code	0x07	Discrete State
Assertion Event Mask	0x000F	Assertion Event Mask: Offset 3 through 0
De-assertion Event Mask	0x0000	De-assertion Event Mask: None
Discrete Reading Mask	0x000F	Discrete Reading Mask: State bit 0 through 3
Unit	Discrete	

Table 3-31 Fw Progress

Features	Raw Value	Description
Sensor Name	Fw Progress	
Sensor Number	25	
Sensor Description	Boot Firmware Progress	
Sensor Type Code	0x0F	System Firmware Progress
Sensor Event Reading Type Code	0x6F	Sensor Specific
Assertion Event Mask	0x0007	Assertion Event Mask: Offset 2, 1, and 0
De-assertion Event Mask	0x0000	De-assertion Event Mask: None
Discrete Reading Mask	0x0007	Discrete Reading Mask: State bit 0, 1, and 2
Unit	Discrete	

Table 3-32 OS Boot

Features	Raw Value	Description
Sensor Name	OS Boot	
Sensor Number	26	
Sensor Description	OS Boot	
Sensor Type Code	0x1F	OS Boot
Sensor Event Reading Type Code	0x6F	Sensor Specific
Assertion Event Mask	0x007F	Assertion Event Mask: Offset 6 through 0
De-assertion Event Mask	0x0000	De-assertion Event Mask: None
Discrete Reading Mask	0x007F	Discrete Reading Mask: State bits 0 through 6
Unit	Discrete	

Table 3-33 Boot Error

Features	Raw Value	Description
Sensor Name	Boot Error	
Sensor Number	27	
Sensor Description	Boot Error	
Sensor Type Code	0x1E	Boot Error
Sensor Event Reading Type Code	0x6F	Sensor Specific
Assertion Event Mask	0x001F	Assertion Event Mask: Offset 4 through 0
De-assertion Event Mask	0x0000	De-assertion Event Mask: None
Discrete Reading Mask	0x001F	Discrete Reading Mask: State bits 0 through 4
Unit	Discrete	

Table 3-34 Boot Initiated

Features	Raw Value	Description
Sensor Name	Boot Initiated	
Sensor Number	28	
Sensor Description	Boot Initiated	
Sensor Type Code	0x1D	System Boot/Restart Initiated
Sensor Event Reading Type Code	0x6F	Sensor Specific
Assertion Event Mask	0x001F	Assertion Event Mask: Offset 4 through 0
De-assertion Event Mask	0x0000	De-assertion Event Mask: None
Discrete Reading Mask	0x001F	Discrete Reading Mask: State bits 0 through 4
Unit	Discrete	

Table 3-35 ATCA-F140 IPMC

Features	Raw Value	Description
Sensor Name	ATCA-F140 IPMC	
Sensor Number	29	
Sensor Description	IPMC Reset Cause	
Sensor Type Code	0xD5	(Penguin Edge) OEM Type D5
Sensor Event Reading Type Code	0x6F	Sensor Specific
Assertion Event Mask	0x0000	Assertion Event Mask: None
De-assertion Event Mask	0x0000	De-assertion Event Mask: None
Discrete Reading Mask	0x007F	Discrete Reading Mask: State bits 0 through 6
Unit	Discrete	

Table 3-36 Power Good

Features	Raw Value	Description
Sensor Name	Power Good	
Sensor Number	30	
Sensor Description	All Power Good Indicator	
Sensor Type Code	0x25	Entity Presence
Sensor Event Reading Type Code	0x6F	Sensor Specific
Assertion Event Mask	0x0003	Assertion Event Mask: Offset 1 and 0
De-assertion Event Mask	0x0000	De-assertion Event Mask: None
Discrete Reading Mask	0x0003	Discrete Reading Mask: State bit 0 and 1
Unit	Discrete	

Table 3-37 -48V A Volts

Features	Raw Value	Description
Sensor Name	-48V A Volts	
Sensor Number	31	
Sensor Description	-48V Input A Voltage	
Sensor Type Code	0x02	Voltage
Sensor Event Reading Type Code	0x01	Threshold
Lower Threshold Reading Mask Code	0x6A14	Lower Threshold Reading Mask: LNR, LC Assertion Event Mask: UNR-GH, UC-GH, LNR-GL, LC-GL
Upper Threshold Reading Mask Code	0x6A14	Upper Threshold Reading Mask: UNR, UC De-assertion Event Mask: UNR-GH, UC-GH, LNR-GL, LC-GL
Settable Threshold Mask, Readable Threshold Mask Code	0x3636	Settable Threshold Mask: UNR, UC, LNR, LC Readable Threshold Mask: UNR, UC, LNR, LC
Unit	Volts	

Table 3-38 -48V B Volts

Features	Raw Value	Description
Sensor Name	-48V B Volts	
Sensor Number	32	
Sensor Description	-48V Input B Voltage	
Sensor Type Code	0x02	Voltage
Sensor Event Reading Type Code	0x01	Threshold
Lower Threshold Reading Mask Code	0x6A14	Lower Threshold Reading Mask: LNR, LC Assertion Event Mask: UNR-GH, UC-GH, LNR-GL, LC-GL

Table 3-38 -48V B Volts (continued)

Features	Raw Value	Description
Upper Threshold Reading Mask Code	0x6A14	Upper Threshold Reading Mask: UNR, UC De-assertion Event Mask: UNR-GH, UC-GH, LNR-GL, LC-GL
Settable Threshold Mask, Readable Threshold Mask Code	0x3636	Settable Threshold Mask: UNR, UC, LNR, LC Readable Threshold Mask: UNR, UC, LNR, LC
Unit	Volts	

Table 3-39 -48V Amps

Features	Raw Value	Description
Sensor Name	-48V Amps	
Sensor Name	33	
Sensor Number	-48V Input Current	
Sensor Description	0x03	Current
Sensor Type Code	0x01	Threshold
Lower Threshold Reading Mask Code	0x0000	Lower Threshold Reading Mask: None Assertion Event Mask: None
Upper Threshold Reading Mask Code	0x0000	Upper Threshold Reading Mask: None De-assertion Event Mask: None
Settable Threshold Mask, Readable Threshold Mask Code	0x0000	Settable Threshold Mask: None Readable Threshold Mask: None
Unit	Amps	

Table 3-40 HoldUp Cap Volts

Features	Raw Value	Description
Sensor Name	HoldUp Cap Volts	
Sensor Number	34	
Sensor Description	Power Module Holdup Cap Voltage	
Sensor Type Code	0x02	Voltage
Sensor Event Reading Type Code	0x01	Threshold
Lower Threshold Reading Mask Code	0x6A14	Lower Threshold Reading Mask: LNR, LC Assertion Event Mask: UNR-GH, UC-GH, LNR-GL, LC-GL
Upper Threshold Reading Mask Code	0x6A14	Upper Threshold Reading Mask: UNR, UC De-assertion Event Mask: UNR-GH, UC-GH, LNR-GL, LC-GL
Settable Threshold Mask, Readable Threshold Mask Code	0x3636	Settable Threshold Mask: UNR, UC, LNR, LC Readable Threshold Mask: UNR, UC, LNR, LC
Unit	Volts	

Table 3-41 iQor Temp

Features	Raw Value	Description
Sensor Name	iQor Temp	
Sensor Number	35	
Sensor Description	Power Module Temperature	
Sensor Type Code	0x01	Temperature
Sensor Event Reading Type Code	0x01	Threshold

Table 3-41 iQor Temp

Features	Raw Value	Description
Lower Threshold Reading Mask Code	0x0000	Lower Threshold Reading Mask: None Assertion Event Mask: None
Upper Threshold Reading Mask Code	0x0000	Upper Threshold Reading Mask: None De-assertion Event Mask: None
Settable Threshold Mask, Readable Threshold Mask Code	0x3838	Settable Threshold Mask: UNR, UC, UNC Readable Threshold Mask: UNR, UC, UNC
Unit	degrees C	

By default, iQor Temp is a read-only sensor. Hence, the thresholds for this sensor are disabled and it does not generate any event.

Table 3-42 iQor Status

Features	Raw Value	Description
Sensor Name	iQor Status	
Sensor Number	36	
Sensor Description	Power Module Status	
Sensor Type Code	0xD7	(Penguin Edge) OEM Type D7
Sensor Event Reading Type Code	0x6F	Sensor Specific
Assertion Event Mask	0x0077	Assertion Event Mask: Offset 6, 5, 4, 2, 1, and 0
De-assertion Event Mask	0x0077	De-assertion Event Mask: Offset 6, 5, 4, 2, 1, and 0

Table 3-42 iQor Status (continued)

Features	Raw Value	Description
Discrete Reading Mask	0x0077	Discrete Reading Mask: Offset 6, 5, 4, 2, 1, and 0
Unit	Discrete	

Table 3-43 Reset Source

Features	Raw Value	Description
Sensor Name	Reset Source	
Sensor Number	37	
Sensor Description	Reset Source Indicator	
Sensor Type Code	0xD2	(Penguin Edge) OEM Type D2
Sensor Event Reading Type Code	0x6F	Sensor Specific
Assertion Event Mask	0x00FF	Assertion Event Mask: Offset 7 through 0
De-assertion Event Mask	0x00FF	De-assertion Event Mask: None
Discrete Reading Mask	0x00FF	Discrete Reading Mask: State bits 0 through 7
Unit	Discrete	

Table 3-44 POST Code

Features	Raw Value	Description
Sensor Name	POST Code	
Sensor Number	38	
Sensor Description	Reserved	
Sensor Type Code	0xFF	(Penguin Edge) OEM Reserved Type FF
Sensor Event Reading Type Code	0x03	Sensor Specific

Table 3-44 POST Code (continued)

Features	Raw Value	Description
Assertion Event Mask	0x0000	Assertion Event Mask: None
De-assertion Event Mask	0x0000	De-assertion Event Mask: None
Discrete Reading Mask	0x0000	Discrete Reading Mask: None
Unit	Discrete	

Table 3-45 RTM Power Good

Features	Raw Value	Description
Sensor Name	RTM Power Good	
Sensor Number	39	
Sensor Description	RTM Power Good Indicator	
Sensor Type Code	0x08	Power Supply
Sensor Event Reading Type Code	0x03	Discrete State
Assertion Event Mask	0x0003	Assertion Event Mask: Offset 1 and 0
De-assertion Event Mask	0x0000	De-assertion Event Mask: None
Discrete Reading Mask	0x0003	Discrete Reading Mask: State bit 0 and 1
Unit	Discrete	

OEM Sensors

4.1 OEM Sensors

This section describes the various OEM sensors provided by Penguin Edge that are located on the ATCA-F140.

Table 4-1 OEM Sensor

Sensor Number	Sensor Name	Sensor Type Code	Sensor Type	Sensor Event Reading Type Code	Sensor Event Reading Type	Description
23	Boot Bank	0xD2	(Penguin Edge) OEM Type D2	0x6F	Sensor Specific	Current FPGA boot bank and next Boot Firmware bank Offset 0: Next Boot Firmware Bank (1: Bank B, 0: Bank A) Offset 1: Current FPGA Bank Booted From (1: Golden Bank, 0: Default Active Bank)
24	SYSSTAT	0xCE	(Penguin Edge) OEM Type CE	0x07	Discrete Severity	System Status reported by SYSSTATMGR running on payload Offset 0: OK. No errors. Offset 1: Non-Critical. Offset 2: Critical. Offset 3: Non-Recoverable. Event Data 2: system status monitor identifier. Event Data 3: system status modifier.

Table 4-1 OEM Sensor

Sensor Number	Sensor Name	Sensor Type Code	Sensor Type	Sensor Event Reading Type Code	Sensor Event Reading Type	Description
29	ATCA-F140 IPMC	0xD5	(Penguin Edge) OEM Type D5	0x6F	Sensor Specific	IPMC firmware reset cause. (Read-Only, No SEL Events) Offset 0: Watchdog Triggered Reset Offset 1: Software Caused Reset (e.g. firmware upgrade) Offset 2: Power Failure Caused Reset (All other offsets may not be correct in this release) Offset 3: External Reset Offset 4: Hard Reset Offset 5: Cold Reset Offset 6: Warm Reset
36	IQor Status	0xD7	(Penguin Edge) OEM Type D7	0x6F	Sensor Specific	Power Module Status: Event Data 0 = 0xA0, Event Data 2 = Status, Event Data 3 = 0x00 Offset 0 (bit 0): Enable A Signal State (1: Enabled) Offset 1 (bit 1): Enable B Signal State (1: Enabled) Offset 2 (bit 2): Alarm Signal State (Primary Side Alarm Set) Offset 3 (bit 3): Reserved Offset 4 (bit 4): Holdup Switch State (1: Holdup Cap is Connected to -49V Out) Offset 5 (bit 5): Hotswap Switch State (1: Hotswap Switch is ON) Offset 6 (bit 6): -48V Output Under-Voltage Alarm (1: Output Voltage is above Threshold) Offset 7 (bit 7): Reserved

Table 4-1 OEM Sensor

Sensor Number	Sensor Name	Sensor Type Code	Sensor Type	Sensor Event Reading Type Code	Sensor Event Reading Type	Description
37	Reset Source	0xD2	(Penguin Edge) OEM Type D2	0x6F	Sensor Specific	FPGA Reset Cause Register. Sensor Reading = Event Data 2 = Cause Register Offset 0 (bit 0): Initial Watchdog Timer Reset Offset 1 (bit 1): Two-stage Watchdog Timer Reset Offset 2 (bit 2): Push Button Reset Offset 3 (bit 3): FPGA Reset Register Initiated Reset Offset 4 (bit 4): IPMC Initiated Reset Offset 5 (bit 5): Service Processor Initiated Reset Offset 6 (bit 6): Emulator Initiated Reset Offset 7 (bit 7): Power-On Reset
38	POST Code	0xFF	(Penguin Edge) OEM Reserved Type FF	0x6F	Sensor Specific	Not used. Placeholder Sensor.

Related Documentation

A.1 Penguin Solutions Documentation

Technical documentation can be found by using the Documentation Search at *https://www.penguinsolutions.com/edge/support/* or you can obtain electronic copies of Penguin Edge documentation by contacting your local sales representative.

Table A-1 Penguin Edge Documentation

Document Title	Documentation Number
ATCA-F140 Data Sheet	ATCA-F140-DS
ATCA-F140 Installation and Use	6806800M67
Basic Blade Services Software on ATCA-F140 Programmer's Reference	6806800N23

A.2 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 A-2 Related Specifications

Document Title	Source
Pigeon Point Shelf Manager User Guide	
Pigeon Point Shelf Manager External Interface Reference	
IPMI Specifications http://www.intel.com/design/servers/ipmi	
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

Table A-2 Related Specifications (continued)

Document Title	Source
PCI Industrial Manufacturers Group (PICMG) http://www.picmg.com/	
AdvancedTCA Base 3.0 Specification, Revision 3.0, March 24, 2008	PICMG 3.0 R 3.0
Advanced Mezzanine Card Base Specification, R2.0, November 15, 2006	AMC.0 Rev 2.0
Hardware Platform Management IPM Controller Firmware Upgrade Specification, R1.0, June 01, 2007	HPM.1 Rev 1.0

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