
Fans of Centellis 2100: Control via IPMI

Programmer's Reference

P/N: 6806800T76B

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About this Manual

Overview of Contents

This Programmer's Reference is intended for users such as system designers and system integrators qualified in electronics or electrical engineering. Users must have a working understanding of system design, Advanced Telecom Computing Architecture (AdvancedTCA®) design and specifications, Intelligent Platform Management Interface (IPMI), and telephony telecommunications.

This manual is divided into following chapters and appendix:

Chapter 1, Introduction on page 11 gives an overview.

Chapter 2, Supported Commands on page 13 provides the standard IPMI commands.

Chapter 3, FRU Information and Sensor Data Records on page 21 provides FRU information.

Appendix A, Related Documentation on page 41 lists related documentation and specifications.



Abbreviations






This document uses the following abbreviations:

Abbreviation	Definition
AdvancedTCA	Advanced Telecom Computing Architecture
FRU	Field Replaceable Unit
ID	Identifier
IPMI	Intelligent Platform Management Interface
LIU	LAN Interface Unit
LUN	Logical Unit Number
PEM	Power Entry Module
PICMG	PCI Industrial Computer Manufacturers Group
RTM	Rear Transition Module
SDR	Sensor Data Record

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
<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
...	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
	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

Notation	Description
	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
<p data-bbox="272 725 386 777">Use ESD protection</p> 	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

Part Number	Date	Description
6806800T76B	January 2020	Rebrand to SMART Embedded Computing template.
6806800T76A	September 2015	Draft version

Introduction

1.1 Overview

This document provides a detailed description of default values of the field replaceable units (FRU) information and sensor data records (SDRs) contained on the fan trays of your system. The default values are given for reference purposes in case you want to restore the factory defaults.

For details on the IPMI commands that are used to read FRU information and SDRs refer to the *IPMI Specification Version 1.5*.

The fan trays provide the following information:

Feature	Available
Provide sensor data records	yes
Provide FRU inventory	yes
Provide system event log	no
Event generator	yes

Supported Commands

2.1 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.

2.1.1 Global IPMI Commands

The IPMC supports the following global IPMI commands.

Table 2-1 Supported Global IPMI Commands

Command	NetFn (Request/Response)	CMD	Comments
Get Device ID	0x06/0x07	0x01	-
Get Self Test Result	0x06/0x07	0x04	-

2.1.2 FRU Inventory Commands

Table 2-2 Supported FRU Inventory Commands

Command	NetFn (Request/Response)	CMD	Comments
Get FRU Inventory Area Info	0x0A/0x0B	0x10	-
Read FRU Data	0x0A/0x0B	0x11	-
Write FRU Data	0x0A/0x0B	0x12	This command returns the error code 0x80 if you attempt to write to the common header, Product Info Area, Board Info Area, Chassis Info Area, Board Connectivity record, Board Address table, Board Power Distribution Record of FRU ID 0.

Supported Commands

2.1.3 Sensor Device Commands

Table 2-3 Supported Sensor Device Commands

Command	NetFn (Request/Response)	CMD	Comments
Get Device SDR Info	0x04/0x05	0x20	-
Get Device SDR	0x04/0x05	0x21	-
Reserve Device SDR Repository	0x04/0x05	0x22	-
Get Sensor Hysteresis	0x04/0x05	0x25	-
Set Sensor Threshold	0x04/0x05	0x26	Most of the threshold-based sensors have fixed thresholds. Before using this command, check whether threshold setting is supported by using the Get Device SDR command.
Get Sensor Threshold	0x04/0x05	0x27	-
Set Sensor Event Enable	0x04/0x05	0x28	-
Get Sensor Event Enable	0x04/0x05	0x29	-
Rearm Sensor Events	0x04/0x05	0x2A	-
Get Sensor Event Status	0x04/0x05	0x2B	-
Get Sensor Reading	0x04/0x05	0x2D	-
Get Sensor Type	0x04/0x05	0x2F	-
Set Event Receiver	0x04/0x05	0x00	-
Get Event receiver	0x04/0x05	0x01	-

Table 2-3 Supported Sensor Device Commands (continued)

Command	NetFn (Request/Response)	CMD	Comments
Platform Event	0x04/0x05	0x02	Any SMART EC IPMC works as event generator, i.e. it may issue the Platform Event command but the fan trays cannot write events to the SEL repository and acknowledge them.

2.2 PICMG 3.0 Commands

The SMART EC IPMC is a fully compliant AdvancedTCA Intelligent Platform Management Controller i.e., it supports all required and mandatory AdvancedTCA commands as defined in the PICMG 3.0 and AMC 0.9x specifications.

Table 2-4 Supported PICMG 3.0 Commands

Command	NetFn (Request/Response)	CMD	Comments
Get PICMG Properties	0x2C/0x2D	0x00	-
Get Address Info	0x2C/0x2D	0x01	The fan trays only support the short form with bytes 0 and 1 of the request data.
FRU Control	0x2C/0x2D	0x04	The fan trays only support the cold reset option.
Get FRU LED Properties	0x2C/0x2D	0x05	-
Get FRU LED Color Capabilities	0x2C/0x2D	0x06	-
Set FRU LED State	0x2C/0x2D	0x07	-
Get FRU LED State	0x2C/0x2D	0x08	-
Set IPMB State	0x2C/0x2D	0x09	-
Set FRU Activation Policy	0x2C/0x2D	0x0A	-
Get FRU Activation Policy	0x2C/0x2D	0x0B	-

Supported Commands

Table 2-4 Supported PICMG 3.0 Commands (continued)

Command	NetFn (Request/Response)	CMD	Comments
Set FRU Activation	0x2C/0x2D	0x0C	-
Get Device Locator Record ID	0x2C/0x2D	0x0D	The SMART EC IPMCs support the standard PICMG 3.0 and the extended AMC 0.9x versions of this command.
Set Port State	0x2C/0x2D	0x0E	-
Get Port State	0x2C/0x2D	0x0F	-
Compute Power Properties	0x2C/0x2D	0x10	-
Set Power Level	0x2C/0x2D	0x11	-
Get Power Level	0x2C/0x2D	0x12	-
Get Fan Speed Properties	0x2C/0x2D	0x14	-
Set Fan Level	0x2C/0x2D	0x15	-
Get Fan Level	0x2C/0x2D	0x16	-
Get IPMB Link Info	0x2C/0x2D	0x18	-

2.3 SMART Embedded Computing Specific Commands

The SMART EC IPMC supports several firmware upgrade commands which are not defined in the IPMI or PICMG 3.0 specification but are introduced by SMART EC:



Before sending any of these commands, the shelf management software must check whether the receiving IPMI controller is an SMART EC IPMI controller, that means IPMC, by using the IPMI command 'Get Device ID'. Sending SMART EC specific commands to IPMI controllers which are not delivered by SMART EC will lead to no or undefined results.

Implementing any of the SMART EC specific IPMI commands means that the software is not portable to other IPMI controllers that do not use the SMART EC IPMC firmware.

Make sure to use these commands with care.

2.3.1 Firmware Upgrade Commands

SMART EC offers three commands to upgrade the IPMC firmware which can be used to write an upgrade function:

- Start Firmware Upgrade
- Continue Firmware Upgrade
- Finish Firmware Upgrade

The firmware upgrade session has to start with the Start Firmware Upgrade command which makes the target IPMC enter the firmware upgrade mode. The firmware image is sent to the target IPMC in several parts with multiple Continue Firmware Upgrade commands. Each part can have the size of an IPMB message length. When the whole firmware image is on the target IPMC, the process has to be finished with the Finish Firmware Upgrade command. During the firmware upgrade mode, the SMART EC IPMC may only execute the Continue Firmware Upgrade and Get Device ID commands.

The following table shows the firmware upgrade commands together with their network function and command code.

Table 2-5 Firmware Upgrade Commands

Command Name	NetFn (Request/Response)	CMD	Description
Start Firmware Upgrade	0x08/0x09	0x1B	See Start Firmware Upgrade on page 17 .
Continue Firmware Upgrade	0x08/0x09	0x1C	See Continue Firmware Upgrade on page 18 .
Finish Firmware Upgrade	0x08/0x09	0x1E	See Finish Firmware Upgrade on page 19 .

2.3.1.1 Start Firmware Upgrade

The Start Firmware Upgrade command puts the target IPMC into firmware upgrade mode. Only the Firmware Upgrade commands and the Get Device ID command are supported in firmware upgrade mode.

2.3.1.1.1 Request Data

No request data needs to be provided for this command.

Supported Commands

2.3.1.1.2 Response Data

The following table lists the response data applicable to the Start Firmware Upgrade command.

Table 2-6 Response Data of Start Firmware Upgrade

Byte	Data Field
1	Completion Code 0x00: Command executed successfully and target IPMC entered firmware upgrade mode 0x01..0xFF: Error, that means IPMC cannot enter into firmware upgrade mode

2.3.1.2 Continue Firmware Upgrade

The Continue Firmware Upgrade command writes a part of the firmware image to the target IPMC. It also checks file integrity and makes the target IPMC leave the firmware upgrade mode if an error occurs. If an error occurs, the whole firmware upgrade sequence must be repeated beginning from the Start Firmware Upgrade command and the whole firmware upgrade image must be retransmitted.

2.3.1.2.1 Request Data

The following table lists the request data applicable to the Continue Firmware Upgrade command.

Table 2-7 Request Data of Continue Firmware Upgrade

Byte	Data Field
1..23	Firmware content to be sent to the target IPMC. The firmware image is an extended INTEL hex file. The whole message length is defined by the maximum IPMB message length.

2.3.1.2.2 Response Data

The following table lists the response data of the Continue Firmware Upgrade command.

Table 2-8 Response Data of Continue Firmware Upgrade

Byte	Data Field
1	Completion Code 0x00: Command executed successfully 0x1..0xFF: Error, that means the IPMC left the firmware upgrade mode

2.3.1.3 Finish Firmware Upgrade

The Finish Firmware Upgrade command makes the target IPMC leave the firmware upgrade mode.

2.3.1.3.1 Request Data

The following table lists the request data applicable to the Finish Firmware Upgrade command.

Table 2-9 Request Data of Finish Firmware Upgrade

Byte	Data Field
1..23	None

2.3.1.3.2 Response Data

The following table lists the response data applicable to the Finish Firmware Upgrade command.

Table 2-10 Response Data of Finish Firmware Upgrade

Byte	Data Field
1	Completion Code 0: Command executed successfully 0x01..0xFF: Error

Supported Commands

FRU Information and Sensor Data Records

3.1 Fan Trays

The fan trays provide FRU information and sensor data records.

3.1.1 FRU Information

Table 3-1 FRU Information of the Fan Trays

Area	Description	Value	Access
Internal use area	not used		
Board info area	Manufacturing date/time	According to the IPMI FRU specification	r
	Board manufacturer	SMART Embedded Computing	r
	Board product name	FRONTFAN-CENT-2100-R1.2 REARFAN-CENT-2100-R1.2	r
	Board serial number	Defined by SMART EC	r
	Board part number	Defined by SMART EC	r
Product info area	Product manufacturer	SMART EC	r
	Product name	FRONT FAN TRAY C2100 REAR FAN TRAY C2100	r
	Product serial number	Defined by SMART EC	r
	Product part number	Defined by SMART EC	r
	Product Version	Defined by SMART EC	
Multirecord area	SMART EC user info are	SMART EC OEM User Info Area. Format: 0x48, 0x0e, 0x00, 0x00 followed by record content	r/w
	Custom usage	Not formatted as records. Min. 256 bytes available	r/w

FRU Information and Sensor Data Records

3.1.2 Power Configuration

Feature	Value
Dynamic power support	No
Number of power draw levels	1
Power draw	70W

3.1.3 Sensor Data Records

The sensors available on the fan trays are shown in the table below. Except for the temperature sensors, they are identical for the front and rear fan tray.

Table 3-2 IPMI Sensors Overview

Sensor Name	Sensor Type	Sensor #	Detailed SDR Description
Air Inlet Temp0	Temperature sensor Measures the air inlet temperature on the front fan tray	0x00	See Table 3-3 on page 25
Air inlet Temp1	Temperature sensor Measures the temperature on the DC/DC converter on the front fan tray	0x02	See Table 3-4 on page 26
Air Outlet Temp0	Temperature sensor Measures the temperature on the DC/DC converter on the rear fan tray	0x00	See Table 3-5 on page 27
Air Outlet Temp1	Temperature sensor Measures the air outlet temperature on rear fan tray	0x02	See Table 3-6 on page 28
Deviation Fan0	SMART EC-specific Discrete Digital Measures the difference between the set and the measured rotation value	0x02	See Table 3-7 on page 29
Deviation Fan1	SMART EC-specific Discrete Digital Measures the difference between the set and the measured rotation value	0x03	See Table 3-8 on page 30
FAN HotSwap	PICMG 3.0: FRU HotSwap	0x84	See Table 3-9 on page 31
FAN IPMC	SMART EC IPMC Status	0x01	See Table 3-10 on page 32

Table 3-2 IPMI Sensors Overview (continued)

Sensor Name	Sensor Type	Sensor #	Detailed SDR Description
FW Revision ISC	SMART EC Firmware Revision	0x04	See Table 3-11 on page 33
Feed A Failure	Power Supply	0x05	See Table 3-12 on page 34
Feed B Failure	Power Supply	0x88	See Table 3-13 on page 35
IPMB 0 Status	PICMG 3.0: IPMB Physical Link	0x85	See Table 3-14 on page 36
RPM Fan0	Fan Measures the fan speed in rotations per minute (rpm)	0x00	See Table 3-15 on page 37
RPM Fan1	Fan Measures the fan speed in rotations per minute (rpm)	0x01	See Table 3-16 on page 38
Voltage +12V	Voltage	0x06	See Table 3-17 on page 39

FRU Information and Sensor Data Records

The following figures show the location of the temperature sensors of the front and rear fan tray.

Figure 3-1 Temperature Sensors on Front Fan Tray

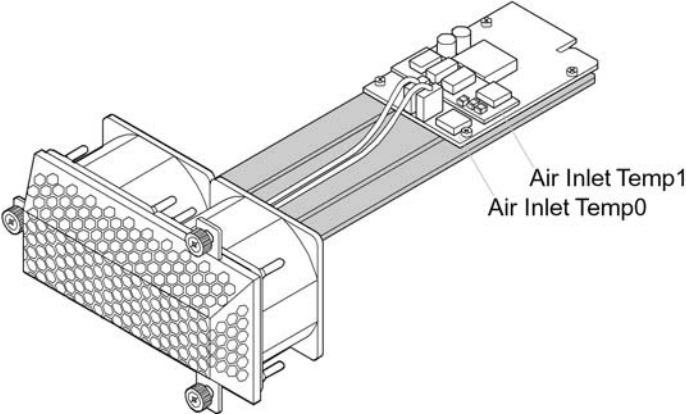
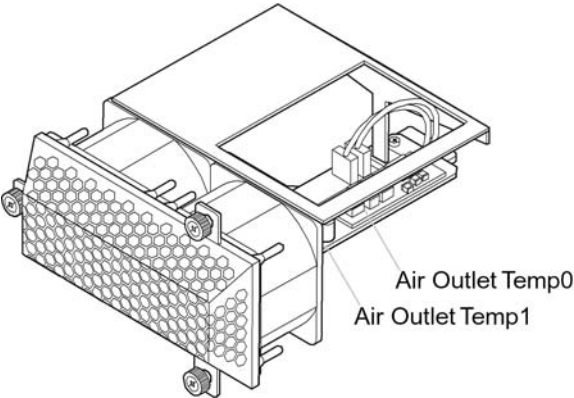


Figure 3-2 Temperature Sensors on Rear Fan Tray



FRU Information and Sensor Data Records

The following tables describe each sensor in detail.

Table 3-3 Air Inlet Temp0 Sensor

Feature	Raw Value	Description
Sensor Name	Air Inlet Temp0	-
Sensor LUN	0x01	-
Sensor Number	0x00	-
Entity ID	0x1E	Fan Tray or other cooling unit
Sensor Type	0x01	Temperature
Event/Reading Type	0x01	Threshold
Assertion Event Mask(Byte 15)	0x95	-
Assertion Event Mask(Byte 16)	0x7A	-
Deassertion Event Mask(Byte 17)	0x95	-
Deassertion Event Mask(Byte 18)	0x7A	-
Threshold Mask(Byte 19)	0x3F	-
Threshold Mask(Byte 20)	0x00	-
Base Unit	0x01	deg. C
Nominal Reading	0x19	25
Upper non-recoverable threshold	0x41	65
Upper critical threshold	0x37	55
Upper non-critical threshold	0x32	50
Lower non-recoverable threshold	0xFA	-6
Lower critical threshold	0x00	0
Lower non-critical threshold	0x05	5
Rearm mode	0x01	Auto
Hysteresis Support	0x01	Readable
Threshold Access Support	0x01	Readable
Event Message Control	0x00	Per Threshold / Discrete State
Reading Definition	Analog reading byte	Analog sensor reading

FRU Information and Sensor Data Records

Table 3-4 Air Inlet Temp1 Sensor

Feature	Raw Value	Description
Sensor Name	Air Inlet Temp1	-
Sensor LUN	0x01	-
Sensor Number	0x02	-
Entity ID	0x1E	Fan Tray or other cooling unit
Sensor Type	0x01	Temperature
Event/Reading Type	0x01	Threshold
Assertion Event Mask(Byte 15)	0x95	-
Assertion Event Mask(Byte 16)	0x7A	-
Deassertion Event Mask(Byte 17)	0x95	-
Deassertion Event Mask(Byte 18)	0x7A	-
Threshold Mask(Byte 19)	0x3F	-
Threshold Mask(Byte 20)	0x00	-
Base Unit	0x01	deg. C
Nominal Reading	0x19	25
Upper non-recoverable threshold	0x41	65
Upper critical threshold	0x37	55
Upper non-critical threshold	0x32	50
Lower non-recoverable threshold	0xFA	-6
Lower critical threshold	0x00	0
Lower non-critical threshold	0x05	5
Rearm mode	0x01	Auto
Hysteresis Support	0x01	Readable
Threshold Access Support	0x01	Readable
Event Message Control	0x00	Per Threshold / Discrete State
Reading Definition	Analog reading byte	Analog sensor reading

FRU Information and Sensor Data Records

Table 3-5 Air Outlet Temp0 Sensor

Feature	Raw Value	Description
Sensor Name	Air Outlet Temp0	-
Sensor LUN	0x01	-
Sensor Number	0x00	-
Entity ID	0x1E	Fan Tray or other cooling unit
Sensor Type	0x01	Temperature
Event/Reading Type	0x01	Threshold
Assertion Event Mask(Byte 15)	0x95	-
Assertion Event Mask(Byte 16)	0x7A	-
Deassertion Event Mask(Byte 17)	0x95	-
Deassertion Event Mask(Byte 18)	0x7A	-
Threshold Mask(Byte 19)	0x3F	-
Threshold Mask(Byte 20)	0x00	-
Base Unit	0x01	deg. C
Nominal Reading	0x19	25
Upper non-recoverable threshold	0x4B	75
Upper critical threshold	0x41	65
Upper non-critical threshold	0x3C	60
Lower non-recoverable threshold	0xFA	-6
Lower critical threshold	0x00	0
Lower non-critical threshold	0x05	5
Rearm mode	0x01	Auto
Hysteresis Support	0x01	Readable
Threshold Access Support	0x01	Readable
Event Message Control	0x00	Per Threshold / Discrete State
Reading Definition	Analog reading byte	Analog sensor reading

FRU Information and Sensor Data Records

Table 3-6 Air Outlet Temp1 Sensor

Feature	Raw Value	Description
Sensor Name	Air Outlet Temp1	-
Sensor LUN	0x01	-
Sensor Number	0x02	-
Entity ID	0x1E	Fan Tray or other cooling unit
Sensor Type	0x01	Temperature
Event/Reading Type	0x01	Threshold
Assertion Event Mask(Byte 15)	0x95	-
Assertion Event Mask(Byte 16)	0x7A	-
Deassertion Event Mask(Byte 17)	0x95	-
Deassertion Event Mask(Byte 18)	0x7A	-
Threshold Mask(Byte 19)	0x3F	-
Threshold Mask(Byte 20)	0x00	-
Base Unit	0x01	deg. C
Nominal Reading	0x19	25
Upper non-recoverable threshold	0x4B	75
Upper critical threshold	0x41	65
Upper non-critical threshold	0x3C	60
Lower non-recoverable threshold	0xFA	-6
Lower critical threshold	0x00	0
Lower non-critical threshold	0x05	5
Rearm mode	0x01	Auto
Hysteresis Support	0x01	Readable
Threshold Access Support	0x01	Readable
Event Message Control	0x00	Per Threshold / Discrete State
Reading Definition	Analog reading byte	Analog sensor reading

Table 3-7 Deviation Fan0 Sensor

Feature	Raw Value	Description
Sensor Name	Deviation Fan0	-
Sensor LUN	0x00	-
Sensor Number	0x02	-
Entity ID	0x1D	Fan / Cooling device
Sensor Type	0xD2	SMART EC-specific Discrete Digital
Event/Reading Type	0x01	Threshold
Assertion Event Mask(Byte 15)	0x00	-
Assertion Event Mask(Byte 16)	0x00	-
Deassertion Event Mask(Byte 17)	0x00	-
Deassertion Event Mask(Byte 18)	0x00	-
Threshold Mask(Byte 19)	0x00	-
Threshold Mask(Byte 20)	0x00	-
Base Unit	0x12	RPM
Nominal Reading	0x00	0
Upper non-recoverable threshold	0x70	(unspecified)
Upper critical threshold	0x60	(unspecified)
Upper non-critical threshold	0x30	(unspecified)
Lower non-recoverable threshold	0xD0	(unspecified)
Lower critical threshold	0xA0	(unspecified)
Lower non-critical threshold	0x90	(unspecified)
Rearm mode	0x01	Auto
Hysteresis Support	0x01	Readable
Threshold Access Support	0x01	Readable
Event Message Control	0x03	No Events
Reading Definition	Analog reading byte	Analog sensor reading

FRU Information and Sensor Data Records

Table 3-8 Deviation Fan1 Sensor

Feature	Raw Value	Description
Sensor Name	Deviation Fan1	-
Sensor LUN	0x00	-
Sensor Number	0x03	-
Entity ID	0x1D	Fan / Cooling device
Sensor Type	0xD2	SMART EC-specific Discrete Digital
Event/Reading Type	0x01	Threshold
Assertion Event Mask(Byte 15)	0x00	-
Assertion Event Mask(Byte 16)	0x00	-
Deassertion Event Mask(Byte 17)	0x00	-
Deassertion Event Mask(Byte 18)	0x00	-
Threshold Mask(Byte 19)	0x00	-
Threshold Mask(Byte 20)	0x00	-
Base Unit	0x12	RPM
Nominal Reading	0x00	0
Upper non-recoverable threshold	0x70	(unspecified)
Upper critical threshold	0x60	(unspecified)
Upper non-critical threshold	0x30	(unspecified)
Lower non-recoverable threshold	0xD0	(unspecified)
Lower critical threshold	0xA0	(unspecified)
Lower non-critical threshold	0x90	(unspecified)
Rearm mode	0x01	Auto
Hysteresis Support	0x01	Readable
Threshold Access Support	0x01	Readable
Event Message Control	0x03	No Events
Reading Definition	Analog reading byte	Analog sensor reading

Table 3-9 FAN HotSwap Sensor

Feature	Raw Value	Description
Sensor Name	FAN HotSwap	-
Sensor LUN	0x00	-
Sensor Number	0x84	-
Entity ID	0x1E	Fan Tray or other cooling unit
Sensor Type	0xF0	PICMG 3.0: FRU HotSwap
Event/Reading Type	0x6F	Discrete (sensor-specific)
Assertion Event Mask(Byte 15)	0xFF	-
Assertion Event Mask(Byte 16)	0x00	-
Deassertion Event Mask(Byte 17)	0x00	-
Deassertion Event Mask(Byte 18)	0x00	-
Threshold Mask(Byte 19)	0xFF	-
Threshold Mask(Byte 20)	0x00	-
Base Unit	0x00	(unspecified)
Rearm mode	0x01	Auto
Hysteresis Support	0x00	No Hysteresis or unspecified
Threshold Access Support	0x00	No Thresholds
Event Message Control	0x02	Global Disable only
Reading Definition	-	See PICMG 3.0 Specification, chapter "Reading the FRU Hot-Swap Sensor"

FRU Information and Sensor Data Records

Table 3-10 FAN IPMC Sensor

Feature	Raw Value	Description
Sensor Name	FAN IPMC	-
Sensor LUN	0x03	-
Sensor Number	0x01	-
Entity ID	0x1E	Fan Tray or other cooling unit
Sensor Type	0xD5	SMART EC IPMC Status
Event/Reading Type	0x6F	Discrete (sensor-specific)
Assertion Event Mask(Byte 15)	0x7F	-
Assertion Event Mask(Byte 16)	0x07	-
Deassertion Event Mask(Byte 17)	0x00	-
Deassertion Event Mask(Byte 18)	0x00	-
Threshold Mask(Byte 19)	0x7F	-
Threshold Mask(Byte 20)	0x07	-
Base Unit	0x00	(unspecified)
Rearm mode	0x01	Auto
Hysteresis Support	0x00	No Hysteresis or unspecified
Threshold Access Support	0x00	No Thresholds
Event Message Control	0x00	Per Threshold / Discrete State
Reading Definition	-	-

FRU Information and Sensor Data Records

Table 3-11 FW Revision ISC Sensor

Feature	Raw Value	Description
Sensor Name	FW Revision ISC	-
Sensor LUN	0x00	-
Sensor Number	0x88	-
Entity ID	0x1E	Fan Tray or other cooling unit
Sensor Type	0xD6	SMART EC Firmware Revision
Event/Reading Type	0x6F	Discrete (sensor-specific)
Assertion Event Mask(Byte 15)	0x00	-
Assertion Event Mask(Byte 16)	0x00	-
Deassertion Event Mask(Byte 17)	0x00	-
Deassertion Event Mask(Byte 18)	0x00	-
Threshold Mask(Byte 19)	0xFF	-
Threshold Mask(Byte 20)	0x7F	-
Base Unit	0x00	(unspecified)
Rearm mode	0x01	Auto
Hysteresis Support	0x00	No Hysteresis or unspecified
Threshold Access Support	0x00	No Tresholds
Event Message Control	0x03	No Events
Reading Definition	-	The firmware revision is returned in the analog and the discrete reading fields.
-	Analog reading field:	-
-	Bits 7:0	Firmware build number (binary encoded)
-	Discrete reading field:	-
-	Bit 15	Reserved (Always returned as 1b)
-	Bits 14:8	Major firmware revision (binary encoded)
-	Bits 7:0	Minor firmware revision (BCD encoded)

FRU Information and Sensor Data Records

Table 3-12 Feed A Failure Sensor

Feature	Raw Value	Description
Sensor Name	Feed A Failure	-
Sensor LUN	0x00	-
Sensor Number	0x04	-
Entity ID	0x13	-
Sensor Type	0x08	Power Supply
Event/Reading Type	0x04	'digital' Discrete (generic)
Assertion Event Mask (Byte 15)	0x03	-
Assertion Event Mask (Byte 16)	0x00	-
Assertion Events	-	-
-	Event Offset: 0	Presence detected
-	Event Offset: 1	Power supply failure detected
Deassertion Event Mask (Byte 17)	0x00	-
Deassertion Event Mask (Byte 18)	0x00	-
Threshold Mask (Byte 19)	0x03	-
Threshold Mask(Byte 20)	0x00	-
Base Unit	0x00	(unspecified)
Rearm mode	0x01	Auto
Hysteresis Support	0x00	No Hysteresis or unspecified
Threshold Access Support	0x00	No Thresholds
Event Message Control	0x00	Per Threshold / Discrete State
Reading Definition	-	-

Table 3-13 Feed B Failure Sensor

Feature	Raw Value	Description
Sensor Name	Feed B Failure	-
Sensor LUN	0x00	-
Sensor Number	0x05	-
Entity ID	0x13	-
Sensor Type	0x08	Power Supply
Event/Reading Type	0x04	'digital' Discrete (generic)
Assertion Event Mask(Byte 15)	0x03	-
Assertion Event Mask(Byte 16)	0x00	-
Assertion Events	-	-
-	Event Offset: 0	Presence detected
-	Event Offset: 1	Power supply failure detected
Deassertion Event Mask (Byte 17)	0x00	-
Deassertion Event Mask(Byte 18)	0x00	-
Threshold Mask(Byte 19)	0x03	-
Threshold Mask(Byte 20)	0x00	-
Base Unit	0x00	(unspecified)
Rearm mode	0x01	Auto
Hysteresis Support	0x00	No Hysteresis or unspecified
Threshold Access Support	0x00	No Thresholds
Event Message Control	0x00	Per Threshold / Discrete State
Reading Definition	-	-

FRU Information and Sensor Data Records

Table 3-14 IPMB 0 Status Sensor

Feature	Raw Value	Description
Sensor Name	IPMB 0 Status	-
Sensor LUN	0x00	-
Sensor Number	0x85	-
Entity ID	0x1E	Fan Tray or other cooling unit
Sensor Type	0xF1	PICMG 3.0: IPMB Physical Link
Event/Reading Type	0x6F	Discrete (sensor-specific)
Assertion Event Mask(Byte 15)	0x0F	-
Assertion Event Mask(Byte 16)	0x00	-
Deassertion Event Mask(Byte 17)	0x00	-
Deassertion Event Mask(Byte 18)	0x00	-
Threshold Mask(Byte 19)	0x0F	-
Threshold Mask(Byte 20)	0x00	-
Base Unit	0x00	(unspecified)
Rearm mode	0x01	Auto
Hysteresis Support	0x00	No Hysteresis or unspecified
Threshold Access Support	0x00	No Thresholds
Event Message Control	0x00	Per Threshold / Discrete State
Reading Definition	-	See PICMG 3.0 Specification, chapter "Physical IPMB-0 Sensors"

Table 3-15 RPM Fan0 Sensor

Feature	Raw Value	Description
Sensor Name	RPM Fan0	-
Sensor LUN	0x00	-
Sensor Number	0x00	-
Entity ID	0x1D	Fan / Cooling device
Sensor Type	0x04	Fan
Event/Reading Type	0x01	Threshold
Assertion Event Mask(Byte 15)	0x95	-
Assertion Event Mask(Byte 16)	0x7A	-
Deassertion Event Mask(Byte 17)	0x95	-
Deassertion Event Mask(Byte 18)	0x7A	-
Threshold Mask(Byte 19)	0x3F	-
Threshold Mask(Byte 20)	0x00	-
Base Unit	0x12	RPM
Nominal Reading	0xB1	14160
Upper non-recoverable threshold	0xB1	14160
Upper critical threshold	0xB1	14160
Upper non-critical threshold	0xB1	14160
Lower non-recoverable threshold	0x00	0
Lower critical threshold	0x00	0
Lower non-critical threshold	0x00	0
Rearm mode	0x01	Auto
Hysteresis Support	0x01	Readable
Threshold Access Support	0x01	Readable
Event Message Control	0x00	Per Threshold / Discrete State
Reading Definition	Analog reading byte	Analog sensor reading

FRU Information and Sensor Data Records

Table 3-16 RPM Fan1 Sensor

Feature	Raw Value	Description
Sensor Name	RPM Fan1	-
Sensor LUN	0x00	-
Sensor Number	0x01	-
Entity ID	0x1D	Fan / Cooling device
Sensor Type	0x04	Fan
Event/Reading Type	0x01	Threshold
Assertion Event Mask(Byte 15)	0x95	-
Assertion Event Mask(Byte 16)	0x7A	-
Deassertion Event Mask(Byte 17)	0x95	-
Deassertion Event Mask(Byte 18)	0x7A	-
Threshold Mask(Byte 19)	0x3F	-
Threshold Mask(Byte 20)	0x00	-
Base Unit	0x12	RPM
Nominal Reading	0xB1	14160
Upper non-recoverable threshold	0xB1	14160
Upper critical threshold	0xB1	14160
Upper non-critical threshold	0xB1	14160
Lower non-recoverable threshold	0x00	0
Lower critical threshold	0x00	0
Lower non-critical threshold	0x00	0
Rearm mode	0x01	Auto
Hysteresis Support	0x01	Readable
Threshold Access Support	0x01	Readable
Event Message Control	0x00	Per Threshold / Discrete State
Reading Definition	Analog reading byte	Analog sensor reading

Table 3-17 Voltage +12V Sensor

Feature	Raw Value	Description
Sensor Name	Voltage +12V	-
Sensor LUN	0x00	-
Sensor Number	0x06	-
Entity ID	0x1E	Fan Tray or other cooling unit
Sensor Type	0x02	Voltage
Event/Reading Type	0x01	Threshold
Assertion Event Mask(Byte 15)	0x14	-
Assertion Event Mask(Byte 16)	0x68	-
Deassertion Event Mask(Byte 17)	0x14	-
Deassertion Event Mask(Byte 18)	0x68	-
Threshold Mask(Byte 19)	0x26	-
Threshold Mask(Byte 20)	0x00	-
Base Unit	0x04	Volts
Nominal Reading	0x9B	11.94
Upper non-recoverable threshold	0xB2	13.71
Upper critical threshold	0x00	(unspecified)
Upper non-critical threshold	0x00	(unspecified)
Lower non-recoverable threshold	0x5D	7.16
Lower critical threshold	0x81	9.93
Lower non-critical threshold	0x00	(unspecified)
Rearm mode	0x01	Auto
Hysteresis Support	0x01	Readable
Threshold Access Support	0x01	Readable
Event Message Control	0x00	Per Threshold / Discrete State
Reading Definition	Analog reading byte	Analog sensor reading

Related Documentation

A.1 SMART Embedded Computing Documentation

The documentation listed is referenced in this manual. Technical documentation can be found by using the Documentation Search at <https://www.smartembedded.com/ec/support/> or you can obtain electronic copies of SMART EC documentation by contacting your local sales representative.

Table A-1 SMART EC Documentation

Document Title	Document Number
Centellis 2100 Data Sheet	Centellis 2100 DS
Centellis 2000 Document Collection	6806800G95
Centellis 2000 Shelf-DC Installation and Use	6806800G45
System Management Interface Based on HPI-B (Centellis CO 2000/2100/4411) User's Guide	6806800P20

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
PICMG 3.0 ATCA Rev. 3.0	www.picmg.org
Platform Management FRU Information Storage Definition Version 1.1	www.intel.com
IPMI-Intelligent Platform Management Interface Version 1.5	www.developer.intel.com

Related Documentation

