
Centellis 2x00 AC PSU: Control via IPMI

Programmer's Reference

P/N: 6806800K03D

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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.

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
PSU	Power Supply Unit
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

About this Manual

Notation	Description
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
	Indicates a property damage message
	Indicates a hot surface that could result in moderate or serious injury

Notation	Description
	Indicates an electrical situation that could result in moderate injury or death
<p>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
6806800K03A	November 2009	First Edition
6806800K03B	June 2014	Re-branded to Artesyn
6806800K03C	September 2015	Changed the title of the manual.
6806800K03D	January 2020	Rebrand to SMART Embedded Computing template.

Introduction

This document provides a detailed description of default values of FRU information and Sensor Data Records (SDRs) contained on the Power Supply Unit (PSU) 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 PSU module provides 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	-
Platform Event	0x04/0x05	0x02	Any SMART Embedded Computing IPMC works as event generator, i.e., it may issue the Platform Event command but the PSU cannot write events to the SEL repository and acknowledge them.

2.2 PICMG 3.0 Commands

Supported Commands

The SMART Embedded Computing 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 PSU only support the short form with bytes 0 and 1 of the request data.
FRU Control	0x2C/0x2D	0x04	The PSU 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	-
Set FRU Activation	0x2C/0x2D	0x0C	-
Get Device Locator Record ID	0x2C/0x2D	0x0D	The SMART Embedded Computing 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 PSU Speed Properties	0x2C/0x2D	0x14	-
Set PSU Level	0x2C/0x2D	0x15	-

Supported Commands

Table 2-4 Supported PICMG 3.0 Commands (continued)

Command	NetFn (Request/Response)	CMD	Comments
Get PSU Level	0x2C/0x2D	0x16	-
Get IPMB Link Info	0x2C/0x2D	0x18	-

2.3 SMART EC 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 a 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 17
Finish Firmware Upgrade	0x08/0x09	0x1E	See Finish Firmware Upgrade on page 18

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.

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.

Supported Commands

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 PSU Module

The PSU module provides FRU information and sensor data records.

3.1.1 FRU Information

Table 3-1 FRU Information of the PSU Module

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 EC	r
	Board product name	P/S, AC, C2000 850 WATT, -48V OUTPUT	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	CENT-2000-PSU	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	Emerson 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 Sensor Data Records

The sensors available on the PSU module are shown in the table below.

Table 3-2 IPMI Sensors Overview

Sensor Name	Sensor Type	Sensor #	Detailed SDR Description
Board Temperature	Temperature sensor	0x02	See Table 3-3 on page 22
BULK_OK	Discrete sensor for Bulk OK status	0x03	See Table 3-4 on page 24
Primary Status	Discrete sensor for PSU status	0x04	See Table 3-5 on page 25
AC Peak Voltage	AC voltage sensor	0x05	See Table 3-6 on page 26
AC Average Current	AC current sensor	0x06	See Table 3-7 on page 27
Output Status	Discrete sensor for output status	0x07	See Table 3-8 on page 28
SEC BIAS	Secondary Bias voltage sensor	0x08	See Table 3-9 on page 29
Output Voltage	-48V DC output voltage sensor	0x09	See Table 3-10 on page 30
Output Current	DC output current sensor	0x0a	See Table 3-11 on page 31
PSU 1 RPM	PSU RPM sensor	0x0b	See Table 3-12 on page 32
PSU 2 RPM	PSU RPM sensor	0x0c	See Table 3-13 on page 33
Primary Temp	Temperature sensor	0x0d	See Table 3-14 on page 34
LFC Current	Latent Fault mode current sensor	0x0e	This sensor is only readable when the PSU is in LFC mode. See Table 3-15 on page 35

The following tables describe each sensor in detail.

Table 3-3 Board Temp0 Sensor

Feature	Raw Value	Description
Sensor Name	Board Temp0	-
Sensor LUN	0x00	-
Sensor Number	0x02	-
Entity ID	0x0A	Power Supply

Table 3-3 Board Temp0 Sensor (continued)

Feature	Raw Value	Description
Sensor Type	0x01	Temperature
Event/Reading Type	0x01	Threshold
Assertion Event Mask (Byte 15)	0x00	-
Assertion Event Mask (Byte 16)	0x08	-
Deassertion Event Mask (Byte 17)	0x00	-
Deassertion Event Mask (Byte 18)	0x78	-
Threshold Mask (Byte 19)	0x38	-
Threshold Mask (Byte 20)	0x00	-
Base Unit	0x01	deg. C
Nominal Reading	0x00	-
Upper non-recoverable threshold	0x69	105
Upper critical threshold	0x3C	60
Upper non-critical threshold	0x37	55
Lower non-recoverable threshold	0x00	-
Lower critical threshold	0x00	-
Lower non-critical threshold	0x00	-
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 *BULK_OK Sensor*

Feature	Raw Value	Description
Sensor Name	BULK_OK	-
Sensor LUN	0x00	-
Sensor Number	0x03	-
Entity ID	0x0A	Power supply
Sensor Type	0x08	Power supply
Event/Reading Type	0x03	State
Assertion Event Mask (Byte 15)	0x04	-
Assertion Event Mask (Byte 16)	0x22	-
Deassertion Event Mask (Byte 17)	0x04	-
Deassertion Event Mask (Byte 18)	0x22	-
Threshold Mask (Byte 19)	0x12	-
Threshold Mask (Byte 20)	0x00	-
Base Unit	0x04	Volts
Nominal Reading	0x00	-
Upper non-recoverable threshold	0x00	-
Upper critical threshold	0x00	-
Upper non-critical threshold	0x00	-
Lower non-recoverable threshold	0x00	-
Lower critical threshold	0x00	-
Lower non-critical threshold	0x00	-
Rearm mode	0x01	Auto
Hysteresis Support	0x00	No hysteresis
Threshold Access Support	0x00	No thresholds
Event Message Control	0x00	Per Threshold / Discrete State
Reading Definition	-	-

Table 3-5 Primary Status

Feature	Raw Value	Description
Sensor Name	Primary Status	-
Sensor LUN	0x00	-
Sensor Number	0x04	-
Entity ID	0x0A	Power supply
Sensor Type	0x08	Power supply
Event/Reading Type	0x0A	Transition
Assertion Event Mask (Byte 15)	0xFF	-
Assertion Event Mask (Byte 16)	0x01	-
Deassertion Event Mask (Byte 17)	0x00	-
Deassertion Event Mask (Byte 18)	0x00	-
Threshold Mask (Byte 19)	0xFF	-
Threshold Mask (Byte 20)	0x01	-
Base Unit	0x00	-
Nominal Reading	0x00	-
Upper non-recoverable threshold	0x00	-
Upper critical threshold	0x00	-
Upper non-critical threshold	0x00	-
Lower non-recoverable threshold	0x00	-
Lower critical threshold	0x00	-
Lower non-critical threshold	0x00	-
Rearm mode	0x01	Auto
Hysteresis Support	0x00	No hysteresis
Threshold Access Support	0x00	No thresholds
Event Message Control	0x00	Per Threshold / Discrete State
Reading Definition	-	-

FRU Information and Sensor Data Records

Table 3-6 AC Peak Voltage Sensor

Feature	Raw Value	Description
Sensor Name	AC Peak Voltage	-
Sensor LUN	0x00	-
Sensor Number	0x05	-
Entity ID	0x0A	Power supply
Sensor Type	0x02	Voltage
Event/Reading Type	0x01	Threshold
Assertion Event Mask (Byte 15)	0x04	-
Assertion Event Mask (Byte 16)	0x22	-
Deassertion Event Mask (Byte 17)	0x04	-
Deassertion Event Mask (Byte 18)	0x22	-
Threshold Mask (Byte 19)	0x12	-
Threshold Mask (Byte 20)	0x00	-
Base Unit	0x04	Volts
Nominal Reading	0x00	-
Upper non-recoverable threshold	0x00	-
Upper critical threshold	0xEA	265
Upper non-critical threshold	0x00	-
Lower non-recoverable threshold	0x00	-
Lower critical threshold	0x50	90
Lower non-critical threshold	0x00	-
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 3-7 AC Average Current Sensor

Feature	Raw Value	Description
Sensor Name	AC Average Current	-
Sensor LUN	0x00	-
Sensor Number	0x06	-
Entity ID	0x0A	Power supply
Sensor Type	0x03	Current
Event/Reading Type	0x01	Threshold
Assertion Event Mask (Byte 15)	0x00	-
Assertion Event Mask (Byte 16)	0x02	-
Deassertion Event Mask (Byte 17)	0x00	-
Deassertion Event Mask (Byte 18)	0x22	-
Threshold Mask (Byte 19)	0x10	-
Threshold Mask (Byte 20)	0x00	-
Base Unit	0x05	Amps
Nominal Reading	0x00	0
Upper non-recoverable threshold	0x00	(unspecified)
Upper critical threshold	0xCB	13
Upper non-critical threshold	0x00	(unspecified)
Lower non-recoverable threshold	0x00	(unspecified)
Lower critical threshold	0x00	(unspecified)
Lower non-critical threshold	0x00	(unspecified)
Rearm mode	0x01	Auto
Hysteresis Support	0x01	Readable
Threshold Access Support	0x01	Readable
Event Message Control	0x00	No Events
Reading Definition	Analog reading byte	Analog sensor reading

FRU Information and Sensor Data Records

Table 3-8 Output Status Sensor

Feature	Raw Value	Description
Sensor Name	Output Status	-
Sensor LUN	0x00	-
Sensor Number	0x07	-
Entity ID	0x0A	Power supply
Sensor Type	0x08	Power supply
Event/Reading Type	0x09	Enable
Assertion Event Mask (Byte 15)	0x03	-
Assertion Event Mask (Byte 16)	0x00	-
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	-
Nominal Reading	0x00	-
Upper non-recoverable threshold	0x00	-
Upper critical threshold	0x00	-
Upper non-critical threshold	0x00	-
Lower non-recoverable threshold	0x00	-
Lower critical threshold	0x00	-
Lower non-critical threshold	0x00	-
Rearm mode	0x01	Auto
Hysteresis Support	0x00	No hysteresis
Threshold Access Support	0x00	No thresholds
Event Message Control	0x00	Per Threshold / Discrete State
Reading Definition	-	-

Table 3-9 SEC BIAS Sensor

Feature	Raw Value	Description
Sensor Name	SEC BIAS	-
Sensor LUN	0x00	-
Sensor Number	0x08	-
Entity ID	0x0A	Power Supply
Sensor Type	0x02	Voltage
Event/Reading Type	0x01	Threshold
Assertion Event Mask (Byte 15)	0x04	-
Assertion Event Mask (Byte 16)	0x28	-
Deassertion Event Mask (Byte 17)	0x04	-
Deassertion Event Mask (Byte 18)	0x48	-
Threshold Mask (Byte 19)	0x22	-
Threshold Mask (Byte 20)	0x00	-
Base Unit	0x04	Volts
Nominal Reading	0x00	-
Upper non-recoverable threshold	0xE0	13.1
Upper critical threshold	0x00	-
Upper non-critical threshold	0x00	-
Lower non-recoverable threshold	0x00	-
Lower critical threshold	0xB8	10.8
Lower non-critical threshold	0x00	
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 3-10 Output Voltage Sensor

Feature	Raw Value	Description
Sensor Name	Output Voltage	-
Sensor LUN	0x00	-
Sensor Number	0x09	-
Entity ID	0x0A	Power supply
Sensor Type	0x02	Voltage
Event/Reading Type	0x01	Threshold
Assertion Event Mask (Byte 15)	0x95	-
Assertion Event Mask (Byte 16)	0x78	-
Deassertion Event Mask (Byte 17)	0x95	-
Deassertion Event Mask (Byte 18)	0x68	-
Threshold Mask (Byte 19)	0x2F	-
Threshold Mask (Byte 20)	0x00	-
Base Unit	0x04	Volts
Nominal Reading	0x00	-
Upper non-recoverable threshold	0xDC	-56
Upper critical threshold	0x00	-
Upper non-critical threshold	0xD6	-53
Lower non-recoverable threshold	0xBA	-39
Lower critical threshold	0xBC	-40
Lower non-critical threshold	0xC0	-42
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 3-11 Output Current Sensor

Feature	Raw Value	Description
Sensor Name	Output Current	-
Sensor LUN	0x00	-
Sensor Number	0x0A	-
Entity ID	0x0A	Power supply
Sensor Type	0x03	Current
Event/Reading Type	0x01	Threshold
Assertion Event Mask (Byte 15)	0x80	-
Assertion Event Mask (Byte 16)	0x02	-
Deassertion Event Mask (Byte 17)	0x80	-
Deassertion Event Mask (Byte 18)	0x32	-
Threshold Mask (Byte 19)	0x18	-
Threshold Mask (Byte 20)	0x00	-
Base Unit	0x05	Amps
Nominal Reading	0x00	
Upper non-recoverable threshold	0x00	
Upper critical threshold	0xF5	19.4
Upper non-critical threshold	0xD1	16.5
Lower non-recoverable threshold	0x00	-
Lower critical threshold	0x00	-
Lower non-critical threshold	0x00	-
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 3-12 PSU 1 RPM Sensor

Feature	Raw Value	Description
Sensor Name	PSU 1 RPM	-
Sensor LUN	0x00	-
Sensor Number	0x0B	-
Entity ID	0x0A	Power Supply
Sensor Type	0x04	PSU
Event/Reading Type	0x01	Threshold
Assertion Event Mask (Byte 15)	0x15	-
Assertion Event Mask (Byte 16)	0x70	-
Deassertion Event Mask (Byte 17)	0x15	-
Deassertion Event Mask (Byte 18)	0x00	-
Threshold Mask (Byte 19)	0x07	-
Threshold Mask (Byte 20)	0x00	-
Base Unit	0x12	RPM
Nominal Reading	0x00	-
Upper non-recoverable threshold	0x00	-
Upper critical threshold	0x00	-
Upper non-critical threshold	0x00	
Lower non-recoverable threshold	0xA9	2526
Lower critical threshold	0xC1	3515
Lower non-critical threshold	0xCF	4555
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 3-13 PSU 2 RPM Sensor

Feature	Raw Value	Description
Sensor Name	PSU 2 RPM	-
Sensor LUN	0x00	-
Sensor Number	0x0B	-
Entity ID	0x0A	Power Supply
Sensor Type	0x04	PSU
Event/Reading Type	0x01	Threshold
Assertion Event Mask (Byte 15)	0x15	-
Assertion Event Mask (Byte 16)	0x70	-
Deassertion Event Mask (Byte 17)	0x15	-
Deassertion Event Mask (Byte 18)	0x00	-
Threshold Mask (Byte 19)	0x07	-
Threshold Mask (Byte 20)	0x00	-
Base Unit	0x12	RPM
Nominal Reading	0x00	-
Upper non-recoverable threshold	0x00	-
Upper critical threshold	0x00	-
Upper non-critical threshold	0x00	-
Lower non-recoverable threshold	0xA9	2526
Lower critical threshold	0xC1	3515
Lower non-critical threshold	0xCF	4555
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 3-14 Primary Temp Sensor

Feature	Raw Value	Description
Sensor Name	Primary Temp	-
Sensor LUN	0x00	-
Sensor Number	0x0D	-
Entity ID	0x0A	Power Supply
Sensor Type	0x01	Temperature
Event/Reading Type	0x01	Threshold
Assertion Event Mask (Byte 15)	0x00	-
Assertion Event Mask (Byte 16)	0x08	-
Deassertion Event Mask (Byte 17)	0x00	-
Deassertion Event Mask (Byte 18)	0x78	-
Threshold Mask (Byte 19)	0x38	-
Threshold Mask (Byte 20)	0x00	-
Base Unit	0x01	deg. C
Nominal Reading	0x00	-
Upper non-recoverable threshold	0x64	100
Upper critical threshold	0x3C	60
Upper non-critical threshold	0x37	55
Lower non-recoverable threshold	0x00	-
Lower critical threshold	0x00	-
Lower non-critical threshold	0x00	
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 3-15 LFC Current Sensor

Feature	Raw Value	Description
Sensor Name	LFC Current	-
Sensor LUN	0x00	-
Sensor Number	0x0E	-
Entity ID	0x0A	Power Supply
Sensor Type	0x03	Current
Event/Reading Type	0x01	Threshold
Assertion Event Mask (Byte 15)	0x80	-
Assertion Event Mask (Byte 16)	0x02	-
Deassertion Event Mask (Byte 17)	0x80	-
Deassertion Event Mask (Byte 18)	0x32	-
Threshold Mask (Byte 19)	0x18	-
Threshold Mask (Byte 20)	0x00	-
Base Unit	0x05	Amps
Nominal Reading	0x00	-
Upper non-recoverable threshold	0x00	-
Upper critical threshold	0xDF	20
Upper non-critical threshold	0xBE	17
Lower non-recoverable threshold	0x00	-
Lower critical threshold	0x00	-
Lower non-critical threshold	0x00	-
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 2000 Data Sheet	Centellis 2000 DS
Centellis 2100 Data Sheet	Centellis 2100 DS
Centellis 2000 AC Document Collection	6806800J90
Centellis 2000 Shelf-AC Installation and Use	6806800J87
System Management Interface Based on HPI-B (Centellis 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

