

MegaRAC® IPMC Firmware Solution

Software Stack for ATCA Board IPM Controller (IPMC)



AMI's IPMC firmware solution is fully compliant with the AdvancedTCA and Advanced Mezzanine Card specifications. Built on top of AMI's IPMI 2.0 firmware and backward compatible with IPMI 1.5, the firmware provides key features such as: Event Generation and Reception, E-Keying, AMC State and Power Control, FRU Generation and IPMC Commands. AMI's IPMC firmware solution is extensible, expandable, portable, and easy to deploy.

Data Sheet

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HIGHLIGHTS

- > IPM Controller Support:
 - Renesas H8S/2168, 2167 and 2166
- > Redundant IPMB
- > Optional Side-band LAN , KCS Interface and SMBUS interface
- > FRU Control
- > Support for:
 - ATCA Board
 - Fan Tray
 - Power Entry Module (PEM)
- > Successfully passes ESO ATCA Tester

AMI's IPMC Firmware Solution supports AdvancedTCA, an open industry standard for high performance data communications, as well as IPMI 2.0, a standard which defines a hardware-software subsystem that performs key platform monitoring and management independently from the main processor.

In an ATCA board, the management tasks are executed by a specialized IPM Controller (IPMC) that operates on standby power independent of the system's main power to periodically poll system health variables such as temperature, fans, voltage, power supplies and chassis intrusion. When discovering any anomaly, the IPMC can log the event and send alerts to the Shelf Manager via the Intelligent Platform Management Bus (IPMB) .

The IPMC Firmware Solution has optional side-band LAN communication capabilities, enabling messaging through the system NIC via LAN. However, an overwhelming majority of the communication will be through the IPMB to the Shelf Manager.

KCS Interface, as specified in the IPMI specification but not required by the ATCA specification, is optional if a customer requires it. The SMBUS system interface can be supported as an option.

AMI's IPMC Firmware Solution supports Electronic Keying (E-Keying) for verifying fabric compatibility between blades and midplane and prevent damage to boards or chassis malfunctioning.

Point-to-Point E-Keying verifies blade compatibility with the base interface, fabric interface and update channel interface. Bused EKeying manages the use of the bused resources provided by an ATCA shelf.

E-keying code requires porting on specific hardware.

Enhanced features of the IPMC Firmware Solution include: Field Replacement Unit (FRU) Control, Serial Port Sharing, SMBUS System Interface and Serial over LAN (SOL).

AMI's reference design is extensible, expandable, portable, dependable and easy to deploy. Reference design schematics are available to OEMs to simplify the design process.

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Features

Key Features

Advanced TCA Features
FRU supported states: M1, M2, M3, M4, M5, M6
Locked / Deactivation-Locked Bits
Guaranteed FRU Hot Swap Event Message Reception
2x redundant IPMB bus
Point-To-Point Connectivity record
Hot Swap sensor, IPMB sensor, and FRU Device Locator SDR records.
Both internal and external watchdog
E-Keying (porting required)
FRU hot swap
Event Generation

General Features

Manage FRU Power and cooling
Manage backplane interconnects
Intelligent Platform Management Bus (IPMB) interface
IPMI 1.5 and 2.0 support
Implement Device Sensor Data Record (SDR)
Implement FRU information and commands
IPMI event support

Additional ATCA Command Support

Get Address Info
Get PICMG Properties
Set FRU Activation
Set FRU Activation Policy
Get FRU Activation Policy
Get Sensor Reading (for normal IPMI sensors, hot swap sensor, and IPMB sensor)
FRU Control
Get FRU LED Properties
Get LED Color Capabilities
Set FRU LED State
Get FRU LED State
Set IPMB State
Compute Power Properties
Set Power Level
Get Power Level
Get Fan Speed Properties
Set Fan Level
Get Fan Level
Set Port State / Get Port State

Address Support

Hardware Address
IPMB Address
Physical address

Field Replacement Units (FRU)
Set FRU Activation command
Get FRU activation policy
FRU Hot Swap Support
Event message
Sensor reading
FRU payload control

FRU LED Control

Blue LED
LED1, LED2, LED3 support
FRU LED control Commands Support

Entity Requirements

System Event Logs
FRU Info access commands
FRU Inventory Device command
FRU info available at any payload power
Primary FRU Device ID 0
Contiguous FRU numbering
Parameter and data completion codes

IPMC FRU Information

Chassis info area
Board info area
Product info area
Internal use area
IPMC data placement rules
Multirecord info area
Board Point-to-Point Connectivity Records
FRU compiler - FRUGEN

E-Keying (porting required)

E-keying entries in Board FRU info
“Set port state” IPMC support

Board Point-to-Point Interface Information

Shelf Power and Cooling

IPMC Power Commands Support

Compute power properties
Get Power level command
Set power level command
Power draw command
Delay to stable power command
Dynamic power configuration
Fan tray participation
Renegotiations of power
Temperature sensor support
Get/Set sensor thresholds
Get/Set sensor hysteresis



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