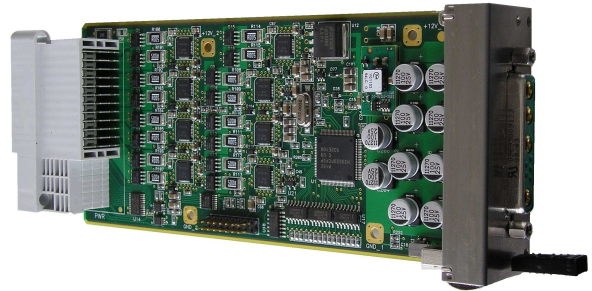


# Power Distribution Module (PDM) for MicroTCA

## Key Features:

- PDM with IPMI support
- +12V input voltage
- Inrush control and over-current protection for MP and PP
- Redundant operation
- Full size module
- Firmware upgrade over IPMB-0 (HPM.1 compliant)



## Description:

The Power Distribution Module (PDM) is designed to power MicroTCA systems using standard 12V output power supplies. The PDM has the same functionality as a standard MicroTCA power module (PM) except it doesn't have a DC-DC converter to generate +12V payload power (PP) from -48V. It is supplied directly with 12V. An on-board DC-DC converter generates +3.3V for management power (MP).

The PDM distributes MP and PP to all AMCs, MCHs and CUs and provides inrush control and over-current protection with programmable fault time. The PDM is designed to work redundant. Two or more PDMs could be plugged in the same time in a system.

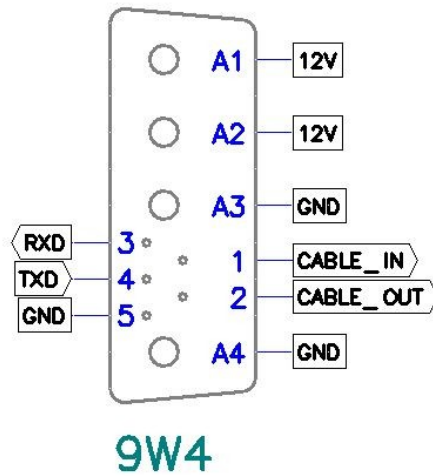
The PDM includes an EMMC controller and communicates with the MCH via IPMI messages sent over IPMB-0 bus. It is hot-swappable and is full compatible with the uTCA specification.

The PDM could be supplied with +12V using the front panel female DSUB 9W4 connector or through four M3 power bolts named on the board +12V\_1, +12V\_2, GND\_1 and GND\_2. A DC-DC converter PCB could be attached on top of the PDM using the four M3 bolts. In this way a full compatible MicroTCA Power Module could be build. To transfer signals between the PDM and converter PCB the J1 connector should be used.

The PDM is not provided with fuses and inrush current control on the bulk 12V power. This should be provided on the external power source.

The front panel DSUB 9W4 connector has 3 pins dedicated for a serial connection with a computer for debug and firmware upgrade purpose.

## Power Input Connector – DSUB 9W4 female



### Mating - cable connector (9W4 male) instructions

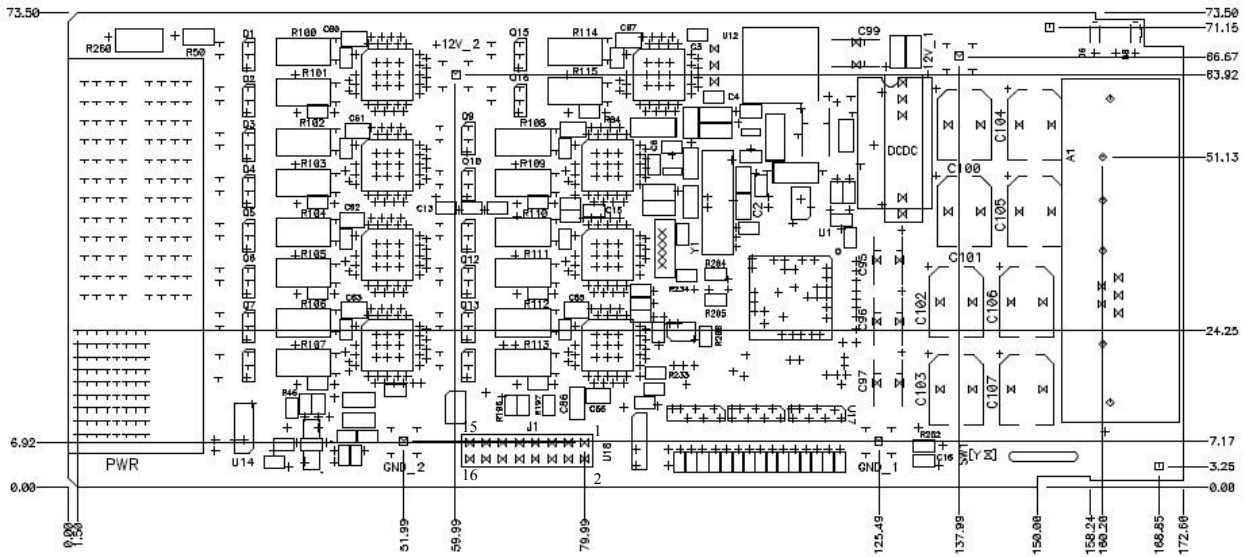
- CABLE\_IN, CABLE\_OUT – Not connected
- pin 3-9W4 should be connected to pin 2 of a serial connector - 9 pin DSUB female
- pin 4-9W4 should be connected to pin 3 of a serial connector - 9 pin DSUB female
- pin 5-9W4 should be connected to pin 5 of a serial connector - 9 pin DSUB female

### J1 connector pinout – Header 2.54mm 16 pins

	Name	Direction	Description
1	Cable#	I	Asserted low when the front panel cable is attached
2	GND		Ground
3	PRIMARY#	O	Active for primary PSU
4	SCL		Clock of the I2C bus used to read converter's EEPROM
5	VCC	O	Supply voltage +3.3V of converter's EEPROM
6	SDA		Data line of the I2C bus used to read converter's EEPROM
7	RESET#	I	Reset the PDM
8	INT#	I	Interrupt for I2C devices
9	Present#	I	Tied to GND on converter board to indicate presence
10	MonExtPwr	I	Analog input 0-2.5V representing input voltage. Sensor data stored in EEPROM
11	TBD1		To be defined pin, pulled low on PDM
12	TBD2		To be defined pin, pulled low on PDM
13	TXD		RS232 TX line – used for serial connection on front panel
14	GND		Ground
15	RXD		RS232 RX line – used for serial connection on front panel

16	Rsv	I	Reserved
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## PDM master drawing



## List of supported commands

IPM Device "Global" Commands	NetFn	CMD
Get Device ID	App	01h
Broadcast "Get Device ID"	App	01h
<b>Event Commands</b>		
Set Event Receiver	S/E	00h
Get Event Receiver	S/E	01h
Platform Event	S/E	02h
<b>Sensor Device Commands</b>		
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 Reading	S/E	2Dh
<b>FRU Device Commands</b>		
Get FRU Inventory Area Info	Storage	10h
Read FRU Data	Storage	11h

Write FRU Data	Storage	12h
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<b>PICMG Commands</b>	<b>NetFn</b>	<b>CMD</b>
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
Get Device Locator Record ID	PICMG	0Dh
FRU Control Capabilities	PICMG	1Eh
Power Channel Control	PICMG	24h
Get Power Channel Status	PICMG	25h
PM Reset	PICMG	26h
Get PM Status	PICMG	27h
PM Heartbeat	PICMG	28h

### Specifications

- PICMG MTCA.0: MicroTCA Specification R1.0.
- PICMG AMC.0: Advanced Mezzanine Card Specification R2.0.
- IPMI Intelligent Platform Management Interface Specification V1.5.

### Serial port command list

The serial port settings are: 19200 bits per second, 8 data bits, no parity, 1 stop bit and no flow control.

#### **mp channel e | d**

Enables or disables the management power for the specified channel. Not valid for CU channels 3 or 4

*channel* – channel number from 1 to 10

Example: mp 5 e – enables MP for channel 5 – AMC slot 1

#### **pp channel e | d**

Enables or disables the payload power for the specified channel. Not valid for CU channels 3 or 4

*channel* – channel number from 1 to 10

Example: pp 5 e – enables PP for channel 5 – AMC slot 1

#### **en channel e | d**

Assert or deassert the enable line for the specified channel. Not valid for CU channels 3 or 4

*channel* – channel number from 1 to 10

Example: en 5 e – enables channel 5 – AMC slot 1

### **channels**

Returns the status of all channels

### **redundancy**

Returns the current primary/redundant channels status

### **temp**

Returns the current temperatures on the PDM

### **info**

Returns firmware version info.

### **voltage**

Returns the current voltage readings

### **uptime**

The time since the system was turned on

### **xmodem pmfru | pmsdr | firmware**

Used to upgrade PM FRU data, PM SDR data or the firmware.

This command should be used together with Hyperterminal XMODEM data transfer. The system must be restarted after upgrade.

Examples:

xmodem pmsdr – upgrades the Power Module SDR data

xmodem firmware – upgrades the firmware

### **print pmfru | pmsdr**

Print as hex values the PM FRU data or PM SDR data,

### **define productversion | errordebounce | maxinputcurrent | activeamcs [value]**

Print or set the current definition of some environment variables

productversion -one byte variable. Set this to 1 for this version of the PDM

errordebounce -one byte variable. Set the number of consecutive errors that needs to be read before asserting a sensor

maxinputcurrent -two bytes variable. Set the maximum current available for PDM. The current is in multiple of 0.1A. The default setting is 250 =>25A

activeamcs -two bytes variable. This is a bitmask that allows to power on AMCs in absence of an MCH. If a bit is set the corresponding AMC will be powered on autonomously. The bit 0 corresponds to AMC1. Whenever an MCH is used set this variable to 0.

examples:

Print the current definitions

```
%>define
```

```
productversion =1
```

```
errordebounce =0
```

```
maxinputcurrent =250
```

```
activeamcs =0x0000
```

Enables all AMCs to get power in absence of a MCH.

```
%>define activeamcs 0xfff
activeamcs =0x0FFF
```

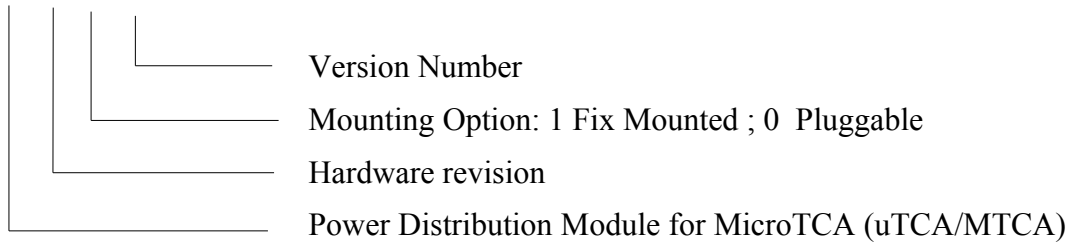
**savepmfru**

Saves the current definitions (variables configured with “define” command) into the FRU.

**Ordering info**

**Ordering Numbers**

SMW 03 x x xx



**Order Codes**

Part Number	Hardware Rev.	Mount Option	Version No.	Description
SMW03C000	C	0: Pluggable	0	Power Distribution Module for MicroTCA (uTCA/MTCA) Pluggable Version: → the Front Panel is assembled →the Power Input Connector – DSUB 9W4 female is assembled
SMW03C100	C	1: Fix Mounted	0	Power Distribution Module for MicroTCA (uTCA/MTCA) Fix Mounted Version: → the Front Panel is not assembled →the Power Input Connector – DSUB 9W4 female is not assembled → the Power Signals are connected through the power bolts