VadaTech UTC010

User's Manual

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Version 1.2

vadatech inc

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Revision History

Doc Rev	Description of Change	Revision Date
1.0	Document Created	01/16/2009
1.1	Updated for UTC010 release 1.3.0	03/12/2009
1.2	Update table with temperature sensors for 1.5.0	09/11/2009

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Figures

Tables

1 Overview

This document describes the operation of the UTC010 MicroTCA Power Module. Refer to the data sheet for the hardware capabilities and limitations.

1.1 Document References

- VadaTech Power Module Command Line Interface Reference Manual
- PICMG® Advanced Mezzanine Card AMC.0 Specification R2.0 (AMC.0)
- PICMG® Specification MTCA.0 R1.0 (MicroTCA)
- PICMG® HPM.1 R1.0 (HPM.1)

1.2 Acronyms Used in this Document

Acronym	Description
PM	Power Module

Table 1: Acronyms

2 Front Panel

The front panel provides two power connectors, a serial port, a hot-swap handle, and several LEDs, as shown in **Figure 1: Front Panel**.

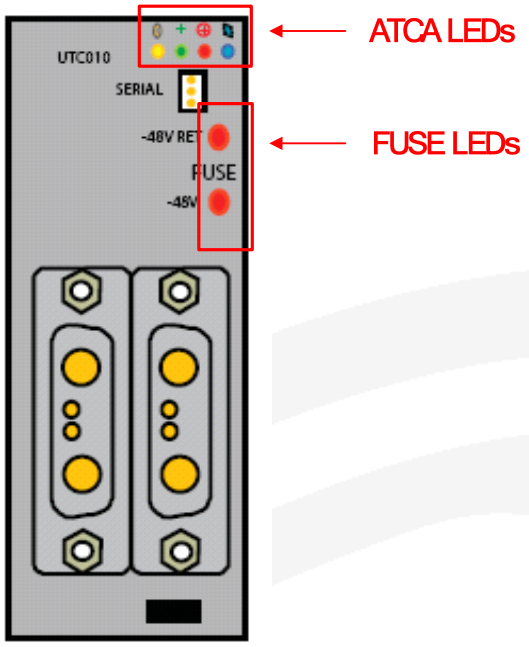

Figure 1: Front Panel

The LEDs on the front panel indicate the state of the UTC010.

Group	LED Name	Color	Description
ATCA	Hot Swap	Blue	Indicates PM hot-swap state, per AMC.0
	Fault	Red	ON when PM cannot provide power on any power channels. Reflects the state of PM_OK, per MicroTCA. This usually indicates a recoverable fault. For example, input power is not present, or the PM is over temperature.
	OK	Green	ON when PM is operating normally. This LED will be ON when the Fault LED is OFF, and vice versa.
	Upgrade	Amber	ON when PM is out-of-service during a firmware upgrade. This occurs during the "Finalize" step as described in HPM.1.
FUSE	-48V RET	Amber	Blinking when input power is not redundant. ON when the -48 volt return fuse is blown. This is a non-recoverable fault.
	-48V	Amber	ON when the -48 volt fuse is blown. This is a non-recoverable fault.

Table 2: Front Panel LEDs

The serial port is a female micro-USB connector. To connect this serial port to a standard DB9 connector, use the cable provided with the UTC010, part number CBL-DB9MUSB1. The serial protocol is RS-232, 115200 baud, N81. Most of the functions available through this interface are described in the VadaTech Power Module Command Line Interface Reference Manual. For functions specific to the UTC010, see **Section 4: Command Line Interface.**

The power connectors allow two redundant power sources to be connected to the UTC010. Note that if only one power source is active, the -48V RET LED will blink. This indicates that the input power is not redundant, and is not a fault condition. Refer to the data sheet for the allowable range of input voltages.

The hot-swap handle operates the same as an AMC hot swap handle. To bring the UTC010 to the operating (M4) state, push the handle in to the closed position. To extract the UTC010, pull the handle to the open position. Wait for the blue LED to come on solid, then take the UTC010 out of the carrier.

3 Sensors

The UTC010 provides the following sensors:

Name	Type	Description
PM HOT SWAP	AMC.0 Module Hot Swap	Handle and Quiesce state
FET TEMP	Temperature	Temperature of the power FET
BRICK 1 TEMP	Temperature	Temperature of power brick 1
BRICK 2 TEMP	Temperature	Temperature of power brick 2
UTC010 tIN	Temperature	Incoming air temperature
UTC010 tOUT	Temperature	Outgoing air temperature
UTC010 Brick T1	Temperature	Internal temperature of power brick 1
UTC010 Brick T2	Temperature	Internal temperature of power brick 1
UTC010 Brick T3	Temperature	Internal temperature of power brick 2
UTC010 Brick T4	Temperature	Internal temperature of power brick 2
PM STATUS	MicroTCA Power Module Status	Health and Primary / Redundant status
PM NOTIFICATION	MicroTCA Power Channel Notification, event-only	Power Channel Status
IPMB LINK	ATCA IPMB Link Sensor	IPMB-0 Status
UTC010 PWR IN	Redundancy	Input power redundancy
UTC010 12V	Voltage	Level of 12-volt power
UTC010 vOut 1	Voltage	Output voltage of power brick 1
UTC010 vOut 2	Voltage	Output voltage of power brick 2
UTC010 iOut 1	Current	Output current of power brick 1
UTC010 iOut 2	Current	Output current of power brick 2

Table 3: Sensors

4 Command Line Interface

This section describes the user interface screens that are specific to the UTC010. For a description of the screens common to all VadaTech Power Modules, refer to the VadaTech Power Module Command Line Interface Reference Manual.

4.1 Fuse & Management Power Status Display

The Fuse & Management Power Source Status display (henceforth known as FMPSD) is selected by the user when they want a more detailed view of the power entry fuse status and the management power status. The display shows the status of the management power that supplies the UTC010 as well as the load modules (MCH, CU and AMC). This display will have the following format (though status values may be different):

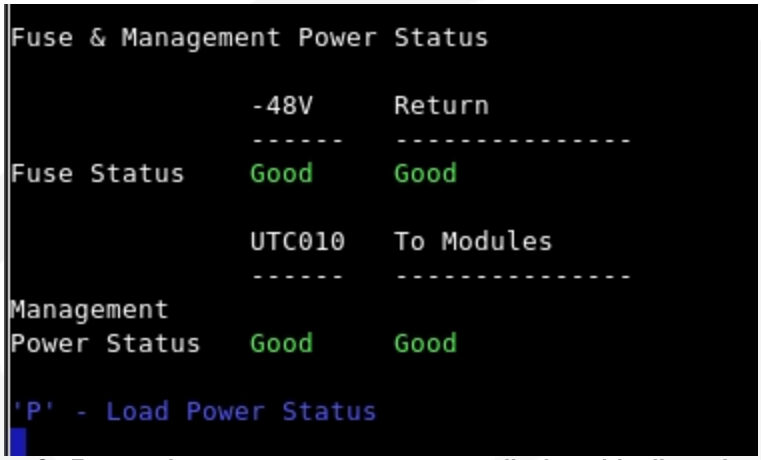

Figure 2: Fuse and management power status display with all good status

Note that the various status indicators on the FMPSD are "ANDed" together to show the overall status of the FMPSD on the main dsiplay. If one status is bad, then the overall status will be bad. If all the status indicators are good, then the overall status will be good.

4.2 Fuse Status

There are two power feeds (A and B) into the UTC010 with -48V and return, resulting in 4 power connections. They are combined to provide redundancy. Fuse failures are detected for all 4 lines but logically combine into two – one for the -48V fuse and the other for the return. The FMPSD will indicate when a fuse has blown due to an over current condition by showing a Fuse Status of "Bad".

The UTC010 could potentially operate normally in a condition where the fuse status shows up as being bad, so the Management Power Status may show up as good even with the two fuses showing a bad status. The UTC010 could operate with two fuses out on either the -48V or the return.

If all of the fuses went out in the ultimate catastrophic case, the Fuse Status and Management Power Status would show up as bad. The UTC010 would be operational since management power would be provided by the redundant power module.

Fuse Status -48V	Fuse Status Return	Meaning
Good	Good	Both power feeds are operating properly
Bad	Good	-48V line on either of the power feeds is bad
Good	Bad	Return line on either of the power feeds is bad
Bad	Bad	Both power feeds are bad – power may be supplied by primary or redundant supply

Table 4: Fuse status

4.3 Management Power Status

There are two sources of management power on the UTC010. One is for the UTC010 itself (internal management power) and the other is management power to the other modules - AMCs, Cooling Units (CUs) and Micro TCA Carrier Hubs (MCH) (external management power). On-board management power can be supplied by the unit in question or it can be supplied by a redundant power module in the event that on-board management power fails.

If Management Power to the UTC010 were provided by the redundant power module due to an internal management power fault and external management power was still available, the Management Power Status to the UTC010 would show up as "Bad" and the Management Power Status to the load modules would appear as "Good".

If external management power was not available due to a fault and internal management power was available, the Management Power Status to the UTC010 would show up as "Good" and the Management Power Status to the other modules would appear as "Bad".

Should both the external and internal management power be provided by the redundant power module due to power faults for internal and external management power sources, the display would be bad for the UTC010 and "To Modules" Management Power Status.

The Table 5: Management power status provides a quick reference to the various conditions of the FMPS display and the meaning of the display:

UTC010	To Modules	Meaning
Good	Good	Internal management power is good for this UTC010 and external modules
Bad	Good	Internal management power for this UTC010 is being provided by the redundant power module but external management power is okay
Good	Bad	Internal management power is good for this UTC010 but external management power cannot be supplied by this UTC010
Bad	Bad	Internal management power for this UTC010 and external management power are being supplied by the redundant power module

Table 5: Management power status

5 UTC010 Modes of Operation

The UTC010 has two primary modes of operation – autonomous and controlled. The UTC010 is shipped in controlled mode. In this mode, it is up to the MCH(s) to read the Carrier configuration information and set current limiting and operational sequencing of the AMC modules. Controlled mode is set when one or two MCH modules are present OR when SW2-3 is in the OFF position.

When operating in the autonomous mode, the UTC010 will power up the AMC slots in a sequence dictated by the power sequencing configuration. The sequencing order, time between sequencing steps, payload current limit and CLI verbosity (i.e. how much information is printed out on AMC module power up) are controlled according to the sequencing configuration the user enters. The UTC010 will not enter autonomous operation when one or both MCH modules are present **and** will not enter autonomous operation unless SW2-3 is in the ON position.

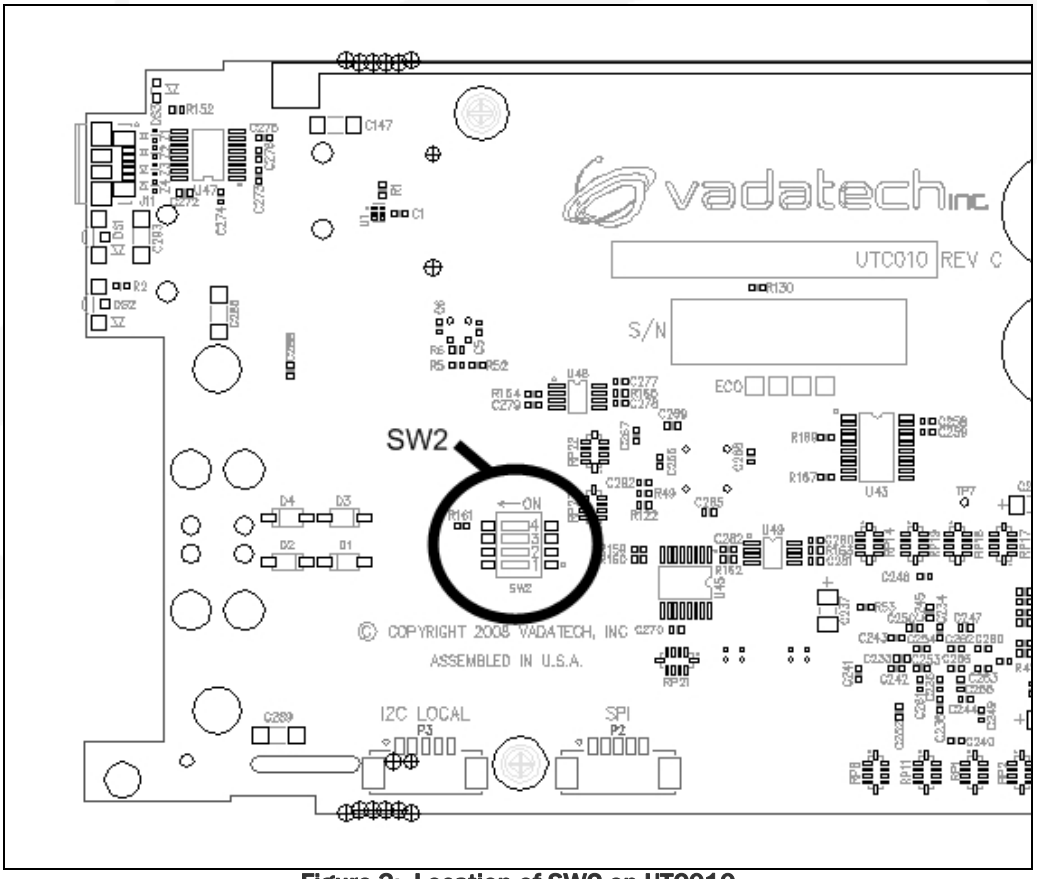

Figure 3: Location of SW2 on UTC010

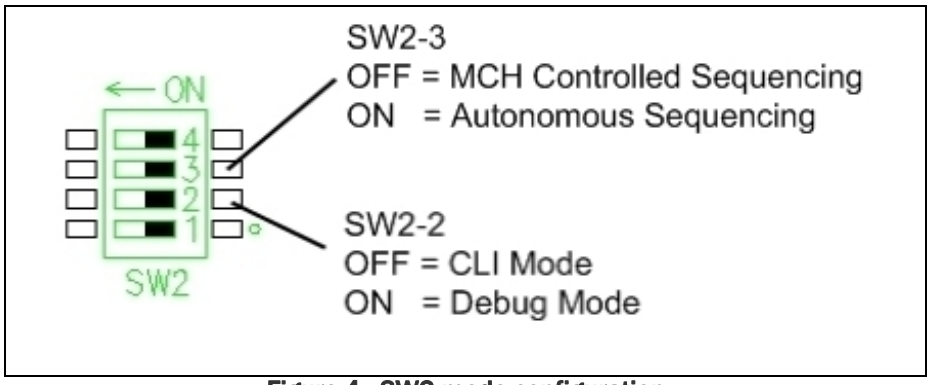

Figure 4: SW2 mode configuration