RackPak/SM4

4U 19" 11 Slot Simple MicroTCA System

Rev. 2, 2009-09

The RackPak/SM4 Simple MicroTCA® chassis is a 4U 19" rack offering 8 AdvancedMC™ double mid-size and 3 single mid-size slots. The RackPak/SM4 system is the perfect base for low cost computer platforms in automation, communication, defence, imaging, medical, and transportation. It supports high-end computing applications with up to 10 CPU modules as well as I/O intensive configurations. Based on the MicroTCA® and AdvancedMC™ PICMG® standards it is the optimal platform for long life cycle applications.

The RackPak/SM4 includes a Simple MicroTCA Support Module (SSM) providing carrier management functions, PCIe switching, PCIe clock generation, power control, and monitoring of temperatures, voltages, and fans. The front panel offers two Gigabit Ethernet ports and the systems management interface through a Fast Ethernet port.

PCI Express™ is the RackPak/SM4 systems basic communication protocol. SATA, GbE, Serial RapidIO® protocols can be used for inter-module communication. A switch slot provides GbE connections to all slots. The backplane offers rear I/O connectors, and all slots fully support hot-swap.

The system has a 350W AC power supply. Cooling system and PSU are designed for a maximum of 40W power dissipation per slot. The dust filter and all fan cartridges are hot-swappable. An optional 500W AC or a DC input power supply is also available.

Features

- 19" rack-mount chassis, 4U height
- 8 AdvancedMC double mid-size slots, 3 mid-size slots
- AMC.0, AMC.1, AMC.2, AMC.3 compliant
- Full hot-swap support
- Simple MicroTCA® Support Module
- Opt. GbE Switch
- 4 slot custom I/O area
- Rear-I/O
- 350W AC power supply
- Front to rear air flow
- Low cost platform

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System Configuration

AMC slot 1 is the CPU slot, and should carry an AMC module with AMC.1 type 4 or 8 interface. Any processor or I/O AMC module may be used in AMC slots 2–9.

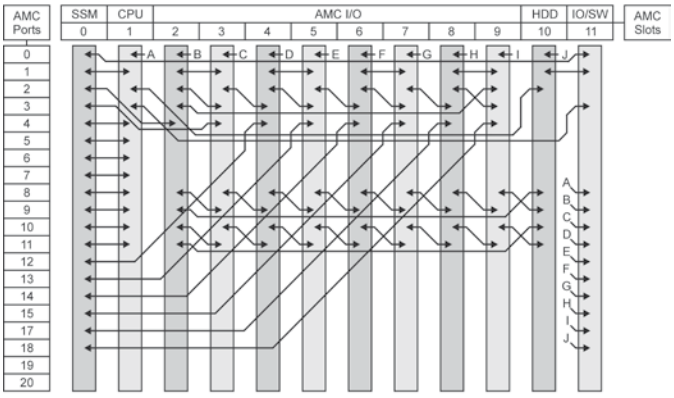
9	(15)
8	(14)
7	(13)
6	(12)
5	11 HDD/SW
4	10 HDD
3	1 CPU
2	0 SSM

RackPak/SM4 slot usage:
Slot 0 carries the SSM,
slot 1 is the CPU slot, slots 2 to 9 may carry CPU or I/O modules, slot 10 and 11 may carry HDD/SSDs, slot 11 also a GbE Switch AMC module. Slots 12 to 15 have AMC and rear I/O connectors to support custom I/O solutions.

Slots 10 and 11 have AMC.3 connections to slot 1 for HDD/SSD usage. Additionally slot 11 provides connections to AMC port 0 of slots 1 to 10, which allows the optional use of a GbE Switch AMC module like the TEWS TAMC890-10R.

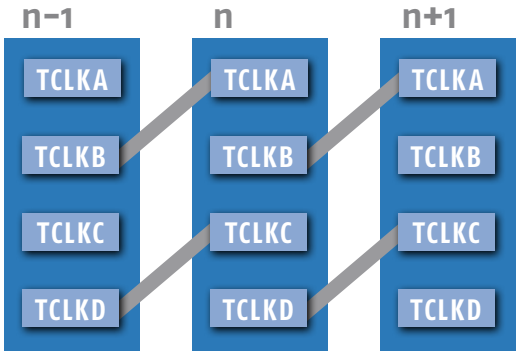
The CPU slot ports 4–11 are routed to the SSM PCIe switch, and further distributed as PCIe x1 lanes to each port 4 of AMC slots 2 to 9 (AMC.1 type 1). The backplane supports slot-to-slot connections for the (telecom) clock signals. Fixed connections are available for the AMC ports 0–3, and 5–11. These connections support PCIe, SATA, GbE, Serial RapidIO®. The backplane has rear I/O connectors for each slot.

Slots 12 to 15 are reserved for custom I/O. The AMC slots connect to their rear I/O header only. This allows custom I/O interface modules, or the integration of e.g. displays or keypads.

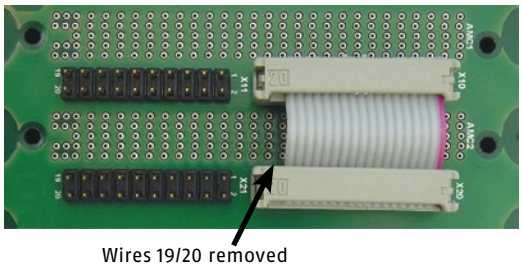


RackPak/SM4 backplane interconnect

The telecom clock signals of AMC slots 2 to 10 connect to their neighbour slots: Slot 2 TCLKB to slot 3 TCKLA, slot 3 TCLKB to slot 4 TCLKA, and so on. TCLKC and TCLKD are routed as TCLKA and TCLKB. The last slot connects back to slot 2.



RackPak/SM4 telecom clock interconnect



Wires 19/20 removed

Backplane rear I/O header. The figure shows a ribbon cable connection between two slots connecting ports 12 to 15.

The AMC ports #12 to #15 and #17 to #20 of AMC slots #1 to #9 and #12 to #15 are routed to two separate 20-pin headers located on the backplane rear side of each AMC slot. Each header provides logic ground, the local management (MP) and payload power (PP). These connectors support rear I/O, or user supplied ribbon cable connections between two or more AMC slots.

XnO				Xn1			
Pin No.	Signal	Pin No.	Signal	Pin No.	Signal	Pin No.	Signal
1	Rx12+	11	Tx14+	1	Rx17+	11	Tx19+
2	Rx12-	12	Tx14-	2	Rx17-	12	Tx19-
3	Tx12+	13	Rx15+	3	Tx17+	13	Rx20+
4	Tx12-	14	Rx15-	4	Tx17-	14	Rx20-
5	Rx13+	15	Tx15+	5	Rx18+	15	Tx20+
6	Rx13-	16	Tx15-	6	Rx18-	16	Tx20-
7	Tx13+	17	GND	7	Tx18+	17	GND
8	Tx13-	18	GND	8	Tx18-	18	GND
9	Rx14+	19	MP	9	Rx19+	19	MP
10	Rx14-	20	PPWR	10	Rx19-	20	PPWR

Rear I/O header pinning

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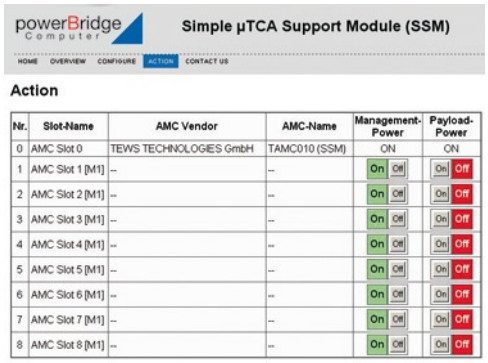
Simple µTCA Support Module



Nr.	Slot-Name	AMC Vendor	AMC-Name	Management-Power	Payload-Power
0	AMC Slot 0	TEWS TECHNOLOGIES GmbH	TAMC010 (SSM)	ON	ON
1	AMC Slot 1 [M1]	--	--	On Off	On Off
2	AMC Slot 2 [M1]	--	--	On Off	On Off
3	AMC Slot 3 [M1]	--	--	On Off	On Off
4	AMC Slot 4 [M1]	--	--	On Off	On Off
5	AMC Slot 5 [M1]	--	--	On Off	On Off
6	AMC Slot 6 [M1]	--	--	On Off	On Off
7	AMC Slot 7 [M1]	--	--	On Off	On Off
8	AMC Slot 8 [M1]	--	--	On Off	On Off

SSM screen shot

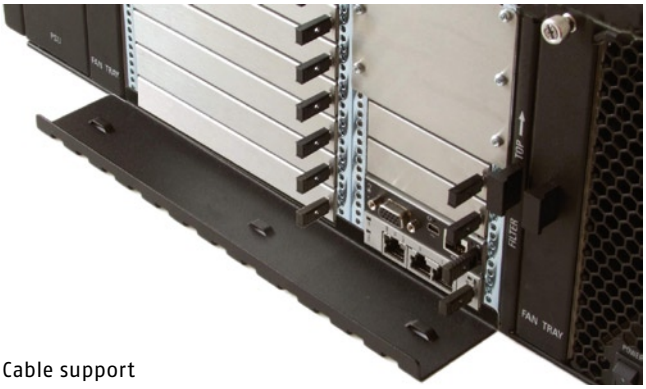
The Simple MicroTCA support module (SSM) provides basic system functions and system management. It contains a PCIe x8-to-8x1 switch, the PCIe clock generation, and the Simple MicroTCA carrier management controller (SCMC) with a front panel Fast Ethernet interface.

Simple MicroTCA Support Module acts as a shelf manager and provides basic system functions

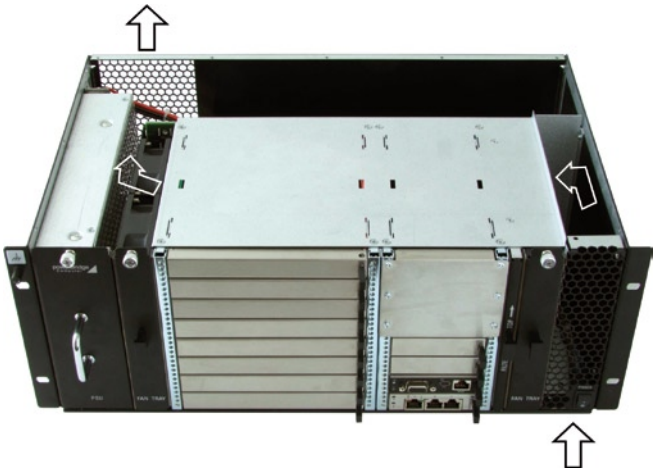
The SCMC offers the user management interface, handles the AMC module set-up and full power control, supervises fan operation and system voltages, and controls the fans. A DC/DC converter generates the management power supply from the systems single 12V power supply. Additionally it provides on its front panel two Gigabit Ethernet ports which connect to AMC ports in the system.

With its AMC mid-size form factor the SSM can easily be serviced. Nevertheless it is not an AMC module, it operates only in slot 0. The SSM may be plugged into any system slot without damaging the system or the module. This is also valid for every other type of AMC module.

RackPak/SM4 rear view



Cable support



RackPak/SM4 front to rear airflow. The system allows a max. of 40W power dissipation in each slot.

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Specifications

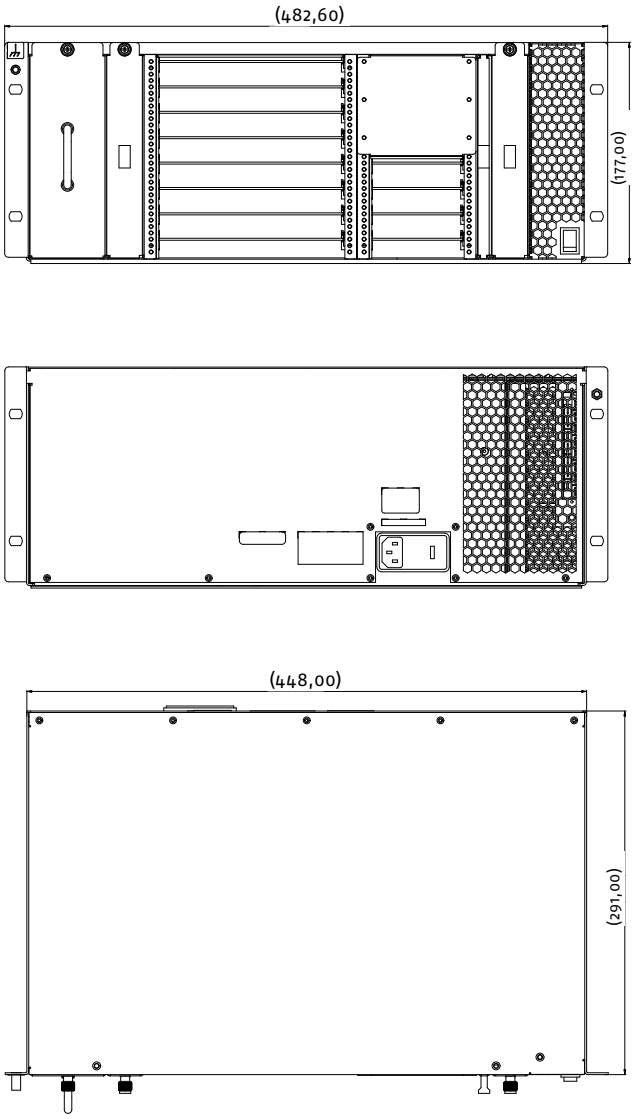
Construction	19" rack-mount, 4U height, self-contained top and bottom cover, RAL 9005 painted
Shelf Manager	Simple MicroTCA Support Module including carrier management, PCIe switching, PCIe clock generation, power control, monitoring of temperature, voltage, and fans, SNMP support
Cooling System	2 hot-swap fan cartridges with 8 fans total, front to rear air flow, supports up to 40W power dissipation in each slot, dust filter compliant to UL 94HF-1
Backplane	12 layer backplane with integrated power and fan connecters
Power Supply	350W AC power module, 85-264VAC input range, MTBF >300,000 h, 12V/22A available to AMC slots 1-11
Weight	10.2 kg incl. SSM module
Operating Temp.	-5°C ... +50°C
Storage Temp.	-25°C ... +85°C
Humidity	up to 95% RH non-condensing
Electromagnetic Compability	System configurations conforming to EN55022 class B and EN61000-4-3 are supported
Safety	EN-60950
Dimensions	19" x 4U x 291 mm (WxHxD)
Compliance	MicroTCA PIGMG MTCA.0 R1.0, AdvancedMC PIGMG AMC.0 R2.0, AdvancedMC PIGMG AMC.1 R2.0, Simple MicroTCA SMTCA.0 R2.0

Ordering Information

RackPak/SM4	4U 19" SMTCA chassis, 8 DMS slots, 3 MS slots, SSM, switch slot
FP-DMS	Filler panel, double mid-size
FP-MS	Filler panel, mid-size
RP-CS-KIT2	Cable support kit

The RackPak/SM4 is available with different AMC CPU modules, e.g. ADLINK's AMC-1000 or EMERSON's PrAMC-6210 and PrAMC-7211.

Dimensions



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