

# Centellis™ 1000 Series

## MicroTCA Computer System

■ Embedded Computing for  
Business-Critical Continuity™

### The Centellis 1000 Series represents a quantum leap in platform outsourcing

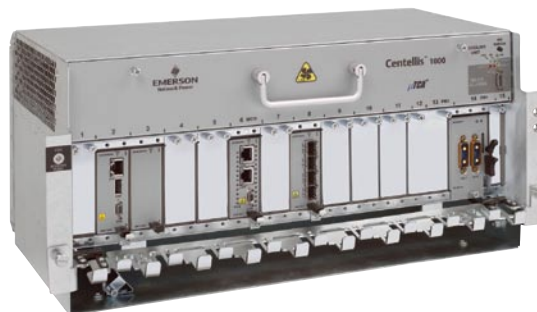
- 11-slot MicroTCA system for scalable embedded computing applications
- 17.6 in. (466 mm) wide, 8.75 in. (222 mm) high, 9 in. (226 mm) deep shelf with front-only I/O and 19 in., 23 in. or 600 mm rack mount options
- 600 Watt AC or -48 VDC power entry modules to support a full complement of AdvancedMC (AMC) modules
- Redundant DC power entry modules, hot-swappable AMC modules, and an easy-to-service design.
- MicroTCA Carrier Hub (MCH) that combines shelf management, clocking and fabric switching in a single module to maximize payload capacity
- Gigabit Ethernet backplane fabric with optional PCI Express secondary fabric
- MontaVista CGE Linux or Wind River PNE Linux Edition operating system
- Basic blade services software support provides blade hardware manager, firmware upgrade and SNMP agent
- Configurable with broad portfolio of AdvancedMCs from Emerson and ecosystem partners
- Complies with PICMG® MicroTCA R1.0 standard
- Designed for use in challenging environments that require high reliability including NEBS

The Centellis™ 1000 series of systems from Emerson Network Power is designed to the MicroTCA™ open standard, making it ideal for use with combinations of Advanced Mezzanine Card (AdvancedMCT™) modules. This scalability enables the Centellis 1000 to support a pay-as-you-grow business model that allows customers to realize cost-effective initial solutions and then expand the platform capabilities in small, low-cost increments as demand for new services increase. This advantage is particularly relevant to some of the new point-of-access applications such as WiMAX and Multi-Service Business Gateways that need to add functional blocks as networks evolve.

Centellis 1000 includes a number of highly integrated and verified hardware and software components such as power modules, backplane, cooling module, MicroTCA Carrier Hub (MCH), processor AMCs, operating system and management support. These tried and tested combinations reduce development costs by providing an application-ready platform enabling customers to focus their efforts on critical, differentiating features that provide competitive advantages.

MicroTCA builds on and leverages the technology developed for the widely used AdvancedTCA® (ATCA®) standard. A MicroTCA system uses the same AMC modules that are deployed as mezzanines on ATCA blades. For existing ATCA customers, this reuse of existing hardware and software will improve cost efficiency through economies of scale. These architectural similarities enable MicroTCA customers to easily scale up to higher performance ATCA platforms and vice versa to create a consistent portfolio of products.

The Centellis 1000 series will be used in a wide range of applications and markets where small physical size, low power consumption, reasonable noise and good serviceability are required. In addition to a wide range of enterprise telecom applications, Centellis 1000 is ideal for a wide variety of applications in the federal, medical and test and measurement markets. Many of these sectors have a common theme of becoming Ethernet-centric and Centellis 1000 provides Ethernet switching as standard in the backplane between all the AMC modules for easy functional partitioning between modules and systems. For additional flexibility, Centellis 1000 offers an optional PCI Express fabric for I/O modules that require a high speed local interconnect.



μTCA™

  
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Network Power

## Shelf Specifications

### CHASSIS

- 5U x 17.6 in. (446 mm) x 9 in. (226 mm). Optional 19 in., 23 in. (584 mm) or ETSI (600 mm) rack mount.
- Two (2) DC or one (1) AC power module slot(s)
- One (1) full-size MicroTCA carrier hub (MCH) slot
- 10 full-size AMC slots plus one (1) compact AMC slot (if second power module not present)
- Cooling architecture - negative pressure forced air
  - ▲ Ingress: Bottom front
  - ▲ Egress: Top sides and top rear

### BACKPLANE

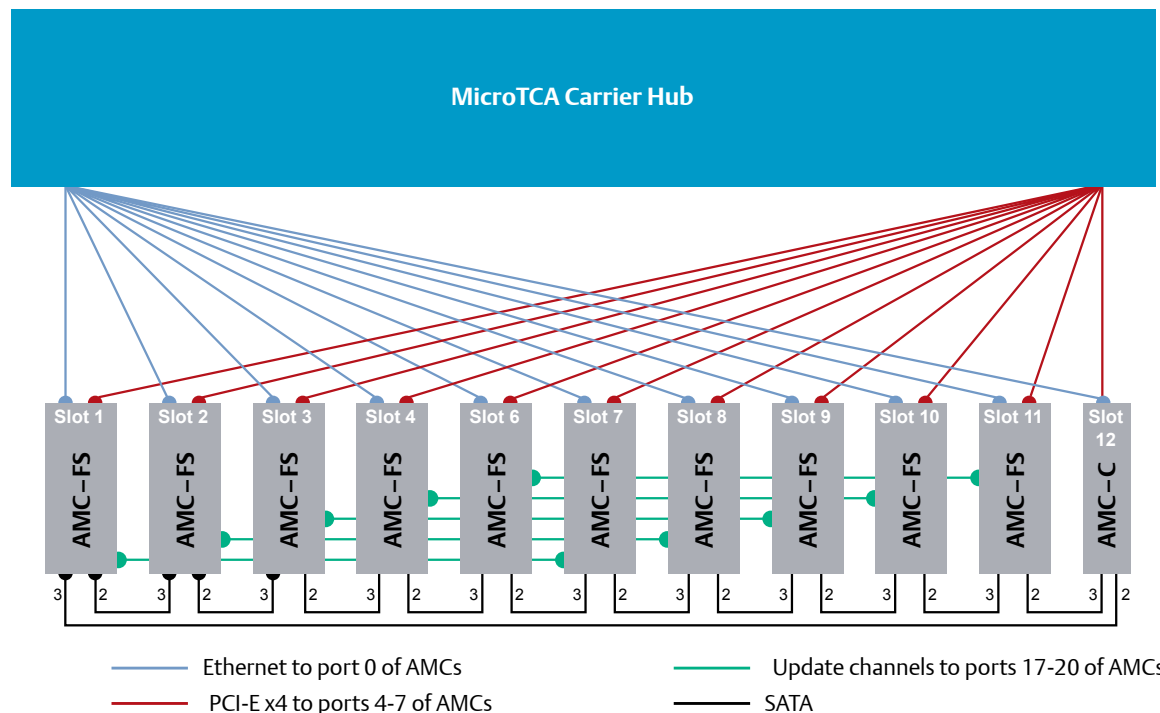
- Radial IPMI from MCH slot to 11 payload slots; bussed, redundant IPMI to power and cooling modules
- Three (3) radial clocks from MCH slot to 11 payload slots
  - ▲ HCSL signaling on FCLKA/CLK3
- Radial Port 0 from 11 payload slots to MCH (base/common fabric)
- Radial Ports 4-7 from 11 payload slots to MCH (extended fabric)
- Daisy-chain Ports 2 & 3 between payload slots
- Ports 17-20 for payload slot-slot I/O

### COOLING

- One (1) front-replaceable top cooling module with 8 fans
- Airflow over 12 cubic feet per minute (CFM) per slot
- Minimum total CFM is 183 (with all fans at full speed)
- IPMI 1.5 compliant; LEDs
  - ▲ H/S (Hot Swap)
  - ▲ OK (In-Service)
  - ▲ OOS (Out-of-Service)
- Integrated Telco alarm LEDs and relay output
- Supports failure of one (1) fan (at reduced max ambient; minimum 164 CFM)
- Recommended one-minute service interval

### TEMPERATURE RANGE

- Operating
  - ▲ +5°C to +40°C (41°F to 104°F) (normal operation) according to NEBS Standard GR-63-CORE
  - ▲ -5° to +55°C (23°F to 131°F) (exceptional operation) according to NEBS Standard GR-63-CORE
- Storage (package state)
  - ▲ -40°C to +70°C (-40°F to 158°F)



### SHELF MANAGEMENT

- One (1) MCH-1011 or MCH-1021 MicroTCA Carrier Hub (non-redundant)
- Carrier manager and shelf manager (Pigeon Point-based [R1.2.4])
  - ▲ AdvancedMC control, status
  - ▲ Power, Cooling and Telco Alarm module control, status
  - ▲ Local control via CLI on serial console
  - ▲ External control via LAN (RMCP) or serial console (SIPL-TM)
- Fabric switching (PCI Express)

### POWER DISTRIBUTION

- Output - All Power Modules
  - ▲ Outputs for up to 12 payload slots, 2x MCH and 2x Cooling Unit
  - ▲ 12 V @ 7.6 maximum payload power
  - ▲ 3.3 V @ 150mA maximum management power
  - ▲ Output noise (PAR):75mV maximum
- Input - 600 Watt -48 VDC power module (1+1 redundancy architecture and input (A/B) feeds)
  - ▲ Hold up Time: 5ms minimum
  - ▲ Inrush current: <\_80A
  - ▲ Input current:18.2A Maximum
  - ▲ Input range: -39.5 to -72 VDC
  - ▲ Input - 600 Watt AC power module
  - ▲ Hold up time: 16.7s minimum
  - ▲ Inrush current: <\_45A
  - ▲ Power factor: 0.99 Typical
  - ▲ Input current: 6.6A Maximum
  - ▲ Input range: 90-264 VAC
  - ▲ Input frequency: 47 to 63 Hz
- Hot-swappable, IPMI 1.5 compliant
- LEDs for Power Good/Hot Swap

### Network Infrastructure (MCH-1011/1021)

- Gigabit Ethernet (GbE) base fabric
  - ▲ One (1) GbE link from MCH to 11 AMC slots (Port 0)
  - ▲ One (1) GbE expansion port on MCH for inter-shelf connections
  - ▲ One (1) GbE port on MCH for management (default) or inter-shelf connections
  - ▲ Layer 2 switch architecture (unmanaged)
- PCI Express extended fabric (optional; MCH-1021)
  - ▲ x1, x2 or x4 PCI Express links from MCH to 11AMC slots (Ports 4-7)
  - ▲ PCI Express clock from MCH to 11 AMC slots (FCLKA/CLK3)

### Safety Standards

- UL 60950-1
- EN 60950-1
- IEC 60950-1
- CAN/CSA C22.2 No 60950-1

### Regulatory Standards

- UL CISPR 22)
- CISPR 24
- EN 55022
- EN 55024
- FCC Part 15
- Industry Canada ICES-003
- VCCI Japan
- AS/NZS CISPR 22
- EN 300 3861

## Software

- Linux
  - ▲ Wind River, PNE/LE 2,0 Evaluation runtime kernel & filesystem
  - ▲ PXE (x86) or TFTP (PPC/Uboot) boot images
  - ▲ Installation scripts for HD or Flash
- Basic Blade Services (BBS) for processor AMC modules
  - ▲ Operating system initialization scripts
  - ▲ Standard Linux SNMP MIB support (module-level mgmt)
  - ▲ Hardware Platform Mgmt CLI/daemon (local MMC interface)
  - ▲ Module Firmware Upgrade Facility (with latest firmware images)
  - ▲ FRU Information Utility (backplane FRU data view/change)
  - ▲ MCH GbE Switch Configuration utility (not persistent)

## PLATFORM MANAGEMENT SOFTWARE

- Easy-to-use SpiderWare®M<sup>3</sup> Platform Management software for management, monitoring and maintenance (available November 2008)
- Graphical interface for quick and easy platform setup
- Uses each module's IPMB\_L or IPMB\_0 link
- Manage function
  - ▲ User-friendly GUI makes it easy to get up and running within minutes of installation
  - ▲ Single screen presentation of hardware management
  - ▲ DHCP service for 1-n shelves (future)
- Monitor function
  - ▲ FRU discovery, inventory and rev-level reporting
  - ▲ Monitor hardware and event sensors
  - ▲ Monitor CPU and memory usage (Emerson processor AMCs – Q1 '09)
- Maintain function
  - ▲ MCH IP addressing maintenance
  - ▲ Platform Event Filtering
  - ▲ Set FRU information
  - ▲ Firmware upgrade and fallback (future)

The screenshot displays the SpiderWareM3 software interface. At the top, the Emerson logo is visible. The main area shows a rack of server modules with a 'Telco Alarm' indicator. On the left, there is a 'Filter Alarms' section with options for Temperature, Voltage, Current, Fan, Processor, and Power Supply. Below this is a 'Chassis Selection' list with various chassis models like C4440, C1000, C500, and C2000. The central part of the interface shows 'Chassis 2, Carrier 1, AMC 2: FRU Information' with a detailed view of board information including Language (English), Manufacturing Date/Time (Tue Sep 18 23:34:00 BST 2007), Manufacturer (Motorola), Product Name (PrAMC-6201), Product Part Number (0106838A01C), Serial Number (7741714), and FRU File ID (7106838A). On the right, a 'Board Summary' panel provides details like Board (PrAMC-6201), P/N (0106838A01C), S/N (7741714), Firmware (1.00), Aux Rev (06 00 00 00), IPMI Rev (1.5), Daemon (No Daemon), and Hot Swap (M4 - FRU Active). At the bottom right, there is an 'M3Server Status' section showing 'M3Server connection status: Connected' and 'IPMI management status: Ready'.

Ordering Information	
Part Number	Description
Pre-Configured Tested and Validated Bundle Configurations	
MTCA-C1KT-7210-S3-A1	Centellis 1000 bundle w/chassis, AC PM, MCH-1011, PrAMC-7210, AMCS301/302, SpiderWareM <sup>3</sup> , filler panels, and MCH serial cable
MTCA-C1KT-6210-00-A1 (available Dec '08)	Centellis 1000 bundle w/chassis, AC PM, MCH-1011, PrAMC-6210, SpiderWareM <sup>3</sup> , filler panels, and MCH serial cable
MTCA-C1KT-7210-S3-D1	Centellis 1000 bundle w/chassis, DC PM, MCH-1011, PrAMC-7210, AMCS301/302, SpiderWareM <sup>3</sup> , filler panels, and MCH serial cable
MTCA-C1KE-7210-S3-A1	Centellis 1000 bundle w/chassis, AC PM, MCH-1021, PrAMC-7210, AMCS301/302, SpiderWareM <sup>3</sup> , filler panels, and MCH serial cable
MTCA-C1KE-6210-00-A1 (available Dec '08)	Centellis 1000 bundle w/chassis, AC PM, MCH-1021, PrAMC-6210, SpiderWareM <sup>3</sup> , filler panels, and MCH serial cable
Tested and Validated AMCs	
PRAMC-7210-1.5F-2G	Full-size Intel® Core™2 Duo 1.5 GHz processor AMC w/2GB DRAM
PRAMC-7210-1.5F-4G	Full-size Intel Core2 Duo 1.5 GHz processor AMC w/4GB DRAM
PRAMC-6210-1F-2G (available Dec '08)	Full-size Freescale Power Architecture MPC8641D dual-core 1GHz -rocessor AMC w/2GB DRAM
AMC-9210-F-1G-N (available Dec '08)	Full-size Cavium OCTEON CN5850 12-core 600MHz NSP MIPS64-based network processor AMC w/1 GB DRAM + 32MB RDRAM
AMC-S302-F-80G	Full-size 80GB Hard Disk Drive AMC
AMC-S602-F-80G	Full-size Dual 80GB Hard Disk Drive AMC
AMC-S502-F-32G (avail Feb '09)	Full-size 32GB SSD AMC
Software Components	
MTCA-SWM3-01	SpiderWareM <sup>3</sup> management software CD for MicroTCA
SA-BBS-WR2X-721X	PrAMC-721x, BBS binary rpms (R1.2), Eval kernel+runtime, PNE LE 2.x, CD
SA-BBS-721X	PRAMC-721X, BBS only, binary rpms (R1.2), CD
MTCA-BBS-MV-LIC-721X (available Dec '08)	PrAMC-721x, BBS binary rpms (R1.1), Eval kernel+runtime, MV CGE 4.0, license, CD
SA-BBS-MV4X-LIC-721X (available Dec '08)	PrAMC-721x, BBS binary rpms (R1.2), Eval kernel+runtime, MV CGE 4.x, license, CD
SA-BBS-WR2X-6210 (available Dec '08)	PrAMC-6210, BBS binary rpms (R1.2), Eval kernel+runtime, PNE LE 2.x, CD
SA-BBS-6210 (available Dec '08)	PrAMC-6210, BBS only, binary rpms (R1.2), CD
SA-BBS-WR2X-9210 (available Dec '08)	AMC-9210, BBS binary rpms (R1.2), Eval kernel+runtime, PNE LE 2.x, CD
SA-BBS-9210 (available Dec '08)	AMC-9210, BBS only, binary rpms (R1.2), CD

Ordering Information	
Part Number	Description
Additional/Spare Components	
MTCA-RM19-001	MicroTCA 19-inch rack mount brackets
MTCA-RM23-001	MicroTCA 23-inch rack mount brackets
MTCA-DCPM-600-001	MicroTCA DC power module
MTCA-ACPM-600-001	MicroTCA AC power module
MTCA-MCH-1011	L2 GB + FCLK, HCSL, NO-SSC, MicroTCA carrier hub, SA/SPARE
MTCA-MCH-1011-LC	L2 GB + FCLK, HCSL, NO-SSC, NO-TCLK, MicroTCA carrier hub, SA/SPARE
MTCA-MCH-1021	L2 GB + PCI-E SW + SSC, HCSL, MicroTCA carrier hub, SA/SPARE
MTCA-MCH-1021-LC	L2 GB + PCI-E SW + SSC, HCSL, NO-TCLK, MicroTCA carrier hub, SA/SPARE
MTCA-LCT-001-K	MicroTCA lower cable tray
5051R	AC power cable – North America
5052R	AC power cable – Australia/New Zealand
5053R	AC power cable – Denmark
5054R	AC power cable – EU Con
5056R	AC power cable – Italy
5057R	AC power cable – Switzerland/Norway
5058R	AC power cable – UK
5059R	AC power cable – Japan

## SOLUTION SERVICES

Emerson Network Power provides a portfolio of solution services optimized to meet your needs throughout the product lifecycle. Design services help speed time-to-market. Deployment services include global 24x7 technical support. Renewal services enable product longevity and technology refresh.

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- Connectivity
- DC Power
- Embedded Computing

- Embedded Power
- Infrastructure Management & Monitoring
- Outside Plant
- Power Switching & Controls

- Precision Cooling
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