AdvancedMC modules are the key to extending the value of AdvancedTCA platforms designed for multiple applications in the wireless / wireline network infrastructure.

As the ideal low-cost, high-capacity storage solution for open modular platforms, Kontron AM450x SATA modules are available in both Mid-Size and Full-Size, are easily managed via IPMI v1.5 and offer a storage capacity up to 120 GByte. Now available is the AM4501 SATA module with an extended temperature range.

Built in accordance to the AMC.0 R2.0 specification, AM450x modules are also AMC.3 R1.0 compliant, and features Native Command Queuing (NCQ) with up to 32 instructions to be queued and reordered. AM450x modules features a SATA switching port device which enables the system to interconnect AMC port 2 or 3 to SATA drive port 0, which can be set automatically by the MMC. This makes it possible to design redundant storage configurations for MicroTCA open modular platforms.

As a hot-swappable field replaceable unit (FRU), AM450x modules also follow the same stringent carrier grade RASM feature set, namely - Reliability, Availability, Serviceability, Maintainability. When offered in combination with AdvancedTCA platforms, TEM (Telecom Equipment Manufacturers) clients literally save valuable system slots.
AMC Everywhere
Kontron makes all of its AdvancedTCA platforms ‘AMC Everywhere’ enabled, offering support for AdvancedMC modules with its processor, hub and carrier AdvancedTCA products. This is a major factor in providing TEMs with unprecedented flexibility in the design of new, IMS/FMC-based applications, as well as increase economies of scale by freeing up valuable AdvancedTCA system slots for other payload blades.

AdvancedMC modules are the smallest Field Replaceable Units (FRU) on the market that are hot swappable and support the RASM concept of “Reliability, Availability, Serviceability, and Maintainability”.

Ultimately for Service Providers and Carriers, this translates into a significantly lower OPEX with easy upgrades in the field, reduced risk for the introduction of new subscriber services, and the ability to expand networks.

Sample of complementary Kontron AdvancedTCA platform elements

* Kontron AT8020 Processor Board - Mid-Size
  - Dual Intel® Dual-Core Xeon®
  - Support for up to 16GB SDRAM
  - 2 X Mid-size AdvancedMC bays
  - Dual Dual-Gigabit on Fabric
  - SAS interface available

* Kontron AT8904 10GB Fabric Hub - Mid-Size
  - 10GBe service to redundant Hub Board
  - 10GBe service to payload slots 2-15
  - 1x 1000Base-T uplink on front panel
  - Non-blocking Layer 2 switching with VLANs

* Kontron AT8030 Processor Board - Mid-Size
  - Triple Intel® Core™2 Duo
  - Dedicated SDRAM memory per CPU core
  - 10 GBe on the fabric
  - 1 X Mid-Size AdvancedMC bay

* Kontron AT8402 AMC Carrier - Mid-Size
  - PICMG 3.0/3.1-compliant base / fabric carrier
  - PCI-Express and SAS/SATA infrastructures.
  - AMC.0 Rev 2.0 clocking support
  - Increased Ethernet Controller performance
  - PCI-Express and Gigabit Ethernet switching

Technical Information

<table>
<thead>
<tr>
<th>Hard Disk Features</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage capacity:</td>
<td>60 GB or 120 GB (AM4500)  80 GB (AM4501)</td>
</tr>
<tr>
<td>Seek time Track to Track:</td>
<td>1.0 ms typ. (read), 1.5 ms typ. (write)</td>
</tr>
<tr>
<td>Average seek (random):</td>
<td>11 ms typ. (read), 13 ms typ. (write) (AM4500)  13 ms typ. (read), 14 ms typ. (write) (AM4501)</td>
</tr>
<tr>
<td>Average latency:</td>
<td>5.6 ms</td>
</tr>
<tr>
<td>Rotational speed:</td>
<td>5 400 RPM</td>
</tr>
<tr>
<td>Data transfer to/from host:</td>
<td>150 MB/s</td>
</tr>
<tr>
<td>Interface:</td>
<td>SATA</td>
</tr>
<tr>
<td>Buffer size:</td>
<td>8MB</td>
</tr>
</tbody>
</table>

Compliance
- AMC.0 R2.0
- AMC.3 R1.0

OS Compatibility
Red Hat Linux Enterprise 4

IPMI Features
- Management Controller compliant to PICMG 3.0, AMC.0 and IPMI v1.5 rev 1.1.
- Management Controller is run time field reprogrammable without payload impact.
- Robust fail safe reprogrammation implementation (which includes two firmware images) that could perform automatic or manual rollback if a problem occurs during critical reprogrammation phase.
- Remote upgrade capability from all IPMI interfaces (via IPMB)
- Management Controller self test which can detect failure under its code integrity and trig an automatic rollback.

Supervisory
- Hardware system monitor through IPMI (voltage, currents, temperature), temperature monitor / alarm; board temperature sensor, power failure.

Mechanical
- 181.5 x 75 x 30.16 mm, single-Width Full-Size
- 181.5 x 75 x 18.96 mm, single-Width Mid-Size
- Weight: 350 g

Power Requirements
- Management power is less than 150 mA peak at 3.3V
- Payload power is 16W

Environmental

<table>
<thead>
<tr>
<th>Temperature*:</th>
<th>Operating</th>
<th>Storage and Transit</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 to 40 °C / 41 to 104°F (AM4500)  0 to 55 °C / 32 to 131°F (AM4501)</td>
<td>-40 to 65°C / -40 to 140°F</td>
<td></td>
</tr>
<tr>
<td>5% to 90% (55°C / 113°F non-condensing</td>
<td>5% to 95% @40°C / 104°F non-condensing</td>
<td></td>
</tr>
<tr>
<td>Altitude*:</td>
<td>4 000m / 13,123 ft  15 000m / 49,212 ft</td>
<td></td>
</tr>
<tr>
<td>Shock*:</td>
<td>30G, half-sine 1ms each axis</td>
<td></td>
</tr>
<tr>
<td>Vibration*:</td>
<td>5-500Hz, 16, each axis</td>
<td></td>
</tr>
<tr>
<td>Airflow:</td>
<td>TBD</td>
<td></td>
</tr>
<tr>
<td>* Designed to meet or exceed.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Reliability
MTBF: > 970,000 hours @ 40°C / 104°F (Telcordia SR-332, Issue1, No Hard Disk)

Safety / EMC
- Designed to meet or exceed:
  - Safety: UL60950 3rd Ed.; CSA C22.2 Ho 60950-00; EN 60950:2000; IEC60950-1
  - EMI/EMC: FCC 47 CFR Part 15, Class B; CE Mark to EN55022/EN55024

Warranty
- Two years limited warranty

Corporate Offices

Europe, Middle East & Africa
Kontron AG
Oskar-von-Miller-Straße 1
85386 Eching/Munich - Germany
Tel.: +49 (0)8165 77 0
Fax: +49 (0)8165 77 279
sales@kontron.com

North America
Kontron America
Corporate Office
14118 Stowe Dr
Poway, CA 92064-7147
Tel.: (858) 677-0877
Fax: (858) 677-0898
sales@us.kontron.com

Asia Pacific
Kontron America
Asia Pacific
4F, No. 415, Ti-Ding Blvd., Sec.2, NeiHu District
Taipei, Taiwan 114
Tel. +886-2-2799-7399
Fax +886-2-2799-7399

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