» User Guide «

AM5500

Double, Mid-Size AMC
Dual 2.5" SATA Storage Carrier

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Environmental Protection Statement

This product has been manufactured to satisfy environmental protection requirements where possible. Many of the components used (structural parts, printed circuit boards, connectors, batteries, etc.) are capable of being recycled.

Final disposition of this product after its service life must be accomplished in accordance with applicable country, state, or local laws or regulations.

Explanation of Symbols



Caution, Electric Shock!

This symbol and title warn of hazards due to electrical shocks (> 60V) when touching products or parts of them. Failure to observe the precautions indicated and/or prescribed by the law may endanger your life/health and/or result in damage to your material.

Please refer also to the section “High Voltage Safety Instructions” on the following page.



Warning, ESD Sensitive Device!

This symbol and title inform that electronic boards and their components are sensitive to static electricity. Therefore, care must be taken during all handling operations and inspections of this product, in order to ensure product integrity at all times.

Please read also the section “Special Handling and Unpacking Instructions” on the following page.



Warning!

This symbol and title emphasize points which, if not fully understood and taken into consideration by the reader, may endanger your health and/or result in damage to your material.



Note ...

This symbol and title emphasize aspects the reader should read through carefully for his or her own advantage.

For Your Safety

Your new Kontron product was developed and tested carefully to provide all features necessary to ensure its compliance with electrical safety requirements. It was also designed for a long fault-free life. However, the life expectancy of your product can be drastically reduced by improper treatment during unpacking and installation. Therefore, in the interest of your own safety and of the correct operation of your new Kontron product, you are requested to conform with the following guidelines.

High Voltage Safety Instructions



Warning!

All operations on this device must be carried out by sufficiently skilled personnel only.



Caution, Electric Shock!

Serious electrical shock hazards may exist during installation, repair and maintenance operations with this product, for example when connecting or disconnecting external cabling with external voltages applied. Therefore, the system integrator is responsible for ensuring that no shock hazards exist during all operations.

Special Handling and Unpacking Instructions



ESD Sensitive Device!

Electronic boards and their components are sensitive to static electricity. Therefore, care must be taken during all handling operations and inspections of this product, in order to ensure product integrity at all times.

Warning!



This product has gold conductive fingers which are susceptible to contamination. Take care not to touch the gold conductive fingers of the AMC Card-edge connector when handling the board.

Failure to comply with the instruction above may cause damage to the board or result in improper system operation.

Do not handle this product out of its protective enclosure while it is not used for operational purposes unless it is otherwise protected.

Whenever possible, unpack or pack this product only at EOS/ESD safe work stations. Where a safe work station is not guaranteed, it is important for the user to be electrically discharged before touching the product with his/her hands or tools. This is most easily done by touching a metal part of your system housing.

It is particularly important to observe standard anti-static precautions when changing piggybacks, ROM devices, jumper settings etc. If the product contains batteries for RTC or memory backup, ensure that the board is not placed on conductive surfaces, including anti-static plastics or sponges. They can cause short circuits and damage the batteries or conductive circuits on the board.

General Instructions on Usage

In order to maintain Kontron's product warranty, this product must not be altered or modified in any way. Changes or modifications to the device, which are not explicitly approved by Kontron and described in this manual or received from Kontron's Technical Support as a special handling instruction, will void your warranty.

This device should only be installed in or connected to systems that fulfill all necessary technical and specific environmental requirements. This applies also to the operational temperature range of the specific board version, which must not be exceeded. If batteries are present, their temperature restrictions must be taken into account.

In performing all necessary installation and application operations, please follow only the instructions supplied by the present manual.

Keep all the original packaging material for future storage or warranty shipments. If it is necessary to store or ship the board, please re-pack it as nearly as possible in the manner in which it was delivered.

Special care is necessary when handling or unpacking the product. Please consult the special handling and unpacking instruction on the previous page of this manual.

Two Year Warranty

Kontron grants the original purchaser of Kontron's products a ***TWO YEAR LIMITED HARDWARE WARRANTY*** as described in the following. However, no other warranties that may be granted or implied by anyone on behalf of Kontron are valid unless the consumer has the express written consent of Kontron.

Kontron warrants their own products, excluding software, to be free from manufacturing and material defects for a period of 24 consecutive months from the date of purchase. This warranty is not transferable nor extendible to cover any other users or long-term storage of the product. It does not cover products which have been modified, altered or repaired by any other party than Kontron or their authorized agents. Furthermore, any product which has been, or is suspected of being damaged as a result of negligence, improper use, incorrect handling, servicing or maintenance, or which has been damaged as a result of excessive current/voltage or temperature, or which has had its serial number(s), any other markings or parts thereof altered, defaced or removed will also be excluded from this warranty.

If the customer's eligibility for warranty has not been voided, in the event of any claim, he may return the product at the earliest possible convenience to the original place of purchase, together with a copy of the original document of purchase, a full description of the application the product is used on and a description of the defect. Pack the product in such a way as to ensure safe transportation (see our safety instructions).

Kontron provides for repair or replacement of any part, assembly or sub-assembly at their own discretion, or to refund the original cost of purchase, if appropriate. In the event of repair, refunding or replacement of any part, the ownership of the removed or replaced parts reverts to Kontron, and the remaining part of the original guarantee, or any new guarantee to cover the repaired or replaced items, will be transferred to cover the new or repaired items. Any extensions to the original guarantee are considered gestures of goodwill, and will be defined in the "Repair Report" issued by Kontron with the repaired or replaced item.

Kontron will not accept liability for any further claims resulting directly or indirectly from any warranty claim, other than the above specified repair, replacement or refunding. In particular, all claims for damage to any system or process in which the product was employed, or any loss incurred as a result of the product not functioning at any given time, are excluded. The extent of Kontron liability to the customer shall not exceed the original purchase price of the item for which the claim exists.

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Please remember that no Kontron employee, dealer or agent is authorized to make any modification or addition to the above specified terms, either verbally or in any other form, written or electronically transmitted, without the company's consent.

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Chapter 1

Introduction

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1. Introduction

1.1 Board Overview

The AM5500 is a dual 2.5” SATA storage carrier implemented as a Double, Mid-size AMC module. There are two front panel versions that may be used with the AM5500, a standard front panel and a front panel with retaining screws for mounting the module to the chassis.

The AM5500 has full hot swap capability, which enables the board to be replaced, monitored and controlled without having to shut down the AMC-supporting carrier or the MicroTCA system. A dedicated Module Management Controller (MMC) is used to manage the board and support a defined subset of Intelligent Platform Management Interface (IPMI) commands and PICMG (ATCA/AMC) command extensions, which enables operators to detect and eliminate faults faster at module level. This includes monitoring onboard temperature conditions, board voltages, managing hot swap operations, etc. All in all, IPMI enhances the board’s availability and reliability while reducing the operating costs and the mean-time-to-repair.

The AM5500 operates with the Advanced Telecommunications Computing Architecture (AdvancedTCA® or ATCA) and the Micro Telecommunications Computing Architecture (MicroTCA or µTCA) defined by the *PCI Industrial Computer Manufacturers Group (PICMG).*

1.2 System Relevant Information

The following system relevant information is general in nature but should still be considered when developing applications using the AM5500.

Table 1-1: System Relevant Information

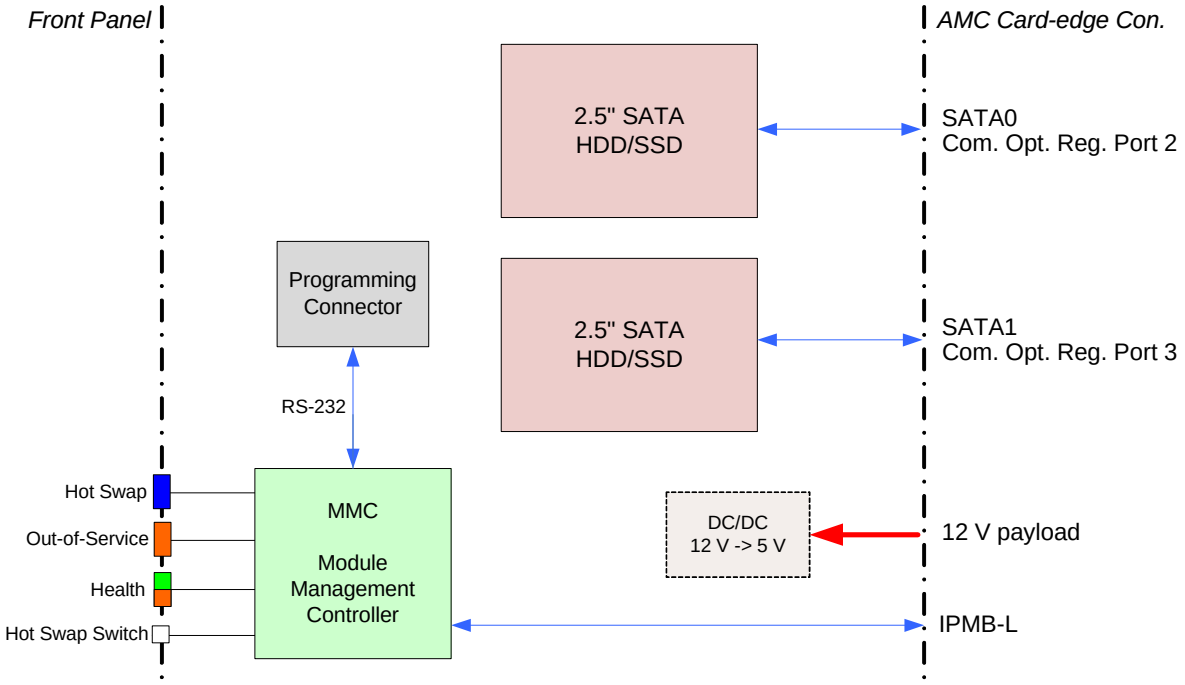
SUBJECT	INFORMATION
Hardware Requirements	The AM5500 can be installed on any AMC-supporting carrier board (with mechanical restrictions) or MicroTCA backplane with the following AMC Card-edge connector port mapping: • Common Options Region ports 2-3 • Two Serial ATA ports

1.3 Board Diagrams

The following diagrams provide additional information concerning board functionality and component layout.

1.3.1 Functional Block Diagram

Figure 1-1: AM5500 Functional Block Diagram



1.3.2 Front Panel

Figure 1-2: AM5500 Front Panel Versions



Standard Front Panel

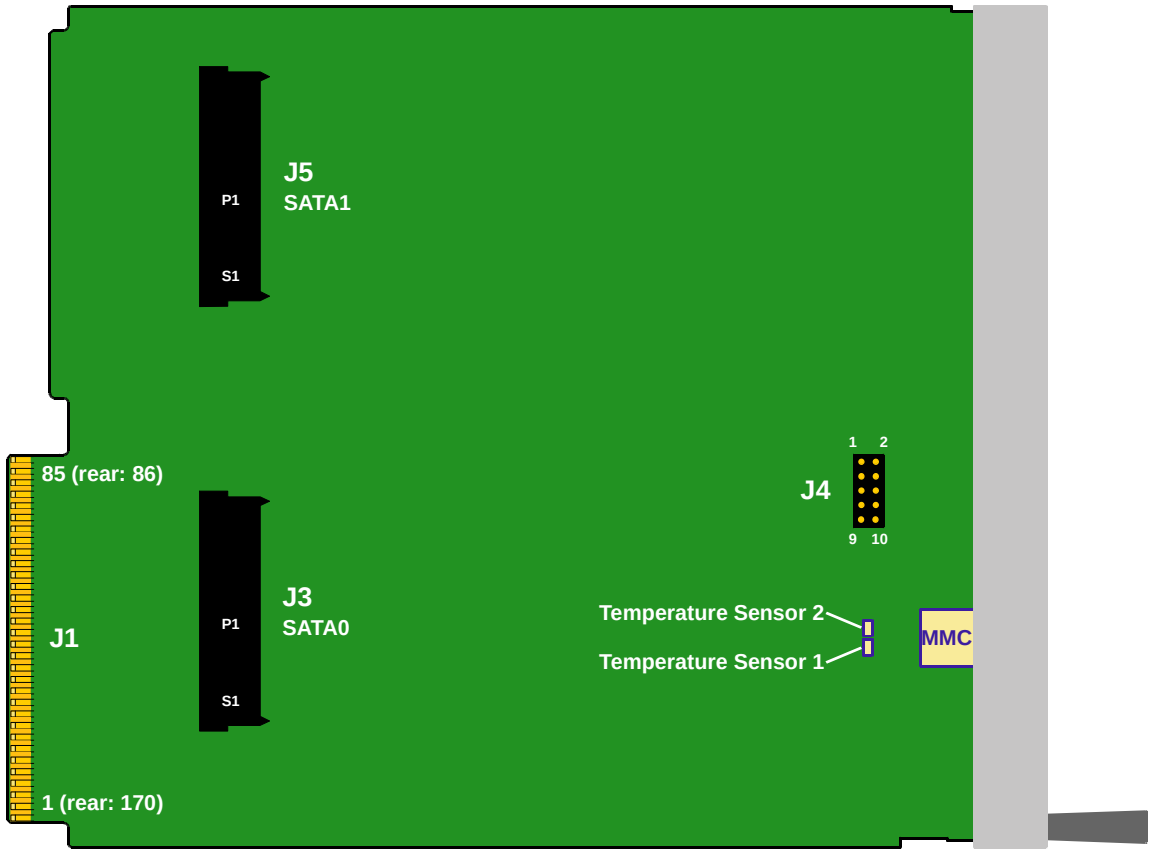
Front Panel with Retaining Screws

Module Management LEDs

- LED1 (red): Out-of-Service LED
- LED2 (red/green/amber): Health LED
- HS LED (blue): The hot swap indicator provides basic feedback to the user on the hot swap state of the module. The HS LED states are *off*, *short blink*, *long blink*, and *on*.

1.3.3 Board Layout

Figure 1-3: AM5500 Board Layout (Top View)



1.4 Technical Specification

Table 1-2: AM5500 Main Specifications

FEATURES		SPECIFICATIONS
AMC Inter-connection	Serial ATA	Common Options Region ports 2-3 • Two Serial ATA ports
Connectors	Onboard Connectors	• Two 22-pin SATA connectors, J3 and J5 • One 10-pin programming connector, J4, (RS-232 serial port)
	AMC Card-edge Connector	• One 170-pin AMC Card-edge connector
LEDs	Module Management LEDs	• LED1 (red): Out-of-Service LED • LED2 (red/green/amber): Health LED • HS LED (blue): Hot Swap LED
IPMI	Module Management Controller	• The MMC carries out IPMI commands such as monitoring onboard temperature conditions, board voltages and the power supply status, and managing hot swap operations. • The MMC is accessible via a local IPMB (IPMB-L).
	Hot Swap	The AM5500 has full hot swap capability.
	Thermal Management	Two board temperature sensors
General	Power Consumption	Management power: approx. 0.3 W Payload power: approx. 0.5 W (without HDD/SSD device)
	Temperature Range	Operational: -5 °C to +75 °C Storage: -40 °C to +70 °C  ***Note ...*** When SATA HDDs/SSDs are installed, refer to their operational specifications as this will influence the operational and storage temperature of the AM5500.
	Mechanical	Double, Mid-size AMC form factor
	Dimensions	181.5 mm x 147.0 mm x 18.96 mm
	Board Weight	140 grams (without HDD/SSD)
Software	Software IPMI	Module Management Controller Firmware providing the following features: • Board supervision • The MMC is accessible via IPMB-L • The MMC Firmware can be updated in the field

1.5 Standards

This *Kontron* AMC board complies with the requirements of the following standards.

Table 1-3: Standards

COMPLIANCE	TYPE	STANDARD	REMARKS
CE	Emission	EN55022 EN61000-6-3 EN300386	--
	Immission	EN55024 EN61000-6-2 EN300386	--
	Electrical Safety	EN60950-1	--
Mechanical	Mechanical Dimensions	IEEE 1101.10	--
Environmental and Health Aspects	Vibration (sinusoidal)	TBD	--
	Vibration (sinusoidal, transportation)	TBD	--
	Shock (operating)	TBD	--
	Climatic Humidity	IEC60068-2-78	93% RH at 40°C, non-condensing
	WEEE	Directive 2002/96/EC	Waste electrical and electronic equipment
	RoHS	Directive 2002/95/EC	Restriction of the use of certain hazardous substances in electrical and electronic equipment



Note ...

For information relating to shock and vibration standards for the HDD/SSD devices, refer to the respective manufacturer's specification.



Note ...

Kontron performs comprehensive environmental testing of its products in accordance with applicable standards.

Customers desiring to perform further environmental testing of Kontron products must contact Kontron for assistance prior to performing any such testing. This is necessary, as it is possible that environmental testing can be destructive when not performed in accordance with the applicable specifications.

In particular, for example, boards **without conformal coating** must not be exposed to a change of temperature exceeding 1K/minute, averaged over a period of not more than five minutes. Otherwise, condensation may cause irreversible damage, especially when the board is powered up again.

Kontron does not accept any responsibility for damage to products resulting from destructive environmental testing.

1.6 Related Publications

The following publications contain information relating to this product.

Table 1-4: Related Publications

PRODUCT	PUBLICATION
ATCA	PICMG® 3.0 AdvancedTCA Base Specification R2.0, March 18, 2005
MicroTCA	PICMG® MTCA.0 Micro Telecommunications Computing Architecture R1.0, July 6, 2006 PICMG® MTCA.1 Air-Cooled Rugged MicroTCA Specification R1.0, March 19, 2009
AMC	PICMG® AMC.0, Advanced Mezzanine Card Specification R2.0 PICMG® AMC.3, Storage Interfaces R1.0
IPMI	IPMI - Intelligent Platform Management Interface Specification, v1.5 Document Revision 1.1, February 20, 2002 IPMI - Platform Management FRU Information Storage Definition, V1.0 Document Revision 1.1, September 27, 1999

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