# MRT522

## MTCA.4 RTM for AMC522

MRT522

## Key Features

- Double module, mid-size (full-size optional)
- Two analog outputs from AMC522's DACs via SSMC connectors
- Eight analog inputs (AC or DC coupled) via SSMC connectors feeding on-board ADCs via programmable gain amplifiers JTAG interface port
- Clocks and Trigger In/Out accessible via Mini-display Port connectors
- IPMI v2.0 compliant

## Benefits

- Full ecosystem of MicroTCA.4 AMCs, PMs, MCH, RTMs, chassis, and application-ready systems.
- Design utilizes proven VadaTech subcomponents and engineering techniques
- Full system supply from industry leader
- AS9100 and ISO9001 certified company

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# MRT522

The MRT522 is a Rear Transition Module (RTM) for VadaTech's AMC522, with the card pair offering 8-channel ADC and 2-channel DAC. The board uses SSMC connectors for the analog input and output interface. Mini-display Port connectors are used for the Clock and Trigger In/Out.

Each of the MRT522 channels are routed to the front module (AMC522). The AC or DC input for each ADC channel is individually programmable. Further, each ADC channel has an individually programmable gain selection for +/-1 V, +/-2 V, +/-5 V or +/-10 V. Each DAC output is nominally 0-1 V, with programmable gain in 0.25 dB steps. Each analog input channel is user-selectable (50Ω or 1 MΩ input impedance) via a jumper.

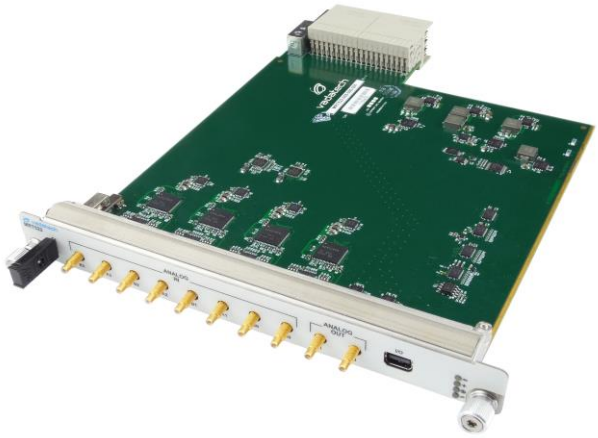

*Figure 1: MRT522*

# Block Diagram

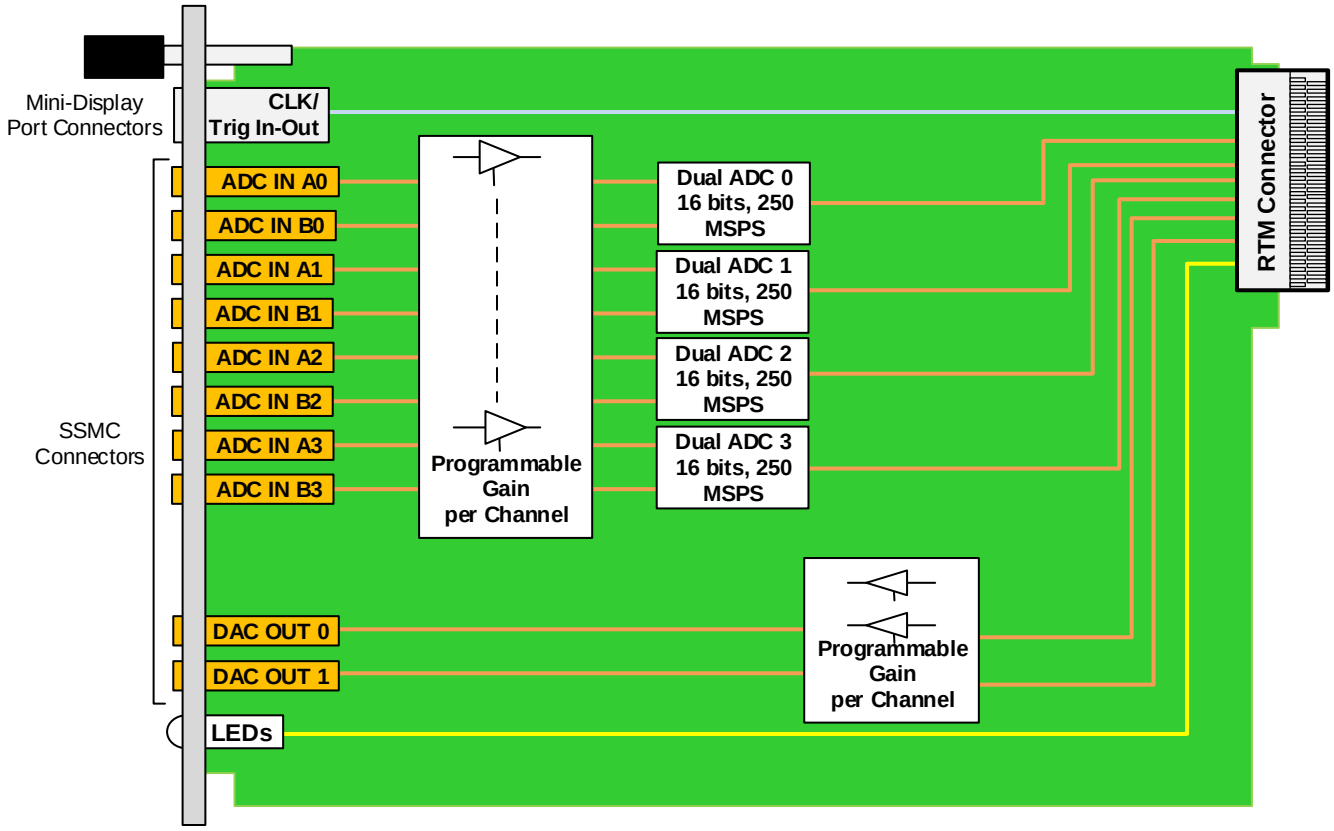


*Figure 2: MRT522*

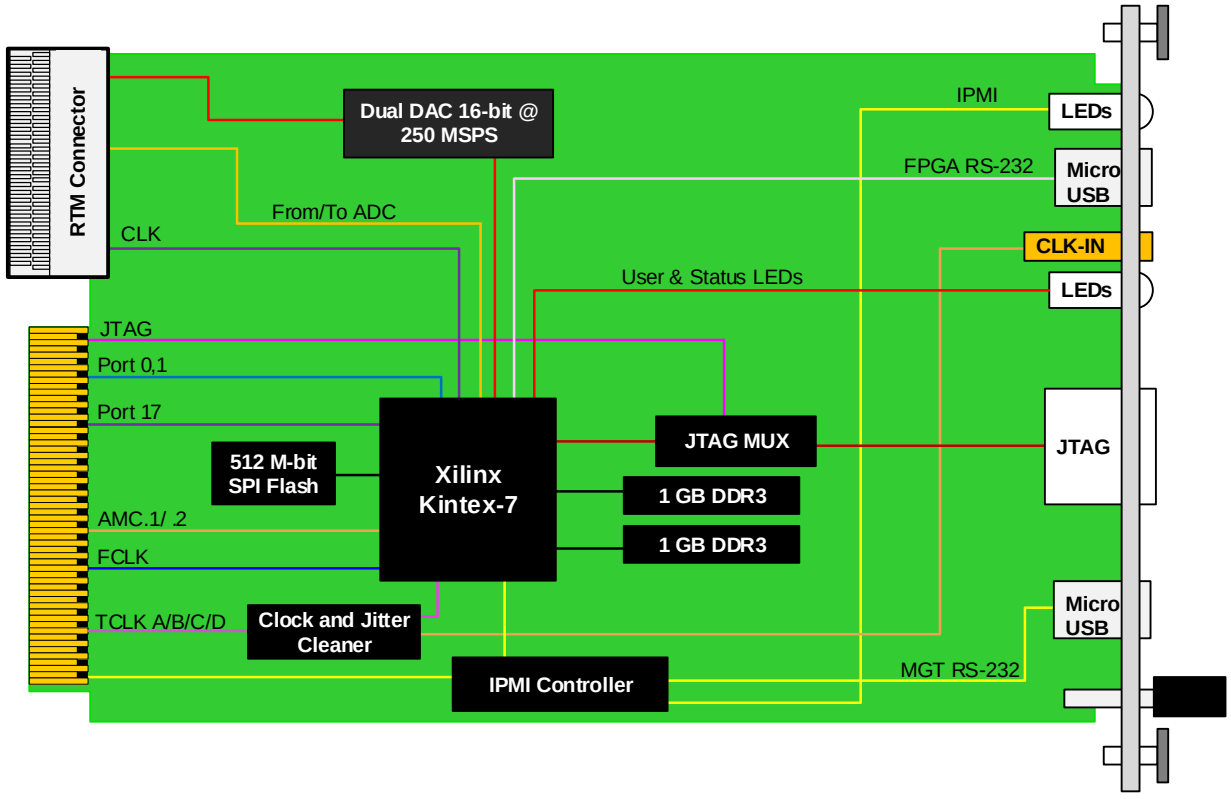


*Figure 3: AMC522 (Sold Separately)*

# Data Acquisition

VadaTech offers a wide range of FPGA AMCs, RTMs, FMC Carriers and FMCs that can be combined to build a Data Acquisition (DAQ) sub-system. The DAQ Series software, when used with a supported hardware configuration, provides all that is needed to configure the system, acquire data and transfer it to a host processor. It also includes a user-configurable Graphical User Interface Figure 4, which incorporates real-time display of acquired data. The host can be within the MTCA system or, via PCI113 or PCI123, in a separate PC. Full documentation is provided to allow users to customize system behavior or develop their own application on the AMC/FMC hardware.

The DAQ includes data acquisition software that allows users to get up and running quickly and easily, while providing a high level of performance and allowing the user to extend functionality by adding their own FPGA code. Please contact VadaTech sales for the latest information on supported combinations of VadaTech hardware. (Note that the DAQ Series software is not currently supported for 3rd party hardware).

Components provided in the DAQ software include:

- System libraries to configure clocking and triggers
- Sequencer to configure the acquisition (duration, start, stop)
- High-performance DMA firmware for acquiring ADC outputs and transferring to host processor
- Linux driver for host processor (e.g. AMC72x)
- EPICS channel access client API
- Pre-configured GUI (based on Qt Creator)

This software set allows the user to acquire, transfer and display data without the need for any user programming of the hardware. Status information is included in the GUI display, to ease integration and debugging activity.

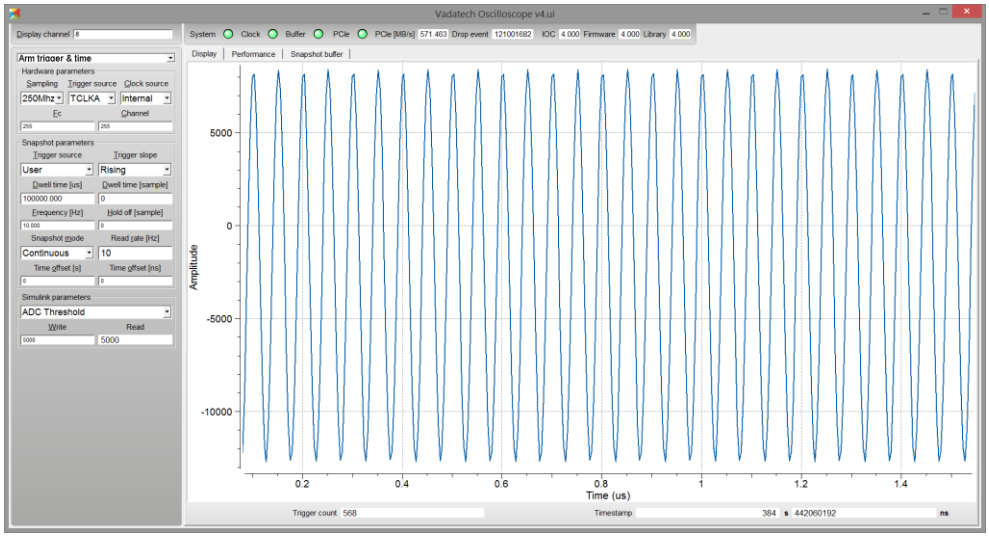


*Figure 4: Typical Graphic User Interface Display*

The data acquisition software provided as part of the DAQ can be used as-delivered without the user needing to develop any FPGA code.

Full source code is provided for the libraries, sequencer, DMA, Linux driver and GUI, allowing users to easily customize or brand to their own requirements at the exception of a low level PCIe IP from Xilinx provided only as Netlist (this low level block doesn't require modification/customization from integrators or end-users).

# Specifications

| | | |
|---|---|---|
| **Architecture** | | |
| **Physical** | **Dimensions** | Double module, mid-size with full-size option |
| | | Width: 5.85” (148.5 mm) |
| | | Depth: 7.18” (182.6 mm) |
| **Type** | **AMC RTM** | 8 analog inputs and 2 analog outputs |
| | | Clocks and Trig In/Out via Mini-display connectors |
| **Standards** | | |
| **MTCA** | **Type** | MTCA.4 RTM |
| **Module Management** | **IPMI** | IPMI v2.0 |
| **Configuration** | | |
| **Power** | **MRT522** | TBD, application specific |
| **Environmental** | **Temperature** | See ordering options and environmental spec sheet |
| | | Storage Temperature: –40° to +85°C |
| | **Vibration** | 1 G, 5 to 500 Hz on each axis |
| | **Shock** | 30 Gs each axis |
| | **Relative Humidity** | 5 to 95% non-condensing |
| **Front Panel** | **Interface Connectors** | 10 SSMC connectors (8 input, 2 output) |
| | | 2 Mini-display Port connectors |
| | **LEDs** | IPMI Management Control |
| | **Mechanical** | Hot swap ejector handle |
| **Other** | | |
| **MTBF** | MIL Hand book 217-F@ TBD hrs | |
| **Certifications** | Designed to meet FCC, CE and UL certifications, where applicable | |
| **Standards** | VadaTech is certified to both the ISO9001:2000 and AS9100B:2004 standards | |
| **Warranty** | Two (2) years | |

### INTEGRATION SERVICES AND APPLICATION-READY PLATFORMS

VadaTech has a full ecosystem of OpenVPX, ATCA and MTCA products including chassis platforms, shelf managers, AMC modules, Switch and Payload Boards, Rear Transition Modules (RTMs), Power Modules, and more. The company also offers integration services as well as pre-configured Application-Ready Platforms. Please contact VadaTech Sales for more information.

# Ordering Options

### MRT522 – A0C-000-00J

| A = AC/DC Coupling | | |
|---|---|---|
| 0 = DC Coupling<br>1 = AC Coupling (min order qty required) | | |
| | | |
| | | |
| **C = Front Panel Size** | | **J = Temperature Range and Coating*** |
| 1 = Reserved<br>2 = Reserved<br>3 = Reserved<br>4 = Reserved<br>5 = Mid-size, MTCA.4 (captive screws)<br>6 = Full-size, MTCA.4 (captive screws) | | 0 = Commercial (–5° to +55°C), No coating<br>1 = Commercial (–5° to +55°C), Humiseal 1A33 Polyurethane<br>2 = Commercial (–5° to +55°C), Humiseal 1B31 Acrylic<br>3 = Industrial (–20° to +70°C), No coating<br>4 = Industrial (–20° to +70°C), Humiseal 1A33 Polyurethane<br>5 = Industrial (–20° to +70°C), Humiseal 1B31 Acrylic<br>6 = Extended (–40° to +85°C), Humiseal 1A33 Polyurethane*<br>7 = Extended (–40° to +85°C), Humiseal 1B31 Acrylic* |

Notes: *Edge of module for conduction cooled boards, consult factory for availability

# Related Products

AMC522

- Dual channel MAX5878 DAC with 250 MSPS @16-bit resolution
- Compliant to MTCA.4, double module, mid-size (full-size optional) with rear I/O
- Xilinx Kintex-7 FPGA

VT811

- MTCA System Platform (with handles)
- Full redundancy with dual MTCA Carrier Hub (MCH), dual Cooling Units and quad Power Modules
- Up to twelve AMCs. 12 front mid-size double module slots and RTM slots

UTC018

- Double-module, 12 HP height module per AMC.0
- Universal AC input (85 to 265 V), 1000 W
- Provides power up to 12 AMCs, 2 MCHs and Cooling Units

# Contact

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