

AMC Dual  
 High Pin Count (HPC)  
 FMC Carrier Board



## DAMC-FMC25

- The DAMC-FMC25 is a full-size standard AMC board designed to host up to two High Pin Count (HPC) FMC mezzanine cards
- On-board Virtex-5 FPGA and Spartan-6 FPGA provided with DDR2 RAM memories
- Designed as MTCA.4 carrier, the DAMC-FMC25 provides management of Rear Transition Module (RTM) boards via fast links

### FEATURES

- Double-width AMC board
- MTCA.4 carrier
- Two HPC FMC Mezzanine slots
- Data processing on Virtex-5 FPGA
- Board Management on Spartan-6 FPGA
- uRTM D1.1 connectivity
- PCI-e (x4) communication on AMC
- Four low-latency links on AMC
- RocketIO channels to FMCs and to RTM
- 256 MB (on Virtex-5) and 128 MB (on Spartan-6) DDR2 Memories
- MicroSD Card Slot
- Dual SPI memories for each FPGA and I2C EEPROM
- External Clock input on front panel

### APPLICATIONS

- AMC carrier board for HPC/LPC FMC
- Research & Development
- Accelerator Controls
- Automation Industry
- Telecommunications

**DAMC-FMC25.** The DAMC-FMC25 is a general-purpose carrier board with the ability to host two FPGA Mezzanine Cards (FMC) with High Pin Count (HPC) connectors. The AMC board is designed as a double-width mid-size MTCA.4 carrier.

A Virtex-5 FPGA allows to perform high demanding computations with a high data throughput between FMCs, uRTM and PCI express on the MTCA backplane.

Standard version of the board mounts a Virtex-5 XC5VFX70T (1136-pin) and a Spartan XC6SLX45T (484-pin) FPGAs provided respectively with 256 MB and 128 MB DDR2 memories.

The local DDR2 memories can be used in order to store data that cannot or does not need to be

sent via PCI-e during acquisition. The module management is performed by a ATxmega128A1\_AU controller directly interfaced to the AMC backplane with an I2C bus connection.





Fast links to both FMC slots - i.e. 77 differential pairs and 2 GTX @ 6.5 Gbps on each one - allow to install high performance and high density FPGA Mezzanine Cards - e.g. fast and/or high resolution digitizers or fast links.

Fast links are also dedicated to the MTCA.4 standard use of the board with 42 differential pairs and 2 GTX @ 6.5 Gbps to the uRTM Zone-3 connector.

AMC backplane connections available are Low-Latency Links (4 lanes), PCI-e 1.0 (4 lanes) and MLVDS (4 lanes).

#### About Us

CAEN ELS is a leading company in the design of power supplies and state-of-the-art complete electronic systems for the Physics research world, having its main focus on dedicated solutions for the particle accelerator community and high-end industrial applications.

-  Power Supply Systems
-  Precision Current Measurements
-  Beamline Electronics Instrumentation
-  FMC and MicroTCA

#### CAEN ELS s.r.l.

SS14 km 163.5 in Area Science Park  
 34149 - loc. Basovizza - Trieste (TS)  
 Italy

Registered Office:  
 via Vetraria 11  
 55049 - Viareggio (LU)  
 Italy

info@caenels.com  
 www.caenels.com

#### Technical Specifications

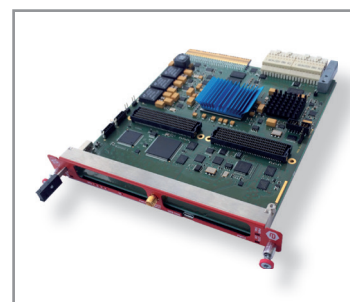
#### DAMC-FMC25

<b>Board Size</b>	Double-Width - Mid-Size
<b>Standard</b>	MicroTCA.4: AMC.0, AMC.1 Module Management: IPMI Version 1.5, MMC V1.0
<b>Compatibility</b>	Zone 3 Classification: Class D1.0 AMC Backplane Support: Full
<b>FMC Carrier</b>	2 x High Pin Count (HPC) - VITA 57.1
<b>FPGAs</b>	Xilinx Virtex-5: XC5VFX70T-2FFG1136C Xilinx Spartan-6: XC6SLX45T-3FGG484C
<b>RAM Memories</b>	256 MB DDR2 for Virtex-5 128 MB for Spartan-6
<b>Storage</b>	Virtex-5 Firmware: 2 x SPI Flash Spartan-6 Firmware: 2 x SPI Flash Identification Data: 1 x I2C EEPROM Mass Storage: 1 x MicroSD Card Slot
<b>MMC Device</b>	ATxmega128A1-AU
<b>FMC Connections</b>	FMC1: 77 differential pairs, 2 GTX (up to 6.5 Gbps) FMC2: 77 differential pairs, 2 GTX (up to 6.5 Gbps)
<b>RTM Connections</b>	42 differential pairs, 2 GTX (up to 6.5 Gbps)
<b>Clock</b>	External Input (SMA connector) FMC1, FMC2 RTM AMC (TCLKA, TCLKB) On-board generator (10 - 280 MHz)
<b>Backplane Links</b>	Low Latency Links: 4 lanes, AMC ports 12-15, up to 6.5 Gbps PCI-e: 4 lanes, AMC ports 4-7, PCI-e gen. 2 MLVDS: 4 lanes, AMC ports 17-20
<b>Front Panel</b>	2 x FMC 1 x SMA, single-ended, 50 $\Omega$ , AC Micro USB (FPGA and MMC) for Debug
<b>Operating Temperature</b>	0 ... 50 °C



Designed and Licensed  
 by **DESY**

**Deutsches Elektronen-Synchrotron**  
 Ein Forschungszentrum der Helmholtz-Gemeinschaft



**DAMC-FMC25 Carrier Board**

#### Ordering Codes

Ordering Code	Acronym	Description
<b>DAMCFMC252XA</b>	<b>DAMC-FMC25-2</b>	<b>Dual HPC (High Pin Count) AMC Carrier Board - MTCA.4 - "2" Speed Grade Virtex-5, 6.5 Gbps Transceivers</b>
<b>DAMCFMC25C1A</b>	<b>DAMC-FMC25-C1</b>	<b>Dual HPC (High Pin Count) AMC Carrier Board - MTCA.4 - XC5VFX100T-2FF1136C - Virtex-5</b>