



**AMC Cost-efficient FMC  
(HPC + LPC) Carrier  
Board with MTCA.4 Rear I/O**



## DAMC-FMC20

- The DAMC-FMC20 is a full-size standard AMC board designed to host up to one High Pin Count (HPC) and one Low Pin Count (LPC) FMC mezzanine cards
  - On-board Spartan-6 FPGAs provided with DDR2 RAM memories
  - Designed as MTCA.4 carrier, the DAMC-FMC20 provides management of Rear Transition Module (RTM) boards via fast links

### FEATURES

- Double-width AMC board
- MTCA.4 carrier
- One HPC and one LPC FMC Mezzanine slots
- Data processing on Spartan-6 FPGA
- Board Management on Spartan-6 FPGA
- uRTM D1.1 connectivity
- PCI-e (x4) communication on AMC
- Four low-latency links on AMC
- 128 MB DDR2 Memories
- Dual SPI memories for each FPGA and I2C EEPROM

### APPLICATIONS

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

**DAMC-FMC20.** The DAMC-FMC20 is designed as a double width mid-size MTCA.4 carrier. This carrier board is a general-purpose solution with the ability to host two FPGA Mezzanine Cards (FMC), one with High Pin Count (HPC) and one with Low Pin Count (LPC).

The DAMC-FMC20 is a cost-efficient FPGA mezzanine card (FMC) carrier designed according to MTCA.4 and equipped with two Spartan-6 FPGAs.

One FPGA allows serial high-speed communication (PCIe, RTM, Backplane, FMCs) while the other one allows implementing large signal processing algorithms.

In addition to providing one PCIe link AMC.1 type 1 compliant, the DAMC-FMC20 is reconfigurable

over PCIe and MMC.

Fast links to both FMC slots (the board supports one serial GTP link for the HPC FMC and up to two serial communication links for the LPC FMC) allow to install high performance and high density FPGA Mezzanine Cards - e.g. fast and/or high resolution digitizers or fast links.

A micro USB port is accessible from the front of the board for debugging purposes while an extra 12V power connector for high current FMC applications is also present on the board.

Backplane is reached via the AMC ports 12-15 that are connected via a dedicated cross-point switch directly to the FPGA exploiting GTP links (that also allow the communication to the LPC FMC from this cross point).

### 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

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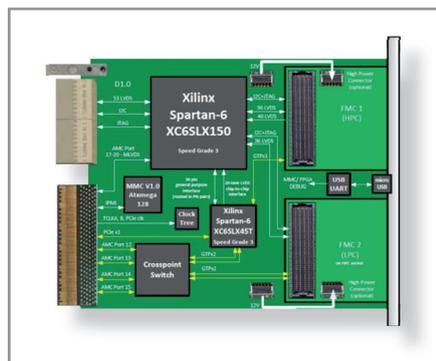
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### Technical Specifications

### DAMC-FMC20

<b>Board Size</b>	Double-Width - Mid-Size
<b>Standard</b>	MicroTCA.4: AMC.0, AMC.1, AMC.2 Module Management: IPMI Version 2.0, MMC V1.0
<b>Compatibility</b>	Zone 3 Classification: Class D1.0
<b>FMC Carrier</b>	1 High Pin Count (HPC) 1 Low Pin Count (LPC)
<b>FPGAs</b>	Xilinx Spartan-6: XC6SLX150-Speed grade 3 Xilinx Spartan-6: XC6SLX45T-Speed grade 3
<b>RAM Memories</b>	128 MB
<b>MMC Device</b>	ATxmega128A1-AU
<b>FMC Connections</b>	FMC1 HPC: 36+40 differential pairs, 1x GTP FMC2 LPC: 36 diff. pairs, 2x GTP
<b>RTM Connections</b>	53 differential pairs, LVDS
<b>Backplane Links</b>	Low Latency Links: 4 lanes, AMC ports 12-15, up to 3.2 Gbps PCI-e: 1 lane, PCIe gen. 1.0, up to 2.5 Gbps MLVDS: 4 lanes, AMC ports 17-20
<b>Front Panel</b>	2 x FMC Micro USB (FPGA and MMC) for Debug
<b>Operating Temperature</b>	0 ... 50 °C



DAMC-FMC20 - Block Diagram



DAMC-FMC20 Carrier Board



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Ein Forschungszentrum der Helmholtz-Gemeinschaft

### Ordering Codes

Ordering Code	Acronym	Description
DAMCFMC20XAA	DAMC-FMC20	Dual FMC Carrier Board - MTCA.4 - Dual-FPGA Processing