

# EMCOMO Solutions AG

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## **New Solutions for Leading Edge Data Aquisition**

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**We create first class Embedded Computer Solutions based on world leading Suppliers**

# ... we create Embedded Solutions



# About EMCOMO

- EMCOMO Solutions AG, Neu-Ulm, Germany
- Founded 2010
- Management:



**Thomas Sabisch**  
CEO



**Karl Judex**  
CTO/COO

- Shareholders:
  - Management (>50%)
  - Private Investors



## ➤ Embedded Computer Systems

- MicroTCA, cPCI, VME, VPX and ATCA based Systems
- Own MicroTCA CPU modules
- Box-PCs, HMI
- Various I/O components from leading vendors
- Customized Hard- and Software components

## ➤ Services

- Consulting and system design according to the customer requirements
- Project specific adaptations and extensions (Software, Hardware, mechanics)
- System setup and installation
- Integration tests and system tests
- Technical support

## ➤ Distribution of Embedded Systems/Boards/Modules



**EM-AM4024**

# Small size – MTCA.0 System



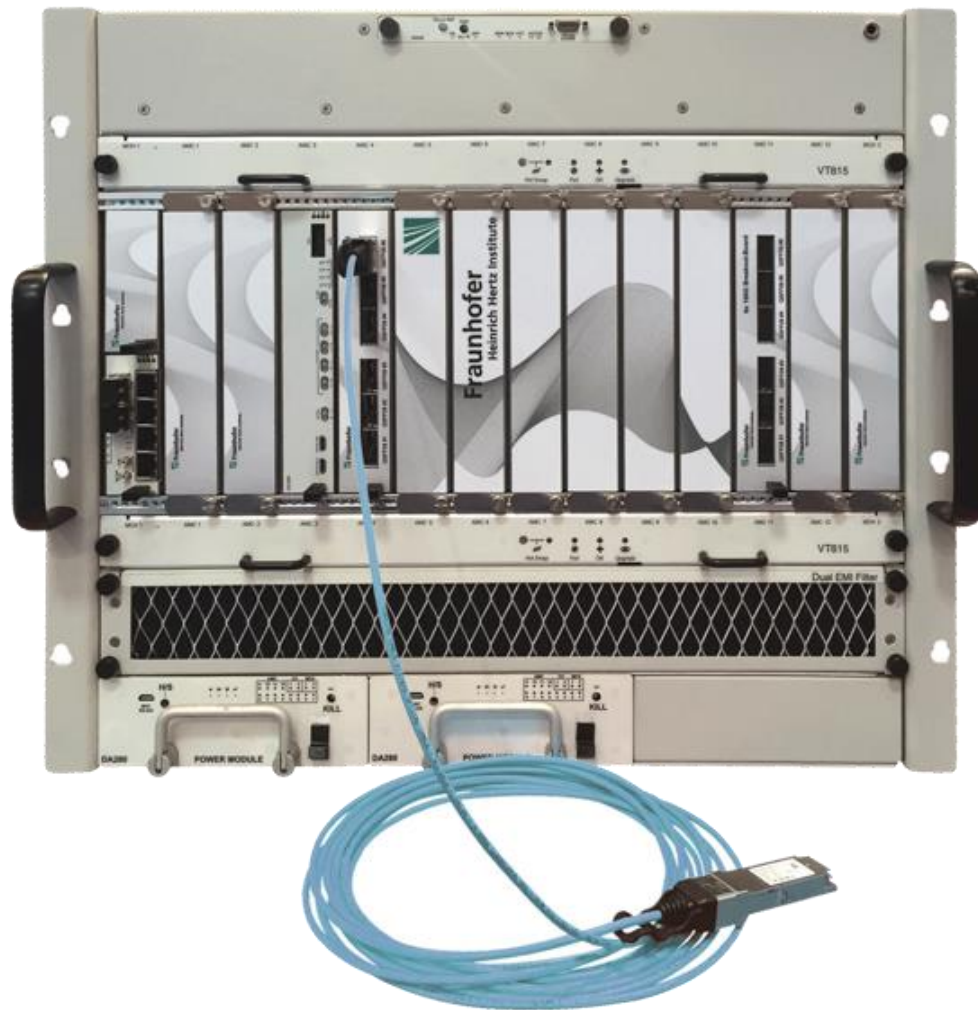
- 1U 19" MTCA.0 Chassis, 2 full-size AMCs
- Xilinx UltraScale+™ XCVU13P FPGA
  - Dual ADC @ 6.4 GSPS, 12-bits or quad ADC @ 3.2 GSPS
  - Dual DAC @ 12 GSPS, 16-bits
  - 8 GB DDR-4 memory

# Medium size – MTCA.1 System



- 5U 19" MTCA.1 Chassis, 12 full-size AMCs
- Core i7 CPU with 512 GB SSD
- 4 TMS320C6678 8-Core DSPs
- Xilinx Virtex-7 690T FPGA
  - Quad ADC, 1.0 GSPS @ 16-bit
  - Quad DAC, 2.8 GSPS @ 16-bit

# Full size – MTCA.4 HSDAQ System



- 9U 19" MTCA.4 Chassis, 12 full-size AMC Slots
- 2x Xilinx UltraScale™ XCVU190 FPGA
  - Dual ADC, 56 GSPS @ 8-bit
- >600 Gb/s Board to Board via Zone 3 Backplane
- External links via QSFP28 6x 100GE per Module
- Optional UltraScale+™ XCVU13P Processing FPGA with 5x 100 GE

# New DAQ Solutions: Faster, Denser

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- **Increasing number of high-speed channels**
  - More DAQ channels per board – modules
  - Even more DAQ channels per board – RFSoc
- **Increasing acquisition speed**
  - More bandwidth on the board – FMC+
  - Even more bandwidth on the board – integrated modules
  - More bandwidth off the board – PinoutPlus
  - Even more bandwidth off the board – Zone 3

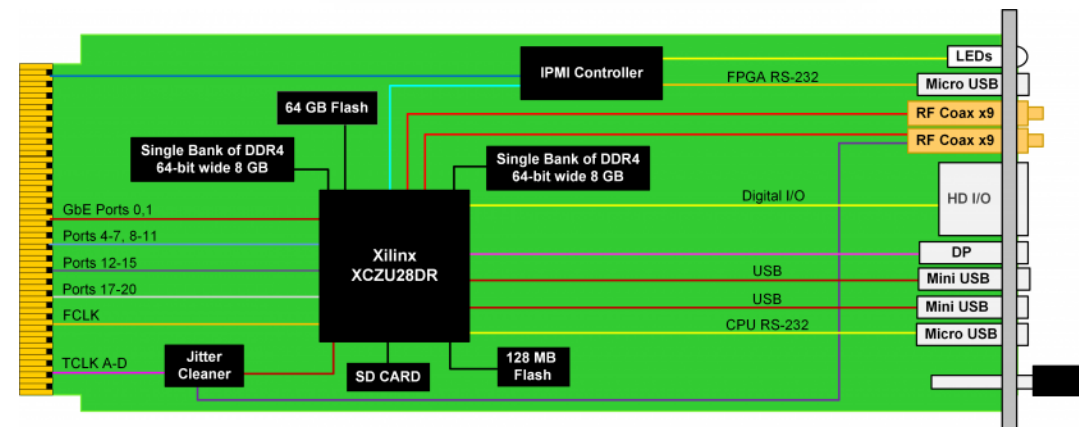
Creating leading edge  
DAQ solutions with  
products from our partner





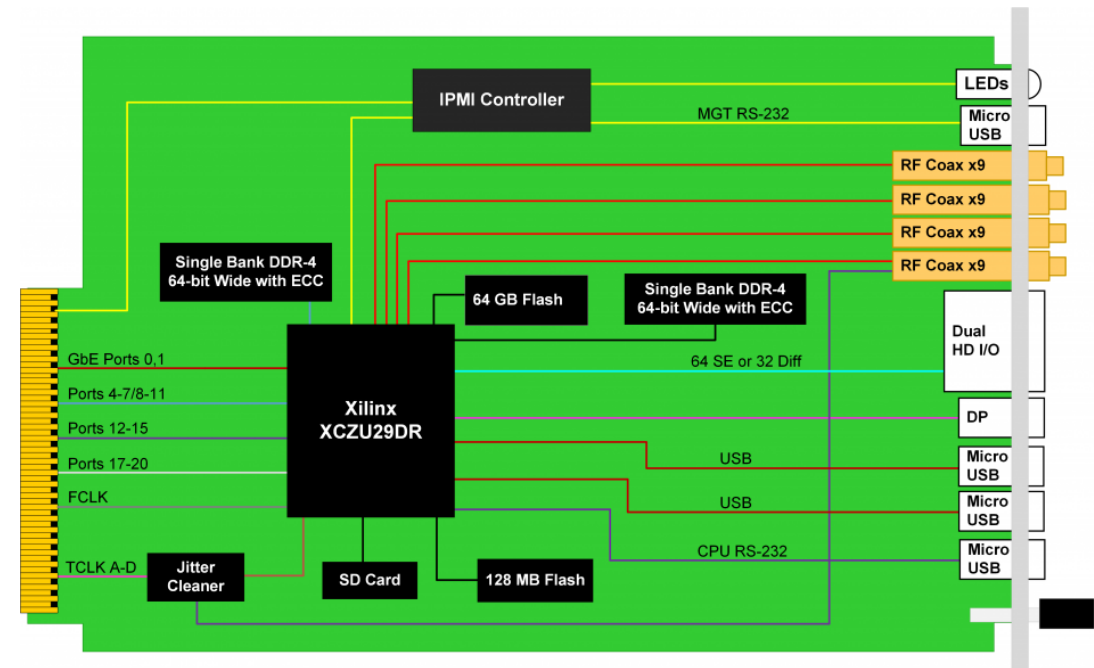
# AMC573 – Xilinx Ultrascale+ RFSoc (I)

- XCZU28DR (4272 DSP Slices and 930k logic cells)
- 8 ADC 12-bit @ 4 GSPS and 8 DAC 14-bit @ 6.4 GSPS
- Nanonics connectors
- High-Density Digital I/O
- 16 GB 64-bit DDR-4
- 64 GB User Flash



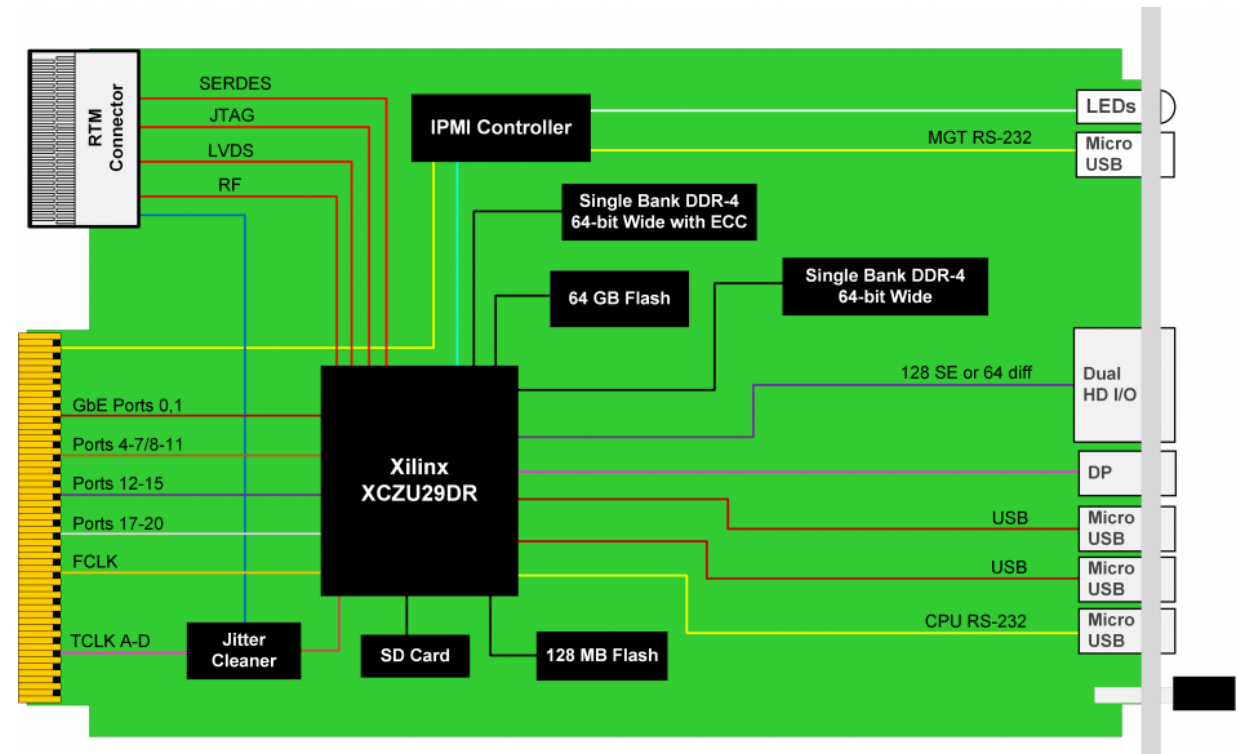
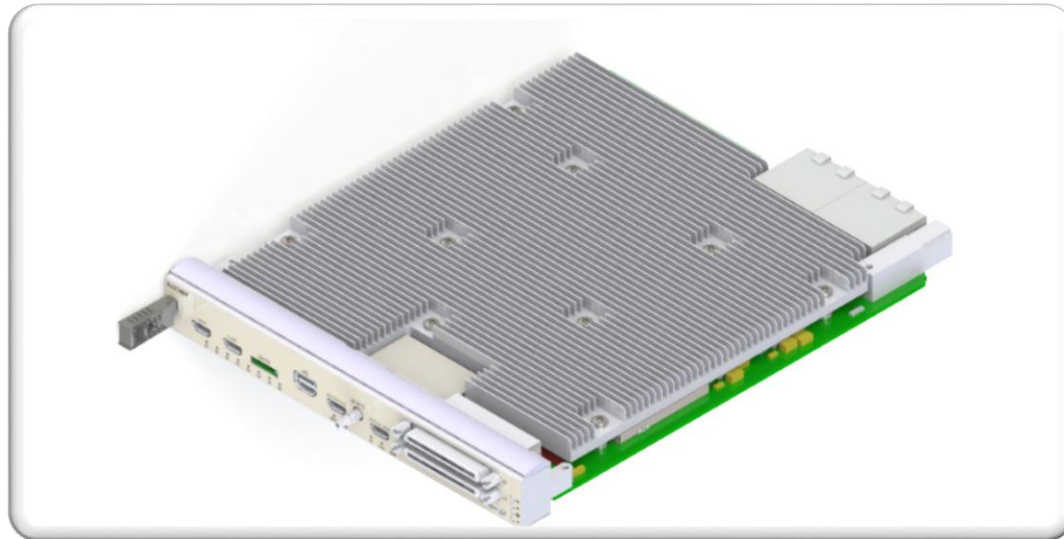
# AMC574 – Xilinx Ultrascale+ RFSoc (II)

- XCZU29DR (4272 DSP Slices and 930k logic cells)
- 16 ADC 12-bit @ 2 GSPS and 16 DAC 14-bit @ 6.4 GSPS
- Nanonics connectors
- High-Density Digital I/O
- 16 GB 64-bit DDR-4
- 64 GB User Flash



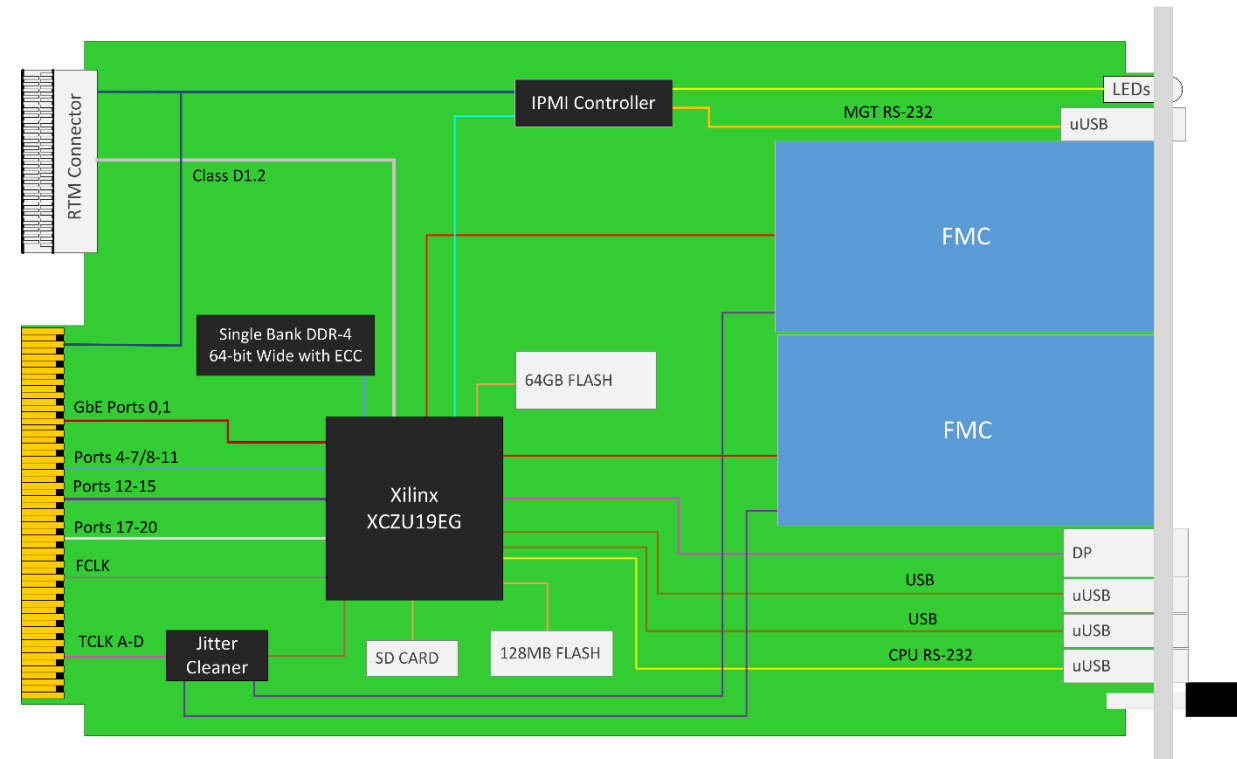
# AMC575 – Xilinx Ultrascale+ RFSoc (III) MTCA.4

- XCZU29DR with High-Density Digital I/O
- 8 ADC 12-bit @ 2 GSPS and 16 DAC 14-bit @ 6.4 GSPS to the RTM
- 16 GB 64-bit DDR-4
- 64 GB User Flash



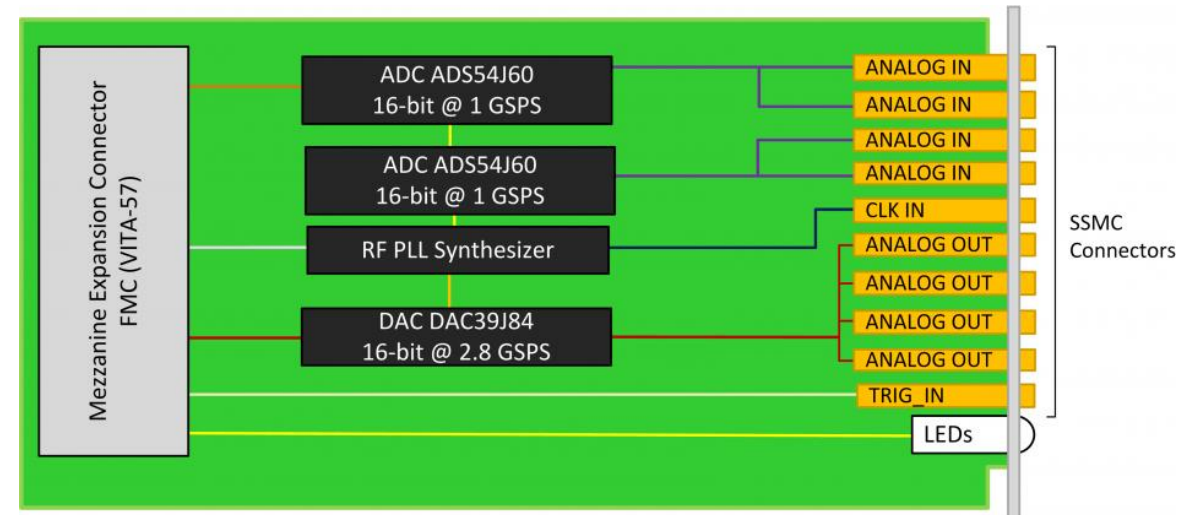
# AMC580 – Zynq UltraScale+ FPGA

- Dual FMC Carrier AMC module
- XCZU19EG (1968 DSP Slices and 1143k logic cells)
- 8GB DDR-4, 64 GB Flash
- RTM follows Class D1.2 recommendation (38 LVDS I/O)



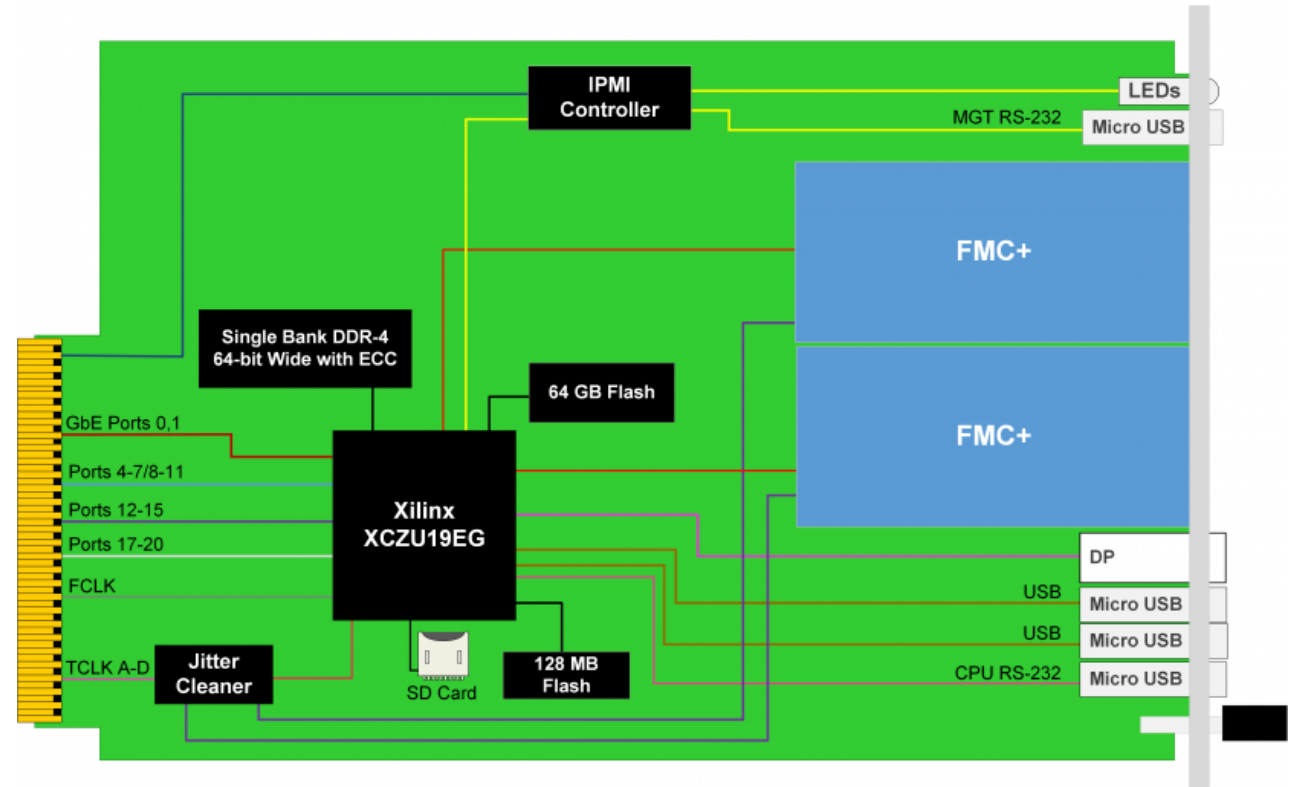
# FMC231 – Quad ADC and quad DAC FMC

- Quad ADC, 1.0 GSPS @ 16-bit
- Quad DAC, 2.8 GSPS @ 16-bit
- JESD204B
- Reference Design for FPGA Carriers



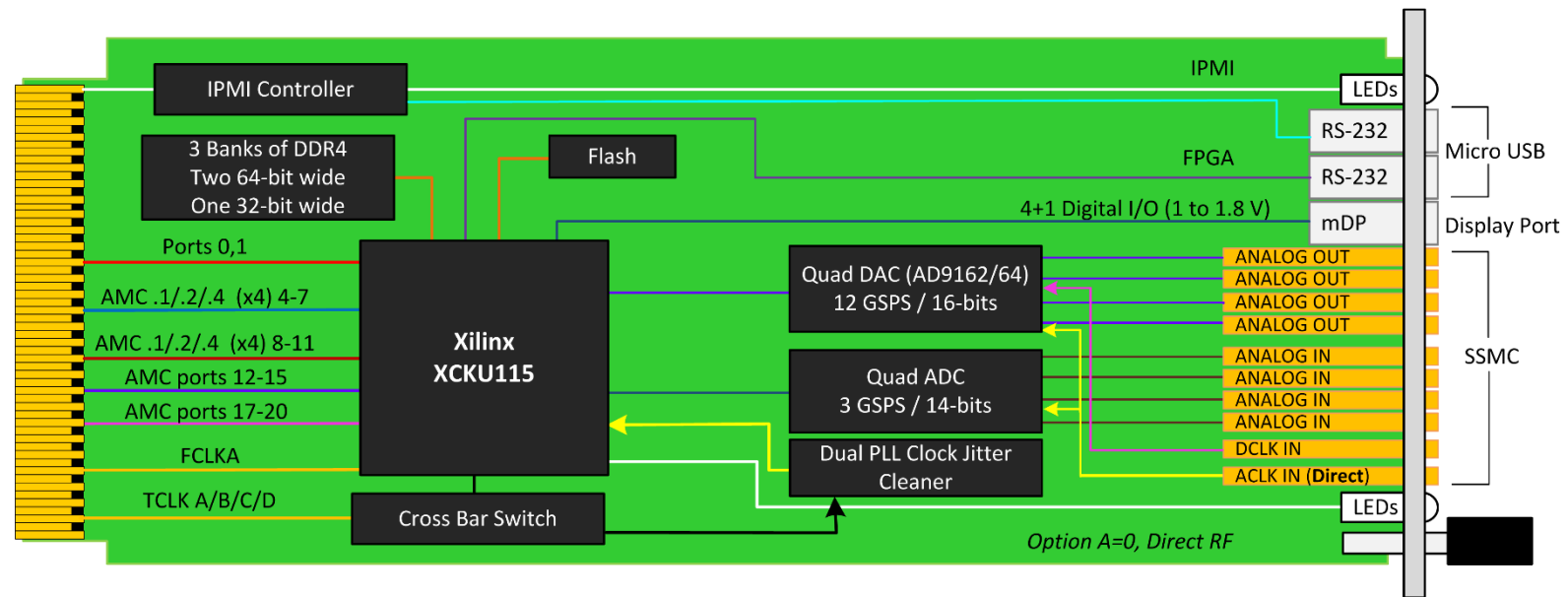
# AMC560 – Dual FMC+ Carrier, Zynq UltraScale+

- XCZU19EG (1968 DSP Slices and 1143k logic cells)
- Dual FMC+ site
- 8 GB DDR-4
- 64 GB User Flash



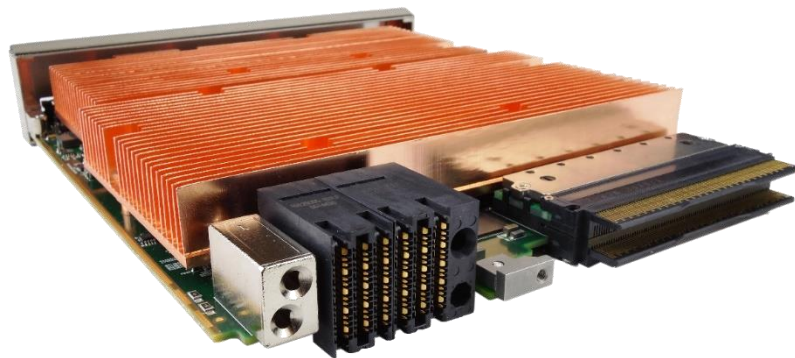
# AMC598 – Quad ADC and DAC, Kintex UltraScale

- XCKU115 with 20GB DDR-4
- Quad ADC AD9208 (14-bit ADC @ 3 GSPS)
- Quad DAC AD9164 (16-bit DAC @ 12 GSPS)

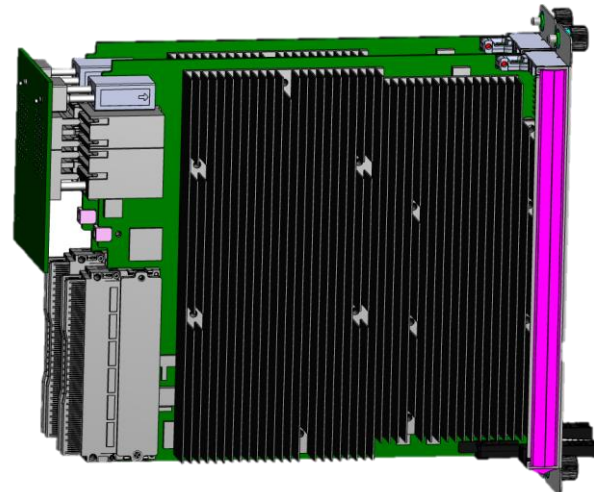


# AMC594 – Ultra High Speed ADC with XCVU190

- 8-bit ADC at up to Dual channels 56 GSPS or Quad channels 26 GSPS generating 896 Gb/s
- AMC594 with Xilinx UltraScale™ XCVU190 FPGA:
  - 60 GTH 16.3 Gb/s Transceivers and 60 GTY 30.5 Gb/s Transceiver for data transfer
  - 2,350k system logic cells and 1,800 DSP slices for heavy processing
- High-speed Zone 3 connector supports more than 600 Gb/s off-board data routing via dedicated PCB
- Highest analog bandwidth (-3 dB analog input bandwidth nominally >14GHz)



AMC594



Two AMC594 assembled with Zone 3 PCB

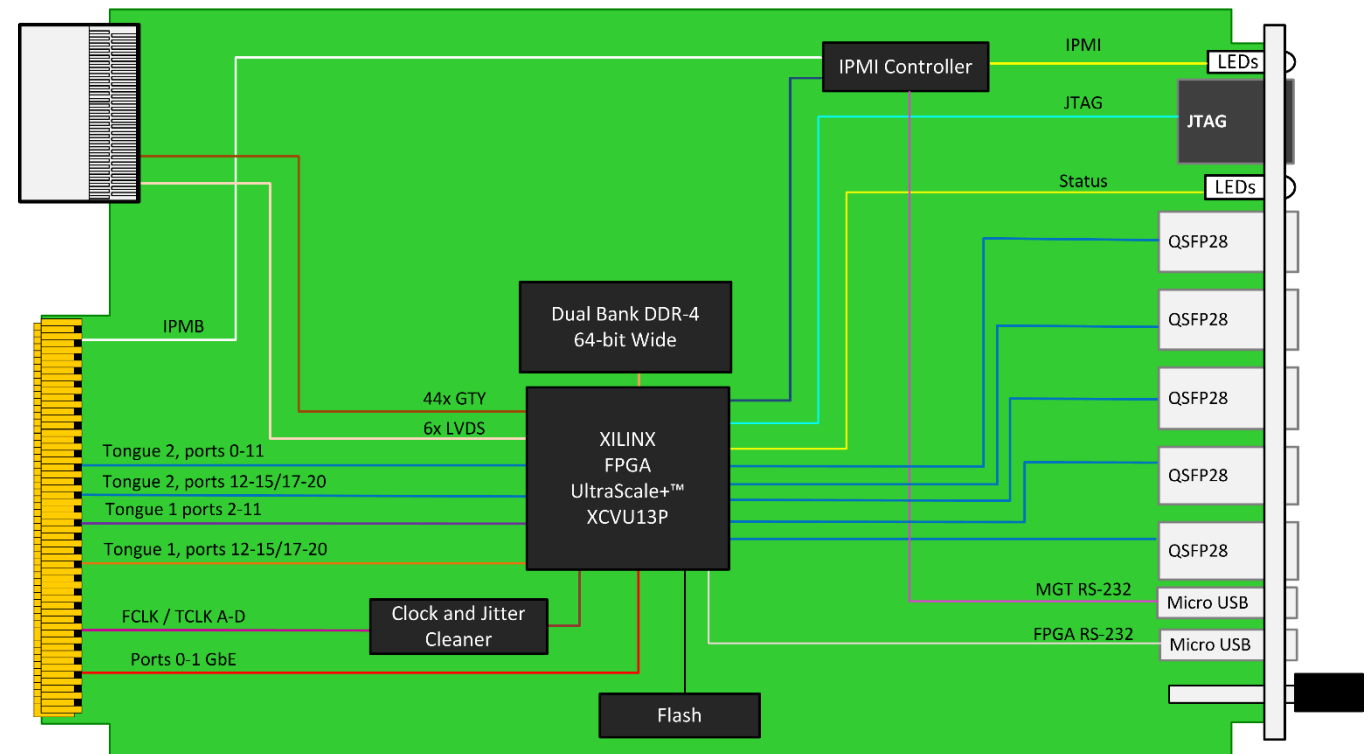
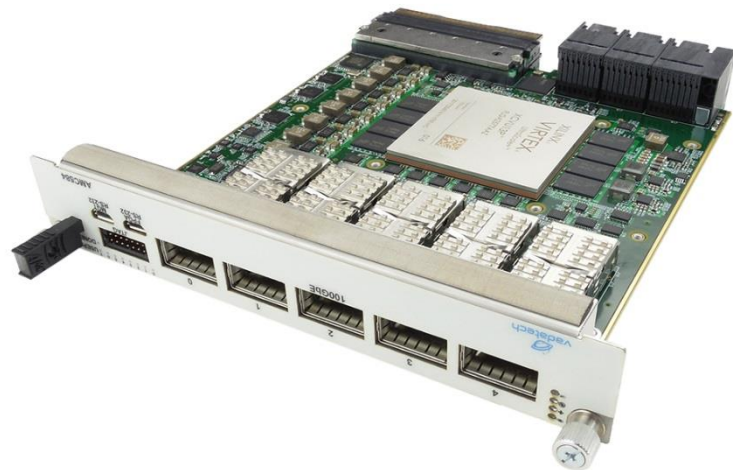


VT815



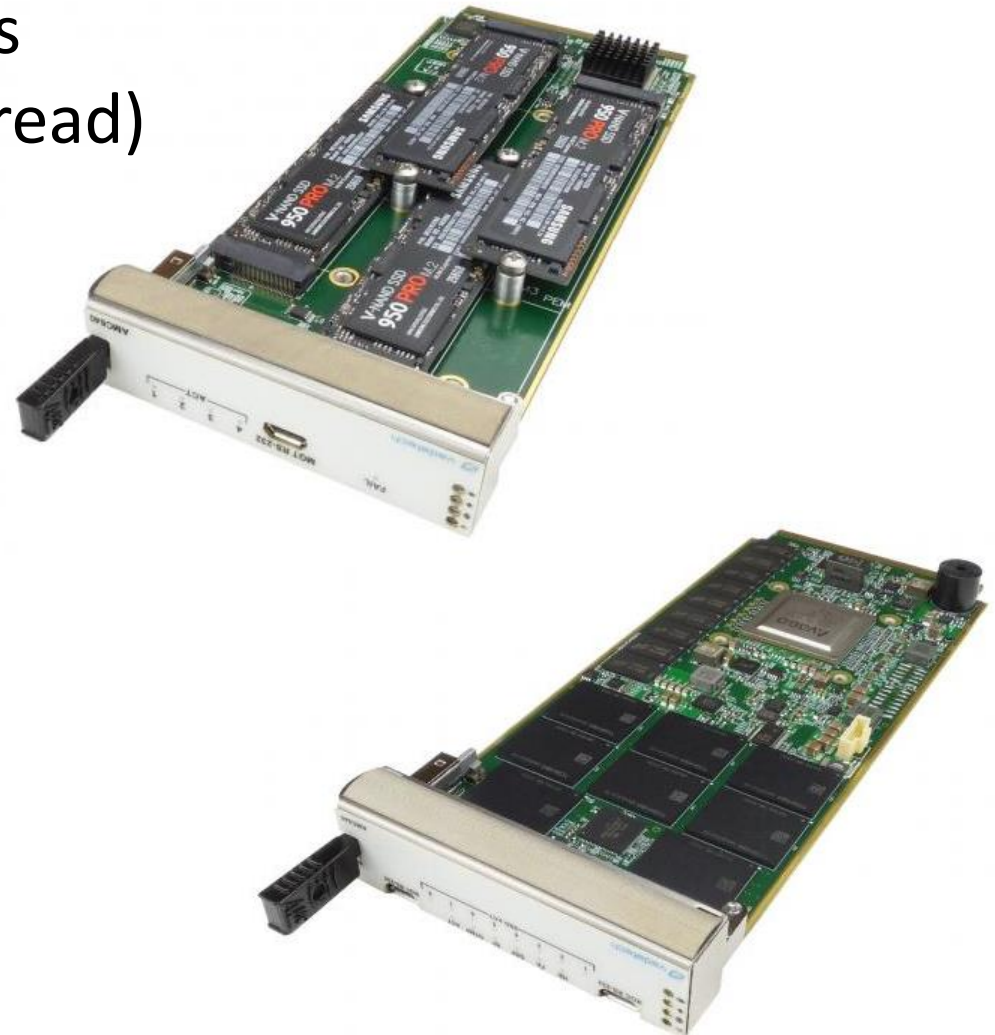
# AMC584 – Virtex UltraScale+ with Zone 3

- Zone 3 connector supporting more than 1.2 Tb/s total bandwidth (44x GTY)
- XCVU13P with more than 12,000 DSP slices and 3,780 thousand logic cells
- Up to 5x 100GE to front panel



# NVMe Storage Solutions for DAQ Systems

- High-Speed NVMe Flash Storage Solutions (up to 2,700 MB/s write and 3,500 MB/s read)
- **AMC641** dual M.2 carrier (up to 4 TB), dual x4 PCIe
- **AMC640** quad M.2 carrier (up to 8 TB) with CPlE switch, dual x4 or x8 PCIe
- **AMC645** NVMe up to 16 TB with RAID, PCIe x4 / x8
- IP-Core for Xilinx Virtex-7 and Ultrascale including PCIe Root-Complex





**Thank you!**  
**Any Questions**

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