

## Key Features

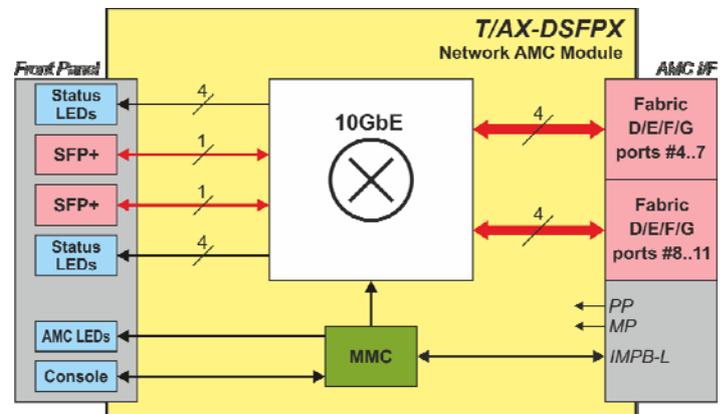
- Dual-port 10GbE LAN/WAN network AMC-module
- Forwards data between two 10GbE front panel uplink SFP+ ports and two 10GbE AMC backplane ports with up to 80km long uplink fiber connection
- Secure uplink communication
- A variety of PCS settings for uplink and backplane ports
- Ideal for high-speed LAN/WAN connections in distributed and remote MicroTCA® and AdvancedTCA® applications



T/AX-DSFPX Network AMC Module

## Details

- Two front panel 10GbE uplink SFP+ ports
- Adaptive 10Gbps (EDC+CDR) engines allow reliable uplink connections using 80km long SM fiber, 220m long MM fiber and 15m long passive twinax cable
- A variety of 10GbE and 1GbE LAN/WAN PCS settings for uplink SFP+ ports
- Automatic PCS setting for uplink SFP+ ports upon the type of SFP+/SFP transceiver module
- A variety of 10GbE PCS settings for AMC backplane ports
- Up to 10.3Gbps operation at legacy backplanes (T/AX-DSFPX-A only)
- "Swap" mode for uplink SFP+ ports
- Secure communication engine for uplink SFP+ ports (T/AX-DSFPX-A only)
- Traffic statistics (T/AX-DSFPX-A only)
- Device configuration saved in non-volatile memory and restored during power on and SFP+ transceiver insertion
- Front panel status LEDs for each SFP+ port
- Continuous monitoring of on-board power supplies and multi-point temperature for reliable operation and protection
- Remote command interface for device control and monitoring
- OS independent, no drivers required
- Complies PICMG® 3.0 Rev.3.0, AMC.0 R2.0, MTCA.0 R1.0 and IPMI 1.5 specifications
- Mid-size AMC-module form-factor
- Low power consumption (9W typ)



Functional Block Diagram of T/AX-DSFPX Network AMC-module

## Applications

- Distributed MicroTCA® and AdvancedTCA® systems
- Remote DAQ and DAQ+DSP MicroTCA® systems
- Telecommunication
- Multichannel image processing
- Industrial and instrumentation
- Multichannel digital radio and cell telephony
- Astrophysics and astronomy



Mini TORNADO-mTCA® DSP/FPGA modular system with T/AX-DSFPX network AMC-module and TORNADO-A6678® DSP/FPGA F/S AMC-module in dual-slot MicroTCA® mini chassis with passive backplane



Compact TORNADO-MTCA® DSP/FPGA modular system with two T/AX-DSFPX network AMC-modules and four TORNADO-A6678® DSP/FPGA M/S AMC-modules in 19" 6-slot MicroTCA® chassis with 10GbE backplane switch

## Technical Specifications (T/AX-DSFPX rev.1A)

### Front-panel uplink SFP+ ports

- Two 10GbE uplink SFP+ ports with independent PCS settings:
  - 10GbE 10GBASE-R LAN PCS support (default PCS mode for 10Gbps SFP+ transceivers)
  - 10GbE 10GBASE-W WAN PCS support (both SFP+ ports only) (optional PCS mode for 10Gbps SFP+ transceivers)
  - 1GbE 1000BASE-X Autonegotiation ON/OFF PCS support for 1Gbps SFP modules and for 10Gbps SFP+ modules (1Gbps module compatibility is required) (default PCS mode for 1Gbps SFP transceivers and optional for 10Gbps SFP+ transceivers)
- 10Gbps SFP+ and 1Gbps SFP Transceiver modules support:
  - 10Gbps '-SR'-grade SFP+ transceiver modules with up to 220m of OM1, OM2, OM3, OM4 fiber
  - 10Gbps '-LR'-grade SFP+ transceiver modules with up to 80km of SM fiber
  - 10Gbps passive copper SFP+ transceiver modules with up to 15m of twinax copper cable
  - 1Gbps SFP transceiver modules with SM fiber, MM SR fiber, and CAT5 cable
- Optional functions:
  - Independently enabled and configured secure communication for uplink SFP+ ports (complies IEEE 802.1ae, GCM-AES-128) (T/AX-DSFPX-A only)
  - "Swap" mode for front panel uplink SFP+ ports
  - Traffic statistics for uplink SFP+ ports and AMC backplane ports (T/AX-DSFPX-A only)

### Front-panel LED indicators and connectors

- Status LEDs (per each uplink SFP+ port):
  - "Module Health Status" LED (bi-color Red/Green)
  - "AMC Backplane Port Link Status" LED (Yellow)
  - "Uplink Status" LED (Green)
  - "Uplink Error" LED (Red)
- AMC Blue LED, bi-color AMC LED1 (power status), bi-color AMC LED2 (temperature status)
- 115kBaude COM/RS232C port for MMC command line console for device configuration and monitoring

### AMC backplane ports

- AMC Fabric-D/E/F/G ports #4..#7 and #8..#11 with independent PCS settings:
  - AMC.2 10GBASE-BX4 (XAUI) PCS for AMC Fabric-D/E/F/G fat pipe ports #4..#7 and #8..#11 (default)
  - 10GBASE-R/KR PCS for AMC Fabric-D or Fabric-F ports #4 or #6 and ports #8 or #10 (optional)
  - 10GBASE-X2 (RXAUI) PCS for AMC Fabric-{D, E} or Fabric-{F, G} ports {#4, #5} or {#6, #7} and ports {#8, #9} or {#10, #11} (optional)
- MMC: IPMB-L port

### MMC (AMC module management controller)

- Firmware based on MicroLAB Systems [TORNADO AMC MMC \(TAMMC®\)](#) MMC kernel
- Compatible with IPMI 1.5, IPMB CPS v1.0, PICMG® 3.0 rev.3.0, AMC.0 R2.0 and MTCA.0 R1.0 specifications
- High-speed monitoring of payload power, MMC power, and all backend power supplies (voltage and current) with tolerance control
- Power status indication via on-board bi-color "Power Status" LED and bi-color AMC LED1 at front panel
- Multi-point temperature monitoring of PCB, SFP+ modules and on-board critical components with tolerance control
- Temperature status indication via on-board bi-color "Temp Status" LED and bi-color AMC LED2 at front panel
- Remote MMC console via MMC 115kBaude COM/RS232C port

### Physical

- Single width (S/W) Mid-size (M/S) AMC card form factor (181 x 74 x 19 mm)
- Weight 0.24 kg

### Power and temperature

- AMC Payload Power (P/P):
  - T/AX-DSFPX: +12V @ 0.8A (typ) (9W typ)
  - T/AX-DSFPX-A: +12V @ 1.3A (typ) (15W typ)
- AMC Management Power (M/P): +3.3V @50mA (typ)
- Operating temperature (ambient) without forced cooling: 0°C...+40°C
- Operating temperature (ambient) with forced cooling (200CFM): 0°C...+65°C
- Storage temperature (ambient): -40°C...+80°C

### Warranty

- Full lifetime warranty for parts and labor.

## Ordering information

T/AX-DSFPX

Dual 10GbE SFP+ Network AMC-module (mid-size, single-width)

T/AX-DSFPX-A

Dual 10GbE SFP+ Network AMC-module (mid-size, single-width) with secure uplink communication and traffic statistics options