NAMC-xE1/T1 and NAMC-xE3/T3

Overview

The **NAMC-xE1/T1** is an Advanced Mezzanine Card (AMC) providing access to up to 16-E1/T1 interfaces in next generation systems based on MTCA and ATCA standards. The TDM-to-I-TDM converter connects the on-board E1/T1 interfaces with a Gigabit Ethernet port for system interconnect (I-TDM). The **NAMC-xE1/T1** is dedicated for (tele-)communication applications with extensive need for a high aggregation of multiple E1/T1 interfaces combined with access to switched networks based on high bandwidth Ethernet. The **NAMC-xE1/T1** is used for distributing signaling and payload data to DSP or CPU based processor resources within a MTCA or ATCA system.

Key features

- Interfaces at the front panel:
  - 8x E1/T1 (NAMC-8E1/T1) or
  - 16x E1/T1 (NAMC-16E1/T1) or
  - 4x E3/T3 (NAMC-4E3/T3)
- Backplane
  - 2xGbE (port 0 and 1)
- FPGA resource with up to 64-Mbit of Quad Data Rate™ 2 (QDR2) SRAM
- extensive software support in combination with other N.A.T. AMC boards for any voice/ data application in ISDN, SS7, ATM, VoIP or 3G environments.

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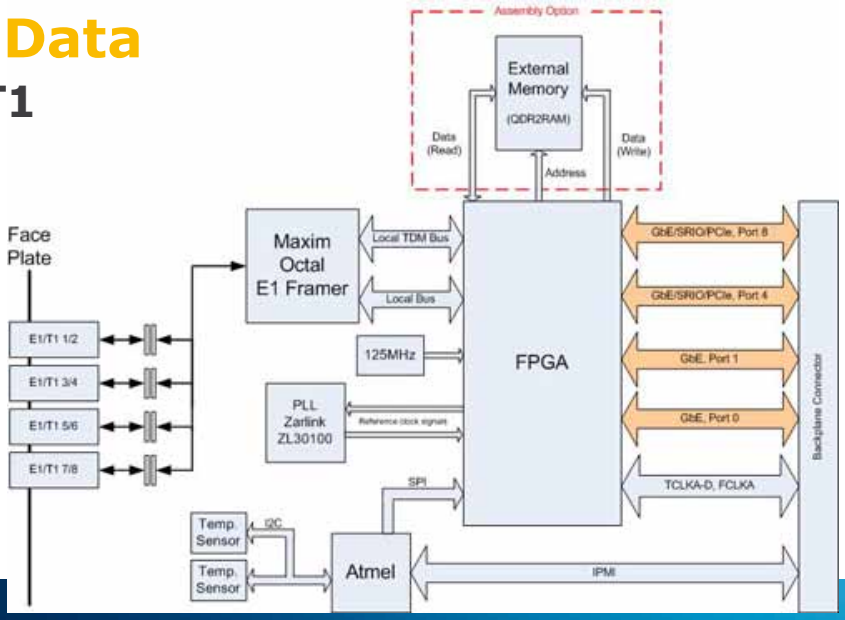
Technical Data

NAMC-xE1/T1



Overview

The **NAMC-xE1/T1** is available as a single width compact-, mid- or full-size AMC providing access to multiple E1/T1 or E3/T3 interfaces (NAMC-xE3/T3). The full-size version can be equipped with a mezzanine board offering additional 8E1/T1 line interfaces (NAMC-16E1/T1) or 4E3/T3 line interfaces (NAMC-4E3/T3).

The **NAMC-xE1/T1** and NAMC-xE3/T3 are dedicated for (tele-)communication applications with extensive need for a high aggregation of multiple E1/T1 or E3/T3 interfaces combined with access to switched networks based on high bandwidth Ethernet.

FPGA and Memory

The **NAMC-xE1/T1** is equipped with an ECP3 FPGA from Lattice which offers 70.000 logic elements and 4 Mbit internal memory. In addition two external QDR2 SRAM devices can be assembled, each offering 32 Mbit.

E1/T1 Access

The onboard DS26518 framer from Maxim/Dallas provides access to 8/16-E1/T1 lines at the front panel by four/eight RJ45 connectors. Besides the standard framing formats the **NAMC-xE1/T1** supports framing standards as:

- T1 Super Frame (SF)
- T1 Extended Super Frame (ESF),
- T1 Digital Multiplexer (DM)
- T1 Switch Line Carrier -96 (SLC-96)
- E1 G.704 and G.706 (CRC-4 multiframe)

The extremely sensitive input amplifier circuits support signal attenuation of up to -44dB making the board an optimal choice for all kind of monitoring applications.

TDM and I-TDM Interface

The E1/T1 framer interfaces to the on-board timeslot interchanger (TSI) chipset. The TSI as well as the TDM-to-I-TDM bridge are incorporated in an ECP3 FPGA from Lattice. The TSI allows flexible routing as well as multicasting of 64kbps timeslots between the various E1/T1 streams. The TDM-to-I-TDM bridge converts the TDM oriented bit stream into Ethernet packets and vice versa. In addition to the I-TDM interface, the TSI offers an optional 32MHz clocked H.110-alike TDM backplane interface at the AMC connector (extended area).

Fabric Support

Fat Pipe

The **NAMC-xE1/T1** offers two bidirectional serial lanes which can be operated either as GbE, PCIe or SRIO. The interfaces at **NAMC-xE1/T1** can be configured to implement either
GbE: two x1 (port 4 and 8) or optionally
PCIe: one x1 (port 4 or 8) or on request
SRIO: two x1 (port 4 and 8)

Base Fabric

The **NAMC-xE1/T1** provides two 1000BaseX interfaces at port 0 and port 1 of the common options region of the AMC backplane connector.

Extender Mezzanines

For applications requiring more TDM interfaces, N.A.T. offers an extender mezzanine supplying 8 additional E1/T1 lines at the front panel: the NAMC-16E1/T1.

The NAMC-4E3/T3 offers a mounted mezzanine providing four E3/T3 lines which are accessible via four RJ45 interfaces at the front panel. T3 handles a bandwidth of 44.736 Mbit/s or 672 channels and E3 supports data transmissions of 34.368 Mbit/s or 512, a higher data speed compared with E1 (2.048 Mbit/s - 32 channels) or T1 (1.544 Mbit/s - 24 channels).

Key Features

FPGA and Memory
- ECP3 FPGA from Lattice with 70.000 logic elements and 4 Mbit internal memory
- QDR2 SRAM with up to 64-Mbit

Front Panel Interface
- 8-/16-E1/T1 available via 4/8 RJ45
- 4-E3/T3 available via four RJ45

Backplane Connectivity
- clock distribution via full bi-directional clock support using TCLK-A, -B, -C, -D at AMC connector

Base Fabric
- 2xGbE at AMC port 0 and port 1

Fat Pipe Interface Options
- GbE x1 on ports 4 and 8 or optionally
- PCIe x1 on port 4 or 8 or on request
- SRIO x1 on ports 4 and 8

I-TDM Interface
- 1024 bidirectional 64kbit/s channels
- 125 µs-mode and 1ms-mode support

TDM (optional)
H.110 alike 32MHz clocked TDM interface connects to ports 12, 13 (data) and port 14 (sync) of the extended options region of the AMC connector

Indicator LEDs
- 8/16 (extension module) bicolour LEDs integrated in the RJ45 for E1 link status
- 2 standard LEDs as fault indicator and for general purpose status

Host Operating System Support
- LINUX

Power Consumption
- 12 V, 1A

Environmental Conditions
- Operating temp.: 0°C to +60°C with forced cooling
- Storage temp.: -40°C to +85°C
- Humidity: 10% to 90% rh noncondensing

Standard Compliance
- PICMG AMC.0 Rev. 2.0/AMC.1 Rev. 1.0/AMC.2 Rev. 1.0 (Type E2)
- PCIe Base Spec. Rev. 1.1
- PICMG SFP.0 Rev. 1.0/SFP.1 Rev. 1.0 (Internal CC)
- IPMI Spec. v2.0 Rev. 1.0
- PICMG MTCA.0 Rev. 1.0
- ITU-T G.823 (Jitter Attenuation)