



# NAMC-8569-xE1/T1 and NAM



## Overview

The **NAMC-8569-xE1/T1** is an Advanced Mezzanine Card (AMC) with a powerful Free-scale PowerQUICC III MPC8569 processor providing access to multiple 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-8569-xE1/T1** and the NAMC-8569-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.

## Key features

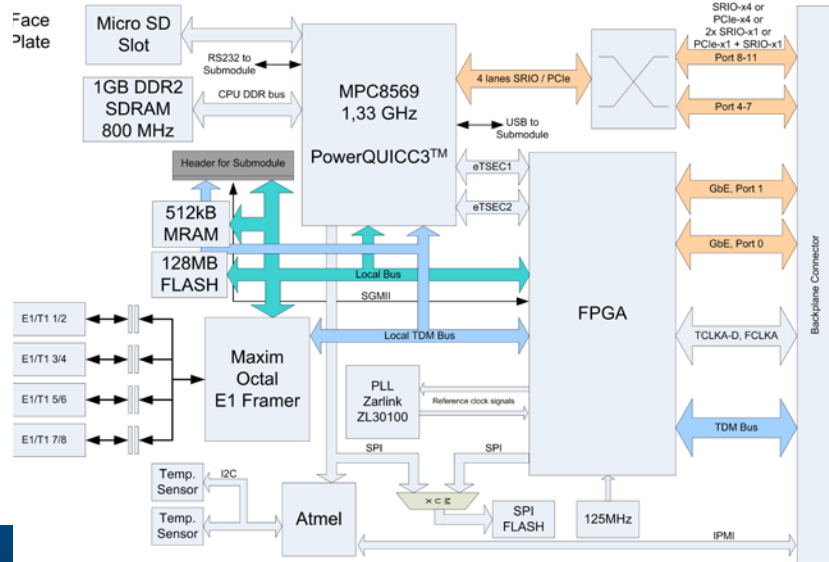
- Powerful Freescale™ PowerQUICC®III MPC8569 processor @1.33 GHz
- Interfaces at the front panel
  - 8x E1/T1 (NAMC-8569-8E1/T1) or
  - 16x E1/T1 (NAMC-8569-16E1/T1) or
  - 4x E3/T3 (NAMC-8569-4E3/T3)
- Backplane connections
  - 1x Gigabit Ethernet (GbE)
- software support for voice/data applications: ISDN, SS7, ATM, VoIP or 3G

These boards are optimized to process standard telecom signaling protocols as well as special payload handling algorithms in next generation's systems based on the MTCA or ATCA standards.



# Technical Data

## NAMC-8569-xE1/T1



## Overview

The **NAMC-8569-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 an additional mezzanine board to count up the line interface to 16-E1/T1. The **NAMC-8569-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 module has been optimized to process standard telecom signaling protocols like ISDN and SS7 as well as special payload handling algorithms.

### System Processor and Memory

The **NAMC-8569-xE1/T1** is equipped with the very powerful Freescale Power QUICC III MPC8569, which offers the double performance as its predecessor. It offers an e500 PowerPC core combined with dedicated interface hardware and four RISC cores. This network processor operates at core frequencies of 800, 1000 or 1333 MHz. The **NAMC-8569-xE1/T1** provides 128-1024 MB DDR2 SDRAM and 128 MB FLASH memory.

### E1/T1 Access

The onboard DS 26518 framer provides access to 8-/16-E1/T1 lines at the front panel

by four/eight RJ45 connectors. Besides the standard framing formats the **NAMC-8569-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-ITDM 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-ITDM 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 on AMC connector (extended area).

### Fabric Support

Fat Pipe

The **NAMC-8569-xE1/T1** offers four bidirectional serial lanes that can be operated either

as PCIe, SRIIO or a combination of both.

The interfaces at NAMC-8569-xE1 can be configured to implement either PCIe: one x1 (port 4 or 8) or one x4 (ports 4-7 or 8-11) or SRIIO: two x1 (port 4 and 8) or one x4 (port 4-7 or 8-11).

The speed is configurable for 1.25Gb/s, 2.5Gb/s or 3.125Gb/s.

PCIe and SRIIO: one x1 PCIe (port 4) and one SRIIO (port 8).

In this case the speed of the SRIIO interface is fixed at 2.5Gb/s

### Base Fabric

The **NAMC-8569-xE1/T1** provides two 1000BaseX interfaces at port 0 and port 1 of the common options region of the AMC backplane connector.

### Extender Mezzanines

Currently, there are two different types of extender mezzanines available. For applications requiring more TDM interfaces, N.A.T. offers the NAMC-8569-16E1/T1 with an extender mezzanine supplying 8 additional E1/T1 lines at the front panel. The NAMC-8569-4E3/T3 provides four E3/T3 interfaces accessible via four RJ45 interfaces at the front panel.

## Key Features

### System Processor and Memory

- Up to 1,33 GHz Freescale Power QUICC III MPC8569
- 128-1024 MB DDR2 SDRAM
- 16-128 MB FLASH PROM
- optional Micro-SD-Card slot

### Front Panel Interface

- 8-/16-E1/T1, clock distribution via clock region at AMC connector
- 4-E3/T3 available via four RJ45

### Backplane Connectivity

- Fat Pipe Interface Options
- PCIe x4 on ports 4 or 8-11
- PCIe x1 on port 4 or 8
- SRIIO x4 on ports 4-7 or 8-11; speed 1.25Gb/s or 2.5Gb/s or 3.125 Gb/s per lane
- SRIIO x1 on ports 4 and 8; speed 1.25Gb/s or 2.5Gb/s or 3.125 Gb/s
- PCIe x1 on port 4 and SRIIO x1 on port 8; speed 2.5Gb/s

### 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 common options region of the AMC connector

### Networking

- 2 x 1 GbE at AMC port 0 and port 1
- 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

### Operating System Support

- OK-1, LINUX (on request)
- Power Consumption
- 12 V, 2A (1,33GHz CPU)

### Environmental Conditions

- Operating temp.: 0°C to +55°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)