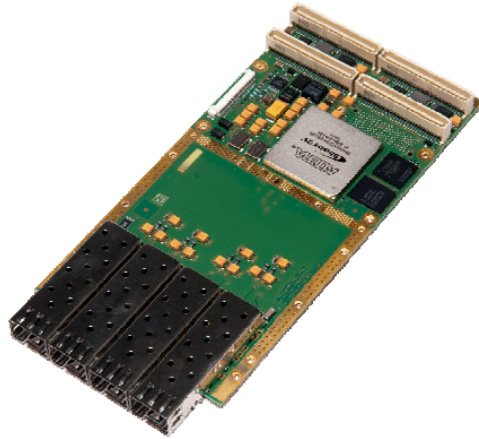


TTEPMC Card

The 1 Gbit/s TTEthernet Network Board



The **TTE**PMC Card brings the full power of time-triggered Ethernet communication technology to the PMC form factor. The TTEthernet technology enables hard real-time operation in distributed systems based on Ethernet networks.

The **TTE**PMC Card supports the three TTEthernet traffic classes:

- Time-triggered traffic with hard real-time guarantee and transport delay jitter in sub-microsecond range
- Rate-constrained traffic with guaranteed bandwidth (ARINC 664-based send and receive operation, no traffic shaping)
- Standard (COTS) Ethernet traffic

The **TTE**PMC Card network interface card implements the distributed fault-tolerant clock synchronization algorithm of TTEthernet in hardware. It is a PMC form factor pluggable mezzanine card for network communication, combining the IEEE 802.3 Ethernet standard for Gigabit Ethernet with the safety-critical time-triggered technology of TTTech.

The card enables real-time Ethernet communication between an embedded computer and **TTE**Switches for redundant channels in a safety-critical system. **TTE**PMC Card can be configured in PMC mode and can be used in PCI, CPCI, VME, VPX and VXS; plugged on various PCs or embedded systems for lab use or for field applications.

KEY FEATURES/BENEFITS

- Supports 1 Gbit/s full duplex Ethernet links
- Standard PMC form factor end system for use in lab environments
- Supports up to 3 channels using SFP connectors
- Supported software driver (PCI / Linux)
- DMA Support
- Conduction cooled board design or cooler mounted (default)
- Variant suitable for use in flight tests possible

The card is available in combination with a PCI carrier board for use in a PCI bus. In PMC mode, a PCI interface is provided and the card is powered over the PMC connectors.

TTEPMC Card transmits time-critical and safety-critical data in a secure way and according to a predefined schedule. Apart from that it is compatible with IEEE 802.3 Ethernet and enables data traffic with a bandwidth of 1 Gbit/s.

The product is offered in a lab version supporting three SFP channels. A copper-only variant and a ruggedized version for field application are planned to be available.

Key Features

- Compliant to TTEthernet 1.0 specification
- Supports 1 Gbit/s full duplex Ethernet links
- Standard PMC form factor end system for use in lab environments
- Supports up to 3 channels using SFP connectors
- Altera Stratix IV (EP4SGX)
- 256 Mbit Flash, 16 Mbit RAM onboard
- Supported software driver (PCI/Linux)
- DMA Support
- JTAG support on board
- Conduction cooled board design
- Variant suitable for use in flight tests possible

Hardware Features

Form Factor

- IEEE 1386.1-2001 PMC 149 x 74 (in mm)
- Vita 20-2001 Conduction Cooled PMC with faceplate I/O
- Conduction cooled board design

Connectivity

- Host Interfaces:
32 or 64-bit 33 MHz PCI 3.3V
- Front Connectors:
Up to 3 ports 1 Gbit/s SFPs

Environment

- Lab environment (with cooler mounted, default)
- Conduction cooling

TTEthernet End System

- The FPGA implements the TTEthernet End System IP with 3 channels.

TTEthernet Connections

- Up to 3 Ports 1 Gbit/s SFPs
- Connectors as faceplate I/Os

Bus Interfaces

- 32 or 64-bit 33 MHz PCI 3.3V

Dimensions

- Size: 170 x 75 (in mm)
- Weight: 200 g

Power Supply

- + 12 V supply from J2 connector
- + 3.3 V Supply from J2 connector

Environmental Operating Ranges

- Lab equipment
- Operating temperature: 0 to 40 °C
- Non-operating temperature: -40 °C to 100 °C
- Operating/Non-operating humidity:
humidity level from 25 to 90 %

Versions

- Basic Lab Version
Lab Version with 3 SFP cages
Note: SFP slots add flexibility, but do not full comply with the PMC form factor (+2 cm)
- Copper Version
Lab Version supporting fixed-mounted copper ports (1000 Base-TX); planned as follow-up release
- Rugged Version
Rugged Version with -40 °C to +85 °C operating temperature range; planned as follow-up release

Software Support

- A Linux driver is available (64 bit/32 bit Linux)
- An optional LabView driver is available

Packaging Contents

- TTEthernet PMC Card hardware board
- User Manual
- Linux driver

Order Number

- HE07.00.1: Three 1000Base-SX SFPs (optical)
- HE07.01.1: Three 1000Base-TX SFPs (copper)
- SE10.02.1: ^{TT}PMC/XMC LabView

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