

TTEnd System A664 Pro (PMC)

The Certifiable 10/100 Mbit/s TTEthernet Network Board



Key Benefits

- ✓ RTCA DO-254/DO-160G/DO-178C certifiable end system card for use in flight programs
- ✓ Fully compliant with Ethernet (IEEE 802.3), rate-constrained (ARINC 664 part 7) and time-triggered traffic (SAE AS6802)
- ✓ Redundancy management and traffic shaping fully implemented in hardware
- ✓ Safety assessment according to SAE ARP 4754/4761

The TTEnd System A664 Pro board brings the full power of deterministic Ethernet communication technology to aerospace certifiable hardware. TTEthernet technology enables hard real-time operation in distributed systems based on Ethernet networks. The end system uniquely supports three standard traffic classes: Ethernet (IEEE 802.3), rate-constrained (ARINC 664 part 7) and time-triggered (SAE AS6802) traffic in parallel on one physical media. It offers redundancy management, as well as an IP/UDP profiled communication layer fully implemented in hardware.

PCI Mezzanine Card for Network Communication

The TTEnd System A664 Pro card supports three Ethernet traffic classes:

- Time-triggered (SAE AS6802) traffic with hard real-time guarantee and transport delay jitter in sub-microsecond range
- Rate-constrained traffic (ARINC 664 part 7 compliant)
- Standard (IEEE 802.3) Ethernet traffic

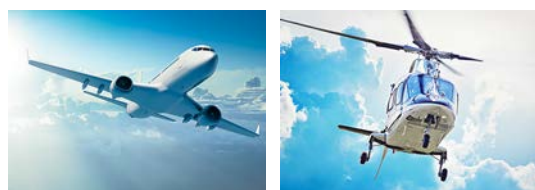
The TTEnd System A664 Pro network interface card implements the distributed fault-tolerant clock synchronization algorithm of TTEthernet in hardware.

100% Deterministic Data Transmission

It is a PCI mezzanine card for network communication and combines the IEEE 802.3 Ethernet standard with safety-critical time-triggered technology.

It enables real-time Ethernet communication between an embedded computer and TTEswitches for redundant channels in a safety-critical system.

The card transmits time-critical and safety-critical data in a 100% deterministic way and according to a pre-defined schedule. The card is designed for safety-critical applications and fully complies with DAL A levels of RTCA DO-254 and DO-178C.



Application Fields

- Aircrafts
- Rotorcrafts
- Ground Stations

End System Capabilities	<ul style="list-style-type: none"> - The NIC controller implements the TTEthernet End System IP with 3 channels - Three configurable traffic classes: <ul style="list-style-type: none"> ✓ Time-triggered (SAE AS6802) traffic ✓ Rate-constrained (ARINC 664 part 7) traffic ✓ Standard Ethernet (IEEE 802.3) traffic - 256 send VLs, 512 receive VLs - 2,048 send ports, 4,096 receive ports - 8 output memory partitions/access points, 8 input memory partitions/access points - Flexible configurable periods (µs granularity) - Profiled IP/UDP, sampled and queued ports - IP/UDP handled on hardware - Diagnosis and status registers - Embedded CPU for BITs - 95% detection of internal failures - Provide BITs results every 500 ms - Ability to store BIT status and error logging information
Certifiability	<ul style="list-style-type: none"> - NIC controller according to RTCA DO-254 DAL A - Embedded software according to RTCA DO-178C DAL A - Environmental ratings according to RTCA DO-160G - Safety assessment according to SAE ARP 4754/4761
Supported Standards	<ul style="list-style-type: none"> - IEEE 802.3 - ARINC 664 part 7 - SAE AS6802
Software Driver Support	<ul style="list-style-type: none"> - RTCA DO-178C certifiable software driver and driver certification package are available for VxWorks 653 v2.2.4
Network Connectivity	<ul style="list-style-type: none"> - 3 ports 10/100 Mbit/s
Hardware Connectivity	<ul style="list-style-type: none"> - 32-bit, 66 MHz PCI revision 2.2 compliant interface
Dimensions	<ul style="list-style-type: none"> - Size: 143.75 x 74 (mm) - Weight: 115 g
Form Factor	<ul style="list-style-type: none"> - PCI Mezzanine Card (PMC) - IEEE 1386.1-2001 PMC 143.75 x 74 (mm) - Vita 20-2001 Conduction Cooled PMC with rear I/O
Power Supply	<ul style="list-style-type: none"> - +3.3 V external power supply
Power Consumption	<ul style="list-style-type: none"> - 3 W for ARINC 664 part 7 traffic for temperatures within the -40°C to +85°C range
Environmental Operating Ranges	<ul style="list-style-type: none"> - Operating temperature range: -40°C / +85°C - Altitude: 7,600 m (25,000 ft) MSL - Relative humidity: 95% +/- 4% - Environmental tests: DO160G compliant
Packaging Contents	<ul style="list-style-type: none"> - TTEthernet PMC card hardware board - User manual - Driver CD
Order Number	<ul style="list-style-type: none"> - 13121: TT^EEnd System A664 Pro

