TTESwitch A664 Lab v2.0

Deterministic Ethernet Switch based on the TTESwitch Module A664 Pro

Key Benefits

- 6 x 10/100/1,000 Mbit/s full-duplex Ethernet
- 18 x 10/100 Mbit/s full-duplex Ethernet
- Based on flight-certifiable switch module
- 4,096 virtual links with up to 8 priorities
- Copper and optical physical layer available
- Partitioning between three traffic classes (standard Ethernet traffic, rate-constrained and time-triggered Ethernet traffic)

The TTESwitch A664 Lab v2.0 was developed to support development and testing efforts for ARINC 664 p. 7 and/or TTEthernet® networks. With advanced features like 1 Gbit/s speeds, flexible physical layer configuration and three supported traffic classes, it is the optimal switching solution for a large variety of application areas. TTEthernet is a fault-tolerant real-time communication protocol for safety-related systems that integrates data flows of standard Ethernet (IEEE 802.3), ARINC 664 part 7 and Time-Triggered Ethernet (SAE AS6802) traffic in one physical infrastructure.

Switching Function

The TTESwitch A664 Lab v2.0 is a Deterministic Ethernet switch enabling the implementation of critical network-centric applications.

The TTEthernet technology of the TTESwitch A664 Lab v2.0 allows for convenient configuration of deterministic processing of critical (time-triggered, ARINC 664 part 7) and non-critical Ethernet traffic.

Virtual Links and Protocol Support

The TTESwitch A664 Lab v2.0 allows the configuration of up to 4,096 virtual links (VLs). Virtual links can be configured with 8 priorities and a bandwidth allocation gap (BAG) of 0.01 ms to 1,300 ms. The configuration of the network is stored in the switch's non-volatile memory (256 Mbit). As an option, IEEE 802.1Q VLANs can be configured. Profiled IP/UDP, redundancy management and traffic shaping are implemented in hardware. Additionally, the switch supports frame forwarding based on layer 3 (IPv4 addresses).

Data Loading and Diagnosis

The built-in management module runs on a separate CPU and allows for data loading as well as for querying the network status via SNMP. Data loading is done according to ARINC 615A/TFTP (and ARINC 665 loadable software parts).

Application Fields

- Technology evaluation
- Product testing
- Architecture development

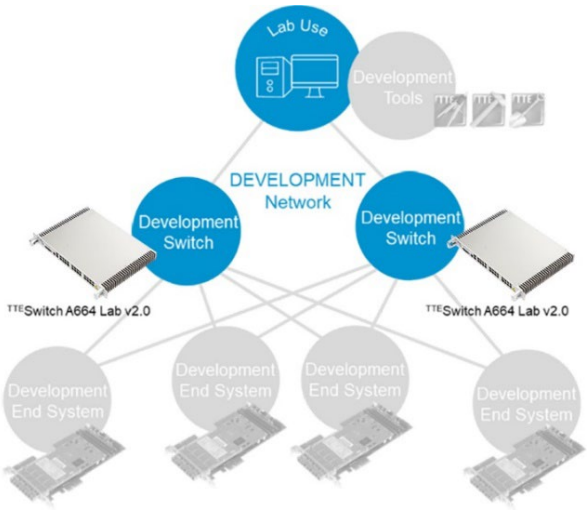
ARINC 664 part 7 Implementation

- Policing, filtering, switching engine for bandwidth control and traffic prioritizing
- Integrity and error checking of frames
- 4,096 virtual links with up to 8 priorities with restrictions of their associated ports
- 4,096 shared bandwidth allocation gaps (BAGs)
- BAGs freely configurable from 0.01 to 1,300 ms
- BAG configuration granularity 100 µs
- SNMP v1 & ICMP fully supported
- Configuration data programmable ARINC 615A/TFTP (ARINC 615A-3)

SAE AS6802 Implementation

- 8 sub-schedules
- 8 clock sync masters
- 4,096 virtual links
- Store-and-forward switch architecture

Deterministic Ethernet Development System Architecture



General Product Features	– 6 x 10/100/1000 Mbit/s full-duplex Ethernet (e.g. for backbone links) – 18 x 10/100 Mbit/s full-duplex Ethernet – 1 x 10/100/1000 Mbit/s mirroring port – Based on flight-certifiable switch module – Ethernet link/activity per port – Availability of copper and optical physical layer – Full line speed switching capability – Layer 3 frame forwarding (based on IPv4 destination addresses) – 256 Mbit Flash memory for storing switch configurations – TMS 570 CPU for management functions – Built-in tests (BITs) for health monitoring – Pin programming (including parity) – External adapter with 12 DIP switches for discrete inputs: reset, shop, ground condition
Standards Compliance	– IEEE 802.3-2005 (switching, flow control) – IEEE 802.1Q (VLAN core capabilities) – ARINC 664 part 7 (fully compliant) – SAE AS6802
Environmental Operating Ranges	– Operational temperature: 0° C to +70° C – Storage temperature: -55° C to +85° C – Operating humidity: humidity levels from 25% to 90%
Power Supply	– AC voltage: 110 to 230 V, 60 to 50 Hz, 0.8 A max.
Dimensions	– Size: 44 x 483 x 356 (in mm) – Weight: 5.0 kg
Form Factor	19” rack housing 1 height unit
Order Number	13204: TTESwitch A664 Lab v2.0

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