The AFDX Switch Lab operates in accordance to all requirements specified in the ARINC 664 p7 standard. Features include traffic policing and frame filtering functions as well as integrity and error checking of frames. Additionally the Switch comes with advanced features like 1Gbit/s speeds, flexible physical layer configuration and extended environmental ratings. The AFDX Switch Lab provides the full range of all technical functionalities of TTTech’s certifiable AFDX production switches making it the optimal switching solution for large variety of application areas.

Switching Function
The high-performance switch enables packet processing on all 24 ports with full line speeds (6x triple-speed 10/100/1000 Mbit/s and 18x 10/100 Mbit/s ports). Naturally the additional monitoring port and all 24 ports operate in full-duplex mode. The high quality configuration tools allow for convenient configuration of deterministic processing of critical Ethernet traffic. Furthermore the switch offers built-in mechanisms for traffic policing, filtering, fault isolation, bandwidth control and traffic prioritizing.

Possible Application Areas
System integration labs, simulators, production test stands, system troubleshooting, soft- & hardware development, data recording and many more.

KEY FEATURES/BENEFITS
- 18 x 10/100 Mbit/s full-duplex Ethernet
- 6 x 10/100/1000 Mbit/s full-duplex Ethernet
- Copper and optical physical layer available
- 100% identical technical feature set of corresponding certifiable AFDX flight switch
- 4096 virtual links with up to 8 priorities
- Highly-customizable BAGs
- AFDX deterministic Ethernet networking as specified in ARINC 664 standards
- Network-level configuration tools available

Virtual Links and Protocol Support
The AFDX Switch Lab allows configuration of up to 4096 virtual links (VLs). The VLs can be configured with 8 priorities, a bandwidth allocation gap (BAG) of 0.5 ms to 1600 ms and a Jitter and BAG resolution of 8ns. The configuration of the network is stored in the switch’s non-volatile memory (256 Mbit). Profiled IP/UDP, redundancy management, and traffic shaping are implemented in hardware. The built-in TMS 570 CPU is used for management and higher-layer protocol functions.

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.
Standards Compliance
- AFDX/ARINC 664 part 7 (fully compliant)

ARINC 664 p7 Implementation
- Policing, filtering, switching engine for bandwidth control and traffic prioritizing
- Integrity and error checking of frames
- 4096 virtual links with up to 8 priorities with restrictions of their associated ports
- 4096 shared bandwidth allocation gaps (BAGs)
- BAGs freely configurable from 0.5 to 1600 ms
- BAG configuration granularity 100us
- Jitter & BAG resolution of 8ns
- SNMP v1 & ICMP fully supported
- Configuration data programmable ARINC 615A/TFTP (ARINC 615A-2 & ARINC 615A-3)

Key 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
- 1x10/100 Mbit/s management & monitoring port
- Ethernet link/ activity LED per port
- Support of Copper and Optical physical layer
- Full line speed switching capability
- 100% identical technical feature set of corresponding certifiable AFDX flight switch
- Up to 64 Mbytes of memory (scalable)
- 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

Connectors
- 6 x 10/100/1000 Mbit/s full-duplex Ethernet (1000Base-T/100Base-Tx via RJ 45)
- 18 x 10/100 Mbit/s Ethernet (100Base-Tx via RJ 45)
- Optional support of optical SFPs
- JTAG connector
- Sub-D-25 connector: For diagnosis and maintenance and access to switch discretes
- Monitoring fault/healthy switch state through SNMP

Form Factor & Dimensions
- 19” rack housing 1 height unit
- Size: 44 x 483 x 356 (in mm)
- Weight: 4,7 kg

Environmental Operating Ranges
- Operational temperature: -40 °C to +70 °C
- Storage temperature: -55 °C to +85 °C
- Operating/non-operating humidity: humidity level from 25 to 90%

Power Supply
- Thermal control 260 W AC power supply with PFC
- AC voltage: 100 to 240 V, 60 to 50 Hz, 2 A max.

Order Number
- 12123: AFDX Switch Lab

Optional Products
- TTETools Bundle