RelyUm® Rugged



Time-Sensitive Networking
SFF Military Switch

MILS0802-10TSN

Overview

In modern defence systems, real-time data transport is critical. Timing and bandwidth define mission success.

The MILS0802-10TSN is a rugged, compact military switch with integrated TSN capabilities designed to deliver deterministic Ethernet performance and high-speed connectivity up to 10 Gbps, enabling time-critical data flows across tactical systems.

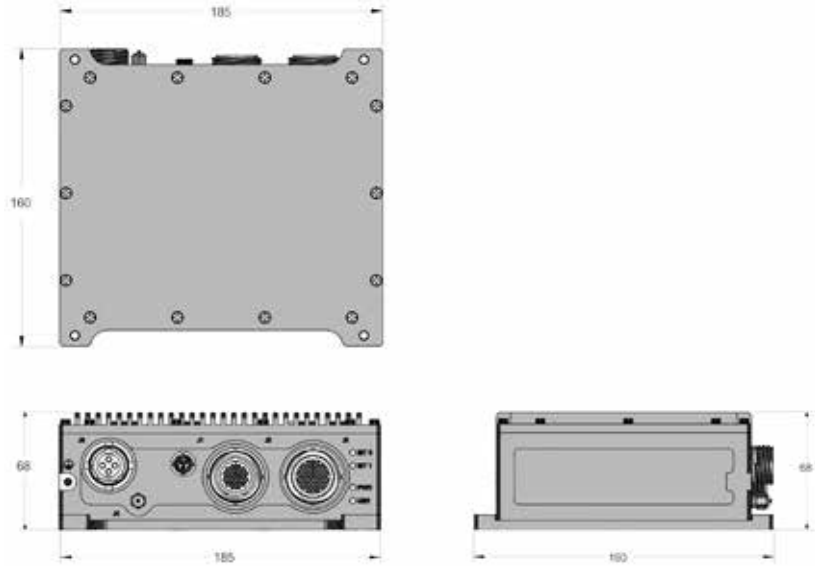
Built for the most demanding operational environments, its small form factor allows seamless integration into space-constrained platforms such as ground vehicles, and mobile command nodes. Time-Sensitive Networking (TSN) ensures bounded latency, low jitter and synchronized traffic, making it ideal for real-time applications.

With full support for TSN standards and military-grade hardening, MILS0802-10TSN switch provides both performance and resilience in the harshest conditions.

Key Features

- **8x 10/100/1000BASE-T** Copper Ethernet ports, **2x 10GbE-SR/LR Fiber Optic** Ethernet ports.
- **Reconfigurable MPSoC** platform with edge computing capabilities to be fully compliant with IEEE 802.1DP and other TSN profiles.
- **“Zero-Packet Loss” redundancy** using TSN FRER for selected traffic combined with MSTP.
- All-in-one equipment with **Grand Master and Clock bridging** capabilities with accurate time distribution via IEEE 802.1AS.
- **Advanced security means** including IEEE 802.1X and MACsec.
- Simplified management and monitoring via a user-friendly HTTPS web interface or a flexible console port, **c ompliant with Qcc for centralised configuration through YANG model configuration files.**
- **Sealed military grade and compact enclosure** with MIL-STD-1275E power supply.

Dimensions



All measurements are in mm.

Technical Specifications

Communication Interfaces

- 8x 10/100/1000BASE-T Copper Ethernet ports
- 2x 10GbE-SR/LR Fibre Optic Ethernet ports
- 1x 10/100/1000BASE-T Ethernet Service port
- 1x 50 ohms PPS output (Miscellaneous connector)
- 1x RS-422 PPS output (Miscellaneous connector)
- 1x 50 ohms PPS input (Miscellaneous connector)
- 1x RS-422 PPS input (Miscellaneous connector)
- 2x RS-232 serial line (Miscellaneous connector)
- 1x 10MHz input (Miscellaneous connector)

Layer 2 Features

- IEEE 802.3-2008 (Ethernet)
- Automatic MAC address learning and aging
- Static MAC Table
- Port-Based Virtual LANs (VLANs):
  - Logical segmentation of network for optimal use of bandwidth
  - IEEE 802.1Q for VLAN tagging (up to 4K VLAN groups)
  - IEEE 802.1p for Class of Service (CoS) / Quality of Service (QoS)
- IEEE 802.1AB for Link Layer Discovery Protocol (LLDP)
- Port rate limiting
- Storm control for flooded broadcast, multicast and unicast
- Layer 2 multicast filtering
- IGMP Snooping (up to 1024 multicast filters)
- Jumbo frame support
- Spanning Tree Protocol:
  - IEEE 802.1D (STP)
  - IEEE 802.1w (RSTP)
  - IEEE 802.1s (MSTP)

TSN Features

- IEEE 802.1AS - Timing and Synchronization
- IEEE 802.1Qav - Credit Based Shaper (CBS)
- IEEE 802.1Qbv - Time Aware Shaper (TAS)
- IEEE 802.1Qci - Per-Stream Filtering and Policing
- IEEE 802.1CB - Frame Replication and Elimination for Reliability (FRER)
- IEEE 802.1Qcc - Stream Reservation Protocol (SRP) Enhancements and Performance Improvements
- 4 priority queues
- Port configuration:
  - 2x 10GbE-SR/LR ports with support for IEEE 802.1AS, IEEE 802.1Qav, IEEE 802.1Qbv, IEEE 802.1CB, IEEE 802.1Qci and IEEE 802.1Qcc
  - 4x 10/100/1000BASE-T ports with support for IEEE 802.1AS, IEEE 802.1Qav, IEEE 802.1Qbv and IEEE 802.1Qcc
  - 4x 10/100/1000BASE-T regular Ethernet ports

For other configurations, please contact your sales representative.

Security

- IEEE 802.1X for port-based network access control
- MAC port binding & authentication for login security
- RADIUS authentication
- RBAC (Role Based Access Control)
- Selective ports disabling capability
- Unsecure protocols disabling capability
- Per port ingress and egress port mirroring
- HTTPS for web interface
- Secure Shell (SSH) Protocol v2 for command line interface
- TPM 2.0 IC for identity authentication
- Encryption/authentication & signature for firmware and bitstream
- IEEE 802.1AE - MACsec (Media Access Control Security) support

Gateway

- Edge-computing capabilities for user defined applications
- Support for DDS standard and MQTT protocol in KVM Virtual Machine for user application (optional)
- Compliant with “DDS Extension for TSN” (OMG Group Standard)

Synchronization

- IEEE 802.1AS - Timing and Synchronization
- Time server and time bridging capabilities
- Time reference obtained from an internally populated GPS chipset (external antenna required through the antenna connector), or from an external provided PPS and serial (NMEA message) input
- GNSS: Time source, geolocation. GPS L1, Galileo, GLONASS G1 and BeiDou B1 frequencies
- Battery backup high accuracy RTC (deviation of ± 3 ppm typ., ± 250 ms/day)
- Time Bridge operation: NTP <-> gPTP <-> GNSS
- IEEE 802.1AS: Time Aware Relay:
  - gPTP Grand Master synchronization accuracy to the reference clock: ± 50 ns (± 25 ns in optimized mode for static position with GNSS reference)
- NTP: Server/Client:
  - NTP v4 (RFC-5905), compatible with NTP v3 (RFC-1305), v2 (RFC-1119) and v1 (RFC-1059)
  - SNTP (RFC-4330)

Configuration & Management

- HTTPS web interface
- SSHv2 command line interface (CLI)
- SNMP V1/V2c/V3 protocol support
- SNMP V3 encrypted authentication and access security
- SNMP over TLS support
- Netconf protocol (YANG model-based configuration) support
- Encrypted and digitally signed firmware / bitstream upgrades
- Saving and restoring configuration
- Internal status monitoring and logging
- Event notification through Syslog
- Statistics independent per port
- DHCP server and relay
- Built-in-Test capability including:
  - PBIT (Power-on BIT)
  - CBIT (Continuous BIT)
  - IBIT (Initiated BIT)
- In-band management via any Ethernet switch port or out-of-band via Ethernet service port
- RS-232 serial console

Processing

- Xilinx UltraScale+ MPSoC device:
  - 2x 64bit CPU ARM-Cortex-A53
  - 2x 32bit CPU ARM-Cortex-R5F
  - 1x 16nm UltraScale+ FPGA
- Up to 4GB DDR4 RAM memory
- 32GB eMMC Flash memory
- 512Mb QSPI Flash memory

Physical & Electrical Characteristics

- Military certified fanless rugged design
- Dimensions (mm): 185(W) | 160(D) | 68(H)
- Weight: 1.9kg (combination of metalwork, PSU and payload)
- Power Input: 28VDC
- Power consumption: TBD
- Copper, fibre optic, power supply and Miscellaneous port with RS-232/PPS capability via D38999 connector

MTBF

- TBD hours GB@25
- MTTR = TBD hours

Warranty

- 2 years

Export Control

- ITAR Free

Certifications

The following certifications are expected to be achieved by the switch:

- MIL-STD-461:G CE101, CE102, CS101, CS114, CS115, CS116, RE101, RE102, RS101, RS103
- MIL-STD-810G Methods: 500.5, 501.5, 502.5, 506.5, 507.5, 508.6, 509.5, 510.5, 513.6, 514.6, 516.6
- RTCA DO-160G: Sections 4, 7, 8, 15, 16, 17, 18, 19, 20, 21, 25, 26
- MIL-STD-1275E
- ESD EN61000-4-2
- IEC-60529 - IP67
- CE Certification

For more information, please contact your sales representative.

Ordering Code

Ordering code	
0802-10TSN-72.38	MILS0802-10TSN: 1G/10G Time-Sensitive Networking SFF Military Switch- 1000Base-SX Fibre Optic ports

To know more about other available references, please contact your sales representative.

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By

MILS0802-10TSN

Time-Sensitive Networking
SFF Military Switch

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