

RelyUm[®] Industrial



12-port 1G
Time-Sensitive Networking Switch

RELY-TSN12

Overview

Time-Sensitive Networking (TSN) seamlessly integrates critical and everyday traffic in a deterministic Ethernet network, offering significant cost savings and reducing dependence on a single vendor. Emerging from the success of RELY-TSN4, SOC-E's TSN journey evolves with RELY-TSN12, built on the company's proven TSN technology.

RELY-TSN12 device features flexible port options, including 8x 10/100/1000Mbps copper ports and 4x 100/1000 Mbps multimedia ports, supporting a broad range of TSN standards for versatility.

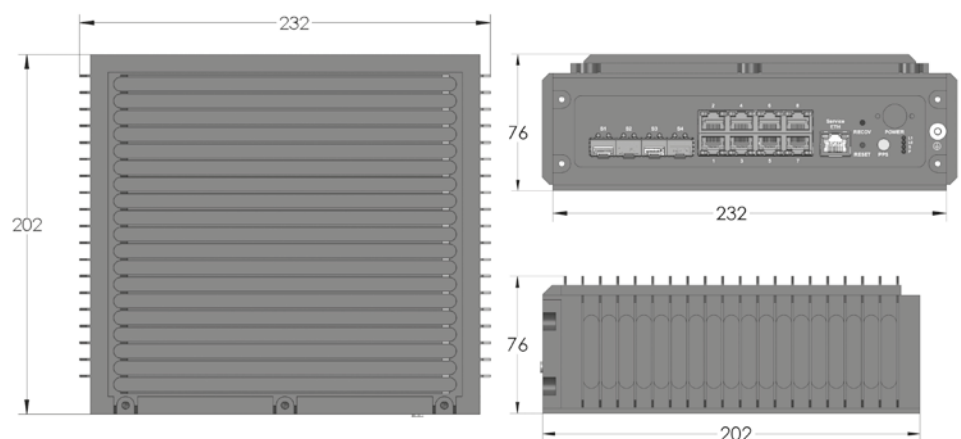
With proven reliability in different critical sectors, the RELY-TSN12 simplifies management through an integrated Web Server for configuration, monitoring, and updates.

Applications for the RELY-TSN12 span real-time precision testing, industrial equipment validation, process automation optimization, secure communication, educational advancements, prototype validation, scientific research, industrial process control, and seamless TSN application development.

Key Features

- **8x 10/100/1000BASE-T TSN** ports and **4x 100/1000BASE-SFP TSN** ports supporting a **wide range of TSN standards**.
- FPGA-based solution, powered with **SOC-E's in-house designed** technology, to be **easily upgraded** as TSN standards evolves.
- **"Zero-Packet Loss" redundancy** using TSN FRER for selected traffic combined with MSTP.
- Simplified management and monitoring via a user-friendly HTTPS web interface or SSH accessible CLI. **Compliant with Qcc for centralized configuration through YANG model configuration files.**
- Comprehensive **TSN Ecosystem** offering combined **with SOC-E's TSN Expertise**, to deploy a turnkey project.

Dimensions



Technical Specifications

Communication Interfaces

- 4x 100/1000BASE-SFP TSN Ethernet ports
- 8x 10/100/1000BASE-T(X) TSN Ethernet ports
- 1x 10/100/1000BASE-T(X) Ethernet Service port
- 1 x PPS output (SMA 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)
- 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

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
- Encryption/authentication & signature for firmware and bitstream

Configuration & Management

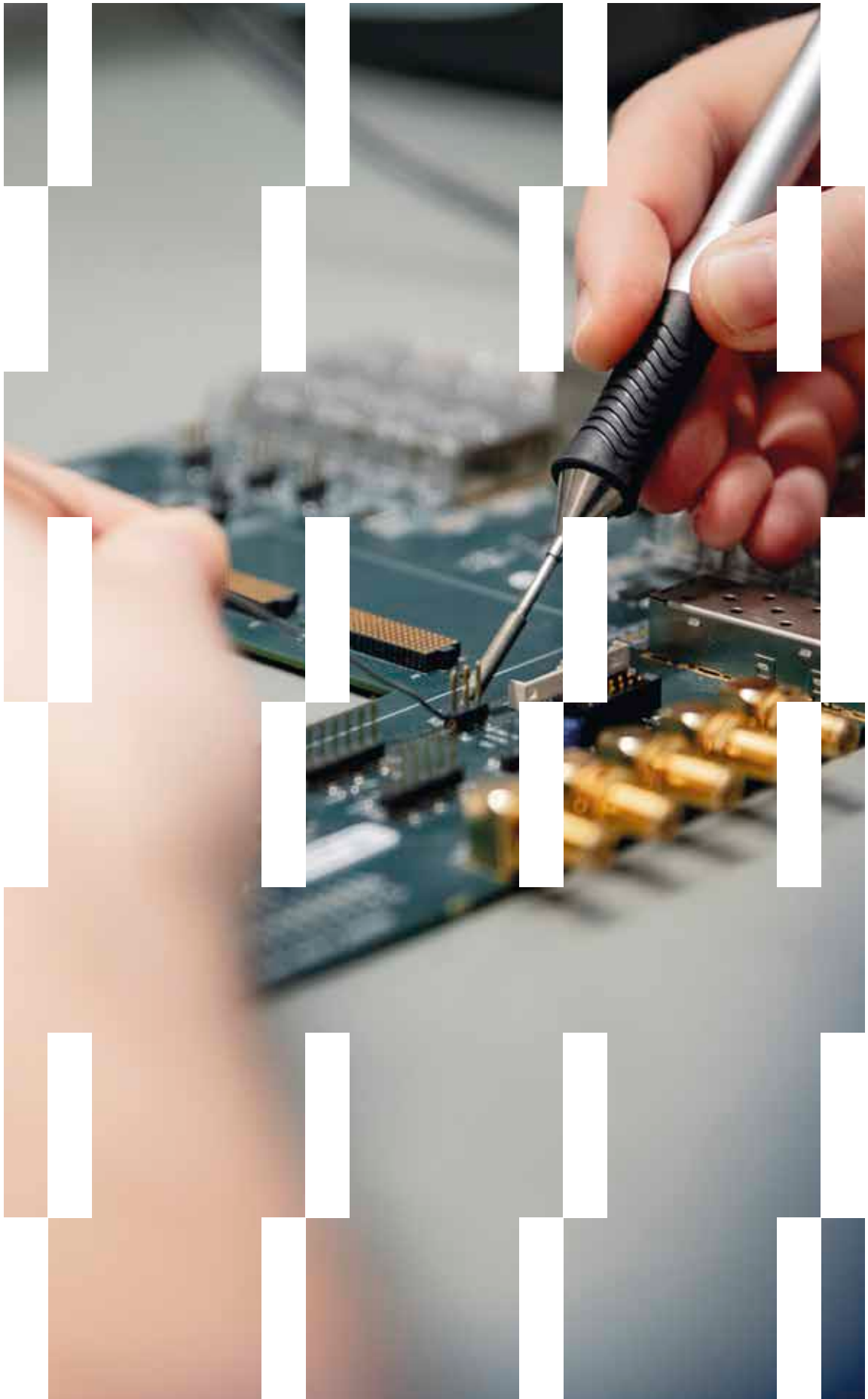
- HTTPS web interface
- SSHv2 command line interface (CLI)
- Netconf protocol (YANG model-based configuration) support
- Encrypted and digitally signed firmware/bitstream upgrades
- Saving and restoring configuration
- Internal status monitoring and logging
- Event notification through Syslog
- Statistics independent per port
- In-band management via any Ethernet switch port or out-of-band via Ethernet service port

Processing	• Xilinx UltraScale+ MPSoC device: - 4x 64bit CPU ARM-Cortex-A53 - 2x 32bit CPU ARM-Cortex-R5F - 1x GPU ARM-Mali 400MHz - 1x 16nm UltraScale+ FPGA	• 4GB DDR4 RAM memory • 32GB eMMC Flash memory • 512Mb QSPI Flash memory
Physical & Electrical Characteristics	• Fanless design and full metal enclosure • Dimensions (mm): 232(W) 202(D) 76(H) • Weight: 2.62kg • Power input: 5VDC @ 10A • Included power adapter with voltage range 100-240VAC	• Power consumption: 15-25W • Operating temperature: - Power adapter: 0°C to +40°C - Equipment: -35°C to +45°C • Storage temperature: - Power adapter: -20°C to +80°C - Equipment: -40°C to +85°C • Optional mounting over coldplate
MTBF	• 500,000 hours GB@25 (w/out external power adapter)	• MTTR = 0.5 hour (w/out external power adapter)
Warranty	• 2 years	
Certifications	• UNE-EN 61326-1:2013	• UNE-EN 61326-2-1:2013

Ordering Code

Ordering code	Model and description
TSN32.05	RELY-TSN12: 12-port Time-Sensitive Networking Switch
Accessories	
A-SFP-CU-02.01	COPPER SFP (10/100/1000): Copper tri-speed RJ45 SFP Module
A-SFP-FO-MM-01.01	FIBRE SFP (100) – 1310/MM/LC: Multimode Fibre Optic LC Connector 1310nm 100Mbps SFP Module
A-SFP-FO-SM-01.01	FIBRE SFP (100) – 1310/SM/LC: Singlemode Fibre Optic LC Connector 1310nm 100Mbps SFP Module
A-SFP-FO-MM-02.01	FIBRE SFP (1000) – 850/MM/LC: Multimode Fibre Optic LC Connector 850nm 1000Mbps SFP Module
A-SFP-FO-MM-02.02	FIBRE SFP (1000) – 1310/MM/LC: Multimode Fibre Optic LC Connector 1310nm 1000Mbps SFP Module

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



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