# RelyUm® Industrial


4-port HSR/PRP/PTP Redbox Switch

# RELY-RB

# Overview

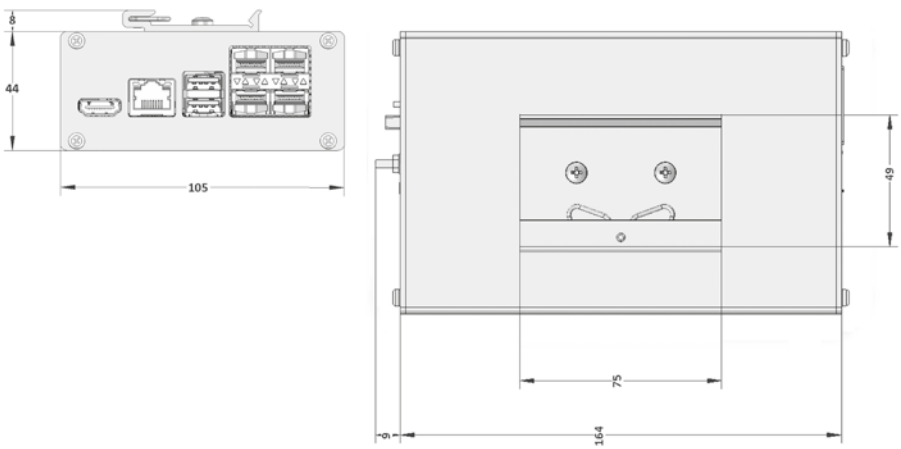
Critical systems demand time-aware high-availability networking. Moreover, the complexity of the modern network infrastructures in these premises overcomes the traditional concept of “managed” device.

RELY-RB is a new concept of intelligent device that integrates advanced field-proven technology for “Zero-Packet Loss” redundant Ethernet, sub-microsecond synchronization and cybersecurity. This device is able to merge the whole LAN with redundant networks, to interconnect PRP and HSR networks and to extend HSR rings via QuadBox operation.

# Key Features

- Full in-house design (SOC-E IP Cores) based on a **reconfigurable platform, upgradable and customizable**.
- Support for **HSR/PRP** “Zero-Packet Loss” redundancy and **NTP/PTP** sub-microsecond synchronization.
- Support for **QuadBox operation** modes: HSR-HSR, HSR-PRP.
- **Simplified management and monitoring** via a user-friendly HTTPS web interface or SSH accessible CLI.

# Dimensions



# Technical Specifications

## Communication Interfaces

- 2x 100/1000BASE-SFP HSR/PRP Ethernet ports
- 2x 100/1000BASE-SFP Regular Ethernet ports (Redbox interlink)
- 1x 10/100/1000BASE-T(X) Ethernet Service port
- 1 x PPS output (MCX 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)
- Switching port mask for forwarding
- Port rate limiting
- Storm control for flooded broadcast, multicast and unicast
- Layer 2 multicast filtering
- Zero-Recovery Time redundancy:
  - High-availability Seamless Redundancy (HSR) - IEC 62439-3 Clause 5
    - Supported modes: H, N, U, HSR-SAN, PRP-HSR, HSR-HSR
    - Cut-through operation for the HSR ring to minimize the latency in the ring
  - Parallel Redundancy Protocol (PRP) - IEC 62439-3 Clause 4
    - Supported modes: Duplicate discard, duplicate accept, transparent reception, PRP-HSR
    - Store & Forward for PRP and Ethernet operation
- Spanning Tree Protocol:
  - IEEE 802.1w (RSTP)

## Synchronization

- IEEE 1588-2008 v2 (PTPv2)
- IEEE 1588 Stateless Transparent Clock (TC)
- IEEE 1588 Ordinary Clock (Master-Slave)
- NTP (Server/Client)

## 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 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)
- SNMP V1/V2c/V3 protocol support
- SNMP V3 encrypted authentication and access security
- Encrypted and digitally signed firmware/bitstream upgrades
- Saving and restoring configuration
- Internal status monitoring and logging
- Graphic representation of HSR/PRP network status
- Statistics independent per port
- In-band management via any Ethernet switch port or out-of-band via Ethernet service port

## Processing

- Xilinx Zynq-7000 SoC device:
  - 2x 32bit CPU ARM-Cortex-A9
  - 1x 28nm Programmable FPGA
- 1GB DDR3 RAM memory
- 16GB eMMC Flash memory
- 256Mb QSPI Flash memory

## Physical & Electrical Characteristics

- Fanless design and full metal enclosure
- Dimensions (mm):
  - RELY-RB 12VDC: 105(W) | 164(D) | 44(H)
  - RELY-RB 48VDC & 125VDC: 105 (W) | 164 (D) | 74.6(H)
- Weight: 1kg
- Power input:
  - RELY-RB 12VDC: 9VDC to 30VDC
  - RELY-RB 48VDC: 36VDC to 75VDC
  - RELY-RB 125VDC: 36VDC to 150VDC
- Operating temperature: -40°C to +70°C
- Storage temperature: -40°C to +85°C
- Optional mounting: DIN rail

## Warranty

- 2 years

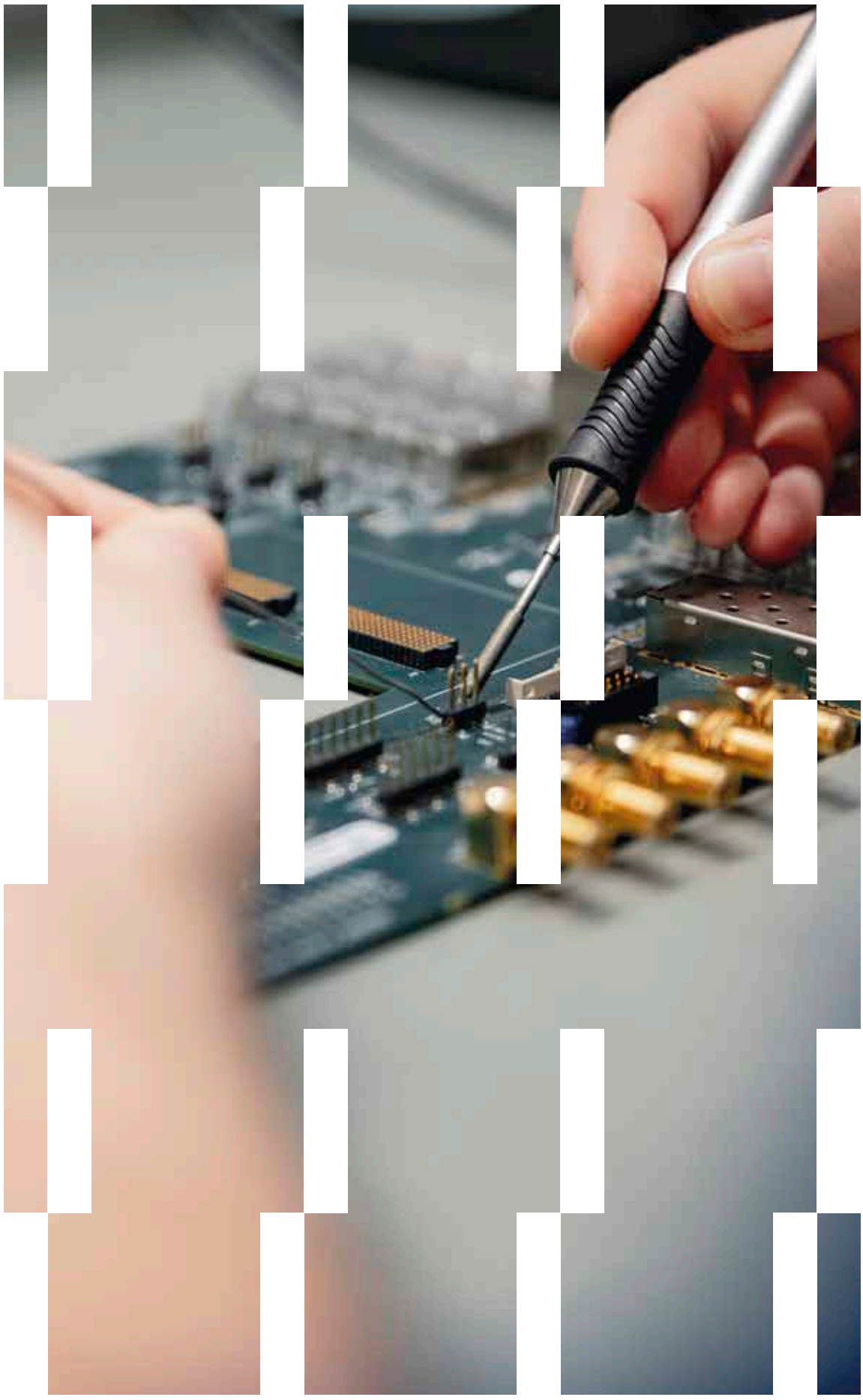
## Certifications

- UNE-EN 61326-1:2013
- UNE-EN 61326-2-1:2013
- IEC 61850-3:2013

## Ordering Code

| Ordering code | Model and description |
|---|---|
| RB12.09 | RELY-RB: 4-port HSR/PRP/PTP Redbox Switch |
| RB12.10 | RELY-RB (125VDC): 4-port HSR/PRP/PTP Redbox Switch - 125VDC power supply |
| RB12.11 | RELY-RB (48VDC): 4-port HSR/PRP/PTP Redbox Switch - 48VDC power supply |
| **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.



# RelyUm®
# By

RELY-RB

4-port HSR/PRP/PTP Redbox Switch

# SOC-E®

www.soc-e.com
info@soc-e.com

Calle Islas Canarias 19, piso -1
48015 Bilbao (Spain)