

Time-aware Redbox Switch

FEATURES HIGHLIGHTS

- Intelligent device that integrates advanced field-proven technology for non-packet-loss redundant Ethernet, sub-microsecond synchronization and cybersecurity.
- Able to merge the whole LAN with redundant networks, to interconnect PRP and HSR networks and to extend HSR rings via QuadBox operation.
- In compliance with IEC 61850-3 / IEEE 1613.
- Ports number can be adapted to customer needs.
- Completely secure and reliable infrastructure.

SIC-R



SIC-R0



SIC-R1



SIC-R2



MODELS

SIC-R0	SIC-R1	SIC-R2
1x 10/100/1000Base-TX Ethernet copper port (Console/Service/Security)	1x 10/100/1000Base-TX Ethernet copper port (Console/Service/Security)	1x 10/100/1000Base-TX Ethernet copper port (Console/Service/Security)
4x SFP Cages for 10/100/1000Base-TX Ethernet copper or 100Base-FX/1000Base-X fiber	6x 10/100/1000Base-TX Ethernet copper port	6x 10/100/1000Base-TX Ethernet copper port 2x SFP Cages for 10/100/1000Base-TX Ethernet copper or 100Base-FX/1000Base-X fiber

SPECIFICATIONS

Communication interfaces

- Multiple PTP Tri-speed Ethernet ports
- Zero-Packet-Loss redundancy modes:
 - » IEC 62439-3 v3 Clause 5 “High-availability Seamless Redundancy (HSR)”
Modes: H, N, T, U, X, HSR-SAN, PRP-HSR, HSR-HSR
 - » IEC 62439-3 v3 Clause 4 “Parallel Redundancy Protocol (PRP)”
Modes: Duplicate discard, duplicate accept, transparent reception, PRP-HSR
- Optional modes:
 - » IEC 62439-2 Clause 5 “Media Redundancy Protocol (MRP)”
 - » “Device Level Ring (DLR)” for Ethernet IP
 - » RSTP IEEE802.1w
- VLAN support and Ethernet type based or IEEE 802.1P Traffic prioritization
- Cut-through and Store&Forward switching capability

Synchronization

- IEEE 1588-2008 PTPv2. Optional IRIGb Master/Slave bridge
- Modes: Transparent Clock, Ordinary Clock, Boundary Clock
- Profiles: Default, Power, IEC 61850-9-3,AS
- IEEE 1588 Stateless Transparent Clock P2P mode to support
- IEEE 1588 PRP/HSR redundant networks merging

Other interfaces (not available in all models)

- 1x RS485 port
- 2 x USB type A ports
- 1x HDMI output
- 1x Alarm output (potential-free relay 250VACmax.)
- 1x Pulse-Per-Second (PPS) SMA output

Processing performance

- Xilinx Zynq FPGA with embedded dual-core ARM9 processor
- 1GB DDR3 RAM Memory
- Linux Operating System

Security

- Optional support for IEC 62351-6 wire-speed cryptography
- Security infrastructure for IEC 62351-9 Key Exchange facilities
- AES 256, HMAC and RSA hardware engines for software and firmware encryption, authentication and signature
- Secure boot
- System Level audited security (OS & Applications)
- Integrated anti-tampering, accelerometers and power consumption measurement sensors to mitigate advanced security attacks
- Ethernet port isolated from switching infrastructure to implement security oriented services (NAT, Firewall, VPN, etc.)
- IEEE 802.1X access control for port based and MAC based authentication, MAC-Port binding and authentication for login security
- Optional internal mirroring port with deep packet inspection capability
- Optional integrated SIEM agent for IDS and Syslogv5 TLS support for distributed SIEMs approach

Rugged devices

- IEC 61850-3 / IEEE 1613
- Fanless design and full metal enclosure
- Redundant Power Supply: 6VDC to 36 VDC
- Optional PS: 48VDC / 125VDC
- Operating. temperature.: -40°C to +70°C
- Storage temperature.: -40°C to +85°C
- Optional mounting: DIN rail

Configuration and management

- SNMPv3, SSH
- Web-based HTML5-GUI access/configuration
- Accessible through HTTP(S)
- Configuration profiles and Firmware updates
- Real-time network monitoring