ECRIN Systems

Quartz

Rugged 10 ports Ethernet Switch

HIGH-END ETHERNET SWITCH IN A SMALL FORM FACTOR

The Quartz is a cutting-edge rugged switch designed for performance and reliability in challenging environments. This robust solution features Gigabit and 10 Gigabit Ethernet ports, with configurations supporting up to 8 copper and 2 optical ports, ensuring flexible connectivity for various network setups. Built to endure extreme environmental conditions, it guarantees reliable and resilient operation, even in the harshest industrial or outdoor settings.

Supporting both Layer 2 and Layer 3 functions, this switch offers advanced network management capabilities and provides network advanced security features to safeguard the infrastructures. It also includes a PTP GrandmasterClock function for precise time synchronization and according to the need,comes with a configuration that supports Time-Sensitive Networking (TSN),ensuring high-performance and real-time data transmission for critical applications. The Quartz is perfectly suited for applications demanding strict timing accuracy and reliability.

Combining cutting-edge performance with industry-leading durability, this switch delivers a powerful solution for critical network demands.

- Rugged COTS Ethernet switch – 10 ports
- 8 ports 10/100/1000Base-T
- 2 fiber ports 1000Base-SX or LX on Quartz-SR / SSR
- 2 fiber ports 10GBase-SR or LR on Quartz-SSR-GM / TSN
- Fully managed L2/L3 (L3 not included in TSN version)
- MIL-DTL-38999 connectors
- Qualified according DO-160, MIL-STD-461, MIL-STD-810, MIL-STD-1275E norms
- TSN support on specific version
- Option – PTP 1588v2 support with grandmaster clock
- ITAR free
- RoHS, REACH compliant

8x 1GbE (copper) and 2x 10GbE (fiber)

MIL-DTL-38999 connectors 1000Base-T

Fully managed L2/L3

FRENCH MANUFACTURER

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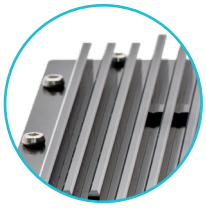
AVAILBALE VERSION

Quartz-EL	Entry Level Rugged Ethernet Switch / Router • L2/L3 managed • Firmware featuring basic Switch / Router functionalities • 8x 1000Base-T Ports (MIL-DTL-38999 connectors)
Quartz-SR	Entry Level Rugged Ethernet Switch / Router • L2/L3 managed • Firmware featuring basic Switch / Router functionalities • 8x 1000Base-T Ports (MIL-DTL-38999 connectors) • 2x Fiber Ports 1000Base-SR (MIL-DTL-38999 connectors)
Quartz-SSR	Entry Level Rugged Ethernet Switch / Router • L2/L3 managed • Firmware featuring basic Switch / Router functionalities • 8x 1000Base-T Ports (MIL-DTL-38999 connectors) • 2x Fiber Ports 1000Base-SR (MIL-DTL-38999 connectors)
Quartz-SSR-GM	Rugged Ethernet Secure Switch/Router and Grand Master capabilities • L2/L3 managed • Firmware featuring basic Switch / Router functionalities + Secure Switch / Router functionalities (VPN, Firewall, ...) + PTP/NTP Grand Master • 8x 1000Base-T Ports (MIL-DTL-38999 connectors) • 2x Fiber Ports 10GBase-SR (MIL-DTL-38999 connectors)
Quartz-TSN	Rugged Ethernet Switch / Router with TSN • L2 managed • Firmware featuring basic Switch / Router functionalities + TSN • 8x 1000Base-T Ports (MIL-DTL-38999 connectors) • 2x Fiber Ports 10GBase-SR (MIL-DTL-38999 connectors)



Cooling fins

MIL-DTL-38999 connectors

Optical interfaces

LAYER 2 FEATURES

	EL	SR	SSR	SSR-GM	TSN
Automatic MAC address learning and aging	•	•	•	•	•
MAC Address filtering on a port-by-port basis by static way (Static MAC table)	•	•	•	•	•
Port Based Virtual LANs (VLANs)	•	•	•	•	•
IEEE 802.1Q for VLAN tagging	•	•	•	•	•
VLAN Priority PCP (802.1P)	•	•	•	•	•
QoS on all ports (4x Priority Queues)	•	•	•	•	•
LLDP (Link Layer Discovery Protocol) (IEEE 802.1AB)	•	•	•	•	•
Broadcast protection / Rate limiting	•	•	•	•	•
Storm prevention (Storm controllers for flooded broadcast, multicast and unicast)	•	•	•	•	•
Layer 2 Multicast filtering	•	•	•	•	•
Activation and deactivation of IGMP Snooping on a port-by-port basis.	•	•	•	•	•
Transfer of one to several ports to a Port Mirroring.		•	•	•	•
Spanning Tree Protocol (STP IEEE 802.1D)	•	•	•	•	•
Rapid Spanning Tree Protocol (RSTP IEEE 802.1s/w)	•	•	•	•	•
Multiple Spanning Tree Protocol (MSTP IEEE 802.1Q-2005)	•	•	•	•	•
IEEE 1588 StateLess TC (Transparent Clock)		•	•	•	•
IEEE 802.1X for port-based network access control		•	•	•	•
IEEE 802.1AE (MACSec) on copper and fiber ports.		•	•	•	•
Jumbo frame support				•	•

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LAYER 3 FEATURES	EL	SR	SSR	SSR-GM	TSN
IPv4/IPv6 support	•	•	•	•	
Multicast IP Routing	•	•	•	•	
Static routing	•	•	•	•	
Dynamic routing: OSPFv2, OSPFv3, RIPv1, RIPv2, RIPng, BGPv4, EIGRP, PIM-SM (IPv4 and IPv6)	•	•	•	•	
Policy Based Routing (PBR) (*supported in 2026)					
Virtual Router Redundancy Protocol (VRRP)	•	•	•	•	
Differentiated Services Code Point (DSCP)	•	•	•	•	
Network Address Translation / Port Address Translation (NAT/PAT)	•	•	•	•	
IGMPv2 and IGMPv3 support	•	•	•	•	
Proxy ARP	•	•	•	•	
Internet Control Message Protocol (ICMP)	•	•	•	•	

SECURITY - RELIABILITY	EL	SR	SSR	SSR-GM	TSN
Integrated Built In Test (pBIT)	•	•	•	•	•
Trusted Platform Module (TPM) 2.0	•	•	•	•	•
Selective ports / Unsecure ports disabling capability	•	•	•	•	•
IEEE 802.1AE (MACSec) on copper and fiber ports.		•	•	•	•
VPN tunnels. Bandwidth: TBD Mbps per VPN.			•	•	
IPSec VPN tunnel clients and servers			•	•	
L2TP VPN tunnels support			•	•	
PPTP VPN tunnels support			•	•	
Gretap VPN tunnels support			•	•	
Secure Sockets Layer Virtual Private Network (SSL VPN)			•	•	
VPN client to transfer data using secured IPsec protocol in Transport and Tunnel Modes			•	•	
Stateful inspection firewall			•	•	
Access Control List (ACL) level 2, 3 , 4 for routed traffic			•	•	
Protection against the Denial of Service (DoS) and Distributed Denial of Service (DDoS) attacks		•	•	•	•
Intrusion attempts 2, 3 & 4		•	•	•	•

TIME SENSITIVE NETWORK	EL	SR	SSR	SSR-GM	TSN
IEEE 802.1 AS – Clock synchronization protocol					•
IEEE 802.1 Qav – AVB Credit Based Shaper (CBS)					•
IEEE 802.1 Qbv – Time Aware Sharper (TAS)					•
IEEE 802.1 Qci – Per stream ingress policing 2					•
IEEE 802.1 CB – Redundancy, Frame replication					•

Note: TSN features not available in all the ports

TIME SERVER - SYNCHRONIZATION	EL	SR	SSR	SSR-GM	TSN
NTPv4 (RFC 5905)	•	•	•	•	•
SNTP (RFC 4330)	•	•	•	•	•
SPTPv2 (IEEE 1588)		•	•	•	
Synchronisation from external reference clock: GNSS receiver, 1 PPS				•	•
Grandmaster time server: NTPv4 (RFC 5905), PTPv2 (IEEE 1588)				•	
Grandmaster time server: NTPv4 (RFC 5905), IEEE802.1AS-2020					•

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MANAGEMENT CONFIGURATION	EL	SR	SSR	SSR-GM	TSN
Management interface through service port (RS232 and 1000Base-T)	•	•	•	•	•
Configuration saving based on secure protocol (SCP, HTTPS…)	•	•	•	•	•
Configuration restoring based on secure protocol (SCP, HTTPS…)	•	•	•	•	•
DHCP client/relay/server	•	•	•	•	•
Management through WEB GUI interface, CLI, SNMP	•	•	•	•	•

COMMUNICATION INTERFACES	EL	SR	SSR	SSR-GM	TSN
8x Ethernet 10/100/1000-BaseT	•	•	•	•	•
2x 1GbE Fibre Optic ports (1000Base-SX)		•	•		
2x 10GbE Fibre Optic ports (10GBase-SR)				•	•
2x Synchronization Output (50 ohm or RS-422)		•	•	•	•
2x Synchronization Input (50 ohm RS-422)				•	•
1x NMEA input (RS-232)				•	•
1x PPS input (50 ohm)				•	•
1x 10MHz input				•	•
Internal GNSS - Antenna input				•	•
1x 10/100/1000BaseT Ethernet Service port	•	•	•	•	•
1x RS-232 Service port	•	•	•	•	•

PHYSICAL & ELECTRICAL CHARACTERISTICS

Size (WxDxH)	185mm x 160mm x 68mm
Weight	1,9kg (TBC)
Cooling types	Conduction cooled system: convection & radiation by fins, conduction by cold plate or forced air flow
Connectors	MIL-DTL-38999 connectors Front panel customizable for specific applications
Power Input	+28VDC (+12VDC up to +36VDC)
Filtering	EMI filtering according to DO-160 / MIL-STD-461 / MIL-STD-704 / MIL-STD-1275
Power consumption	Up to 30W, 20W typica
HoldUp module	According to DO160, Section 16, Category B, 50ms

CERTIFICATIONS	FULLY QUALIFIED PRODUCT ACCORDING TO:
RTCA DO-160G	Sections 4, 7, 8, 15, 16, 17, 18, 19, 20, 21, 25, 26
MIL-STD-810G	1Methods 500.5, 501.5, 502.5, 506.5, 507.5, 508.6, 509.5, 510.5, 513.6, 514.6, 516.6
MIL-STD-461G	CE101, CE102, CS101, CS114, CS115, CS116, RE101, RE102, RS101, RS103
MIL-STD-1275E	
ESD	EN61000-4-2
Ingress protection	IP67
CE Certification	

Quartz-Starter kit

ECRIN Systems proposes a starter kit to support the evaluation and integration of the QUARTZ.
The kit includes a fully assembled and integrated switch board, standard interfaces ,(RJ45, SMA etc) and access to configuration tools
It is designed not only as an evaluation platform, but also as a lightweight,deployable solution for non-constrained or low-demand environments.
This allows for both rapid prototyping and field testing with minimal additional integration effort.

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