

# RocketLinx® ES8520-XT

Part Number: 32142-2



## KEY FEATURES AND BENEFITS

- 16 10/100Base-TX Ethernet ports
- 4 Gigabit RJ45/SFP combo ports
- 1000Mbps Optical Fiber Connection
- Supports TACACS+
- NEMA TS2 compliant
- Wide Operating Temperature -40 to 75° C
- 11.2Gbps Non-Blocking, High Speed Network Switching Fabric
- 1.5Mbytes shared memory for packet buffering
- 9Kbytes Jumbo Frame for large data transmission
- Network Redundancy - Redundant Ring, RSTP, MSTP Super Chain
- Full Device Management - SNMP v1/v2c/v3, RMON, Web UI, Telnet and Local Console, PortVision DX
- Advanced Network Security - MAC security, IEEE 802.1x Port Based access control, IEEE 802.1x Radius Server authentication
- Layer 2 Network Performance - IEEE802.1Q VLAN, Private VLAN, Trunk, Traffic Filtering, DHCP Server/Client, Traffic Prioritize, Forwarding Rate Control
- Layer 2 plus Packet Filtering - MAC based, of TCP/UDP, ICMP
- Real Hardware Watchdog compliant
- Multiple Event Dry Relay Output alarm, Digital Input
- High Level Electromagnetic interference immunity
- Compliance with Heavy Industrial EMC, Track Side EMC



## HARDWARE

**Network Interfaces**  
Gigabit fiber (SX/LX/LHX/XD/ZX)

**Connector Type**  
16 - RJ45  
4 - RJ45/SFP Combo

**Ingress Protection** IP30

**Enclosure**  
Sheet Metal Aluminum Case

**Installation Method** EN50022 DIN Rail

**LED Indicators**  
Power (PWR1 and PWR2) System Status (SYS)  
Ring Signal (RS), Digital Input (DI), Digital Output (DO)  
RJ45 Link/Activity and Link Speed  
SFP Port Link/Activity and Link Speed

**Digital Input (DI)**  
One DI, 4-Pin Screw Terminal Block

**Digital Output (DO)**  
One DO (Dry Relay Output), 4-Pin Screw Terminal Block

**Serial Console Port**  
One RJ45 RS-232 (TXD, RXD, Signal GND)  
Baud Rate: 115200 bps  
Data Bits: 8  
Parity: None  
Stop Bits: 1  
Flow Control: None

**Dimensions**  
*Without DIN Rail Clip*  
6.3" (H) x 4.25" (W) x 5.0" (D)  
160 (H) x 108 (W) x 127 (D) mm  
*With DIN Rail Clip*  
6.3" (H) x 4.25" (W) x 5.35" (D)  
160 (H) x 108 (W) x 136 (D) mm

**Packet Buffer Memory**  
1.5Mbytes Shared Memory

**Switch Technology**  
11.2Gbps Non-Blocking Switch Fabric  
Store/Forward Switch Technology  
16K MAC Address

**System Throughput**  
26 Mega Packets/Second  
64 byte Packet Size, 14,880pps  
10Mbps; 148,800pps  
100Mbps; 1,488,100pps  
1000Mbps; Max Packet Size 1632

**Product Weight**  
4.2 lbs  
1.871 kg

## ETHERNET SPECIFICATIONS

**Number of Ports**  
16 - RJ45 and 4 - Combo (RJ45/SFP)

**RJ45**  
10/100BASE-TX (Ports 1-16)  
10/100/1000-BASE-TX (Ports 17-20)  
Auto MDI/MDIX  
Auto-Negotiation (Speed/Duplex Mode)

**SFP (Optional)**  
1000BASE Single-Mode, Multi-Mode, and BIDI/WDM Single-Mode  
Auto MDI/MDIX  
Auto-Negotiation (Speed/Duplex Mode)  
Hot-swappable  
Digital Diagnostic Monitoring (DDM)  
Auto-recognition functionality

**Cable Types**  
Cat 5, Cat 5e, Cat6 (UTP or STP)

**Link Distances**  
RJ45: 100 Meters  
SFP: Single-Mode: 30KM, Multi-Mode: 2KM

**Port Alarm Relay** Yes

**Transfer Packet Size**  
64 bytes to 9712 bytes (excludes Tag)

**Standards**  
IEEE 802.3u: 10BASE-T Ethernet  
IEEE 802.3z: 100BASE-TX Fast Ethernet  
IEEE 802.3z: Gigabit Ethernet Fiber  
IEEE 802.3ab: 1000BASE-T Gigabit Ethernet Copper  
IEEE 802.1AB: Link Layer Discovery Protocol (LLDP)  
IEEE 802.1D-2004: Rapid Spanning Tree Protocol (RSTP)  
IEEE 802.1p: Class of Service  
IEEE 802.1Q: VLAN Tagging, GVRP, and Double Tag VLAN  
IEEE 802.1s: Multiple Spanning Tree Protocol (MSTP)  
IEEE 802.1X: Port Based Network Access Control  
IEEE 802.3ad: Port Trunking with Link Aggregation Control Protocol (LACP)  
IEEE 802.3x: Flow Control and Back-Pressure  
IEEE 1588-2008: Precision Time Protocol (PTP)

**Internet Protocol** IPv4, IPv6 ready

## MANAGEMENT FEATURES

**Configuration and Monitoring**  
*In-Band Management:* Web Interface with SSL (HTTP/HTTPS) or a Telnet with SSH, IPv4/IPv6 SNMP V1/V2c/V3 with SNMP Trap (4 Trap Stations), RMON Groups 1,2,3, and 9  
*Out-Band Management:* Local RS-232/RJ45 Console Port with Command Line Interface (CLI) - Similar to Cisco CLI

**Embedded Watchdog**  
Embedded Hardware Watchdog Timer (10 sec) Automatically Resets System if Switch System Failure Occurs

**System Upgrade/Backup**  
Provides TFTP/Web Interface for Firmware Upgrade and Configuration Backup/Restore

**SNMP**  
V1, V2c, V3 with SNMP Trap Function  
Up to Four Trap Stations

**SNMP MIB**  
MIB-II, Bridge MIB, VLAN MIB, IGMP MIB, Ethernet-like MIB, Control Private MIB, and RMON

**Email Warning**  
Automatic Warning, Up to Four Accounts by Pre-Defined Events

**System Log**  
Supports both local mode and server mode

**Management Utility**  
PortVision DX: configure network settings, upload firmware, manage, and monitor Control Ethernet-attached devices

## NETWORK REDUNDANCY

**Loop Protection**  
Layer 2 loop prevention through the STP, RSTP, and MSTP  
Increases the efficiency of STP, RSTP, and MSTP by preventing ports from moving into a forwarding state that would result in a loop in the network

**Rapid Spanning Tree Protocol (RSTP)**  
IEEE 802.1D-2004 Rapid Spanning Tree Protocol (RSTP)  
Compatible with Legacy STP and IEEE 802.1w

**Multiple Spanning Tree Protocol**  
IEEE 802.1s MSTP  
Each MSTP Instance Can Include One or More VLANs  
Supports Multiple RSTP Deployed in a VLAN or Multiple VLANs

**Redundant Ring Technology**  
Failure Recovery within 20ms  
Rapid Dual Homing: Multiple Uplink Paths to Upper Switches  
Ring Trunking: Integrates Port Aggregate Function in Ring Path to Get Higher Throughput Ring Architecture  
Multiple Ring: Couple or Multiples of Up to 10 Rapid Super Rings in One Device, Supports Up to Eight 100M and Two Gigabit Rings in One Switch  
Super-Chain: Flexible and scalable, compatible, and easy to configure. The Ring Includes Two Types of Node Switches: Border Switch and Member Switch.

## NETWORK PERFORMANCE

**Access Control List**  
Permit/Deny access control lists

**Back-Pressure**  
IEEE 802.3x: 1000Mbps Half-Duplex Only

**Class of Service (CoS)**  
IEEE 802.1p: 8 priority queues/port

**DHCP**  
DHCP Client/Server with IP and MAC Address Binding  
Port-Based DHCP Server Configuration  
DHCP Relay Agent (Option 82)  
DHCP Server with Static Port-Based IP Assigned Function

**Flow Control Pause Frame**  
IEEE 802.3x: 10/100/1000Mbps Full-Duplex

**GMRP**  
GARP multicast registration protocol

**IEEE**  
802.1adDouble-Tag for Private VLAN Access

**IGMP Snooping**  
V1/V2c/V3 for multicast filtering and IGMP query V1/V2;  
Supports unknown multicasting, Processes Forwarding Policies; Drop, Flooding and Forward to Router Port

**IP Security**  
Assign Authorized IP Addresses to Specific Port, 10 Max/Port

**LLDP**  
Link Layer Discovery Protocol - Advertizes System and Port Identity Capability on the Local Network

**Modbus TCP/IP**  
CLI support for Modbus TCP/IP communications with Function Code 4 (factory automation). Operates as slave/ server device, while a typical master/client device is a host computer running appropriate through Ethernet. The Modbus TCP/IP master can read or write to the Modbus registers provided by the Modbus TCP/IP application software (SCADA/HMI System).

**Port Based Network Access Control/EAP IEEE**  
802.1X: Port-Based network Access Control with EoP (Extensible Authentication Protocol over LAN) to Permit or Deny Interface Access with Remote RADIUS Server Authentication, Supports TACACS+

**Port Configuration**  
Port Link Speed, Link Mode, Port Status, Enable/Disable

**Port Mirroring**  
Online Traffic Monitoring on Multiple Selected Ports

**Port Security**  
Assign Authorized MAC Addresses to Specific Port, 10 Max/Port

**Port Trunk/Link Aggregation**  
IEEE 802.3ad LACP - Port Aggregation and Static Port Trunk  
Trunk Member Up to 8 Ports  
Maximum of 10 Trunk Groups Including Gigabit Ethernet Ports

**Private VLAN**  
Direct Client Ports in Isolated/Community VLAN to Promiscuous Port in Primary VLAN

**Rate Control**  
Ingress Filtering for Broadcast, Multicast, Unknown DA or All Packets  
Egress Filtering for All Packet Types

**Time Synchronization**  
Supports IEEE 1588-2008 (PTP) and NTP protocols with daylight savings and localized time sync function

**Traffic Prioritization (QoS)**  
8 Physical Queues  
Weighted Fair Queuing (WRR) or Strict Priority Scheme, which Follows 802.1p CoS tag ID and IPv4 ToS/ Diffserv Information to Prioritize Industrial Network Traffic

**Transfer Performance (Max)**  
14,880pps - 10Mbps; 148,800pps - 100Mbps; 1,488,100pps - 1000Mbps

**VLAN (Max)**  
IEEE 802.1Q Tag VLAN with 4K (Max) VLAN Entries and 2K GVRP Entries; 3 VLAN Link Modes: Trunk, Hybrid, and Link Access  
IEEE802.1 QinQ Supports Double VLAN Tag Function for Implementing Metro Network Topologies

## ELECTRICAL SPECIFICATIONS

**Device**  
DC Input Voltage Power Consumption  
9.6 to 60VDC (Positive or Negative As Long As Both Power Supplies Are in the Same Mode)  
10W @ 12VDC  
11W @ 24VDC  
14W @ 48VDC  
16W @ 60VDC

**Power Connector** 1

**Power Connector Type**  
4-Pin Screw Terminal Block

**Power Input Redundancy** Dual redundant inputs

**Reverse Polarity Protection** Yes

**Digital Input**  
1 with photo optical isolation  
Logic Low (0) 10 to 10VDC  
Logic High (1) 11 to 30VDC

**Digital Output (Relay Output)** 1  
DC Input Voltage  
30VDC  
Current Consumption  
(24VDC) 1A maximum

**Multi-Event Relay Feature**  
Power  
Port Link  
DI/Ring Status Change  
Ping Reset  
Perform Routing Relay On/Off Function

## ENVIRONMENTAL SPECIFICATIONS

**Air Temperature**  
System On -40° to 75°C  
System Off -40° to 80°C

**Operating Humidity**  
Non-condensing 0% to 90%

**MTBF (Mean Time Between Failures)** 28.53 Years

## EXPORT INFORMATION

**Packaged Shipping Weight**  
5.2 lb  
236g

**Package Dimensions**  
11.2" x 5.6" x 8.98"  
285 mm x 143 mm x 228 mm

**UPC Code** 7-56727-32142-2

**ECCN** 5A991

**Schedule B Number**  
8517.62.0050

## REGULATORY APPROVALS

**Emissions**  
European Standard EN55022  
Canadian EMC Requirements - ICES-003  
CISPR 22  
FCC Part 15 Subpart B  
Class A limit

**Immunity**  
European Standard EN55024  
IEC 1000-4-2/EN61000-4-2: ESD  
IEC 1000-4-3/EN61000-4-3: RF  
IEC 1000-4-4/EN61000-4-4: Fast Transient/ Burst  
IEC 1000-4-5/EN61000-4-5: Surge  
IEC 1000-4-6/EN61000-4-6: Conducted Disturbance  
IEC 1000-4-8/EN61000-4-8: Magnetic Field  
IEC 1000-4-9/EN61000-4-9: Pulse Magnetic Field

**Safety**  
IEC 60950/EN60950 (LISTED)  
CSA C22.2 No. 60950/UL60950 Third Edition

**Vibration**  
IEC60068-2-6: 10-150Hz, 20m/S<sup>2</sup>, 20 Sweeps/Axis

**Shock**  
IEC 60068-2-27: 50gn, 18ms, Half-Sine wave

**Free Fall**  
IEC 60068-2-32: 1 corner, 3 lines, 6 faces

**Other**  
European Standard: 2002/95/EC Directive (RoHS)  
NEMA TS2 Compliant  
EN50121-4 Railway Track Side

**Regulatory Approvals**



## Warranty Information

Control offers a 30-day satisfaction guarantee and 5-year limited warranty.

## Sales Support

+1.763.957.6000  
sales@comtrol.com

## Technical Support

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