EtherDevice™ Switch EDS-508 Series

Industrial 8-Port Managed Redundant Ethernet Switches

Features

Advanced Industrial Networking Capability

- Redundant Fast Ethernet Ring and RSTP (IEEE 802.1W) Capability (recovery time < 300 ms at full load)
- IGMP Snooping for filtering multicast traffic from industrial Ethernet Protocols
- Supports IEEE 802.1Q VLAN and GVRP protocol to ease network planning
- Supports QoS-IEEE 802.1p/1Q and TOS/DiffServ to increase determinism
- Port Trunking for optimum bandwidth utilization
- SNMP V1/V2c/V3 for different levels of network management security
- Supports https/SSL to enhance network security

Designed for Industrial Applications

- Bandwidth management prevents unpredictable network status
- Lock port for authorized only MAC address access
- Port mirroring for online debugging
- Automatic warning by exception through email, relay output
- Digital inputs to integrate sensors and alarms with IP networks
- Automatic recovery of connected device's IP addresses

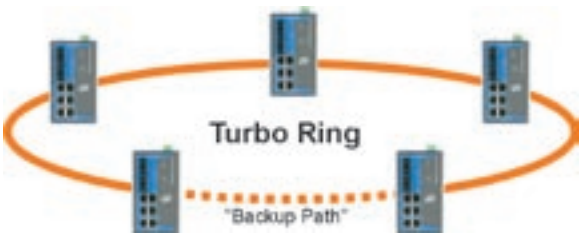
- Line-swap fast recovery (Patented)
- Redundant, dual DC power inputs
- -40 to 75°C operating temperature range
- IP 30, rugged high-strength case
- Long-haul transmit distance of 40 km or 80 km
- DIN-Rail or panel mounting ability
- Configurable by Web browser, Telnet/Serial console, Windows utility
- Send ping commands to identify network segment integrity

Recommended Software and Accessories

- SNMP OPC Server Pro
- DR-4524, DR-75-24, DR-120-24 DIN-Rail 24 VDC

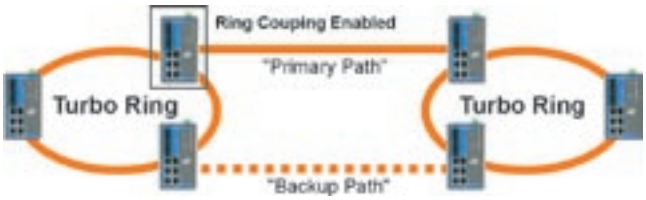
Fast Ethernet Redundant Ring Capability (< 300 ms)

For industrial automation applications, redundancy is an important issue to help increase the reliability of your system. MOXA EtherDevice™ Redundant Switch EDS-508 comes equipped with a redundant network protocol called Turbo Ring that was developed by Moxa. Turbo Ring gives users an easy way to establish a redundant Ethernet network, and with its ultra high-speed recovery time, once any segment of your network is disconnected, your automation system will be back to normal in less than 300 ms.



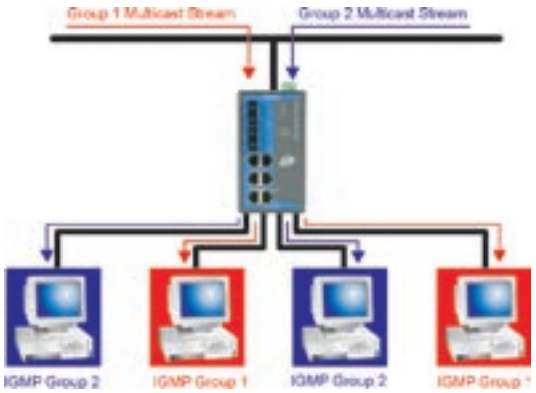
Couple several Turbo Rings for distributed applications

For some systems, it may not be convenient to connect all devices in the system to create one BIG redundant ring, since some devices could be located at a remote site. Turbo Ring's "Ring Coupling" function helps you separate those distributed devices into different smaller redundant rings, but in such a way that they can still communicate with each other.



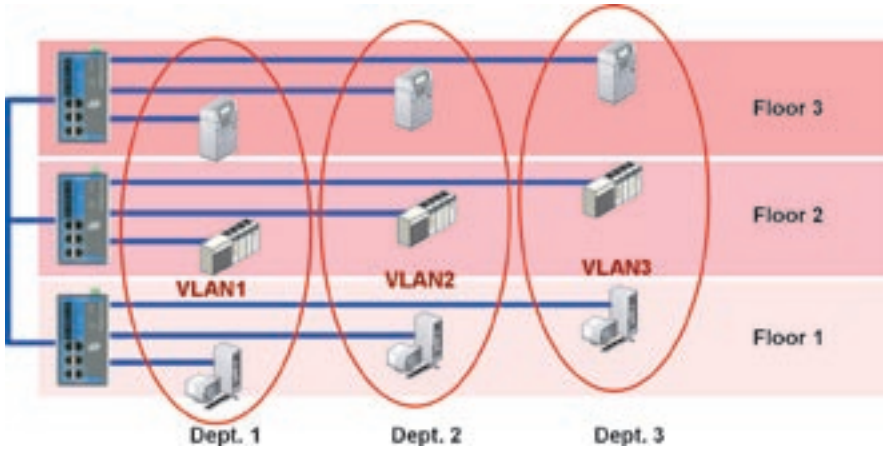
IGMP Snooping for filtering multicast traffic

IGMP (Internet Group Management Protocol) is important in industrial networking, and may be used over Ethernet with some field bus protocols, such as Allen-Bradley EtherNet/IP, Siemens Profibus, and Foundation Fieldbus HSE (High Speed Ethernet). These industrial Ethernet protocols use publisher/subscriber communications models to multicast packets that could flood a network with heavy traffic. IGMP Snooping provides the ability to prune multicast traffic so that it travels only to those end destinations that require this kind of traffic, and consequently reduces the amount of traffic on the Ethernet LAN.



VLAN eases network planning

A VLAN is a group of devices that can be located anywhere on a network, but which communicate as if they are on the same physical segment. VLANs can be used to segment your network without being restricted by physical connections—a limitation imposed by traditional network design. Besides, since all automation systems incorporate sensitive devices that must be protected from unauthorized access, it is very important to have some type of authentication system set up that only allows authorized users to access the system. If devices belong to different VLANs, they cannot communicate with each other, providing extra security and protection from unwanted invasion or traffic. The IEEE 802.1Q standard and GVRP protocol can exchange the same interoperable parameters to keep consistent VLAN settings over the entire network.



QoS increases determinism

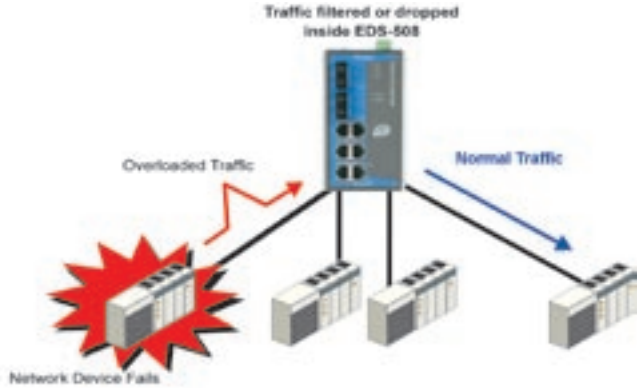
Quality of Service (QoS) provides a traffic prioritization capability to ensure that important data is delievered consistently and predictably. EDS-508 Series can inspect IEEE 802.1p/1Q layer 2 CoS tags, and even layer 3 TOS information, to provide a consistent classification of the entire network. EDS-508 Series' QoS capability improves your industrial network's performance and determinism for mission critical applications.

Port Trunking for flexible network connections

Port Trunking allows devices to communicate by aggregating up to four links in parallel with a maximum of 4 ports for each link. That means users could connect one EDS to another EDS by port trunking to double, triple, or quadruple the bandwidth of the connection.

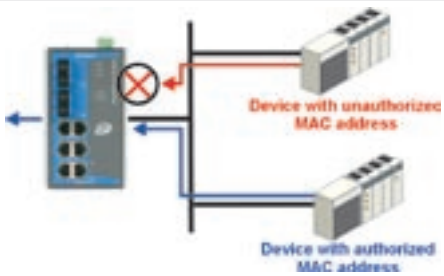
Bandwidth management prevents unpredictable network status

Any single device on a network should not have unlimited bandwidth, particularly when it malfunctions. The most well-known problem is the broadcast storms caused by setting up the wrong topology, or by devices that malfunction. The EDS-508 Series not only prevents broadcast storms, but also can configure the ingress/egress rate of unicast/multicast/broadcast packets, and in this way give administrators full control of limited bandwidth to prevent unpredictable faults.



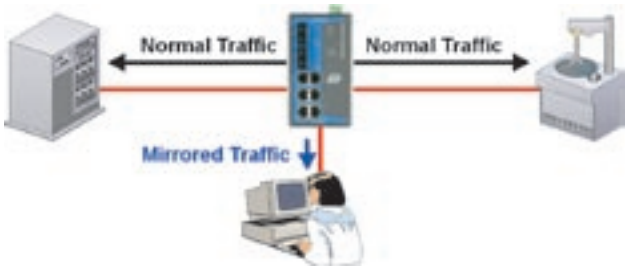
Port Lock to allow authorized access by specific MAC addresses

The EDS-508 series can assign protected static MAC addresses to specific ports. By using the Port Lock function, locked ports will not be able to learn other addresses but only allow the traffic that comes from the preset static MAC address, helping to block unwanted invasion and usage.



Port Mirroring for online monitoring

In some cases, a network is so large that it is difficult to achieve the expected level of communications. Industrial communications applications use more of a command-response style than the file-transfer style used in office network environments. This means that when first setting up an industrial Ethernet network, control engineers may need to use a second port to monitor the actual activity between their devices and computer host. EDS-508 Series' mirroring port function helps to ensure that the system behaves as expected.



Automatic warning by event

Since industrial Ethernet devices are often located at the endpoints of a system, such devices cannot always know what's happening elsewhere on the network. This means that industrial Ethernet switches that connect these devices must take responsibility for providing system maintainers with real-time alarm messages. Even when control engineers are out of the control room for an extended period of time, they can still be informed of the status of devices almost instantaneously when exceptions occur.

The traditional way of determining device status is to poll devices periodically, but this is not "real-time" enough, and is not very efficient. Warning messages must be actively triggered by events. To take care of these requirements, industrial Ethernet Switches need features such as:

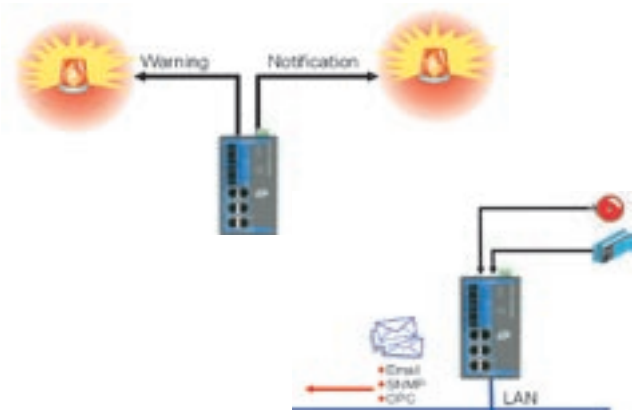
Warning by e-mail

The EDS-508 Series can send out a warning e-mail when an exception is detected, providing system managers with real-time alarm messages.

Switch Events		Port Events
Cold Start	Warm Start	Link On
Power On/Off	Authentication failure	Link Off
Topology Change	Configuration Change	Traffic Overload

Warning by relay output

The EDS-508 Series provides two relay outputs that can be set up to indicate events with different importance to notify or warn engineers in the field, so the engineer can use the appropriate emergency maintenance procedures to respond quickly to higher priority messages.

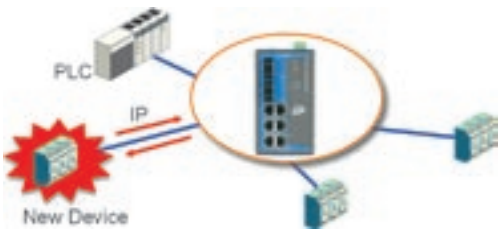


DI to integrate other important sensors

With two digital inputs, the EDS-508 Series can integrate sensors into its automatic alarm mechanism, turning warning messages into IP network by e-mail, SNMP trap, or OPC.

Replace Faulty Devices

To reduce the effort required to repeatedly configure IP addresses, the EDS-508 Series comes equipped with DHCP/BootP server and RARP protocol to automatically set up IP addresses of Ethernet-enabled devices.



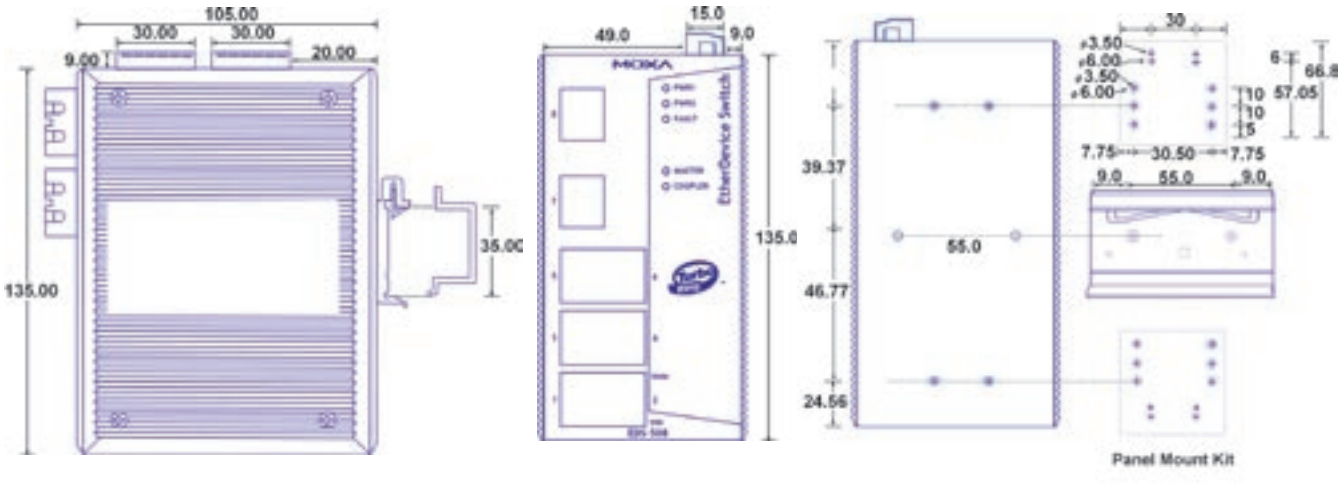
Easy Browser-based Configuration

The EDS-508 Series is easily configured over the network by web browser, Telnet console, or a Moxa provided Windows utility. In addition, Moxa's Batch Configurator can also be used to store and copy configuration parameters to multiple EDS-508 units simultaneously.

Network Management with EDS-SNMP OPC Server Pro

The SNMP OPC Server software package can convert SNMP into OPC format. The vertical integration of SNMP-Management Information into existing OPC-based SCADA-packages gives the customer the ability to establish an Ethernet Network Management Application that is integrated with existing Visualization and Control applications.

Dimensions (unit = mm)



Side View **DIN-Rail Kit** **Front View** **Rear View** **Panel Mounting Kit**

Specifications

Technology

Standards: IEEE802.3, 802.3u, 802.3x, 802.1D, 802.1W, 802.1Q, 802.1p

Protocols: IGMP V1/V2/V3 device, GVRP, SNMP V1/V2C/V3, DHCP Server/Client, BootP, TFTP, SNTP, SMTP, RARP and EDS-SNMP OPC Server Pro (Optional)

MIB: MIB-II, Ethernet-Like MIB, P-BRIDGE MIB, Q-BRIDGE MIB, Bridge MIB, RSTP MIB

Flow Control: IEEE802.3x flow control, back pressure flow control

Interface

RJ45 Ports: 10/100BaseT(X) auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection

Fiber Ports: 100BaseFX ports (SC connector)

Console: RS-232 (RJ45)

LED Indicators: Power, Faults, ACT, LNK, 10/100, Master, coupler

Alarm Contact: Two relay outputs with current carrying capacity of 1A @ 24 VDC

Digital Input: Two inputs with the same ground, but electrically isolated from the electronics.

- For state "1": +13 to +30V
- For state "0": -30 to +3V
- Max. input current: 8 mA

Optical Fiber

Distance:

Multi mode: 0 to 5 km, 1310 nm (50/125 μm, 800 MHz*km)
0 to 4 km, 1310 nm (62.5/125 μm, 500 MHz*km)

Single mode: 0 to 15 km, 1310 nm (9/125 μm, 3.5 PS/(nm*km))
0 to 40 km, 1310 nm (9/125 μm, 3.5 PS/(nm*km))
0 to 80 km, 1550 nm (9/125 μm, 19 PS/(nm*km))

Min. TX Output:

Multi mode : -20 dBm
Single mode: 0 to 15 km, -15 dBm
0 to 40 km, -5 dBm
0 to 80 km, -5 dBm

Max. TX Output:

Multi mode : -14 dBm
Single mode: 0 to 15 km, -6 dBm
0 to 40 km, 0 dBm
0 to 80 km, 0 dBm

Sensitivity: -36 to -32 dBm (Single), -34 to -30 dBm (Multi)

Power

Input Voltage: 24 VDC (12 to 48 VDC), redundant dual inputs
Input Current (@24V): 0.29A: (EDS-508),
0.43A: (EDS-508-MM-SC, EDS-508-SS-SC)
Connection: Two removable 6-pin terminal blocks
Overload Current Protection: Present, can withstand 1.6A
Reverse Polarity Protection: Present

Mechanical

Casing: IP30 protection, aluminum case
Dimensions: 80.5 x 135 x 105 mm (W x H x D)
Weight: 1.04 kg
Installation: DIN-Rail, Wall Mounting (optional kit)

Environmental

Operating Temperature:
0 to 60°C (32 to 140°F)
-40 to 75°C (-40 to 167°F) for -T models
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5% to 95% (non-condensing)

Regulatory Approvals

Safety: UL60950 (E212360), UL 508, CSA C22.2 No. 60950, EN60950

Hazardous location:
UL/cUL Class I, Division 2,
Groups A, B, C and D (E238559)
ATEX Class I, Zone 2, EEx nC IIC (03CA24537)

EMI: FCC Part 15, CISPR (EN55022) class A,
EMS: EN61000-4-2 (ESD), level 3
EN61000-4-3 (RS), level 3
EN61000-4-4 (EFT), level 4
EN61000-4-5 (Surge), level 3
EN61000-4-6 (CS), level 3
EN61000-4-8
EN61000-4-11
EN61000-4-12
Shock: IEC60068-2-27
Free Fall: IEC60068-2-32
Vibration: IEC60068-2-6
MTBF: 260,000 hours
Data Base: MIL-HDBK-217F, GB
WARRANTY: 5 years

Ordering information

EDS-508: Industrial Redundant Ethernet Switch with 8 10/100BaseT(X) ports, Operating Temp. 0 to 60°C
EDS-508-MM-SC: Industrial Redundant Ethernet Switch with 6 10/100BaseT(X) ports, 2 multi mode 100BaseFX ports, Operating Temp. 0 to 60°C
EDS-508-SS-SC: Industrial Redundant Ethernet Switch with 6 10/100BaseT(X) ports, 2 single mode 100BaseFX ports, Operating Temp. 0 to 60°C

Extended Operating Temperature Models (-40 to 75°C):

EDS-508-T: Industrial Redundant Ethernet Switch with 8 10/100BaseT(X) ports, Operating Temp. -40 to 75°C
EDS-508-MM-SC-T: Industrial Redundant Ethernet Switch with 6 10/100BaseT(X) ports, 2 multi mode 100BaseFX ports, Operating Temp. -40 to 75°C
EDS-508-SS-SC-T: Industrial Redundant Ethernet Switch with 6 10/100BaseT(X) ports, 2 single mode 100BaseFX ports, Operating Temp. -40 to 75°C

l l k d e ^ r i q o ^ k p j f q c l o P f k d i b j l a b l m q f ` ^ i ª _ b o l c 1 - h j ^ k a 5

Optional Accessories

DR-4524: 45W/2A DIN-Rail 24 VDC Power Supply with universal 85 to 264 VAC input
DR-75-24: 75W/3.2A DIN-Rail 24 VDC Power Supply with universal 85 to 264 VAC input
DR-120-24: 120W/5A DIN-Rail 24 VDC Power Supply with 88 to 132 VAC/176 to 264 VAC input by switch
***See page 9-5 for more details about these DIN-Rail Power Supplies.**
EDS-SNMP OPC Server Pro: CD with EDS-SNMP OPC Server Software and Manual
WK-46: Wall Mounting Kit