

## 24+4G-port Gigabit managed Ethernet switches



### Features and Benefits

- 4 Gigabit plus 24 fast Ethernet ports for copper and fiber
- Turbo Ring and Turbo Chain (recovery time < 20 ms @ 250 switches),<sup>1</sup> RSTP/STP, and MSTP for network redundancy
- RADIUS, TACACS+, MAB Authentication, SNMPv3, IEEE 802.1X, MAC ACL, HTTPS, SSH, and sticky MAC-addresses to enhance network security
- Security features based on IEC 62443
- EtherNet/IP, PROFINET, and Modbus TCP protocols supported for device management and monitoring
- Supports MXstudio for easy, visualized industrial network management
- V-ON™ ensures millisecond-level multicast data and video network recovery

### Certifications



## Introduction

The EDS-528E standalone, compact 28-port managed Ethernet switches have 4 combo Gigabit ports with built-in RJ45 or SFP slots for Gigabit fiber-optic communication. The 24 fast Ethernet ports have a variety of copper and fiber port combinations that give the EDS-528E Series greater flexibility for designing your network and application. The Ethernet redundancy technologies, Turbo Ring, Turbo Chain, RSTP/STP, and MSTP, increase the system reliability and availability of your network backbone. The EDS-528E also supports advanced management and security features.

In addition, the EDS-528E Series is designed specifically for harsh industrial environments with limited installation space and high protection level requirements, such as maritime, rail wayside, oil and gas, factory automation, and process automation.

### Additional Features and Benefits

- DHCP Option 82 for IP address assignment with different policies
- Supports EtherNet/IP, PROFINET, and Modbus TCP protocols for device management and monitoring
- IGMP snooping and GMRP for filtering multicast traffic
- Port-based VLAN, IEEE 802.1Q VLAN, and GVRP to ease network planning
- QoS (IEEE 802.1p/1Q and TOS/DiffServ) to increase determinism
- Port Trunking for optimum bandwidth utilization
- SNMPv1/v2c/v3 for different levels of network management
- RMON for proactive and efficient network monitoring
- Bandwidth management to prevent unpredictable network status
- Lock port function for blocking unauthorized access based on MAC address
- Automatic warning by exception through email and relay output
- Supports the ABC-02-USB (Automatic Backup Configurator) for system configuration backup/restore and firmware upgrade

## Specifications

### Input/Output Interface

|                        |                                                                                 |
|------------------------|---------------------------------------------------------------------------------|
| Alarm Contact Channels | 1<br>Relay output with current carrying capacity of 1 A @ 24 VDC                |
| Buttons                | Reset button                                                                    |
| Digital Input Channels | 1                                                                               |
| Digital Inputs         | +13 to +30 V for state 1<br>-30 to +3 V for state 0<br>Max. input current: 8 mA |

1. Gigabit Ethernet recovery time < 50 ms

## Ethernet Interface

|                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10/100BaseT(X) Ports (RJ45 connector)                 | 24<br>Auto negotiation speed<br>Full/Half duplex mode<br>Auto MDI/MDI-X connection                                                                                                                                                                                                                                                                                                                                                                                            |
| Combo Ports (10/100/1000BaseT(X) or 100/1000BaseSFP+) | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 10/100/1000BaseT(X) Ports (RJ45 connector)            | Auto negotiation speed<br>Full/Half duplex mode<br>Auto MDI/MDI-X connection                                                                                                                                                                                                                                                                                                                                                                                                  |
| Standards                                             | IEEE 802.3 for 10BaseT<br>IEEE 802.3u for 100BaseT(X) and 100BaseFX<br>IEEE 802.3ab for 1000BaseT(X)<br>IEEE 802.3z for 1000BaseSX/LX/LHX/ZX<br>IEEE 802.3x for flow control<br>IEEE 802.1D-2004 for Spanning Tree Protocol<br>IEEE 802.1w for Rapid Spanning Tree Protocol<br>IEEE 802.1s for Multiple Spanning Tree Protocol<br>IEEE 802.1p for Class of Service<br>IEEE 802.1Q for VLAN Tagging<br>IEEE 802.1X for authentication<br>IEEE 802.3ad for Port Trunk with LACP |

## Ethernet Software Features

|                      |                                                                                                                                                                                                                                                 |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Filter               | 802.1Q VLAN<br>BPDU Filter<br>BPDU Guard<br>GMRP<br>GVRP<br>IGMP v1/v2/v3<br>Port-based VLAN                                                                                                                                                    |
| Industrial Protocols | EtherNet/IP<br>Modbus TCP<br>PROFINET IO Device                                                                                                                                                                                                 |
| Management           | LLDP<br>Back Pressure Flow Control<br>BOOTP<br>Port Mirror<br>DHCP Option 66/67/82<br>DHCP Server/Client<br>Fiber check<br>Flow control<br>IPv4/IPv6<br>RARP<br>RMON<br>SCP<br>SMTP<br>SNMP Inform<br>SNMPv1/v2c/v3<br>Syslog<br>Telnet<br>TFTP |
| MIB                  | Ethernet-like MIB<br>MIB-II<br>Bridge MIB<br>P-BRIDGE MIB<br>Q-BRIDGE MIB<br>RMON MIB Groups 1, 2, 3, 9<br>RSTP MIB                                                                                                                             |
| Redundancy Protocols | Link Aggregation<br>MRP<br>MSTP<br>RSTP<br>STP                                                                                                                                                                                                  |

|                 |                                                                                                                                                                                  |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                 | Turbo Chain<br>Turbo Ring v1/v2                                                                                                                                                  |
| Security        | Broadcast storm protection<br>HTTPS/SSL<br>TACACS+<br>SNMPv3<br>MAB authentication<br>Sticky MAC<br>NTP authentication<br>MAC ACL<br>Port Lock<br>RADIUS<br>SSH<br>SMTP with TLS |
| Time Management | NTP Server/Client<br>SNTP                                                                                                                                                        |

#### Switch Properties

|                    |               |
|--------------------|---------------|
| IGMP Groups        | 2048          |
| MAC Table Size     | 16 K          |
| Max. No. of VLANs  | 64            |
| Packet Buffer Size | 1 Mbits       |
| Priority Queues    | 4             |
| VLAN ID Range      | VID 1 to 4094 |

#### USB Interface

|              |            |
|--------------|------------|
| Storage Port | USB Type A |
|--------------|------------|

#### LED Interface

|                |                                                                                                  |
|----------------|--------------------------------------------------------------------------------------------------|
| LED Indicators | PWR1, PWR2 (LV model), STATE, FAULT, 10/100M (TP port), Gigabit combo port, MSTR/HEAD, CPLR/TAIL |
|----------------|--------------------------------------------------------------------------------------------------|

#### Serial Interface

|              |                                       |
|--------------|---------------------------------------|
| Console Port | USB-serial console (Type B connector) |
|--------------|---------------------------------------|

#### DIP Switch Configuration

|              |                                      |
|--------------|--------------------------------------|
| DIP Switches | Turbo Ring, Master, Coupler, Reserve |
|--------------|--------------------------------------|

#### Power Parameters

|                             |                                                                                                                                                                   |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Connection                  | EDS-528E-4GTXSFP-HV Series: 1 removable 4-contact and 1 removable 5-contact terminal block<br>EDS-528E-4GTXSFP-LV Series: 2 removable 4-contact terminal block(s) |
| Input Current               | EDS-528E-4GTXSFP-LV Series: 0.47 A @ 24 VDC<br>EDS-528E-4GTXSFP-HV Series: 0.11/0.055 A @ 110/220 VDC, 0.21/0.13 A @ 110/220 VAC                                  |
| Input Voltage               | EDS-528E-4GTXSFP-LV Series: 12/24/48/-48 VDC, Redundant dual inputs<br>EDS-528E-4GTXSFP-HV Series: 110/220 VDC/VAC, Single input                                  |
| Operating Voltage           | EDS-528E-4GTXSFP-LV Series: 9.6 to 60 VDC<br>EDS-528E-4GTXSFP-HV Series: 88 to 300 VDC, 85 to 264 VAC                                                             |
| Overload Current Protection | Supported                                                                                                                                                         |
| Reverse Polarity Protection | Supported                                                                                                                                                         |

## Physical Characteristics

|              |                                                        |
|--------------|--------------------------------------------------------|
| Housing      | Metal                                                  |
| IP Rating    | IP30                                                   |
| Dimensions   | 115.4 x 135 x 137 mm (4.54 x 5.31 x 5.39 in)           |
| Weight       | 1850 g (4.08 lb)                                       |
| Installation | DIN-rail mounting<br>Wall mounting (with optional kit) |

## Environmental Limits

|                                        |                                                                                             |
|----------------------------------------|---------------------------------------------------------------------------------------------|
| Operating Temperature                  | Standard Models: -10 to 60°C (14 to 140°F)<br>Wide Temp. Models: -40 to 75°C (-40 to 167°F) |
| Storage Temperature (package included) | -40 to 85°C (-40 to 185°F)                                                                  |
| Ambient Relative Humidity              | 5 to 95% (non-condensing)                                                                   |

## Standards and Certifications

|                  |                                                                                                                                                                                                                                             |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Safety           | UL 61010-2-201<br>EN 60950-1 (LVD)                                                                                                                                                                                                          |
| EMC              | EN 61000-6-2/-6-4                                                                                                                                                                                                                           |
| EMI              | CISPR 32, FCC Part 15B Class A                                                                                                                                                                                                              |
| EMS              | IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m<br>IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV<br>IEC 61000-4-5 Surge: Power: 4 kV; Signal: 4 kV<br>IEC 61000-4-6 CS: 10 V<br>IEC 61000-4-8 PFMF |
| Power Substation | IEC 61850-3<br>IEEE 1613                                                                                                                                                                                                                    |
| Railway          | EN 50121-4                                                                                                                                                                                                                                  |
| Shock            | IEC 60068-2-27                                                                                                                                                                                                                              |
| Freefall         | IEC 60068-2-32                                                                                                                                                                                                                              |
| Vibration        | IEC 60068-2-6                                                                                                                                                                                                                               |

## MTBF

|           |                          |
|-----------|--------------------------|
| Time      | 774,634 hrs              |
| Standards | Telcordia (Bellcore), GB |

## Warranty

|                 |                                                                      |
|-----------------|----------------------------------------------------------------------|
| Warranty Period | 5 years                                                              |
| Details         | See <a href="http://www.moxa.com/warranty">www.moxa.com/warranty</a> |

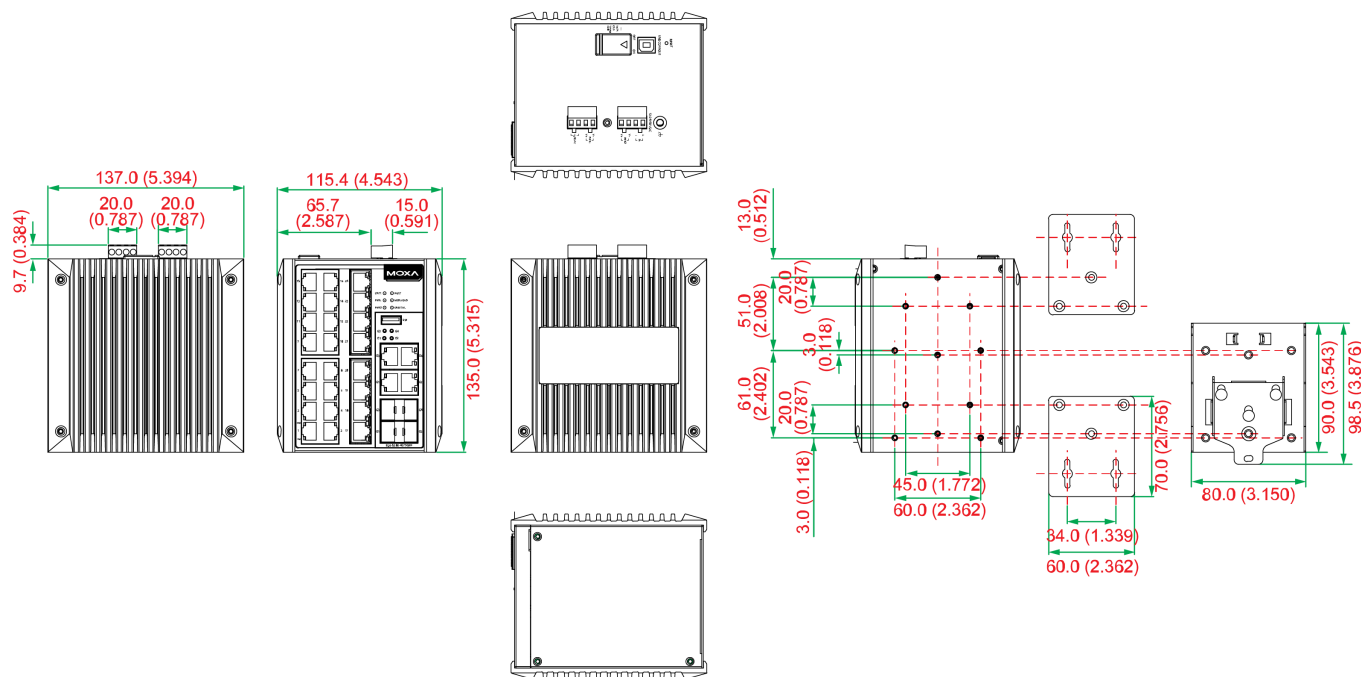
## Package Contents

|                  |                                                                   |
|------------------|-------------------------------------------------------------------|
| Device           | 1 x EDS-528E Series switch                                        |
| Cable            | 1 x USB type A male to USB type B male                            |
| Installation Kit | 4 x cap, plastic, for RJ45 port<br>4 x cap, plastic, for SFP slot |

|               |                                                                                                                                                                   |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Documentation | 1 x quick installation guide<br>1 x warranty card<br>1 x product certificates of quality inspection, Simplified Chinese<br>1 x product notice, Simplified Chinese |
| Note          | SFP modules need to be purchased separately for use with this product.                                                                                            |

## Dimensions

Unit: mm (inch)



## Ordering Information

| Model Name            | 10/100BaseT(X) Ports<br>RJ45 Connector | Combo Ports<br>10/100/1000BaseT(X)<br>or 100/1000BaseSFP+ | 12/24/48/-48 VDC | 110/220 VDC/VAC | Operating Temp. |
|-----------------------|----------------------------------------|-----------------------------------------------------------|------------------|-----------------|-----------------|
| EDS-528E-4GTXSFP-LV   | 24                                     | 4                                                         | 2                | –               | -10 to 60°C     |
| EDS-528E-4GTXSFP-LV-T | 24                                     | 4                                                         | 2                | –               | -40 to 75°C     |
| EDS-528E-4GTXSFP-HV   | 24                                     | 4                                                         | –                | 1               | -10 to 60°C     |
| EDS-528E-4GTXSFP-HV-T | 24                                     | 4                                                         | –                | 1               | -40 to 75°C     |

## Accessories (sold separately)

### Storage Kits

|              |                                                                                                                                                                     |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ABC-02-USB   | Configuration backup and restoration tool, firmware upgrade, and log file storage tool for managed Ethernet switches and routers, 0 to 60°C operating temperature   |
| ABC-02-USB-T | Configuration backup and restoration tool, firmware upgrade, and log file storage tool for managed Ethernet switches and routers, -40 to 75°C operating temperature |

### SFP Modules

|              |                                                                                                                   |
|--------------|-------------------------------------------------------------------------------------------------------------------|
| SFP-1FELLC-T | SFP module with 1 100Base single-mode with LC connector for 80 km transmission, -40 to 85°C operating temperature |
| SFP-1FEMLC-T | SFP module with 1 100Base multi-mode, LC connector for 2/4 km transmission, -40 to 85°C operating temperature     |

|                 |                                                                                                                                                        |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| SFP-1FESLC-T    | SFP module with 1 100Base single-mode with LC connector for 40 km transmission, -40 to 85°C operating temperature                                      |
| SFP-1G10ALC     | WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 10 km transmission; TX 1310 nm, RX 1550 nm, 0 to 60°C operating temperature   |
| SFP-1G10ALC-T   | WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 10 km transmission; TX 1310 nm, RX 1550 nm, -40 to 85°C operating temperature |
| SFP-1G10BLC     | WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 10 km transmission; TX 1550 nm, RX 1310 nm, 0 to 60°C operating temperature   |
| SFP-1G10BLC-T   | WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 10 km transmission; TX 1550 nm, RX 1310 nm, -40 to 85°C operating temperature |
| SFP-1G20ALC     | WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 20 km transmission; TX 1310 nm, RX 1550 nm, 0 to 60°C operating temperature   |
| SFP-1G20ALC-T   | WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 20 km transmission; TX 1310 nm, RX 1550 nm, -40 to 85°C operating temperature |
| SFP-1G20BLC     | WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 20 km transmission; TX 1550 nm, RX 1310 nm, 0 to 60°C operating temperature   |
| SFP-1G20BLC-T   | WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 20 km transmission; TX 1550 nm, RX 1310 nm, -40 to 85°C operating temperature |
| SFP-1G40ALC     | WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 40 km transmission; TX 1310 nm, RX 1550 nm, 0 to 60°C operating temperature   |
| SFP-1G40ALC-T   | WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 40 km transmission; TX 1310 nm, RX 1550 nm, -40 to 85°C operating temperature |
| SFP-1G40BLC     | WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 40 km transmission; TX 1550 nm, RX 1310 nm, 0 to 60°C operating temperature   |
| SFP-1G40BLC-T   | WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 40 km transmission; TX 1550 nm, RX 1310 nm, -40 to 85°C operating temperature |
| SFP-1GEZXLC     | SFP module with 1 1000BaseEZX port with LC connector for 110 km transmission, 0 to 60°C operating temperature                                          |
| SFP-1GEZXLC-120 | SFP module with 1 1000BaseEZX port with LC connector for 120 km transmission, 0 to 60°C operating temperature                                          |
| SFP-1GLHLC      | SFP module with 1 1000BaseLH port with LC connector for 30 km transmission, 0 to 60°C operating temperature                                            |
| SFP-1GLHLC-T    | SFP module with 1 1000BaseLH port with LC connector for 30 km transmission, -40 to 85°C operating temperature                                          |
| SFP-1GLHXL      | SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, 0 to 60°C operating temperature                                           |
| SFP-1GLHXL-T    | SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, -40 to 85°C operating temperature                                         |
| SFP-1GLSXL      | SFP module with 1 1000BaseLSX port with LC connector for 1km/2km transmission, 0 to 60°C operating temperature                                         |
| SFP-1GLSXL-T    | SFP module with 1 1000BaseLSX port with LC connector for 1km/2km transmission, -40 to 85°C operating temperature                                       |
| SFP-1GLXL       | SFP module with 1 1000BaseLX port with LC connector for 10 km transmission, 0 to 60°C operating temperature                                            |
| SFP-1GLXL-T     | SFP module with 1 1000BaseLX port with LC connector for 10 km transmission, -40 to 85°C operating temperature                                          |
| SFP-1GSXL       | SFP module with 1 1000BaseSX port with LC connector for 300m/550m transmission, 0 to 60°C operating temperature                                        |
| SFP-1GSXL-T     | SFP module with 1 1000BaseSX port with LC connector for 300m/550m transmission, -40 to 85°C operating temperature                                      |
| SFP-1GZXLC      | SFP module with 1 1000BaseZX port with LC connector for 80 km transmission, 0 to 60°C operating temperature                                            |
| SFP-1GZXLC-T    | SFP module with 1 1000BaseZX port with LC connector for 80 km transmission, -40 to 85°C operating temperature                                          |

## Rack-Mounting Kits

|       |                           |
|-------|---------------------------|
| RK-4U | 19-inch rack-mounting kit |
|-------|---------------------------|

#### Wall-Mounting Kits

|          |                                                       |
|----------|-------------------------------------------------------|
| WK-60-01 | Wall-mounting kit, 2 plates, 6 screws, 60 x 70 x 2 mm |
|----------|-------------------------------------------------------|

#### Software

|                   |                                                                                                |
|-------------------|------------------------------------------------------------------------------------------------|
| MXview-50         | Industrial network management software with a license for 50 nodes (by IP address)             |
| MXview-100        | Industrial network management software with a license for 100 nodes (by IP address)            |
| MXview-250        | Industrial network management software with a license for 250 nodes (by IP address)            |
| MXview-500        | Industrial network management software with a license for 500 nodes (by IP address)            |
| MXview-1000       | Industrial network management software with a license for 1000 nodes (by IP address)           |
| MXview-2000       | Industrial network management software with a license for 2000 nodes (by IP address)           |
| MXview Upgrade-50 | License expansion of MXview industrial network management software by 50 nodes (by IP address) |

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