

# EDS-4012 Series

8+4G-port (with 8 802.3bt PoE port option) managed Ethernet switches



## Features and Benefits

- Developed according to the IEC 62443-4-1 and compliant with the IEC 62443-4-2 industrial cybersecurity standards
- Support for IEEE 802.3bt PoE for up to 90 W output per port
- Turbo Ring and Turbo Chain (recovery time < 20 ms @ 250 switches)<sup>1</sup>, and RSTP/STP for network redundancy
- Wide range of power input options for flexible deployment
- Compact and flexible housing design to fit into confined spaces
- Supports MXstudio for easy, visualized industrial network management

## Certifications



## Introduction

The EDS-4012 Series is a range of 12-port managed Fast Ethernet switches with the option for four 1 Gbps fiber-optic uplink ports. This Series also offers models with four 10/100BaseT(X) 802.3af (PoE), 802.3at (PoE+), and 802.3bt-compliant Ethernet PoE port options to connect high-bandwidth PoE devices.

Redundant Ethernet technologies such as Turbo Ring, Turbo Chain, and RSTP/STP increase the reliability of your system and improve the availability of your network backbone. The EDS-4012 Series is designed specifically for demanding applications such as video and process monitoring, ITS, and DCS systems, all of which can benefit from a scalable backbone.

The EDS-4012 Series is compliant with the IEC 62443-4-2 and IEC 62443-4-1 Industrial Cybersecurity certifications, which cover both product security and secure development life-cycle requirements, helping our customers meet the compliance requirements of secure industrial network design.

## Specifications

### Ethernet Interface

|  |  |
|--|--|
| 10/100BaseT(X) Ports (RJ45 connector)      | EDS-4012-4GS-LV/-HV/-T models: 8<br>EDS-4012-4GC-LV/-HV/-T models: 8<br>Auto negotiation speed<br>Full/Half duplex mode<br>Auto MDI/MDI-X connection |
| PoE Ports (10/100BaseT(X), RJ45 connector) | EDS-4012-8P-4GS-LVA/-LVB/-T models: 8  |
| 100/1000BaseSFP Ports                      | EDS-4012-4GS-LV/-HV/-T models: 4<br>EDS-4012-8P-4GS-LVA/-VB/-T models: 4   |

1. If the port link speed is 1 Gigabit or higher, the recovery time is < 50 ms.

|  |   |
|--|---|
| Combo Ports (10/100/1000BaseT(X) or 100/1000BaseSFP) | EDS-4012-4GC-LV/-HV/-T models: 4  |
| 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 1000BaseX<br>IEEE 802.3x for flow control<br>IEEE 802.3ad for Port Trunk with LACP<br>IEEE 802.1Q for VLAN Tagging<br>IEEE 802.1D-2004 for Spanning Tree Protocol<br>IEEE 802.1w for Rapid Spanning Tree Protocol<br>IEEE 802.1p for Class of Service<br>IEEE 802.1X for authentication |

### Ethernet Software Features

|                      |  |
|----------------------|--|
| Filter               | GMRP, GVRP, GARP, 802.1Q VLAN, IGMP Snooping v1/v2/v3, IGMP Querier  |
| Management           | IPv4/IPv6, Flow control, Back Pressure Flow Control, DHCP Server/Client, ARP, RARP, LLDP, Port Mirror, Linkup Delay, SMTP, SNMP Trap, SNMP Inform, SNMPv1/v2c/v3, RMON, TFTP, SFTP, HTTP, HTTPS, Telnet, Syslog, Private MIB |
| MIB                  | P-BRIDGE MIB, Q-BRIDGE MIB, IEEE8021-SPANNING-TREE-MIB, IEEE8021-PAE-MIB, IEEE8023-LAG-MIB, LLDP-EXT-DOT1-MIB, LLDP-EXT-DOT3-MIB, SNMPv2-MIB, RMON MIB Groups 1, 2, 3, 9   |
| Redundancy Protocols | STP, RSTP, Turbo Ring v2, Turbo Chain, Ring Coupling, Dual-Homing, Link Aggregation  |
| Security             | Broadcast storm protection, Rate Limit, Trust access control, Static Port Lock, MAC Sticky, HTTPS/SSL, SSH, RADIUS, TACACS+, Login and Password Policy   |
| Time Management      | SNTP, NTP Server/Client, NTP Authentication  |
| Protocols            | IPv4/IPv6, TCP/IP, UDP, ICMP, ARP, RARP, TFTP, DNS, NTP Client, DHCP Server, DHCP Client, 802.1X, QoS, HTTPS, HTTP, Telnet, SMTP, SNMPv1/v2c/v3, RMON, Syslog  |

### Switch Properties

|                    |               |
|--------------------|---------------|
| MAC Table Size     | 16 K          |
| Jumbo Frame Size   | 9.216 KB      |
| Max. No. of VLANs  | 256           |
| VLAN ID Range      | VID 1 to 4094 |
| IGMP Groups        | 512           |
| Priority Queues    | 4             |
| Packet Buffer Size | 1 MB          |

### LED Interface

|                |  |
|----------------|--|
| LED Indicators | PWR1, PWR2, STATE, FAULT, MSTR/HEAD, CPLR/TAIL, SYNC |
|----------------|--|

### Serial Interface

|              |  |
|--------------|--|
| Console Port | RS-232 (TxD, RxD, GND), 8-pin RJ45 (115200, n, 8, 1) |
|--------------|--|

### USB Interface

|               |                       |
|---------------|-----------------------|
| USB Connector | USB Type A (Reserved) |
|---------------|-----------------------|

### Input/Output Interface

|                        |  |
|------------------------|--|
| Alarm Contact Channels | 1, Relay output with current carrying capacity of 1 A @ 24 VDC |
| 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   |
| Buttons                         | Reset button  |
| <b>DIP Switch Configuration</b> |   |
| DIP Switches                    | Turbo Ring, Master, Coupler, Reserve  |
| <b>Power Parameters</b>         |   |
| Connection                      | 2 removable 4-contact terminal block(s)   |
| Pre-installed Power Module      | -LV/-LV-T models: PWR-100-LV<br>-HV/-HV-T models: PWR-105-HV-I<br>-LVA/-LVA-T models: PWR-101-LV-BP-I<br>-LVB/-LVB-T models: PWR-103-LV-VB-I  |
| Note                            | The EDS-4012 Series supports modular power supplies. The model names and power parameters are determined by the installed power module.<br><br>For example:<br>EDS-4012-4GS-T + PWR-100-LV = EDS-4012-4GS-LV-T<br>EDS-4012-4GS-T + PWR-105-HV-I = EDS-4012-4GS-HV-T<br><br>If you install a different power module, refer to the specifications of the corresponding model. For example, if you replace the power module of the EDS-4012-4GS-LV-T with the PWR-105-HV-I, refer to the specifications of the EDS-4012-4GS-HV-T.  |
| Input Voltage                   | -LV/-LV-T models: 12/24/48 VDC, Redundant dual inputs<br>-HV/-HV-T models: 110/220 VDC/VAC, Single input<br>-LVA/-LVA-T models: 48 VDC, Redundant dual inputs<br>-LVB/-LVB-T models: 12/24/48 VDC, Redundant dual inputs  |
| Operating Voltage               | -LV/-LV-T models: 9.6 to 60 VDC<br>-HV/-HV-T models: 88 to 300 VDC, 85 to 264 VAC<br>-LVA/-LVA-T models: 44 to 57 VDC (>52 VDC for PoE+ output recommended)<br>-LVB/-LVB-T models: 12 to 57 VDC (>52 VDC for PoE+ output recommended)   |
| Input Current                   | -LV/-LV-T models: 12-48 VDC, 1.50-0.40 A or 24 VDC, 0.70 A<br>-HV/-HV-T models: 110-220 VAC, 50-60 Hz, 0.30-0.20 A or 110-220 VDC, 0.30-0.20 A<br>-LVA/-LVA-T models: 48 VDC, 5.42 A<br>-LVB/-LVB-T models: 12/48 VDC, 7.46/4.27 A or 24 VDC, 7.26 A  |
| Power Consumption (Max.)        | EDS-4012-4GS-LV/-T models: 10.52 W<br>EDS-4012-4GS-HV/-T models: 12.22 W<br>EDS-4012-4GC-LV/-T models: 10.7 W<br>EDS-4012-4GC-HV/-T models: 13.35 W<br><br>EDS-4012-8P-4GS-LVA/-T models:<br>Without PoE: 13.34 W<br>With PoE: Max. 240 W for total PD power consumption @ 48 VDC input<br><br>EDS-4012-8P-4GS-LVB/-T models:<br>Without PoE: 15.32 W<br>With PoE:<br>Max. 180 W for total PD power consumption @ 48 VDC input<br>Max. 150 W for total PD power consumption @ 24 VDC input (Max. 120 W for -T model)<br>Max. 62 W for total PD consumption @ 12 VDC input |
| Max. PoE Power Output per Port  | 90 W  |
| Overload Current Protection     | Supported   |
| Reverse Polarity Protection     | Supported   |
| <b>Physical Characteristics</b> |   |
| IP Rating                       | IP40  |
| Dimensions                      | 55 x 140 x 120 mm (2.17 x 5.51 x 4.72 in)   |

|              |  |
|--------------|--|
| Weight       | 827 g (1.82 lb)                                      |
| Installation | DIN-rail mounting, Wall mounting (with optional kit) |
| Housing      | Metal  |

#### 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

|                          |   |
|--------------------------|---|
| Industrial Cybersecurity | IEC 62443-4-1<br>IEC 62443-4-2  |
| Safety                   | UL 61010-2-201, EN 62368-1 (LVD)  |
| EMC                      | EN 55032/35, 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 |
| Vibration                | IEC 60068-2-6   |
| Shock                    | IEC 60068-2-27  |
| Freefall                 | IEC 60068-2-32  |
| Railway                  | EN 50121-4  |
| Traffic Control          | NEMA TS2  |

#### MTBF

|           |  |
|-----------|--|
| Time      | EDS-4012-4GC-LV/-T models: 1,036,336 hrs<br>EDS-4012-4GC-HV/-T models: 497,392 hrs<br>EDS-4012-4GS-LV/-T models: 874,838 hrs<br>EDS-4012-4GS-HV/-T models: 456,870 hrs<br>EDS-4012-8P-4GS-LVA/-T models: 799,780 hrs<br>EDS-4012-8P-4GS-LVB/-T models: 759,924 hrs |
| Standards | Telcordia SR332  |

#### Warranty

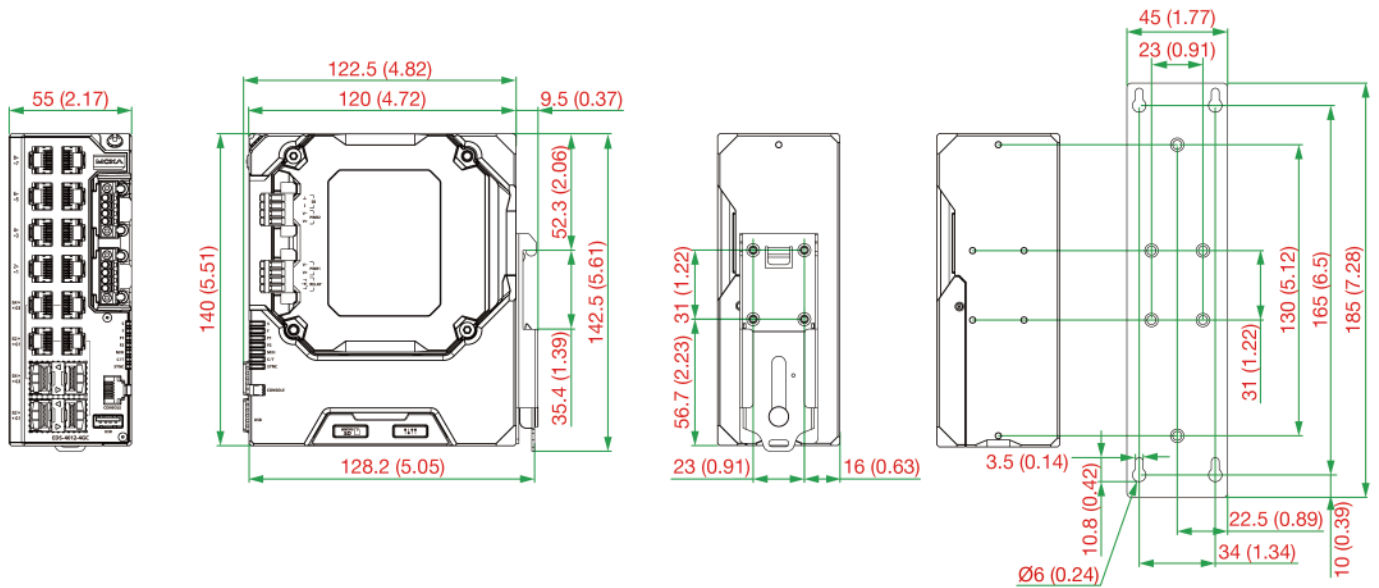
|                 |  |
|-----------------|--|
| Warranty Period | 5 years  |
| Details         | See <a href="http://www.moxa.com/warranty">www.moxa.com/warranty</a> |

#### Package Contents

|               |   |
|---------------|---|
| Device        | 1 x EDS-4012 Series switch  |
| Documentation | 1 x quick installation guide<br>1 x product notice, Simplified Chinese<br>1 x product certificates of quality inspection, Simplified Chinese<br>1 x warranty card |

## Dimensions

Unit: mm (inch)



## Ordering Information

| Model Name            | 10/100BaseT(X) Ports (RJ45 Connector) | PoE 10/100BaseT(X) Ports (RJ45 Connector) | 100/1000BaseSFP Slots | Combo Ports (10/100/1000BaseT(X) or 100/1000BaseSFP) | Operating Voltage                                   | Pre-installed Power Module | Operating Temp. |
|-----------------------|---------------------------------------|---|-----------------------|--|---|----------------------------|-----------------|
| EDS-4012-4GS-LV       | 8                                     | -   | 4                     | -  | 9.6 to 60 VDC                                       | PWR-100-LV                 | -10 to 60°C     |
| EDS-4012-4GS-LV-T     | 8                                     | -   | 4                     | -  | 9.6 to 60 VDC                                       | PWR-100-LV                 | -40 to 75°C     |
| EDS-4012-4GS-HV       | 8                                     | -   | 4                     | -  | 88 to 300 VDC, 85 to 264 VAC                        | PWR-105-HV-I               | -10 to 60°C     |
| EDS-4012-4GS-HV-T     | 8                                     | -   | 4                     | -  | 88 to 300 VDC, 85 to 264 VAC                        | PWR-105-HV-I               | -40 to 75°C     |
| EDS-4012-4GC-LV       | 8                                     | -   | -                     | 4  | 9.6 to 60 VDC                                       | PWR-100-LV                 | -10 to 60°C     |
| EDS-4012-4GC-LV-T     | 8                                     | -   | -                     | 4  | 9.6 to 60 VDC                                       | PWR-100-LV                 | -40 to 75°C     |
| EDS-4012-4GC-HV       | 8                                     | -   | -                     | 4  | 88 to 300 VDC, 85 to 264 VAC                        | PWR-105-HV-I               | -10 to 60°C     |
| EDS-4012-4GC-HV-T     | 8                                     | -   | -                     | 4  | 88 to 300 VDC, 85 to 264 VAC                        | PWR-105-HV-I               | -40 to 75°C     |
| EDS-4012-8P-4GS-LVA   | -                                     | 8   | 4                     | -  | 44 to 57 VDC (> 52 VDC for PoE+ output recommended) | PWR-101-LV-BP-I            | -10 to 60°C     |
| EDS-4012-8P-4GS-LVA-T | -                                     | 8   | 4                     | -  | 44 to 57 VDC (> 52 VDC for PoE+ output recommended) | PWR-101-LV-BP-I            | -40 to 75°C     |
| EDS-4012-8P-4GS-LVB   | -                                     | 8   | 4                     | -  | 12 to 57 VDC (> 52 VDC for PoE+ output recommended) | PWR-103-LV-VB-I            | -10 to 60°C     |
| EDS-4012-8P-4GS-LVB-T | -                                     | 8   | 4                     | -  | 12 to 57 VDC (> 52 VDC for PoE+ output recommended) | PWR-103-LV-VB-I            | -40 to 75°C     |

## Accessories (sold separately)

### SFP Modules

|                 |  |
|-----------------|--|
| SFP-1GEZXLC     | SFP module with 1 1000BaseEZ port with LC connector for 110 km transmission, 0 to 60°C operating temperature   |
| SFP-1GEZXLC-120 | SFP module with 1 1000BaseEZ 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-1GLHXL      | SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, 0 to 60°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-1GLXL       | SFP module with 1 1000BaseLX port with LC connector for 10 km transmission, 0 to 60°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-1GZXLC      | SFP module with 1 1000BaseZX port with LC connector for 80 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-T    | SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, -40 to 85°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-T     | SFP module with 1 1000BaseLX port with LC connector for 10 km transmission, -40 to 85°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-T    | SFP module with 1 1000BaseZX port with LC connector for 80 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-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-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-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-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-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-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-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-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-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-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-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-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 |

#### Power Supplies

|            |  |
|------------|--|
| HDR-60-24  | 60 W/2.5 A DIN-rail 24 VDC power supply, universal 85 to 264 VAC or 120 to 370 VDC input voltage, -30 to 70°C operating temperature  |
| NDR-120-24 | 120 W/5.0 A DIN-rail 24 VDC power supply, universal 90 to 264 VAC or 127 to 370 VDC input voltage, -20 to 70°C operating temperature |
| NDR-120-48 | 120 W/2.5 A DIN-rail 48 VDC power supply, universal 90 to 264 VAC or 127 to 370 VDC input voltage, -20 to 70°C operating temperature |
| NDR-240-48 | 240 W/5.0 A DIN-rail 48 VDC power supply, universal 90 to 264 VAC or 127 to 370 VDC input voltage, -20 to 70°C operating temperature |
| MDR-40-24  | DIN-rail 24 VDC power supply with 40W/1.7A, 85 to 264 VAC, or 120 to 370 VDC input, -20 to 70°C operating temperature                |
| MDR-60-24  | DIN-rail 24 VDC power supply with 60W/2.5A, 85 to 264 VAC, or 120 to 370 VDC input, -20 to 70°C operating temperature                |

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