

# EDS-405A Series

## 5-port entry-level managed Ethernet switches



### Features and Benefits

- Turbo Ring and Turbo Chain (recovery time < 20 ms @ 250 switches), and RSTP/STP for network redundancy
- IGMP Snooping, QoS, IEEE 802.1Q VLAN, and port-based VLAN supported
- Easy network management by web browser, CLI, Telnet/serial console, Windows utility, and ABC-01
- PROFINET or EtherNet/IP enabled by default (PN or EIP models)
- Supports MXstudio for easy, visualized industrial network management

### Certifications



### Introduction

The EDS-405A Series is designed especially for industrial applications. The switches support a variety of useful management functions, such as Turbo Ring, Turbo Chain, ring coupling, IGMP snooping, IEEE 802.1Q VLAN, port-based VLAN, QoS, RMON, bandwidth management, port mirroring, and warning by email or relay. The ready-to-use Turbo Ring can be set up easily using the web-based management interface, or with the DIP switches located on the top panel of the EDS-405A switches.

### Additional Features and Benefits

- DHCP Option 82 for IP address assignment with different policies
- Supports EtherNet/IP, Modbus TCP and PROFINET<sup>1</sup> protocols for device management and monitoring
- EtherNet/IP EDS (Electronic Data Sheet) file, custom AOI (Add-On Instructions) and FactoryTalk® View faceplate available
- PROFINET GSDML file and SIMATIC STEP 7 device icons available<sup>1</sup>
- Port mirroring for online debugging
- Port-based VLAN, IEEE 802.1Q VLAN, and GVRP to ease network planning
- QoS (IEEE 802.1p and TOS/DiffServ) to increase determinism
- RMON for proactive and efficient network monitoring
- SNMPv1/v2c/v3 for different levels of network management security
- Bandwidth management to prevent unpredictable network status

### Specifications

| Ethernet Interface                         |                                                                                                                                                                                        |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10/100BaseT(X) Ports (RJ45 connector)      | EDS-405A, 405A-EIP/PN/PTP Series: 5<br>EDS-405A-MM-SC/MM-ST/SS-SC Series: 3<br><br>All models support:<br>Auto negotiation speed<br>Full/Half duplex mode<br>Auto MDI/MDI-X connection |
| 100BaseFX Ports (multi-mode SC connector)  | EDS-405A-MM-SC Series: 2                                                                                                                                                               |
| 100BaseFX Ports (multi-mode ST connector)  | EDS-405A-MM-ST Series: 2                                                                                                                                                               |
| 100BaseFX Ports (single-mode SC connector) | EDS-405A-SS-SC Series: 2                                                                                                                                                               |

1. EDS-405A-PN Series only

|               |                                                                                                                                                                                                                                                                                                                   |                         |              |              |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------|--------------|
| Optical Fiber |                                                                                                                                                                                                                                                                                                                   |                         |              |              |
|               |                                                                                                                                                                                                                                                                                                                   |                         | 100BaseFX    |              |
|               |                                                                                                                                                                                                                                                                                                                   |                         | Multi-Mode   | Single-Mode  |
|               | Fiber Cable Type                                                                                                                                                                                                                                                                                                  |                         | OM1          | 50/125 μm    |
|               |                                                                                                                                                                                                                                                                                                                   |                         |              | 800 MHz x km |
|               | Typical Distance                                                                                                                                                                                                                                                                                                  |                         | 4 km         | 5 km         |
|               | Wavelength                                                                                                                                                                                                                                                                                                        | Typical (nm)            | 1300         | 1310         |
|               |                                                                                                                                                                                                                                                                                                                   | TX Range (nm)           | 1260 to 1360 | 1280 to 1340 |
|               |                                                                                                                                                                                                                                                                                                                   | RX Range (nm)           | 1100 to 1600 | 1100 to 1600 |
|               | Optical Power                                                                                                                                                                                                                                                                                                     | TX Range (dBm)          | -10 to -20   | 0 to -5      |
|               |                                                                                                                                                                                                                                                                                                                   | RX Range (dBm)          | -3 to -32    | -3 to -34    |
|               |                                                                                                                                                                                                                                                                                                                   | Link Budget (dB)        | 12           | 29           |
|               |                                                                                                                                                                                                                                                                                                                   | Dispersion Penalty (dB) | 3            | 1            |
|               | <p>Note: When connecting a single-mode fiber transceiver, we recommend using an attenuator to prevent damage caused by excessive optical power.</p> <p>Note: Compute the “typical distance” of a specific fiber transceiver as follows: Link budget (dB) &gt; dispersion penalty (dB) + total link loss (dB).</p> |                         |              |              |

|           |                                                                                                                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Standards | IEEE 802.3 for 10BaseT<br>IEEE 802.3u for 100BaseT(X) and 100BaseFX<br>IEEE 802.3x for flow control<br>IEEE 802.1D-2004 for Spanning Tree Protocol<br>IEEE 802.1p for Class of Service<br>IEEE 802.1Q for VLAN Tagging<br>IEEE 802.1w for Rapid Spanning Tree Protocol |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Ethernet Software Features

|                      |                                                                                                                                                                                             |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Filter               | 802.1Q VLAN, GMRP, GVRP, IGMP v1/v2, Port-based VLAN                                                                                                                                        |
| Industrial Protocols | EtherNet/IP <sup>2</sup> , Modbus TCP<br>EDS-405A-PN Series: PROFINET IO Device (Slave)                                                                                                     |
| Management           | Back Pressure Flow Control, BOOTP, DHCP Option 66/67/82, DHCP Server/Client, Flow control, IPv4/IPv6, LLDP, Port Mirror, RARP, RMON, SMTP, SNMP Inform, SNMPv1/v2c/v3, Syslog, Telnet, TFTP |
| MIB                  | Bridge MIB, Ethernet-like MIB, MIB-II, P-BRIDGE MIB, RMON MIB Groups 1, 2, 3, 9, RSTP MIB                                                                                                   |
| Redundancy Protocols | RSTP, STP, Turbo Chain, Turbo Ring v1/v2                                                                                                                                                    |
| Time Management      | All models: NTP Server/Client, SNTP<br>EDS-405A-PTP Series: IEEE 1588v2 PTP (hardware-based)                                                                                                |

## Switch Properties

|                    |                                                                                            |
|--------------------|--------------------------------------------------------------------------------------------|
| IGMP Groups        | 256                                                                                        |
| MAC Table Size     | EDS-405A Series, EDS-405A-EIP/MM-SC/MM-ST/PN/SS-SC Series: 2 K<br>EDS-405A-PTP Series: 8 K |
| Max. No. of VLANs  | 64                                                                                         |
| Packet Buffer Size | 1 Mbits                                                                                    |
| Priority Queues    | 4                                                                                          |
| VLAN ID Range      | VID 1 to 4094                                                                              |

2. EDS-405A-EIP Series: EtherNet/IP protocol enabled by default.

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Serial Interface</b>                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Console Port                           | RS-232 (TxD, RxD, GND), 10-pin RJ45 (19200, n, 8, 1)                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>DIP Switch Configuration</b>        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Ethernet Interface                     | Turbo Ring, Master, Coupler, Reserve                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Input/Output Interface</b>          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Alarm Contact Channels                 | Relay output with current carrying capacity of 1 A @ 24 VDC                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Power Parameters</b>                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Input Voltage                          | 12/24/48 VDC, Redundant dual inputs                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Operating Voltage                      | 9.6 to 60 VDC                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Input Current                          | EDS-405A/405A-T, EDS-405A-EIP/PN Series: 0.21 A @ 24 VDC<br>Fiber models: 0.26 A @ 24 VDC<br>PTP models: 0.23 A @ 24 VDC                                                                                                                                                                                                                                                                                                                                                       |
| Overload Current Protection            | Supported                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Reverse Polarity Protection            | Supported                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Connection                             | 1 removable 6-contact terminal block(s)                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Physical Characteristics</b>        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Housing                                | Metal                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| IP Rating                              | IP30                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Dimensions                             | 53.6 x 135 x 105 mm (2.11 x 5.31 x 4.13 in)                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Weight                                 | EDS-405A-EIP/MM-SC/MM-ST/PN/SS-SC Series: 650 g (1.44 lb)<br>EDS-405A-PTP Series: 820 g (1.81 lb)                                                                                                                                                                                                                                                                                                                                                                              |
| Installation                           | DIN-rail mounting, Wall mounting (with optional kit)                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Environmental Limits</b>            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 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)                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Standards and Certifications</b>    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Safety                                 | All models: UL 508<br>non-PTP models: UL 60950-1                                                                                                                                                                                                                                                                                                                                                                                                                               |
| EMC                                    | EN 55032/24                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| EMI                                    | CISPR 32, FCC Part 15B Class A                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| EMS                                    | Non-PTP models:<br>IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m<br>IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 kV<br>IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV<br>IEC 61000-4-6 CS: 10 V<br>IEC 61000-4-8<br><br>PTP models:<br>IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 0.5 kV; Signal: 0.5 kV<br>IEC 61000-4-5 Surge: Power: 0.5 kV; Signal: 1 kV |

|                     |                                          |
|---------------------|------------------------------------------|
|                     | IEC 61000-4-6 CS: 3 V<br>IEC 61000-4-8   |
| Hazardous Locations | Non-PTP models: ATEX, Class I Division 2 |
| Maritime            | Non-PTP models: DNV-GL                   |
| Traffic Control     | Non-PTP models: NEMA TS2                 |
| Freefall            | IEC 60068-2-31                           |
| Shock               | IEC 60068-2-27                           |
| Vibration           | IEC 60068-2-6                            |

MTBF

|           |                                                                                                                                                  |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Time      | EDS-405A/405A-T, EDS-405A-EIP/PN Series: 1,547,941 hrs<br>EDS-405A-MM-SC/MM-ST/SS-SC Series: 1,429,327 hrs<br>EDS-405A-PTP Series: 1,316,464 hrs |
| Standards | Telcordia (Bellcore), GB                                                                                                                         |

Warranty

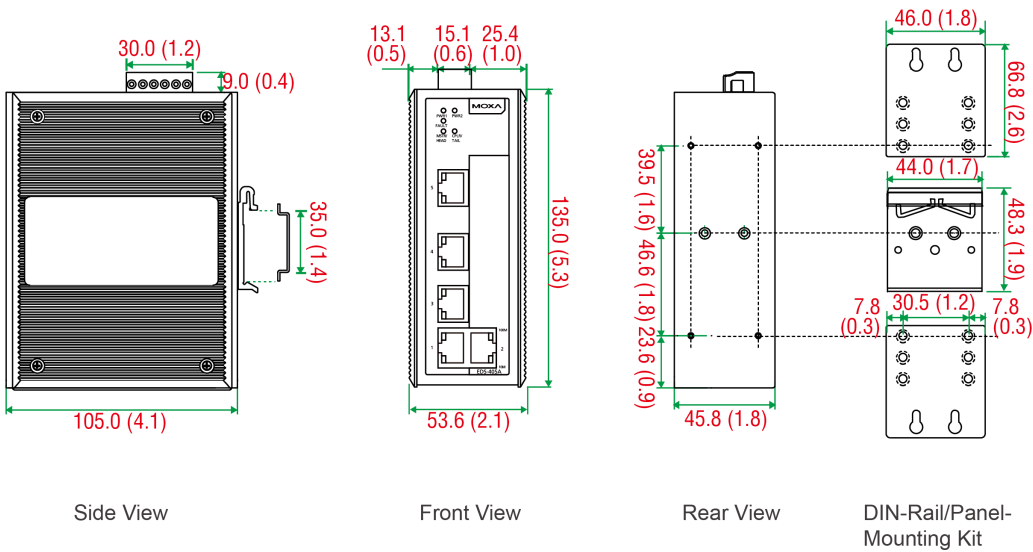
|                 |                                                                      |
|-----------------|----------------------------------------------------------------------|
| Warranty Period | 5 years                                                              |
| Details         | See <a href="http://www.moxa.com/warranty">www.moxa.com/warranty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

Package Contents

|                  |                                                                                                                                                                   |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Device           | 1 x EDS-405A Series switch                                                                                                                                        |
| Cable            | 1 x RJ45-to-DB9 console cable                                                                                                                                     |
| Installation Kit | 2 x cap, plastic, for RJ45 port                                                                                                                                   |
| Documentation    | 1 x product certificates of quality inspection, Simplified Chinese<br>1 x product notice, Simplified Chinese<br>1 x quick installation guide<br>1 x warranty card |

Dimensions

Unit: mm (inch)



## Ordering Information

| Model Name       | Layer | Total No. of Ports | 10/100BaseT(X) Ports RJ45 Connector | 100BaseFX Ports Multi-Mode SC Connector | 100BaseFX Ports Multi-Mode ST Connector | 100BaseFX Ports Single-Mode SC Connector | Operating Temp. |
|------------------|-------|--------------------|-------------------------------------|-----------------------------------------|-----------------------------------------|------------------------------------------|-----------------|
| EDS-405A         | 2     | 5                  | 5                                   | –                                       | –                                       | –                                        | -10 to 60°C     |
| EDS-405A-T       | 2     | 5                  | 5                                   | –                                       | –                                       | –                                        | -40 to 75°C     |
| EDS-405A-MM-ST   | 2     | 5                  | 3                                   | –                                       | 2                                       | –                                        | -10 to 60°C     |
| EDS-405A-MM-ST-T | 2     | 5                  | 3                                   | –                                       | 2                                       | –                                        | -40 to 75°C     |
| EDS-405A-MM-SC   | 2     | 5                  | 3                                   | 2                                       | –                                       | –                                        | -10 to 60°C     |
| EDS-405A-MM-SC-T | 2     | 5                  | 3                                   | 2                                       | –                                       | –                                        | -40 to 75°C     |
| EDS-405A-SS-SC   | 2     | 5                  | 3                                   | –                                       | –                                       | 2                                        | -10 to 60°C     |
| EDS-405A-SS-SC-T | 2     | 5                  | 3                                   | –                                       | –                                       | 2                                        | -40 to 75°C     |
| EDS-405A-EIP     | 2     | 5                  | 5                                   | –                                       | –                                       | –                                        | -10 to 60°C     |
| EDS-405A-EIP-T   | 2     | 5                  | 5                                   | –                                       | –                                       | –                                        | -40 to 75°C     |
| EDS-405A-PN      | 2     | 5                  | 5                                   | –                                       | –                                       | –                                        | -10 to 60°C     |
| EDS-405A-PN-T    | 2     | 5                  | 5                                   | –                                       | –                                       | –                                        | -40 to 75°C     |
| EDS-405A-PTP     | 2     | 5                  | 5                                   | –                                       | –                                       | –                                        | -10 to 60°C     |
| EDS-405A-PTP-T   | 2     | 5                  | 5                                   | –                                       | –                                       | –                                        | -40 to 75°C     |

## Accessories (sold separately)

### Storage Kits

|        |                                                                                                                                                      |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| ABC-01 | Configuration backup and restoration tool for managed Ethernet switches and AWK Series wireless APs/bridges/clients, 0 to 60°C operating temperature |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------------|

### Power Supplies

|           |                                                                                                                                                                   |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DR-120-24 | 120W/2.5A DIN-rail 24 VDC power supply with universal 88 to 132 VAC or 176 to 264 VAC input by switch, or 248 to 370 VDC input, -10 to 60°C operating temperature |
| DR-4524   | 45W/2A DIN-rail 24 VDC power supply with universal 85 to 264 VAC or 120 to 370 VDC input, -10 to 50°C operating temperature                                       |
| DR-75-24  | 75W/3.2A DIN-rail 24 VDC power supply with universal 85 to 264 VAC or 120 to 370 VDC input, -10 to 60°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                                             |

### Wall-Mounting Kits

|          |                                                         |
|----------|---------------------------------------------------------|
| WK-46-01 | Wall-mounting kit, 2 plates, 8 screws, 46 x 66.8 x 2 mm |
|----------|---------------------------------------------------------|

### Rack-Mounting Kits

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

### 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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