SDS-3016 Series
Quick Installation Guide

Moxa's Industrial Smart Ethernet Switch

Version 1.1, February 2021

Technical Support Contact Information
www.moxa.com/support

MOXA®

Overview

The SDS-3016 industrial smart Ethernet switch is the ideal device for IA engineers and automation machine builders to make their networks compatible with the vision of Industry 4.0. By breathing life into machines and control cabinets, the smart switch simplifies daily tasks with its easy configuration and easy installation. In addition, it is monitorable and easy to maintain throughout the entire product life cycle.

The most frequently used automation protocols—including EtherNet/IP, PROFINET, and Modbus/TCP—are embedded in the SDS-3016 to provide enhanced operational performance and flexibility by making it controllable and visible from automation HMIs. It also supports a range of useful management functions, including IEEE 802.1Q VLAN, port mirroring, SNMP, and warning by relay.

Package Checklist

The SDS-3016 is shipped with the following items. If any of these items are missing or damaged, please contact your customer service representative for assistance.

- 1 SDS-3016 industrial smart Ethernet switch
- Protective caps for unused ports
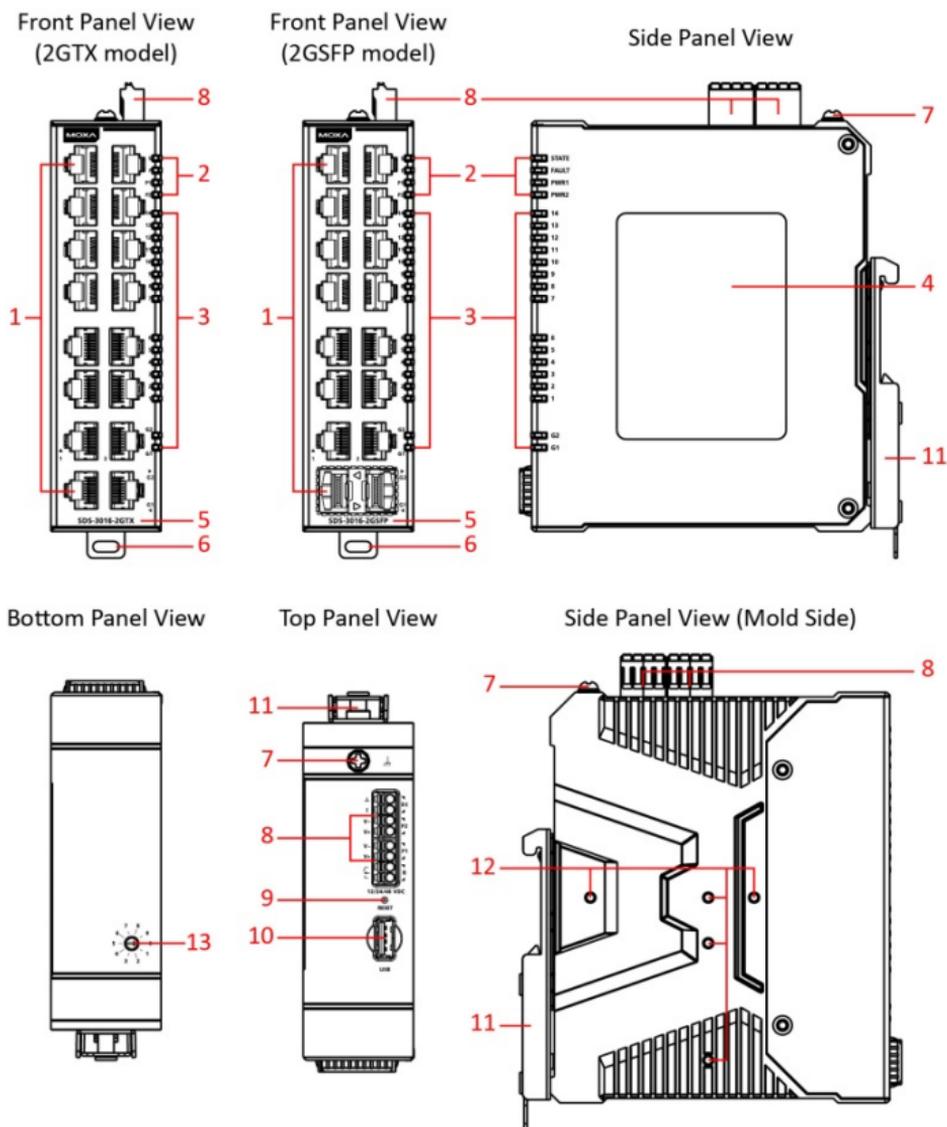- Quick installation guide (printed)
- Warranty card

Features

- 14 10/100BaseT(X), and 2 10/100/1000BaseT(X) or 100/1000BaseSFP
- Web-based graphical user interface for quick configuration and management
- Web-based graphical user interface for port diagnostics, with statistics to prevent issues
- Supports EtherNet/IP, PROFINET, and Modbus/TCP industrial protocol profiles for easy device integration and monitoring in HMI/SCADA systems
- Supports the MRP Client redundancy function to ensure high network availability
- Supports DSCP precedence for Ethernet/IP profiles to ensure traffic prioritization
- Rotary DIP switch can perform profile-based settings without using a web browser
- IP port binding to ensure critical devices can be replaced quickly without reassigning the IP Address
- Supports IEEE 802.1D-2004 and IEEE 802.1w STP/RSTP for rapid network redundancy
- IEEE 802.1Q VLAN to ease network planning
- Static port lock, SNMPv3 and HTTPS to enhance network security
- Role-based account management for self-defined administration and/or user accounts
- ABC-02 automatic backup configurator for quick event log and configuration backup. Can also enable quick device change over and firmware upgrade
- Automatic warning by exception through relay output
- Local log and the ability to export inventory files simplify inventory management

Default Settings

- Default IP address: 192.168.127.253
- Default Subnet Mask: 255.255.255.0
- Default Usernames: admin, user
- Default Password: moxa

SDS-3016 Panel Layout

Front Panel View (2GTX model)

Front Panel View (2GSFP model)

Side Panel View

Bottom Panel View

Top Panel View

Side Panel View (Mold Side)

1. 2 10/100/1000BaseT(X) or 100/1000BaseSFP uplink port
   1 to 14 10/100BaseT(X) ports (bottom to top)
2. System status LEDs (top to bottom)
   STATE LED indicator (Green), FAULT LED indicator (Red),
   PWR1 LED indicator (Amber), PWR2 LED indicator (Amber)
3. G1, G2 port status LEDs
   - LED lights in Green: 1000 Mbps
   - LED lights in Amber: 100 Mbps (SDS-3016-2GSFP Series)
   - LED lights in Amber: 10/100 Mbps (SDS-3016-2GTX Series)

   1 to 14 port status LEDs (bottom to top)
   - LED lights in Green: 100 Mbps
   - LED lights in Amber: 10 Mbps
4. Model side label (Multiple production information included)
   - Default IP: 192.168.127.253

5. Model name
6. Latch of the DIN-rail mounting kit
7. Grounding screw (chassis ground)
8. Two 4-pin terminals for power inputs (P1/P2), relay output (R) and digital input (DI)
9. Reset button
10. USB storage port (type A connector)
11. DIN-rail mounting kit
12. Screw hole (reserved for other DIN-rail mounting methods; for more information please see the *DIN-Rail Mounting* section)
13. Rotary DIP switch for EIP, PI, Modbus/TCP, and DHCP Client configurations

Mounting Dimensions; unit = mm (inches)
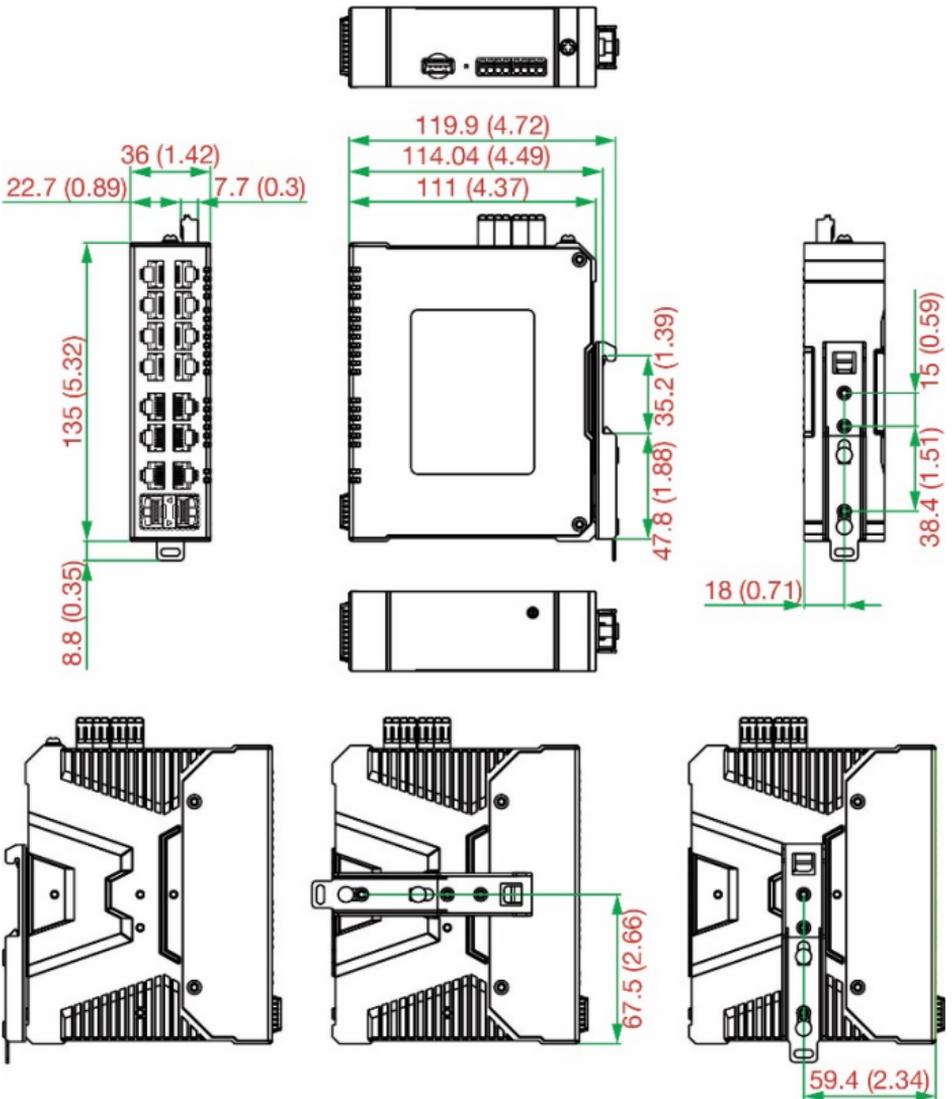
DIN-Rail Mounting

There are 2 options for DIN-rail mounting that can be adopted on a SDS-3016. Option 1 is the default type when shipped.
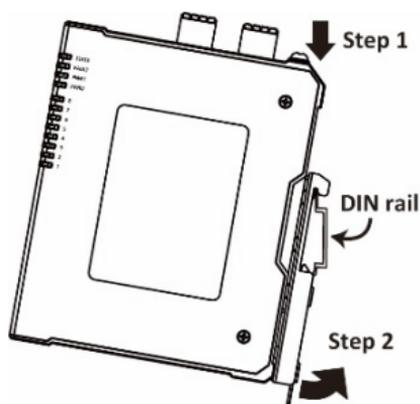
Option 1 (Default):

When shipped, the metal DIN-rail mounting kit is fixed to the back panel of the SDS-3016. Mount the SDS-3016 on the corrosion-free mounting rail that adheres to the EN 60715 standard.

Suggested Installation Method

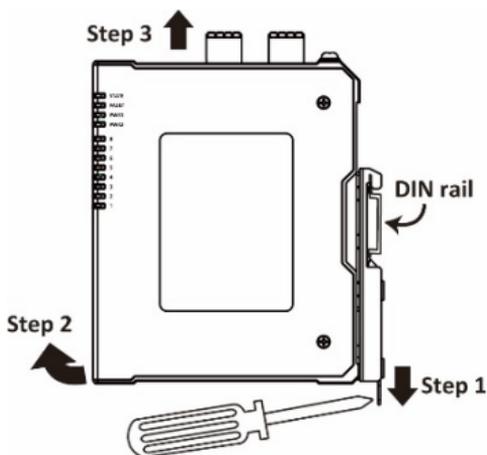**STEP 1—**Insert the upper lip of the DIN-rail kit into the mounting rail.

STEP 2—Press the SDS-3016 towards the mounting rail until it snaps into place.
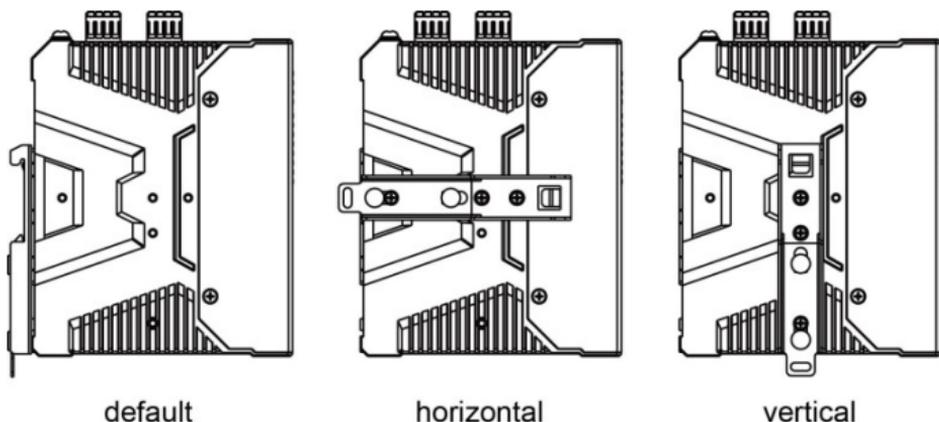

Suggested Removal Method

STEP 1—Pull down the latch on the DIN-rail kit with a screwdriver.

STEPS 2 & 3—Slightly pull the SDS-3016 forward and lift up to remove it from the mounting rail.


Option 2 (when side cabling is needed):

The metal DIN-rail mounting kit can be fixed to the side panel (mold side) of the SDS-3016 (horizontal or vertical). Mount the SDS-3016 on the corrosion-free mounting rail that adheres to the EN 60715 standard.


default   horizontal   vertical

Suggested Installation Method

STEP 1—Detach the metal DIN-rail mounting kit from the back panel and attach it to the side panel (mold side) in either the horizontal or vertical direction as indicated in the figure below.
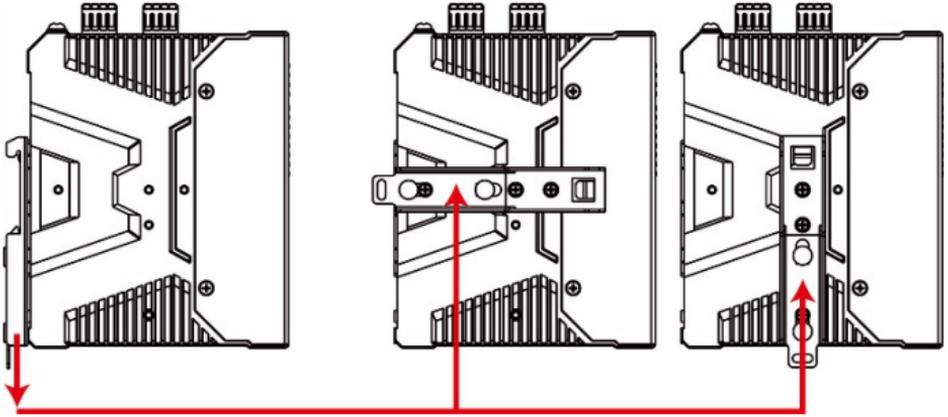
STEP 2—Insert the upper lip of the DIN-rail kit into the mounting rail.

STEP 3—Press the SDS-3016 towards the mounting rail until it snaps into place.
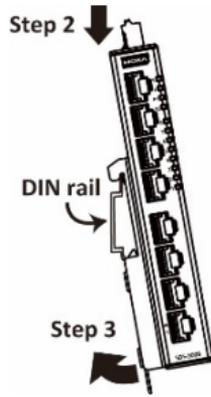
Suggested Removal Method

STEP 1—Pull down the latch on the DIN-rail kit with a screwdriver.

STEPS 2 & 3—Slightly pull the SDS-3016 forward and lift up to remove it from the mounting rail.
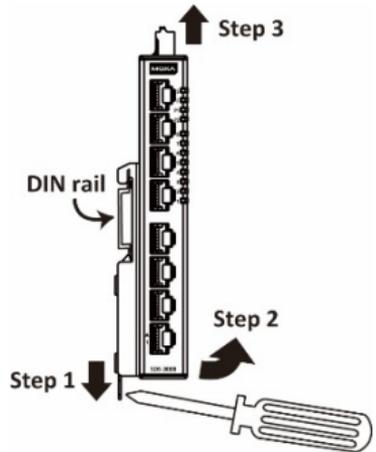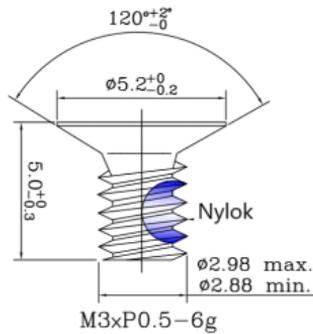
NOTE Screws that are used to fix the DIN-rail kit on the SDS-3016 should be securely fastened before mounting on the mounting rail. Please make sure that if you remove the DIN-rail, it must be securely fastened when it is reattached.

> ⚠️ **ATTENTION**
>
> In order to ensure reliable operations, please make sure the operating temp. of the environment does not exceed the spec. When mounting a SDS-3016 with other operating units in a cabinet without forced ventilation, minimum spacing of 3cm on both sides and above/below the switch is recommended.

Wiring Requirements

> ⚠️ **ATTENTION**   **Safety First!**
>
> Be sure to disconnect the power cord before installing and/or wiring your Moxa Industrial Smart Ethernet Switch. Calculate the maximum possible current in each power wire and common wire. Observe all electrical codes dictating the maximum current allowable for each wire size. If the current goes above the maximum ratings, the wiring could overheat, causing serious damage to your equipment.

Be sure to read and follow these important guidelines:

• Use separate paths to route wiring for power and devices. If power wiring and device wiring paths must cross, make sure the wires are perpendicular at the intersection point.

> **NOTE** Do not run signal or communications wiring and power wiring through the same wire conduit. To avoid interference, wires with different signal characteristics should be routed separately.

• You can use the type of signal transmitted through a wire to determine which wires should be kept separate. The rule of thumb is that wiring that shares similar electrical characteristics can be bundled together.
• You should separate input wiring from output wiring.
• We advise that you label the wiring to all devices in the system.

Grounding the Industrial Smart Ethernet Switch

Grounding and wire routing help limit the effects of noise due to electromagnetic interference (EMI). Run the ground connection from the ground screw (chassis ground) to the grounding surface prior to connecting devices.

> ⚠️ **ATTENTION**
>
> This product is intended to be mounted onto a well-grounded mounting surface, such as a metal panel.

Suggested Wire Type for Wiring Relay Contact (R), Digital Input (DI) and Power Inputs (P1/P2)

The switch includes two 4-pins 3.5 mm pin-pitch terminal blocks. When wiring the relay contact (R), digital input (DI) and power inputs (P1/P2) for the SDS-3016.

> ⚠️ **ATTENTION**
>
> We suggest using a copper conductor with the cable type - AWG (American Wire Gauge) 18-24 and the corresponding pin type cable terminals. In addition, the wire must be able to withstand at least 105°C.

> **NOTE** The wire must be able to withstand at least 105℃ and the torque value should be 4.5 lb-in (0.51 N-m).

> **NOTE** The devices are designed for operation with a Safety Extra-Low Voltage. Thus, they may only be connected to the supply voltage connections and to the signal contact with the Safety Extra-Low Voltages (SELV).

> **NOTE** We suggest the length of the pin type cable terminal is 8 mm.
>
> In order to tighten the wire properly, ① use a small flathead screwdriver to press the push-in button beside each terminal of the terminal block connector before and during ② inserting the wire. ③ Release the screwdriver after the wire has been fully inserted. Please refer to the diagram below.
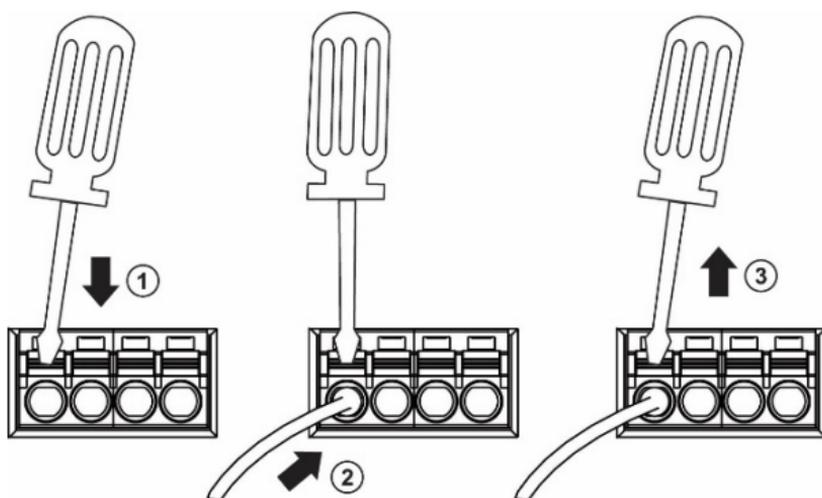
Wiring the Relay Contact

The SDS-3016 has one relay output for identifying when a specific event has occurred (i.e., fault; see below). This relay output uses the first two contacts out of the first 4-pin terminal on the SDS-3016's top panel.

Refer to the instructions and diagram below on how to connect the wires to the terminal block connector, and how to attach the terminal block connector to the terminal block receptor.

STEP 1—Insert two wires into the relay position (see the diagram below showing the top view) on the terminal to form an open circuit.

STEP 2—To keep the relay wires from coming loose, use a small flathead screwdriver to press the button beside each terminal of the plastic terminal block connector in order to insert the wire tightly. Release the screwdriver after the wire has been inserted properly.
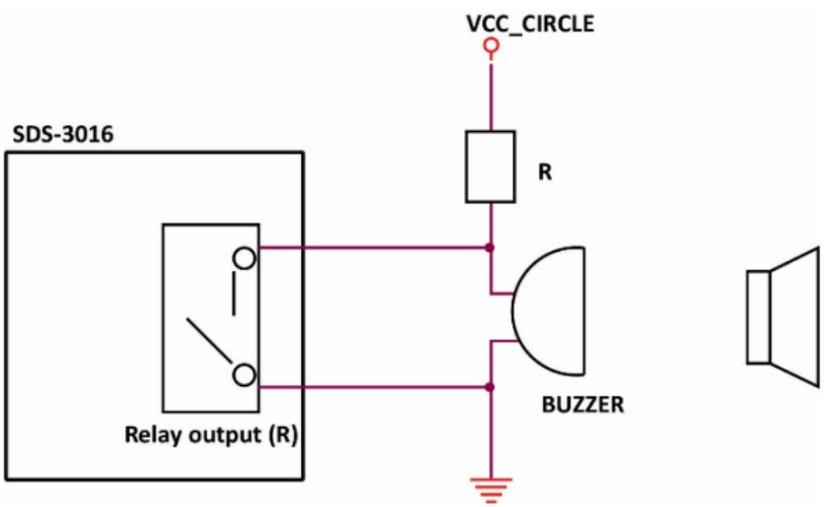
STEP 3—Insert the plastic terminal block connector prongs into the terminal block receptor, which is located on the SDS-3016's top panel.
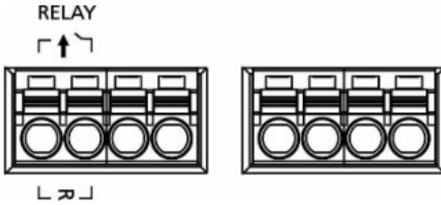
FAULT:
The two relay contacts of the 4-pin terminal block connector can be used to indicate that a user-configured event has occurred. The two wires attached to the relay contacts will form an open circuit when a user-configured event is triggered. If a user-configured event does not occur, the circuit remains closed as the relay itself is closed. Examples of user-configured events include port link-down and power input ON/OFF. For more details about user-configured events, please refer to the SDS-3016 user manual.

NOTE The relay output of the SDS-3016 reflects a potential-free, normally opened solid-state relay. Therefore, not only when user-configured events are triggered but also when there is no power supply to the switch it will open. To indicate a fault has occurred one can integrate the relay contact on the smart switch with an external alarming system circuit so that the status of user-configured events or no power supply can be monitored. An example is given in the diagram below where the buzzer will sound when user-configured events happen.

Wiring the Digital Input

The SDS-3016 has one set of digital inputs (DI). The DI consist of two contacts of the second 4-pin terminal block on the SDS-3016's top panel, and the other 2 contacts are used for the power 2 (P2) DC inputs.

Refer to the instructions and diagram (top view) below on how to connect the wires to the terminal block connector, and how to attach the terminal block connector to the terminal block receptor.
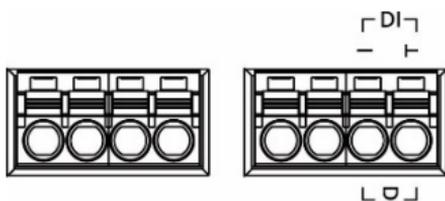
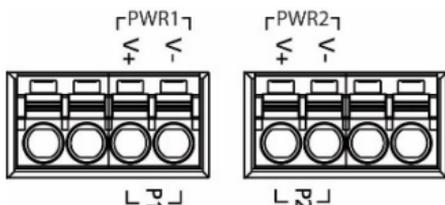**STEP 1**: Insert the negative (ground)/positive DI wires into the respective ⊥/I terminals.

STEP 2: To prevent the DI wires from coming loose, use a small flathead screwdriver to press the button beside each terminal of the plastic terminal block connector in order to insert the wire tightly. Release the screwdriver after the wire has been properly inserted.

STEP 3: Insert the plastic terminal block connector prongs into the terminal block receptor, which is located on the top panel of the SDS-3016.

Wiring the Redundant Power Inputs (12/24/48 VDC)

The SDS-3016 has two sets of power inputs–power input 1 (PWR 1/P1) and power input 2 (PWR 2/P2). The top view of the terminal block connector and the positions of the power inputs are shown below.

Take the following steps to wire the redundant power inputs:

STEP 1: Insert the Positive/Negative DC wires into the V1+/V1- terminal for PWR 1 and/or V2+/V2- terminal for PWR 2.

STEP 2: To prevent the DC wires from coming loose, use a small flathead screwdriver to press the button beside each terminal of the plastic terminal block connector in order to insert the wire tightly. Release the screwdriver after the wire has been properly inserted.

STEP 3: Insert the plastic terminal block connector prongs into the terminal block receptor, which is located on the top panel of the SDS-3016.

> ⚠️ **ATTENTION**
>
> Before connecting the SDS-3016 to the DC power inputs, ensure the DC power supply voltage is stable and of a correct level and polarity.

Communication Connections

Each SDS-3016 smart Ethernet switch has three types of communication ports:

- 1 USB storage port (type A connector)
- 14 10/100BaseT(X) Fast Ethernet ports
- 2 10/100/1000BaseT(X) or 2 100/1000BaseSFP Gigabit

USB Storage Connection

The SDS-3016 has one USB storage port (type A connector; see the diagram below for pinout assignments) on the front panel. Use Moxa's ABC-02-USB automatic backup configurator to connect to the SDS-3016's USB storage port in order to perform configuration backup, firmware upgrade, or system log file backup.

USB Storage Port (Type A Connector) Pinouts
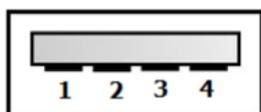
Pin	Description
1	VCC (+5V)
2	D− (Data -)
3	D+ (Data+)
4	GND (Ground)

NOTE ABC-02-USB Installation

Plug the ABC-02-USB into the USB storage port of the SDS-3016. We suggest securing the ABC-02-USB on the wall with an M4 screw.
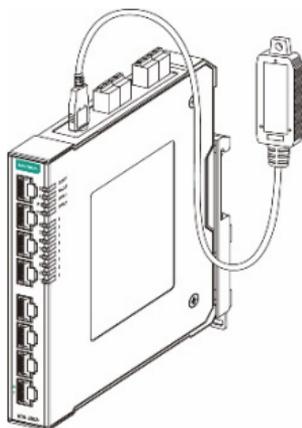
10/100BaseT(X) Ethernet Port Connection

The 10/100BaseT(X) ports located on the front panel of the SDS-3016 are used to connect to Ethernet-enabled devices.

Next, we show pinouts for both MDI (NIC-type) ports and MDI-X (HUB/Switch-type) ports, and also show cable wiring diagrams for straight-through and cross-over Ethernet cables.

10/100Base T(X) RJ45 Pinouts

MDI Port Pinouts

Pin	Signal
1	Tx+
2	Tx-
3	Rx+
6	Rx-

MDI-X Port Pinouts

Pin	Signal
1	Rx+
2	Rx-
3	Tx+
6	Tx-

8-pin RJ45

RJ45 (8-pin) to RJ45 (8-pin) Straight-Through Cable Wiring

Tx+	3	————————	3	Rx+
Tx-	6	————————	6	Rx-
Rx+	1	————————	1	Tx+
Rx-	2	————————	2	Tx-

RJ45 (8-pin) to RJ45 (8-pin) Cross-Over Cable Wiring

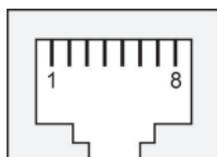|						
(Rx+)	Tx+	3	————————	1	Rx+	(Tx+)
(Rx-)	Tx-	6	————————	2	Rx-	(Tx-)
(Tx+)	Rx+	1	————————	3	Tx+	(Rx+)
(Tx-)	Rx-	2	————————	6	Tx-	(Rx-)
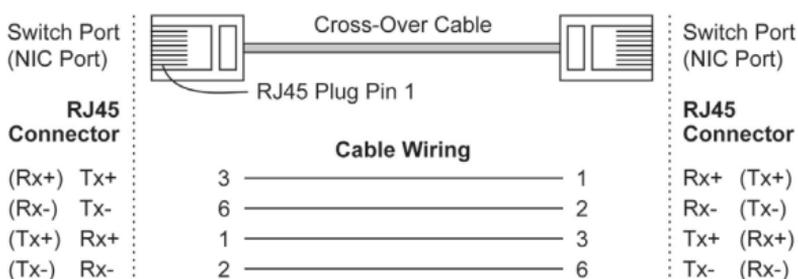
10/100/1000BaseT(X) Ethernet Port Connection

The 10/100/1000BaseT(X) ports located on the front panel of Moxa's Switch are used to connect to Ethernet-enabled devices. Most users will choose to configure these ports for Auto MDI/MDI-X mode, in which case the port's pinouts are adjusted automatically depending on the type of Ethernet cable used (straight-through or cross-over), and the type of device (NIC-type or HUB/Switch-type) connected to the port.

In the following section, we give pinout information for both MDI (NIC-type) ports and MDI-X (HUB/Switch-type) ports. We also give cable wiring diagrams for straight-through and cross-over Ethernet cables.

10/100Base T(X) RJ45 Pinouts
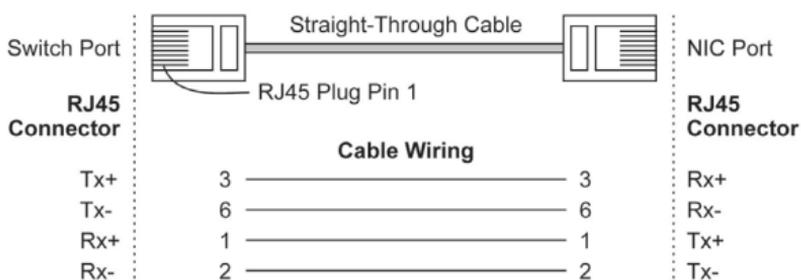
MDI Port Pinouts

Pin	Signal
1	Tx+
2	Tx-
3	Rx+
6	Rx-

MDI-X Port Pinouts

Pin	Signal
1	Rx+
2	Rx-
3	Tx+
6	Tx-

8-pin RJ45
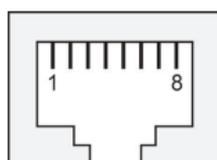
1000BaseT RJ45 Pinouts

Pin	MDI	MDI-X
1	BI_DA+	BI_DB+
2	BI_DA-	BI_DB-
3	BI_DB+	BI_DA+
4	BI_DC+	BI_DD+
5	BI_DC-	BI_DD-
6	BI_DB-	BI_DA-
7	BI_DD+	BI_DC+
8	BI_DD-	BI_DC-
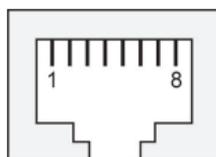
RJ45 (8-pin) to RJ45 (8-pin) Straight-Through Cable Wiring

Switch Port	RJ45 Connector			NIC Port RJ45 Connector
		Cable Wiring		
Tx+	3	———————	3	Rx+
Tx-	6	———————	6	Rx-
Rx+	1	———————	1	Tx+
Rx-	2	———————	2	Tx-
DD+	4	———————	4	DC+
DD-	5	———————	5	DC-
DC+	7	———————	7	DD+
DC-	8	———————	8	DD-

RJ45 (8-pin) to RJ45 (8-pin) Cross-Over Cable Wiring

Switch Port (NIC Port) RJ45 Connector				Switch Port (NIC Port) RJ45 Connector	
		Cable Wiring			
(Rx+) Tx+	3	———————	1	Rx+	(Tx+)
(Rx-) Tx-	6	———————	2	Rx-	(Tx-)
(Tx+) Rx+	1	———————	3	Tx+	(Rx+)
(Tx-) Rx-	2	———————	6	Tx-	(Rx-)
(DD+) DC+	4	———————	7	DD+	(DC+)
(DD-) DC-	5	———————	8	DD-	(DC-)
(DC+) DD+	7	———————	4	DC+	(DD+)
(DC-) DD-	8	———————	5	DC-	(DD-)
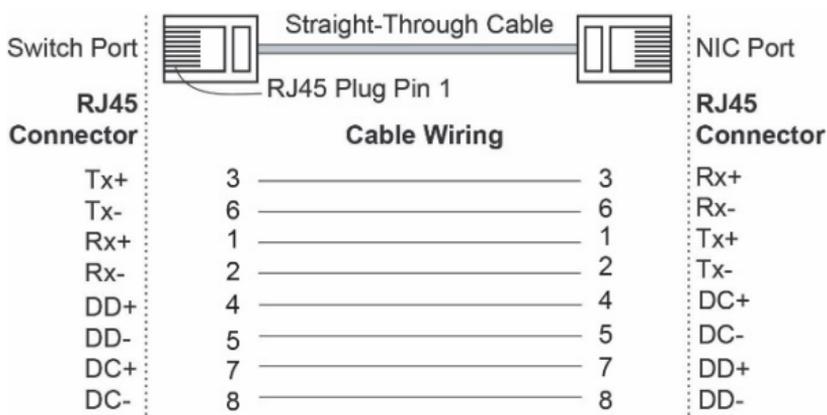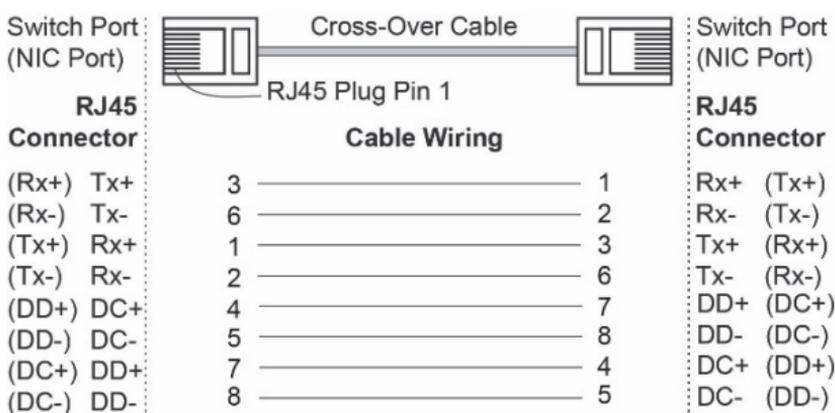
100/1000Base-X Fiber Port

The Fiber ports on the SDS-3016 Series are SFP type slots, which support both 100Base-FX and 1000Base-X speeds. Moxa provides complete transceiver models for various distance requirements.

The concept behind the LC port and cable is quite straightforward. Suppose you are connecting devices I and II. Unlike electrical signals, optical signals do not require a circuit in order to transmit data.

Consequently, one of the optical lines is used to transmit data from device I to device II, and the other optical line is used to transmit data from device II to device I, for full-duplex transmission.

Remember to connect the Tx (transmit) port of device I to the Rx (receive) port of device II, and the Rx (receive) port of device I to the Tx (transmit) port of device II. If you make your own cable, we suggest labeling the two sides of the same line with the same letter (A-to-A and B-to-B, as shown below, or A1-to-A2 and B1-to-B2).
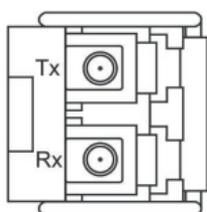
LC-Port Pinouts　　**LC-Port to LC-Port Cable Wiring**

	Cable Wiring	
A	———————	A
B	———————	B
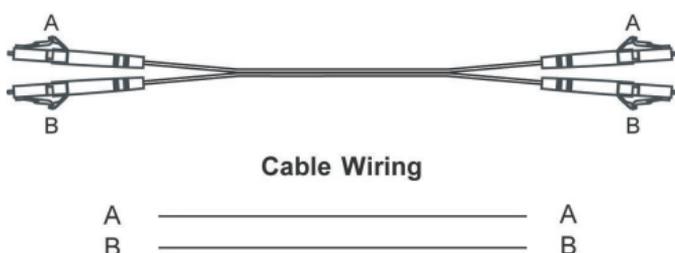
> ⚠️ **ATTENTION**
>
> This is a Class 1 Laser/LED product. To avoid causing serious damage to your eyes, do not stare directly into the Laser Beam.

Rotary DIP Switch

The SDS-3016 switches are classified as smart Ethernet switches. The rotary DIP switches located on the bottom panel of SDS-3016 facilitate one-step configuration to enable Industrial Protocol and DHCP client in only a few seconds without having to use a web browser.

The Rotary DIP switch has ten options that can be selected by pointing the arrow in that direction. The default setting 0 is reserved for the Modbus TCP profile. The options 1 to 4 can be used for PROFINET, Ethernet/IP Profile, and DHCP clients. The options 5 to 9 are reserved for future use. Please reboot the device after changing the rotary DIP switch settings to enable the function.
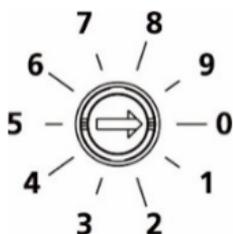
> **NOTE** We strongly recommend to use a 2.0 mm flathead screwdriver to rotate the DIP switch.

Rotary DIP Switch Settings for IA Profile:

Indicator	Mode
0	Modbus TCP profile (Default)
1	PROFINET profile enabled
2	PROFINET profile and DHCP client enabled
3	Ethernet/IP profile enabled
4	Ethernet/IP profile and DHCP client enabled
Others	Reserved (perform the same behavior as Indicator 0.)

Reset Button

The reset button can perform two functions. One is to reset the industrial smart Ethernet switch back to factory default settings and the other is to perform a quick back up of configuration and log files to the ABC-02-USB automatic backup configurator.

Reset to Factory Default Settings

Use a pointed object, such as a straightened paper clip, to depress and hold the reset button for 5 seconds. This will cause the state LED to blink once a second. After depressing the button for 5 seconds, the state LED will start to blink rapidly. This indicates that factory default settings have been loaded and executed, and that you can release the reset button.

> **NOTE** Do NOT power off your Moxa industrial smart Ethernet switch when the default settings are loading.

Configuration and Log Files Back Up

When the ABC-02-USB is connected to the industrial smart Ethernet switch, the reset button allows for a quick back up of configuration and event logs to the ABC-02-USB. Press the reset button on top of the SDS-3016 in order for the industrial smart Ethernet switch to start backing up the current system configuration files and event logs to the ABC-02-USB.

NOTE When the ABC-02 is plugged in, you can't reset to factory default by pressing the reset button.

LED Indicators

LED	Color	Status	Description
Per Device LED			
PWR 1	Amber	Solid light	Power is being supplied to the main system's power input PWR1
		Light off	Power is not being supplied to the main system's power input PWR1
PWR 2	Amber	Solid light	Power is being supplied to the main system's power input PWR2
		Light off	Power is not being supplied to the main system's power input PWR2
STATE	Green	Solid light	System has passed self-diagnosis test on boot-up and is ready to run
		Blinking	1. System is undergoing the self-diagnosis test 2. System detects that the ABC-02-USB is plugged in and has been detected by the USB port 3. Blinks continuously when the reset button is pressed for 5 seconds to reset to factory default settings
	Red	Solid light	System failed self-diagnosis on boot-up.
FAULT	Red	Solid light	1. System is in the event of failure, or is under quick inspection 2. Invalid port connection 3. When the Relay DO is triggered
		Blinking	1. RAM test failed / switch initialization failed 2. Firmware checksum failed / Uncompressed failed
		Light off	The system is operating normally
STATE + FAULT	STATE: Green FAULT: Green	Rotate Blinking Sequentially	ABC-02-USB is importing/exporting files

LED	Color	Status	Description
STATE + FAULT	STATE: Green FAULT: Red	Blinking	Smart switch is being discovered/located by the Switch Locator at the Web GUI or by MXview or MXview ToGo (LEDs blinking twice per second).
Per 10/100/1000 Mbps Copper Port LED			
1000M	Green	Solid Light	When the port is active and links at 1000 Mbps
		Blinking	When the port's data is being transmitted at 1000 Mbps
		Light off	When the port is inactive or link down
10/100M	Amber	Solid Light	When the port is active and links at 10/100 Mbps
		Blinking	When the port's data is being transmitted at 10/100 Mbps
		Light off	When the port is inactive or link down
Per 10/100 Mbps SFP Port LED			
1000M	Green	Solid Light	When the port is active and links at 1,000 Mbps
		Blinking	When the port's data is being transmitted at 1,000 Mbps
		Light off	When the port is inactive or link down
100M	Amber	Solid Light	When the port is active and links at 100 Mbps
		Blinking	When the port's data is being transmitted at 100 Mbps
		Light off	When the port is inactive or link down
Per 10/100 Mbps Copper			
100M	Green	Solid Light	When there is a secure connection (or link) to a 100Mbps device at any port.
		Blinking	When there is reception or transmission of data occurring at 100Mbps.
		Light off	Link down or no link.
10M	Amber	Solid Light	When there is a secure connection (or link) to a 10Mbps device at any port.
		Blinking	When there is reception or transmission of data occurring at 10Mbps.
		Light off	Link down or no link

Specifications

Technology	
Standards	IEEE 802.3 for 10BaseT
	IEEE 802.3u for 100BaseT(X) and 100BaseFX
	IEEE 802.3ab for 1000BaseT(X)
	IEEE 802.3z for 1000BaseX
	IEEE 802.3x for Flow Control
	IEEE 802.1D-2004 for Spanning Tree Protocol
	IEEE 802.1w for Rapid STP
	IEEE 802.1Q for VLAN Tagging
	IEEE 802.1p for Class of Service

Software Features	
Management	IPv4/IPv6, SNMP v1/v2c/v3, LLDP, Port Mirror, DHCP Client, Syslog, SNMP Inform, Flow Control, Back Pressure Flow Control
Filter	IEEE 802.1Q VLAN
Redundancy Protocols	STP, RSTP, MRP (Client)
Security	Broadcast Storm Protection, Port Lock, SNMPv3, HTTPS
Time Management	SNTP/NTP Server/Client
Industrial Protocols	EtherNet/IP, PROFINET IO, and Modbus/TCP
MIB	RFC1213 MIB, Ether-Like MIB, IF MIB, LLDP-MIB, BRIDGE MIB, Q-BRIDGE MIB

Switch Properties	
Max. Number of VLANs	8
VLAN ID Range	VID 1 to 4094
MAC Table Size	8 K
Packet Buffer Size	3 Mbit

Interface	
RJ45 Ports	10/100BaseT(X) auto negotiation speed 10/100/1000BaseT(X) auto negotiation speed
Fiber Ports	100/1000BaseSFP
Storage Port	USB storage (Type A connector for ABC-02-USB)
Alarm Contact (Relay Output)	1 normally open solid-state relay output with current carrying capacity of 1 A @ 24 VDC
Digital Input	1 input with the same ground, but electrically isolated from the electronics. • +13 to +30 V for state "1" • -30 to +3 V for state "0" • Max. input current: 8 mA
Button	Reset button

Power Requirements	
Input Voltage	12/24/48/-48 VDC, redundant dual inputs
Input Current	SDS-3016-2GTX: 12-48 VDC, 0.858 A (max.) SDS-3016-2GSFP: 12-48 VDC, 0.99 A (max.)
Overload Current Protection	Supported
Connection	2 removable 4-contact terminal blocks
Reverse Polarity Protection	Supported

Physical Characteristics	
Housing	Metal
Dimension (W x H x D)	36 x 135 x 111 mm (1.42 x 5.32 x 4.37 in)
Weight	590 g (1.30 lb)
Installation	DIN rail mounting
Environmental Limits	
Operating Temperature Standard Models: Wide Temp. Models:	-10 to 60°C (14 to 140°F) -40 to 75°C (-40 to 167°F)
Storage Temperature	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5% to 95% (non-condensing)
Altitude	Up to 2000 m Note: Please contact Moxa if you require products guaranteed to function properly at higher altitudes.
Standards and Certifications	
Safety	UL 61010-2-201, EN 62368-1
EMC	EN 61000-6-2/6-4
EMI	CISPR 22, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m IEC 61000-4-4 EFT: Power: 1 kV; Signal: 1 kV IEC 61000-4-5 Surge: Power: 2 kV; Signal: 1 kV IEC 61000-4-6 CS: Signal: 10 V IEC 61000-4-8 PFMF: 30A/m, 60 s
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-32
Vibration	IEC 60068-2-6
Note: Please check Moxa's website for the latest certification status.	
MTBF (mean time between failures)	
Time	1,109,179 hours
Standard	Telcordia (Bellcore), GB
Warranty	
Warranty Period	5 years
Details	See www.moxa.com/warranty

> ⚠️ **ATTENTION**
>
> This device complies with Part 15 of the FCC rules.
>
> Operation is subject to the following conditions:
>
> 1. This device may not cause harmful interference.
> 2. This device must accept any interference received including interference that may cause undesired operation.

⚠️ **ATTENTION**

This product is for indoor use and meets the Pollution Degree 2 requirements.

If the device needs to be cleaned it should be wiped with a dry cloth. The device must be installed within a suitable, secure, final enclosure. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.