



SDW-500 series

Industrial Ethernet 5-port Switch

General information

Legal information

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About This Guide

This guide is intended for installation engineers and users of the Westermo products.

It includes information on safety and regulations, a product description, installation instructions and technical specifications.

Safety and Regulations

Warning signs are provided to prevent personal injuries and/or damages to the product.

The following levels are used:

Level of warning	Description	Consequence personal injury	Consequence material damage
 WARNING	Indicates a potentially hazardous situation	Possible death or major injury	Major damage to the product
 CAUTION	Indicates a potentially hazardous situation	Minor or moderate injury	Moderate damage to the product
 NOTICE	Provides information in order to avoid misuse of the product, confusion or misunderstanding	No personal injury	Minor damage to the product
 NOTE	Used for highlighting general, but important information	No personal injury	Minor damage to the product

Safety Information

Before installation:

Read this manual completely and gather all information on the product. Make sure that you understand it fully. Check that your application does not exceed the safe operating specifications for this product.



SAFETY DURING INSTALLATION

The product must be installed and operated by qualified service personnel and installed into an apparatus cabinet or similar, where access is restricted to service personnel only.

Before energising and connecting communication cables to the product, ensure a protective earthing conductor is first connected to the protective earthing terminal (only valid for metallic housings). Westermo recommends a cross-sectional area of at least 4 mm².

If the product does not have a protective earthing terminal, then the DIN-rail must be connected to protective earth. Upon removal of the product, ensure that the protective earthing conductor, or the connection to earth via the DIN-rail, is disconnected last.



HAZARDOUS VOLTAGE

Do not open an energized product. Hazardous voltage may occur when connected to a power supply.



PROTECTIVE FUSE

The power supply wiring must be sufficiently fused. It must be possible to disconnect manually from the power supply. Ensure compliance to national installation regulations.

Replacing the internal fuse must only be performed by Westermo qualified personell.



REDUCE THE RISK OF FIRE

To reduce the risk of fire, use only telecommunication line cords with a cable diameter of AWG 26 or larger. Regarding power cable dimensions, see Interface Specifications.



CLASS 1 LASER PRODUCT

Do not look directly into a fibre optical port or any connected fibre, although the product is designed to meet the Class 1 Laser regulations and complies with 21 CFR 1040.10 and 1040.11.



FIBRE OPTIC HANDLING

Fibre optic equipment needs special treatment. It is very sensitive to dust and dirt. If the fibre is disconnected from the product, the protective plugs on the transmitter/receiver must be connected. The protective plugs must be kept on during transportation. The fibre optics cables must be handled the same way.



CORROSIVE GASES

If the product is placed in a corrosive environment, it is important that all unused connector sockets are protected with a suitable plug, in order to avoid corrosion attacks on the gold plated connector pins.



ELECTROSTATIC DISCHARGE (ESD)

Prevent electrostatic discharge damages to internal electronic parts by discharging your body to a grounding point (e.g. use a wrist strap).

Care recommendations

Follow the care recommendations below to maintain full operation of product and to fulfil the warranty obligations:

- Do not drop, knock or shake the product. Rough handling above the specification may cause damage to internal circuit boards.
- Use a dry or slightly water-damp cloth to clean the product. Do not use harsh chemicals, cleaning solvents or strong detergents.
- Do not paint the product. Paint can clog the product and prevent proper operation.

If the product is used in a manner not according to specification, the protection provided by the equipment may be impaired.

If the product is not working properly, contact the place of purchase, nearest Westermo distributor office or Westermo technical support.

Cleaning of the optical connectors

In the event of contamination, the optical connectors should be cleaned by the use of forced nitrogen and some kind of cleaning stick.

Recommended cleaning fluids:

- Methyl-, ethyl-, isopropyl- or isobutyl-alcohol
- Hexane
- Naphtha

Product disposal



This symbol means that the product shall not be treated as unsorted municipal waste when disposing of it. It needs to be handed over to an applicable collection point for recycling electrical and electronic equipment.

By ensuring the product is disposed of correctly, you will help to reduce hazardous substances and prevent potential negative consequences to both environment and human health, which could be caused by inappropriate disposal.

Article number, model and description

Article	Model	Description
3644-0001	SDW-550	10/100Base-T/TX: 5 ports
3644-6001	SDW-550 E-mark	10/100Base-T/TX: 5 ports
3644-0020	SDW-541-MM-SC2	10/100Base-T/TX: 4 ports 100Base-FX: 1 port
3644-0022	SDW-541-SM-LC15	10/100Base-T/TX: 4 ports 100Base-FX: 1 port
3644-0023	SDW-541-MM-LC2	10/100Base-T/TX: 4 ports 100Base-FX: 1 port
3644-0024	SDW-541-SM-SC15	10/100Base-T/TX: 4 ports 100Base-FX: 1 port
3644-0030	SDW-532-MM-SC2	10/100Base-T/TX: 3 ports 100Base-FX: 2 port
3644-0032	SDW-532-SM-LC15	10/100Base-T/TX: 3 ports 100Base-FX: 2 port
3644-0033	SDW-532-MM-LC2	10/100Base-T/TX: 3 ports 100Base-FX: 2 port
3644-0034	SDW-532-SM-SC15	10/100Base-T/TX: 3 ports 100Base-FX: 2 port
3644-0035	SDW-532-SM-LC40	10/100Base-T/TX: 3 ports 100Base-FX: 2 port

Simplified EU declaration of conformity

Hereby, Westermo declares that this product is in compliance with applicable EU directives and UK legislations. The full declaration of conformity and other detailed information is available at www.westermo.com/support/product-support.



Agency approvals and standards compliance

Type	Approval / Compliance
EMC	EN 61000-6-2, Immproducty industrial environments
	EN 61000-6-3 ¹ , Emission residential environments
	EN 61000-6-4 ² , Emission industrial environments
	E-Mark, Road Vehicles, 10R-04 7216 ³
Safety	UL 60950-1, IT Equipment
Marine	DNV GL rules for classification – Ships and offshore products ⁴
Note	¹ _ Applicable only for 3644-x001 ² _ Applicable only for 3644-0019, 3644-002x and 3644-003x ³ _ Applicable only for 3644-6001 ⁴ – Applicable only for 3644-0001, 3644-0022 , 3644-0023, 3644-0025, 3644-0032, 3644-0033, 3644-0035

Corrosive environment:

This product has been successfully tested in a corrosion test according to *IEC 60068-2-60, method 3*. This means that the product meets the requirements to be placed in an environment classified as *ISA-S71.04 class G3*.



CORROSIVE GASES

If the product is placed in a corrosive environment, it is important that all unused connector sockets are protected with a suitable plug, in order to avoid corrosion attacks on the gold plated connector pins.

Environmental conditions

Isolation between interfaces	
Power Interface to all other	2.8 kV DC 2.0 kV RMS @ 50 Hz and 60 s duration
TX signal Interface to all other	2.1 kV DC 1.5 kV RMS @ 50 Hz and 60 s duration
TX shield Interface to all other	1.5 kV DC 1.0 kV RMS @ 50 Hz and 60 s duration

Environmental	
Temperature, operating	–25 to +70°C (SDW-550), –25 to +65°C (SDW-541) –25 to +60°C (SDW-532)
Temperature, storage and transportation	–25 to +70°C
Relative humidity, operating	5 to 95% (non-condensing)
Relative humidity, storage and transportation	5 to 95% (condensation allowed outside packaging)
Altitude, operating	2000 m/70 kPa

Mechanical	
Dimension (W x H x D)	35 x 121 x 119 mm
Weight	0.2 kg
Mounting	DIN-rail
Degree of protection	IP21

Configuration
Auto configured (auto-negotiation) or manually setting of speed and duplex of individual TX port, by DIP-switches.
Port mirror function is possible to set with DIP-switch. With the port mirror function active the switch will copy all outgoing traffic to port 1. This can be used to monitor all traffic going out from the switch. Packets may be discarded if the total throughput exceeds the port speed of port 1.

Fibre optic power budget

Model	Multimode MM-xx2	Singlemode SM-SC15	Singlemode SM-LC15	Singlemode SM-LC40
Transmitted wavelength	1310 nm	1310 nm	1310 nm	1310 nm
Min. output power, transmitter	–19 dBm	–15 dBm	–15 dBm	–5 dBm
Max. output power, transmitter	–12 dBm	–8 dBm	–8 dBm	0 dBm
Input sensitivity, receiver	–31 dBm	–34 dBm	–31 dBm	–34 dBm
Min. power budget	12 dBm	19 dBm	16 dBm	29 dBm
Max. power budget	19 dBm	26 dBm	23 dBm	34 dBm
Recommended fibre cable and core / cladding diameter	50/125 62.5/125	9/125 10/125	9/125 10/125	9/125 10/125

Attenuation in connectors / splices

Type	Normal attenuation
Connector	0.2 - 0.4 dBm
Fusion splice	0.1 dBm
Mechanical splice	0.2 dBm

Description

The SDW-550 is an Industrial Ethernet 5-port switch.

All ports support auto-negotiation, but DIP-switches also allow speed and duplex configuration of any individual TX port. It is also possible to set up one port to monitor traffic to/from the switch.

The SDW-550 has been designed to meet high industrial specifications, providing very high dependability in harsh environmental conditions.

Features:

- ⌘ TX shields individually isolated
- ⌘ Wide DC power range 12 – 48 VDC
- ⌘ Wide temperature range
- ⌘ Automatic MDI/MDI-X crossover
- ⌘ LED indicators for Power, Speed, Duplex, Link and Traffic
- ⌘ Port monitoring
- ⌘ 35 mm DIN rail mounting
- ⌘ Enable or disable of flow control

Example of applications are:

- ⌘ 5-port switch
- ⌘ Ethernet isolator, for STP networks

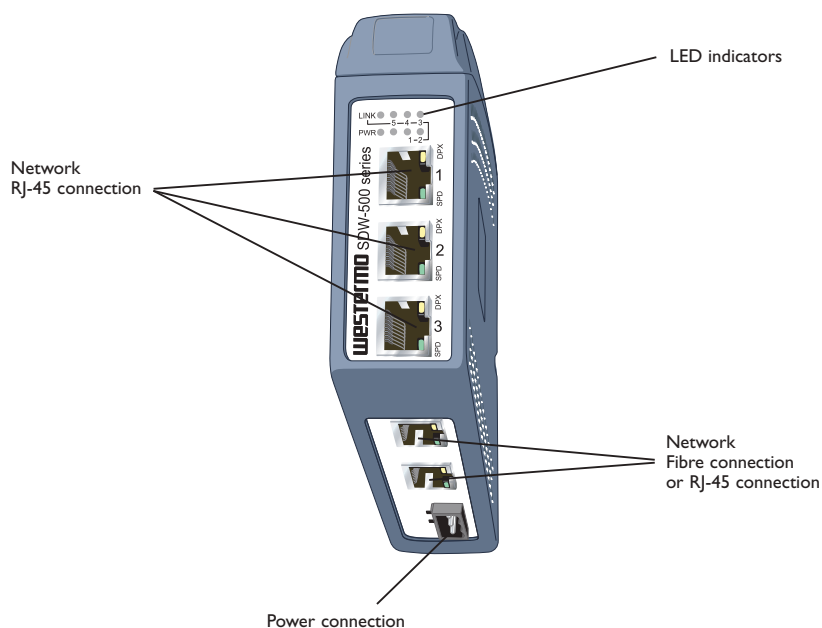
Interface specifications

Power SDW-500 series	
Rated voltage	12 – 48 VDC, polarity protected
Operating voltage	9.6 – 57.6 VDC
Rated current	@12 VDC power input
	SDW-550 320 mA
	SDW-541-MM-SC2 450 mA
	SDW-541-SM-LC15 450 mA
	SDW-541-SM-SC15 350 mA
	SDW-541-MM-LC2 350 mA
	SDW-532-MM-SC2 600 mA
	SDW-532-SM-LC15 450 mA
	SDW-532-SM-SC15 450 mA
	SDW-532-SM-LC40 450 mA
	SDW-532-MM-LC2 450 mA
Rated frequency	DC
Connection	Detachable screw terminal
Connector size	0.2 – 2.5 mm ² (AWG 24-12)

Ethernet TX	
Electrical specification	IEEE std 802.3. 2000 edition
Data rate	10 Mbit/s or 100 Mbit/s, manual or auto
Duplex	Full or half, manual or auto
Connection	SC, ST or LC
Circuit type	Optical
Transmission range	100 m

Ethernet FX	
Electrical specification	IEEE std 802.3. 2000 edition
Data rate	10 Mbit/s or 100 Mbit/s, manual or auto
Duplex	Full or half, manual or auto
Connection	SC, ST or LC
Circuit type	Optical
Transmission range	100 m

Connections



Available models:

- ⌘ SDW-550 10/100Base-T/TX: 5 ports
- ⌘ SDW-541 10/100Base-T/TX: 4 ports 100Base-FX: 1 port
- ⌘ SDW-532 10/100Base-T/TX: 3 ports 100Base-FX: 2 ports

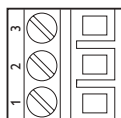
Power

The SDW-500 series supports redundant power connection.

The positive input are +VA and +VB, the negative input for both supplies are COM.

The power is drawn from the input with the highest voltage.

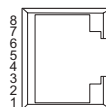
3-pos screw terminal	Description	Power
1	COM	0 V
2	+VA	A: 9.6 – 57.6 VDC
3	+VB	B: 9.6 – 57.6 VDC



TX

Ethernet TX connection (RJ-45 connector), automatic MDI/MDI-X crossover.

Contact	Signal Name	Direction	Description/Remark
1	TD+	In/Out	Transmitted/Received data
2	TD–	In/Out	Transmitted/Received data
3	RD+	In/Out	Transmitted/Received data
4	–	–	–
5	–	–	–
6	RD–	In/Out	Transmitted/Received data
7	–	–	–
8	–	–	–
Shield	–	–	HF-connected



CAT 5 cable is recommended.

Unshielded (UTP) or shielded (STP) connector might be used.

FX SC Multi- or single mode (optional)

Ethernet FX connection.

1300 nm multi- or singlemode fibre transceiver with SC-connector.

The dust protection plug shall be mounted when no fibre is connected.

FX ST Multi mode (optional)

Ethernet FX connection.

1300 nm multi mode fibre transceiver with ST-connector.

The dust protection plugs shall be mounted when no fibre is connected.

FX LC Multi- or single mode (optional)

Ethernet FX connection.

1300 nm singlemode fibre transceiver with LC-connector.

The dust protection plug shall be mounted when no fibre is connected.

LED indicators

At power on the PWR flashes during initialising.

Indicators (LED) Power (PWR)
Link (LINK) of every port
Speed (SPD) and duplex (DPX) of TX ports

LED	Status	Indication of
PWR	ON	Internal power, initialising OK
	Slow flash	Initialisation progressing
	Fast flash	Initialisation error
LINK	OFF	No Ethernet link
	ON	Good Ethernet link
	Flash	Ethernet data is transmitted or received, traffic indication
SPD	OFF	10 Mbit/s
(TX only)	ON	100 Mbit/s
DPX	OFF	Half duplex
(TX only)	ON	Full duplex

Installation

Mounting / Removal



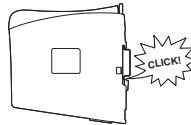
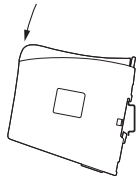
HAZARDOUS VOLTAGE

Do not open an energized product. Hazardous voltage may occur when connected to a power supply.



ELECTROSTATIC DISCHARGE (ESD)

Prevent electrostatic discharge damages to internal electronic parts by discharging your body to a grounding point (e.g. use a wrist strap).



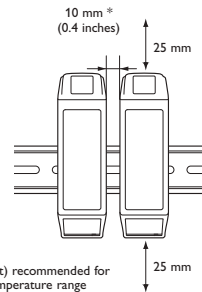
Mounting

This product should be mounted on 35 mm DIN-rail which is horizontally mounted on a wall or cabinet backplate.

Cooling

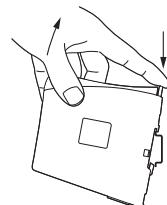
This product uses convection cooling. To avoid obstructing the airflow around the product, use the following spacing rules. Minimum spacing 25 mm (1.0 inch) above / below and 10 mm (0.4 inches) left / right the product.

Spacing is recommended for the use of product in full operating temperature range and service life.



* Spacing (left/right) recommended for full operating temperature range

Removal Press down the black support at the back of the product, see figure.



DIP switch settings SDW-550

DIP-switches are accessible under the lid on top of the product. DIP-switches are used to configure the product.



HAZARDOUS VOLTAGE

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ELECTROSTATIC DISCHARGE (ESD)

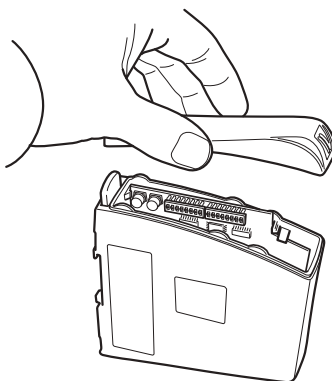
Prevent electrostatic discharge damages to internal electronic parts by discharging your body to a grounding point (e.g. use a wrist strap).

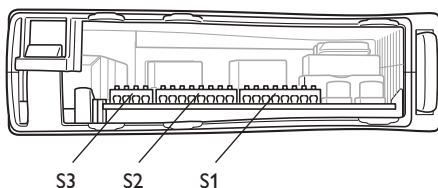
NOTE

When configuration via DIP-switches, the settings of DIP-switches configure the product only after a reboot (power off/on).

Observe this when the DIP-switches are configured:

- ⌘ Speed and duplex setting only valid when auto-negotiation is disabled.
- ⌘ When monitoring selected all outgoing packets from the switch is also copied to the port 1.
- ⌘ Speed and duplex switch settings are ignored for FX ports.
- ⌘ If auto-negotiation and auto MDI/MDI-X disabled all TX ports support MDI-X configuration.





Port 1 settings

S1	ON	Auto-negotiation and auto MDI/MDI-X disabled
S1	ON	Auto-negotiation and auto MDI/MDI-X enabled
S1	ON	10 Mbit/s speed selected
S1	ON	100 Mbit/s speed selected
S1	ON	Half duplex selected
S1	ON	Full duplex selected

Port 3 settings

S1	ON	Auto-negotiation and auto MDI/MDI-X disabled
S1	ON	Auto-negotiation and auto MDI/MDI-X enabled
S1	ON	10 Mbit/s speed selected
S1	ON	100 Mbit/s speed selected
S1	ON	Half duplex selected
S2	ON	Full duplex selected

Port 2 settings

S1	ON	Auto-negotiation and auto MDI/MDI-X disabled
S1	ON	Auto-negotiation and auto MDI/MDI-X enabled
S1	ON	10 Mbit/s speed selected
S1	ON	100 Mbit/s speed selected
S1	ON	Half duplex selected
S1	ON	Full duplex selected

Port 4 settings

S2	ON	Auto-negotiation and auto MDI/MDI-X disabled
S2	ON	Auto-negotiation and auto MDI/MDI-X enabled
S2	ON	10 Mbit/s speed selected
S2	ON	100 Mbit/s speed selected
S2	ON	Half duplex selected
S2	ON	Full duplex selected

Port 5 settings

S2  Auto-negotiation and auto MDI/MDI-X disabled

S2  Auto-negotiation and auto MDI/MDI-X enabled

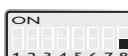
S2  10 Mbit/s speed selected

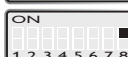
S2  100 Mbit/s speed selected

S2  Half duplex selected

S2  Full duplex selected

Port mirroring settings

S2  No monitoring selected

S2  Monitoring selected

Flow control selected

S3  Flow control selected

S3  No flow control selected

Factory settings

S1  S2  S3 

DIP switch settings SDW-541 and SDW-532

DIP-switches are accessible under the lid on top of the product. DIP-switches are used to configure the product.



HAZARDOUS VOLTAGE

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ELECTROSTATIC DISCHARGE (ESD)

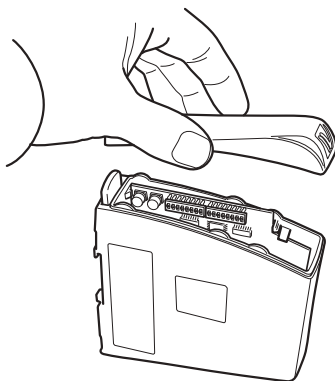
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- ⌘ When monitoring selected all outgoing packets from the switch is also copied to the port 1.
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- ⌘ If auto-negotiation and auto MDI/MDI-X disabled all TX ports support MDI-X configuration.



Port 1 settings

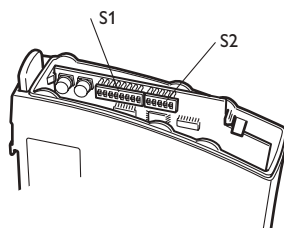
S1		Auto-negotiation and auto MDI/MDI-X disabled
S1		Auto-negotiation and auto MDI/MDI-X enabled
S1		10 Mbit/s speed selected
S1		100 Mbit/s speed selected
S1		Half duplex selected
S1		Full duplex selected

Port 2 settings

S1		Auto-negotiation and auto MDI/MDI-X disabled
S1		Auto-negotiation and auto MDI/MDI-X enabled
S1		10 Mbit/s speed selected
S1		100 Mbit/s speed selected
S1		Half duplex selected
S1		Full duplex selected

Port 3 settings

S1		Auto-negotiation and auto MDI/MDI-X disabled
S1		Auto-negotiation and auto MDI/MDI-X enabled
S1		10 Mbit/s speed selected
S1		100 Mbit/s speed selected
S2		Half duplex selected
S2		Full duplex selected



Port 4 settings*

S2		Auto-negotiation and auto MDI/MDI-X disabled
S2		Auto-negotiation and auto MDI/MDI-X enabled
S2		10 Mbit/s speed selected
S2		100 Mbit/s speed selected
S2		Half duplex selected
S2		Full duplex selected

* Setting of port 4 is only possible when using SDW-541. These settings are ignored when using SDW-532

Port mirroring settings

S2		No monitoring selected
S2		Monitoring selected

Factory settings

S1		
S2		

Westermo

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