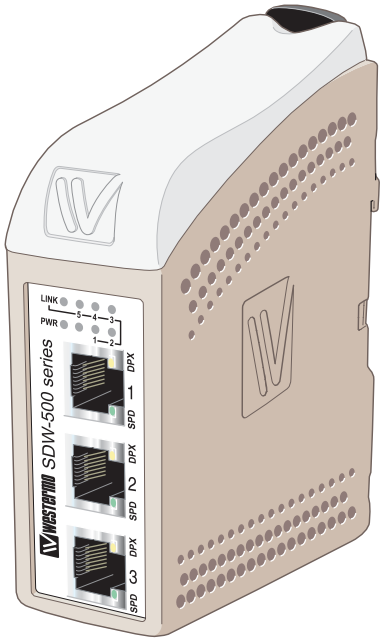
User Guide

SDW-550

6644-2230



Industrial Ethernet 5-port Switch

www.westermo.com

Contents

1. 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

2. Safety

General:

Before using this unit, read this manual completely and gather all information on the unit. Make sure that you understand it fully. Check that your application does not exceed the safe operating specifications for this unit.

Before installation, maintenance or modification work:

Prevent damage to internal electronics from electrostatic discharges (ESD) by discharging your body to a grounding point (e.g. use of wrist strap).

Prevent access to hazardous voltages by disconnecting the unit from DC mains supply and all other electrical connections.

When installed, should the unit and it's wiring be separated from hazardous voltage by double or reinforced insulation.

Installation:

This unit should only be installed by qualified personnel.

This unit should only be installed in a "restricted access area", for example a lockable cabinet where access is restricted to service personnel only.

This unit is intended for permanent connection to the DC mains supply.

The power supply wiring must be sufficiently fused, and if necessary must be possible to disconnect manually from the DC mains supply. Ensure compliance to national installation regulations.

Prevent access to hazardous voltage by disconnecting the unit from power supply.

Warning! Do not open connected unit. Hazardous voltage may occur within this unit when connected to power supply.

This unit uses convection cooling. To avoid obstructing the air flow around the unit, follow the spacing recommendations (see Installation section).

Care recommendations

Follow the care recommendations below to maintain full operation of unit and to fulfil the warranty obligations.

This unit must not be operating with removed covers or lids.

Do not attempt to disassemble the unit. There are no user serviceable parts inside.

Do not drop, knock or shake the unit, rough handling above the specification may cause damage to internal circuit boards.

Do not use harsh chemicals, cleaning solvents or strong detergents to clean the unit.

Do not paint the unit. Paint can clog the unit and prevent proper operation.

Do not expose the unit to any kind of liquids (rain, beverages, etc). The unit is not water-proof. Keep the unit within the specified humidity levels.

Do not use or store the unit in dusty, dirty areas, connectors as well as other mechanical part may be damaged.

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

3. Approvals

Conformity with the Directive 73/23/EEC Low Voltage Directive – LVD has been assessed by application of the standard EN 60 950.

Conformity with the Directive 89/336/EEC Electromagnetic Compatibility (EMC) has been assessed by application of standards EN 61000-6-2 (industrial immunity) and EN 61000-6-3 (residential emission).

3.1 Declaration of Conformity

Westermo Teleindustri AB

Declaration of conformity

The manufacturer Westermo Teleindustri AB
SE-640 40 Stora Sundby, Sweden

Herewith declares that the product(s)

Type of product	Model	Art no	Installation manual
DIN-rail	SDW-550	3644-0001	6644-2230

is in conformity with the following EC directive(s).

No	Short name
89/336/EEG	Electromagnetic Compatibility (EMC)

References of standards applied for this EC declaration of conformity.

No	Title	Issue
EN 61000-6-2	Immunity for industrial environments	2 (2001)
EN 61000-6-3	Emission standard for residential, commercial and light-industrial environments	1 (2001)

The last two digits of the year in which the CE marking was affixed: 05

Hans Levin
Technical Manager
15th December2004

Postadress/Postal address	Tel.	Telefax	Postgiro	Bankgiro	Org.nr/ Corp. identity number	Registered office
S-640 40 Stora Sundby	016-428000	016-428001	52 72 79-4	5671-5550	556361-2604	Eskilstuna
Sweden	Int+46 16428000	Int+46 16428001				

4. Specification

Power interface	
	SDW-550
Rated voltage	12–48 VDC, polarity protected
Operating voltage	9.6 – 57.6 VDC
Rated current	@12 VDC power input
	320 mA
Rated frequency	DC
Connection	Detachable screw terminal
Connector size	0.2 – 2.5 mm^2 (AWG 24-12)

Ethernet TX Interface	
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	RJ-45, shielded
Transmission range	100 m

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

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
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)

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.
Flow control is possible to enable or disable with DIP-switch.

5. Maintenance

No maintenance is required, as long as the unit is used as intended within the specified conditions.

6. Installation

6.1 Mounting / Removal

Before mounting or removing the unit:

Prevent damage to internal electronics from electrostatic discharges (ESD) by discharging your body to a grounding point (e.g. use of wrist strap).

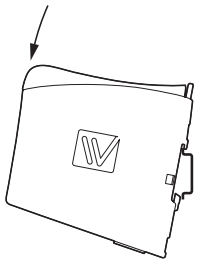
Prevent access to hazardous voltages by disconnecting the unit from DC mains supply and all other electrical connections.

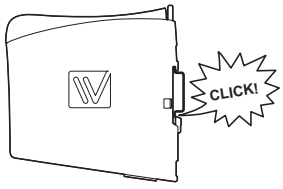
Mounting

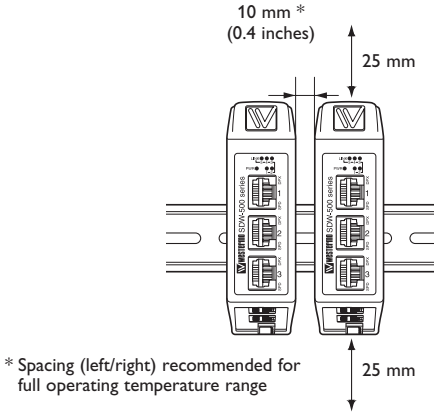
This unit should be mounted on 35 mm DIN-rail which is horizontally mounted on a wall or cabinet backplate.

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

Snap on mounting, see figure

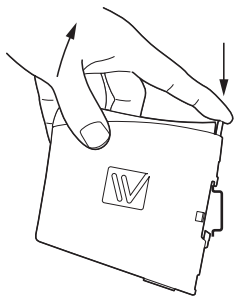




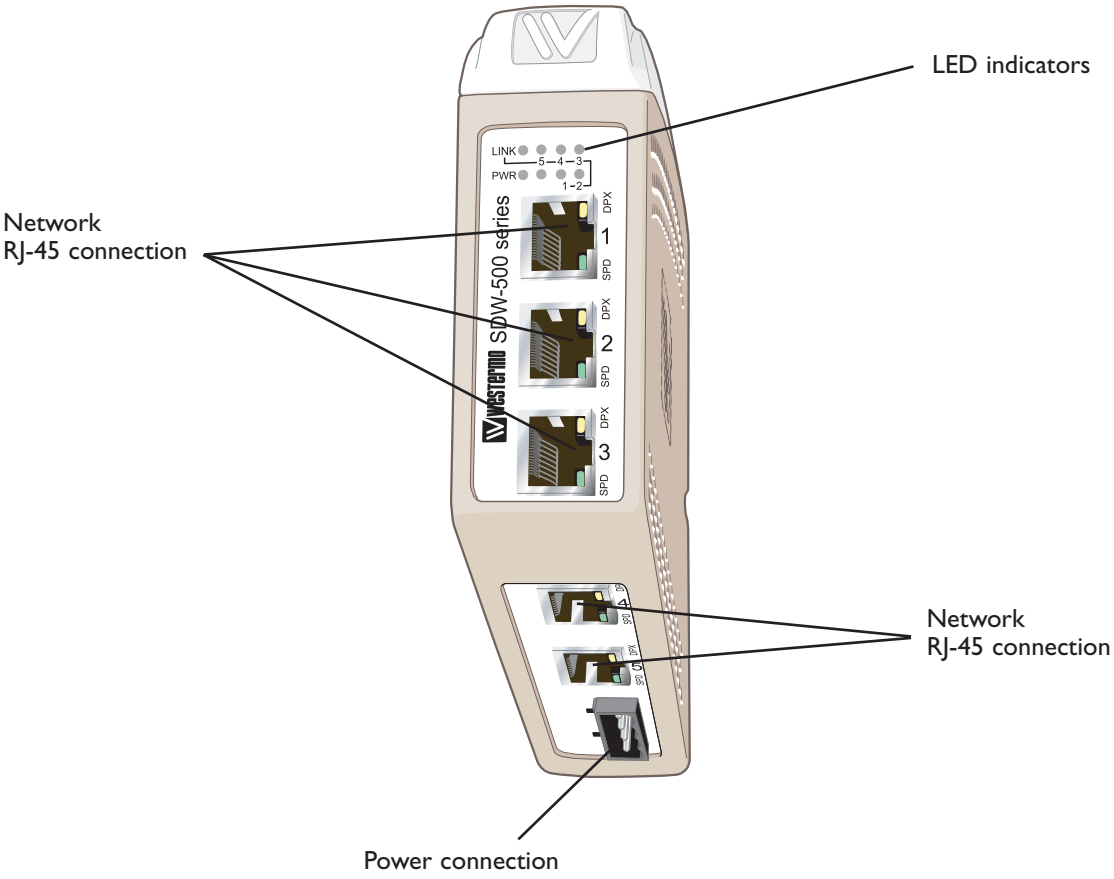


Removal

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



6.2 Connections



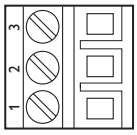
Available models:

- SDW-550 10/100Base-T/TX: 5 ports

6.2.1 Power

The SDW-550 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.

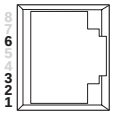
3-pos screw terminal	Description
1	COM
2	+VA
3	+VB



6.2.2 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.

6.3 DIP switch settings SDW-550

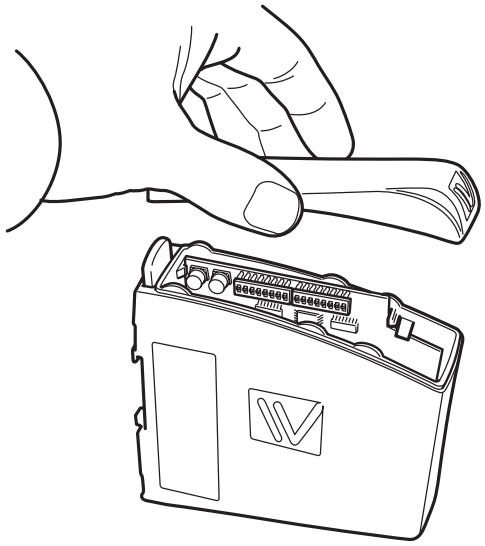
DIP-switches are accessible under the lid on top of the unit. DIP-switches are used to configure the unit.

Warning!

Prevent damage to internal electronics from electrostatic discharges (ESD) by discharging your body to a grounding point (e.g. use of wrist strap), before the lid on top/front of the unit is removed.

Warning! Do not open connected equipment.

Prevent access to hazardous voltages by disconnecting the unit from DC mains supply and all other electrical connections.

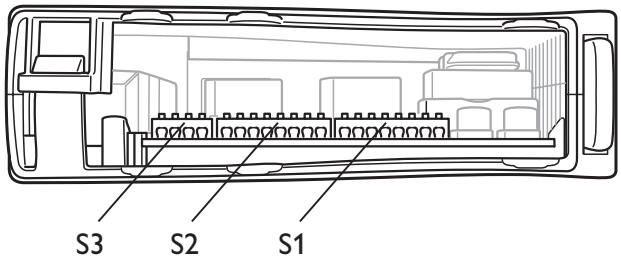


NOTE

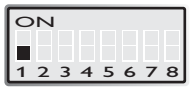
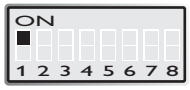
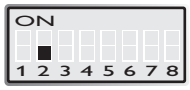
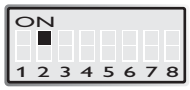
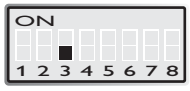
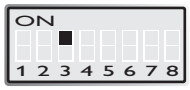
When configuration via DIP-switches, the settings of DIP-switches configure the unit only after a reboot (power off/on).

To be observe when the DIP-switches will be configured

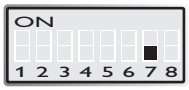
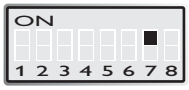
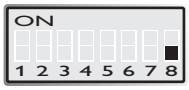
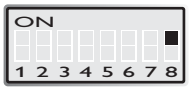
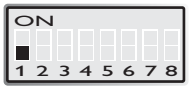
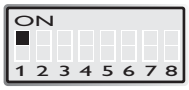
- Speed and duplex setting only valid when auto-negotiation is disabled.
- When monitoring selected all outgoing packets from the switch is also copied to the port 1.
- If auto-negotiation and auto MDI/MDI-X disabled all TX ports support MDI-X configuration.



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 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

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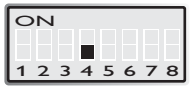
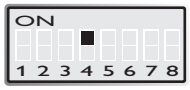
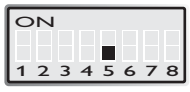
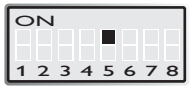
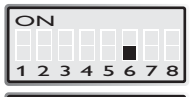
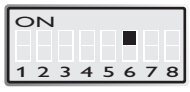
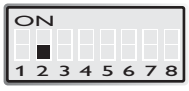
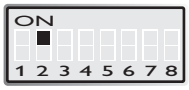
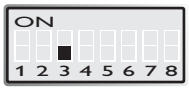
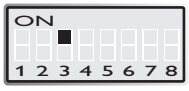
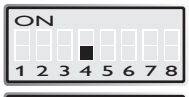
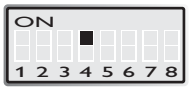
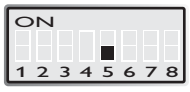
S1		Auto-negotiation and auto MDI/MDI-X disabled
S1		Auto-negotiation and auto MDI/MDI-X enabled
S1		10 Mbit/s speed selected
S1		100 Mbit/s speed selected
S1		Half duplex selected
S1		Full duplex selected

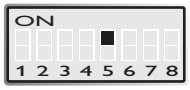
Port 4 settings

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

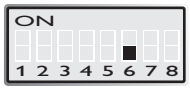
Port 5 settings

S2 

Auto-negotiation and auto MDI/MDI-X disabled

S2 

Auto-negotiation and auto MDI/MDI-X enabled

S2 

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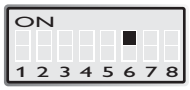
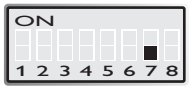
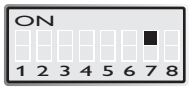
S2 

100 Mbit/s speed selected

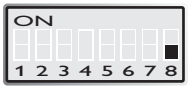
S2 

Half duplex selected

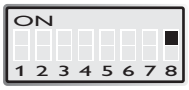
S2 

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 

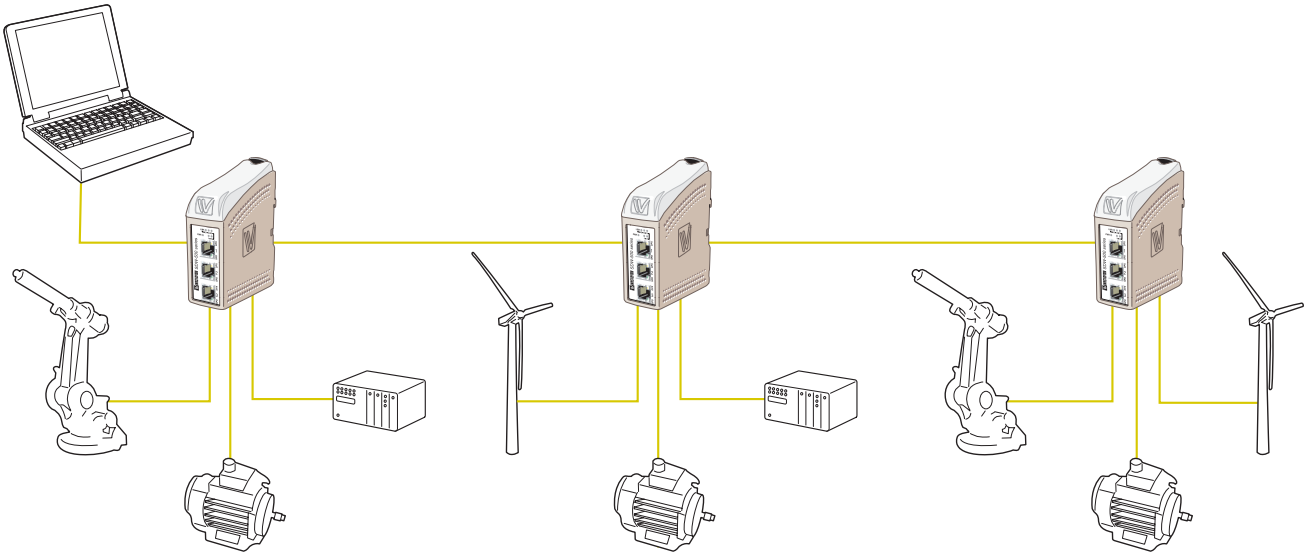
6.5 LED indicators

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

Application example



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