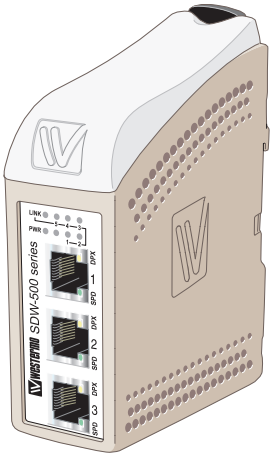
www.westermo.com

SDW-500 series

Industrial Ethernet

5-port Switch



General information

Legal information

The contents of this document are provided “as is”. Except as required by applicable law, no warranties of any kind, either express or implied, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose, are made in relation to the accuracy and reliability or contents of this document. Westermo reserves the right to revise this document or withdraw it at any time without prior notice.

Under no circumstances shall Westermo be responsible for any loss of data or income or any special, incidental, and consequential or indirect damages howsoever caused.

More information about Westermo can be found at the following Internet address: **www.westermo.com**

Safety

Before installation:

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.

This unit should only be installed by qualified personnel.
This unit should be built-in to an apparatus cabinet, or similar, where access is restricted to service personnel only.
The power supply wiring must be sufficiently fused, and if necessary it must be possible to disconnect manually from the power supply. Ensure compliance to national installation regulations.
This unit uses convection cooling. To avoid obstructing the air flow around the unit, follow the spacing recommendations (see Installation section).

Before mounting, using or removing this unit:

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.

Class 1 Laser Product

Do not look directly into fibre optical fibre port or any connected fibre although this unit is designed to meet the Class 1 Laser regulations.

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 waterproof. 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.

Fibre connectors are supplied with plugs to avoid contamination inside the optical port.

As long as no optical fibre is mounted on the connector, e.g. for storage, service or transportation, should the plug be applied.

Note. Fibre Optic Handling

Fibre optic equipment needs special treatment. It is very sensitive to dust and dirt. If the fibre will be disconnected from the modem the protective hood on the transmitter/ receiver must be connected. The protective hood must be kept on during transportation. The fibre optic cable must also be handle the same way.

If this recommendation not will be followed it can jeopardise the warranty.

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.

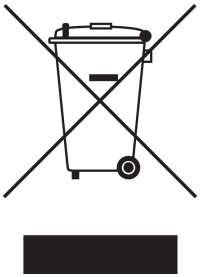
Recommended cleaning fluids:

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

Maintenance

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

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 this 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
3644-0015	SDW-550B	10/100Base-T/TX: 5 ports
3644-0019	SDW-532-MM-SC2-SM-SC15	10/100Base-T/TX: 3 ports 100Base-FX: 2 port
3644-0020	SDW-541-MM-SC2	10/100Base-T/TX: 4 ports 100Base-FX: 1 port
3644-0021	SDW-541-MM-ST2	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
3644-0025	SDW-541-SM-LC40	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
3644-0031	SDW-532-MM-ST2	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 the equipment is in compliance with EU directives. The full EU declaration of conformity and other detailed information are available at the respective product page at www.westermo.com.

Agency approvals and standards compliance

Type	Approval / Compliance
EMC	EN 61000-6-2, Immunity 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	EN/IEC 60950-1, IT Equipment
	UL 60950-1, IT Equipment 1st Edition[4]
Marine	DNV GL rules for classification – Ships and offshore units[5]
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
	5 – Applicable only for 3644-0001, 3644-0022 , 3644-0023, 3644-0025, 3644-0032, 3644-0033, 3644-0035

Corrosive environment Notice:

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*.

Note! 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 pins in connectors.

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

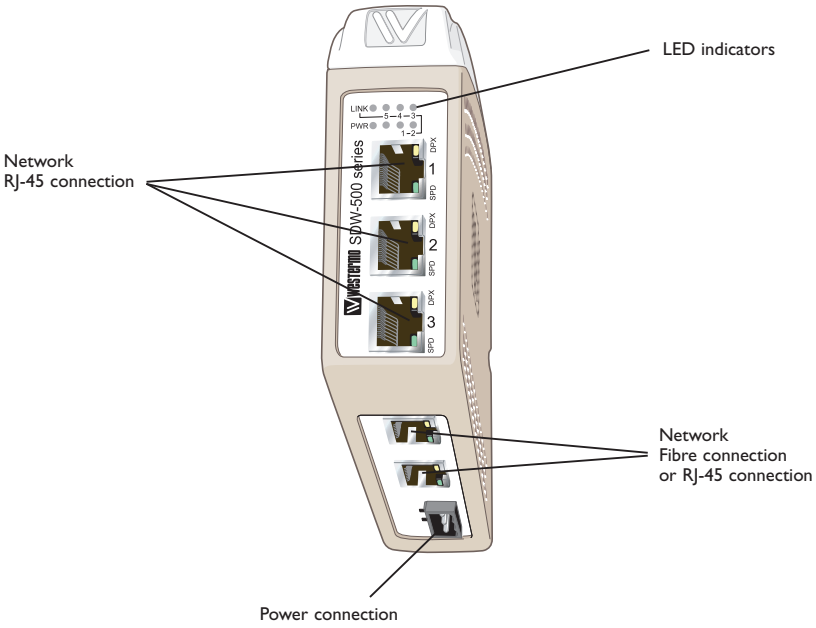
Interface specifications

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-MM-ST2	450 mA
	SDW-541-SM-LC15	450 mA
	SDW-541-SM-SC15	350 mA
	SDW-541-SM-LC40	350 mA
	SDW-541-MM-LC2	350 mA
	SDW-532-MM-SC2	600 mA
	SDW-532-MM-ST2	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
	SDW-532-MM-SC2-SM-SC15	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:

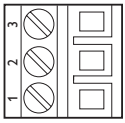
- SDW-550 10/100Base-T/TX: 5 ports
- SDW-541 10/100Base-T/TX: 4 ports 100Base-FX: 1 port
- SDW-532 10/100Base-T/TX: 3 ports 100Base-FX: 2 ports

NOTE! SDW-532-MM-SC2-SM-SC15
Port 4: SC Single mode 15 km connector
Port 5: SC Multi mode 2 km connector

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.

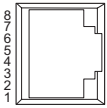
3-pos screw terminal	Description	Power
1	COM	0 V
2	+VA	A: 9.6 – 57.6 VDC
3	+VB	B: 9.6 – 57.6 VDC



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 tranceiver 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 tranceiver 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

DIP switch settings SDW-550

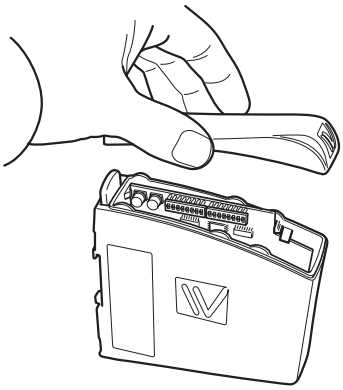
DIP-switches are accessible under the lid on top of the unit. DIP-switches are used to configure the unit.

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 AC/DC mains supply and all other electrical connections.

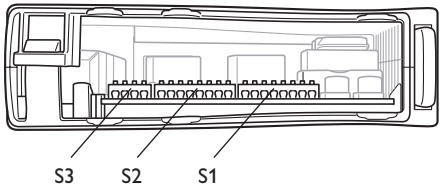


NOTE

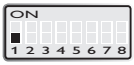
When configuration via DIP-switches, the settings of DIP-switches configure the unit only after a reboot (power off/on).

To be observe when the DIP-switches will be configured

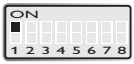
- Speed and duplex setting only valid when auto-negotiation is disabled.
- When monitoring selected all outgoing packets from the switch is also copied to the port 1.
- Speed and duplex switch settings are ignored for FX ports.
- If auto-negotiation and auto MDI/MDI-X disabled all TX ports support MDI-X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



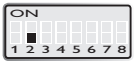
Port 1 settings



Auto-negotiation and auto MDI/MDI-X disabled

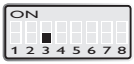


Auto-negotiation and auto MDI/MDI-X enabled

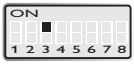


10 Mbit/s speed selected

100 Mbit/s speed selected

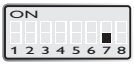


Half duplex selected

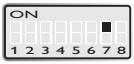


Full duplex selected

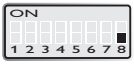
Port 3 settings



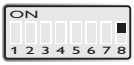
Auto-negotiation and auto MDI/MDI-X disabled



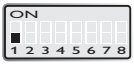
Auto-negotiation and auto MDI/MDI-X enabled



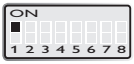
10 Mbit/s speed selected



100 Mbit/s speed selected

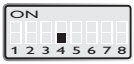


Half duplex selected

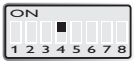


Full duplex selected

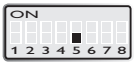
Port 2 settings



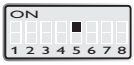
Auto-negotiation and auto MDI/MDI-X disabled



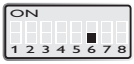
Auto-negotiation and auto MDI/MDI-X enabled



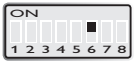
10 Mbit/s speed selected



100 Mbit/s speed selected

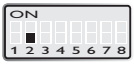


Half duplex selected

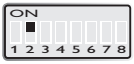


Full duplex selected

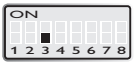
Port 4 settings



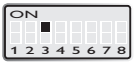
Auto-negotiation and auto MDI/MDI-X disabled



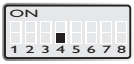
Auto-negotiation and auto MDI/MDI-X enabled



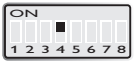
10 Mbit/s speed selected



100 Mbit/s speed selected

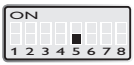


Half duplex selected

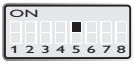


Full duplex selected

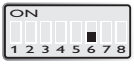
Port 5 settings

S2 

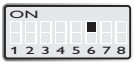
Auto-negotiation and auto MDI/MDI-X disabled

S2 

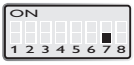
Auto-negotiation and auto MDI/MDI-X enabled

S2 

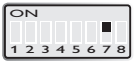
10 Mbit/s speed selected

S2 

100 Mbit/s speed selected

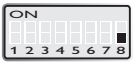
S2 

Half duplex selected

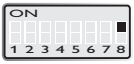
S2 

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

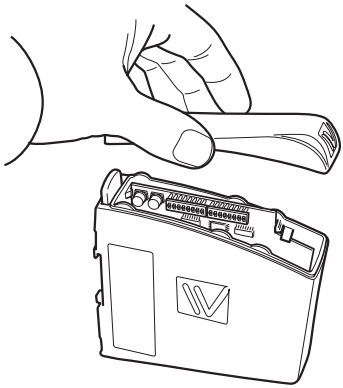
DIP-switches are accessible under the lid on top of the unit. DIP-switches are used to configure the unit.

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 AC/DC mains supply and all other electrical connections.



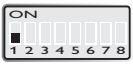
NOTE

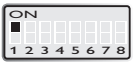
When configuration via DIP-switches, the settings of DIP-switches configure the unit only after a reboot (power off/on).

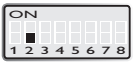
To be observe when the DIP-switches will be configured

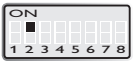
- Speed and duplex setting only valid when auto-negotiation is disabled.
- When monitoring selected all outgoing packets from the switch is also copied to the port 1.
- Speed and duplex switch settings are ignored for FX ports.
- If auto-negotiation and auto MDI/MDI-X disabled all TX ports support MDI-X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

Port 1 settings

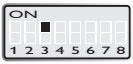
S1  Auto-negotiation and auto MDI/MDI-X disabled

S1  Auto-negotiation and auto MDI/MDI-X enabled

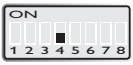
S1  10 Mbit/s speed selected

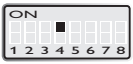
S1  100 Mbit/s speed selected

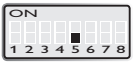
S1 Half duplex selected

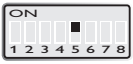
S1  Full duplex selected

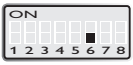
Port 2 settings

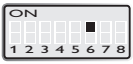
S1  Auto-negotiation and auto MDI/MDI-X disabled

S1  Auto-negotiation and auto MDI/MDI-X enabled

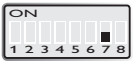
S1  10 Mbit/s speed selected

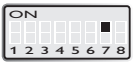
S1  100 Mbit/s speed selected

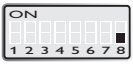
S1  Half duplex selected

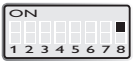
S1  Full duplex selected

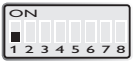
Port 3 settings

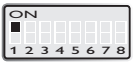
S1  Auto-negotiation and auto MDI/MDI-X disabled

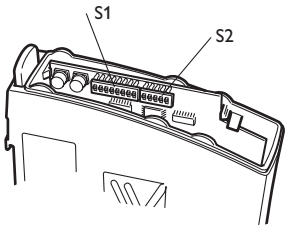
S1  Auto-negotiation and auto MDI/MDI-X enabled

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

Installation

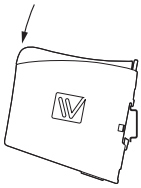
Mounting / Removal

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 AC/DC mains supply and all other electrical connections.

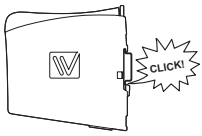
Mounting

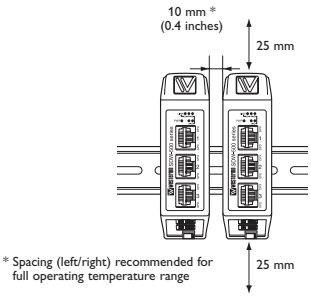


This unit should be mounted on 35 mm DIN-rail which is horizontally mounted on a wall or cabinet backplate.

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.

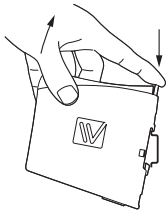
Snap on mounting, see figure





Removal

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



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