TECHDOCS

Manual

WAGO Industrial Switches

852-1417

Industrial Eco Switch

5 Ports 1000BASE-T; 2 Slots 1000BASE-SX/LX; EXT; 4 x PoE

Version 1.2.2

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Every conceivable measure has been taken to ensure the accuracy and completeness of this documentation. However, as errors can never be fully excluded, we always appreciate any information or suggestions for improving the documentation.

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We wish to point out that the software and hardware terms as well as the trademarks of companies used and/or mentioned in the present manual are generally protected by trademark or patent.

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1 Notes about this Documentation

Note

Always retain this documentation!
This documentation is part of the product. Therefore, retain the documentation during the entire service life of the product. Pass on the documentation to any subsequent user. In addition, ensure that any supplement to this documentation is included, if necessary.

1.1 Validity of this Documentation

This documentation is only applicable to WAGO ETHERNET accessory products “Industrial Eco Switch” (852-1417).

This documentation is only applicable from .

1.2 Copyright

1.3 Symbols

⚠ DANGER

Personal Injury!
Indicates a high-risk, imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ DANGER

Personal Injury Caused by Electric Current!
Indicates a high-risk, imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING

Personal Injury!
Indicates a moderate-risk, potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION

Personal Injury!
Indicates a low-risk, potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

NOTICE

Damage to Property!
Indicates a potentially hazardous situation which, if not avoided, may result in damage to property.

NOTICE

Damage to Property Caused by Electrostatic Discharge (ESD)!
Indicates a potentially hazardous situation which, if not avoided, may result in damage to property.

Note

Important Note!
Indicates a potential malfunction which, if not avoided, however, will not result in damage to property.

Information

Additional Information:
Refers to additional information which is not an integral part of this documentation (e.g., the Internet).

1.4 Number Notation

Table 1: Number Notation

Number Code	Example	Note
Decimal	100	Normal notation
Hexadecimal	0x64	C notation
Binary	'100' '0110.0100'	In quotation marks, nibble separated with dots (.)

1.5 Font Conventions

Table 2: Font Conventions

Font Type	Indicates
italic	Names of paths and data files are marked in italic-type. e.g.: *C:\Program Files\WAGO Software*
Menu	Menu items are marked in bold letters. e.g.: **Save**
>	A greater-than sign between two names means the selection of a menu item from a menu. e.g.: **File** > **New**
Input	Designation of input or optional fields are marked in bold letters, e.g.: **Start of measurement range**
“Value”	Input or selective values are marked in inverted commas. e.g.: Enter the value “4 mA” under **Start of measurement range**.
[Button]	Pushbuttons in dialog boxes are marked with bold letters in square brackets. e.g.: **[Input]**
[Key]	Keys are marked with bold letters in square brackets. e.g.: **[F5]**

2 Important Notes

This section includes an overall summary of the most important safety requirements and notes that are mentioned in each individual section. To protect your health and prevent damage to devices as well, it is imperative to read and carefully follow the safety guidelines.

2.1 Legal Bases

2.1.1 Subject to Changes

WAGO Kontakttechnik GmbH & Co. KG reserves the right to provide for any alterations or modifications. WAGO Kontakttechnik GmbH & Co. KG owns all rights arising from the granting of patents or from the legal protection of utility patents. Third-party products are always mentioned without any reference to patent rights. Thus, the existence of such rights cannot be excluded.

2.1.2 Personnel Qualification

All sequences implemented on Series 852 devices may only be carried out by electrical specialists with sufficient knowledge in automation. The specialists must be familiar with the current norms and guidelines for the devices and automated environments.

All changes to the controller should always be carried out by qualified personnel with sufficient sufficient skills in PLC programming.

2.1.3 Proper Use of the Industrial Switches

The device is designed for the IP30 protection class. It is protected against the insertion of solid items and solid impurities up to 2.5 mm in diameter, but not against water penetration. Unless otherwise specified, the device must not be operated in wet and dusty environments.

2.1.4 Technical Condition of Specified Devices

The devices to be supplied ex works are equipped with hardware and software configurations, which meet the individual application requirements. These modules contain no parts that can be serviced or repaired by the user. The following actions will result in the exclusion of liability on the part of WAGO Kontakttechnik GmbH & Co. KG:

- Repairs,
- Changes to the hardware or software that are not described in the operating instructions,
- Improper use of the components.

Further details are given in the contractual agreements. Please send your request for modified and new hardware or software configurations directly to WAGO Kontakttechnik GmbH & Co. KG.

2.1.5 Standards and Regulations for Operating the Industrial Switches

Please observe the standards and regulations that are relevant to installation:

- The data and power lines must be connected and installed in compliance with the standards to avoid failures on your installation and eliminate any danger to personnel.
- For installation, startup, maintenance and repair, please observe the accident prevention regulations of your machine (e.g., DGUV Regulation “Electrical Installations and Equipment”).
- Emergency stop functions and equipment must not be deactivated or otherwise made ineffective. See relevant standards (e.g., EN 418).
- Your installation must be equipped in accordance to the EMC guidelines so electromagnetic interferences can be eliminated.
- Please observe the safety measures against electrostatic discharge according to EN 61340-5-1/-3. When handling the modules, ensure that environmental factors (persons, workplace and packing) are well grounded.
- The relevant valid and applicable standards and guidelines regarding the installation of switch cabinets must be observed.

2.2 Safety Advice (Precautions)

For installing and operating purposes of the relevant device to your system the following safety precautions shall be observed:

DANGER

Do not work on devices while energized!
All power sources to the device shall be switched off prior to performing any installation, repair or maintenance work.

DANGER

Only install in appropriate housings, cabinets or electrical operation rooms!
WAGO's 852 Series ETHERNET Switches are considered exposed operating components. Therefore, only install these switches in lockable housings, cabinets or electrical operation rooms. Access must be limited to authorized, qualified staff having the appropriate key or tool.

DANGER

Ensure a standard connection!
To minimize any hazardous situations resulting in personal injury or to avoid failures in your system, the data and power supply lines shall be installed according to standards, with careful attention given to ensuring the correct terminal assignment. Always adhere to the EMC directives applicable to your application.

NOTICE

Do not use in telecommunication circuits!
Only use devices equipped with ETHERNET or RJ-45 connectors in LANs. Never connect these devices with telecommunication networks.

NOTICE

Replace defective or damaged devices!
Replace defective or damaged device/module (e.g., in the event of deformed contacts).

NOTICE

Protect the components against materials having seeping and insulating properties!
The components are not resistant to materials having seeping and insulating properties such as: aerosols, silicones and triglycerides (found in some hand creams). If you cannot exclude that such materials will appear in the component environment, then install the components in an enclosure being resistant to the above-mentioned materials. Clean tools and materials are imperative for handling devices/modules.

NOTICE

Clean only with permitted materials!
Clean housing and soiled contacts with propanol.

NOTICE

Do not use any contact spray!
Do not use any contact spray. The spray may impair contact area functionality in connection with contamination.

NOTICE

Do not reverse the polarity of connection lines!
Avoid reverse polarity of data and power supply lines, as this may damage the devices involved.

NOTICE

Avoid electrostatic discharge!
The devices are equipped with electronic components that may be destroyed by electrostatic discharge when touched. Please observe the safety precautions against electrostatic discharge per DIN EN 61340-5-1/-3. When handling the devices, please ensure that environmental factors (personnel, work space and packaging) are properly grounded.

2.3 Special Use Conditions for ETHERNET Devices

If not otherwise specified, ETHERNET devices are intended for use on local networks. Please note the following when using ETHERNET devices in your system:

- Do not connect control components and control networks directly to an open network such as the Internet or an office network. WAGO recommends putting control components and control networks behind a firewall.
- Limit physical and electronic access to all automation components to authorized personnel only.
- Change the default passwords before first use! This will reduce the risk of unauthorized access to your system.
- Regularly change the passwords used! This will reduce the risk of unauthorized access to your system.
- If remote access to control components and control networks is required, use a Virtual Private Network (VPN).
- Regularly perform threat analyses. You can check whether the measures taken meet your security requirements.
- Use “defense-in-depth” mechanisms in your system's security configuration to restrict the access to and control of individual products and networks.

3 General

3.1 Package Contents

- One Industrial Switch (below referred to as switch)
- DIN rail bracket
- Protective caps for unused ports

3.2 Industrial ETHERNET Technology

WAGO's rugged switches are designed for industrial use in compliance with the following standards:

- IEEE 802.3,
- IEEE 802.3u
- IEEE 802.3ab
- IEEE 802.3z
- IEEE 802.3x
- IEEE 802.1p
- IEEE 802.3af
- IEEE 802.3at
- IEEE 802.3az

The switches have a power supply with a supply voltage range of 24 … 57 V.
“Power over Ethernet” (PoE+) is supported on 4 ports.
In addition, 2 SPF slots are available for integration in extensive networks.
Features such as auto-negotiation and auto-MDI/MDIX (crossover) are realized in all 10/100/1000BASE-T ports.

3.3 Switching Technology

Industrial ETHERNET primarily uses switching technology. This technology allows any network subscriber to send at any time because the subscriber always has an open peer-to-peer connection to the next switch. The connection is bidirectional, i.e., the subscriber can send and receive at the same time (full duplex).
The targeted use of switching technology can increase real-time capability because the peer-to-peer connection prevents collisions in network communication.

3.4 PoE (Power over Ethernet)

“Power over Ethernet” (PoE) supplies power and transmits data simultaneously and safely over the same ETHERNET cable, eliminating the need for a separate power supply.
“Power over Ethernet” (POE) is an ETHERNET network technology defined in the IEEE 802.3af (PoE) und 802.3at (PoE+) standards.
If the IEEE 802.3at standard is supported, a higher current can be transmitted via the ETHERNET cable.

Table 3: Comparison of PoE and PoE+

Feature	PoE	PoE+
Standard	IEEE 802.3af	IEEE 802.3at
PSE power	15.4 W	25.4 W
Max. power PD	12.95 W	21.90 W
Max. current per core pair	350 mA	600 mA
Transmission standard	10Base-T 100Base-TX	10Base-T 100Base-TX 1000-BASE-T

Calculation example for PoE+:

Table 4: Calculation Example for PoE+

Power consumption	Value
4 ports at 30 W	120 W
Device requirement	13 W
Total	**133 W**

Special equipment is required for PoE (PSE = “**P**ower **S**ourcing **E**quipment”) and subscribers (PD = “**P**owered **D**evice”).

The PoE description and performance classes are available in the appendix (see Section “Appendix” > “PoE Performance Classes”).

PoE can be realized in 2 operating modes.

Operating Mode A

In this operating mode, the supply voltage is modulated on the data lines (“phantom power”).

Operating Mode A can be used with the following transmission standards:

- 10BASE-T
- 100BASE-TX
- 1000BASE-T

In this operating mode, core pairs 1 and 2 (+), as well as 3 and 6 (-) are used for the power supply. A 4-core or 8-core ETHERNET cable of at least category 5 or 5e can be used (see section “Appendix” > “RJ-45 Cable”).

Operating Mode B

In this operating mode, the core pairs of the network cable not used for data transmission are used for the power supply (“spare pair power”).

Operating Mode B can be used with the following transmission standards:

- 10BASE-T
- 100BASE-TX

In this operating mode, open core pairs 4 and 5 (+) or 7 and 8 (-) are used for the power supply. An 8-core ETHERNET cable of at least category 5 or 5e is required (see section “Appendix” > “RJ-45 Cable”).

3.5 Autonegotiation

Autonegotiation allows the switch to detect the transmission rate and operating mode for each port and the connected subscriber or subscribers, and to set them automatically. The highest possible mode (transmission speed and operating mode) is set.
Autonegotiation is available to ETHERNET subscribers connected to the switch via copper cable.
This make the switch a plug-and-play device.

3.6 Autocrossing

Autocrossing (MDI/MDI-X, “Medium Dependent Interface”) automatically reconfigures the receive and transmit signals for twisted-pair interfaces as needed. This allow users to use wired and crossover cables in the same manner 1:1.

3.7 Store-and-forward switching mode

In “Store and Forward” mode, the ETHERNET switch caches the entire data telegram, checks it for errors (CRC checksum) and if there are no errors, puts it in a queue. Subsequently, the data telegram (MAC table) is selectively forwarded to the port that has access to the addressed node.

The time delay required by the data telegram to pass the store-and-forward switch depends on the telegram length.

Advantage of “Store and Forward”:
The data telegrams are checked for correctness and validity. This prevents faulty or damaged data telegrams from being distributed via the network.

3.8 Transmission Methods

2 modes are available for data transmission in ETHERNET networks:

- Half duplex
  - An ETHERNET device can only send or receive data at one time.
  - Collision detection (CSMA/CD) is enabled.
  - The length of the network is limited by the propagation delays of the devices and transmission media.

- Full duplex
  - An ETHERNET device can send and receive data at the same time.
  - Collision detection (CSMA/CD) is disabled.
  - The length of the network only depends on the performance limits of the send and receive components used.

4 Device Description

The 852-1417 Industrial ETHERNET Switch features 5 10/100/1000BASE-T ports, of which 4 ports support Power over Ethernet (PoE+) with 30 W. These 4 ports can be used simultaneously for power supply. The integrated voltage transformer enables operation on the 24 VDC power supplies common in the control cabinet.
In addition to the reduced wiring effort, a separate power supply for the supply of sensors can be saved.
The industrial switch is easy to configure and install and is best suited for small to medium-sized networks.
Its 2 SFP slots make it possible to integrate the industrial switch in extensive networks.

4.1 View

4.1.1 Front View

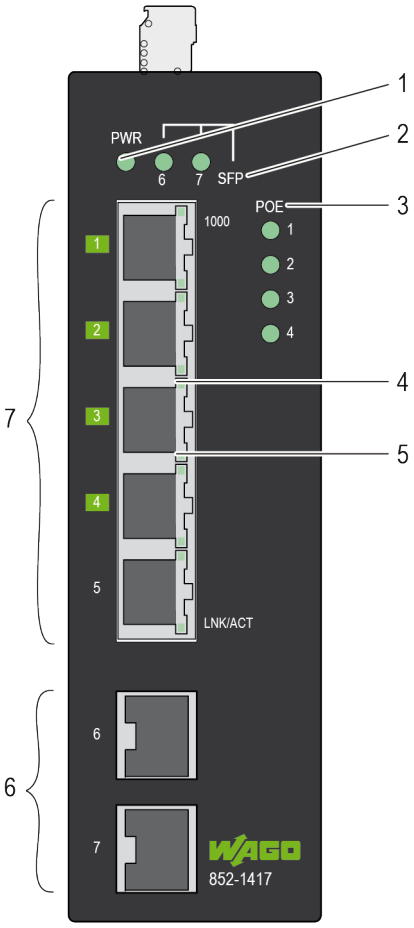

Figure 1: Front View of the Industrial ECO Switch

Table 5: Legend for Figure “Front View of the Industrial ECO Switch”

Pos.	Descrip-tion	Meaning	Details see Section
1	PWR	Status LED Power Supply	“Device Description” > “Display Elements”
2	SFP	Status LED SFP port (2)	“Device Description” > “Display Elements”
3	POE	Status LED Power over Ethernet (4) (1 LED for each port)	“Device Description” > “Display Elements”
4	-	Status LED T-Port 1000-Mbit/s (1 LED for each port)	“Device Description” > “Display Elements”
5	-	Status LED T-Port LNK/ACT (1 LED for each port)	“Device Description” > “Display Elements”
6	-	Port 2 x SFP (1000BASE-SX/-LX, fiber optic)	“Device Description” > “Connectors”
7	-	Port 8 x RJ-45 (10/100/1000BASE-T-Ports), including 4 PoE+ ports	“Device Description” > “Connectors”

4.1.2 Top View

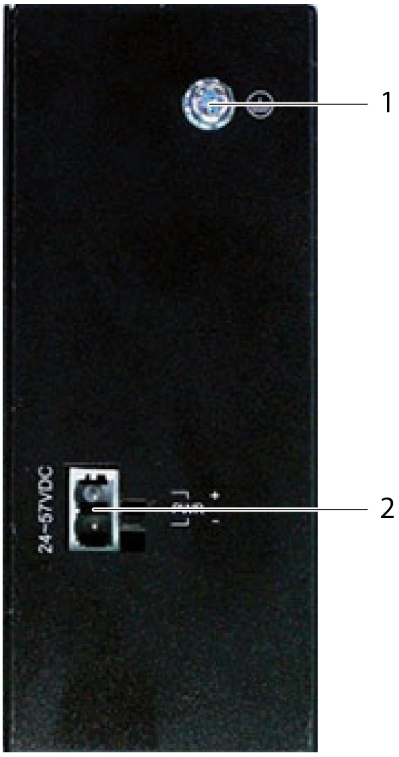

Figure 2: Top View of the Industrial ECO Switch

Table 6: Legend for Figure “Top View of the Industrial ECO Switch”

Pos.	Descrip-tion	Meaning	Details see Section
1	-	Grounding screw	“Device Description” > “Grounding screw”
2	-	Terminal block (male connector) for power supply (PWR)	“Device Description” > “ Connectors”

4.2 Connectors

4.2.1 Grounding screw

The switch must be grounded. Connect the grounding screw to the ground potential. Do not operate the switch without an appropriately installed protective earth conductor.

Figure 3: Grounding screw

4.2.2 Power Supply (PWR/RPS)

The female connector (Order No. 2231-102/026-000) can easily be connected to the 2-pole male connector located on the top of the industrial ECO switch.

The male connector shows the following pin assignment:

Figure 4: Power Supply (PWR) Port

Table 7: Legend fort Figure “Power Supply (PWR) Port “

Pin	Description	Meaning
+	PWR	Primary DC input
-	PWR	Primary DC input

NOTICE

Damage to Property Caused by Electrostatic Discharge (ESD)!
Industrial Eco switch for DC operation: Power supply is provided via an external direct-current power source. As the industrial switch is not equipped with a power switch, it switches on immediately when you apply the direct-current power supply.

4.2.3 Network Connections

The industrial Eco switch uses ports with copper connectors and supports ETHERNET, Fast ETHERNET and Gigabit ETHERNET.

Note

Capping unused ports!
Cap unused ports with included protective covers!

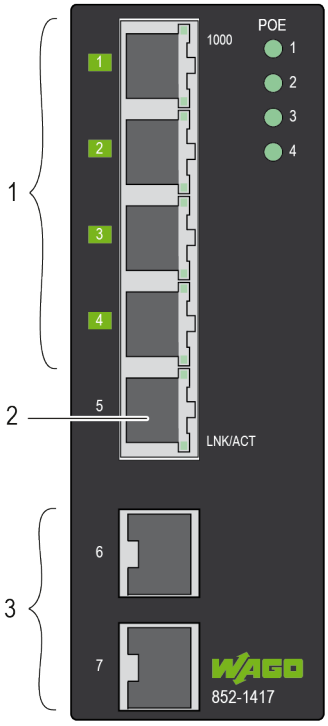

Figure 5: Network Connections

Table 8: Legend fort the Figure “Network Connections“

No.	Descrip-tion	Meaning	Details see Section
1	-	Connection 8 x RJ-45 (10/100/1000BASE-T ports)	“Device Description” > … “10/100/1000BASE-T ports“
2	-	Connection 1 x RJ-45 (10/100/1000BASE-T port)	„Device Description“ > … „10/100/1000BASE-T ports“
3		Connection 2 x SFP (1000BASE-SX/-LX, fiber optic)	„Device Description“ > … „1000BASE-SX/-LX- ports“

4.2.3.1 10/100/1000BASE-T ports with PoE+

10/100/1000BASE-T ports support “Power over Ethernet +” (PoE+) up to 30 W per port.

Advantages:

- No separate power supply required for end devices with PoE+ network technology
- No separate data and power lines required

4.2.3.2 10/100/1000Base-T ports

The 10/100/1000Base-T ports support network speeds of 10 Mbit/s, 100 Mbit/s and 1000 Mbit/s and can be operated in half and full-duplex transmission modes. These ports also provide automatic crossover detection (Auto-MDI/MDI-X), with plug&play capabilities. Simply plug the network cables into the ports; they then adapt to the end node devices. We recommend the following cable for the RJ-45 ports:

- Cat. 5e or better with a cable length of max. 100 m

4.2.3.3 1000BASE-SX/-LX ports

1000BASE SX/LX ports are designed to connect Gigabit SFP modules that support network speeds of 1000 Mbit/s.

4.3 Display Elements

The industrial switch is equipped device LEDs and port LEDs.
You can see the status of the industrial switch at a quick glance of the device LEDs, while the port LEDs provide information about connection actions.

4.3.1 Device LED

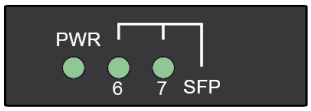

Figure 6: Device LED

Table 9: Legend for Figure “Device LED”

LED		Name	Status	Description
PWR		Primary Power LED	Green	The primary supply voltage is connected to the industrial switch.
			OFF	The primary power supply is off or has an error.
SFP	6, 7	SFP Port LED	Green	Lights up when the port is linked.
			Flashing	Data traffic being routed via the port.
			OFF	No proper link established at the port.

4.3.2 Port LEDs

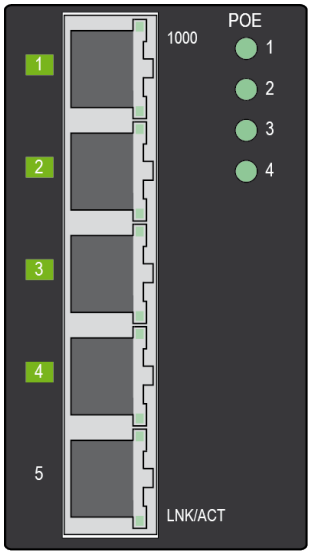

Figure 7: Port LEDs

Table 10: Legend for Figure “Port LEDs”

LED	Name	Status	Description
1000	10/100/1000BASE T-Ports-LED (1 LED for each port)	Green	Port in operation at 1000 Mbit/s.
		OFF	Connection in operation at less than 1000 Mbit/s.
LNK/ ACT	LNK/ACT-LED (1 LED for each port)	Green	Lights when ports are connected.
		Flashing	Data traffic being routed over the port.
		OFF	No proper link established at the port.
POE	Power over Ethernet (1 LED for each port)	Green	PoE power is on.
		OFF	There is no PoE power.

4.4 Label

4.4.1 Hardware and Software Version

There is a label with the serial no “S/N” on the back of the industrial switch.

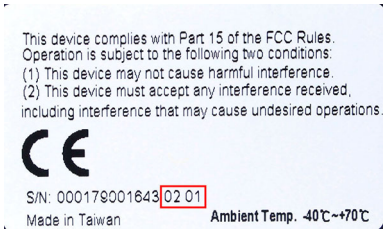

Figure 8: Label (Example)

Table 11: Legend for Figure “Label (Example)“

No.	“SN” Description
02	Firmware version (left number sequence)
01	Hardware version (right number sequence)

4.5 Technical Data

4.5.1 Device Data

Table 12: Technical Data - Device Data

Width	Carrier rail mounting	50 mm
Height	Carrier rail mounting	120 mm (from the top edge of the carrier rail)
Length	Carrier rail mounting	160 mm
Weight		830 g
Degree of protection		IP30

4.5.2 System Data

Table 13: Technical Data – System Data

MAC table	Up to 8000 addresses
VLAN	Port-based und Tag-based (4094 VIDs)
Jumbo Frame Size	10 kB
Wavelength (optical fibers)	Depends on SFP module
Maximum length	10/100/ 1000BASE-T: 100 m; Fiber optic: up to 2 km to 80 km RS-232: 15 m

4.5.3 Power Supply

Table 14: Technical Data – Power Supply

Supply voltage	24 … 57 VDC
Power consumption, max.	14 W; 134 W with 4 PoE

4.5.4 Communication

Table 15: Technical Data - Communication

Ports	4 x 10/100/1000BASE-T with PoE 1 x 10/100/1000BASE-T
Ports (FOC)	2 x 1000BASE-SX/-LX
Standards	IEEE 802.3 10BASE-T IEEE 802.3u 100BASE-TX IEEE 802.3ab 1000BASE-T IEEE 802.3z 1000BASE-SX/-LX IEEE 802.3x Flow Control IEEE 802.1p Prioritization IEEE 802.3af Power over Ethernet (PoE) IEEE 802.3at High Power over Ethernet (PoE+)
Topology	Star

4.5.5 Environmental Conditions

Table 16: Technical Data - Environmental Conditions

Surrounding air temperature, operation	-10 … +60 °C (valid for UL 61010) -40 … +70 °C (valid for CE)
Surrounding air temperature, storage	-40 … +80 °C
UL 61010 Use Pollution degree	Indoor 2
Relative humidity (without condensation)	10 … 95 %
Vibration resistance	Acc. to IEC 60068-2-6
Shock resistance	Acc. to IEC 60068-2-27
EMC-1 immunity to interference	Acc. to EN 61000-6-2
EMC-1 Emission of interference	Acc. to EN 61000-6-4

4.6 Approvals

The following approvals have been granted for the WAGO ETHERNET accessory product “Industrial Eco Switch” (852-1417):

CE Conformity Marking

c UL us Ordinary Locations UL61010-2-201 (E175199)

Table 17: Assignment UL – Hardware Version

Approval	Hardware Version
UL	valid from version 03

5 Mounting

5.1 Installation site

The location selected to install the industrial ECO switch may greatly affect its performance. When selecting a site, we recommend considering the following rules:

- Install the industrial ECO switch at an appropriate place. See section “Device Description” > … > “Technical Data” for the acceptable temperature and humidity operating ranges.

Make sure that the heat output from the industrial ECO switch and ventilation around it is adequate. Do not place any objects on the industrial ECO switch.

5.2 Installation on a DIN Rail

The industrial ECO switch must be grounded through the grounding screw and the DIN rail.

Note

Grounding the switch
Grounding the Industrial ECO switch prevents electromagnetic interference due to electromagnetic interference. Please refer to the corresponding standards for EMC-compliant installations.

Place the industrial ECO switch onto the DIN rail from the top and snap it into position.

5.3 Removal from DIN Rail

To remove the device from the DIN rail, press down on the industrial ECO switch and pull it out of the DIN rail.

You can then release the switch down from the carrier rail and remove it upwards.

6 Connect Devices

6.1 Power Supply

The switch uses direct-current power supply for 24 … 57 V.

The primary network link is established via a 2-pin plug-in connection located on the top of the switch.

The female connector (order-no. 2231-102/026-000) is composed of two connecting terminals and can be inserted and removed easily by hand to connect to the 2-pin plug connector located on the top of the switch.

The power supply for the switch automatically adjusts to the local power source and can also be switched on if no or not all patch cables are connected.

1. Connect a suitable grounding conductor to the grounding lug on the top of the switch.

Note

Ground for the switch

The ground for the switch prevents electromagnetic interference from electromagnetic radiation.
Observe the corresponding standards for EMC-compatible installations as well.

2. Plug the female connector into the male connector of the switch if it has not already been plugged in. Check the tight fit of the multipoint connector by gently shaking it.

3. PWR +/-:
   To connect or disconnect the conductors, actuate the spring directly in the female connector using a screwdriver or an operating tool and insert or remove the conductor.

4. Check whether the power LED “PWR” on the top of the device lights up when power is supplied to the device. If not, check to ensure that the power cable is plugged in correctly and fits securely.

7 Appendix

7.1 RJ-45 Cable

Always use category 5e cables to connect your network devices. The pin assignment is given below:

Table 18: RJ-45 Cable

Contact	Description		Pair	Color (acc. EIA/TIA 568B)
	4-wire	8-wire		
1	TD	D1+	2	White/Orange
2	TD-	D1-	2	Orange
3	RX+	D2+	3	White/Green
4	Not assigned	D3+	1	Blue
5	Not assigned	D3-	1	White/Blue
6	RX-	D2-	3	Green
7	Not assigned	D4+	4	White/Brown
8	Not assigned	D4-	4	Brown

Note

Functions on the RJ45 connector
The industrial ECO switch offers the functions autocrossing und autonegotiation to the RJ-45 connection.

7.2 PoE (Power over Ethernet) Performance Classes

PoE can be divided into different performance classes:

Table 19: PoE Performance Classes

Performance class	Power at PSE output	Power at PD output
0	15.4 W	13.0 W
1	4.0 W	3.84 W
2	7.0 W	6.49 W
3	15.4 W	13.0 W
4*	25.5 W	25.5 W

* PoE+ acc. IEEE 802.3at

The PSE (**P**ower **S**ourcing **E**quipment) applies a defined voltage to the PD (Power Device) and measures the corresponding current (“Classification Current”). The PD is assigned to a performance class based on the current.

Table 20: PD Assignment – Performance Class

Classification current PD	Performance class
0 … 5 mA	0
8 … 13 mA	1
16 … 21 mA	2
25 … 31 mA	3
35 … 45 mA	4
≥ 51 mA	0

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