

# WAGO Industrial-Switches

Industrial-ECO-Switch, 8 Ports 100BASE-TX

852-112/000-002



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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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# Provisions

This document applies to the following product:

852-112/000-002 (Industrial ECO Switch; 8 100Base-TX ports)

Product detail page	<a href="https://www.wago.com/852-112/000-002">www.wago.com/852-112/000-002</a>
Hardware version	01 and above
Firmware version	02 and above

The product must only be installed and operated in accordance with the operating instructions. Knowledge of the operating instructions is required for proper use. You can find all documents and information on the detailed product page.

## 1.1 Intended Use

This product is for setting up ETHERNET networks.

The product is an open type device and is designed for installation in an additional enclosure.

- This product is intended for installation in automation technology systems.
- Operation of the products in industrial area is permitted.
- The product is designed for use in dry indoor rooms.
- Operation of the product in other application areas is only permitted when corresponding approvals and labeling are present.

### Improper Use

Improper use of the product is not permitted. Improper use occurs especially in the following cases:

- Non-observance of the intended use
- Use without protective measures in an environment in which moisture, salt water, salt spray mist, dust, corrosive fumes, gases, direct sunlight or ionizing radiation can occur
- Use of the product in areas with special risk that require continuous fault-free operation and in which failure of or operation of the product can result in an imminent risk to life, limb or health or cause serious damage to property or the environment (such as the operation of nuclear power plants, weapons systems, aircraft and motor vehicles)

### Warranty and Liability

The terms set forth in the General Business and Contract Conditions for Delivery and Service of WAGO GmbH & Co. KG and the terms for software products and products with integrated software stated in the WAGO Software License Contract – both available at

[www.wago.com](https://www.wago.com) – shall apply. In particular, the warranty is void if:

- The product is improperly used.
- The deficiency (hardware and software configurations) is due to special instructions.
- Modifications to the hardware or software have been made by the user or third parties that are not described in this documentation and that has contributed to the fault.

Individual agreements always have priority.

## Obligations of Installers/Operators

Installers and operators bear responsibility for the safety of an installation or a system assembled with the product. The installer/operator is responsible for the proper installation and safety of the system. All laws, standards, guidelines, local regulations and accepted technological standards and practices applicable at the time of installation, as well as the products' operating instructions, must be followed. In addition, the installment requirements for approval must be met. In the event of non-compliance, operation of product within the scope of the approval is not permitted.

In addition, the installer/operator is responsible for the deployment of suitable personnel.

## 1.2 Typographical Conventions





### Number Notation

100	Decimals: Normal notation
0x64	Hexadecimals: C-notation
'100'	Binary: In single quotation marks
'0110.0100'	Nibbles separated by a period

### Text Formatting

<i>italic</i>	Names of paths or files
<b>bold</b>	Menu items, entry or selection fields, emphasis
Code	Sections of program code
>	Selection of a menu point from a menu
"Value"	Value entries
[F5]	Identification of buttons or keys

### Cross References / Links

	Cross references/links to a topic in a document
	Cross references / links to a separate document
	Cross references / links to a website
	Cross references / links to an email address

### Sequence of Action

- ✓ This symbol identifies a precondition.
- 1. Action step
- 2. Action step
  - ⇒ This symbol identifies an intermediate result.
  - ⇒ This symbol identifies the result of an action.
- Individual action step

### Lists

- Lists, first level

- Lists, second level

### Figures

Figures in this documentation are for better understanding and may differ from the actual product design.

### Warning Notices

#### **DANGER**

##### Type and source of hazard

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

- Action step to reduce risk

#### **WARNING**

##### Type and source of hazard

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

- Action step to reduce risk

#### **CAUTION**

##### Type and source of hazard

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

- Action step to reduce risk

#### **NOTICE**

##### Type and source of malfunction (property damage only)

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

- Action step to reduce risk

### Information Notices

#### **Note**

##### Information


Indicates information, clarifications, recommendations, referrals, etc.

## 1.3 Legal Information

### Intellectual property

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Third-party trademarks are referred to in the product documentation. The “®” and “™” symbols are omitted hereinafter. The trademarks are listed in the Appendix:  **Protected Rights [▶ 26]**.

### Subject to Change

The instructions, guidelines, standards, etc., in this manual correspond to state of the art at the time the documentation was created and are not subject to updating service. The installer and operator bear sole responsibility to ensure they are complied with in their currently applicable form. WAGO GmbH & Co. KG retains the right to carry out technical changes and improvements of the products and the data, specifications and illustrations of this manual. All claims for change or improvement of products that have already been delivered – excepting change or improvement performed under guarantee agreement – are excluded.

### Licenses

The product may contain open-source software. The requisite license information is saved in the product. This information is also available under  [www.wago.com](http://www.wago.com).

# Safety

## 2.1 General Safety Regulations

- 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 of the product. In addition, ensure that any supplement to this documentation is included, if necessary.
- The product must only be installed and put into operation by qualified electrical specialists per EN 50110-1/-2 and IEC 60364.
- Changes to switch configurations in the network must always be performed by qualified personnel with sufficient skills.
- Comply with the laws, standards, guidelines, local regulations and accepted technology standards and practices applicable at the time of installation.

## 2.2 Electrical Safety

- Make sure the product does not carry any voltage before starting work.

### Power Supply

- Connecting impermissible current or frequency values may destroy the product.

### Grounding/Protection/Fuses

- When handling the product, please ensure that environmental factors (personnel, work space and packaging) are properly equalized. Do not touch any conducting parts.

### Cables

- Maintain spacing between control, signal and data lines and the power supply lines.
- Observe permissible temperature range of connecting cables.
- Only one conductor may be connected to each connection point (e.g., CAGE CLAMP® connection).
- Use appropriate strain relief.

## 2.3 Mechanical Safety

- Before startup, please check the product for any damage that may have occurred during shipping. Do not put the product into operation in the event of mechanical damage.
- Do not open the product housing.
- Avoid conductive contamination.

## 2.4 Thermal Safety

- The surface of the housing heats up during operation. Under special conditions (e.g., in the event of a fault or increased surrounding air temperature), touching the product may cause burns. Allow the product to cool down before touching it.
- If the surface temperature of the product can exceed 40 °C, wear protective gloves and attach protective covers and/or touch-proof protection.

- The temperature inside the additional enclosure must not exceed the surrounding air temperature permitted for the mounted product.
- Cooling of the product must not be impaired. Ensure air can flow freely and that the minimum clearances from adjacent products/areas are maintained.

## **2.5 Indirect Safety**

- Do not use any contact spray for cleaning.
- Do not use hard objects that could cause scratches for cleaning.
- The product is not resistant to materials with seeping and insulating properties, such as aerosols, silicones or triglycerides (found in some hand creams). If these substances occur in the environment of the product, install the product in an additional housing that is resistant to these substances as well.
- Observe possible different technical specifications for mounting that does not correspond to the nominal mounting position.
- Only use accessories authorized by WAGO.

# Overview

This product is an unmanaged industrial ETHERNET switch with eight 10/100BASE-TX ports for easily setting up small- to medium-sized networks. Its compact design with a DIN-rail adapter makes installation in control cabinets easier and provides high vibration and shock resistance. Additionally, automatic transmission rate detection (auto-negotiation) and automatic detection of the transmit and receive lines (Auto MDI-X) allow simple plug-and-play operation.

## 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 operation). Targeted use of switching technology can increase real-time capability, because the peer-to-peer connection prevents collisions in network communication.

## Auto-Negotiation

Auto-negotiation allows two interconnected ETHERNET ports to independently set the highest possible transmission rate and transmission type for their communication link. Auto-negotiation is available to ETHERNET subscribers connected to the switch via a twisted pair cable.

## Autocrossing

Autocrossing (Auto-MDI/MDI-X, "Medium Dependent Interface") automatically reconfigures the receive and transmit signals for twisted-pair interfaces as needed. This allows users to use wired and crossover cables in the same manner one-to-one.

## Store-and-Forward Switching Mode

WAGO's industrial switches operate in store-and-forward switching mode. In this mode, the ETHERNET switch caches the entire data telegram and uses the CRC checksum to verify its correctness and validity. If there are no errors, the data telegram is queued and forwarded to the destination address using the MAC table. Faulty or damaged data telegrams are not further distributed in the network. The delay the data telegram requires in order to pass the store-and-forward switch depends on the telegram length.

# Properties

## 4.1 View



Figure 1: Front View

1	Status LED: speed	<a href="#">LED Indicators – Network Connections [▶ 14]</a>
2	Status LED: TX-port LNK/ACT	<a href="#">LED Indicators – Network Connections [▶ 14]</a>
3	10/100BASE-TX ports	<a href="#">RJ-45 Cable [▶ 26]</a>
4	Status LED: supply voltage	<a href="#">Display Elements [▶ 14]</a>
5	Power supply and functional ground	<a href="#">Supply Voltage [▶ 14]</a>
6	Grounding screw	<a href="#">Ground Conductor and Protective Ground [▶ 16]</a>

## 4.2 Type Plate

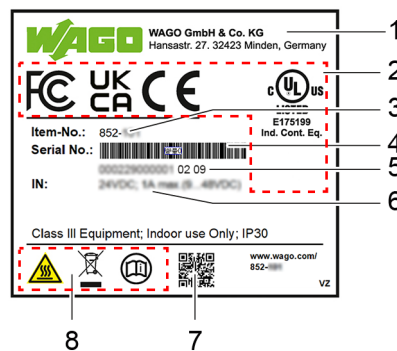










Figure 2: Type Plate (Example)

No.	Name	Description
1		WAGO logo and address


No.	Name	Description
2		Field for names
		With the CE mark, WAGO declares that the product meets the applicable requirements as set out in Community harmonization legislation per EC Regulation 765/2008, which allows the product to carry this mark.
		The UKCA (UK Conformity Assessed) mark declares that the conformity requirements for the UK market are met.
		With the FCC marking, WAGO declares conformity with the regulations of the US Federal Communications Commission.
		Certified safety mark of UL-listed products for the American and Canadian market
3	Item No.	Item number
4	Serial No.	Product serial number as a barcode
5	Serial No.	Product serial number in text form: <Serial number> <Firmware version> (left sequence of digits; example: 02) <Hardware version> (right sequence of digits; example: 09)
6	IN:	Indicates the supply voltage <a href="#">🔗 Technical Data, Approvals, Guidelines and Standards [▶ 23]</a>
7		QR code with link to product detail page www.wago.com/<item number>
8		Field for warning and information symbols
		<b>Caution:</b> Do not touch hot surfaces!
		<b>Note:</b> Electrical and electronic equipment must not be disposed of with household waste! More information about this topic: <a href="#">🔗 Disposal and Recycling [▶ 22]</a>
		<b>Note:</b> Observe the product documentation!

## 4.3 Connections

### 4.3.1 Supply Voltage



Figure 3: Supply Voltage

Connection	Description
+	Plus potential
-	Minus potential
	Ground potential (functional ground)

## 4.4 Display Elements

### 4.4.1 Status LED of the Supply Voltage



Figure 4: Status LED

LED	Designation	State	Description
PWR	Status LED: supply voltage	Green	Power supply in use
		Off	Power supply switched off or error

### 4.4.2 LED Indicators – Network Connections

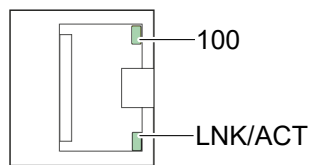


Figure 5: LED Indicators – Network Connections

Designation	Color	State	Description
100	Green	On	100 Mbit/s connection
		Off	10 Mbit/s or no connection
LNK/ACT	Green	On	Port running at 10 or 100 Mbit/s
		Flickering	Data packet transfer active
		Off	No connection

# Planning

## 5.1 Data Security

Professional planning and design is an important requirement for securing data confidentiality, availability and integrity.

### Random Influences

Data transmission and processing can be disrupted by random influences, such as temporary electromagnetic disturbances. Proper setup can significantly reduce the likelihood of corruption or destruction of data.

For additional information see:  [EMC Installation \[▶ 17\]](#).

### Deliberate Influences

#### Use in ETHERNET Areas

ETHERNET products are designed for use in local networks. Please note the following when using ETHERNET products in your system:

- Do not connect control components and control networks to an open network such as the Internet or an office network.  
WAGO recommends putting control components and control networks behind a fire-wall.
- In the control components, close all ports and services not required by your application to minimize the risk of cyber attacks and to enhance cybersecurity.  
Only open the ports and services for the duration of the commissioning/configuration.
- Limit physical and electronic access to all automation components to authorized personnel only.
- To reduce the risk of unauthorized access to your system, change the default passwords during initial commissioning.
- To reduce the risk of unauthorized access to your system, regularly change the passwords used.
- To verify that the measures taken meet your security requirements, regularly perform threat analyses.
- To restrict access to and control of individual products and networks, employ a “defense-in-depth” mechanism in your system’s security configuration.

#### Additional document

-  [White Paper Cybersecurity in Production Facilities](#)

All the documentation and information is available at:  [www.wago.com](http://www.wago.com).

## 5.2 Line Depth

### Line Depth for PROFINET

This product meets the requirements of PROFINET Conformance Class A. The line depth (cascading) is the number of all switches in a communication path. The maximum line depth depends on the update cycle.

**Note****Observe line depth!**

Observe the maximum line depth for switches in store-and-forward mode according to the “Topology Check” section of the PI-PROFINET Commissioning Guidelines (PROFINET\_Commissioning\_8081) ([www.profibus.com](http://www.profibus.com)).

### 5.3 Installation Location and Additional Enclosure

The product is an open type device. It must only be installed within appropriate enclosures, cabinets or electrical operation rooms that fulfill at least the following requirements:

- Offer adequate protection against direct or indirect contact.
- Offer adequate protection against UV irradiation.
- Restrict access to authorized personnel and may only be opened with tools.
- Ensure the required pollution degree in the vicinity of the system.
- Prevent fire from spreading outside of the enclosure.
- Guarantee mechanical stability.

### 5.4 Ground Conductor and Protective Ground

The product must be grounded. The following options are available for this:

- Grounding screw
- CAGE CLAMP® connection

Do not operate the product without an appropriate ground conductor installed.

### 5.5 Mounting Position

All specifications and handling steps refer to the nominal mounting position. Deviating mounting positions affect, for example:

- Air circulation



Figure 6: Nominal Mounting Position

## 5.6 EMC Installation

- **Ground DIN-rails.**

Ground the DIN-rails to divert electromagnetic interference.

- **Use shielded cables for data and signal lines.**

Electromagnetic interference is reduced and signal quality increased. Measurement errors, data transmission faults and interference due to excessive voltage can be prevented!

- **Keep data and signal lines separate from interference sources.**

Route data and signal lines separately from all power supply cables and other sources of high electromagnetic emissions (e.g., frequency converters or drives).

- **Connect the cable shielding with the ground potential.**

Integrated shielding is mandatory to meet technical specifications regarding measurement accuracy. Establish the connection between the cable shielding and ground potential at the inlet of the cabinet or housing. This grounding allows induced interferences to dissipate and be kept away from devices in the cabinet or housing.

- **Improve shielding performance with a large contact area.**

A low-impedance connection between shielding and ground achieves better shielding performance. For this purpose, connect the shielding over a large surface area, e.g., using the WAGO Series 790 Shield Connection System. This is especially recommended for large-scale systems where equalizing or high impulse currents may occur.

# Transport and Storage

The original packaging offers optimal protection during transport and storage.

- Store the product in suitable packaging, preferably the original packaging.
- Only transport the product in suitable containers/packaging.
- Make sure the product contacts are not contaminated or damaged during packing or unpacking.
- Observe the specified ambient climatic conditions for transport and storage.

## Long-Term Storage

- For long-term storage, power must be applied to the product for five minutes at least every two years.

# Installation and Removal

## 7.1 Mounting on the DIN-Rail

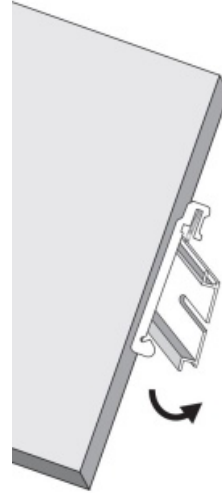


Figure 7: Mounting Product on DIN-Rail

1. Tilt the product slightly.
2. Place the product, with the DIN-rail guide, on the top edge of the DIN-rail.
3. Press the product onto the DIN-rail.
4. Push down until the product audibly snaps into place.

## 7.2 Removal from the DIN-Rail

### CAUTION

#### Hot Surface!

The surface of the housing heats up during operation. Under special conditions (e.g., in the event of a fault or increased surrounding air temperature), touching the product may cause burns!

- Allow the product to cool down before touching it.

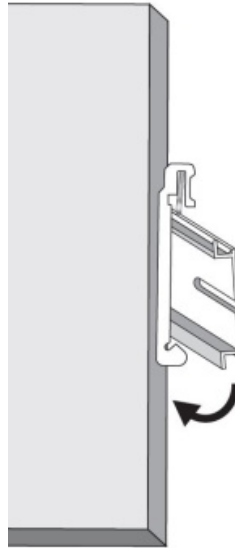


Figure 8: Removing the Product from the DIN-Rail

1. Press the product onto the DIN-rail.  
⇒ The product is now unlocked.
2. Tilt the product forward and unhook it from the DIN-rail.

### 7.3 Screw Installation on a Flat Surface

The product can be mounted directly on a flat surface using the boreholes on the rear of the device.

The surface must be able to bear at least 1.5 kg.

# Anschließen

An operating tool must be used to open the CAGE CLAMP® connections. Only one conductor may be connected to each clamping unit.

- ✓ You need an operating tool.
  - 1. Insert the operating tool into the rectangular opening above the connection to open the CAGE CLAMP®.
  - 2. Insert the conductor into the corresponding connection opening (round housing opening).
  - 3. Remove the operating tool again to close CAGE CLAMP®.
- ⇒ The conductor is now securely clamped.

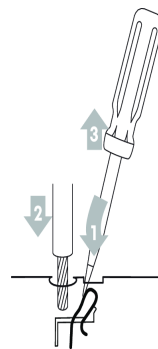


Figure 9: Connecting a Conductor to a CAGE CLAMP®

## Removing Conductor

- ✓ You need an operating tool.
  - 1. Insert the operating tool into the rectangular opening above the connection to open the CAGE CLAMP®.
  - 2. Remove the conductor.
  - 3. Remove the operating tool again to close CAGE CLAMP®.
- ⇒ The conductor is now detached.

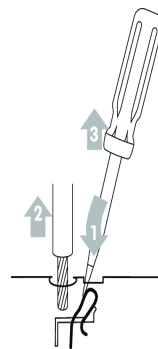


Figure 10: Removing Conductor from CAGE CLAMP®

# Decommissioning

## 9.1 Disposal and Recycling



### WEEE Mark


Electrical and electronic equipment may not be disposed of with household waste. This also applies to products without this mark.

Electrical and electronic equipment contain materials and substances that can be harmful to the environment and health. Electrical and electronic equipment must be disposed of properly after use. Environmentally friendly disposal benefits health, protects the environment from harmful substances in electrical and electronic equipment and enables sustainable and efficient use of resources.

- Observe the national and local regulations for the disposal of electrical and electronic equipment, lithium-ion batteries, lead–acid batteries and packaging.
- Clear any data stored on electrical and electronic equipment.
- Remove lithium-ion batteries, lead–acid batteries or memory cards that are added to the electrical and electronic equipment.
- Wear appropriate personal protective equipment when removing the lithium-ion batteries/lead–acid batteries.
- Dispose of the removed lithium-ion batteries/lead–acid batteries according to your local waste regulations (e. g. collection boxes at the retail or local collection points).
- Have electrical and electronic equipment sent to a local collection point.
- Dispose of all types of packaging to ensure a high level of recovery, reuse and recycling.
- Transport packages from the B2B area can be taken back free of charge via a return system in accordance with the Packaging Act. Please contact our service provider Interseroh directly. The corresponding certificate can be found at: [🌐 corporate-certificates](#)
- Throughout Europe, Directives 2006/66/EC, 94/62/EC and 2012/19/EU (WEEE) apply. National directives and laws may differ.



# Appendix

## See also

 Datenblatt\_852-112\_000-002de.pdf [[▶ 24](#)]

## 10.1 Technical Data, Approvals, Guidelines and Standards

The following approvals have been granted for the product:

	Conformity marking	
	Ordinary Locations	UL61010-2-201 (E175199)

The UL approval is only valid for DIN-rail mounting.

### Note

#### Subject to changes!

Please also observe the further product documentation! You can generate the current datasheet at any time at: [www.wago.com](https://www.wago.com) /<item number>.

### Supplementary Technical Data for the Data Sheet

*Table 1: Supplementary Technical Data*

Relative humidity	5 ... 95 % (non-condensing)
UL 61010 use	Indoor
UL 61010 pollution degree	2

Der Switch 852-112/000-002 ist ein industrieller Unmanaged-ETHERNET-Switch mit 8 Ports 10/100BASE TX für den einfachen Aufbau von kleinen bis mittleren Netzwerken. Die kompakte Bauform mit Tragschienenadapter ermöglicht eine einfache Installation im Schaltschrank bei hoher Vibrations- und Schockbeständigkeit. Die automatische Erkennung der Übertragungsrates (Autonegotiation) sowie die selbstständige Ermittlung der Sende- und Empfangsleitungen (Auto MDI-X) ermöglichen einen einfachen „Plug & Play“-Betrieb.

#### Eigenschaften:

- 8 ETHERNET-Ports 10/100 Mbit/s Autonegotiation
- Diagnose-LEDs auf der Vorderseite
- Unterstützt Auto-MDI-/MDI-X-Funktionen
- Halb- oder Vollduplex-Übertragungsmodus pro Port
- Store-and-Forward-Switching-Methode
- Integrierte Address-Look-Up-Tabelle, unterstützt bis zu 8192 absolute MAC-Adressen
- Überspannungsschutz, Verpolungsschutz, Überlastschutz mit Sicherung
- Datenflusskontrolle, gemäß IEEE 802.3x Flow Control, bei Vollduplexbetrieb
- Priorisierung von ETHERNET-Datenpaketen (PROFINET-Protokoll, EtherType=0x8892) gemäß IEEE802.1p
- Für Tragschiene 35 (TS 35)

#### Technische Daten

Switchingmodus	Store-and-Forward; non-blocking
Anzahl 100 Mbit/s-Ports	8
Kommunikationsstandards	IEEE 802.3 10BASE-T IEEE 802.3u 100BASE-TX IEEE 802.3x Flow Control IEEE 802.1p Prioritization IEEE 802.3 Nway Autonegotiation
MAC Tabelle (Größe)	8192 Adressen
Jumbo Frame Size	9216 Byte
Versorgungsspannung	DC 12 ... 48 V; ( $\pm 15\%$ ); DC 12 ... 48 V (UL)
Leistungsaufnahme max.	2 W
Übertragungsrate	Kupferkabel: 10/100 Mbit/s
Topologie	Stern
Anzeigeelemente	Gerät: LED (PWR) grün: Versorgungsspannung; pro Port: LED (100, LNK/ACT) grün: Status 100 Mbps, LNK/ACT Port 1 ... 8

#### Anschlussdaten

Anschlussstechnik: Kommunikation/Feldbus	Kupferkabel: 8 x RJ-45
Anschlussstechnik: Versorgung	1 x im Gerät verbaute Leiterplattenklemme: 739-103

#### Geometrische Daten

Breite	109,2 mm / 4.299 inch
Höhe	73,8 mm / 2.906 inch
Tiefe ab Oberkante Tragschiene	30,7 mm / 1.209 inch

### Mechanische Daten

Gewicht	287 g
Farbe	schwarz
Gehäusewerkstoff	Stahlblech

### Umgebungsbedingungen

Umgebungstemperatur (Betrieb)	-40 ... +70 °C
Umgebungstemperatur (Lagerung)	-40 ... +85 °C
Schutzart	IP30
Relative Feuchte (ohne Betauung)	95 %
Montageart	Tragschiene 35
Vibrationsfestigkeit	gemäß IEC 60068-2-6
Schockfestigkeit	gemäß IEC 60068-2-27
EMV-Störfestigkeit	gemäß EN 61000-6-2
EMV-Störaussendung	gemäß EN 61000-6-4

### 10.3 RJ-45 Cable

Use standard ETHERNET cables when connecting the product. WAGO recommends using cables of at least category 5e with the following pin assignment:

Table 2: RJ45 cable

Contact	Designation		Pair	Color
	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

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