

# Industrial Media Converter

Industrial Media Converter, Single Pair Ethernet, 10BASE-T1L to 10BASE-T

852-1705



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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.

**WAGO is a registered trademark of WAGO Verwaltungsgesellschaft mbH.**

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# 1 Provisions

This document applies to the following product:

852-1705 (Industrial Media Converter, Single Pair Ethernet, 10BASE-T1L to 10BASE-T)

Product detail page

<https://www.wago.com/852-1705>

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 provisions of the latest WAGO General Terms and Conditions of Deliveries and Services (GTC) apply as well as the Software License Terms for Standard Software (SW-License) applicable to software products und software embedded in WAGO hardware products, both available at: [www.wago.com](https://www.wago.com).

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

The 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 technology standards and practices applicable at the time of installation, and the instructions in the the products' Instructions for Use, must be complied with. In addition, the installment requirements for licensing must be observed. In the event of non-compliance, the product may not be operated within the scope of the approval.

## 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 Markups

<i>italic</i>	Names of paths or files
<b>bold</b>	Menu items, entry or selection fields, emphasis
Code	Excerpts from 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 Messages

### **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 contains 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).

## 2 Safety



This section presents hazards that could occur if the product is used. Builders and operators must take all hazards into account when analyzing the risk of their installed systems.

Measures to reduce the risk of hazards that are foreseeable from the manufacturer's point of view (i.e., without knowledge of the specific system built) are explained in the respective sections of this documentation (e.g., in "Planning").

Builders and operators must implement explained risk reduction measures and also take their own measures depending on the residual risk.

### 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.
- Set up permissions management for authorized persons.
  - Physical access may only be made by authorized persons.
  - Digital access may only be made by authorized persons.
- 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.
- Plan for voltage buffering if the requirement for voltage buffering according to EN 61131-2 is to be met.

#### 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

- To minimize interference (e.g., by electromagnetic interference), maintain a spatial separation between control, signal and data lines and the power supply lines.
- Always design the connection cables for the maximum anticipated current load.
- High currents and the inherent heat generated by the product can cause additional heat generation at the clamping point. Plan for a correspondingly higher temperature range for the connecting cables, or reduce inherent heat by selecting larger conductor cross-sections.
- Only one conductor may be connected to each connection point (e.g., CAGE CLAMP® connection).

### 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 ambient 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.

## 3 Overview

The device is an industrial media converter with a 10 Mbit/s RJ-45 ETHERNET port (10BASE-T) and a single-pair Ethernet port (10BASE-T1L).

The media converter enables ETHERNET communication, with a bandwidth of 10 Mbit/s, with shielded twisted-pair cabling, over a range of up to 1,000 meters.

The automatic transmission rate detection (autonegotiation) of the connected ETHERNET device enables simple plug-and-play operation. Connecting the SPE cable to a female connector with levers is simple and time-saving.

The use of Single Pair Ethernet significantly reduces the costs of integrating an ETHERNET connection at long ranges. In particular, the use of existing cables can significantly reduce the costs of connecting decentralized ETHERNET-capable sensors to an automation system. Another application is the networking of remote ETHERNET devices with the aid of two SPE media converters over a maximum distance of 1000 meters. This application makes it possible to substitute DSL modems or fiber optic connections. Its compact design with a DIN-rail adapter makes installation in control cabinets easier and provides high heat, vibration and shock resistance. The device enables operation with 24 VDC, which is the standard supply voltage in control cabinets.

# 4 Properties

## 4.1 View

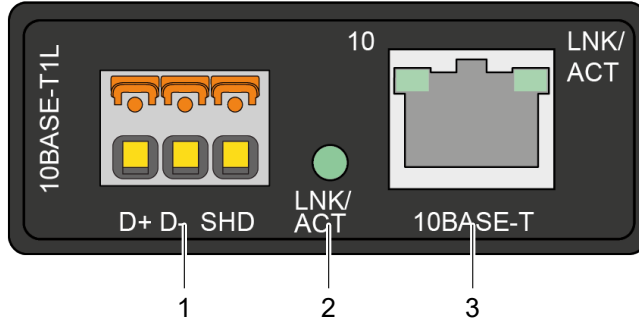


Figure 1: View from below

1	10BASE-T1L (SPE port)	<a href="#">Network Connections [▶ 13]</a>
2	Status LED LNK/ACT	<a href="#">LED Indicators – Network Connections [▶ 14]</a>
3	10BASE-T port	

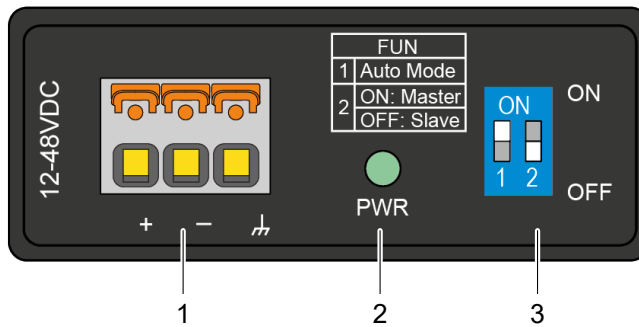


Figure 2: View from above

1	Plug for power consumption	<a href="#">Supply Voltage [▶ 13]</a>
2	Status LED of the Supply Voltage	<a href="#">Display Elements [▶ 14]</a>
3	DIP switch	<a href="#">Control Elements [▶ 15]</a>

## 4.2 Type Plate

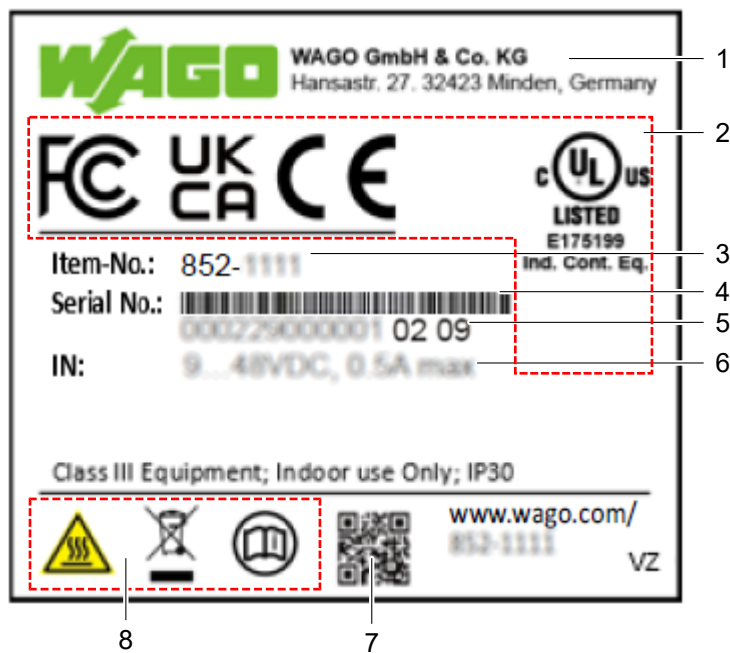





Figure 3: Type Plate (Example)

Pos.	Name	Description
1		WAGO logo and address
2		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.
		“Certification Mark for Safety” of UL-listed products for the North America 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>

Pos.	Name	Description
8		Field for warning and information symbols
		<b>Warning:</b> Do not touch hot surfaces! The housing surface can become hot during operation. If the product has been used at high ambient temperatures, let it cool down before touching it.
		<b>Note:</b> Electrical and electronic equipment must not be disposed of with household waste! Electrical and electronic equipment contains materials and substances that can be harmful to the environment and health. Electrical and electronic equipment must be disposed of properly after use. For more information on this topic, see <a href="#">Disposal and Recycling [p. 22]</a> .
		<b>Note:</b> Observe the product documentation!

### 4.3 Connections

#### 4.3.1 Supply Voltage

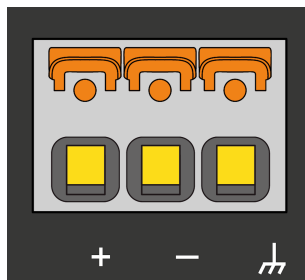



Figure 4: Power supply connection

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

#### 4.3.2 Network Connections

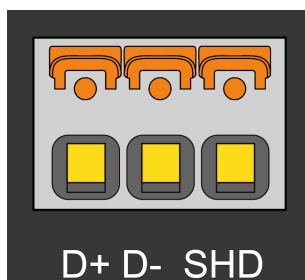


Figure 5: SPE connection

D+	Data signal +
D-	Data signal -
SHD	Shield connection

## 4.4 Display Elements

### 4.4.1 Status LED of the Supply Voltage



Figure 6: Status LED of the Supply Voltage

PWR	Status LED of the Supply Voltage	Green	Power supply in use
		OFF	Power supply switched off or error

### 4.4.2 LED Indicators – Network Connections

#### 10BASE-T Port Status LED

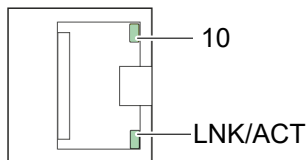


Figure 7: 10BASE-T port status LEDs

10	Green	ON	10 Mbit/s connection
		OFF	No connection/incompatible network speed
LNK/ACT	Green	ON	Port running at 10 Mbit/s.
		Flickering	Data packet transfer enabled.
		OFF	No connection/incompatible network speed

#### SPE Port Status LED



Figure 8: Status LED of the Single Pair Ethernet port

LNK/ACT	Green	ON	Port running at 10 Mbit/s.
	Orange	ON	Port is running at 10 Mbit/s (poor connection quality).
	Green/Orange	Flickering	Data packet transfer enabled.
	Green/Orange	OFF	No connection available.

## 4.5 Control Elements

The media converter can be operated in “Plug & Play” mode (factory default). Manual configuration is required if automatic configuration is not supported.

Changes to the DIP switches are only applied after the media converter is restarted.

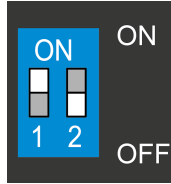


Figure 9: DIP switch

No.	Name	Status	Description
1	Auto mode	ON*	Automatic SPE configuration (master/slave)
		OFF	Manual SPE configuration via DIP switch 2
2	Master/Slave	ON	Configuration as primary SPE device (master)
		OFF*	Configuration as a secondary SPE device (slave)

\*) Factory default


# 5 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 Safety Measures at the Installation Location

### 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.

### 5.3 Ground Conductor and Protective Ground

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

- CAGE CLAMP® connection

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

### 5.4 Mounting Position

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

- Air circulation



Figure 10: Nominal Mounting Position

### 5.5 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.
- **Continue twisting the data line.**  
Continue twisting the wires of the data line as far as possible up to the female connector. Twist the shield and, if necessary, insulate it with shrink tubing and connect it to the female connector.



Figure 11: Data line twisting

## 6 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.

# 7 Installation and Removal

## 7.1 Mounting on the DIN-Rail

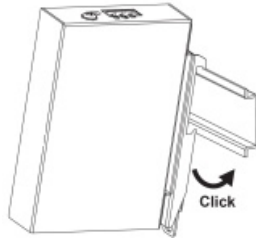


Figure 12: Mounting Product on DIN-Rail

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.
  - ⇒ If the product does not lock into place automatically, pull down the DIN-rail mounting/removal latch with an operating tool while pressing the product onto the bottom fastener.
5. Gently shake the product to ensure that it is correctly locked 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!

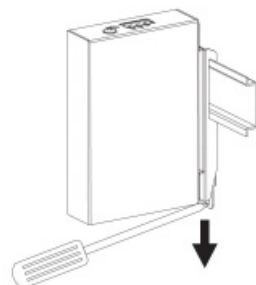


Figure 13: Removing the Product from the DIN-Rail

1. To remove the product, pull down the DIN-rail removal latch. Use an operating tool for this purpose.
  - ⇒ The product is now unlocked.
2. Tilt the product forward and unhook it from the DIN-rail.

## 8 Connecting

Solid, stranded and fine-stranded conductors are terminated by pushing them into Push-in CAGE CLAMP® Connectors. For all other conductor types, the Push-in CAGE CLAMP® must be opened with the lever. Only one conductor may be connected to each clamping unit.

1. Open the lever of the respective connection to open the Push-in CAGE CLAMP®.
  2. Insert the conductor into the corresponding connection opening (round housing opening).
  3. Close the lever to close the Push-in CAGE CLAMP®.
- ➔ The conductor is now securely clamped.

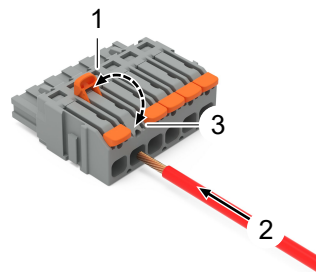


Figure 14: Connecting Conductor to Push-in CAGE CLAMP®

### Removing the Conductor

1. Open the lever of the respective connection to open the Push-in CAGE CLAMP®.
  2. Remove the conductor.
  3. Close the lever to close the Push-in CAGE CLAMP®.
- ➔ The conductor is now detached.

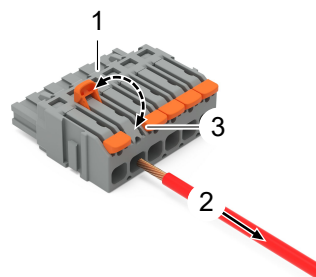
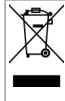


Figure 15: Removing Conductor from Push-in CAGE CLAMP®

# 9 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.

# 10 Appendix


## 10.1 Technical Data, Approvals, Guidelines and Standards

### 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>.

#### See also

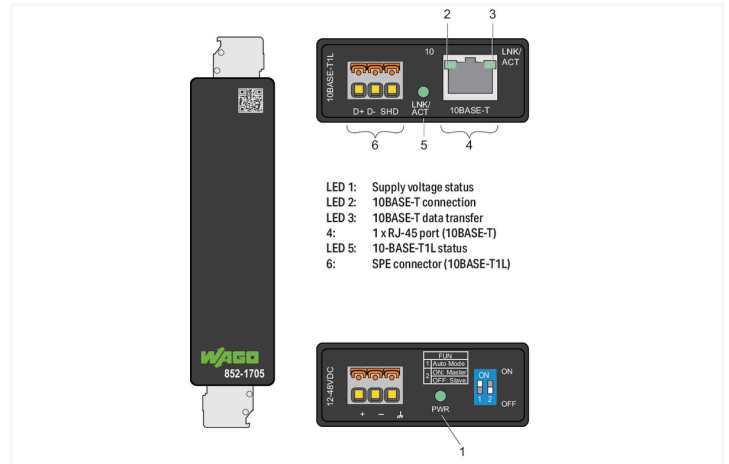
 Datenblatt 852-1705\_en [▶ 24]

# Data Sheet | Item Number: 852-1705

## Industrial Media Converter; Single Pair Ethernet; 10BASE-T1L to 10BASE-T



<https://www.wago.com/852-1705>



The device is an industrial media converter with a 10Mbit/s RJ-45 ETHERNET port (10BASE-T) and a single-pair Ethernet port (10BASE-T1L). The media converter enables ETHERNET communication with a bandwidth of 10 Mbit/s with shielded twisted pair cabling over a maximum range of 1,000 meters.

The automatic detection of the transmission rate (autonegotiation) of the connected ETHERNET device enables simple "plug & play" operation. The SPE cable is connected simply and quickly to a cage clamp connector with a lever. The use of Single Pair Ethernet significantly reduces the cost of integrating an ETHERNET connection at long ranges. In particular, the use of existing cables can significantly reduce the costs of connecting decentralized ETHERNET-capable sensors to an automation system. Another application is the networking of distant ETHERNET devices using two SPE media converters over a maximum distance of 1000 meters. This application offers the possibility of substituting DSL modems or fiber optic connections. The compact design with mounting rail adapter enables simple installation in the control cabinet with high resistance to heat, vibration and shock. The device can be operated with the usual supply voltage of 24 VDC.

### Technical data

Number of copper ports	1 x 10 Mbit/s port 10BASE-T; 1 x 10 Mbit/s port 10BASE-T1L
Communication standards	IEEE 802.3i 10BASE-T IEEE 802.3cg 10BASE-T1L (Single Pair Ethernet)
Configuration options	DIP switch for configuring the Single Pair Ethernet port
Jumbo frame size	16000 bytes
Supply voltage	12 ... 48 VDC; ( $\pm 15\%$ ); 12 ... 48 VDC (UL)
Power consumption (max.)	3 W
Current consumption (max.)	250 mA
Transmission rate	10BASE-T: 10 Mbit/s; 10BASE-T1L: 10 Mbit/s
Transmission medium (communication/fieldbus)	10BASE-T: Copper cable Cat. 5 or higher, 100 m maximum cable length; 10BASE-T1L: SPE (10BASE-T1L) compliant cable, 1000 m maximum cable length
Indicators	Device: LED (PWR) green: Supply voltage status; Ports: LED 10BASE-T port (10, LNK/ACT) green: connection, data transfer; LED 10BASE-T1L connector (LNK/ACT) green/amber: SPE status

### Connection data

Connection technology: communication/fieldbus	10BASE-T: 1 x RJ-45; 10BASE-T1L: 1 x Built-in male connector: 231-433/001-000; included female connector (MCS Connectors): 2231-1103/327-000
Connection technology: supply	1 x Built-in male connector: 231-433/001-000; included female connector (MCS Connectors): 2231-1103/327-000
Connectable conductor materials	Copper

### Physical data

Width	23.4 mm / 0.921 inches
Height	103.4 mm / 4.071 inches
Depth from upper-edge of DIN-rail	68 mm / 2.677 inches

### Mechanical data

Weight	87 g
Housing material	Steel Electrolytic Cold Commercial (SECC)

### Environmental requirements

Ambient temperature (operation)	-40 ... +75 °C
Ambient temperature (storage)	-40 ... +80 °C
Protection type	IP30
Relative humidity (without condensation)	95 %
Mounting type	DIN-35 rail
Vibration resistance	per IEC 60068-2-6
Shock resistance	per IEC 60068-2-27
EMC immunity to interference	Per EN IEC 61000-6-2
EMC emission of interference	Per EN IEC 61000-6-4

### Commercial data

PU (SPU)	1 pcs
Packaging type	Box
Country of origin	TW
GTIN	4066966672787
Customs tariff number	85176200000

### Approvals

Approvals	CE UL OrdLoc 61010 (E175199) UKCA FCC
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