



Quick Start Guide TAP IE 100, Ethernet Test Access Point

Order number: 700-800-TAP01

Version
1 en

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1 Safety instructions

Target audience



CAUTION

This description is only intended for trained personnel qualified in control and automation engineering who are familiar with the applicable national standards. For installation, commissioning, and operation of the components, compliance with the instructions and explanations in this operating manual is essential. The specialist personnel is to ensure that the application or the use of the products described fulfills all safety requirements, including all applicable laws, regulations, provisions, and standards.

Intended use



WARNING

The device has a protection rating of IP 20 (open type) and must be installed in an electrical operating room or a control box/cabinet in order to protect it against environmental influences. To prevent unauthorized operation, the doors of control boxes/cabinets must be closed and possibly locked during operation. The consequences of improper use may include personal injury to the user or third parties, as well as property damage to the control system, the product, or the environment. Use the device only as intended!

Operation

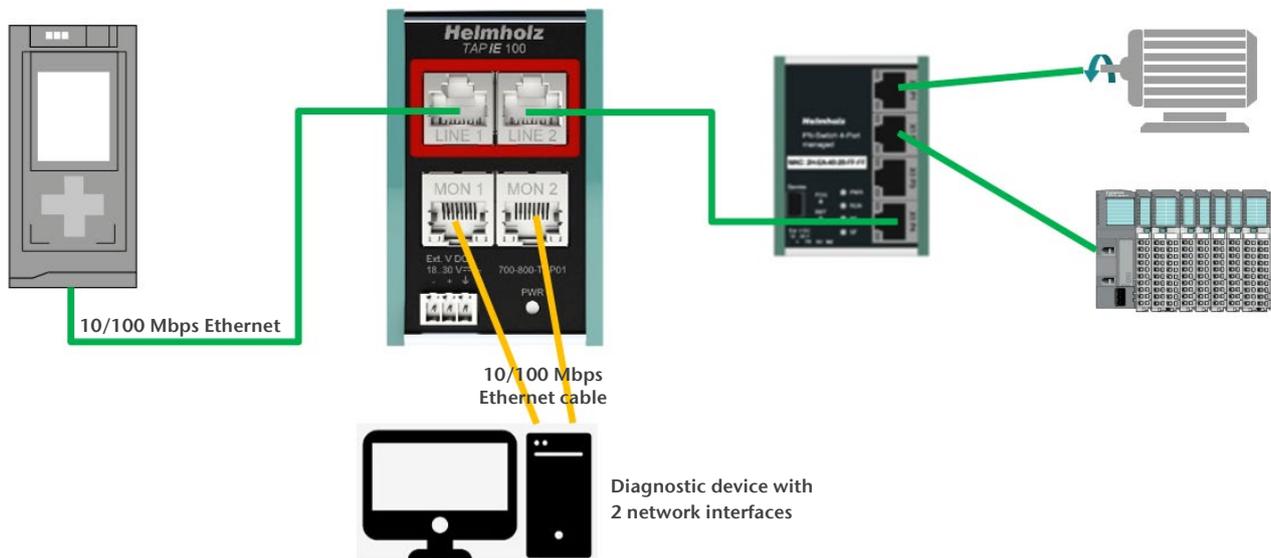


ATTENTION

Successful and safe operation of the device requires proper transport, storage, setup, assembly, installation, commissioning, operation, and maintenance. Operate the device only in flawless condition. The permissible operating conditions and performance limits (technical data) must be adhered to. Retrofits, changes, or modifications to the device are strictly forbidden.

2 Introduction

The TAP IE 100 enables recording of Ethernet communications at 10 or 100Mbps without retroactive effect. The Ethernet transmission via the Line RJ45 sockets is sent out on the two monitor sockets as a "copy". With a PC or other diagnostic device the Ethernet telegrams can be logged and analyzed, e.g. with "Wireshark". The practical flat design with the intelligent arrangement of the network connections saves space in the control cabinet.



The network line is looped through the TAP IE 100 without feedback ("LINE 1" / "LINE 2"). The monitor RJ45 socket ("MON 1"/"MON 2") sends the data out separately from the communication partners.

The transmission between the two communication partners works even if the TAP IE 100 is not supplied with voltage or if no cables are connected to the monitoring sockets. Connecting or disconnecting the monitoring cables or the diagnostic device has no effect on the communication via the LINE sockets.



NOTE

The latest version of this document can be found at www.helmholz.de.

3 Connecting the TAP IE 100

The power supply of the TAP IE 100 must be supplied with 24 VDC via the supplied connector plug at the "-/+ " wide range input (18 - 30 VDC).



The housing of the TAP IE is not grounded. Please connect the ground terminal of the TAP IE properly to the reference potential.

The RJ45 sockets "LINE 1" and "LINE 2" are used to connect the network participants. Use the TAP IE 100 either directly at the PLC or the host computer to be able to record all communication processes. Alternatively, the TAP IE 100 can be used directly at the station that is to be specifically examined.

The sockets "LINE 1" and "LINE 2" are physically connected to each other. The Ethernet transmission is not influenced. For this reason, the two RJ45 sockets also have no status LEDs! Please note that the total length of the cable connections between the subscriber at LINE 1 and the subscriber at LINE2 must not exceed the maximum cable length allowed for Ethernet (usually <100m).



The connection of the Ethernet cables to "MON 1" and "MON 2" and the diagnostic device as well as the power supply of the TAP IE 100 can also be omitted during the initial installation of the TAP IE 100 and only carried out if required. The connection of the cables is also retroactive.



4 Commissioning and use

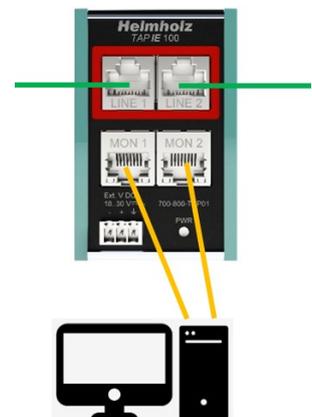
If the Ethernet telegram traffic is to be read, a diagnostic device must be connected via the monitor sockets.

To do this, connect the RJ45 sockets "MON 1" and "MON 2" to the diagnostic PC or the diagnostic device using two standard 100MBps Ethernet cables. The diagnostic PC or the diagnostic device must have two network connections for differentiated reading of the Ethernet frames.

Via "MON 1" the Ethernet frames of transmission direction "LINE 1" and via "MON 2" the frames of the other transmission direction "LINE 2" are decoupled and sent as standard Ethernet frames to the diagnostic device.



If the auto crossover function is used between the communication partners, the monitor sockets may output the telegrams from the transmitters crosswise "LINE 1" to "MON 2" and "LINE 2" to "MON 1". Either switch off the auto crossover during installation or swap the cables at "MON 1" and "MON 2".



Any Ethernet analysis software can be used on the diagnostic PC, but it must support two network connections. As an example, the free software "Wireshark" may be mentioned here.



NOTE

If the TAP IE 100 is already installed during commissioning of the plant, the Ethernet communication can be analyzed without changing the running machine in case of service. We recommend early installation of the TAP IE 100 in critical applications where it is not possible or difficult to switch off the system or the communication line during operation.



ATTENTION

In the current version, the TAP IE 100 does not always support the recording of transmissions with activated "EEE" (Energy Efficient Ethernet). It is possible that the connection with the diagnostic device cannot always be established. However, "EEE" is not usually used in the automation environment.

5 Diagnostics via LEDs

The TAP IE 100 has a Power-Led (PWR) and 4 LEDs at the RJ45 monitor jacks. The RJ45 LINE jacks have no LEDs, because the transmission signal between the jacks should not be influenced.

The green PWR LED indicates a functioning power supply. With the correct voltage supply, the RJ45 sockets "MON 1" and "MON 2" are also functional.



NOTE

The transmission between the two communication partners via the LINE sockets also works if the TAP IE 100 is not supplied with voltage! The voltage supply is only necessary if a diagnostic device is connected to the monitor sockets.

The LEDs at the RJ45 sockets "MON 1" and "MON 2" indicate the Ethernet transmission to the diagnostic device. For technical reasons, only the green led on each RJ45 socket has a function. The green LED lights up or flashes as soon as Ethernet telegrams are transmitted to the diagnosis device via the respective RJ45 socket. The LEDs only light up or flash when the TAP IE 100 is supplied with voltage and a diagnostic device is connected to the monitor sockets.

6 Technical data

Order number	700-800-TAP01
Name	TAP IE 100, Ethernet Test Access Point 10/100 MBps
Scope of delivery	TAP IE 100 with power supply plug
Dimensions (D x W x H)	34,5 x 48 x 75,5 mm (without power supply plug) 43,5 x 48 x 75,5 mm (with power supply plug)
Weight	Ca. 95 g
Ethernet interface	
Connection	2 x RJ45 „LINE“ 2 x RJ45 „MON“ (Monitor)
Protocol	10 Base-T, 100 Base-TX
Transmission rate	10/100 Mbit/s
Status indication	1 LEDs Power, 2 LEDs Ethernet-Status MON1/2
Voltage supply	2x DC 24 V, 18 – 30 V DC
Power consumption	max. 40 mA bei DC 24 V
Current draw	Max. 0,9 W
Ambient conditions	
Installation position	Any
Ambient temperature	-40 °C ... +75 °C
Transport and storage temperature	-40 °C ... +85 °C
Relative air humidity	95 % r H without condensation
Protection rating	IP20
REACH & RoHS	Ja



The contents of this Quick Start Guide have been checked by us so as to ensure that they match the hardware and software described.

However, we assume no liability for any existing differences, as these cannot be fully ruled out. The information in this Quick Start Guide is, however, updated on a regular basis.

When using your purchased products, please make sure to use the latest version of this Quick Start Guide, which can be viewed and downloaded on the Internet from www.helmholz.de.