

TREBING



HIMSTEDT

xEPI 2

Doc. Version 6.0

Installation Guide

English

Dear Customer,

This installation Guide will help you to install the hardware. If you have any further questions, please contact our Technical Support:

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Content

About this Installation Guide	4
Intended use	4
Explanation of safety instructions	4
Menu and keyboard commands	5
For your safety	5
Performance and functioning	8
Features	8
Scope of delivery	8
Configuration requirements	9
Ethernet network presets	9
Design of the xEPI 2	10
Connections and indicating elements	12
Mounting	12
Start-up guideline	13
Note regarding the application software	13
Installing the xEPI 2	14
Installing the xEPI 2	14
Uninstalling the xEPI 2	15
Connecting to Ethernet	15
Connecting the power supply	16
Configuring the xEPI 2 in the Ethernet network	18
Establish a connection to the xEPI 2	18
User administration	20
xEPI 2 description	20
Network configuration	20
TH SCOPE settings	25
Measurement	26
Alert	26
Parameter distribution	26
Connecting the PROFIBUS	28
Bus terminating resistors	29
Setting PROFIBUS parameters	30
Firmware update	31
Troubleshooting	32
Technical data	34
General conditions	35

About this Installation Guide

Please read this installation guide carefully prior to installation. It facilitates installation and setup of your system and provides you with important information.

Intended use

The xEPI 2 is designed to be used as an interface between PROFIBUS and Ethernet networks. Any other use is deemed non-intended use.

Explanation of safety instructions

The following symbols and signal words used are intended to draw your attention to special situations:



Danger!

Warning of personal injury from high voltage.



Warning!

Warning of damage to the device.



Note!

Useful tips.



Disposal

Notes on disposal.

Menu and keyboard commands

The following conventions apply to menu and keyboard commands:

Courier font

Window names, menu items, fields and descriptions of combo boxes, check boxes, radio buttons and icons.

<Key>

Press the indicated key.

For your safety

Strictly observe the following safety instructions before connecting the device:



Danger!

Small objects or liquids must not enter the case of the xEPI 2 (e.g. through the ventilation slots). This may damage the device.

Never cover the ventilation slots on the device.



Warning!

Never open the case of the xEPI 2 or carry out any mechanical modifications on the device. Otherwise, this may lead to damages on the device as well as to loss of warranty.



Warning!

The xEPI 2 contains electronic components sensitive to electrostatic discharges. Damages due to electrostatic discharge can lead to premature failure of components or intermittent faults at a later stage.

Before installing the xEPI 2, divert the electrostatic discharge away from your body and the tools used.

- Carefully plan the integration of the xEPI 2 into an existing system and ensure proper function of the system after installation.
- The xEPI 2 may only be installed or uninstalled by qualified, trained electrical engineering personnel.
When installing the xEPI 2, observe the regulations for handling electric components in accordance with VDE 0100. In addition, you must also observe the valid safety and accident prevention regulations (UVV) when operating the device within the jurisdiction of the Federal Republic of Germany.
- Observe the IEC 61158 standard.
- Always install the xEPI 2 on a suitable top-hat rail (mounting rail).
- Cables used for the connection must not apply any mechanical forces to the xEPI 2.

- High temperature differences between the storage site and installation site can result in condensation within the case, which may cause the xEPI 2 to become damaged.
In case of high temperature differences, please wait at least three hours before operating the xEPI 2.
- Lock the connected plug (PROFIBUS) using the screw connections intended for this purpose.



Disposal

The xEPI 2 must be disposed of separately from normal household waste in accordance with the 2002/96/EC (WEEE) directive.

Performance and functioning

The xEPI 2 provides access to the communication system and connects the higher-level network structure with the field level. It forms the basis for the Trebing + Himstedt products TH SCOPE, PROFIBUS Scope, Trebing + Himstedt DTM Library, TACC and TH OPC Server DP.

The xEPI 2 is quick to assemble/install and to put into operation. The delivered default configuration allows start-up in only a few minutes. In order to prevent network disruptions by unauthorized configuration changes, all configuration functions are protected by user administration.

The xEPI 2 includes the free-of charge TH SCOPE easy.

Features

- Connection between higher-level network and field level
- Access to the PROFINET/Industrial Ethernet network
- Basis for TH SCOPE, PROFIBUS Scope, Trebing + Himstedt DTM Library, TACC and TH OPC Server DP
- Access protection through integrated user administration
- TH SCOPE easy preinstalled

Scope of delivery

- xEPI 2
- Installation Guide
- Release Note (per download at www.t-h.de)

Configuration requirements

(not included in the scope of delivery)

- Web browser with Adobe Flashplayer 10.0 or higher
- Enabling port 80 and IP 224.0.5.128 port 2364 UDP
- Application software for PROFIBUS configuration

Ethernet network presettings

- The xEPI 2 is preset to Ethernet network operation with a DHCP server. No Ethernet network configuration settings are required in this operating mode.
- In case of manual allocation of IP addresses the xEPI 2 has the following standard IP configuration:

IP address	169.254.0.1
Subnet mask	255.255.0.0
Default gateway	0.0.0.0

Design of the xEPI 2

(see figure 1)

- 1 Ethernet interface
- 2 LED ETH
- 3 LED RUN
- 4 LED PB
- 5 PROFIBUS interface
- 6 Terminal strip for power supply
- 7 Type label
- 8 Top-hat rail (not included in the scope of delivery)

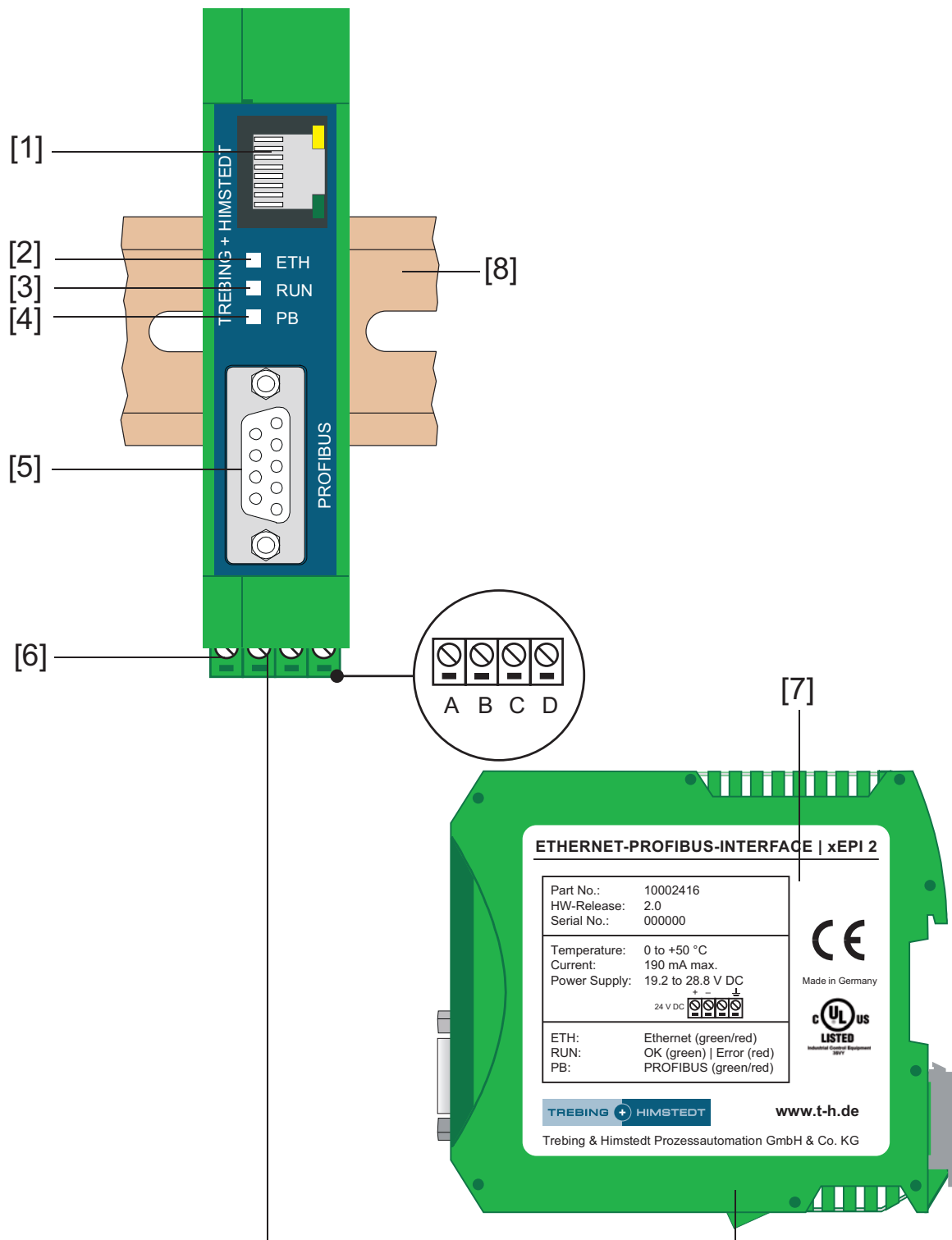


Fig. 1: xEPI 2 (front and side view)

Connections and indicating elements

[1] Ethernet interface: RJ-45 (10Base-T/100Base-TX)

- LED lights yellow: Ethernet data communication
- LED lights green: physical connection available

[2] LED ETH

- ETH lights red: first start phase
- ETH flashes red: boot procedure
- ETH lights red or flashes red or green in case of an error: internal firmware failure
- ETH lights green: connection to application via Ethernet

[3] LED RUN

- RUN lights red: internal failure identified
- RUN lights green: 24V power supply is fed

[4] LED PB

- PB lights green: device communicates active via PROFIBUS

[5] PROFIBUS interface: D-Sub socket

[6] Terminal strip for +24 VDC power supply

- A: 24 V (+)
- B: 0 V (-)
- C: not assigned
- D: Earth conductor

Mounting

[8] 35 mm DIN top-hat rail (not included in the scope of delivery)

Start-up guideline

The following steps are required for start-up:

1. Install the xEPI 2 (see »Installing the xEPI 2« on page 14).
2. Connect to Ethernet (see »Connecting to Ethernet« on page 15).
3. Connect to the power supply (see »Connecting the power supply« on page 16)
4. Configure Ethernet (see »Configuring the xEPI 2 in the Ethernet network« on page 18)



Note!

To set the IP address manually you must connect your PC/notebook to the xEPI 2 via crossover cable.

5. Connect the PROFIBUS (see »Connecting the PROFIBUS« on page 28).
6. If you use the xEPI 2 as a class 2 master you have to configure PROFIBUS parameters of the xEPI 2 using an application software (see »Setting PROFIBUS parameters« on page 30).

Note regarding the application software

For operating the xEPI 2 as a class 2 master, an application software with the appropriate drivers is required. For more information about purchasing and operating the software please check our website at <http://www.t-h.de> or contact our sales department (sales-ic@t-h.de).

Installing the xEPI 2

Installing the xEPI 2



Warning!

Above and below the xEPI 2, a minimum of 5 cm head space for heat dissipation needs to be available.

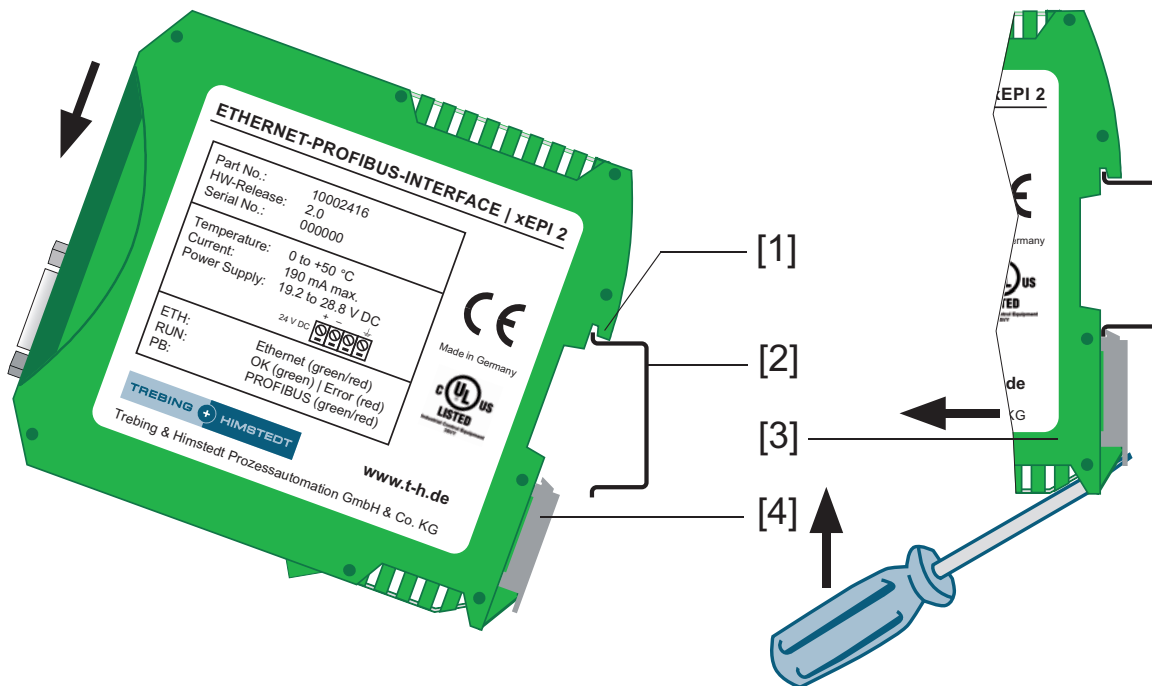


Fig. 2: Installing and removing of the xEPI 2

- 1 Device with notch on top-hat rail
- 2 Top-hat rail
- 3 xEPI 2 on top-hat rail
- 4 Stop lever

Place the notch of the xEPI 2 on the top-hat rail and move the xEPI 2 downward until the stop lever locks into place on the top-hat rail.

Uninstalling the xEPI 2

1. Remove the connected supply and signal lines (Ethernet, PROFIBUS, voltage).
2. Place the screwdriver into the stop lever on the xEPI 2 (see figure 2).
3. Press the screwdriver in the direction of the xEPI 2 and simultaneously swing the device off the top-hat rail.

Connecting to Ethernet

- Insert the patch cable plug (RJ-45, not included in the scope of delivery) into the Ethernet socket (see figure 1 no. [1]) on the xEPI 2 until the plug locks into place.
- The green LED on the Ethernet socket lights as soon as the xEPI 2 is energized and an Ethernet network is available.

Connecting the power supply



Danger!

Electrical voltage.

Only qualified electricians are allowed to work on the electrical equipment.



Danger!

Incorrect xEPI 2 earthing can cause injury to personnel or device damage. Ensure correct and proper earthing of the xEPI 2.



Warning!

Reverse polarity in the power supply can damage the device. Make sure the power supply is connected with correct polarity.

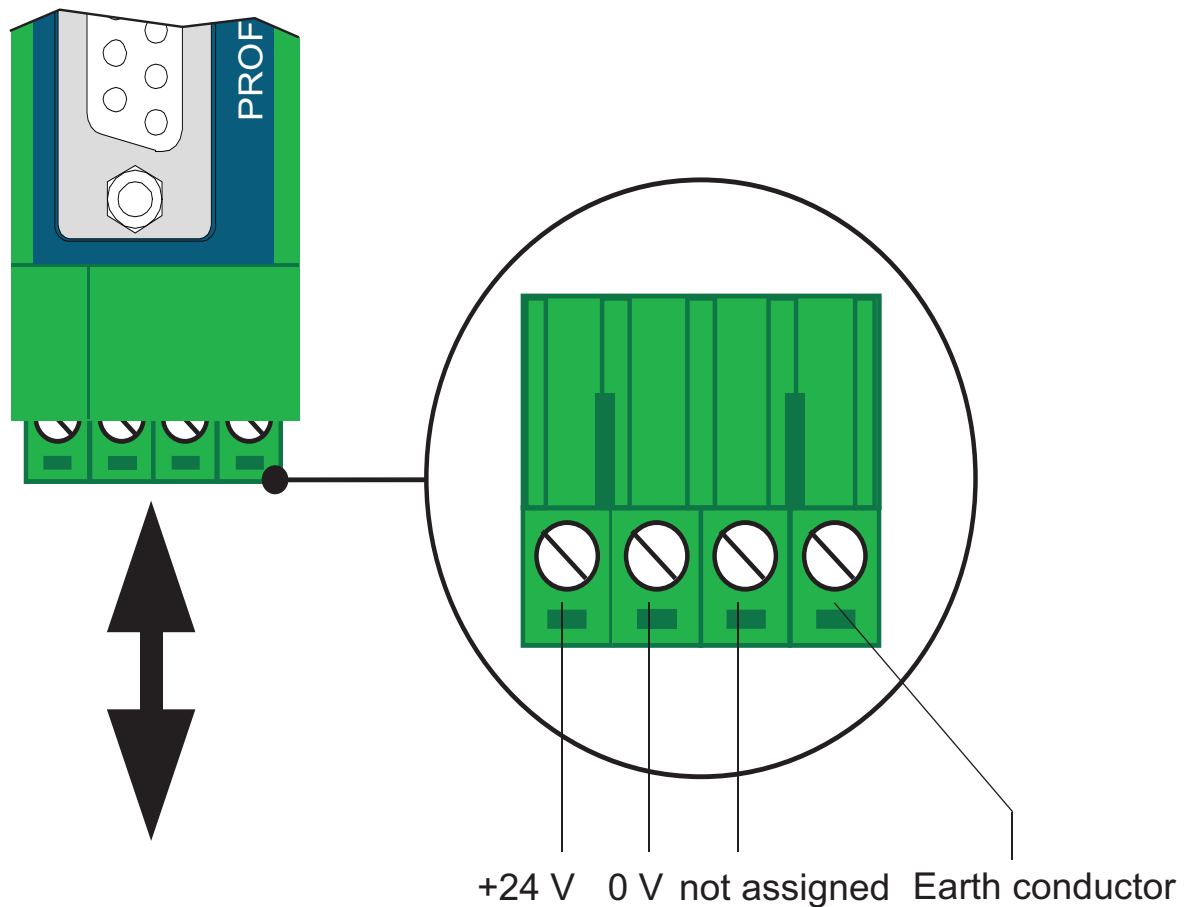


Fig. 3: Terminal strip for power supply on the xEPI 2

1. Connect the cable of a 24 V power supply and the earth conductor (earth terminal) to the terminal strip on the device. The terminal strip can be plugged and lifted out for installation using a screwdriver.
2. Switch on the power supply. The LED RUN is green and the LED ETH flashes red until the xEPI 2's initiation procedure is completed. Afterwards only the LED RUN lights green.

Configuring the xEPI 2 in the Ethernet network

Establish a connection to the xEPI 2

1. Connect the xEPI 2 to a PC/notebook via crossover cable. The PC/notebook has to be in the same subnet as the xEPI 2.
2. Start a web browser on your PC/notebook.
3. Enter the IP address `http://169.254.0.1` and press <Enter>. The TH SCOPE website is loaded.

Login

1. Click on **Login**.
2. Enter the password. The default password is the six-figure serial number of the device. You can find it on the type label at the case or at **Info**.
3. Click on **OK**.



Note!

We recommend changing the password after login (see »User administration« on page 20).



Note!

Log out after changing settings (Click on **Logout**). Otherwise you have to wait about 10 minutes to get access to this xEPI 2, if you have left the site or closed the browser.

Settings

Click on settings and then on xEPI 2.

Here you can change the settings for user administration, xEPI 2 description and network configuration.

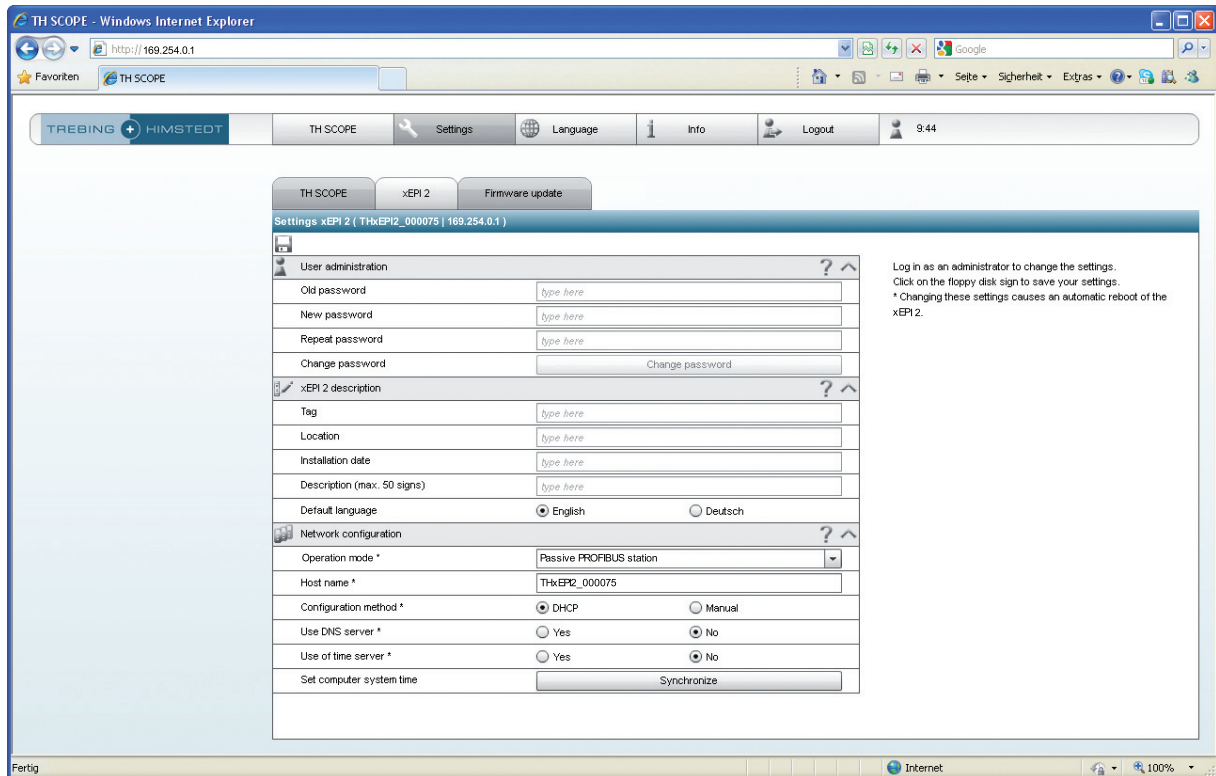


Fig. 4: xEPI 2 settings



Note!

For detailed information about each setting, click on the question mark.

User administration

Here you can change the password. Proceed as follows:

1. Enter the old password.
2. Select a new password and confirm it by re-entering.
3. Finally, click **Change password**.

xEPI 2 description

Here you can enter a tag name, a location, an installation date and a description of the xEPI 2.

Network configuration

Here you have to set the operation mode and the configuration method. You can also make time settings.

Operation mode

Select at **network configuration** the **operation mode** of the xEPI 2.

In the operation mode **Passive PROFIBUS station** the xEPI 2 is a passive station in the bus. Therefore the xEPI 2 needs no own PROFIBUS address.

In the operation mode **Active/Passive PROFIBUS station** the xEPI 2 can be used as a class 2 master in connection with an external master application (FDT or Emerson's AMS Suite).

The xEPI 2 is passive until a PROFIBUS address is set in the master application and the communication is started. Then the xEPI 2 is an active station.

Configuration method (DHCP/Manual)

There are two connecting options to choose from, depending on your network:

- Connection in an Ethernet network with DHCP server – automatic and dynamic allocation of IP addresses (connection with patch cable via hub or switch)
- Connection in an Ethernet network with manual IP address assignment (peer-to-peer) – manual allocation of IP addresses (connection with crossover cable)

Connection in a network with DHCP (Dynamic Host Configuration Protocol)

The xEPI 2 is preset to network operation with a DHCP server and in this case it is automatically assigned an IP address. Therefore, no further configuration settings are necessary.



Note!

If you connect to Ethernet network with the power supply already connected, the DHCP may fail to be identified. The routine for the DHCP identification only runs during xEPI 2 start-up.

Briefly switch off the power supply for a new DHCP identification.

Configuring the xEPI 2 in the Ethernet network

Connection in a network with manual IP address assignment

If you use the xEPI 2 in an Ethernet network without DHCP server, you need the following for configuration:

- TCP/IP settings for this network
- a PC/notebook with a web browser and Adobe Flash Player
- a crossover cable between PC/notebook and xEPI 2 (peer-to-peer connection)



Note!

Always notify your system administrator prior to allocating IP addresses.

If you set an address already assigned, other devices in the network may be deactivated and communication may be affected.



Note!

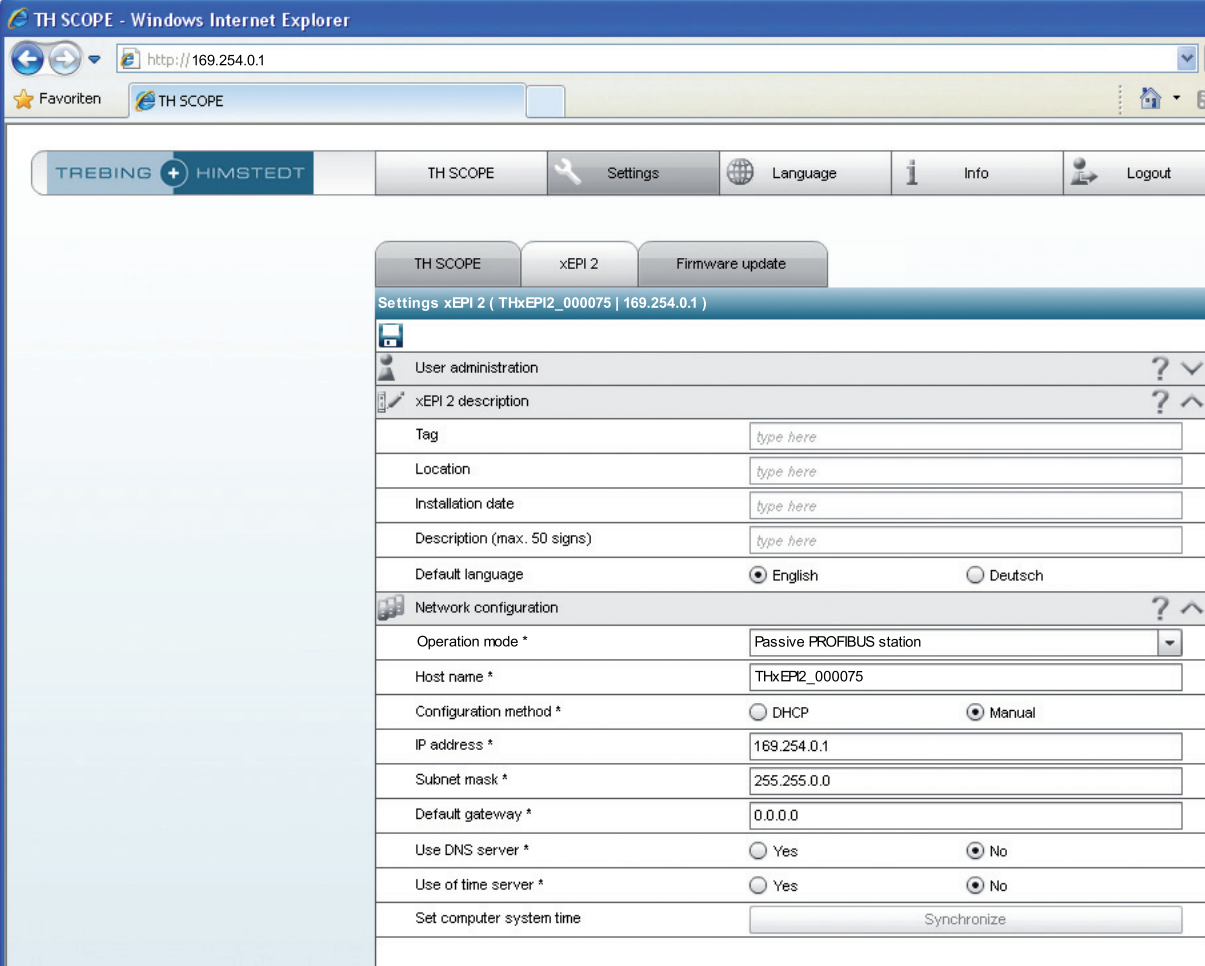
The PC/notebook must be in the same subnet as the xEPI 2.

The xEPI 2 has the following manual default IP addresses (default settings at the time of delivery):

IP address	169.254.0.1
Subnet mask	255.255.0.0
Default gateway	0.0.0.0

Setting new IP and network addresses

1. Change the **Configuration method** from **DHCP** to **Manual** (see figure 5).



The screenshot shows the TH SCOPE web interface in Internet Explorer. The browser address bar shows <http://169.254.0.1>. The page title is "Settings xEPI 2 (THxEPI2_000075 | 169.254.0.1)". The configuration is for a "Passive PROFIBUS station" with host name "THxEPI2_000075". The "Configuration method" is set to "Manual". The IP address is "169.254.0.1", subnet mask is "255.255.0.0", and default gateway is "0.0.0.0". DNS and time server options are set to "No". A "Synchronize" button is present for the system time.

Settings xEPI 2 (THxEPI2_000075 169.254.0.1)	
User administration	
xEPI 2 description	
Tag	<input type="text" value="type here"/>
Location	<input type="text" value="type here"/>
Installation date	<input type="text" value="type here"/>
Description (max. 50 signs)	<input type="text" value="type here"/>
Default language	<input checked="" type="radio"/> English <input type="radio"/> Deutsch
Network configuration	
Operation mode *	Passive PROFIBUS station
Host name *	THxEPI2_000075
Configuration method *	<input type="radio"/> DHCP <input checked="" type="radio"/> Manual
IP address *	169.254.0.1
Subnet mask *	255.255.0.0
Default gateway *	0.0.0.0
Use DNS server *	<input type="radio"/> Yes <input checked="" type="radio"/> No
Use of time server *	<input type="radio"/> Yes <input checked="" type="radio"/> No
Set computer system time	<input type="button" value="Synchronize"/>

Fig. 5: Setting IP and network addresses

2. Enter the new **IP address**.



Note!

Note down the set IP address. You can only access the xEPI 2 by using this IP address.

3. Enter the new addresses for **Subnet mask** and **Default gateway**.

Configuring the xEPI 2 in the Ethernet network

4. If you want to use a DNS server, select **Yes** and enter the DNS server IP addresses.
5. Click on the floppy disk sign to save the settings.
Thereafter the xEPI 2 restarts and you will be logged out as administrator automatically.



Note!

If you use several xEPI 2, you can facilitate the configuration by using the parameter distribution (see »Parameter distribution« on page 26).

Checking the connection to the xEPI 2

You can check the xEPI 2 in the network when:

- the xEPI 2 is integrated into the Ethernet network
- the xEPI 2 is energized
- the PC/notebook is in the same subnet

Procedure

Start a web browser on your PC/notebook.

- For DHCP: Enter the host name (basic setting: xEPI2_+serial number) found on the xEPI 2's type label (e.g.: **xEPI2_000075**) and press <Enter>.
- Manual IP configuration: Enter the set IP address (basic setting: **169.254.0.1**) and press <Enter>.

The TH SCOPE website is displayed in the web browser.

TH SCOPE settings

Click on **settings** > **TH SCOPE**.

Here you can change the settings for measurement, alert and parameter distribution.

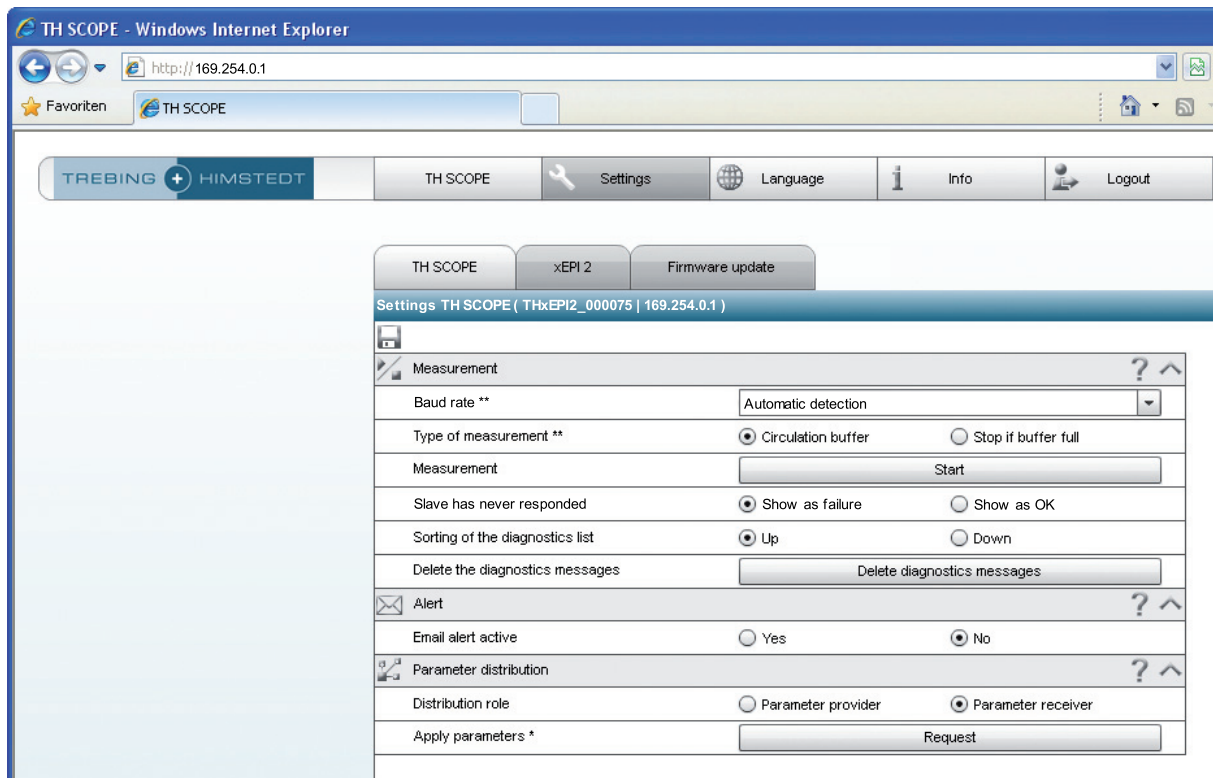


Fig. 6: TH SCOPE settings



Note!

Log in as administrator to change settings (see »Login« on page 18).



Note!

For detailed information about each setting, click on the question mark.

Measurement

The measurement settings include among other settings for baud rate and Start/Stop of the TH SCOPE measurement.

Alert

The alert settings include among other settings for activating the email alert function, when an email should be sent, SMTP server, subject, email sender and receiver.

Parameter distribution

The parameter distribution serves for a quick and easy configuration of several xEPI 2. Therefore one xEPI 2 has to be set a **parameter provider**. All other units can request the parameters from this xEPI 2.

Set parameter provider

The xEPI 2 from which all other units can take over the set parameters is called parameter provider.

Select the distribution role **Parameter provider** and save your settings by clicking on the floppy disk sign.



Note!

Only one "parameter provider" is allowed in the entire network.

In TH SCOPE **network overview > network list** the parameter provider is marked with the following icon.



Apply parameters

By default all xEPI 2 are set as parameter receiver. Before taking over the parameters of a xEPI 2, make sure that this xEPI 2 is set as a parameter provider.

Click on **Request** at **Apply parameters** to query the parameters from the parameter provider.

Thereafter the xEPI 2 restarts and you will be logged out as administrator automatically.

Parameters

The following data will be assigned:

xEPI 2	TH SCOPE
– Default language	– Type of measurement
– Operation mode	– Measurement
– DNS server	– Slave has never responded
– Time server settings / PC system time	– Sorting of diagnostics list
	– Alert settings

Connecting the PROFIBUS

The 9-pin D-Sub socket is used for connection.

- Only use standard PROFIBUS plugs and cables.
- Wire the PROFIBUS plug according to the details for pin assignment (see »Technical data« on page 34).
- If the xEPI 2 is installed at the beginning or end of the PROFIBUS cable segment, you will need a bus terminating resistor (see »Bus terminating resistors« on page 29).



Warning!

Do not use branch lines for the connection.

If local conditions do not allow a direct connection, use a repeater (connection according to PROFIBUS norm).

1. Attach the PROFIBUS connector onto the PROFIBUS socket on the xEPI 2.
2. Secure the plug with screws.
3. Switch the switch for the bus terminating resistor on the PROFIBUS connector to the required position (ON/OFF).

[1] Connection at end/start of bus with terminating resistor

[2] Connection in the middle of the PROFIBUS segment 1

[3] Connection in a separate PROFIBUS segment behind a repeater.

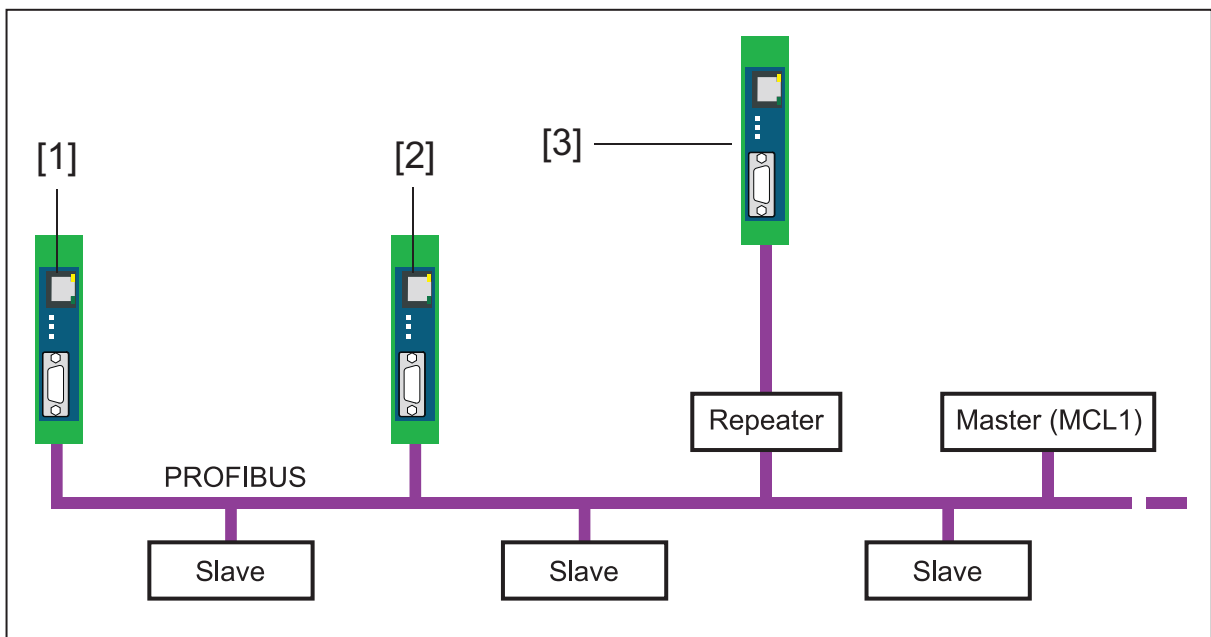


Fig. 7: Interface connection possibilities in the PROFIBUS network

Bus terminating resistors

Terminations of a PROFIBUS segment must each be terminated with a bus terminating resistor. Use standardised plugs containing terminating resistors.

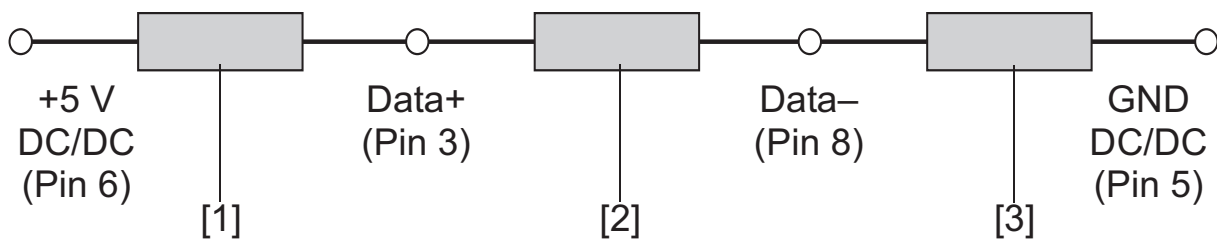


Fig. 8: Bus termination configuration (see standard IEC 61158)

- [1] 390 Ω Pull-up resistance from pin 3 to positive supply voltage at pin 6
- [2] 220 Ω Cable terminating resistor between pin 3 and pin 8
- [3] 390 Ω Pull-down resistance from pin 8 to data reference potential at pin 5

Setting PROFIBUS parameters

Depending on the used application software (not included in the scope of delivery), the xEPI 2 can be a passive station (without an own station address) or an active station (class 2 PROFIBUS master).

The setting of the PROFIBUS parameters is only required, if you use the xEPI 2 as a class 2 master in the operation mode active/passive PROFIBUS station. The PROFIBUS parameters are given by the class 1 master.

Firmware update

Firmware updates for the xEPI 2 are available free of charge at our website, www.t-h.de. Proceed as follows.

1. You have to log in as administrator to perform a firmware update (see »Login« on page 18).
2. Click on **settings** and then on **Firmware update**.
3. Check if the requirements for a firmware update are met. Therefore the measurement and the external applikation must be stopped.
4. Download the latest firmware version from www.t-h.de and save it in your local directory.
5. Click on [. . .] and select the firmware.
6. Click on **Start**.



Note!

Do not not turn off the power, during the entire firmware update process! After the firmware update the xEPI 2 restarts automatically.

Firmware update of the xEPI 2 (THxEPI2_000075 169.254.0.1)	
Firmware update	?
Current firmware version	6.0.0.0
Firmware update requirement	Requirements met.
Firmware file	Download
Firmware selection	Select file
Firmware update start *	Start

Log in as an administrator
Download the latest firmware version from our website.
Then select the latest firmware version.
* A firmware update

Fig. 9: Firmware update

Troubleshooting

xEPI 2 is not found in the Ethernet network

- Check the power supply (LED RUN must light green).
- Check for correct connection (RJ-45, see »Connecting to Ethernet« on page 15).
- The xEPI 2 is preset to network operation with a DHCP server (IP address for the xEPI 2 is assigned by the DHCP server). If your network server does not support DHCP, you need to set the IP address for the xEPI 2 yourself (see »Connection in a network with manual IP address assignment« on page 22).
- When a crossover cable is used between PC/notebook and xEPI 2, both devices must be in the same subnet.

PROFIBUS network is not found

xEPI 2 as Passive PROFIBUS station:

- Check for proper connection (see »Connecting the PROFIBUS« on page 28) and switch at **Settings > TH SCOPE > Measurement** the baud rate on **Automatic detection**.

xEPI 2 as Active/Passive PROFIBUS station:

- Check the PROFIBUS parameters for the used xEPI 2 (see application software, not included in the scope of delivery). Each station has its own station address, which can only be assigned once in the network.

LED ETH lights red or flashes red or green in case of failure
or
LED RUN lights red – internal error

– Internal error or defect: Please contact the Technical Support:

Trebing & Himstedt Prozeßautomation GmbH & Co. KG
Technical Support
Wilhelm-Hennemann-Str. 13
19061 Schwerin | Germany

Phone: +49 385 39572-500
Fax: +49 385 39572-22
E-mail: support@t-h.de
Internet: <http://www.t-h.de>

Technical data

Electrical data

Nominal supply voltage (limit values)	VDC	24 (19.2...28.8)
Current consumption max.	mA	190
Protection class	IP	20

Operating conditions

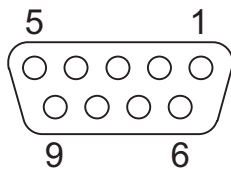
Ambient temperature range	°C	0...+50
Relative humidity	%	20...80 (no condensation)

Case data

Dimensions W × H × D	mm	22.5 × 99 × 114.5
Weight (approx.)	g	120

PROFIBUS interface

Interface	Type	RS 485
Transmission rate	bps	9,600...12M
Sub-D plug pin assignment	Pin 1	not assigned
	Pin 2	not assigned
	Pin 3	B line data+ (RxD/TxD-P)
	Pin 4	RTS
	Pin 5	GND (0 V)
	Pin 6	Potential (+5 VDC)
	Pin 7	not assigned
	Pin 8	A line data- (RxD/TxD-N)
	Pin 9	not assigned



Other

Ethernet connection	Type	RJ-45 (10Base-T/100Base-TX)
Certificates		CE, UL

General conditions

Right to make additions or alterations

Trebing & Himstedt Prozeßautomation GmbH & Co. KG reserves the right to continue development of this installation guide and the properties of the hardware and software at any time, also without releasing information about this or about alterations prior to doing so.

Exclusion from liability

Trebing & Himstedt Prozeßautomation GmbH & Co. KG assumes no warranty for proper function of the hardware and software in all conceivable situations. Currently available technical means do not enable the development of software which is completely free of errors in all conceivable applications. Trebing & Himstedt Prozeßautomation GmbH & Co. KG does not accept any liability for damages, both direct and indirect, arising from the use of the hardware and software and the information contained in this manual.

Duty to monitor products

As part of our duty to monitor products, we strive to warn about dangers we have identified which can result from the interaction of hardware and software and product use with third-party products. Monitoring is only possible if we receive sufficient information from our customers on the planned application(s) and the existing hardware and software components. As a result of the complex interactions, it is no longer possible for us to accurately identify all dangers and to check the effect on the overall system and in particular on our hardware and software, if the conditions of application have changed and/or hardware or software has been exchanged. This installation guide does not describe all technical characteristics of the hardware and software and their variants. For more information please contact Trebing & Himstedt Prozeßautomation GmbH & Co. KG.

Warranty

Our products are subject to warranty in accordance with our general business and delivery terms.

