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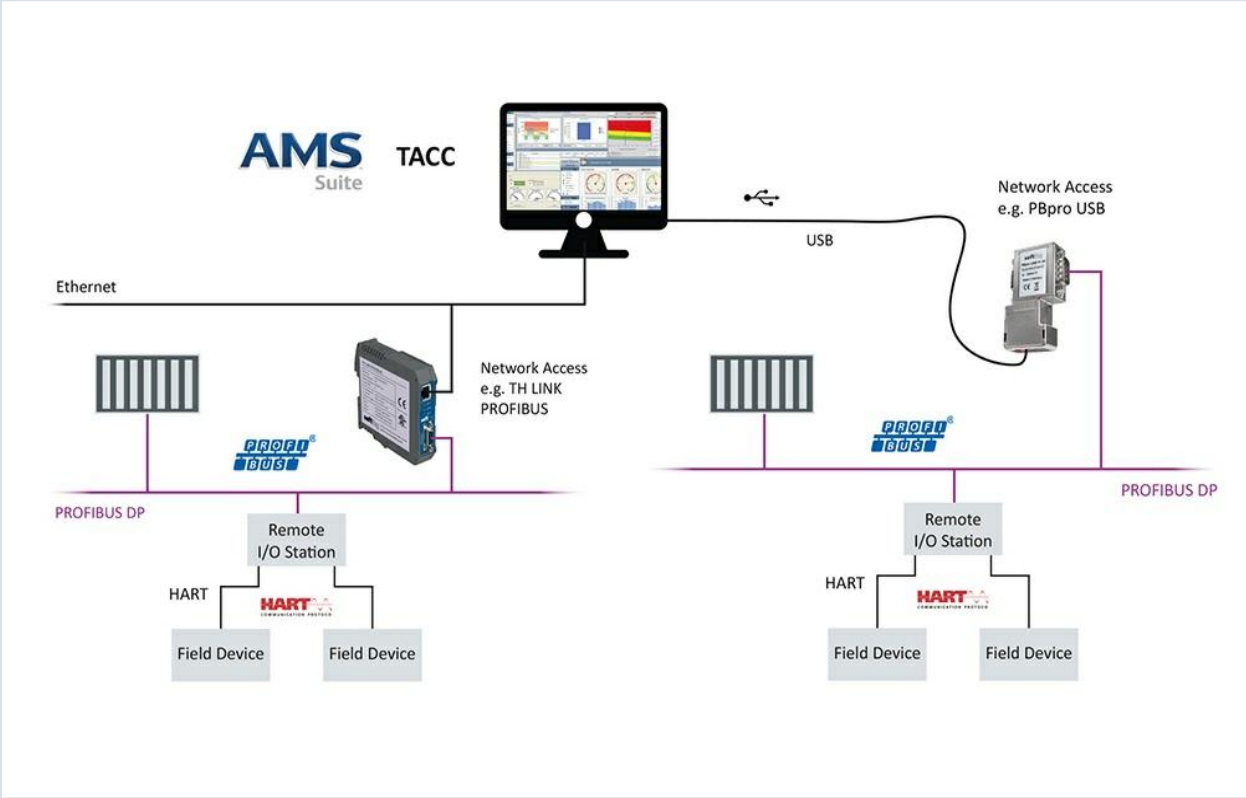
User Guide

# TACC




Version: EN-112018-3.21

## Disclaimer of liability

The information contained in these instructions corresponds to the technical status at the time of printing of it and is passed on with the best of our knowledge. The information in these instructions is in no event a basis for warranty claims or contractual agreements concerning the described products, and may especially not be deemed as warranty concerning the quality and durability pursuant to Sec. 443 German Civil Code. We reserve the right to make any alterations or improvements to these instructions without prior notice. The actual design of products may deviate from the information contained in the instructions if technical alterations and product improvements so require.

## Copyright and Trademark Information



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**Scan the QR code to find the latest documentation on the product web page under Downloads.**

# Table of Contents

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# 1 About this guide

## 1.1 Read me first

Please read this guide carefully before using the software to ensure safe and proper use. Softing does not assume any liability for damages due to improper installation or operation of this software. For the purpose of this document, all PROFIBUS interfaces are referred to as gateways.

This document is not warranted to be error-free. The information contained in this document is subject to change without prior notice. To obtain the most current version of this guide, visit the download center on our website at: http://industrial.softing.com/en/downloads

## 1.2 Target audience

This guide is intended for experienced operation personnel and network specialists responsible for configuring and maintaining field devices in process automation networks. Any person using TACC must have read and fully understood the safety requirements and working instructions in this guide.

## 1.3 Typographic conventions

The following conventions are used throughout Softing customer documentation:

| | |
|---|---|
| Keys, buttons, menu items, commands and other elements involving user interaction are set in bold font and menu sequences are separated by an arrow | Open **Start** → **Control Panel** → **Programs** |
| Buttons from the user interface are enclosed in brackets and set to bold typeface | Press **[Start]** to start the application |
| Coding samples, file extracts and screen output is set in Courier font type | `MaxDlsapAddressSupported=23` |
| Filenames and directories are written in italic | Device description files are located in *C:\<Application name>\delivery\software\Device Description files* |

**CAUTION**

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

**Note**

This symbol is used to call attention to notable information that should be followed during installation, use, or servicing of this device.

**Hint**

This symbol is used when providing you with helpful user hints.

## 1.4 Related documentation

The following documents provide additional product information:

- Insallation Guide
- Release Notes

## 1.5 Document feedback

We would like to encourage you to provide feedback and comments to help us improve the documentation. You can write your comments and suggestions to the PDF file using the editing tool in Adobe Reader and email your feedback to support.automation@softing.com.

If you prefer to write your feedback directly as an email, please include the following information with your comments:

- document name
- document version (as shown on cover page)
- page number

# 2 About TACC

TACC is a software extension of the Emerson AMS Device Manager. It was jointly developed by Emerson Process Management and Trebing & Himstedt (T+H), now Softing Industrial Automation GmbH (Softing) . TACC offers central management of HART field devices over PROFIBUS remote I/O subsystems via a Softing PROFIBUS interface (TH LINK PROFIBUS, PROFIusb etc.). If you have any questions about the operation of TACC, please contact the Emerson Global Service Center at:

E-Mail: ap-sms@ap.emersonprocess.com
Internet: http://www.emersonprocess.com/systems/support

## 2.1 Intended use

TACC is designed and intended to connect the Emerson AMS Device Manager to Softing PROFIBUS gateways for HART Over PROFIBUS communication. Any other use is not intended. Follow the instructions in this manual on how to use TACC.

## 2.2 Product download

The TACC software package is available for download from the Softing product page and download center. Here you also find the related product documentation[6] .

## 2.3 System requirements

- AMS Device Manager is installed on a PC running a supported operating system.
- The latest version of the TACC software is installed.
- A control system supporting PROFIBUS DP.
- At least one Softing PROFIBUS Gateway for communications.
- At least one PROFIBUS DP remote I/O subsystem that supports HART communications is connected to the control system.
- At least one HART I/O module is installed in the remote I/O subsystem.
  See the Installation Guide for a list of supported HART I/O modules.

**Note**

To use TACC, your AMS must have an activated HART Over PROFIBUS license.

## 2.4 HART over PROFIBUS

The HART Over PROFIBUS solution allows central access via Ethernet to all HART devices connected to PROFIBUS by supported Remote I/O (RIO) with HART functionality. See the Installation Guide for a list of supported RIO hardware.

The HART devices are configured with the Intelligent Device Manager program of the Emerson AMS Suite. For communication via PROFIBUS, a class 2 master is required which is configured using the Hardware Configuration tool. The following configuration sections describe how to set up your PROFIBUS gateway for HART Over PROFIBUS.

**Note**

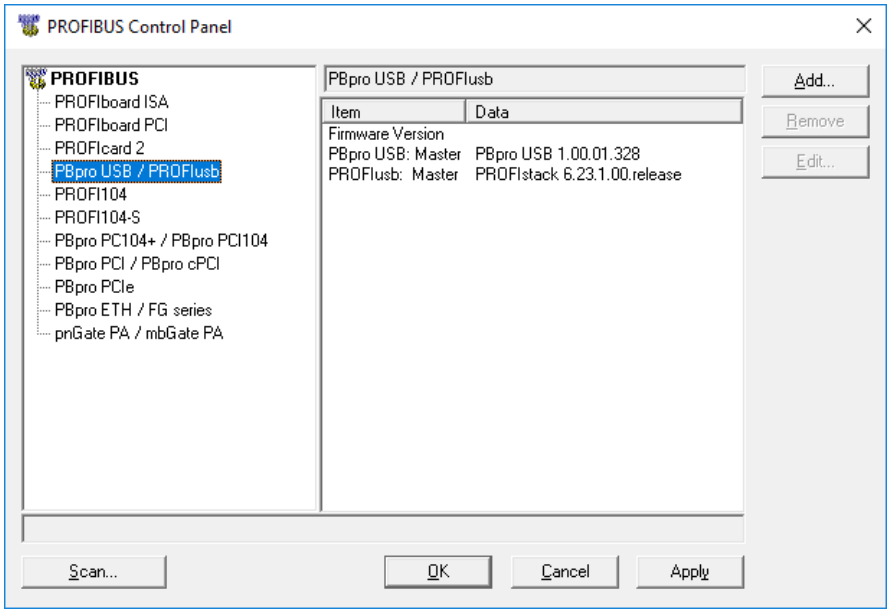
You will need an additional license in your AMS Suite to run HART Over PROFIBUS.

# 3 Configuration

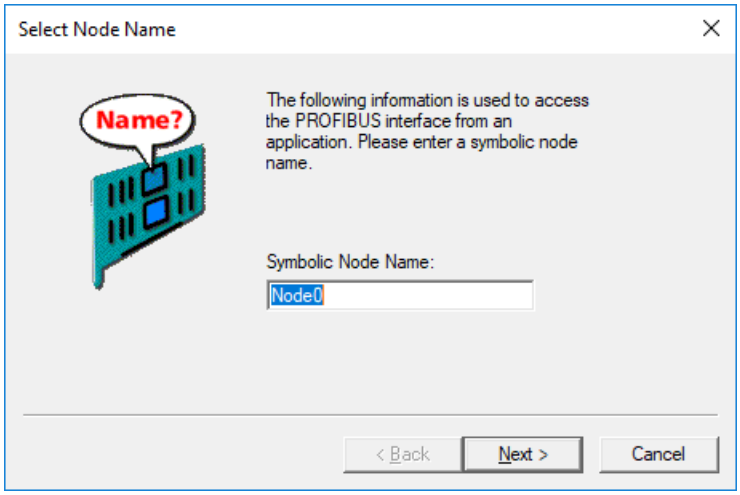
The following sections guides you step-by-step through the configuration in Windows 10 and shows you how to add, modify and delete a gateway, how to set parameters and create gateway redundancy. Before you can start the configuration of your gateway (TH LINK PROFIBUS/xEPI 2 or Softing PROFIBUS gateway) you have to connect your PC over Ethernet or USB with the device and configure the PROFIBUS driver you installed with the latest TACC software version.

1. Click the Windows Start Button and select **Softing PROFIBUS → Driver Configuration**.
   This starts the PROFIBUS Control Panel.


2. Double-click a Softing PROFIBUS interface (example: PBproUSB/PROFIusb).
   The **Symbolic Node Name** window appears.




3. Enter a name in the **Symbolic Node Name** field and click **[Next]**.
   The name you enter here is the name you will have to select when adding an configuring a new gateway 11 .




4. Enter the serial device number (IP address) of the interface or select "auto" and click **[Finish]**.

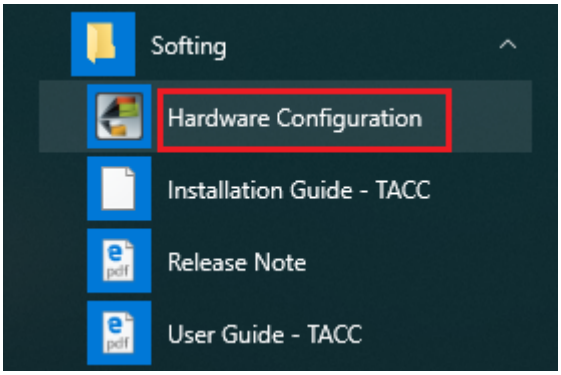
5. Click **[Apply]**.
   The **Symbolic Node Name** window is closed. In the **PROFIBUS Control Panel** the node name is shown on the left side underneath the interface you double-clicked in step 7. The question mark on a yellow background indicates that the connection to the interface has not yet been tested.

6. Click **[Apply]** in the **PROFIBUS Control Panel** to save all settings and confirm with **[Yes]**.
   The PROFIBUS Control Panel tests the connection to the PROFIBUS interface. After a short while, the yellow question mark is replaced by a green check mark. If a red cross appears instead, check the network cables and the IP settings of your PC and PROFIBUS interface. Ensure that the PC and the PROFIBUS interface are on the same IP subnet.

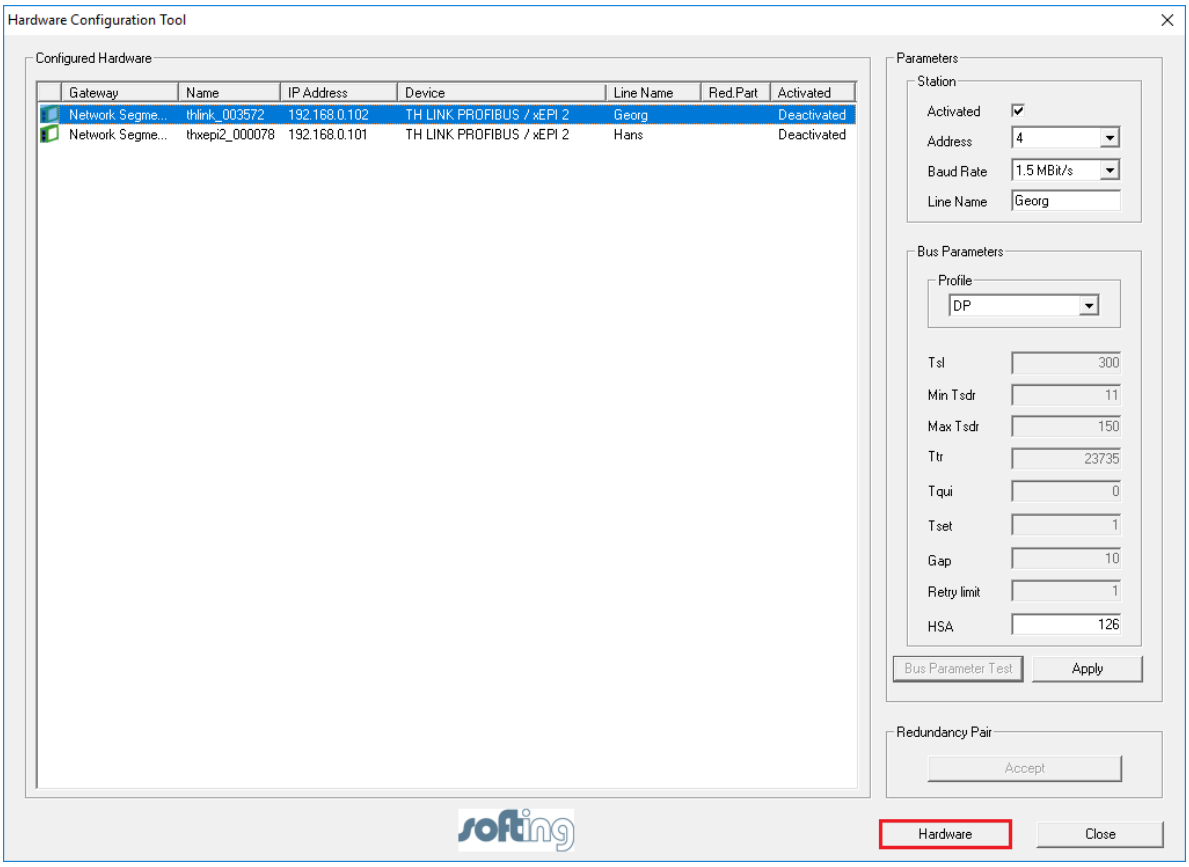
7. Click **[OK]** to close the **PROFIBUS Control Panel**.

## 3.1 Adding a gateway to a network

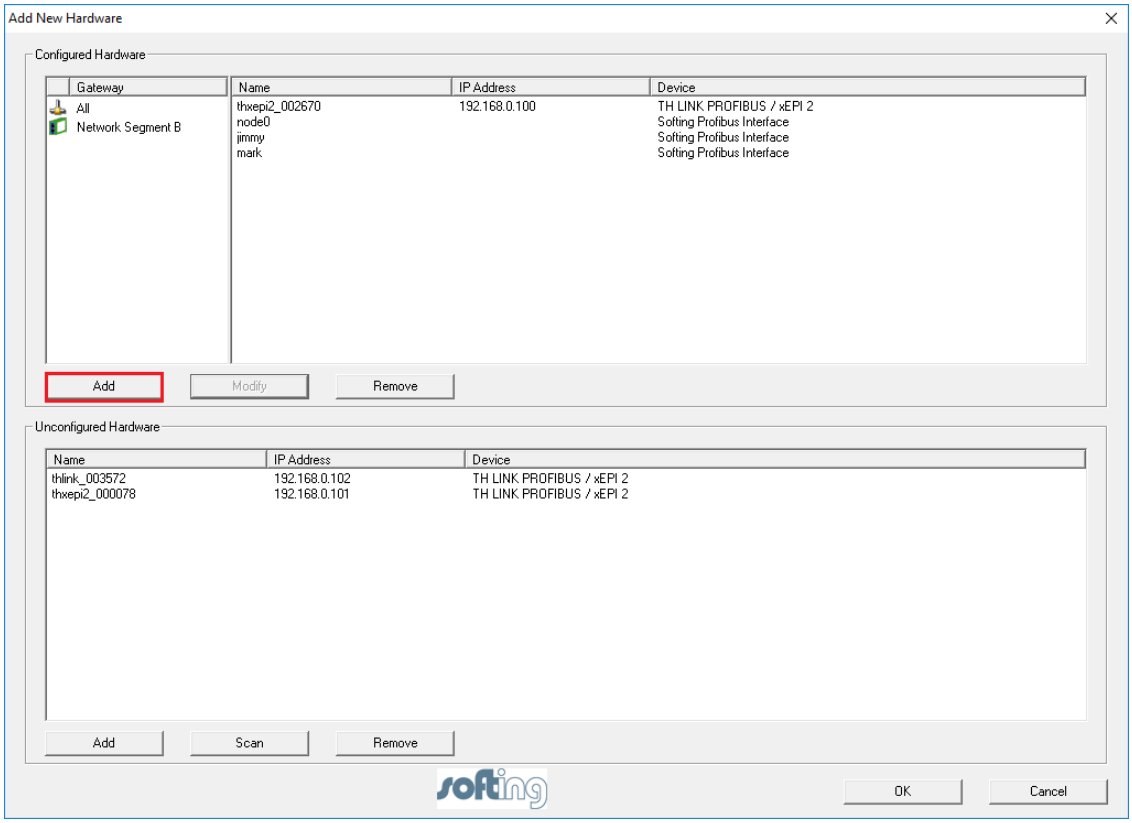
1. Click the Windows Start Button and select **Softing → Hardware Configuration**.
   The Hardware Configuration window is displayed.




2. Click **[Hardware]** to add or modify available devices.
   The **Add New Hardware** window is displayed.




3. Click **[Add]** under the **Configured Hardware** area.



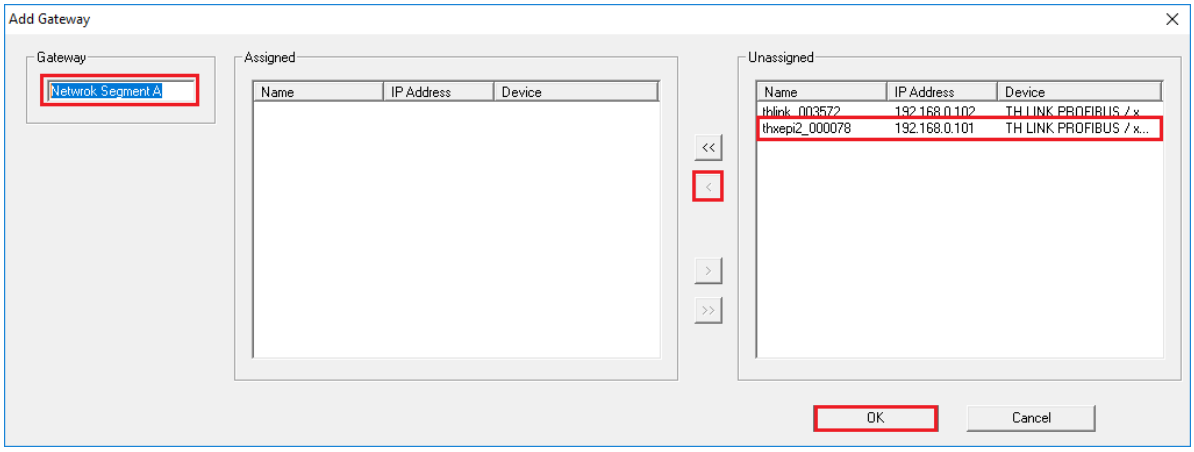

**Note**

The **[Add]** button in the **Configured Hardware** area is deactivated if there is no unconfigured hardware available to be added to a new network segment. Available hardware is normally shown in the **Unconfigured Hardware** area. If this window is empty you can  scan the system for unlisted hardware.

4. Enter a new network segment name in the Gateway field of the Add Gateway window.

**Note**

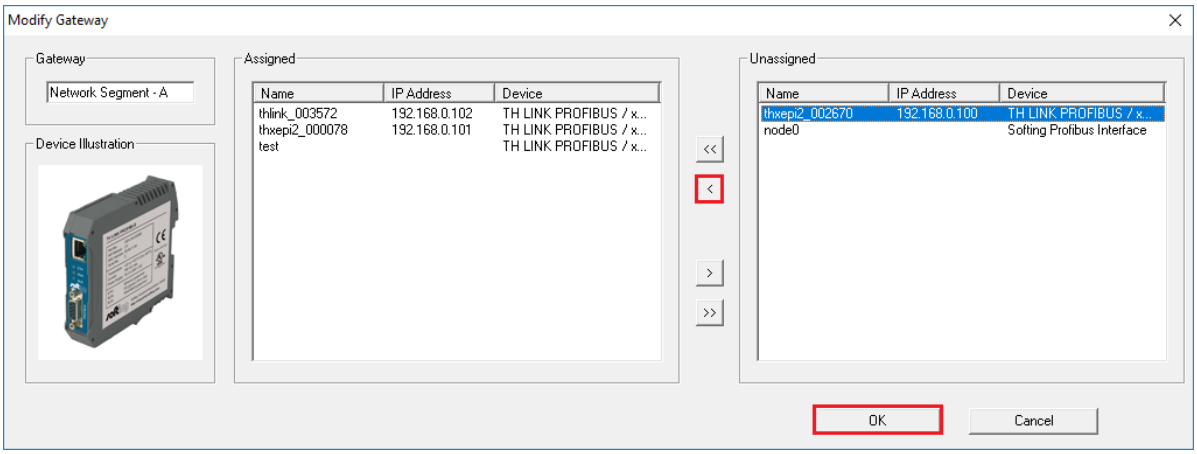
The column Gateway in the Hardware Configuration Tool refers to a group of gateways assigned to a network segment. You can assign up to 12 gateways of the same type to one gateway group or network segment.




If you want to add a gateway to an existing network segment, continue with Step 12.

5. Click **[Scan]** below the **Unconfigured Hardware** area to search for available hardware. Existing gateway masters are searched and listed. The search may take a while.

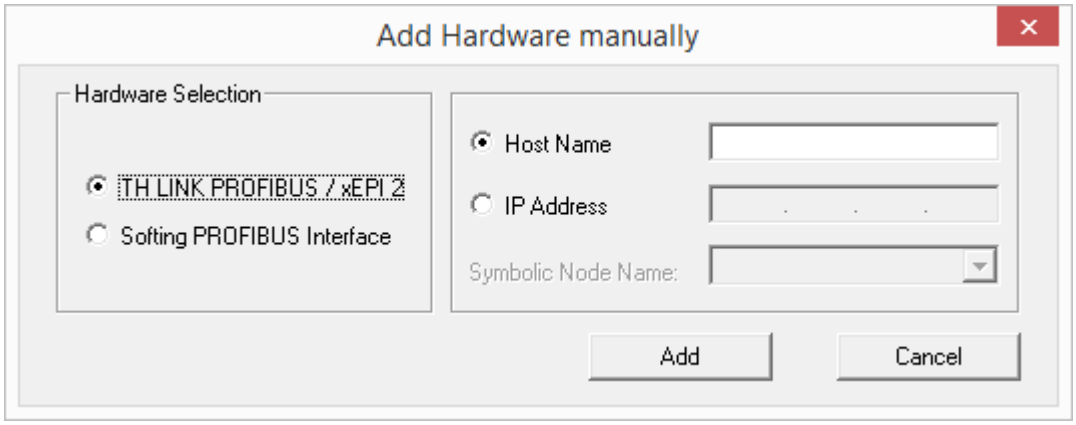
6. Select a gateway from the **Unassigned** area on the right side of the Add Gateway window and click the button to move the gateway over to the **Assigned area.**




7. Click **[Ok]** to confirm and close the window.

8. If you are working offline, click **[Add]** in the **Unconfigured Hardware** area to add hardware manually. This opens a window where you can select the hardware.

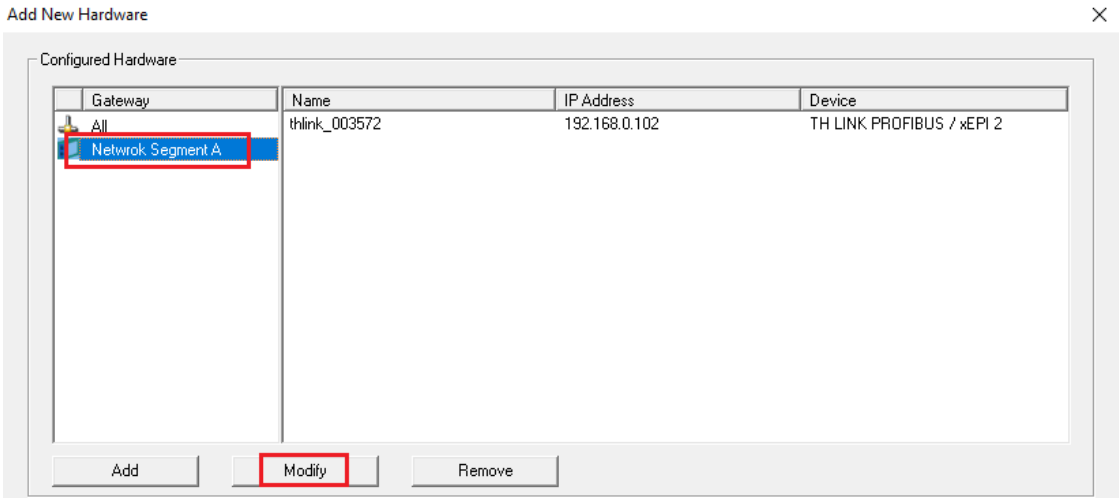
9. Select TH LINK PROFIBUS/xEPI 2 and enter a host name or IP address. To select a Softing PROFIBUS Interface enter the Symbolic Node Name.



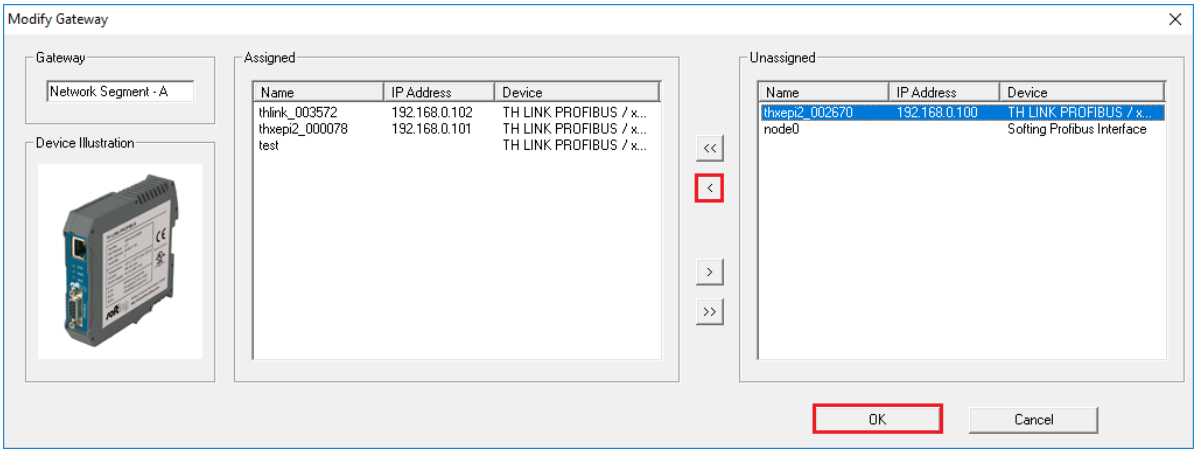

10. Click **[Add]** to continue.
    Having scanned or added the hardware manually, the **Add New Hardware** window is displayed again. All Softing PROFIBUS Interfaces and TH LINK PROFIBUS/xEPI 2 units are listed in the **Unconfigured Hardware** area and need to be assigned manually to a network segment.

11. Click **[Ok]** to confirm and close the window.

12. Select a network segment from the Gateway column of the **Configured Hardware** area and click **[Modify]** to assign a gateway to the segment previously defined in the Hardware Configuration Tool.




13. Select the gateway from the **Unassigned** area on the right side of the Modify Gateway window and click the button to move the gateway over to the **Assigned** area. You can assign a maximum of 12 gateways to a network, but only hardware of the same type.




14. Click **[Ok]** to confirm and close the window.

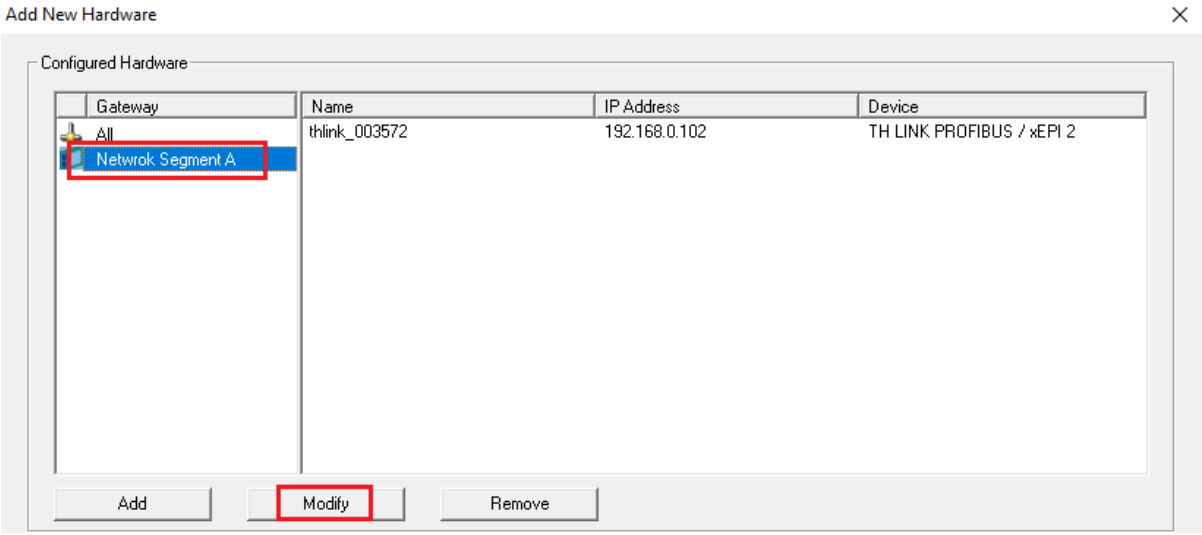
## 3.2 Reassigning a gateway to a network

This section describes how you can assign a configured gateway to a network segment.

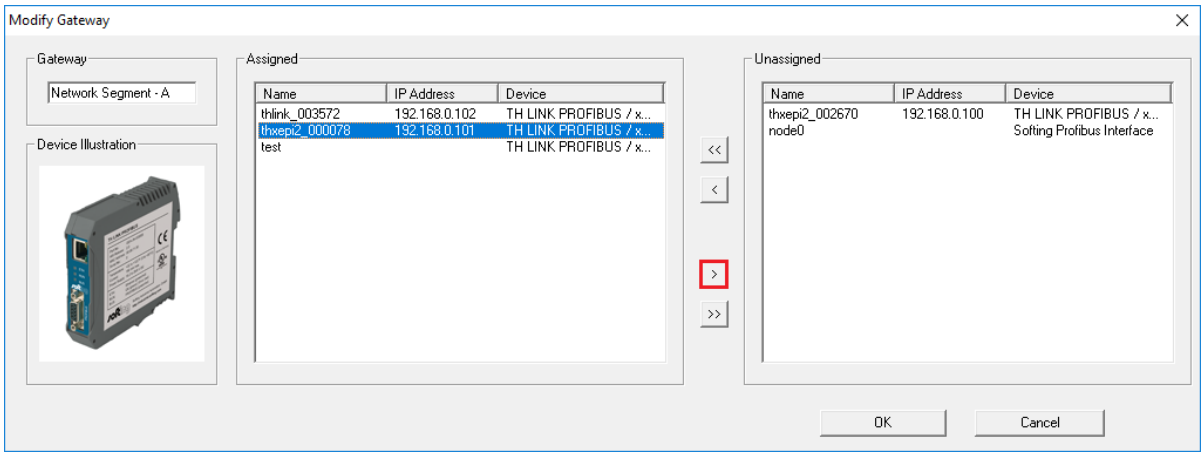
1. Open the **Hardware Configuration Tool**.

2. Click **[Hardware]**.
   The **Add New Hardware** window opens.

3. Select a network segment in the Gateway column of the **Configured Hardware** area.




4. Click **[Modify]** to assign the added gateway to the segment previously defined in the Hardware Configuration Tool.
   This opens the Modify Gateway window.




5. Click the button to move the gateway over to the **Unassigned** area.

6. If you want to add the removed gateway to a new segment, continue with Step 3 in the previous section 11 .

**Note**

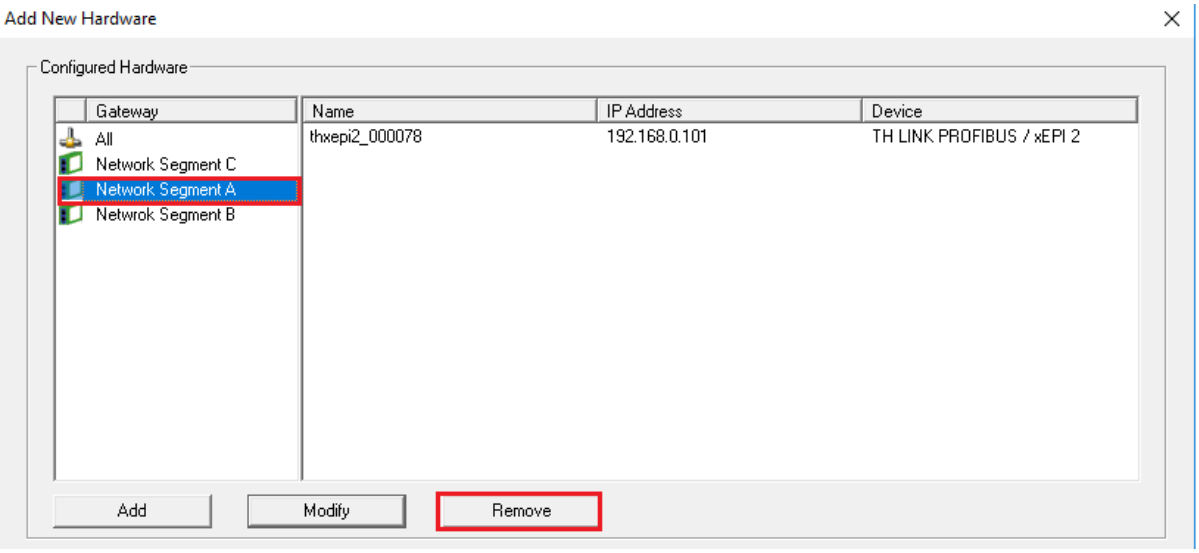
If you modify a gateway by removing a device that is part of a redundancy pair, the redundancy partnership is also removed. The line name of the remaining device of the former redundancy pair still displays. See the section Creating redundancy 22 for more details.

## 3.3 Deleting a gateway from a network

1. Open the **Hardware Configuration Tool**.

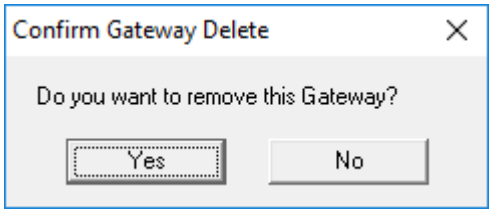
2. Click **[Hardware]**.
   The **Add New Hardware** window opens.

3. Select a network segment in the Gateway column of the **Configured Hardware** area.




4. Click **[Remove]**.
   The network segment is deleted from the Gateway column.

5. Click **[Yes]** in the Confirm Gateway Delete window.

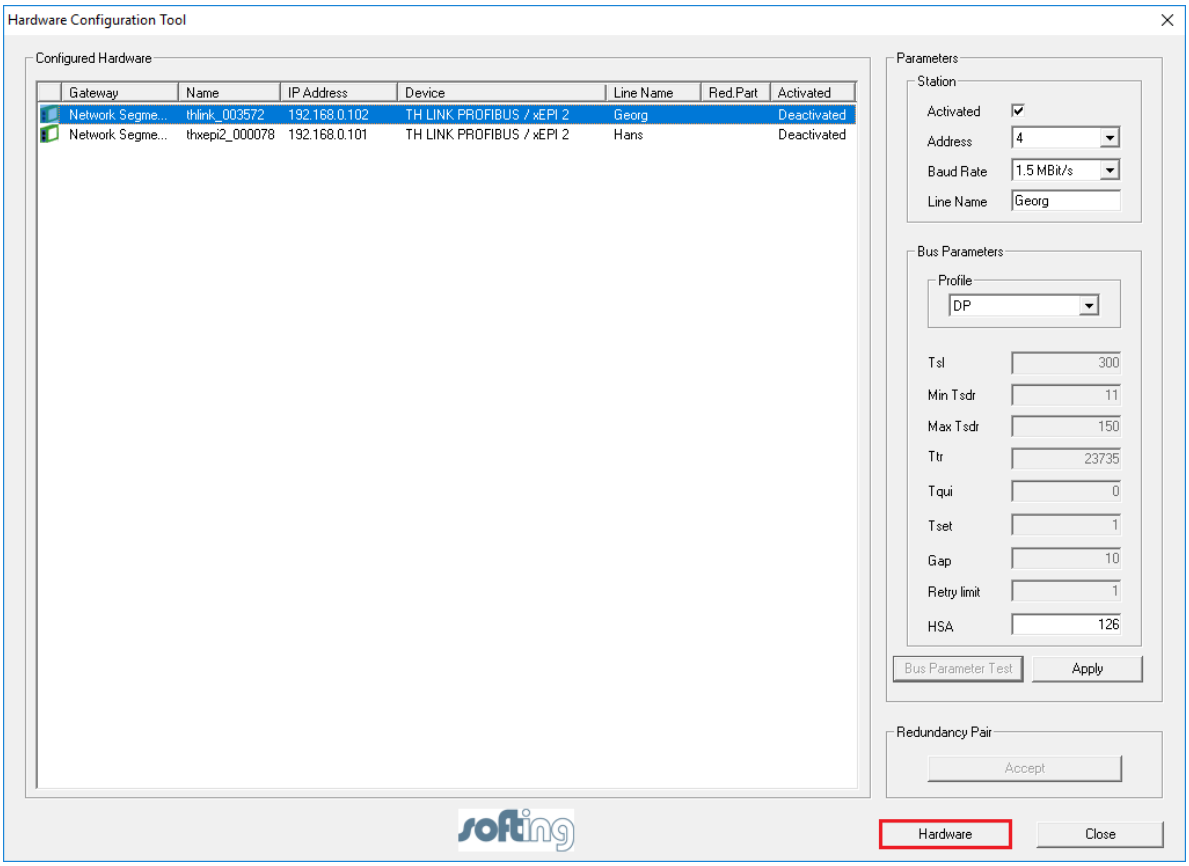



All gateways that had been assigned to the network segment you just deleted and moved to the **Unconfigured Hardware** area below.

## 3.4 Setting gateway parameters

1. Open the **Hardware Configuration Tool**.

2. Select a gateway to display its current parameters.



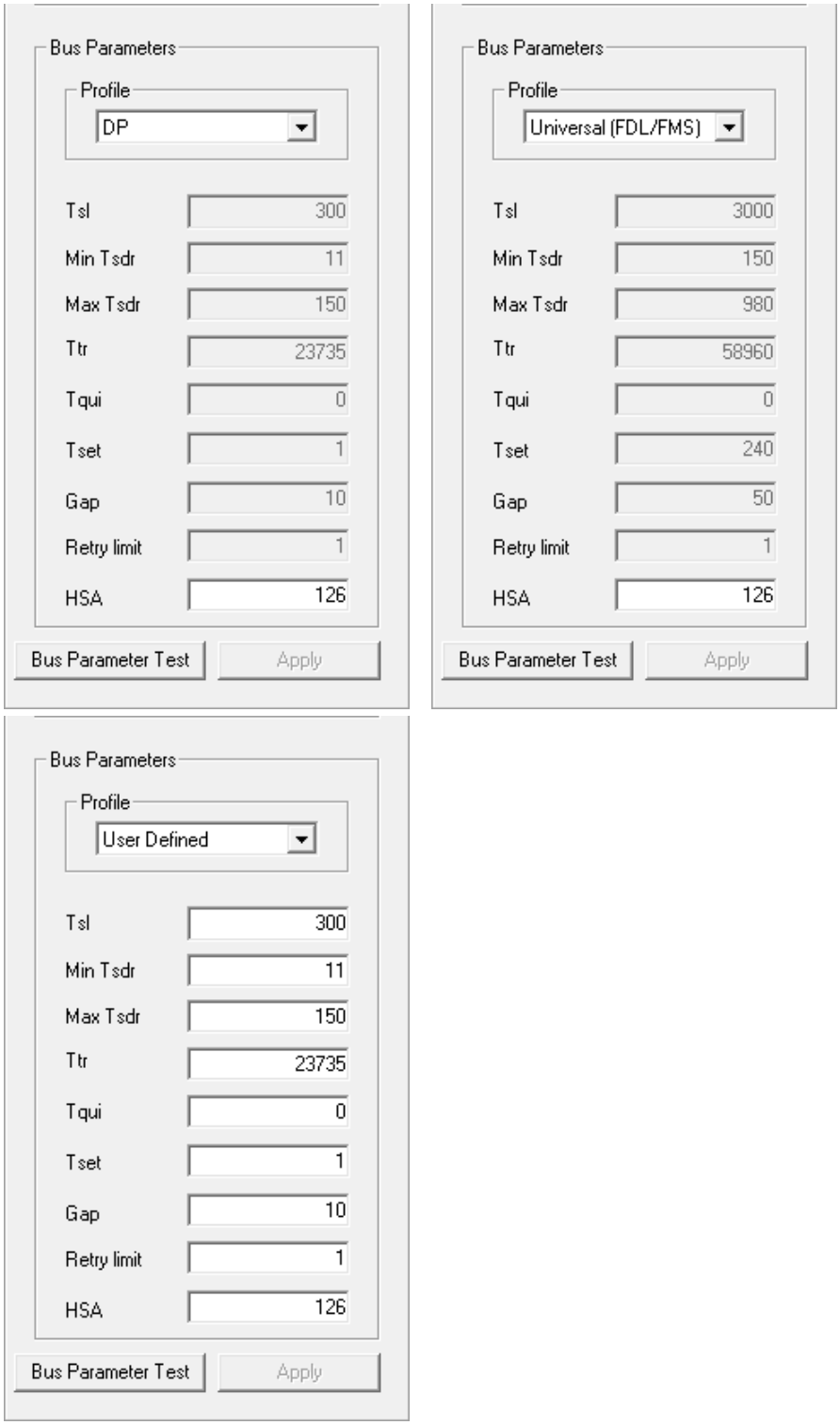

3. Modify the station parameters and bus parameters on the right side of the window.

4. Select one of the three bus parameter profiles.
   See Chapter Terms and Abbreviations 31 for the meaning of the bus parameter.

   - **DP Profile**
     In this profile you can exclusively modify the HSA value.

   - **Universal Profile (FDL/FMS)**
     In this profile also, only the HSA value can be changed. Baud rates 45.45 kBit/s, 3 MBit/s, 6 MBit/s, and 12 MBit/s are not supported in this profile.

   - **User-Defined Profile**
     In this profile you can modify further bus parameters. Click the respective description field and enter your settings




**Note**

We strongly recommend that you use one of these standard profiles for all gateways in your PROFIBUS network. Manual bus parameter setting requires thorough PROFIBUS knowledge.

5. Click **[Bus Parameter Test]** to validate the parameters.
   If all settings are correct, the message **All profibus parameters are correct** appears.

6. Click **[Ok]** to close the message window.

7. Tick the checkbox **Activated** at the top right.

| Status | Description |
|---|---|
| Activated | Activated status means that the master is completely configured and parameterized. This master can be used in AMS Device Manager. |
| Deactivated | Deactivated status means that the master is completely configured and needs to be parameterized and activated. However, this master cannot be used in AMS Device Manager. |
| Invalid | Invalid status means a master has been added manually by entering its host name, but the IP address cannot be identified by the host name. Masters in the Invalid state cannot be parameterized. |

**Note**

Only gateways with activated checkboxes are active bus stations. The bus parameters of  deactivated are saved and can be activated at a later time.

8. Click **[Apply]** to confirm your changes.

9. Click **[Close]** when you are done setting the parameter or keep this window open and continue with the next section describing how to create gateway redundancy 22 .
The new settings are adopted with the next start of AMS Device Manager.

## 3.5 Creating redundancy

**Note**

Redundancy can only be created with TH LINK PROFIBUS/xEPI 2 units.

To create a redundant system one TH LINK PROFIBUS/xEPI 2 unit has to be in the **primary line** and another TH LINK PROFIBUS/xEPI 2 unit in the **backup line** of your PROFIBUS network. See the product data sheet (download from product web page) for a list of supported hardware.

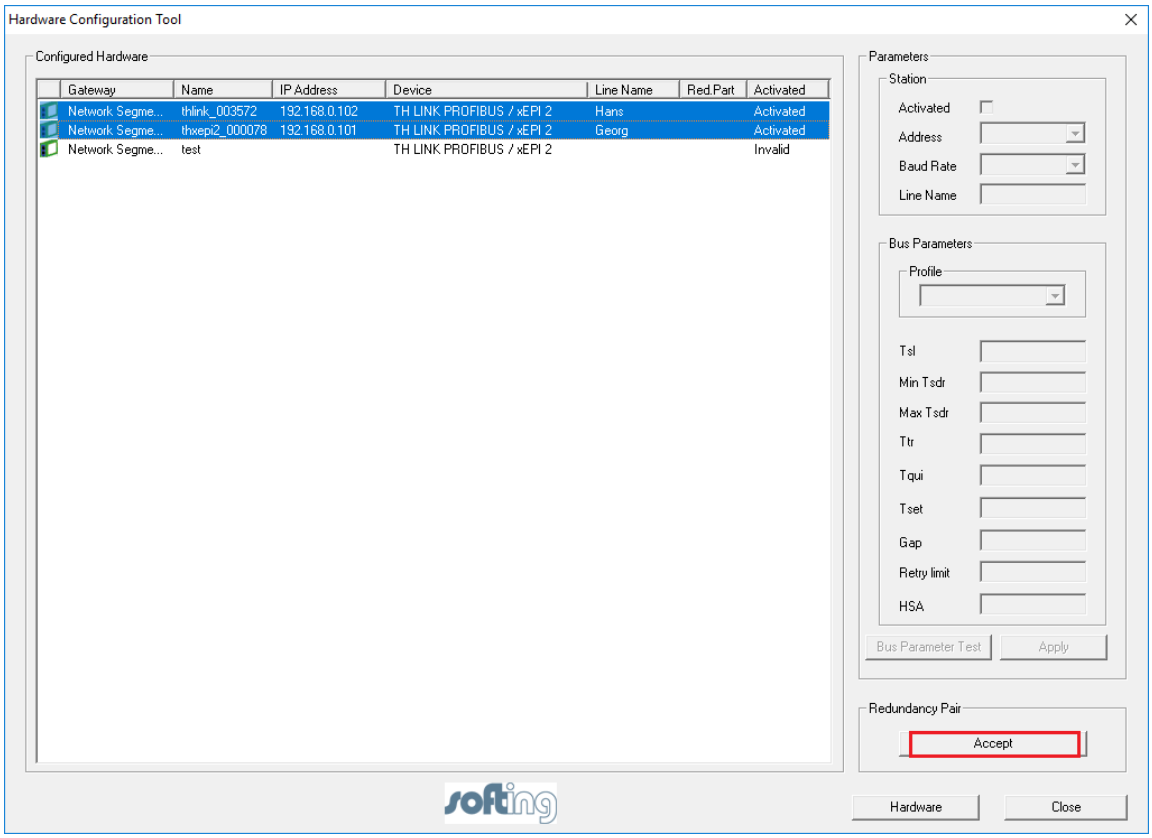
### 3.5.1 Creating a redundancy pair

1. Configure the TH LINK PROFIBUS/xEPI 2 gateways as described at the start 9 of this Chapter.

2. Select the first TH LINK PROFIBUS/xEPI 2 gateway, hold down the Ctrl key and select the second TH LINK PROFIBUS/xEPI 2 gateway.

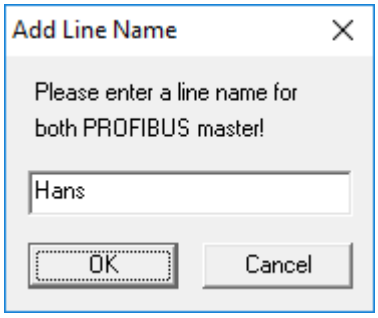
**Note**

The order in which you select the two gateways decides which gateway will be the .




3. Click **[Accept]** to create a redundancy pair.
   The window **Add Line Name** opens.

4. Enter a **Line Name** for both PROFIBUS masters and click **[Ok]**.




**Note**

The entered **Line Name** must be **unique**. If the entered Line Name already exists, the OK button is disabled.

5. Click **[OK]**.
   The first selected TH LINK PROFIBUS/xEPI 2 unit is displayed in the **Configured Hardware** list as the primary master and the second as backup.

**Hint**

A redundancy pair may consist of only two TH LINK PROFIBUS/xEPI 2 gateways. It is not recommended to create a redundancy pair of two PROFIBUS gateways from two network segments.

**Note**

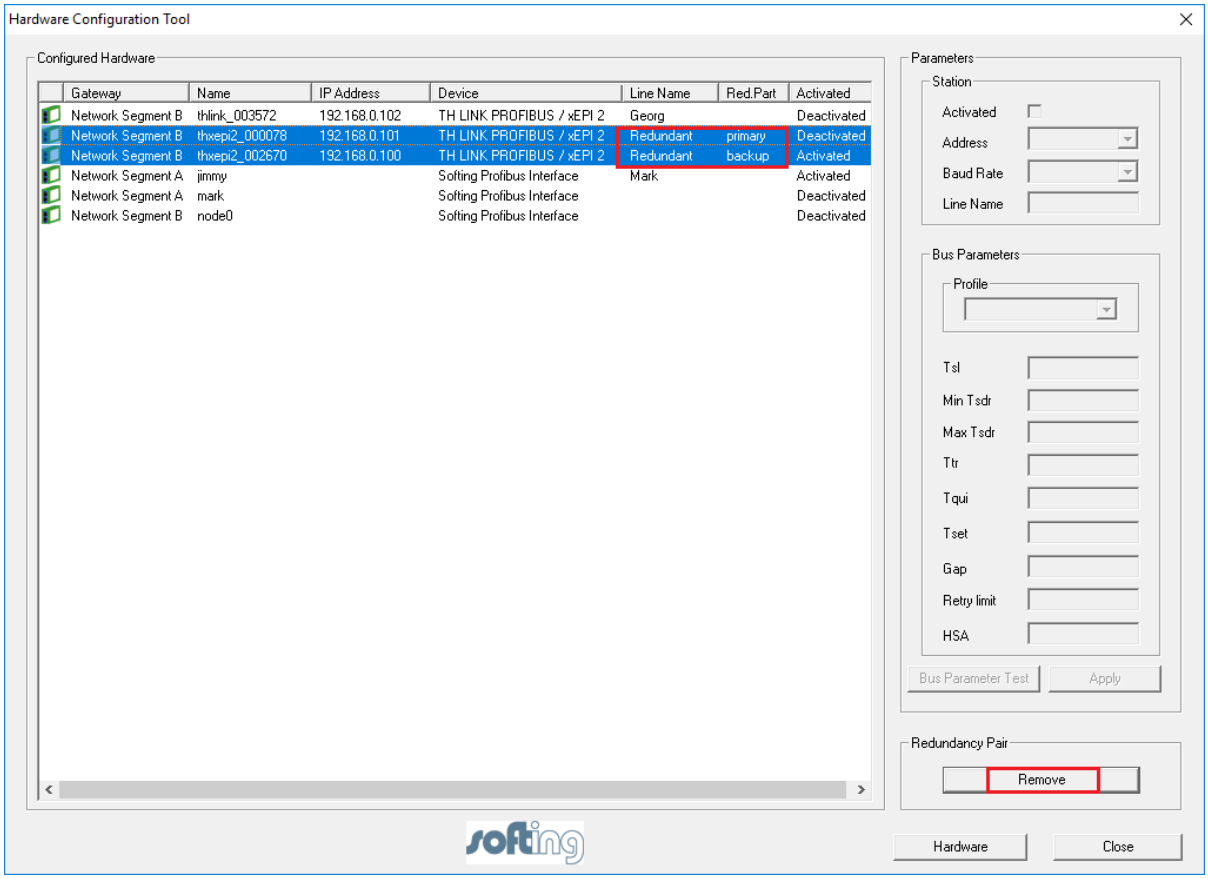
It is not possible to modify a redundancy pair. If you want to change a Line Name you must remove the redundancy and rebuild it with a new **Line Name**.

### 3.5.2 Deleting a redundancy pair

To delete a redundancy pair you select both PROFIBUS gateways of the redundancy pair.

1. Select the first TH LINK PROFIBUS/xEPI 2 unit, hold down the Ctrl key and select the second TH LINK PROFIBUS/xEPI 2 unit.

2. Click **[Remove]** to delete the redundancy partnership.

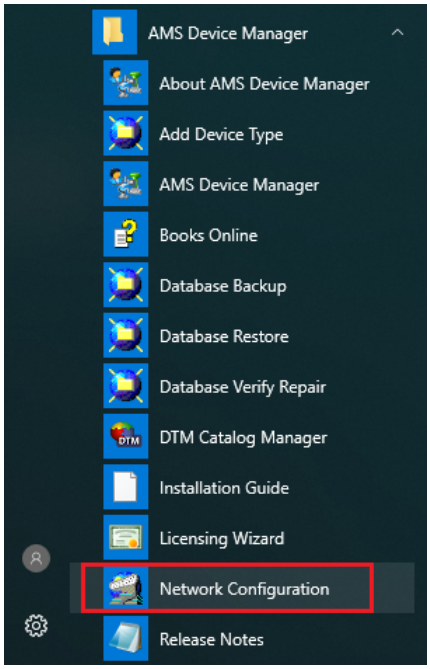


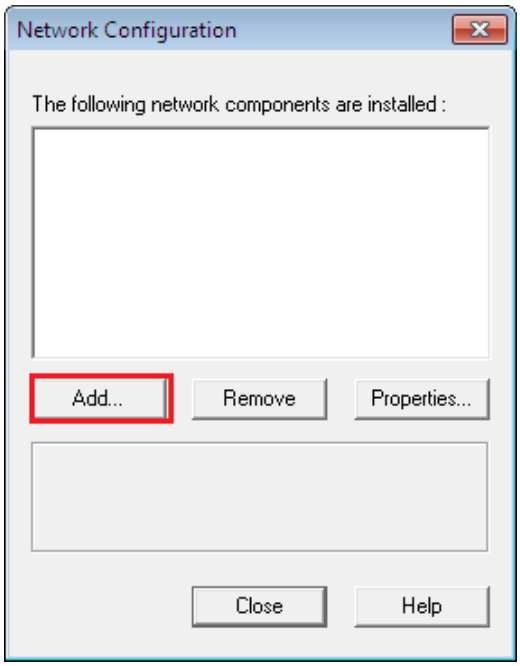

## 3.6 Configuring the network in AMS

**Note**

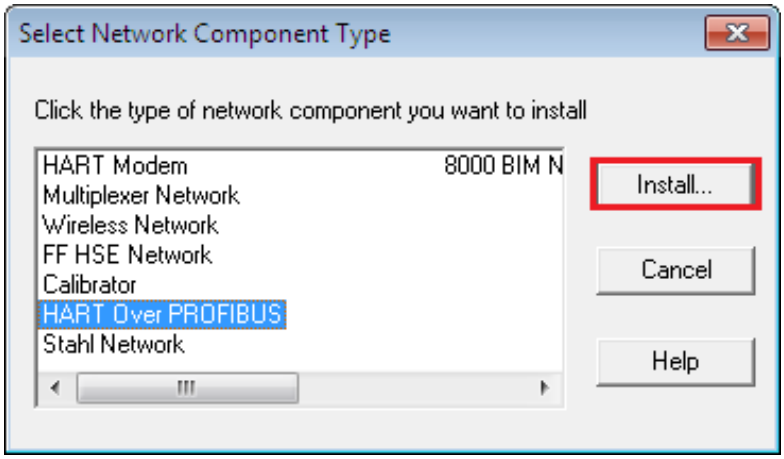
Running HART Over PROFIBUS communication with the AMS Device Manager requires a separate software license.

1. Open the Network Configuration tool of your AMS device manager and click **[Add]**.

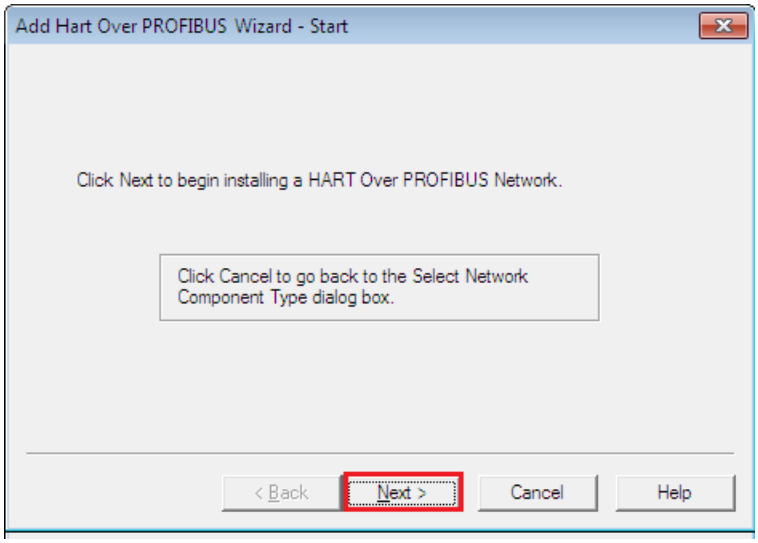


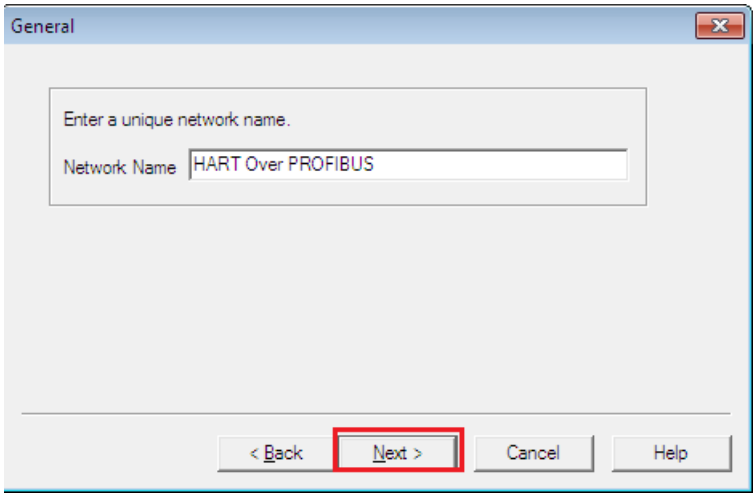

2. Select the **HART Over PROFIBUS** Network type and confirm with **[Install]**.



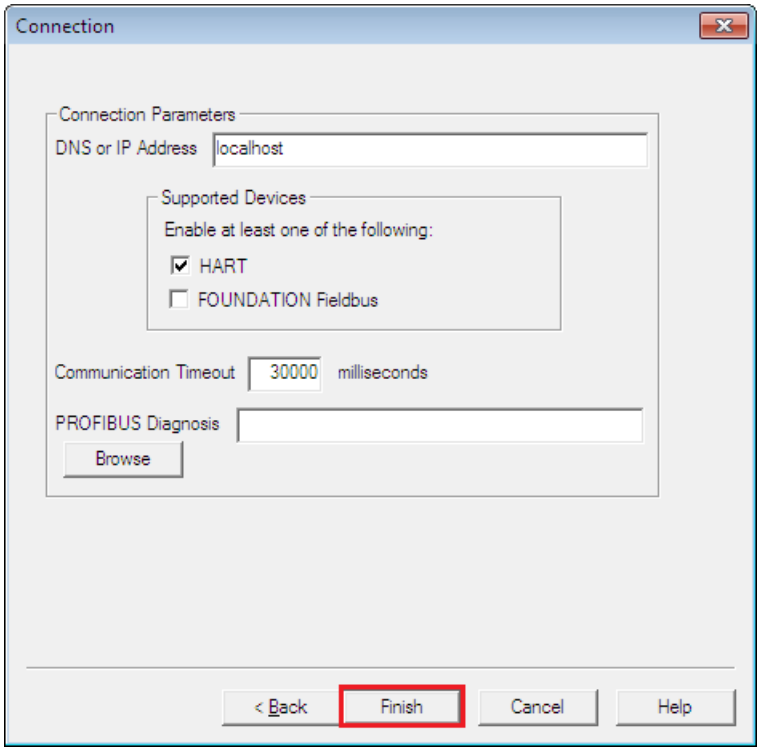

3. Click **[Next]** to install the HART Over PROFIBUS network.




4. Select a name for your network. This name is displayed in the AMS Device Manager.



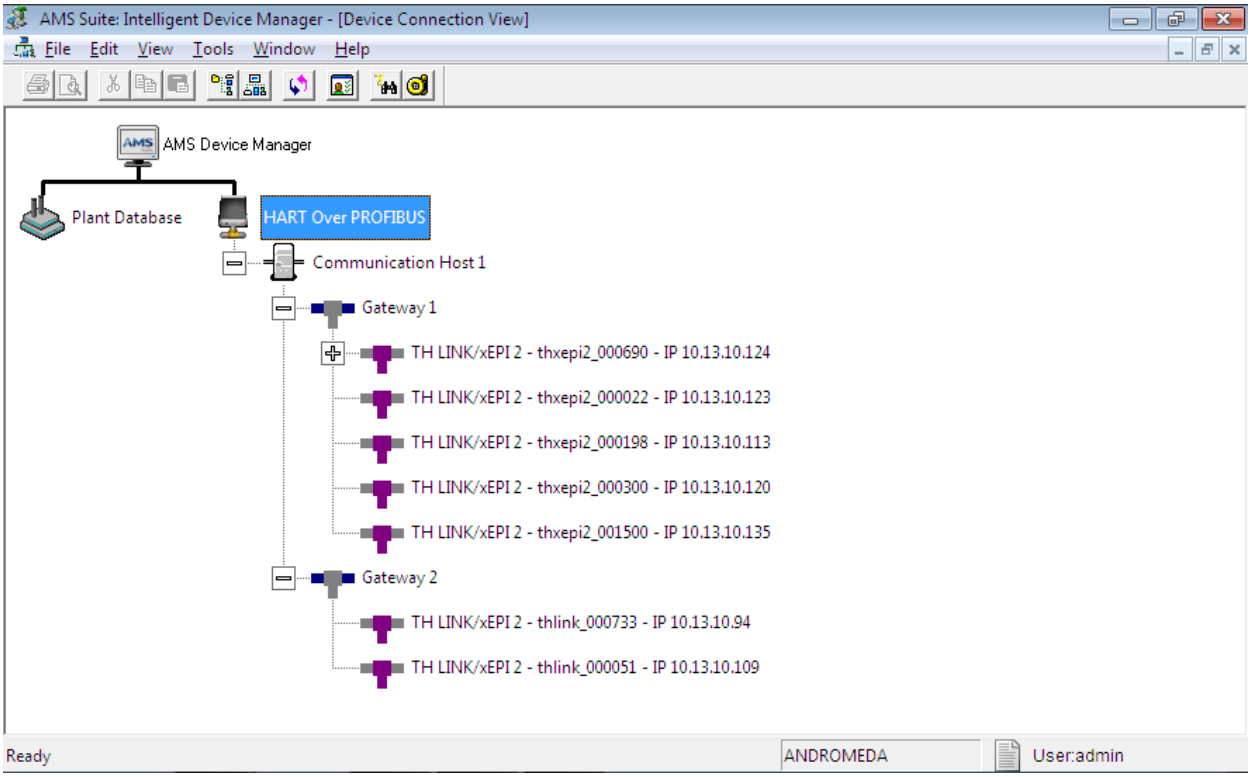

5. Enter the name of the PC system or “localhost“ in the DNS or IP Address field and deselect FOUNDATION Fieldbus.

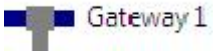
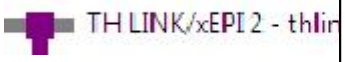



6. Click **[Finish]** to confirm your entry.
   The PROFIBUS DP gateway is now parameterized and will be integrated in the AMS Device Manager.

# 4 Displaying the network in AMS

The server component of all gateways runs on the local AMS Device Manager server with the name of the PC system or “localhost“.




| Status | Description |
|---|---|
|   | Network name from AMS Device Manager Network Configuration. |
|   | Is the computer where TH AMS Device Manager Communication Components has been installed. |
|   | Shows the gateway that was created in the Hardware Configuration Tool. |
|   | Master that has been assigned to a gateway in the Hardware Configuration Tool (in this case for a TH LINK/xEPI 2).<br><br>If the host name is not available, For the Softing PROFIBUS Interface the caption shows for example:<br><br>Softing PROFIBUS Interface - 1 - Symbolic Name eth |

# 5 FAQs

| Question | Answer |
|---|---|
| Why is the Configured Hardware window empty after starting the Hardware Configuration tool? All bus parameter fields are gray. | No hardware has been configured. Click Hardware and add the new hardware. Bus parameters are displayed only when a gateway master has been selected. |
| Why is there no hardware in the Unconfigured Hardware area after scanning? | No hardware units are available in the network, or they cannot be identified automatically. Hardware units can only be located automatically if the search process is not blocked by firewall settings or similar security settings. If the hardware units cannot be searched automatically, they have to be inserted by manual addition and IP address entry. |
| How many hardware units can I assign to one gateway? | Up to 12 hardware units can be assigned to one gateway. |
| Why are no masters listed in the Unconfigured Hardware area after starting the Hardware Configuration tool? | Only configured gateway masters are saved when terminating the program. Unconfigured hardware is no longer displayed after program restart. It has to be added again. |
| Why is a gateway master listed as Invalid after manually adding the TH LINK PROFIBUS/xEPI 2 unit via host name? | The Invalid status is assigned to a master if it has been added manually by entering its host name, but the IP address cannot be identified by the host name. This could be caused by the fact that there is no active DNS server, or if the TH LINK PROFIBUS/xEPI 2 with statically set IP address has not been logged on at the DNS server. In this case you need to add your TH LINK PROFIBUS/xEPI 2 via IP address. |
| Why does AMS Device Manager show an empty network after a Rebuild Hierarchy? | Ensure that your master has been parameterized and activated correctly depending on the cyclic master. If not, it will not be registered in the PROFIBUS network, or PROFIBUS failures might occur. |
| Why does AMS Device Manager show a gateway without segments? | In the Hardware Configuration tool there is a gateway configured, but all assigned masters are deactivated or invalid. |
| Why does the start-up of AMS Device Manager take so long? | HART Over PROFIBUS is designed with a 17-second time-out to build up the connection to the hardware units. If one of these units cannot be reached via TCP/IP, this time-out situation occurs. Please ensure that all inaccessible units are deactivated in the Hardware Configuration tool. |
| Why does the hierarchy in AMS Device Manager not show a special Remote I/O? | This can happen if there is no class 1 master in the PROFIBUS network of the missing Remote I/O. In this case, it is possible to increase the time before HART Over PROFIBUS begins to communicate with the devices. During this additional time, the Remote I/O has the chance to connect to the PROFIBUS network. In the AMSTHInterface folder of the installation directory, you can access the AMSTHInterface.ini file. Open this file and search for WaitAfterMasterStart and assign the time in seconds that should elapse before communication (default value = 0), e.g., “WaitAfterMasterStart = 5” the wait time is five seconds. |

| Question | Answer |
| --- | --- |
| Why are process values highlighted in black in the AMS Device Manager process windows? | 1. The HART device is not accessible. Please check physical connections to the HART device.<br>2. Some devices are not capable of responding to several HART requests concurrently. HART requests are processed consecutively which requires more time. Increase the Communication Timeout in AMS Device Manager Network Configuration. A time-out period of 30000 milliseconds per open process window is recommended. |

# 6 Terms and Abbreviations

| Terms / Abbreviations | Meaning |
|---|---|
| DP | Decentralized Periphery |
| DNS | Domain Name Service |
| FDL | Fieldbus Data Link |
| FMS | Fieldbus Message Specification<br>FMS can be operated together with DP. |
| Gap | GAP Update Factor – Specifies after how many bus rotations the master searches for new active stations in order to include them in the bus and be able to pass the token on to that station. The GAP area is between the own station address and the next one (exception: the area of the highest station address up to address 127 does not belong to the GAP area). |
| HSA | Highest Station Address – States the highest valid station address in the PROFIBUS network. |
| Max Tsdr | Max Station Delay Responder –<br>The time in which the slave must respond to are request from the master. The value range is between 60 and 800 Tbit depending on transfer rate. |
| Min Tsdr | Min Station Delay Responder –<br>The time that the slave must wait before it may respond to a request from the master. In the standard 11 Tbit is defined. |
| Retry limit | Maximum Number of Call Retries – Determines the maximum number of telegram retries carried out to reach a station. |
| Tqui | Quiet Time for Modulator – This is the time a station needs for switching from sending to receiving after telegram end. |
| Ttr | Target Rotation Time – This time is the maximum time available for one Token rotation. In this time span, all DP masters receive the Token once. |
| Tset | Setup Time – This is the time that may pass between receiving a data telegram and the respective reaction within a station. |
| Tsl | Slot Time –<br>This time determines the maximum time the sender waits for a response from the addressed station |

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