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User Guide

MOBILINKdtm

Communication Device Type Manager

MOBILINKdtm

Field device | Field device | Field device | Field device

data**FLOW**®

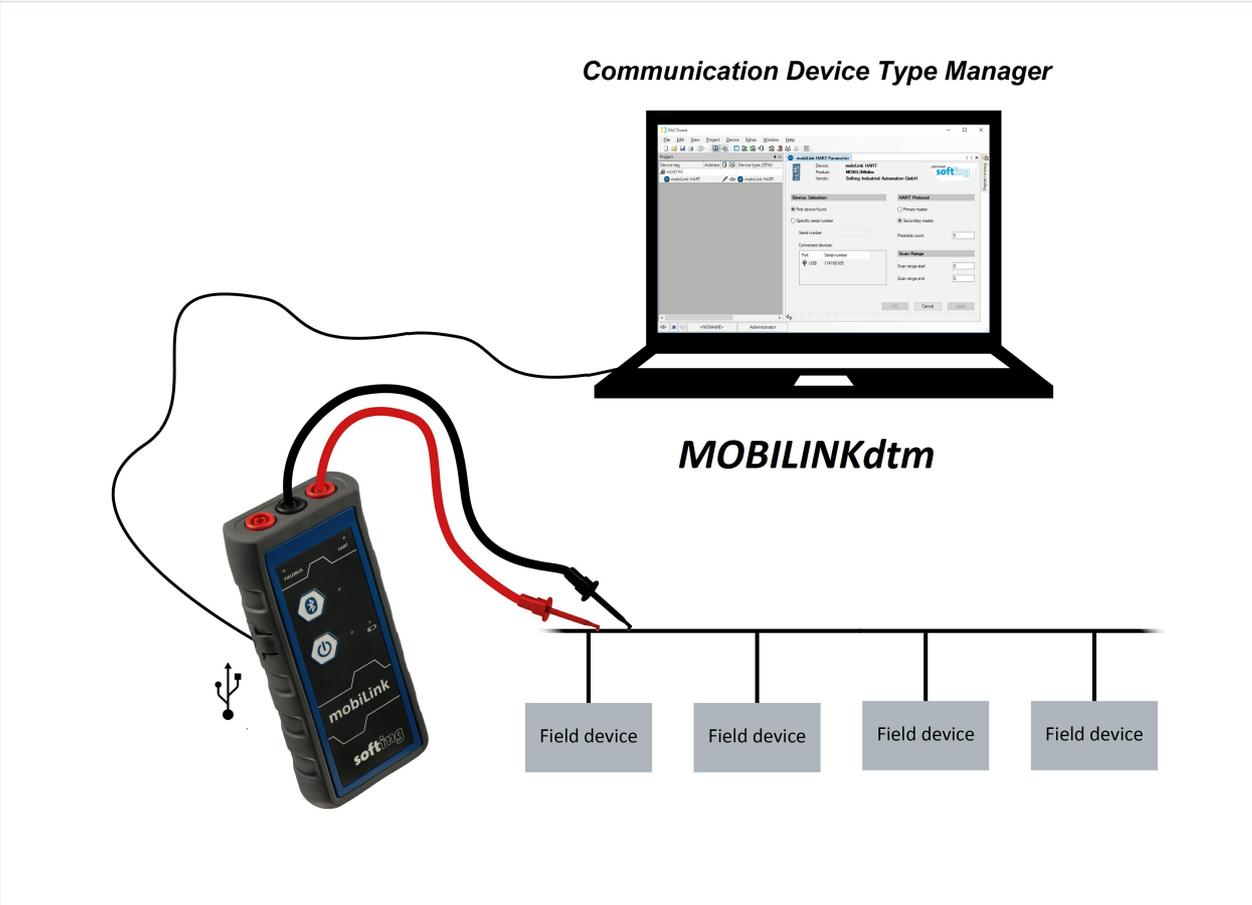## Disclaimer of liability

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1 Introduction

1.1 Software package contents

The MOBILINKdtm is a device type manager developed for the mobile communication device mobiLink. Using the Device Type Manager MOBILINKdtm FDT frame applications under Windows 7, Windows 8.1 and Windows 10 have read and write access to HART devices, Foundation Fieldbus (FF) devices and PROFIBUS PA devices connected to a mobiLink.

The MOBILINKdtm software package consists of the MOBILINKdtm tool and this manual.

The DTM corresponds to the FDT-Joint Interest Group Guideline FDT Interface Specification Version 1.2 of May 2001 including the corresponding addendum.

1.2 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`
File names and directories are written in italic	Device description files are located in *C:\<product 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.

2   About MOBILINKdtm

The MOBILINKdtm tool is used to configure, diagnose and maintain field devices that are connected to the mobile mobiLink communication device from Softing. This chapter describes the application scenarios and functionality of this tool including the relevant Field Device Tool (FDT), HART, Foundation Fieldbus and PROFIBUS PA technologies.

2.1   Software and functionality

MOBILINKdtm takes over the entire protocol and device-specific management for communicating with HART devices, FF devices or PROFIBUS PA devices via the corresponding Softing mobiLink interface.

> **Note**
>
> In order for a mobiLink to have unrestricted communication with FF devices and PROFIBUS PA devices, you must first activate the optionally available FF license or PROFIBUS PA. For more information see the mobiLink **User Guide**.

Using the MOBILINKdtm you can parameterize and diagnose any number of HART, FF and PROFIBUS PA devices. Please note that suitable DeviceDTMs are required to parameterize the devices. These DeviceDTMs are typically provided by the device manufacturer.

The MOBILINKdtm offers the following functionality:

- Access to HART, FF and PROFIBUS PA devices via the USB or Bluetooth interface of mobiLink.

- Selection and configuration of the of the mobiLink in an intuitive user interface.

- Setting the device addresses that are used by the device DTMs to establish a connection.

- Setting the polling address and the current mode in a HART device.

- Setting the slave address in the PROFIBUS PA device

- Setting the nodes address and the PD tag in an FF device.

- Display of the basic properties of the connected HART, FF and PROFIBUS PA devices.

- Updating the mobiLink firmware.

- Internationalization (UTF8) and localization for English and German.

- Control of access to critical functions according to the FDT user role concept.

- Logging of audit trail events and status changes and changes in the mobiLink configuration (must be supported by the FDT frame application).

- Documentation of the mobiLink configuration.

- Monitoring of the communication with a mobiLink device.

- Automatic restoring of the communication with the mobiLink device after communication failure.

- Display of mobiLink battery voltage.

- Activation and deactivation of an increased battery lifetime of the mobiLink device.

2.2   Field Device Tool

The Field Device Tool (FDT) meets all the requirements regarding an integrated and efficient device configuration. This fieldbus-independent concept, as well as the fact that the extended device functions are represented in DTMs as active software components, opens up a multitude of new possibilities.

FDT – Field Device Tool

FDT simplifies and saves time in the commissioning and maintenance of increasingly complex installations which consist of a growing number of field devices from different manufacturers. FDT is a standardized software interface for the configuration, parameterization and handling of intelligent field devices, regardless of the manufacturer and communication protocol. FDT is based on the existing fieldbus technologies and extends them by a fieldbus-independent software interface between the devices and the engineering system. The most diverse automation components from various manufacturers can thus be configured, parameterized and managed using only one engineering system, independently of the protocols or fieldbuses over which the devices communicate. To make the devices easy to commission and handle, FDT defines a wide variety of graphical options for describing and operating the devices. FDT offers different user roles and defines specific access rights, e.g. for maintenance, commissioning, monitoring, etc.

DTM – Device Type Manager

The central component of the FDT concept is the Device Type Manager (DTM), a software module which the manufacturer supplies together with a device. Like a printer driver for a manufacturer-specific printer, the "FDT device driver"—the DTM—comprises all device-specific data, functions and graphical controls. Over the defined FDT interfaces, an engineering system has uniform access to the device-specific properties and can use their information and functionality for parameterization or fault diagnostics. A DTM itself is not an executable. It can only be run in an application that implements an FDT container. This application is referred to as the FDT frame application. DTMs are implemented as ActiveX components (DLLs) and loaded into an FDT frame application.

New field devices can be added anytime as long as the relevant DTM can be newly loaded without problems. The possibilities of the DTMs as well as their functions, features and parameters are described in XML format.

There are three types of DTMs, according to the different device types:

- **DeviceDTM**

The DeviceDTM is a DTM that represents a specific field device. It contains all the information on configuration, diagnostics and documentation that is distinctive for the device. To make all the desired functions of the device available in the engineering system, the DTM uses the communication services of a CommDTM or GatewayDTM. A DeviceDTM is often simply called a DTM. This should be avoided because the term DTM is a generic term for all kinds of DTMs.

- **CommDTM**

The CommDTM (communication DTM) is a DTM that represents a communication device, such as a PC interface board, which acts as a master on a fieldbus network. The CommDTM encapsulates all communication-specific aspects, and manages and configures the communication module (e.g. PC interface board).

To configure and test a device, the relevant DeviceDTM transmits communication requests as XML documents via a COM interface to a communication channel of the CommDTM. A communication channel represents the fieldbus access within a communication device. The communication device may provide one or more communication channels.

- **GatewayDTM**

A GatewayDTM is a DTM that represents a physical gateway between two fieldbus segments. The fieldbus segments typically differ in the protocol (e.g. HART/PROFIBUS) and/or the physical properties. A GatewayDTM contains functionality that is specific to the bridged communication protocols and to the manufacturer-dependent gateway properties.

To configure and test a field device on the target segment of the gateway (the segment behind a gateway from the point of view of the fieldbus access), the relevant DeviceDTM transmits communication requests as XML documents via a COM interface to a communication channel of the GatewayDTM. A communication channel represents a path between fieldbus segments within a physical gateway.

The gateway may provide one or more communication channels. The GatewayDTM transforms the communication requests that are specific to the communication protocol used by the device into communication requests according to the fieldbus access. It then passes them on to the CommDTM. Communication across segment boundaries by using a GatewayDTM is referred to as *nested communication*.
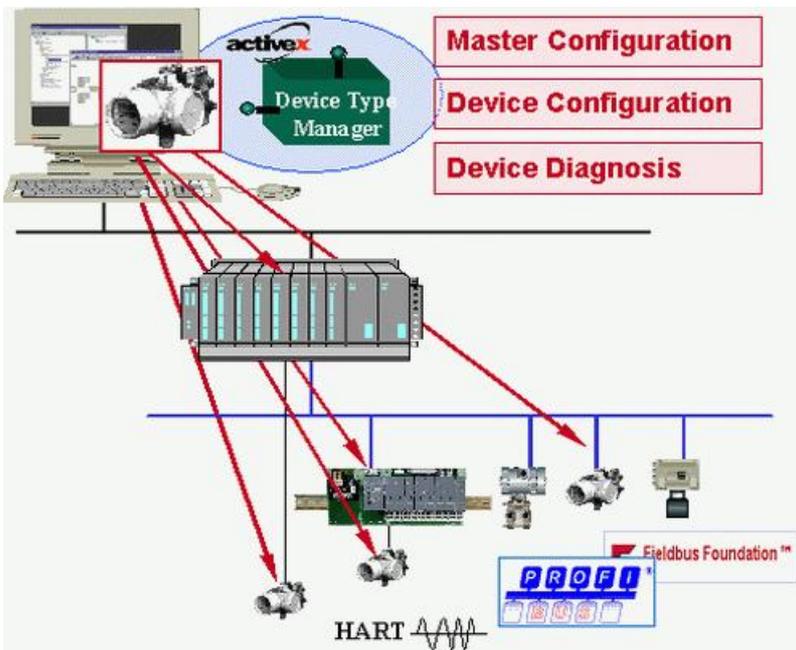
Fieldbus-independent FDT concept

FDT Container

An FDT container is the "connector" in an engineering system or configuration tool that is provided with an FDT interface. DTMs for various devices are loaded and "embedded" in the FDT container to execute their functionality for parameterizing or managing the devices. When a DTM is loaded into the FDT container, this process is referred to as creating an instance of the DTM in the FDT container. DTMs can be loaded into the FDT container several times; this means that multiple instances of the DTMs can be created and the functionality of a DTM can thus be used several times simultaneously. By creating multiple instances of a DTM, multiple devices of the same type can be managed in parallel.

FDT Frame Application

An FDT frame application is an application, e.g. an engineering system or configuration tool, which is provided with an FDT container.

FDT frame applications import information on devices by accessing the relevant DTMs via their device-, manufacturer- and fieldbus-independent interfaces.

The FDT frame application is the only application within the FDT concept which is implemented as an executable. An FDT frame application is responsible for loading and unloading the DTMs, managing and saving all the data in a project database, managing a device catalog, generating a project documentation, supervising user and access rights, and displaying all user interfaces of the DTMs.

Since the FDT frame applications of the different manufacturers differ in their orientation, priorities and user interface, the use of the DTMs with the offered functionality may also vary from frame to frame.

2.3   HART

HART (Highway Addressable Remote Transducer) is a two-way communication protocol designed for field devices in process automation using a 4-20mA analog signal. It can be used to parameterise, diagnose and poll process values.

The HART protocol implements OSI layers 1 (physical layer), 2 (data link layer) und 7 (application layer).

The HART Physical Layer defines the electrical connection between HART devices, typically on twisted copper cables which transmit the 4-20mA analog signal of the device. For transmitting the HART bit stream a high frequency signal is superimposed on the analog signal is using the Continuous Phase Frequency Shift Keying (CPFSK) principle where the bit values of 0 and 1 are represented by different frequencies without causing phase jumps during frequency switching. The data transmission rate is 1200 bps. To synchronize transmitter and receiver preambles are added to the Physical Layer.

The Data Link Layer deals mostly with the structure of the data packets, device addressing, error correction and bus access control. Insofar, HART is a binary byte-oriented master-slave protocol on which bus access is organized by the token-passing method. Device addressing is done either by using a polling address that can be individually assigned to a slave (field device) or by a specific bit address which is a unique identifier permanently set by the device manufacturer. With HART you can have to masters.

The primary master is normally the control system master while the secondary master is used only when required, typically by a temporarily connected hand-held communicator such as the mobiLink device. The token-passing protocol communicates between both masters to control the bus access. During normal operation the slaves do not have an active role. They may, however, be used in what is called burst mode communication, a method where the slaves are instructed to continuous burst (broadcast) messages, thereby taking part in the token-passing communication.

The Application Layer handles through a serious of HART commands the generation (master) and processing (slave) of data packets. The HART commands are divided into three categories: The *Universal Commands* which must be supported by all slaves. The *Common Practice Commands* which even optional device manufacturers are encouraged to prioritize them over Device-Specific Commands. The *Device-Specific Commands* which include only device functions implemented by specific manufacturers.

2.4 Foundation Fieldbus

Foundation Fieldbus (FF) is a digital LAN communication system of the FieldComm Group for fast time-critical applications and complex communication tasks. It can be implemented as FF H1 protocol and FF HSE protocol. The MOBILINKdtm supports the H1 protocol.

The FF H1 protocol is divided into three layers and is mapped to the OSI communication model as follows:

- OSI layer 1 = Physical Layer

- OSI layer 2 = Data Link Layer (DLL)

- OSI layer 7 = Fieldbus Message Layer (FMS + FAS)

The OSI layers 3 to 6 have no equivalent in FF H1.

The physical layer uses synchronous bit-serial Manchester coding. This coding combines clock and data to a serial signal with a transmission rate of 31.25 Kbps. Another task of the physical layer is to add or remove preambles and start/end delimiters for synchronization.

In the data link layer, data transmission on the fieldbus is controlled. In particular, the Data Link Layer controls fieldbus access via a redundantly designed central scheduler, the so-called Link Active Scheduler (LAS). The LAS has the following main tasks:

- Control of the planned data exchange (control loop schedule)

- Control of unplanned data exchange via token passing

- Managing a Live List

The Fieldbus Message Layer is divided into the Fieldbus Message Specification (FMS) and the Fieldbus Access Sublayer (FAS). FAS provides an abstract connection model called Virtual Communication Relationships (VCRs). There are three types of VCRs:
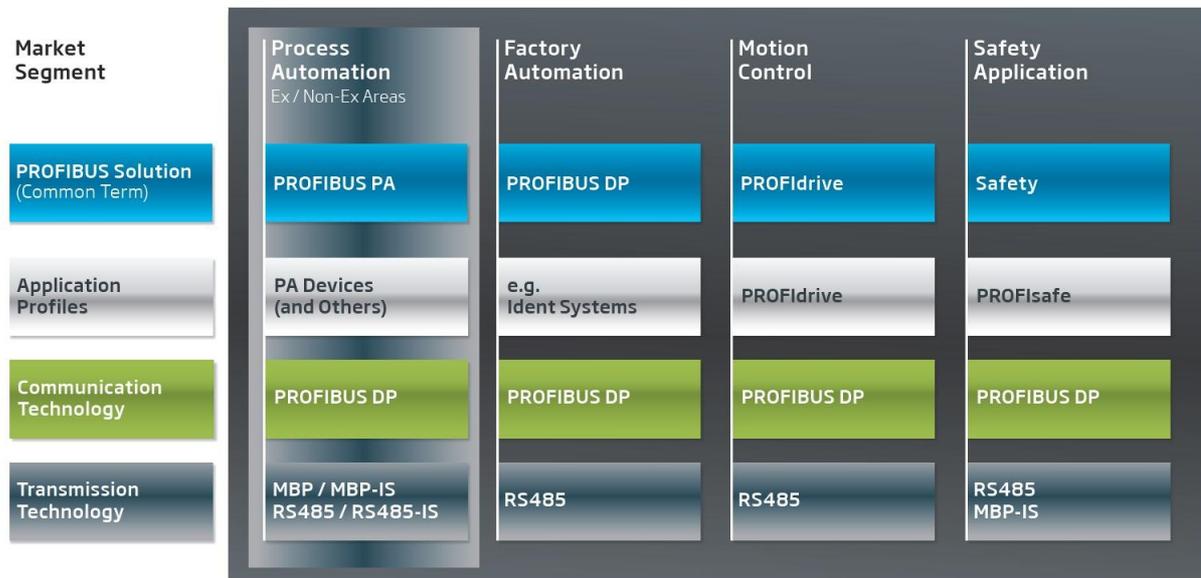
- Client/Server VCRs represent a connection between two subscribers for unplanned data exchange.

- Report Distribution VCRs represent a connection between a sender and potentially multiple receivers for unplanned data exchange. Field devices typically use this type of VCR to send alarms.

- Publisher/Subscriber VCRs represent a connection between a sender and potentially multiple recipients. This type of VCR is mainly used in the control loop for the planned cyclic data exchange between function blocks. However, recipients can also initiate an unplanned data exchange outside the series.

FMS is based on FAS which it extends with the following:

- Logical division of the device into so-called virtual field devices (VFD). A VFD is the container for one or more functional areas, such as network management, system management or function block processing. Network management and system management are combined in the so-called MIB VFD. The function block processing is located in a so-called FBAP VFD, of which there can potentially be several.

- An object model and its structural description. The structural description is contained in the Object Dictionary (OD) for short.

- A message model that provides access to the data contained in the object model and the structural description.

2.5 PROFIBUS PA

PROFIBUS (PROcess FIeld BUS) is a world leading fieldbus communication standard in automation technology. It is designed for digital data exchange within a network using a single bus cable and achieves a high data transmission reliability. Based on different related application profiles, it provides solutions for a wide range of application areas including manufacturing and process automation (see figure below).

Market Segment	Process Automation Ex / Non-Ex Areas	Factory Automation	Motion Control	Safety Application
PROFIBUS Solution (Common Term)	PROFIBUS PA	PROFIBUS DP	PROFIdrive	Safety
Application Profiles	PA Devices (and Others)	e.g. Ident Systems	PROFIdrive	PROFIsafe
Communication Technology	PROFIBUS DP	PROFIBUS DP	PROFIBUS DP	PROFIBUS DP
Transmission Technology	MBP / MBP-IS RS485 / RS485-IS	RS485	RS485	RS485 MBP-IS

The capabilities of individual PROFIBUS field devices are described by the General Station Description (GSD) files, supplemented by the Electronic Device Description (EDD) files. The GSD file contains the key data of an individual PROFIBUS slave, information about its communication capabilities and, e.g. diagnostic values. It supplies all information necessary for the cyclic exchange of measured values and calculated variables between the field device and the PROFIBUS master, and supports the configuration of the PROFIBUS network. The EDD file provides additional information describing application-specific functions and the parameters of complex field devices. It comprises a description of acyclically communicated device capabilities, including graphics-based options, and device information such as order data, materials, maintenance instructions, etc.

In 1996, the first PROFIBUS Process Automation (PA) application profile was released (the most frequently used version is 3.02, released in April 2009). It uses the PROFIBUS DP communication technology and especially addresses process automation needs. PROFIBUS PA is suitable for use in hazardous and potentially explosive areas (Ex zones 0 and 1). In addition to supporting the standard PROFIBUS DP transmission technology RS485, PROFIBUS PA can also perform the data transfer based on Manchester Coded Bus Powered (MBP), which is capable of supplying power to the individual field devices via the bus wire.

As a consequence, the wiring overhead can be reduced significantly. MBP communication requires only 8Bits for encoding a character. Thus, PROFIBUS PA meets the requirements for a much simpler and safer installation and boasts all the benefits of digital transmission right down to the field device. PROFIBUS PA also supports intrinsically safe applications providing explosion protection by limiting the power supplied by the bus or the installation components in the field. It is widely used in chemical, oil, and gas industry applications.

The MBP transmission technology basically supports a variety of different topologies, including linear and simple tree structures. In practice, the „Trunk & Spur Topology" (see figure below) has established itself as the de-facto standard, as it is particularly clear and well laid out. Thanks to the technically mature installation technologies available on the market, it also exhibits a high degree of robustness. The overall length of a segment may not exceed 1,900m, and the length of the spurs in intrinsically safe applications is limited to 30m and must be taken into account when calculating the overall length.
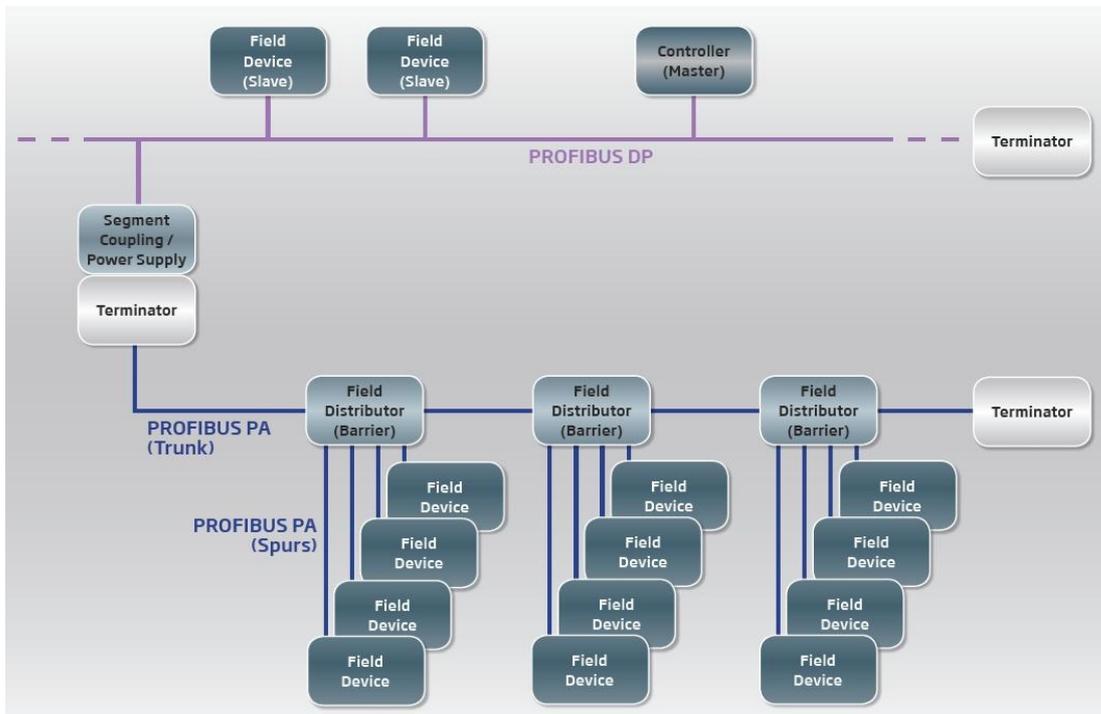
PROFIBUS PA is based on the PROFIBUS DP-V1 version. It uses the PROFIBUS DP protocol at a data transfer rate of 31.25Kbit/s and is connected to a PROFIBUS DP network using a coupling device. PROFIBUS DP then acts as a backbone network for transmitting process signals to the controller.

The PROFIBUS PA application profile defines functions and parameters for process control devices, such as transmitters, actuators, valves, and analyzers. These functions and parameters are used to adapt the devices to the respective application and process conditions. The functions are based on Function Blocks, and the associated parameters are classified as input, output, and internal parameters. The PROFIBUS PA application profile also determines how the various services of the PROFIBUS communication protocol are used. This means, for example, that process data that is exchanged cyclically is based on a standard format for all devices. In addition to the measured value and/or manipulated measurement value, this format also features a status supplying information about the quality of the value and possible limit violations. It thereby provides the foundation for harmonized applications, simplified engineering, device exchangeability and increased reliability by means of standardized diagnostic information.

Version V3.02 of the PROFIBUS PA application profile especially addresses user requests for comprehensive diagnostic and status information as well as the requirements of system-oriented asset management for field devices within process automation applications.

3   Installing MOBILINKdtm

Before you can work with your mobiLink, install the mobiLinkDTM. You find the software application for download from the mobiLink product site.

1. Download the latest version of the mobiLinkDTM.

2. Double-click the **setup.exe** file to start the installation.

3. Select the installation language.
    This is the language, in which once installed the software will be running.

4. Follow the install wizard instructions.

4 Using MOBILINKdtm

This chapter describes an FDT application following the basic work steps with MOBILINKdtm und DeviceDTMs.

> **Note**
>
> You will need an optionally available license to use the FF DTM or PROFIBUS PA functionalities. For information on activating the license, see the mobiLink **User Guide**.

4.1 Starting the FDT frame application

Like any DTM, MOBILINKdtm cannot be started as a standalone application. It must be loaded into an FDT frame application. The services provided by MOBILINKdtm for communication with HART, FF and PROFIBUS PA devices can be used by DeviceDTMs running in the same FDT frame application.

The FDT frame applications of different manufacturers prioritize different tasks and objectives. Therefore, the design of the user interface, the functionality provided and the operation may also vary significantly from frame application to frame application.

Start the frame application of your choice. With many frame applications you need to log on with your user name and password after initial startup. You may also have to create a new project before you can start adding DTMs.

The following sections refer to the PACTware™ frame application. If you are using a different frame application, consult the related user manual.

The figure below shows the PACTware user interface immediately after startup and with an open device catalog . Note that you have to update the device catalog after installing new DTMs to inform the frame application of the newly installed DTMs and the devices they support. This process is specific for the frame application you are using. Refer to the user manual of the frame application for the relevant information. If you are using PACTware, click **[Update device catalog]** in the device catalog.
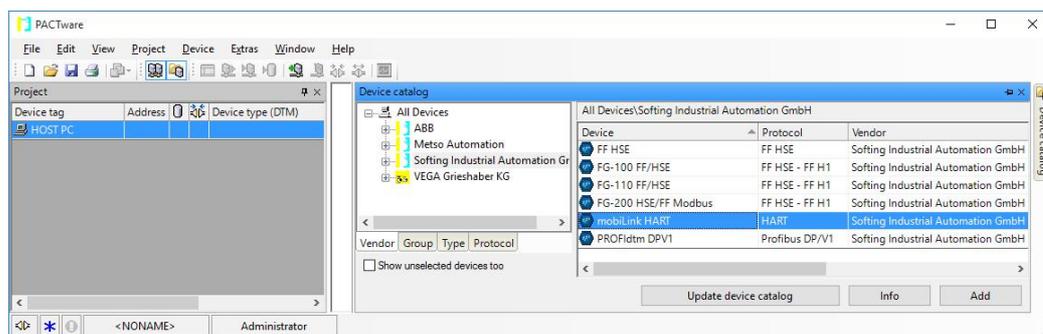

On the left you can see the project view, which currently contains only the root node of the project. Devices are typically represented in a hierarchical tree structure in the project view of a frame application. The common root of all devices is often a node that represents the overall project instead of a device. The communication devices are shown as child nodes of this root. The field devices are represented as the leaves of the tree. There may be gateways connected between a communication device and field devices.

On the right, you can see the devices that are supported by the installed DTMs. In the figure above, the manufacturer **Softing Industrial Automation GmbH** has been selected. Therefore, only devices supported by Softing DTMs are displayed. The list includes, in particular, the communication devices *mobiLink HART*, *mobiLink FF* and *mobiLink PA*, which represent the HART, FF and PA interfaces of mobiLink supported by MOBILINKdtm.

The next step <u>Adding a mobiLink</u> [16] describes how you add a mobiLink device to the project.
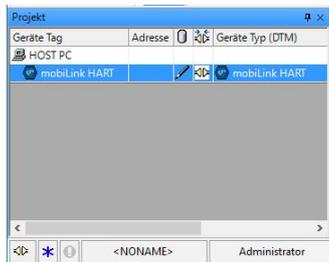
4.2 Adding a mobiLink

1. Right-click the root node in the project view.
   The context menu opens.

2. Select the menu item **Add device**.
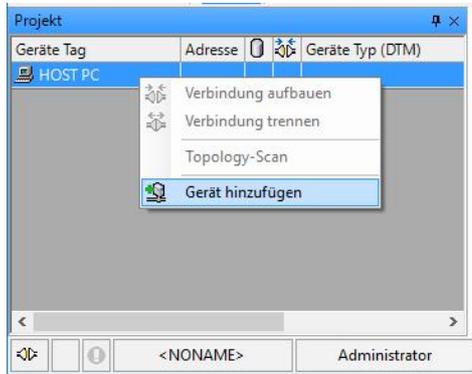
A dialog window opens in which you can choose the available communication devices.

3. Select **mobiLink HART**, **mobiLink FF or mobiLink PA** and click **[OK]**.
   The HART or FF communication device is added to the project view.
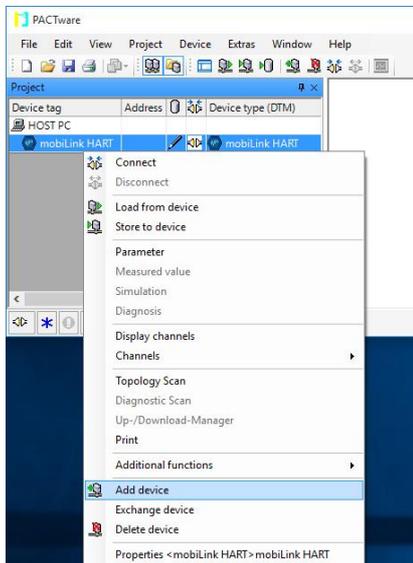

> **Note**
>
> MOBILINKdtm addresses by default the first mobiLink found and uses standard communication parameters. See Chapter Bus Configuration[25] for details on how to change the settings.

4.3   Adding field devices

1. Right-click the node **mobiLink HART, mobiLink FF** or **mobiLink PA** in the project view.
   The context menu opens.

2. Select the menu item **Add device**.

A dialog box opens in which you can choose the available HART, FF or PA devices.
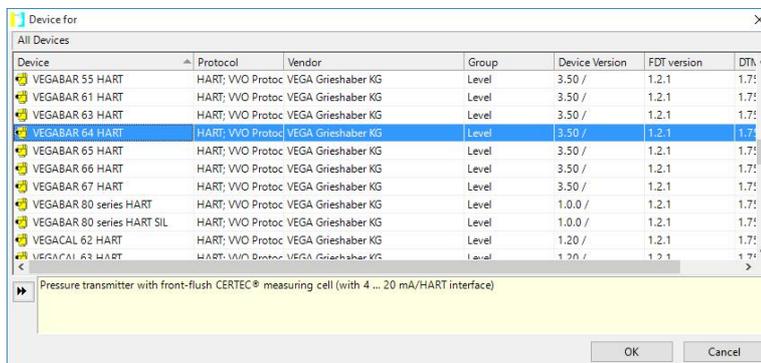
3. Select a **HART, FF** or **PA** device and confirm with **[OK]**.

   The selected device is added to the project view and a conncetion is made between the DeviceDTM
   and MOBILINKdtm. This will allow the DeviceDTM to use the MOBILINKdtm services. The connection of
   this device is displayed in the project view as a child to the mobiLink. If you are unsure which of the
   devices in the list represents the actual physical device, please contact the device manufacturer.

4.4   Setting deviceDTM address

For a DeviceDTM to connect with a HART, FF or PA device it must know the device address. In PACTware see in the column **Address** which address is currently set in the DeviceDTM.

1. Right-click the node **mobiLink HART**, **mobiLink FF** or **mobiLink PA** in the project view.

2. Navigate to **Additional functions → Edit DTM Addresses...**.
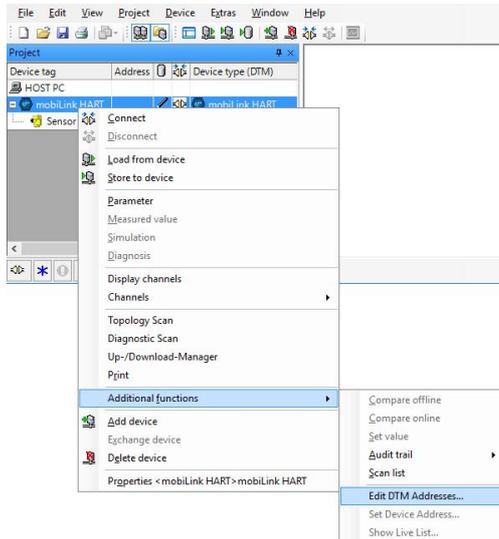
4.4.1   Setting a polling address for a HART-DeviceDTM

Now that you are in the user interface window for changing the address of the HART DeviceDTM, this is how you can change the polling address that is used to address a HART device:
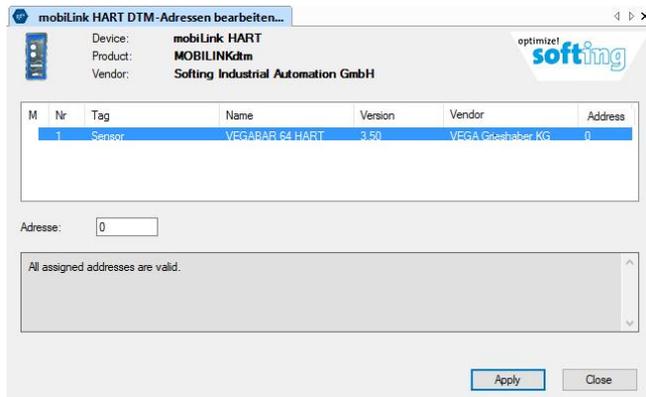
1. Select an entry in the device list and enter the polling address in the field **Address**.

2. Click **[Apply]** to confirm the change.

3. Click **[Close]** to close the interface window.
   You will see the changed address (here **1**) in PACTware in the column **Address** of the project view.

4.4.2   Setting a node address for an FF DeviceDTM

Now that you are in the user interface window for changing the address of the FF DeviceDTM, this is how you can change the node address that is used to address your FF device:

1. Select an entry in the device list and enter the node address in the **Address** field.

2. Enter the PD tag of the FF device in the **PD-Tag** field.

3. Click **[Apply]** to confirm the change.

4. Click **[Close]** to close the interface window.
   You will see the changed address (here 26) in PACTware in the column **Address** and the PD tag (here **VEGAPULS62**) in the column **Device Tag** of the project view.

4.4.3 Setting an address for PROFIBUS PA DeviceDTM

You are in the user interface window for editing the address of PROFIBUS PA DeviceDTM. Here you will have to change the address that is used to access your PROFIBUS PA device.
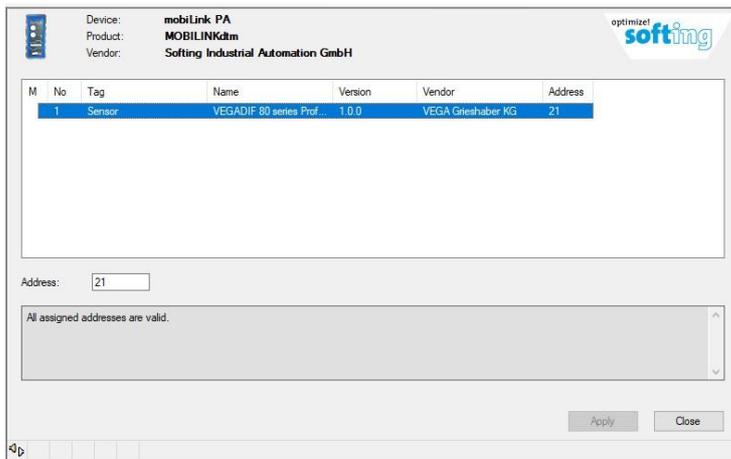
1. Select the device for which you want to specify a new address in the DeviceDTM and enter the address in the **Address** field.

2. Click **[Apply]** to confirm the change.

3. Click **[Close]** to close the interface window.
   In PACTware you will see the changed address (here **1**) in the column **Address** of the project view.

4.5 Connecting a mobiLink device

Make sure that your mobiLink is physically connected to a HART, FF or PROFIBUS PA network before establishing a connection via PACTware. For a detailed description of how to physically connect to a network see the mobiLink User Guide.

1. Right-click a **mobiLink HART**, **mobiLink FF or mobiLink PA** node in the project view.
   The context menu opens.

2. Select **Connect** in the context menu.
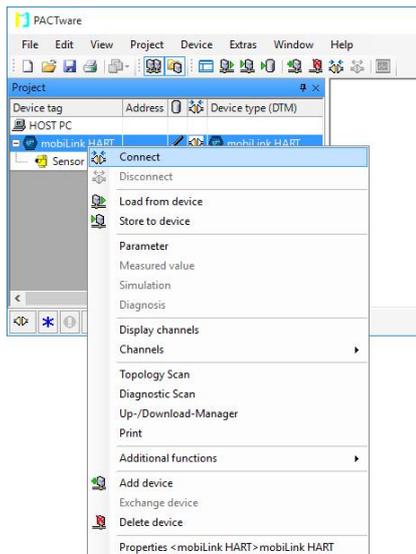
A successful connection is typically displayed in the project view by a symbol next to the mobiLink. In PACTware this is a closed connector. In the FDT status model a successful connection can be inactive (standby) or active (online). An active connection is displayed in PACTware by a **green** background of the connector symbol. A connection which has been successfully created by MOBILINKdtm with mobiLink is always shown as being active.
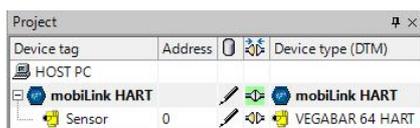
You now have access to the connection-related services of MOBILINKdtm:

- Changing the polling address and the current loop mode in HART devices (see Setting a polling address [39]).

- Changing the node address and the PD tag in FF devices (see Setting a node address [40]).

- Changing the address in PROFIBUS PA devices (see address in PROFIBUS PA).

- Showing the Live List (see Show Live List [35]).

> **Note**
>
> At this point, you cannot yet access the connection-related services of the DeviceDTMs.

4.6   Connecting a field device

1. Right-click a node of a field device in the project view.
    The context menu opens.
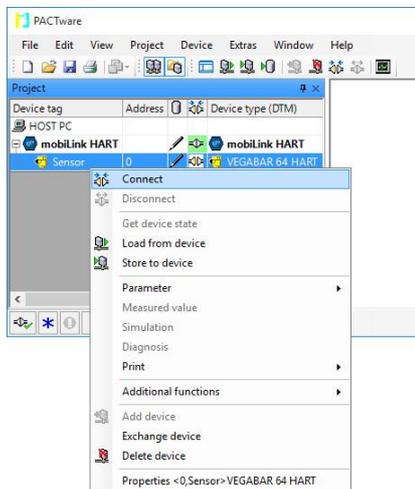
2. Select **Connect** in the context menu.

A successful connection is typically displayed in the project view by a symbol next to the device. In PACTware this is a closed connector. In contrast to MOBILINKdtm a connection established for the DeviceDTM is initially inactive (standby) and therefore not highlighted green in PACTware. If necessary, the DeviceDTM will change its state to active (online).
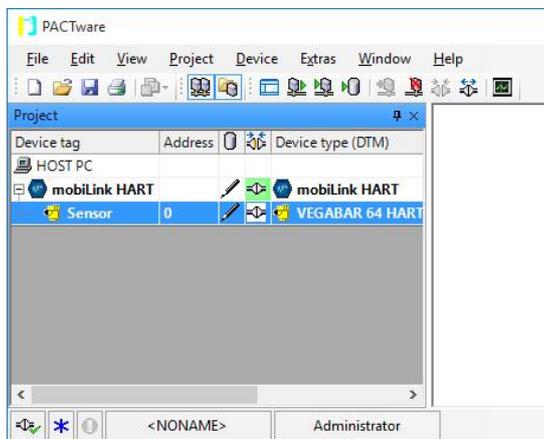
You now have access to the connection-related services of the DeviceDTM which typically include:

-   Online parameterization

-   Upload/download of device parameters

-   Device-specific functionality for startup or diagnostic purposes

This completes the introduction to MOBILINKdtm. To work efficiently with MOBILINKdtm , continue exploring the additional functions. The following Chapter about MOBILINKdtm user interface describes these functions in detail.

5   User interface and functions

In this Chapter you will learn which menu item will start which interface window or function. The different user interface windows and functions of MOBILINKdtm can be typically accessed from the context menu. Right-click a **mobiLink HART**, **mobiLink FF or mobiLink PA** node in the project view. The context menu opens.
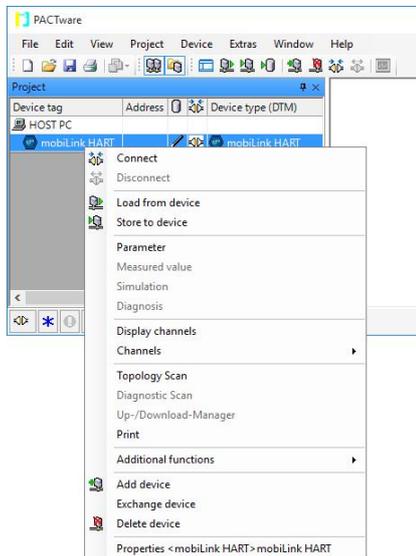
5.1   Understanding the user interface

The user interface of MOBILINKdtm follows the basic design according to the FDT style guide. The example below shows the bus configuration of the **mobiLink HART**.
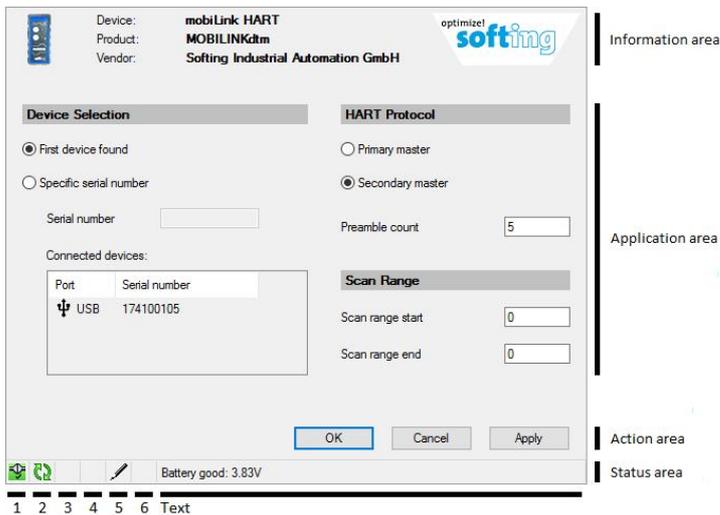
- The **informations area** shows an image of a mobiLink, the corporate logo and the names of the product, the device and the vendor.

- The **application area** shows the operational elements for the tasks that are performed in a user interface.

- The **action area** contains buttons to execute the main actions.

- The **status area** shows general status information about mobLink and its battery status.

The optional navigation area described in the FDT style guide is not included in the MOBILINKdtm user interface.

Status symbols

Field 1 of the status area displays the following DTM status symbols:

The mobiLink device is disconnected.

A mobiLink connection has been established and is inactive. This state occurs only briefly when MOBILINKdtm is connected and disconnected. When MOBILINKdtm is connected it changes to an active connection right away. This state does not occur during normal operation.

A mobiLink connection has been established and is active.

A mobiLink connection changes from inactive to active.

A mobiLink connection changes from active to inactive.

A mobiLink connection has been disrupted.

Field 2 of the status area shows the following communication states:

mobiLink is currently not communicating.

mobiLink is currently communicating.

Field 3 of the status area typically shows the processing state of the instance dataset of the device dataset while field 4 shows if the instance dataset has been modified compare with the device dataset. Both fields are always empty, because mobiLink does not have any device parameters.

Field 5 of the status area shows the input state as follows:

The current input values are unchanged and valid.

The current input values have been hanged and are invalid.

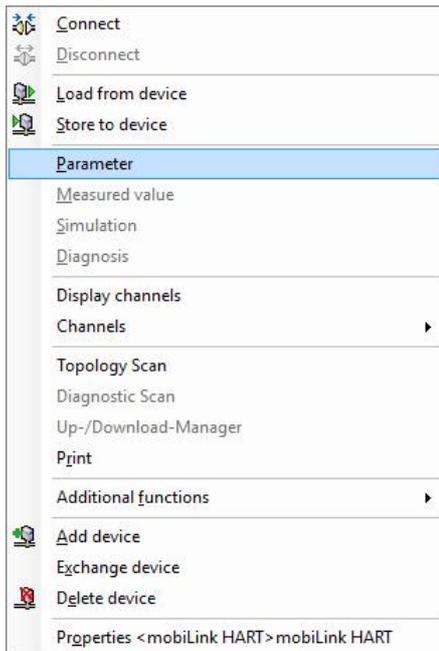The current input values are in valid.

Field 6 of the status are is always empty. It normally shows if the user interface operates in block mode or in direct mode. The MOBILINKdtm user mobiLink always runs in block mode and this filed has to be empty according to the FDT style guide.

The text field in the status area is used by MOBILINKdtm to display the battery status of mobiLink, as soon as a mobiLink connection has been established. The text field shows the current battery voltage and shows if it is sufficient for operation.

5.2   Bus configuration

With the function **parameter** you select the mobiLink which you want to address to set the communication parameter and define the address range of the device search. To use this function, you have to have the user role **Maintenance**, **Planning Engineer** or **Administrator**. Please note that this is the name of the function in PACTware and that the function has a different name in other frame applications.

1. Right-click a **mobiLink HART**, **mobiLink FF or mobiLink PA** node in the project view.

2. Select **Parameter** from the menu.

弞	Connect
弞	Disconnect
⬇	Load from device
⬆	Store to device
	Parameter
	Measured value
	Simulation
	Diagnosis
	Display channels
	Channels ▶
	Topology Scan
	Diagnostic Scan
	Up-/Download-Manager
	Print
	Additional functions ▶
📥	Add device
	Exchange device
🗑	Delete device
	Properties <mobiLink HART>mobiLink HART

Note

The device selection and communication parameters can also be changed when the connection to mobiLink has been established. However, they will only become active after you have disconnected and reconnected mobiLink.

3. Click **[OK]** or **[Apply]** to confirm the changes. If you click **[OK]** the user interface is closed.

Note

The last active bus configuration is overwritten and cannot be recovered.

Click **[Cancel]** to discard your changes and close the user interface.

Note

If you have made changes which you want to keep confirm your changes with **[OK]**. Other your changes will be lost.

5.2.1 Selecting a mobiLink

Under **Device Selection** select a mobiLink which you want to address with MOBILINKdtm. You can select the first mobiLik found in the system or address a specific mobiLink by its serial number. In the first case select the option **First device found** and in the second case select the option **Specific serial number**. In the second case you have to enter the serial number of the mobiLink in the the input field **Serial number**. You find this number on the mobiLink nameplate on the back of the device as the final numbers of the FF device ID (example: *1E6D114003_mobiLink_SN_180200153*). In the list **Connected devices** you see the serial numbers of the mobiLinks which are currently connected via USB or paired by Bluetooth. If you are selecting an entry from the list you serial number is imported int the input field **Serial number**. As the list is constantly updated any recently connected mobiLink appear within seconds.

5.2.2 Defining the scan range

In the group **Scan Range** you define the address range, which is scanned when a frame application starts a bus scan. In addition, this is the initial address range for the user interface <u>Show live list</u> [35].
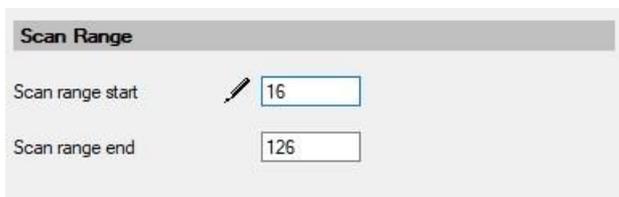
5.2.3 Setting communication parameters

The following sections describe how to set the configuration parameters for the HART and FF interfaces of the mobiLink.

5.2.3.1 mobiLink HART

Under **HART Protocol** the communication parameters are configured for HART. Here you can set the number of preambles. The HART master mode is predefined with **Secondary Master**.

5.2.3.2 mobiLink FF

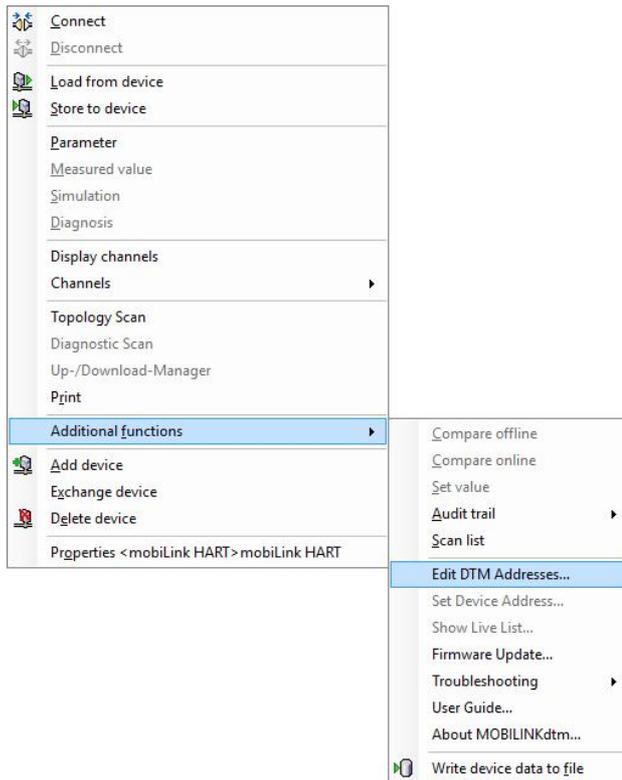The communication parameters of FF devices are set under **Bus Parameters**.

The following table describes the various communication parameters, their meaning, default values and valid range.

Parameter	Meaning	Default Value	Valid Range
Node address	Node address assigned to mobiLink	252	16 - 247 251 - 255
First unpolled node address	The first node address which mobiLink ignores when detecting connected devices. Together with the number of unpolled nodes this defines the range of addresses which are not taken into account.	20	20 - 247
Number of unpolled nodes	The number of nodes starting from the first unpolled node address which mobiLink ignores when detecting connected devices. Together with the first unpolled node address this defines the range of addresses which are not taken into account. The last unpolled node ma not exceed the value 247. Devices with an address outside the polled range are not taking part in the bus communication and are threrefore not detected during a bus scan or a live scan. If all nodes are toe be considered the value must be set to 0.	0	0 - 228
Slot Time	H1 bus time unit. See also **Max Response Delay** and **Min Inter PDU Delay**.	8	1 - 4095
Max Response Delay	Maximum time interval in slot times which may lapse between request and response. Devices which do not respond within this interval are excluded from the bus communication. Each device has its own value for this parameter. The set value should be at least as large as the largest value of all devices connected to the H1 segment.	10	1 - 11
Min Inter PDU Delay	Minimum time interval in slot times which has to lapse between two frames on the bus so the frames can be processed. Each device has its own value for this parameter. The set value should be at least as large as the largest value of all devices connected to the H1 segment.	16	1 - 255

5.2.3.3   mobiLink PA

The communication parameters of PROFIBUS PA devices can be selected under **Bus Parameters.** Select the profile dropdown menu **Custom** to specify the bus parameters according to the table below. Alternatively, you can select profiles with predefined bus parameters for specific PA transitions.

The following table describes the various communication parameters, their meaning, default values and valid range.

Parameter	Meaning	Default Value	Valid Range
Address	This is the address assigned to the mobiLink PA master.	0	0 .. 126
Highest Station Address	The highest station address addressed by the mobiLink PA master.	126	1 .. 126
Tsl	Slot Time. The time interval that the master waits for the response of a participant before it repeats the telegram or sends the next telegram. The lower limit of the slot time is the sum of Max Tsdr + Tqui + 14.	600 (bit times)	Max Tsdr + Tqui + 14 .. 16,383
Min Tsdr	Min Station Delay Responder. The minimum time interval that must elapse before a participant is allowed to answer.	11 (bit times)	11 .. 1023
Max Tsdr	Max Station Delay Responder. The time interval within which a participant must answer.	400 (bit times)	37 .. 65,535
Ttr	Target Rotation Time. Maximum duration of a token circulation.	20,000 (bit times)	256 .. 16,777,215
Tqui	Quiet Time. The time interval required by a transmitting station to switch to reception.	0 (bit times)	0 .. 255
Tset	Setup Time. The time interval that may elapse between receipt of a telegram and the required response to it. The upper limit value results from the difference of 494 -Tqui	95 (bit times)	min (494-Tqui, 255)
Gap Update Factor	The number of token cycles after which a newly added master can be included in the token ring.	1	1 .. 100
Max Retry Limit	The maximum number of repetitions if a station does not respond.	3	0 .. 7

5.3   Editing deviceDTM addresses

Using the function **Edit DTM Addresses** you tell the Device DTMs which are assigned to the mobiLink project the addresses of the represented devices. A DeviceDTM uses this address to contact the device during connection setup. This function is available with the user role **Maintenance**, **Planning Engineer** and **Administrator**.

1. Right-click the a **mobiLink HART**, **mobiLink FF** or **mobiLink PA** node in the project view.

2. Navigate to **Additional functions → Edit DTM Addresses...**.

| Connect |
| Disconnect |
| Load from device |
| Store to device |
| Parameter |
| Measured value |
| Simulation |
| Diagnosis |
| Display channels |
| Channels ▶ |
| Topology Scan |
| Diagnostic Scan |
| Up-/Download-Manager |
| Print |
| Additional functions ▶ |
| Add device |
| Exchange device |
| Delete device |
| Properties <mobiLink HART> mobiLink HART |

Additional functions submenu:
- Compare offline
- Compare online
- Set value
- Audit trail ▶
- Scan list
- Edit DTM Addresses...
- Set Device Address...
- Show Live List...
- Firmware Update...
- Troubleshooting ▶
- User Guide...
- About MOBILINKdtm...
- Write device data to file

Depending on the interface one of the following windows appears:

The devices which are assigned to mobiLink are displayed in a list. In addition to the address which has been recently passed on to the DeviceDTM, each list entry shows further details such as tag, name, version, manufacturer and various version numbers. These details make it easier to identify devices in the system. The device numbers in the first column are used to reference the devices for which messages are displayed in the status field.

If the currently assigned DeviceDTMs are valid and do not contain any duplicates, the following message is sown in the status field: **All assigned addresses are valid.** Otherwise, the message in the status field describes a possible problem.

3. Select the device for which you want to assign a new address in the Device DTM.

4. Enter a new address in the input field **Address** or **Node Address**.
You can add a PD tag in the input filed PD Tag. The changes are added to the list and next to the device number a pencil symbol appears indicating that a change has been made for the device which has not yet been reported to the DeviceDTM.
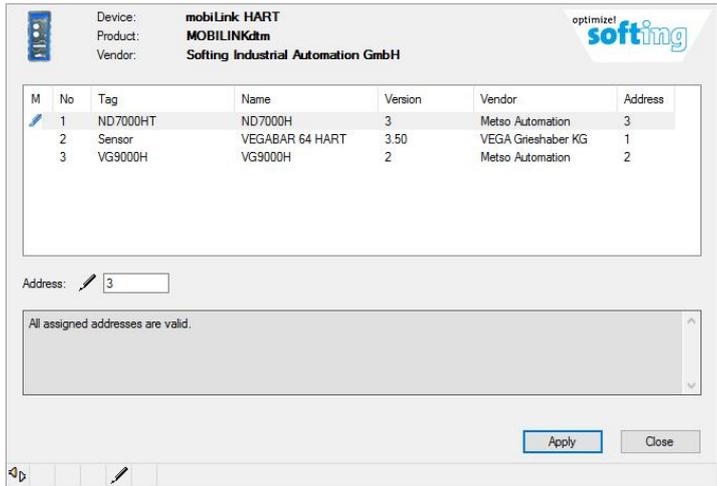
You can change the addresses and if necessary the PD-Tags for further devices. All changes are only first collected and are not yet passed on to the DeviceDTMs. The pencil symbol next to the device number indicates that the changes have not yet be passed on to the DeviceDTM.
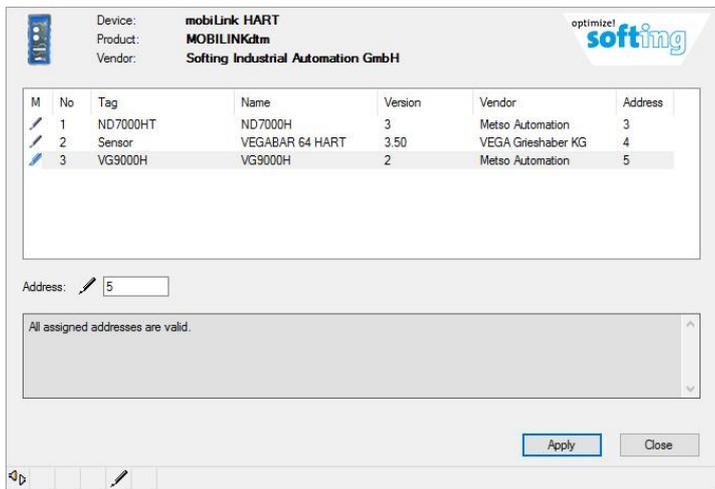
5. Click **[Apply]** when you have made all changes. The changes are now passed on to the DeviceDTMs and the pencil symbol disappears.
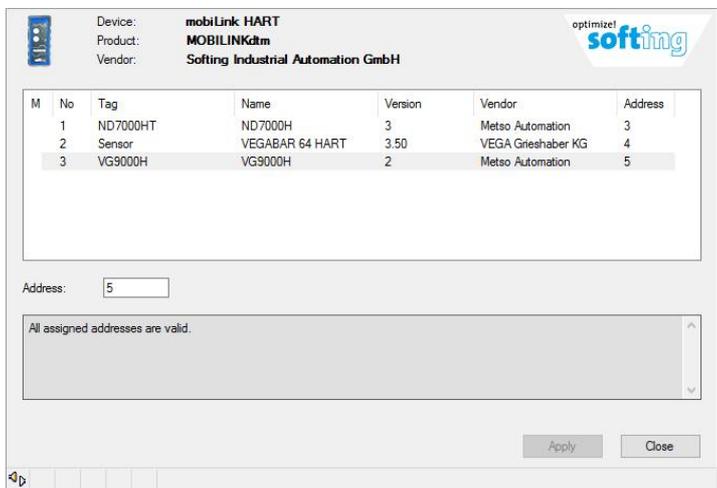
MOBILINKdtm informs you in the message window if the same address has been entered for different devices and asks you how you would like to proceed.
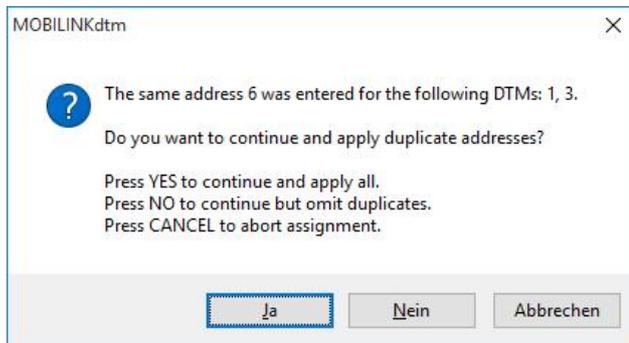
MOBILINKdtm informs you in the message window about address which have already been assigned to other devices and asks you how you would like to proceed.
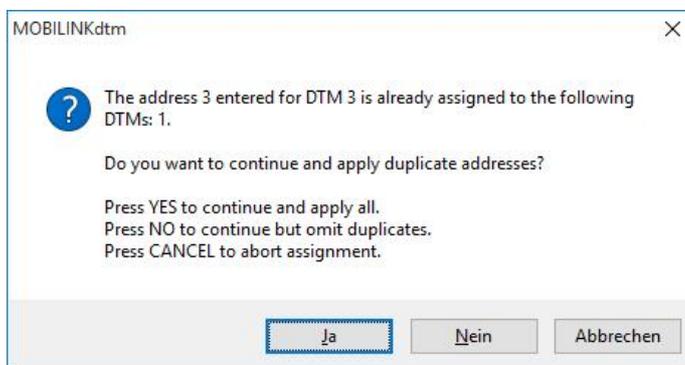
Note

Remember that the relevant devices are referenced by their number from the first list column.

Click **[Cancel]** to return to the user interface and to improve the address assignment.

Click **[No]** if you want to continue without assigning duplicate addresses.

Click **[Yes]** if you want to continue and apply all addresses including duplicate addresses.

If errors occur during the assignment of the addresses to the DeviceDTMs which cannot be ignored, you will see one of the following messages in the message field:

- **DTM <number> has rejected the assigned address.**

- **DTM <number> has not accepted the assigned address.**

Warnings and errors are also always displayed in the status field. The following table shows possible messages. <Number> is a wildcard used for the device number as displayed in the first list column. <Numbers> stands for a range of device numbers as displayed in the first list column. <Address> is a wildcard used for an assigned address. <Amount> is a wildcard used for a specific number (range) of devices.

| Message	Explanation
All assigned addresses are valid.	No error occurred while assigning the polling addresses to the DeviceDTMs. The polling addresses are valid and there are no duplicate polling addresses.
DTM <number> provides no identification/address information	The specified DeviceDTM provided neither identification nor the currently assigned polling address.
DTM <number> provides no any address information	The specified DeviceDTM provided identification but not the currently assigned polling address.
The same address <Adresse> is assigned to the following DTMs: <number>.	The entered polling address has been assigned to more than one DeviceDTM.
DTM <number> has rejected the address assignment.	The specified Device DTM has refused to assign the polling address. This may occur if the DeviceDTM currently cannot change the assignment.
DTM <number> has not accepted the assigned polling address.	The DTM did not refuse the assignment of the polling address, but a test reading of the polling address returned an address which is different from the one assigned.
The same PD tag <name> is assigned to the following DTMs: 1, 2.	Although the DTM did not refuse to assign the PD tags, an assignment of the same PD tag more than once can however lead to problems in the future.

5.4 Show live list

The option **Show Live List** is a powerful function to identify devices which are connected to mobiLink. This option is available for all user roles.

1. Right-click a **mobiLink HART**, **mobiLink FF** or **mobiLink PA** node.

2. Navigate to **Additional functions → Show Live List...**
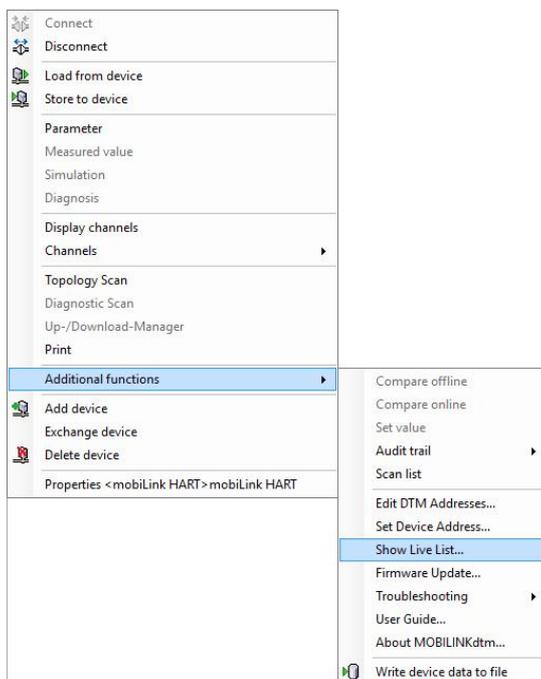
Note

The Live List can be shown only with a successfully established mobiLink connection.
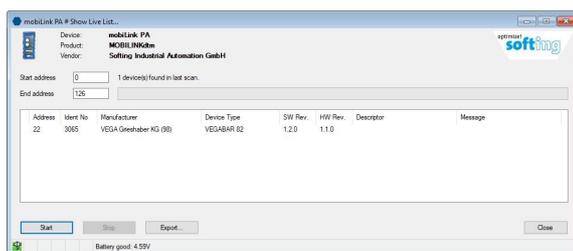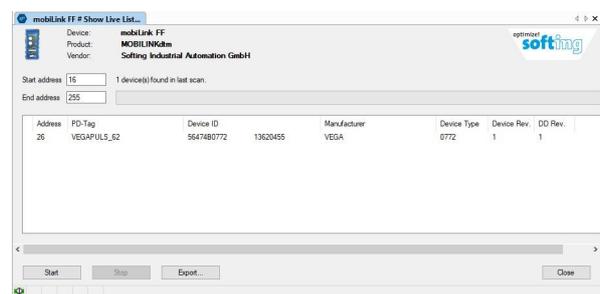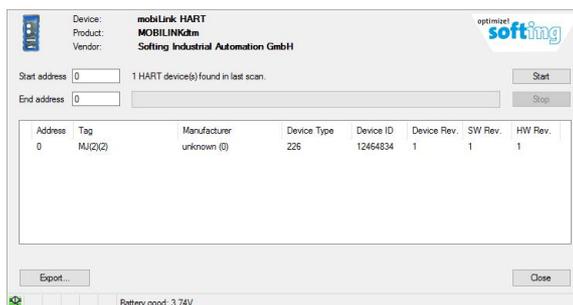
5.4.1 Creating a live list

To create a live list enter the start address and end address of the address range you want to scan. Both input fields are filled by default with the address range that was set in the user interface Bus Configuration [25]. If the pre-defined addresses match the rang you want to scan you do not need to change anything.

- Click **[Start]** to initiate the device scan.
  In the case of **mobiLink HART** the device search is done in two steps. In step one the detected devices are added to the device list. In step two additional information is picked up from the device and included in the list. In the case of **mobiLink FF** the device search is done in only one step which takes about one minute. The progress bar tells you how far the scan process has advanced.

- Click **[Stop]** if you want to cancel the creation of a live list.

Hint

Instead of entering a single address in the input field **Start address** you can add several addresses separated by a comma or address ranges separated by a hyphen. When MOBILINKdtm identifies a complex entry in the **Start address** input field, it ignores the input field **End address** and only searches for the addresses or address ranges in the **Start address** field. The following examples shows the search syntax. These examples refer to **mobilink HART**. For **mobilink FF** or **mobilink PA** see the valid address range for Foundation Fieldbus or PROFIBUS PA.

Start address input field	Searched addresses
2,5	2, 5
8-12	8, 9, 10, 11, 12
2,5,8-12	2, 5, 8, 9, 10, 11, 12
3-7,11-14	3, 4, 5, 6, 7, 11, 12, 13, 14
-3	0, 1, 2, 3
60-	60, 61, 62, 63
,24	24

5.4.2 Exporting a live list as CSV

MOBILINKdtm allows you to export the easily to any text editor and Microsoft Excel.

1. Click **[Export…]** after the live list has been created.

2. Enter a file name into the file selection dialog box.

3. Click **[Save]** to store the file as a CSV file with the specified name.

4. Select **[File/Open…]** to load the CSV file in a text editor or Excel.
   A file selection dialog box opens.

5. Change the file type to **Text File.**

6. Navigate to the directory to which you saved the CSV file and select the CSV file.

5.4.3 Setting an address in a DeviceDTM

Entries from the device list in the user interface Show Live List [35] can be dragged and dropped to an entry in the device list of the user interface Editing deviceDTM addresses [30] . The address of the detected device and the PD tag of the MOBILINKdtm FF are assigned to the DeviceDTM for the device.
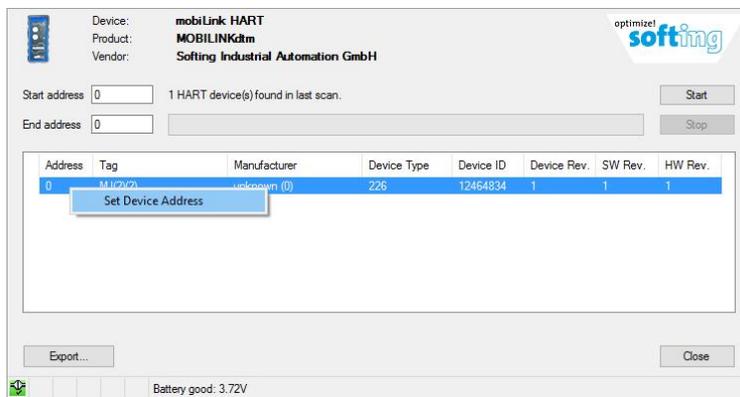
> **Note**
>
> The change will only become effective after you click **[Apply]** in the **Edit DTM Addresses...** dialog box.

5.4.4 Changing the address in a device

1. Right-click the device in the device list.

2. Select the entry **Set Device Address**.
   This function is available with the user roles **Maintenance**, **Planning Engineer** and **Administrator**.

The dialog window for setting the device address opens. The **Address** and **Node Address** fields show the values that are currently set for the selected device.
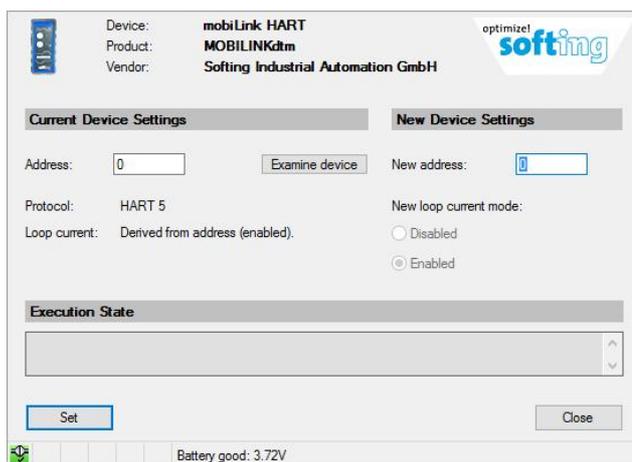
For a detailed description of the dialog box for setting address in the device, see Setting a device address [38] .

5.5   Setting a device address

Using the function **Set Device Address** you can set the address of a device and depending on the mobiLink interface additional parameters. This function is available with the user roles **Maintenance**, **Planning Engineer** and **Administrator**.

1. Right-click a **mobiLink HART**, **mobiLink FF or mobiLink PA** node in the project view.

2. Navigate to **Additional functions → Set Device Address...**
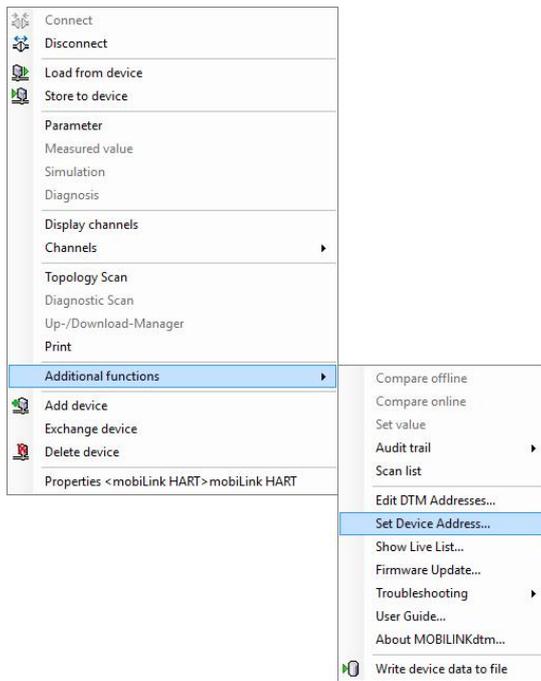
> **Note**
>
> The live list is shown only if a connection is established with mobiLink.

5.5.1 Setting a polling address in a HART device

1. Enter the current polling address of the relevant device in the **Address** field under **Current Device Settings**.
As of HART version 6 you can change the current loop mode of a HART field device.

Even though you may assign a new device address at this point in time, the loop current mode is, however, still set according to the process of HART protocol version 6 as the protocol version of the HART device is not yet defined. The loop current is active when the polling address is 0 (zero).

2. Click **[Examine device]** to determine the HART protocol version and to select the if possible the current loop mode.
You will briefly see the message that the device is being examined followed by the message that the process has been successfully completed. In addition, you will now see under **Current Device Settings** the protocol version and the currently set current loop mode of the HART device. If HART protocol version is at least 6 you can now also select the current loop mode under **New Device Settings**. In the event of an error a message appears which describes the problem closer.

3. Enter the new polling address in the **New Address** field an select if possible the current loop.
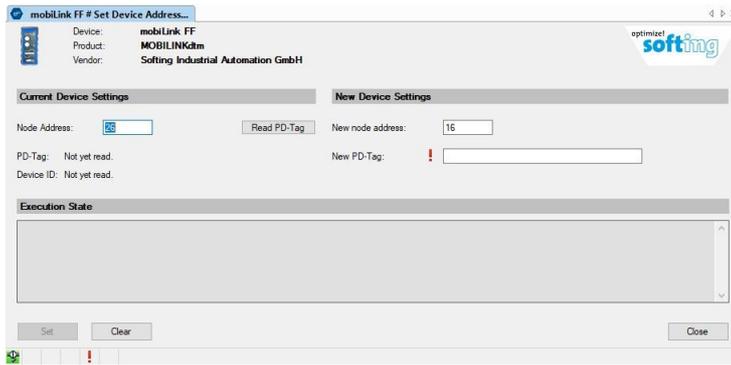
4. Click **[Set]**.
The status field will show for a few seconds the message that the new address is being assigned to the HART device followed by the message that the address has been successfully assigned. In the event of an error a message appears which describes the problem closer.
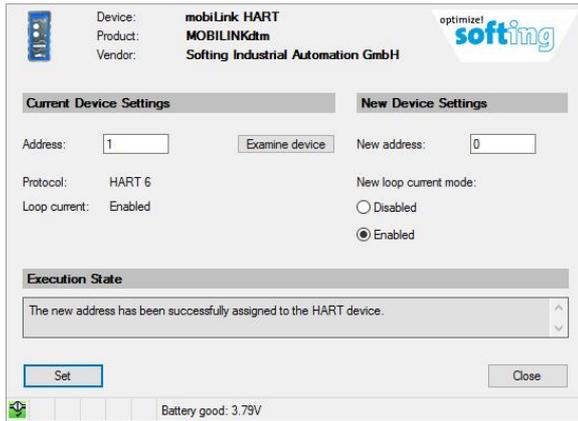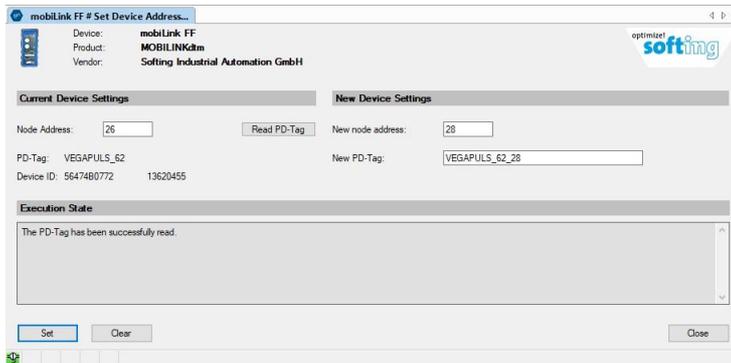
5. Click **[Close]**.

5.5.2 Setting a node address in an FF device

1. Enter the current address of the relevant device in the **Node Address** field under **Current Device Settings**.


2. Click **[Read PD tag]** to read the PD tag.
   The status field will briefly show the message that the PD tag is being read followed by the message that the process has been successfully completed. In addition, you will now see under **Current Device Settings** the PD tag and the device ID of the FF device. The PD tag is shown in the **New PD Tag** field under **New Device Settings**. In the event of an error a message appears which describes the problem closer.

3. Enter the new node address in the **New node address** field an select if possible the new PD tag in the New PD Tag field.

4. Click **[Set]**.
   The status field will show for a few seconds a message saying that the new values are being assigned to the device followed by the message that the process has been successfully completed. If an error occurs, a message appears in the status field that describes the problem in more detail.
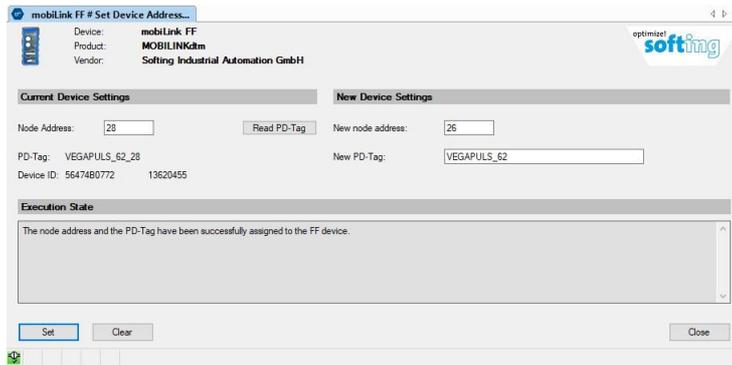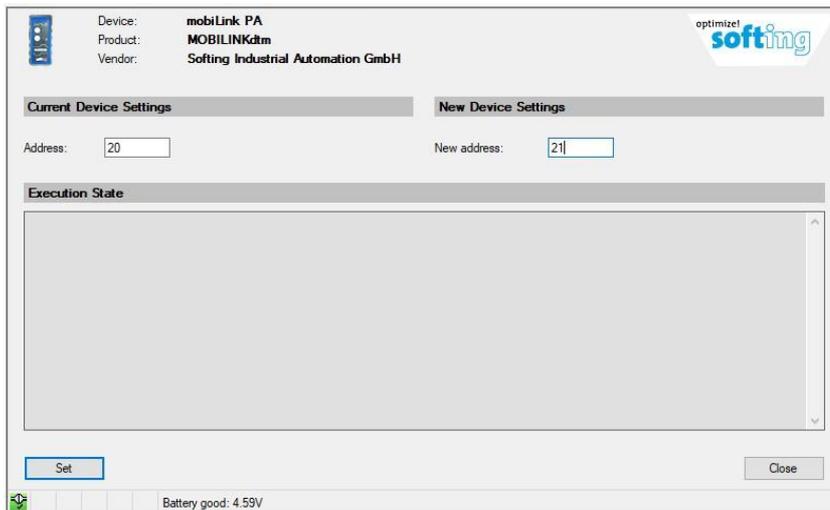

5. Click **[Close]**.

5.5.3   Setting an address in a PROFIBUS PA device

1. Enter the current address of the relevant device in the **Address** field under **Current Device Settings**.

2. Enter the new address in the **New address** field.

3. Click **[Set]**.
   In the status field the message appears for a few seconds saying that the new address is assigned to the PROFIBUS PA device followed by a success message. If an error occurs, a message appears in the status field that describes the problem in more detail.
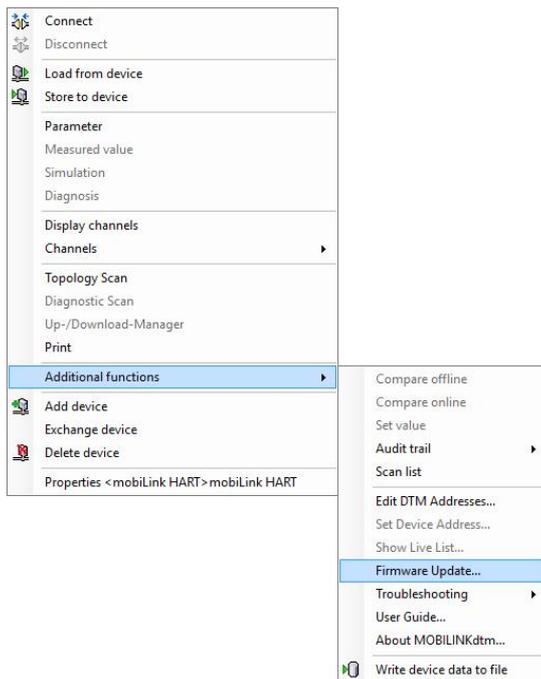

4. Click **[Close]**.

5.6   Updating the firmware

With the function **Firmware Update** you an update the firmware of mobiLink. This function is available with the user roles **Maintenance**, **Planning Engineer** and **Administrator**.

Before you update the firmware, disconnect your mobiLink device from the FDT frame application PACTware. However, do not disconnect the USB or Bluetooth connection to your mobiLink.

1. Right-click a **mobiLink HART**, **mobiLink FF** or **mobiLink PA** node in the project view.

2. Navigate to **Additional functions → Firemware Update...**

Connect
Disconnect
Load from device
Store to device
Parameter
Measured value
Simulation
Diagnosis
Display channels
Channels ▶
Topology Scan
Diagnostic Scan
Up-/Download-Manager
Print
Additional functions ▶
Add device
Exchange device
Delete device
Properties <mobiLink HART> mobiLink HART

Compare offline
Compare online
Set value
Audit trail ▶
Scan list
Edit DTM Addresses...
Set Device Address...
Show Live List...
Firmware Update...
Troubleshooting ▶
User Guide...
About MOBILINKdtm...
Write device data to file

Note

The firmware for HART, FF or PROFIBUS PA can only be updated via a mobiLink HART, mobiLink FF or mobiLink PA node. Attemptinf an update via a mobiLink node that does not match the bus protocol will result in an error. You can download the individual firmware updates for HART, FF and PROFIBUS PA from the mobiLink product page under Downloads.

The following dialog window opens. Under **Device Selection** you see a list of **Connected devices.**
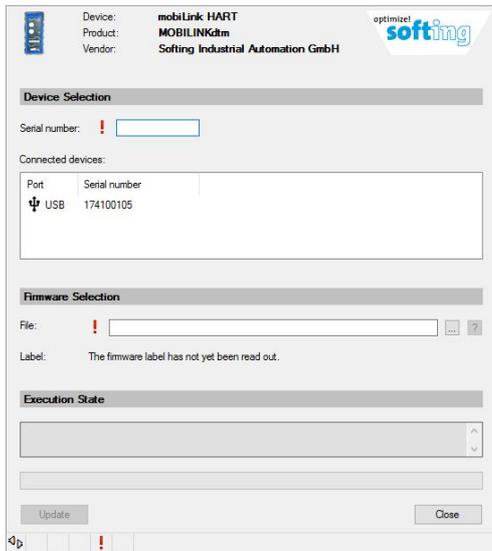
3. Click with your mouse pointer on the serial number of the mobiLink whose firmware you want to update to copy it into the input field.

4. Click the list icon ▦ behind the **File** input field under **Firmware Selection** to select your firmware update.
   A new dialog window opens.

5. Select the .bin-file containing the new firmware and click **[OK]**.
   The file name appears in the input field.
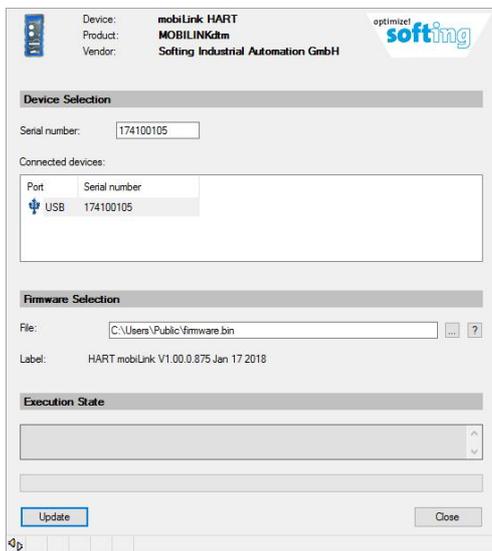
6. Make sure the connected mobiLink you want to update is switched on.
   If it is not switched on the final update steps will fail.

7. Click **[Update]** to start the update process and click **[OK]** in a new window to confirm your choice.
   During the update a number of status messages appear in the status field.
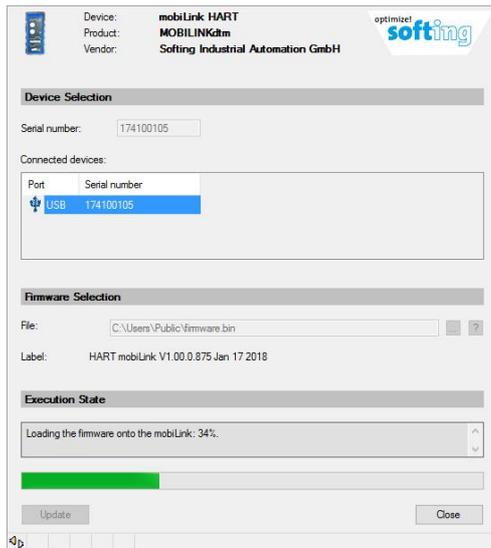
![Note icon] **Note**

The user interface must remain open during the firmware update. If you close the user interface the update will be cancelled and your mobilink will not be operational. To bring the mobiLink back into operation you will have to start the firmware update again.

At the end of the update you will see the status message: **The mobiLink has been successfully updated with the following firmware,** followed by details about the version you installed.
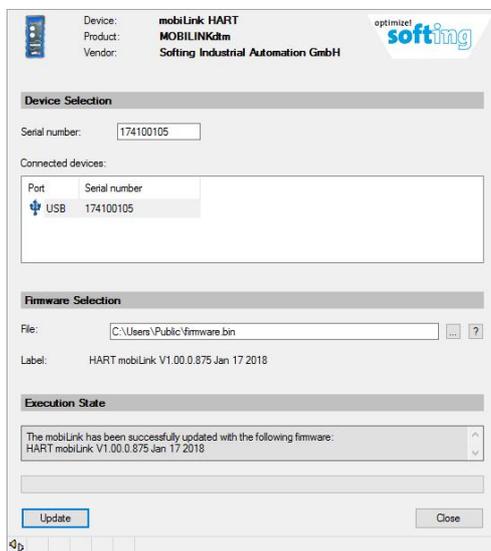
If an error occurs, a message will appear in the status field describing the problem.

8. Click **[Close]**.

5.7   Increasing the battery lifetime

Use this function to increase the battery lifetime of a mobiLink FF or a mobiLink PA. The function is available for the user roles **Maintenance**, **Planning Engineer** and **Administrator**. The activation status is indicated by an icon in the menu item.

If the option *Increase Battery Lifetime* is activated, mobiLink draws additional power from the fieldbus (18mA instead of 10mA) to minimize the power consumption of the battery. Make sure that the power supply is sufficiently dimensioned for the fieldbus segment to cover the additional power requirement. Otherwise communication problems may occur during operation of the mobiLink and for the connected control system.

You can deactivate and reactivate the increase of the battery lifetime at any time. The setting is saved in the project specifically for the mobiLink addressed. If you are already connected with your mobiLink, the setting takes immediate effect. Otherwise, it takes effect when the connection to the mobiLink is established.

1. Right-click on the node mobiLink FF or mobiLink PA.

2. Select **Additional Functions → Increase Battery Lifetime**.
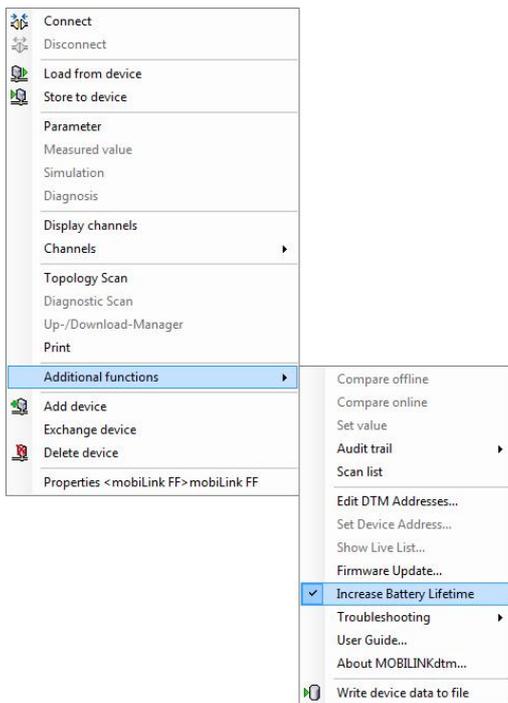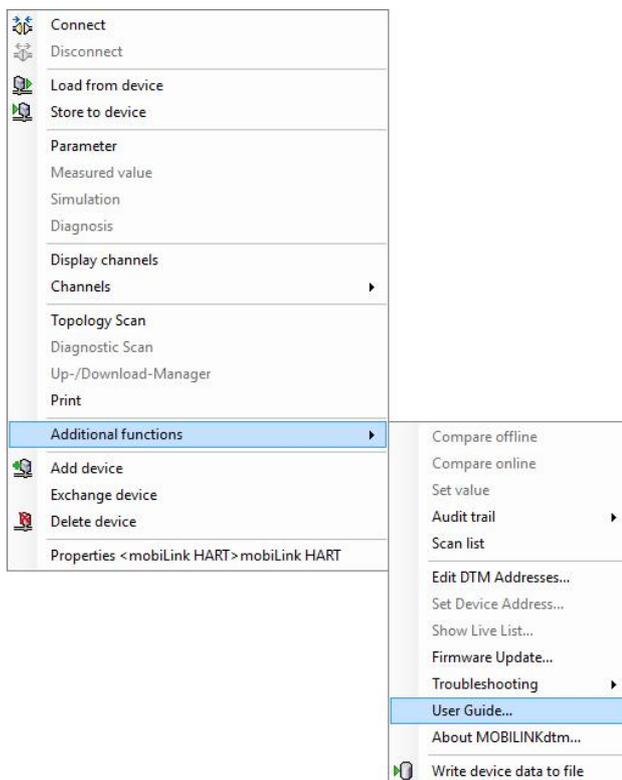
5.8   User guide

With the function **User Guide** you can open the operation instructions for MOBILINKdtm. This function is available with any user role. When this function is selected, the operating manual opens in a separate main window.

Note

You can also find the User Guide on the mobiLink product page under Downloads.

1. Right-click a **mobiLink HART**, **mobiLink FF or mobiLink PA** node in the project view.

2. Navigate to **Additional functions → User Guide...**

You can also open the user guide by double-clicking the files **DTM_MOBILINK_U_EN.chm** and **DTM_MOBILINK_U_EN.pdf** in the installation directory of MOBILINKdtm .

5.9 About MOBILINKdtm

Select the function **About MOBILINKdtm...** to see product information about MOBILINKdtm . This function is available for all users.

1. Right-click a **mobiLink HART**, **mobiLink FF** or **mobiLink PA** node in the project view.

2. Navigate to **Additional functions → ABout MOBILINKdtm...**
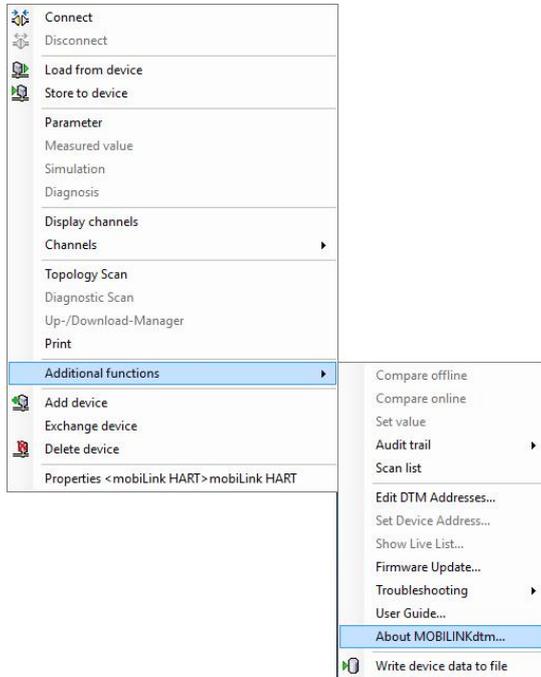
5.10 Documentation of bus configuration

With this function you can generate the documentation of the mobiLink-bus configuration. This function is available for all users. When you select this function, the documentation is displayed according to the frame application used.
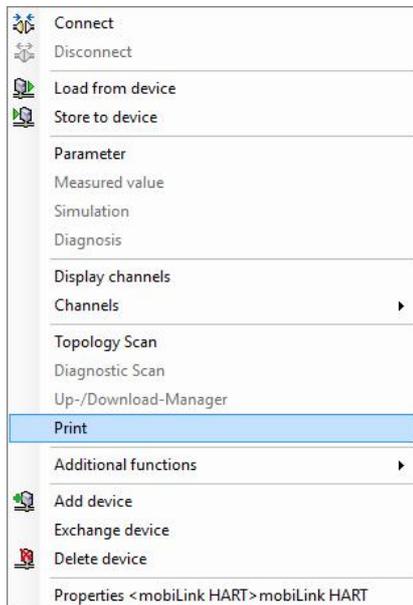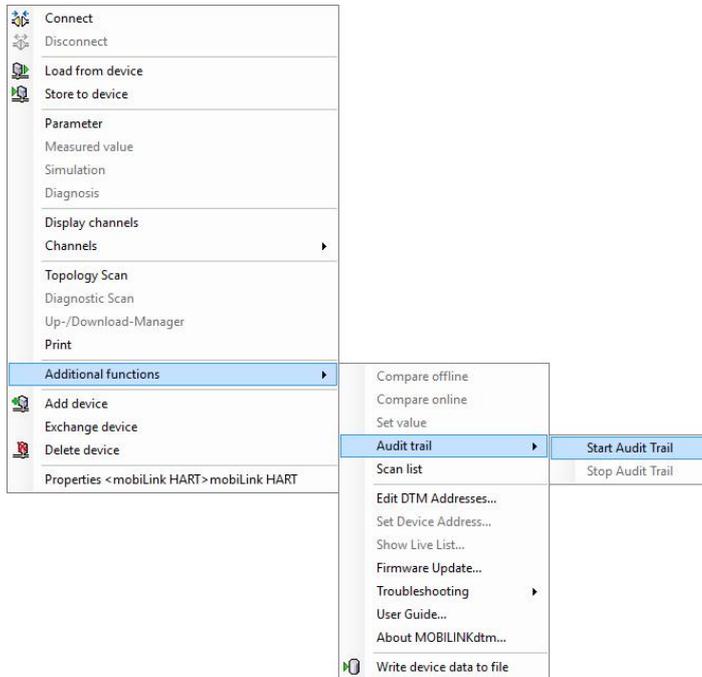
5.11   Audit trail

With this function your can start and stop logging audit trail events generated by MOBILINKdtm. To use this function, you must have the **Planning Engineer** or **Administrator** user role.
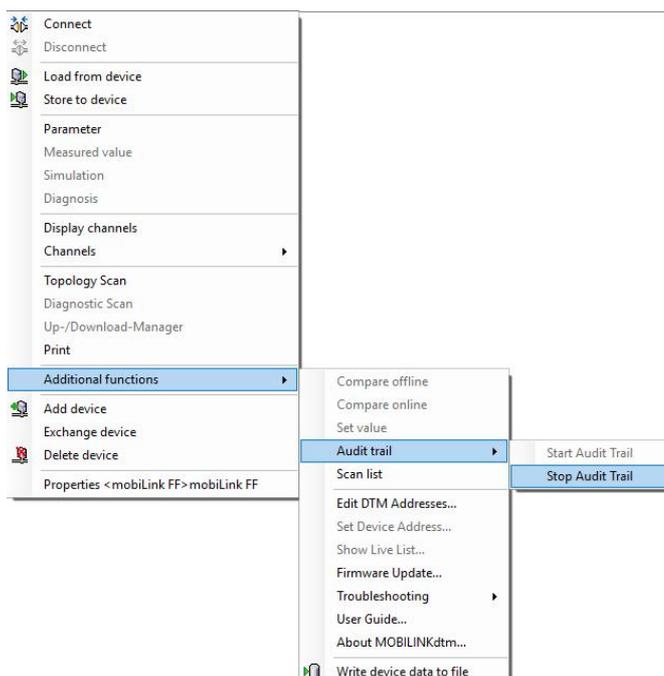
Start Audit Trail

Select **Additional functions → Audit Trail → Start Audit Trail**

Stop Audit Trail

Select **Additional functions → Audit Trail → Stop Audit Trail**

> **Note**
>
> The Audit Trail feature needs to be supported by FDT frame application.

The Audit Trail setting is saved in the project folder of the FDT frame application. The setting currently chosen when saving the project is restored when the project is reloaded

MOBILINKdtm generates audit trail events in the following situations:

- Starting the DTM instance.
- Exiting the DTM instance.
- Prompting for connection.
- Prompting for disconnection.
- Successful connection establishment.
- Failed connection establishment (e.g. due to a communication fault).
- Disconnection on request.
- Disconnection triggered by a communication fault.
- Connection re-establishment after a communication fault has ceased.
- Modification of the addressed mobiLink hardware.
- Changing a communication parameter.
- Changing the polling address range scanned during a bus scan.

5.12   Troubleshooting

Select **Additional Functions → Troubleshooting → Start Tracing**.
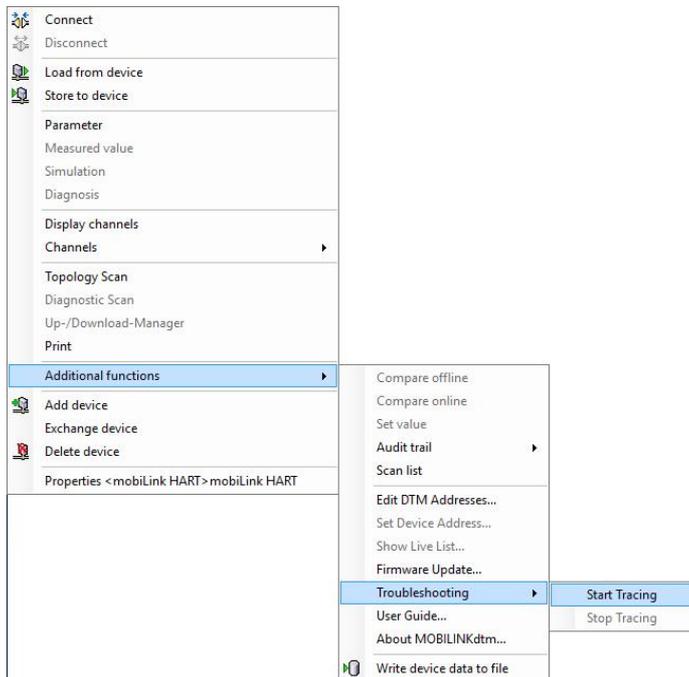
Select **Additional Functions → Troubleshooting → Stop Tracing**.
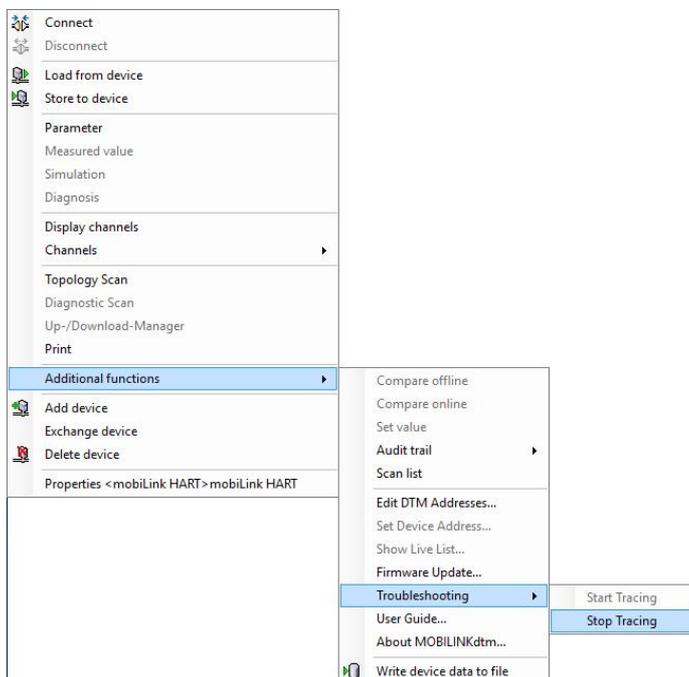
These functions start or stop the tracing of MOBILINKdtm. When tracing is enabled, the program flow within MOBILINKdtm and detected error states are written to files. Although this information cannot be easily interpreted by those using MOBILINKdtm, it is a valuable tool helping Softing Support to detect an error.

If you would like Softing Support to assist you in cases of inexplicable/erroneous behavior, you can help us diagnose the errors by carrying out the following steps in advance.

- Start the tracing with the Start tracing function.

- Repeat the error.

- Stop tracing as soon as possible after the error has occurred using the Stop tracing function.

After performing these steps, you will find the file **MOBILINKdtm.trc** in the following directory:

- *User directory>\<username>\AppData\Local\Softing\MOBILINKdtm\Trace*

Furthermore, locate file **siadtmbe130.trc** in the following directory:

- *User directory>\<username>\AppData\Local\Softing\DTMToolkit\Trace*

Please email these files to Softing Support. If you require telephone support, please let us know that you have already created .trc files using the tracing function.

6   Troubleshooting

In case of an error during connection establishment or a connection failure MOBILINKdtm generates the following error message: **The connection to the mobiLink is disturbed: <Cause of error>**

The table lists a number of possible causes of errors:

Error Message	Meaning and Measures
A severe error has been detected in the mobiLink hardware.	The mobiLink device may be faulty. Please contact Softing Support.
mobiLink does not respond. Please verify that it is turned on.	If mobiLink is connected to a USB port, it has been detected but is not switched on. If you attempt to address mobiLink via Bluetooth, it is either not switched on or it is not within range. Make sure that the PC is within range of mobiLink device.
mobiLink is occupied by another application.	mobiLink can only work with one PC application at a time. Close the application that is currently accessing mobiLink.
mobiLink was not found.	mobiLink is neither connected to a USB port of your PC nor is it connected over Bluetooth with your PC. Connect mobiLink to a USB port of the PC or establish a Bluetooth connection between your PC and mobiLink.
A transmission error has occurred.	A transmission error occurred while trying to communicate with mobiLink. If mobiLink is connected to a USB port, check the position of the USB connectors. If mobiLink is addressed via Bluetooth, make sure that the PC is within range of mobiLink.
A mobiLink resource is exhausted.	Switch mobiLink off and on. If the problem persists, contact Softing Support.
The mobiLink has unexpectedly switched to maintenance mode.	Disconnect mobiLink in the FDT frame application and switch mobiLink off and on. If the problem persists when reconnecting to mobiLink, contact Softing Support.
The firmware type is not recognized.	This error occurs if you want to connect to mobiLink after canceling a firmware update. Restart your firmware update and do not abort the process prematurely.
The bus terminal is not connected.	Make sure that the bus terminal is connected.
The bus terminal is connected the wrong way round.	Make sure that the bus terminal is connected the right way round.
The wrong bus terminal is connected.	Only use the bus terminal provided for the relevant protocol.
Both HART and FF bus terminal are connected.	Only use the bus terminal provided for the relevant protocol.
The battery voltage is too low.	The battery voltage has dropped below the limit value for safe operation. Replace the batteries.
Both HART and FF bus terminals are connected.	Make sure you only use the bus terminal that is intended for the protocol.