

**PACTware**  
**Process Automation Configuration Tool**  
**Edition 3.6 FDT 1.2.1**



## Copyright

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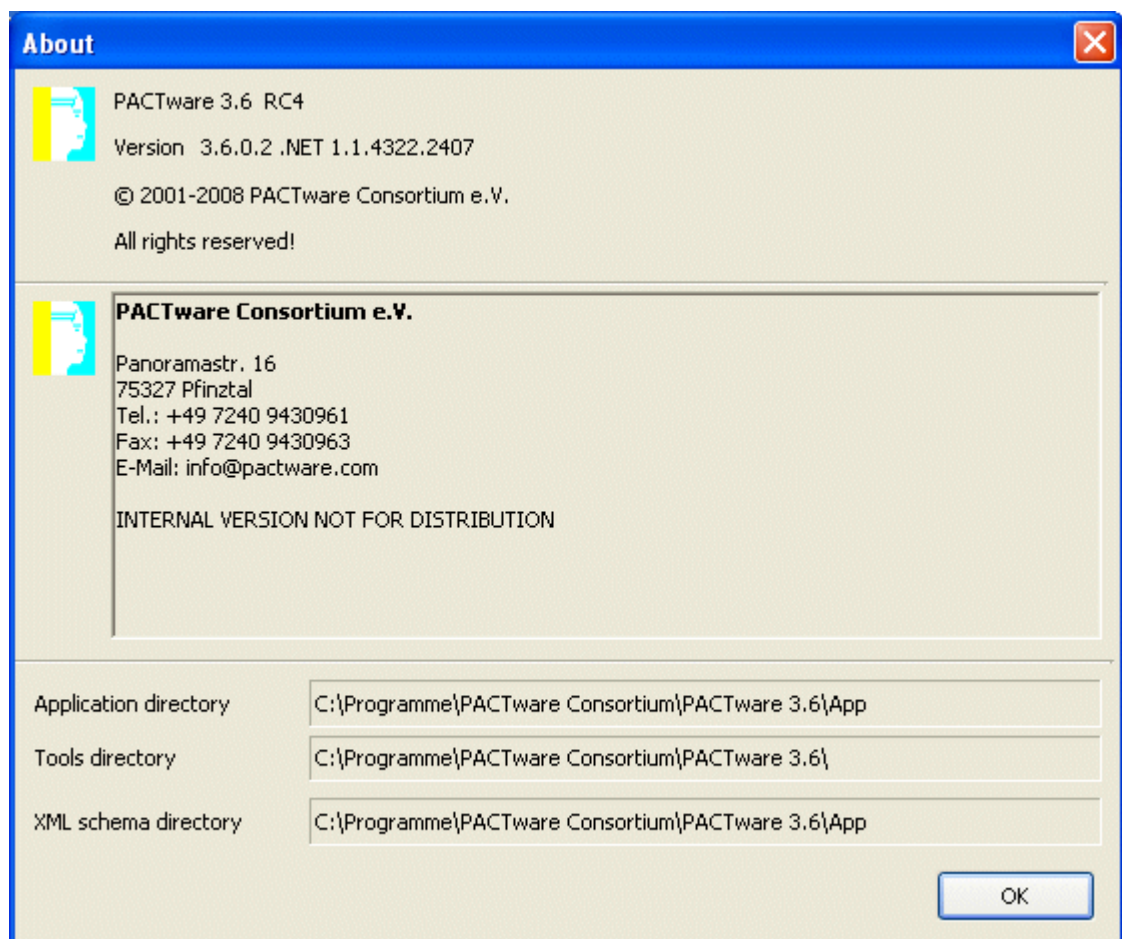
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## Enduser License

The terms of the license agreement are contained in file **PWEULAENG.TXT** of the PACTware installation directory.

## Program version

The program version is displayed via menu **Help** using menu item **About...** Example:



## Document history

Version	Date
3.5.0	20.6.2007
3.6.0	30.6.2008



## Table of Contents

	<b>Copyright .....</b>	<b>1-1</b>
	<b>Table of Contents .....</b>	<b>1-1</b>
<b>1.</b>	<b>Overview .....</b>	<b>1-1</b>
1.1	Software Requirements .....	1-1
1.2	Hardware Requirements .....	1-1
1.3	Install .....	1-2
1.4	Start .....	1-3
1.5	Getting Started .....	1-5
1.6	Uninstall .....	1-7
1.7	Problem report .....	1-7
<b>2.</b>	<b>Main Window .....</b>	<b>2-1</b>
2.1	Menu bar .....	2-1
2.2	Toolbar .....	2-2
2.3	Status bar .....	2-2
2.4	Operating range .....	2-3
2.4.1	PACTware Window .....	2-4
2.4.2	DTM Window .....	2-7
2.5	Layout Management .....	2-8
<b>3.</b>	<b>Functions .....</b>	<b>3-1</b>
3.1	Menus .....	3-1
3.1.1	Menu File .....	3-1
3.1.2	Menu Edit .....	3-2
3.1.3	Menu View .....	3-2
3.1.4	Menu Project .....	3-3
3.1.5	Menu Device .....	3-4
3.1.6	Menu Extras .....	3-6
3.1.7	Menu Window .....	3-8
3.1.8	Menu Help .....	3-8
3.2	Context Menu .....	3-9
3.2.1	Connection between DTM and device .....	3-10
3.2.2	Data exchange between DTM and device .....	3-11
3.2.3	Edit device data with a DTM .....	3-13
3.2.4	Additional Functions .....	3-14
3.2.5	Add device or delete device .....	3-16
3.2.6	Device properties .....	3-16
<b>4.</b>	<b>Working with PACTware .....</b>	<b>4-1</b>
4.1	Generate/Open project .....	4-2
4.2	Device Catalog .....	4-4
4.2.1	Working with the Device Catalog .....	4-5
4.2.2	Administer Device Catalog .....	4-7
4.3	Project View .....	4-8
4.3.1	Add DTM .....	4-9
4.3.2	Delete DTM .....	4-10
4.3.3	Add part of a project .....	4-12
4.4	Plant View .....	4-14
4.5	Edit device .....	4-16
4.5.1	Parameterize device .....	4-16
4.5.2	Load from device .....	4-16
4.5.3	Store into device .....	4-17



4.5.4	Communication log.....	4-19
4.5.5	Print device parameters .....	4-20
4.6	Save project .....	4-22
4.7	Debug Monitor.....	4-23
4.8	Error Monitor .....	4-25
<b>5.</b>	<b>PACTware Add-Ins .....</b>	<b>5-1</b>
5.1	HART Advanced Scan Add-In.....	5-2
5.1.1	Start Add-In .....	5-2
5.1.2	Prepare Scan .....	5-3
5.1.3	Execute Scan .....	5-4
5.1.4	Identify DTMs of detected devices .....	5-5
5.1.5	Add detected DTMs to a project.....	5-8
5.1.6	Edit topology.....	5-9
5.1.7	Close Add-In, Stop Scan .....	5-9
5.2	Up/Download Manager Add-In .....	5-10
5.2.1	Start Add-In .....	5-10
5.2.2	Edit several field devices .....	5-10
<b>6.</b>	<b>Glossary .....</b>	<b>6-1</b>
	<b>Index .....</b>	<b>Index-1</b>



## 1. Overview

PACTware (Process Automation Configuration Tool) is a program designed for the selection of communication-capable field devices from a device catalog and for the combination of the communication structure of projects in a production plant.

In conformity with the FDT Specification 1.2.1 (Field Device Tool Specification) PACTware is a frame application for DTMs (Device Type Manager) which is delivered as configuration software by the field device vendors. DTMs enable the configuration of the field devices and changes of the device parameters. In PACTware configuration and parameter values can be saved to storage devices and printed. PACTware works with DTMs, which were implemented according to the FDT Specification 1.2 or 1.2.1.

Via CommDTM (Communication DTM) the communication with field devices is established using protocols like e.g. HART or Profibus Protocol. **Gateway DTMs** can be inserted between CommDTM and the DTMs of the field devices. They parameterize the functions of Remote I/O Systems or multiplexers. A project can comprise several CommDTMs and such represent complex communication structures in a plant.

A large part of the functionality is realized in PACTware by so-called Add-Ins, which are included in the delivered software pack and can be downloaded as required. To realize special project-related functions, additional Add-Ins can be developed or existing Add-Ins can be extended. The PACTware service pack includes:

- the **Device Catalog** which lists all DTMs installed on the PC,
- the **Project View** which displays the communication structure of a project,
- the **Plant View** which shows the arrangement of the field devices in a plant,
- the **Error Monitor** which records e.g. errors in the communication with field devices and
- the **Debug Monitor** which logs all debug outputs of PACTware.

In addition, PACTware offers Add-Ins which are suitable for processing several field devices within a project. These are

- the **HART Advanced Scan Add-In**, via which HART field devices of the same communication channel are recognized and automatically generated into one project and
- the **Up/Download Manager Add-In**, which supports loading and storing of parameters to many field devices of a project.

### 1.1 Software Requirements

PACTware runs under the operating systems Windows 2000 Service Pack 4, Windows XP Service Pack 1 and 2 and Windows Vista. The .NET Framework Release 1.1 Service Pack 1 must be installed. Printing of parameter values of a field device requires the installation of Microsoft Internet Explorer as of Release 4.0.

### 1.2 Hardware Requirements

PACTware requires 50 MByte hard disk memory and at least 40 MByte main memory. Depending on the complexity of the projects and the applied DTMs the required main memory may be a multiple of this. A computer with Pentium IV 450 MHz processor or higher, XGA graphic card and a Microsoft compatible mouse or similar pointing device is required.



## Overview

### 1.3 Install

All running programs must be closed before you install PACTware on your computer. Administrator rights are required to install PACTware to your PC.

The Setup includes the following programs:

- a program library to read PACTware 2.4 project files
- PACTware Release 3.6
- a CommDTM for the HART-Protocol
- a generic HART device-DTM
- manuals and online help for PACTware in several languages

After unzipping the installation file the following files are available:

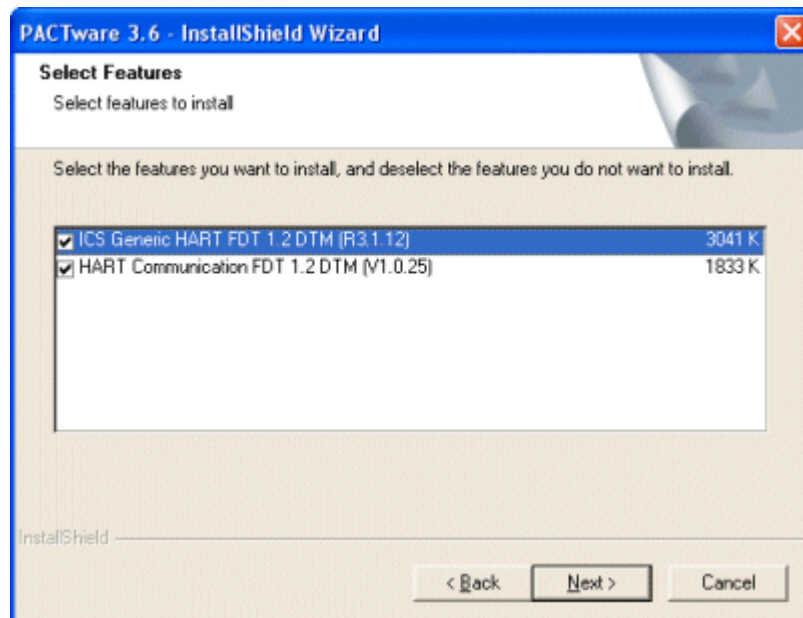
Name	Size	Type	Date Modified
CWHARTFDTSetup		File Folder	5/15/2007 06:57
IGenHartSetup		File Folder	5/15/2007 06:57
0x040c.ini	7 KB	Configuration Settings	4/7/2004 15:04
0x0407.ini	7 KB	Configuration Settings	4/15/2004 16:24
0x0409.ini	6 KB	Configuration Settings	4/24/2004 19:21
1031.mst	51 KB	MST File	4/24/2007 17:40
1033.mst	20 KB	MST File	4/24/2007 17:40
1036.mst	50 KB	MST File	4/24/2007 17:40
Data1.cab	13.010 KB	WinZip-Datei	4/24/2007 17:40
instmsiw.exe	1.780 KB	Application	3/11/2002 11:06
ISScript10.Msi	877 KB	Windows Installer Package	5/24/2004 20:38
LIESMICH.TXT	8 KB	Text Document	4/24/2007 17:30
MDAC_TYP.EXE	5.439 KB	Application	4/26/2005 08:50
msxml2.msi	650 KB	Windows Installer Package	1/11/2006 14:48
PACTware 3.5.msi	1.955 KB	Windows Installer Package	4/24/2007 17:40
PACTware.bmp	770 KB	Bitmap Image	3/7/2007 12:37
PACTware.ini	1 KB	Configuration Settings	1/23/2007 08:08
PACTware.ver	1 KB	VER File	3/7/2007 12:35
PWEULAENG.TXT	1 KB	Text Document	6/7/2002 09:18
PWEULAGER.TXT	1 KB	Text Document	6/7/2002 09:17
README.TXT	7 KB	Text Document	4/24/2007 17:30
setup.exe	244 KB	Application	4/24/2007 17:39
Setup.ini	2 KB	Configuration Settings	4/24/2007 17:40

The installation is started by a double-clicking **setup.exe**. After selecting the installation language confirming the license agreement a complete or user-defined setup can be selected.



## Overview

In the user-defined setup a target directory can be selected for PACTware and a few components can be excluded from the installation.

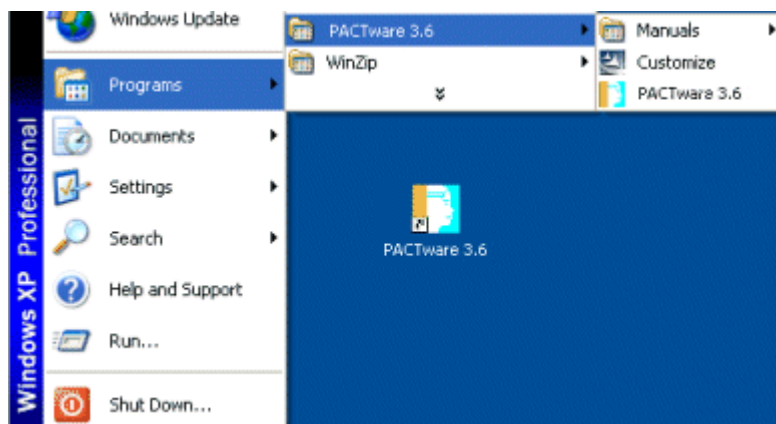


In the further course of the setup PACTware, the selected features and the system components are installed. The features are installed via own setups. The special license terms must be respected.

At the end of the PACTware setup, the password valid for a previously installed version of PACTware, can be applied. A program group for all users is entered to the Windows Start menu. A link to start PACTware is stored on the desktop.

## 1.4 Start

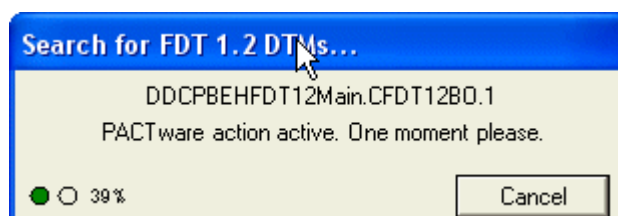
PACTware is started either by a double-click on the link or in the Windows Start menu via <Programs> in the installed program group with the entry PACTware 3.6.



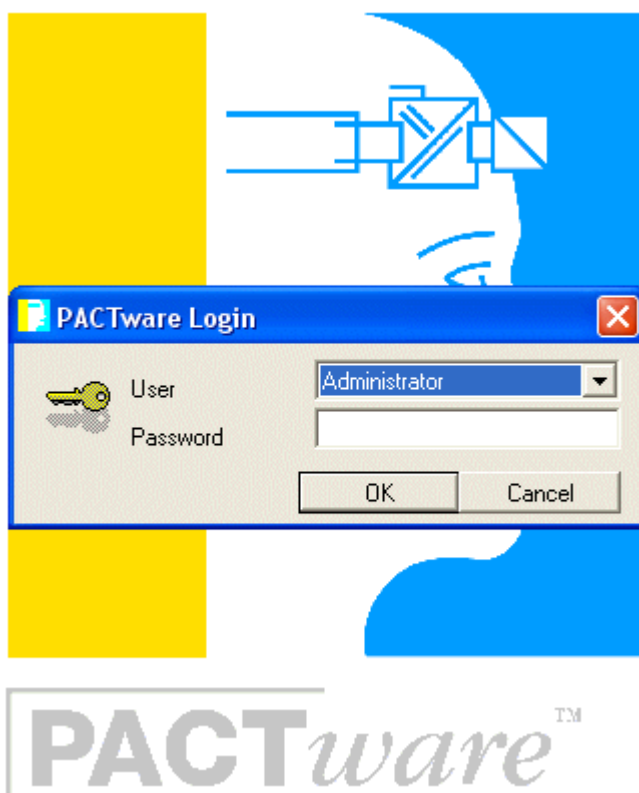


## Overview

At the initial program start, the device catalog is generated automatically. All DTMs installed on the PC are found and entered to it. The search may take a few minutes when many DTMs were installed.



At the initial program start following the installation PACTware is displayed immediately if the passwords are not applied from an earlier installation. Otherwise a dialog is displayed to which a password must be entered.



It is recommendable to define passwords in menu item **Extras** - User Administration.  
Before PACTware can be used at least one DTM must be installed.



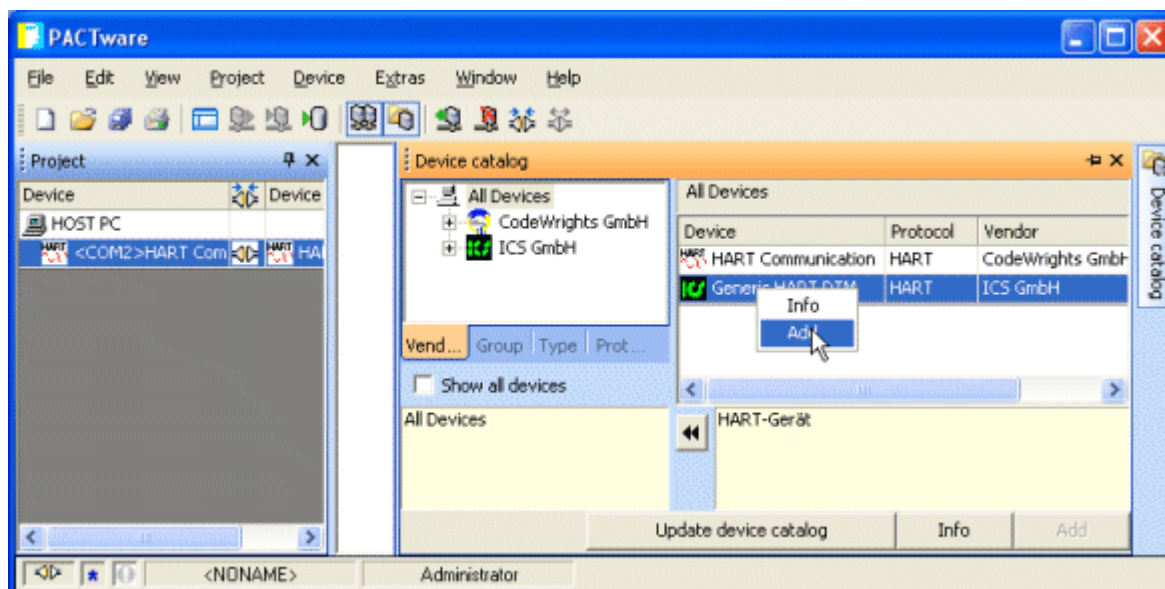


## Overview

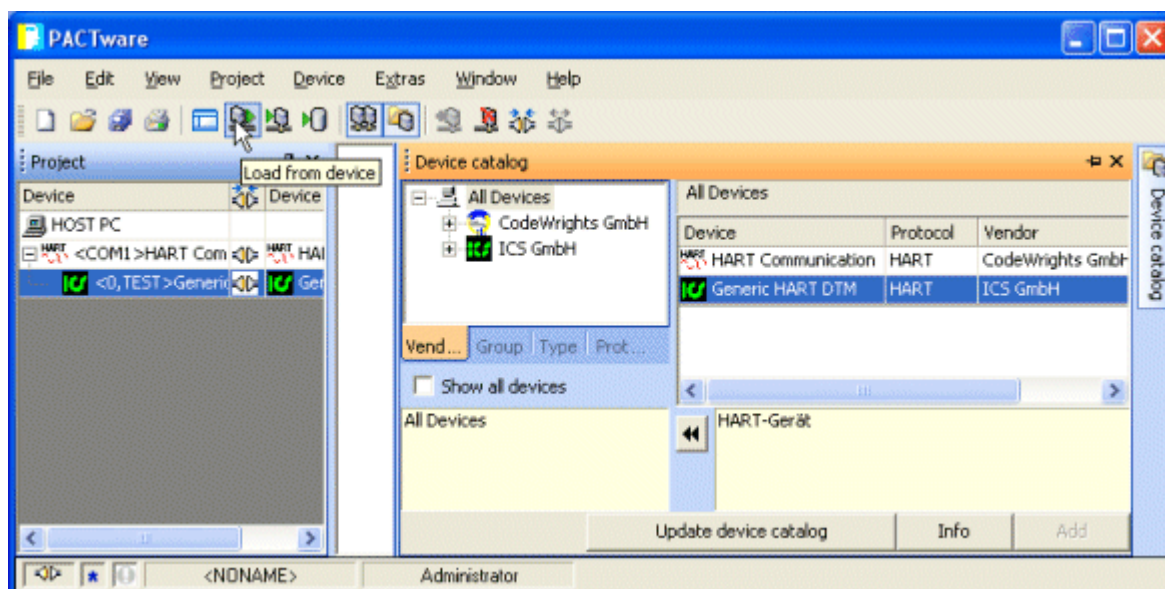
### 1.5 Getting Started

A HART-capable field device can be parameterized in few steps using both DTMs contained in the delivered software pack. The field device must therefore be connected to the PC using e.g. a HART Modem.

The project window and the device catalog must be opened:



The two DTMs are added from the device catalog to the project in the sequence HART Communication and Generic HART DTM via button **Add**, via menu item **Add** of the DTM context menu or via mouse by drag&drop.

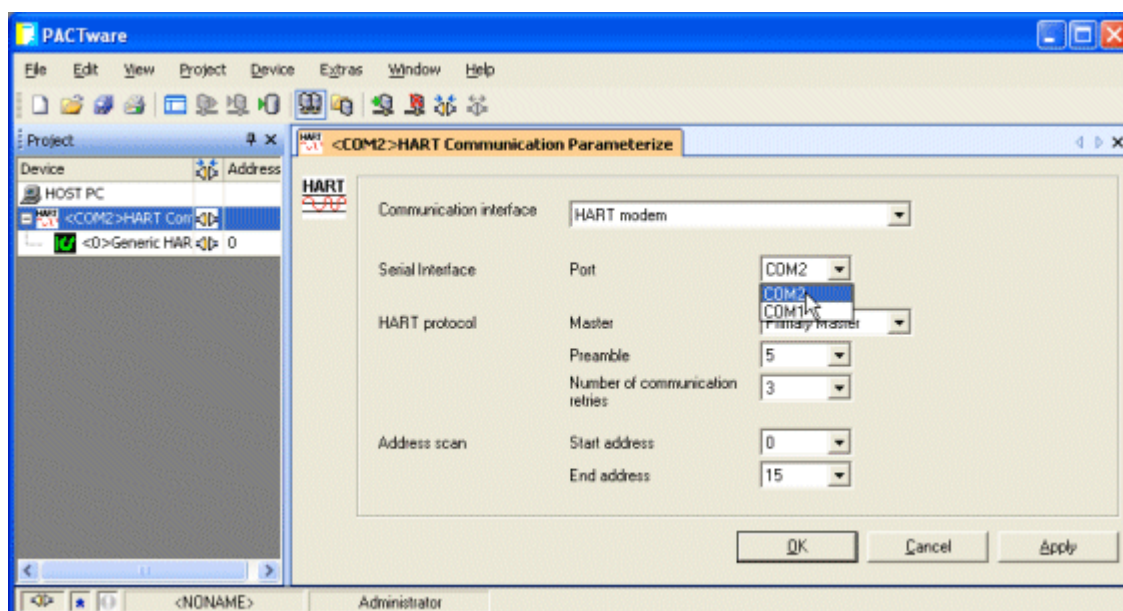


Tool **Load from device** reads the data from the field device. A connection to the field device is automatically established.

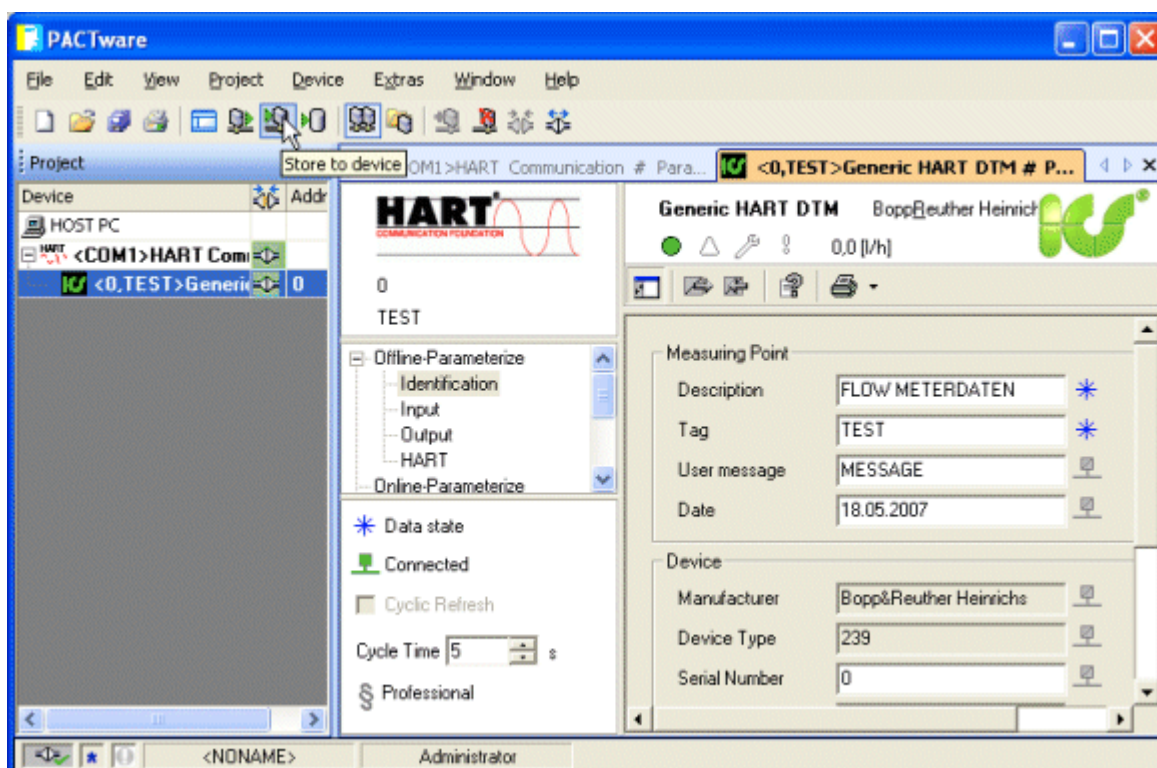


## Overview

If no connection can be established, e.g. the address of the COM-interface in the HART Communication DTM must be changed. The parameter page of the DTM must therefore be opened by a double-click on its menu item in the project window.



The parameter page of the Generic HART DTM is also opened by double-clicking its entry in the project window and subsequently displays the values read from the field device.



Changed parameters can be stored to the field device by using tool **Store to device**.

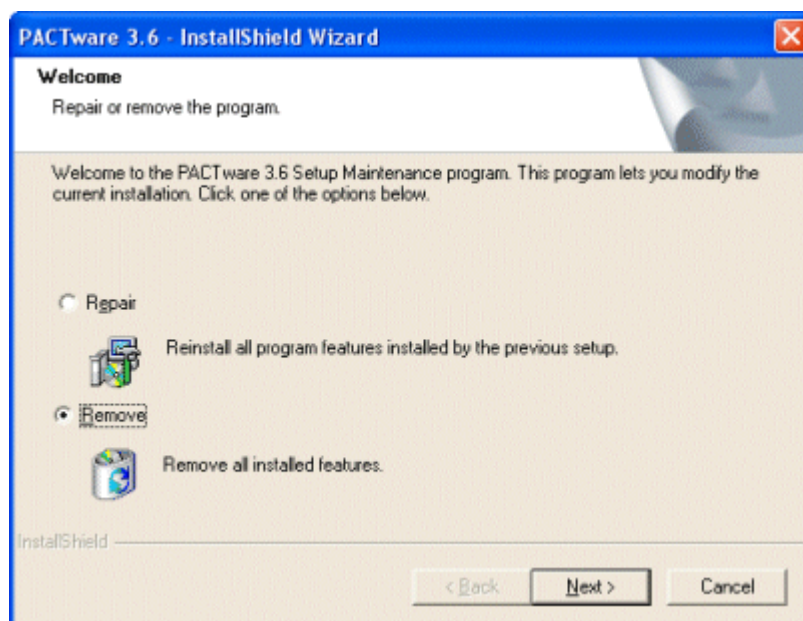


## Overview

### 1.6 Uninstall

PACTware is deinstalled via menu item **Customize** in the PACTware 3.6 program group.

The installation program is called via this menu item.



The device catalog, the project files which were edited in PACTware and all installed DTMs remain unchanged.

### 1.7 Problem report

In the event that DTM or PACTware-related problems occur, a hotline is available by e-mail to [hotline@pactware.com](mailto:hotline@pactware.com) or by phone 0 180 5 350050 (14 ct./min). Additional support is provided by the vendor who supplied the DTM or PACTware.

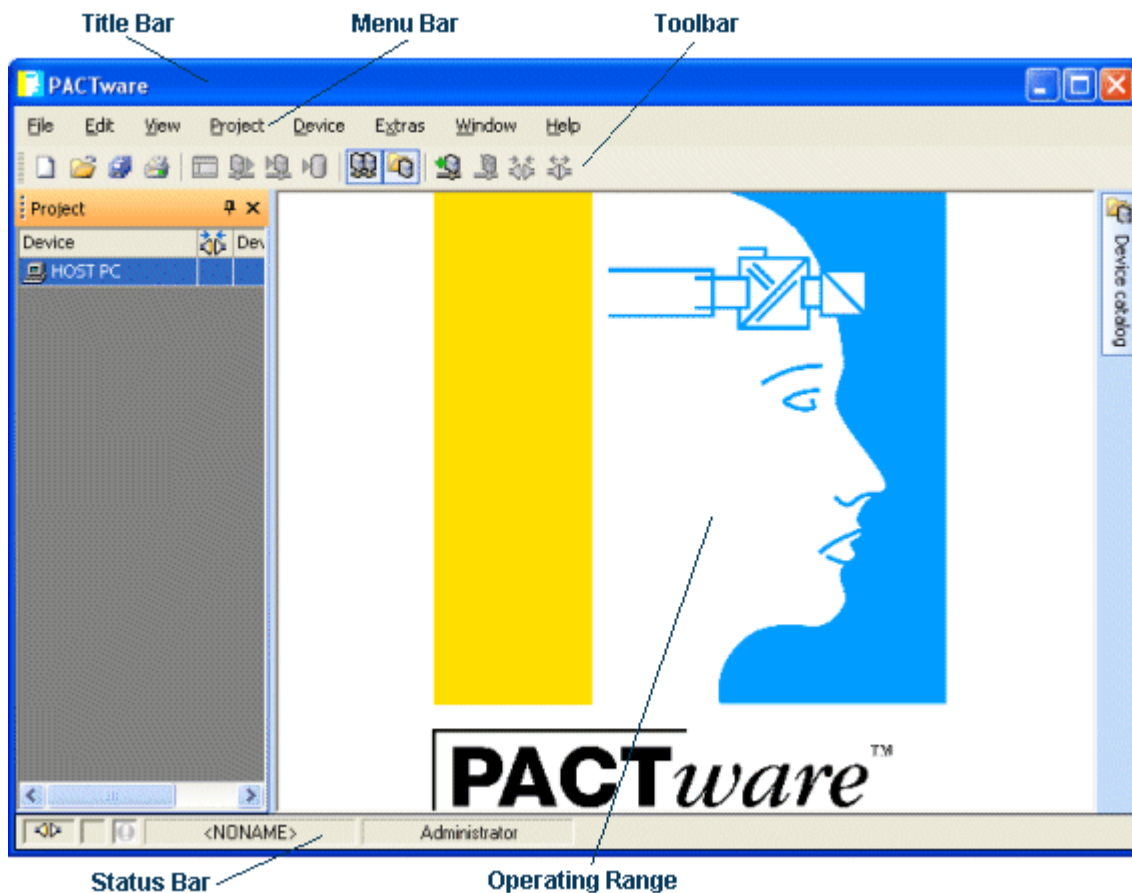
Information about suppliers of PACTware are contained in a form which can be called via entry **About...** in **Menu Help**. Information about the DTM is either obtained via menu item **Properties** in the context menu of the DTM in the project structure or via the button **Info** of the device catalog after selecting the associated device from the device catalog.

When describing the problem, information regarding the operating system on which PACTware runs, the PACTware and DTM program version are required. To find a solution, any information about the interactions or the executed functions which lead to the problem are useful. In addition, screenshots are also helpful in the error analysis.



## 2. Main Window

Following the start PACTware displays the main window which consists of 5 components:



### 2.1 Menu bar

The menu bar contains pull-down menus to start all available program functions. The requested menu item is selected by using the mouse or the corresponding shortcut key (ALT-<letter>).

File Edit View Project Device Extras Window Help



## Main Window

### 2.2 Toolbar

Frequently used command of the menu bar and the project view are contained in a toolbar. The symbols have tooltips which explain the function.

The toolbar is divided into 4 sections.



The left section contains symbols to create a new project, to open an existing project, to save or to print the current project.

The second section contains tools to edit DTMs. For parameterization of a field device the user interface of a DTM selected in a project is displayed. Tool **Load from Device** reads all parameters from a field device, **Store to device** writes them to a field device and tool **Write device data to file** writes the current parameter set of the DTM to the PACTware database.

The third section contains the tools of the two most important components of PACTware: the project view and the device catalog.

The symbols in the right section have the following meaning starting from left to right:

- add an additional DTM to a selected position of the project,
- delete the selected DTM from the project,
- connect the selected DTM and the field device
- disconnect DTM and field device.

### 2.3 Status bar

The status bar contains information about the current status of the edited project.



The displays have the following meaning (from left to right):

- Connected with a **CommDTM**
- Project was changed (identified by an asterisk)
- Error messages exist. The symbol flashes if the messages have not yet been displayed in the error monitor. A tooltip displays the number of the error messages.
- Name of the project
- Active user role





## Main Window

## 2.4 Operating range

In the operating range two window types are displayed, which are required for project editing or parameterization of the field devices:

- **PACTware Windows**, which are assigned to the PACTware Add-Ins and
- **DTM Windows**, which are offered by the DTM.

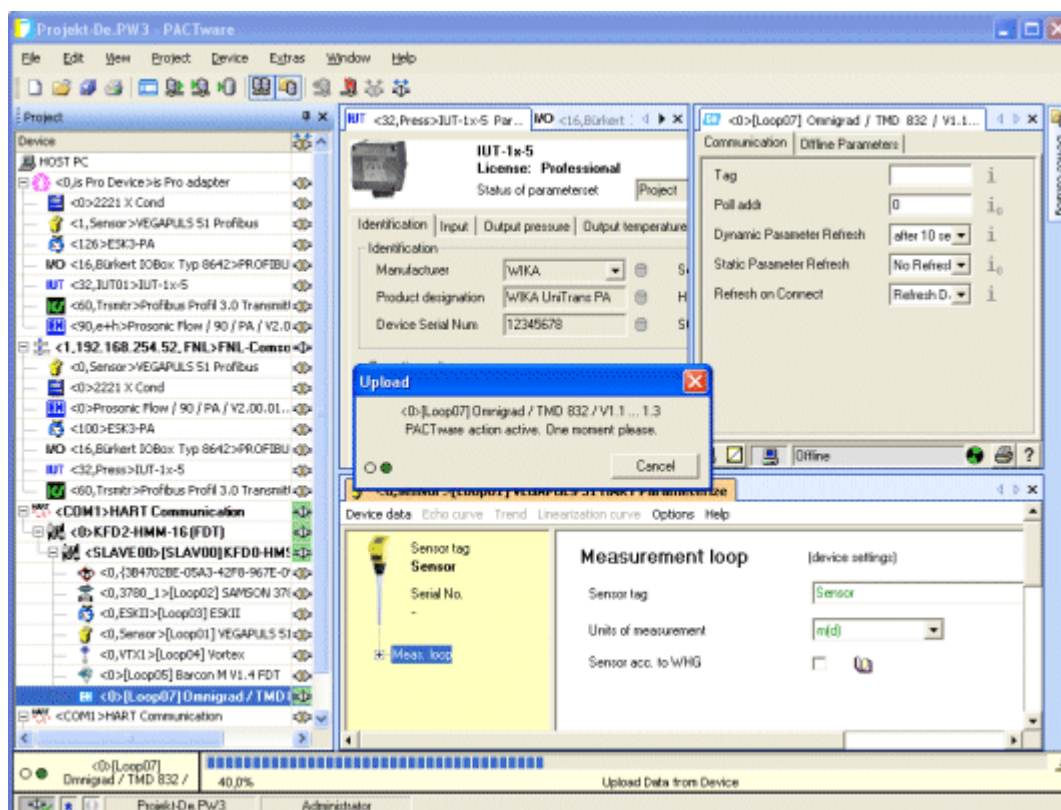
PACTware windows include the device catalog, project view, clipboard, plant view, error monitor and debug monitor.

DTM windows are combined in a group, if they are displayed in "Tabbed MDI". Each window contains a tab, to which the name of the DTM and the function displayed in the window is entered (see the following figure).

If "Classic View" is selected (see **Menu Window**), a separate window is displayed for each DTM and function (e.g. parameterize, calibrate, display measured values). It can be moved freely, arranged and minimized.

When actions take a long time - like for example **Load from device** - a progress bar is displayed at the lower edge of the operating range. This progress bar must be closed again if the action cannot be terminated.

The following figure shows a complex arrangement of windows while a field device is connected.



The arrangement of windows can be stored and recreated automatically in case of repeated application (see **Layout Management**).

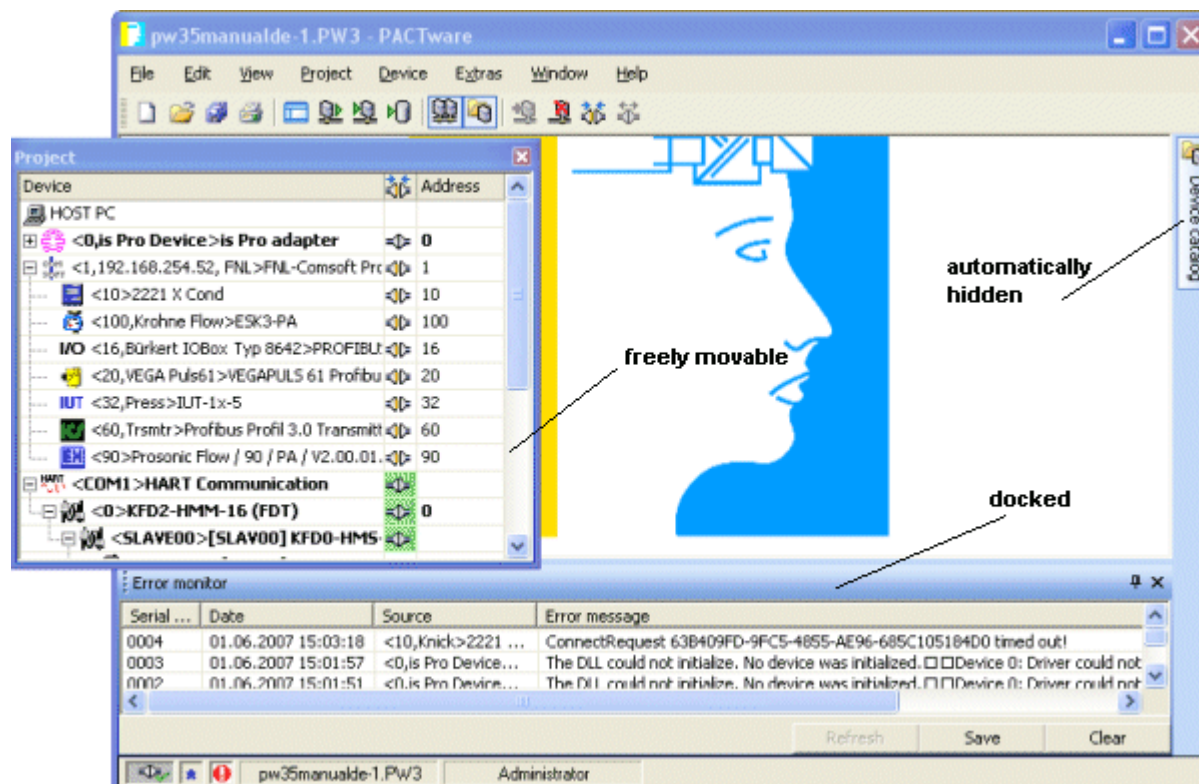


## Main Window

### 2.4.1 PACTware Window

PACTware windows can be handled flexibly according to the different use cases. As several windows are in use simultaneously, a most space-saving arrangement which still displays any required information is necessary. The Layout Management supports the user in optimal manner.

PACTware windows can be displayed docked to the main window, automatically hidden and freely movable. The following figure shows all three possibilities:



The project view is contained in a freely movable window, which can be positioned on the desktop independently of the main window.

The device catalog is automatically hidden at the right edge. It is displayed docked, as soon as the cursor glides along the labeled tab and disappears when the cursor is outside the window.

The error monitor is docked onto the main window.



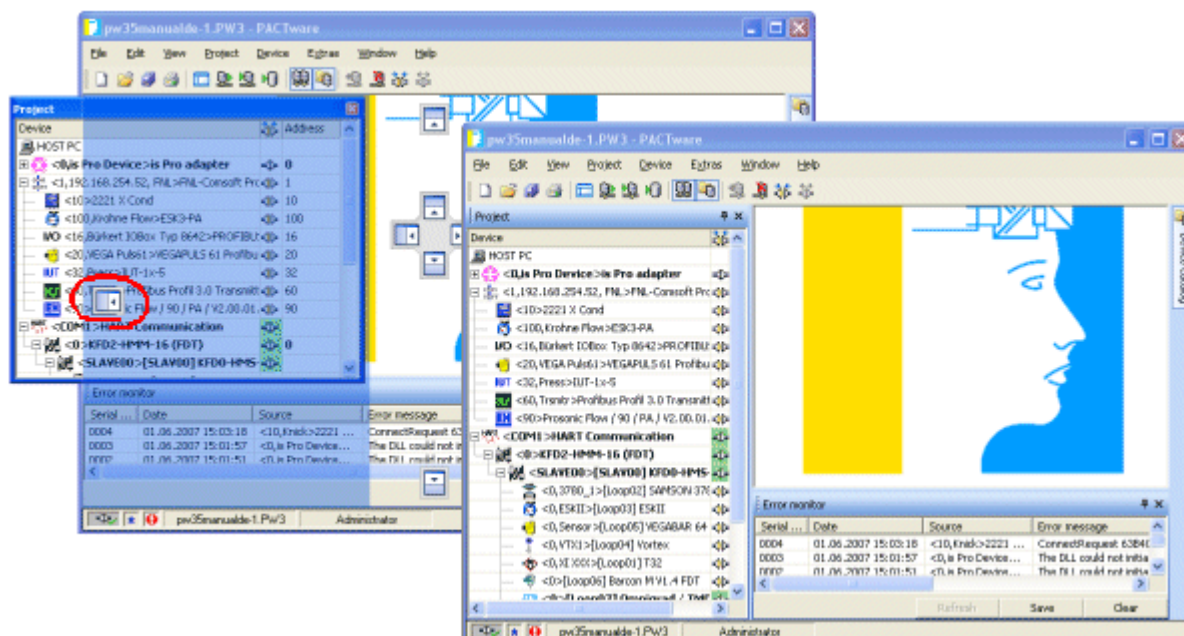
The needle symbol in the title bar of the window allows to switch from docked window to automatically hidden window.

All PACTware windows may have any of the three states. The user is offered visual help to switch between different states and to easily navigate to each new position.

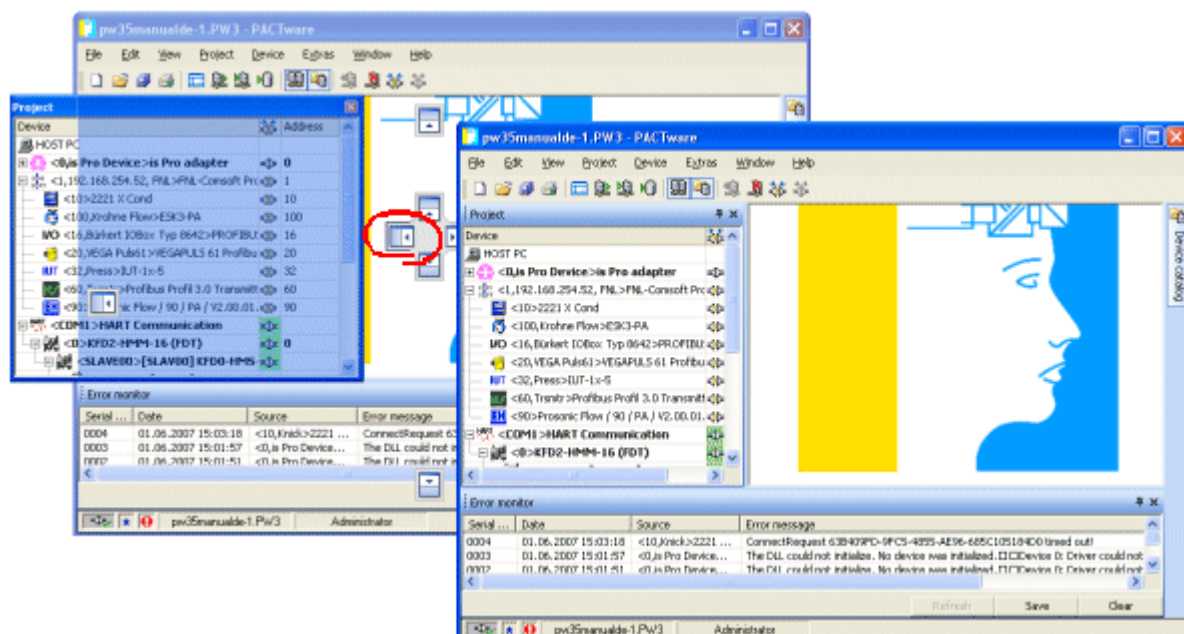


## Main Window

In the following displays docking of a freely movable window is shown. The target position of the window is displayed in a blue area. The target position is displayed when the cursor reaches one of the arrows (outer left in the figure below).



4 external positions are available which represent docking to the edge of the main window. The 4 internal positions characterize targets within the empty pane between the windows. The following figure shows the alternative docking of the project window.

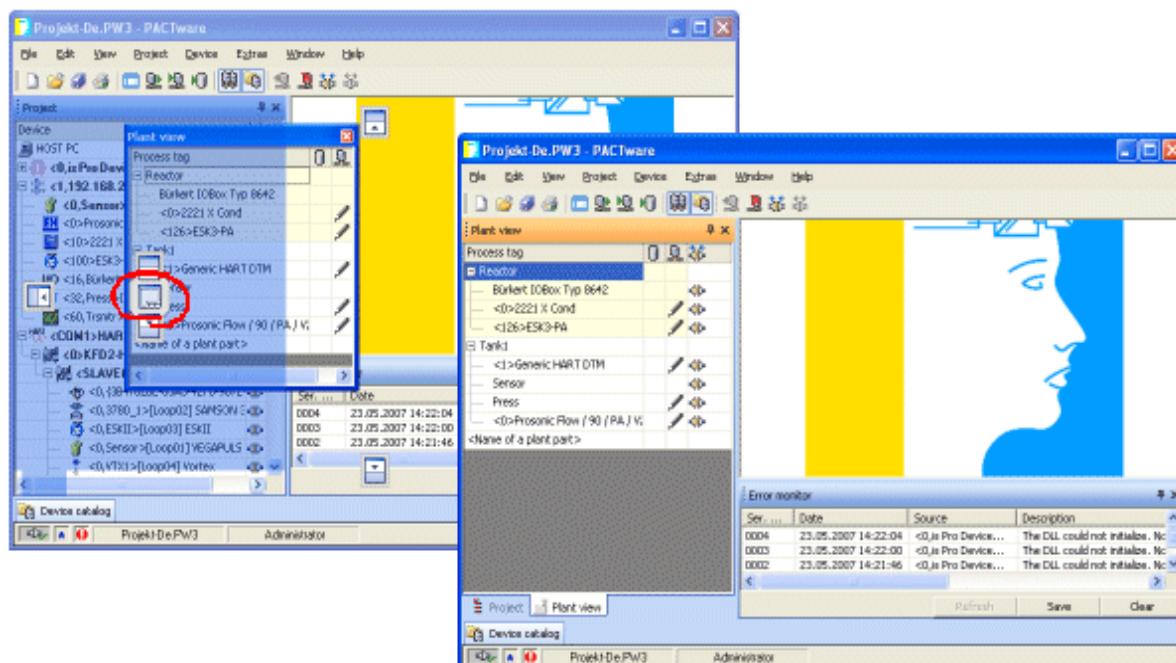






## Main Window

An additional possibility of the space-saving layout is to cascade several PACTware windows. The windows are selectable by a tab at the bottom edge. This layout is suitable for windows of similar content, which are to be displayed alternatively. In the figure, project view and plant view are displayed cascaded.



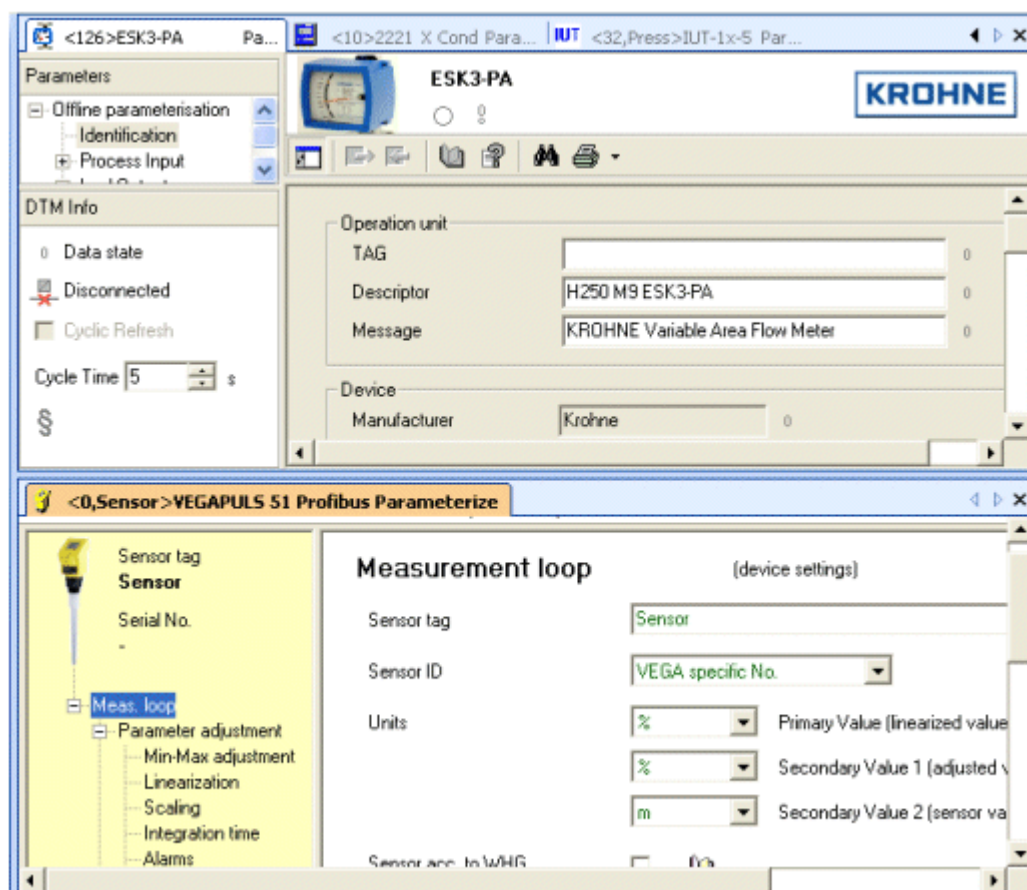


## Main Window

### 2.4.2 DTM Window

All DTM windows are combined in a group. The group can consist of several panes containing one or several DTM windows which are each labeled by a tab. Only one window is displayed in each pane.

The tab allows to switch a DTM window to the front.



When the number of DTM windows in a pane exceeds the space provided for labeling all tabs, arrows are used for scrolling. Button x closes the displayed DTM window.

Each call of a function of the DTM displays a new DTM window. If a window is already open for a function of a DTM, it is switched to the front.

The following context menu is offered on the tabs for the arrangement of DTM windows:

<u>C</u> lose	Ctrl+Shift+C
<u>M</u> aximize	Ctrl+Shift+T
<u>A</u> rrange all	Ctrl+Shift+R
<u>N</u> ew <u>H</u> orizontal Tab Group	Ctrl+Shift+H
<u>N</u> ew <u>V</u> ertical Tab Group	Ctrl+Shift+V
M <u>o</u> ve to <u>N</u> ext Tab Group	Ctrl+Shift+N



## Main Window

When a DTM window is displayed maximized, all remaining DTM windows are masked. The arrangement becomes visible again when the maximized display is reduced to regular window size. Menu items **New Horizontal Tab Group** or **New Vertical Tab Group** displays the corresponding DTM window individually in a new line or column of the arrangement.

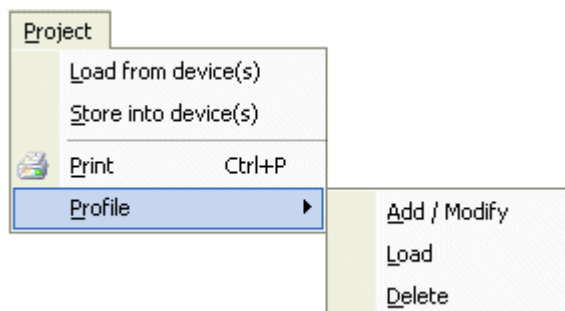
The arrangement of the DTM windows can be changed analog to the PACTware windows by using the mouse. A preview is offered for the displayed target positions as well as for the new position of the edited DTM window.

## 2.5 Layout Management

The Layout includes the PACTware window as well as the DTM window. The arrangement of all windows and their states can be assigned an own name and be saved as profile. Switching between layouts for different use cases is such possible.

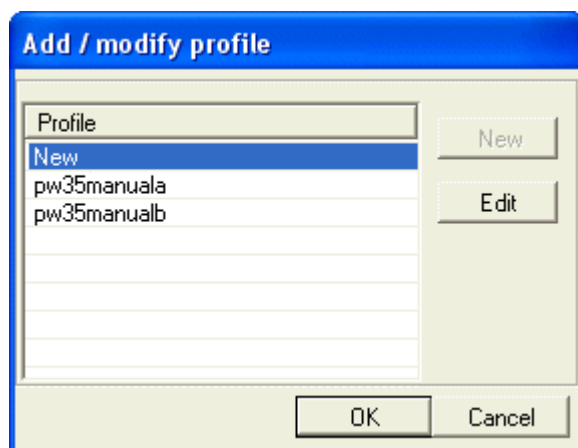
In addition to the graphic layout, the connection status between DTMs and field devices is also saved by the layout management. PACTware can such automatically reproduce a use case by opening a project also in complex plants to e.g. proceed working after an interruption.

The Layout Management is called via menu **Project**.



Every user can add, modify, load or delete profiles within a session.

### Add/ modify profile



To add a profile to a project, a new profile is created using button **New**. A new profile is created under a new name using button **OK**.

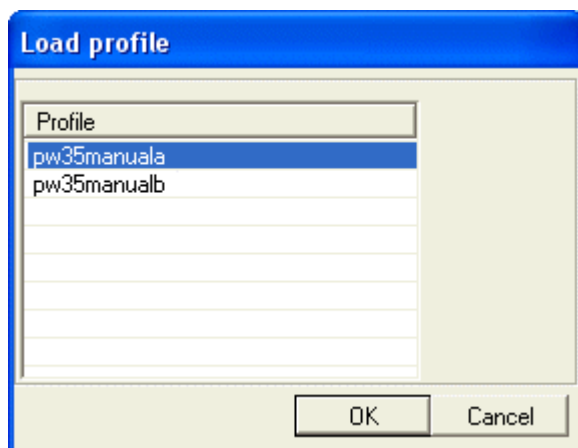
The name of a profile is opened by a double-click on the entry in the list and can then be modified.



## Main Window

If modifications of a layout are to be saved, the desired profile must be selected and confirmed via **OK**.

### Load profile



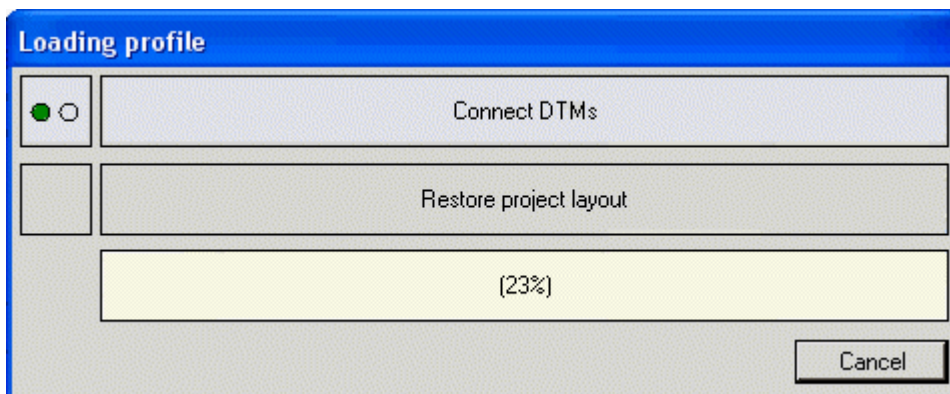
Loading the selected profile is triggered by clicking **OK**.

When opening a project the most recently saved profile can be loaded, if the respective option is set in dialog **Options** (see [Menu Extras](#)).

Before the new profile is loaded, all connections with field devices are deactivated and all windows of the current project are closed. Subsequently, the project containing the selected profile is opened and the layout with all DTM and PACTware windows is displayed.

If field devices are connected in the loaded profile, they are reconnected when the respective option is set (see [Menu Extras](#)).

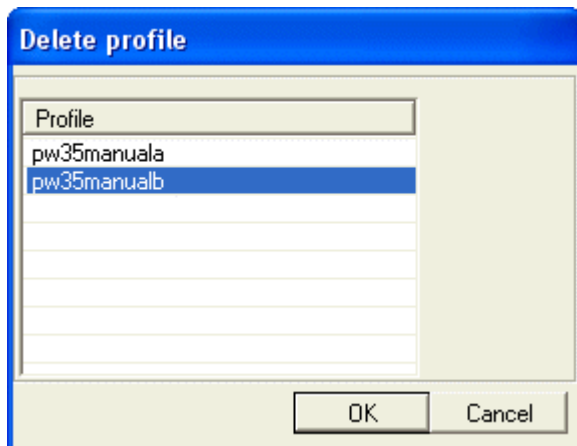
The progress in the buildup of the layout and the connections is displayed in a form.





Main Window

### Delete profile



The selected profile is marked as deleted. It is, however, only deleted when the project is closed and all modifications are saved.

All profiles are saved including the current project (see [Save project](#)). To save projects, [User Rights](#) of maintenance or of a planning engineer are required (**save as...**).

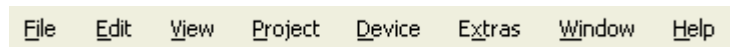


## 3. Functions

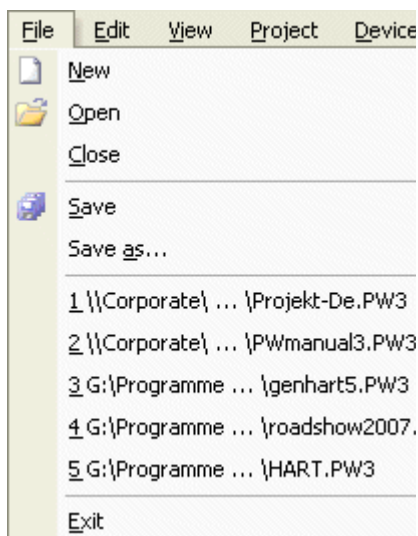
The functions of PACTware relate to project editing, the parameterization and the work with field devices as well as the settings of the program itself.

### 3.1 Menus

The menus combine all functions of PACTware in groups.



#### 3.1.1 Menu File



Menu **File** contains all functions pertaining to project editing.

##### **New**

Creates a new project. The project window is empty. To create a new project the **User Rights** of a planning engineer are required.

##### **Open**

Opens a project file. Every user can open a project. Loading a project progress is displayed in a form. (see **Generate/Open project**).

##### **Close**

Closes the currently edited project. If changes are not saved, a dialog window is displayed prompting the user to save them. Each user can close a project.

##### **Save**

Saves the current configuration of the project. This function requires the **User Rights** of a planning engineer.

##### **Save as...**

Saves the project file under a new name. This function requires the **User Rights** of maintenance.

##### **1 \\Corporate\...**

A list displays the most recently edited projects. The requested project can be selected and opened directly from this list.

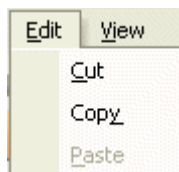
##### **Exit**

Exits PACTware. If changes are not saved a dialog is displayed prompting the user to save (see **Save project**) them. Every user may exit PACTware.



## Functions

### 3.1.2 Menu Edit



Menu **Edit** contains functions to edit a project.

#### Cut

A DTM or a part of a project which is connected with the selected **CommDTM** or **Gateway DTM** is copied to the PACTware **Clipboard** and removed from the project. This function requires **User Rights** of a planning engineer.

#### Copy

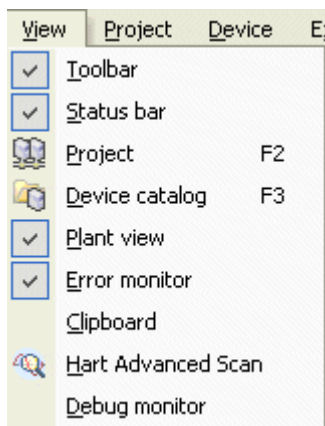
A DTM or another part of a project which is connected to the selected **CommDTM** is copied to the PACTware Clipboard. This function requires the **User Rights** of a planning engineer.

#### Paste

The project part or DTM contained in the PACTware Clipboard is pasted to a selected position of the project. This function requires **User Rights** of a planning engineer.

The use of the Clipboard is described in [Add part of a project](#).

### 3.1.3 Menu View



The **Toolbar** and the **Status bar** can be activated and deactivated using menu **View**.

In the **operating range** the **Project window**, the **Device catalog**, the **Plant view**, the **Clipboard**, the **Error Monitor** and the **Debug Monitor** as well as the windows of additional **Add-Ins** can be displayed and hidden.

The **HART Advanced Scan Add-In** is an Add-In, which is contained in the PACTware software pack. This Add-In detects field devices, which are connected with a HART modem and scans the device catalog for a suitable DTM.

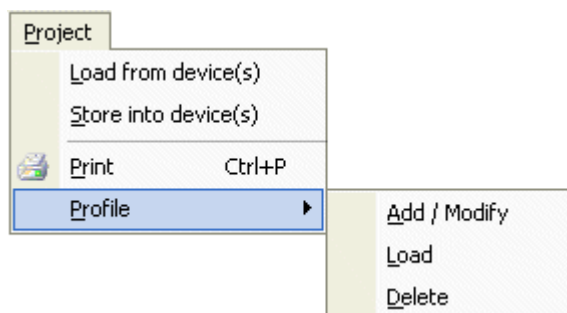
The **Error Monitor** logs all error messages which show DTMs.

The **Debug Monitor** logs events within PACTware and between PACTware and the DTMs.



## Functions

### 3.1.4 Menu Project



#### Load from device(s)

The parameters of all field devices contained in the project are read and applied to the project. This function requires maintenance **User Rights**.

PACTware offers the **Up/Download Manager Add-In** to load parameters from field devices, which are assigned to a selected communication field device (e.g. Remote I/O System or HART-Multiplexer).

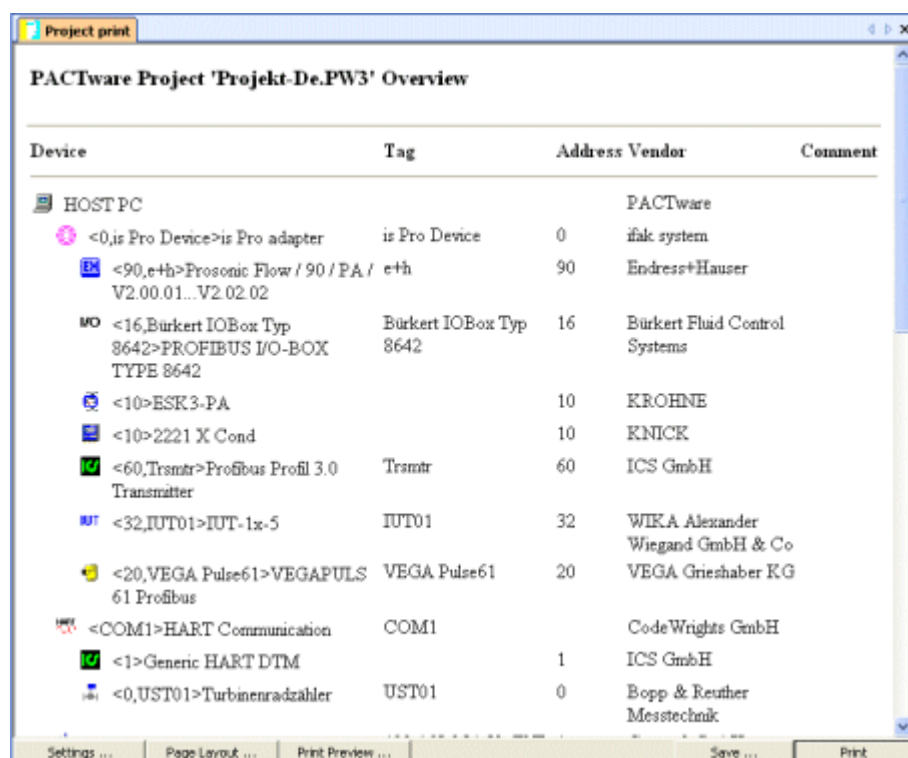
#### Store to device(s)

This function is similar to function **Load from device(s)**, except that all parameter values of the project are stored to the associated field devices. This function requires **User Rights** of maintenance.

PACTware offers the **Up/Download Manager Add-In** to store parameters to field devices, which are assigned to a selected communication field device (e.g. Remote I/O System or HART-Multiplexer).

#### Print

Displays the project in a list which is displayed in a preview window. The project can subsequently be output on a printer. Any user may print projects.

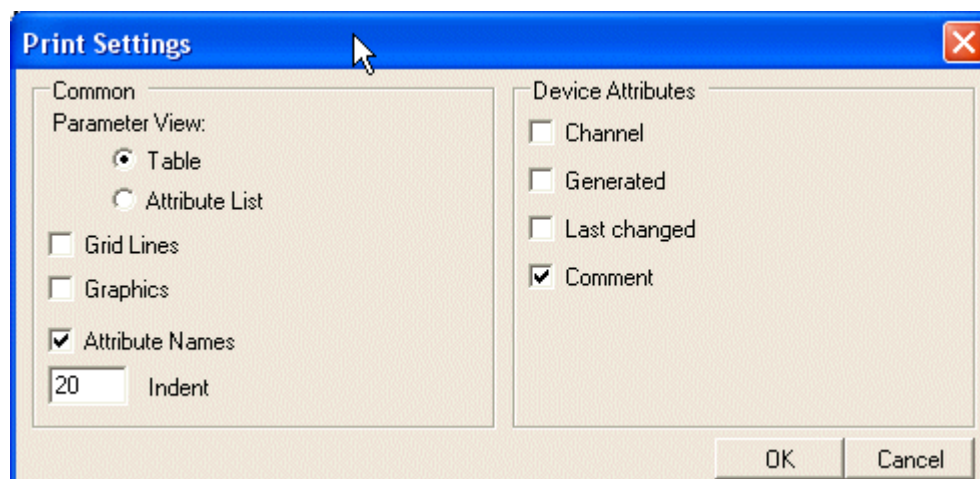






## Functions

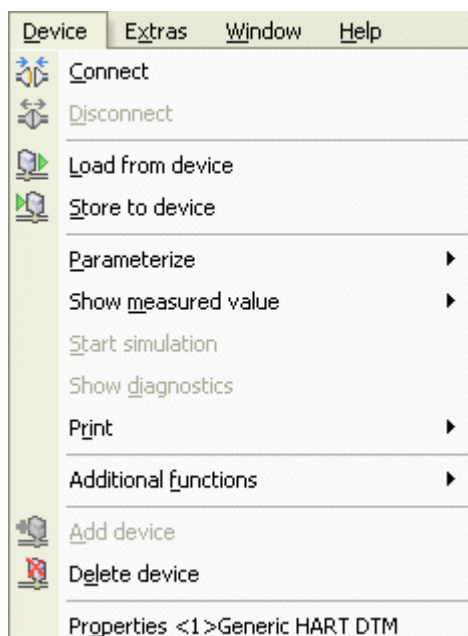
The following dialog provides parameters to change the print layout:



### Profile

A new PACTware layout and a new DTM window are defined and stored in this submenu or an existing layout can be changed, loaded or deleted (see [Layout Management](#)).

## 3.1.5 Menu Device



All functions a **DTM** can execute with field devices, CommDTMs or Gateway DTMs, are contained in menu **Device**. The content of this menu corresponds to the **Context Menu**, which is displayed using the right mouse key for each DTM in a project.

The first two groups of menu items are provided by each DTM. The menu items of the third group are offered by most DTMs. Functions which are generally or temporarily not available in the selected DTM are displayed in gray color.

Special functions of the selected DTM are called via menu item **Additional Functions**. The content of the submenu depends entirely on the functions of the DTM.

The functions Connect/Disconnect, Measured value and Diagnostics, Print and Properties are enabled to all users.

A more detailed description of the functions is contained in section **Context Menu** or in the manuals of the DTMs.

The operator may **Load from Device** and view parameters offline and online. Maintenance staff may in addition change parameters and **Store to device** or **write** to the project file and **Start simulation**.

An additional device can be added to the project structure via **Add device**. A catalog of all DTMs is provided which can be used for a communication field device, like e.g. a multiplexer or a communication component like e.g. a Profibus interface connection.

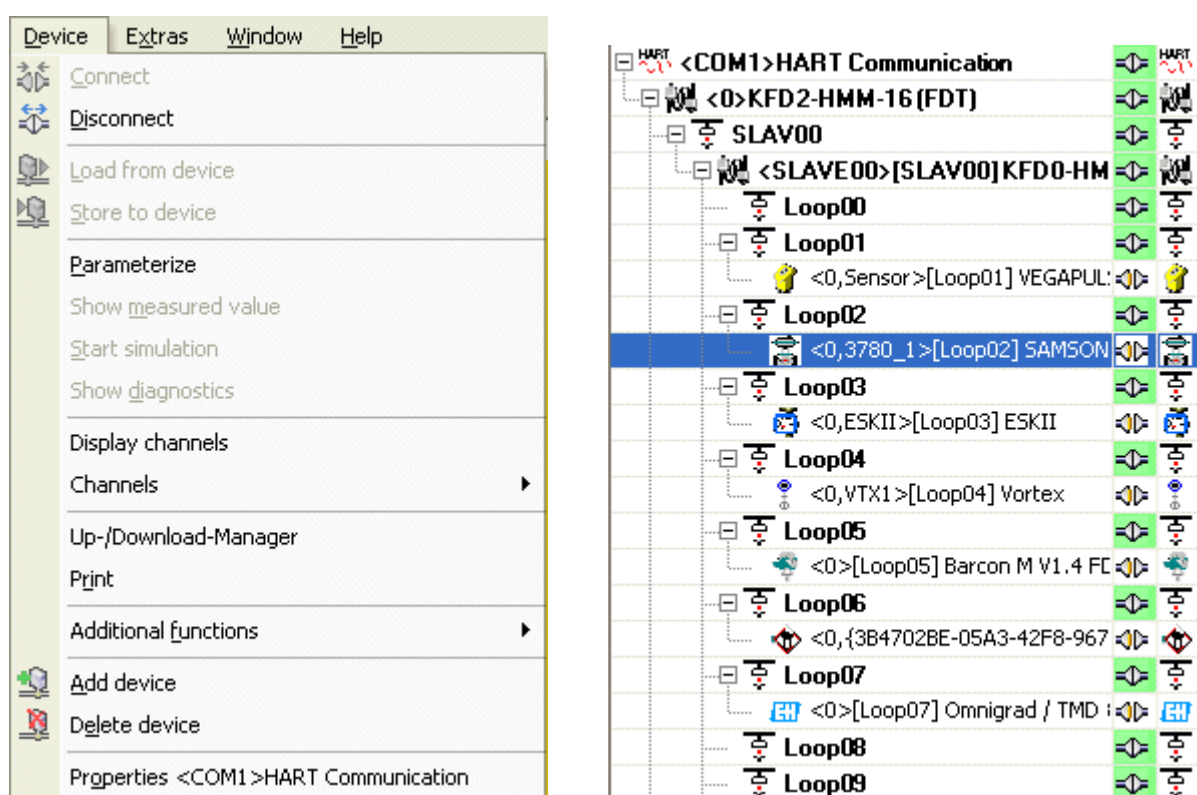


## Functions

The selected device in a CommDTM or Gateway DTM, also any device connected with it, are deleted from the project via menu item **Delete device**. These functions require **User Rights** of a planning engineer.

Menu item **Properties** displays a form with information about the selected DTM and the field device. The information is entered to the project database.

CommDTMs and **Gateway DTMs** offer some additional functions to edit the channels provided by such a DTM. The display of channels supports the selective assignment of DTMs to channels of a Gateway DTM. The project view displays assigned and unassigned channels.

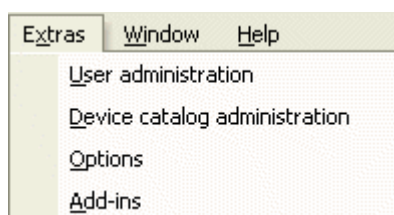


In addition, the **Up/Download Manager Add-In** for CommDTMs and **Gateway DTMs** can be called.



## Functions

### 3.1.6 Menu Extras

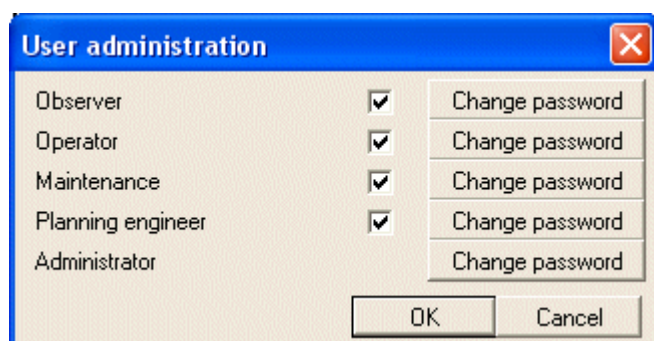


Administrative functions and program settings for PACTware are defined in menu **Extras**.

Passwords of the user roles are edited in the administrative functions; DTMs requested to appear in the **Device Catalog** can be selected and the **Add-Ins** which are to extend PACTware functions are defined.

#### User Administration

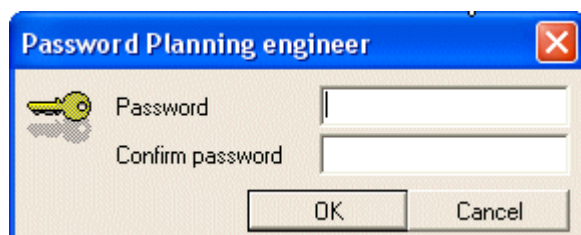
Passwords for the user roles are defined in the **User administration**. Only the administrator may edit the user administration.



The rights of the user roles are detailed in the glossary of the table **User Rights**.

User roles which are selected are available at the PACTware program start.

Button **Change Password** provides a dialog for the entry of a new password. The password must be confirmed in the second line to eliminate spelling mistakes.



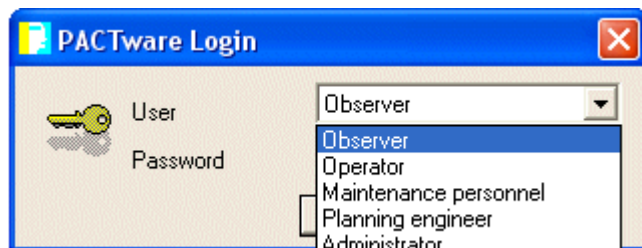
**Caution:** If an empty password is defined for user role Administrator, no login dialog is displayed at the PACTware program start. The user is automatically logged in as administrator. If a new password is entered for the user role administrator, the Login form is displayed again.

The user administration allows to define up to 5 PACTware user roles on a PC containing different rights to use DTMs.



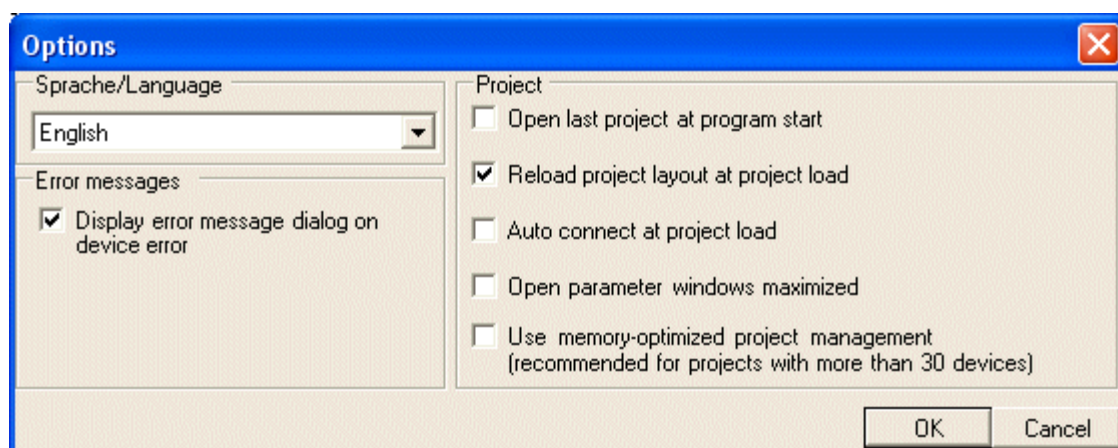
## Functions

At the PACTware start, the user can select one of the predefined user roles from the Login Dialog and is requested to enter the corresponding password.



### Options

The settings which are entered to dialog **Options** are effective immediately or at the next program start. Every user can set options.



In the event that e.g. the **language** is changed and the dialog is confirmed using **OK**, text will everywhere be displayed in the requested language. This also applies to the user interface of the DTMs if the selected language is supported by the DTM.

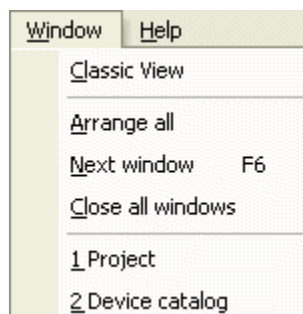
The following default settings can be made to edit projects:

- The most recently edited project can be opened directly at the program start. This option should only be used when PACTware is used repeatedly in succession in the same project and under the same environmental conditions.
- If a layout was stored, it can be rebuilt automatically when a project is opened. This option must be activated, when switching between different layouts of a project (see [Layout Management](#)).
- For repeated parameterization of field devices the connection can be established automatically. When changes to the plant were made like e.g. change of field device address, the connection cannot be reestablished. The project cannot be opened completely.
- If only one field device at a time is in use, the view in the operating range can be reduced to one dialog of a field device.
- In large projects the loading of DTMs is optimized. When a project is opened, not all DTMs are loaded. DTMs which are no longer used are unloaded as soon as a certain memory capacity is reached.



## Functions

### 3.1.7 Menu Window



Menu **Window** supports the arrangement of the PACTware windows and the **DTM** windows in the operating range.

If option **Classic View** is selected, each function of a DTM is displayed in an own window which can be maximized or minimized.

If this option is not selected, the DTM windows are arranged in **Tabbed MDI** style (see **DTM Window**).

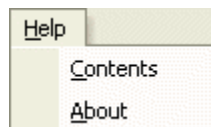
**Arrange all** in Tabbed MDI Style allocates the same amount of space to all DTM windows. **Arrange windows** in the classic view shows an own window for each DTM function in the size predefined by the DTM and arranges the windows cascaded from top left to bottom right.

**Next window** switches from one PACTware window or DTM-window to the next and displays it in the foreground.

The operating range is emptied by activating **Close all windows**. Only the DTM windows are closed.

**1Project** etc. These menu items allow to display windows selectively.

### 3.1.8 Menu Help



This documentation is called via the first menu item of the **Help** menu.

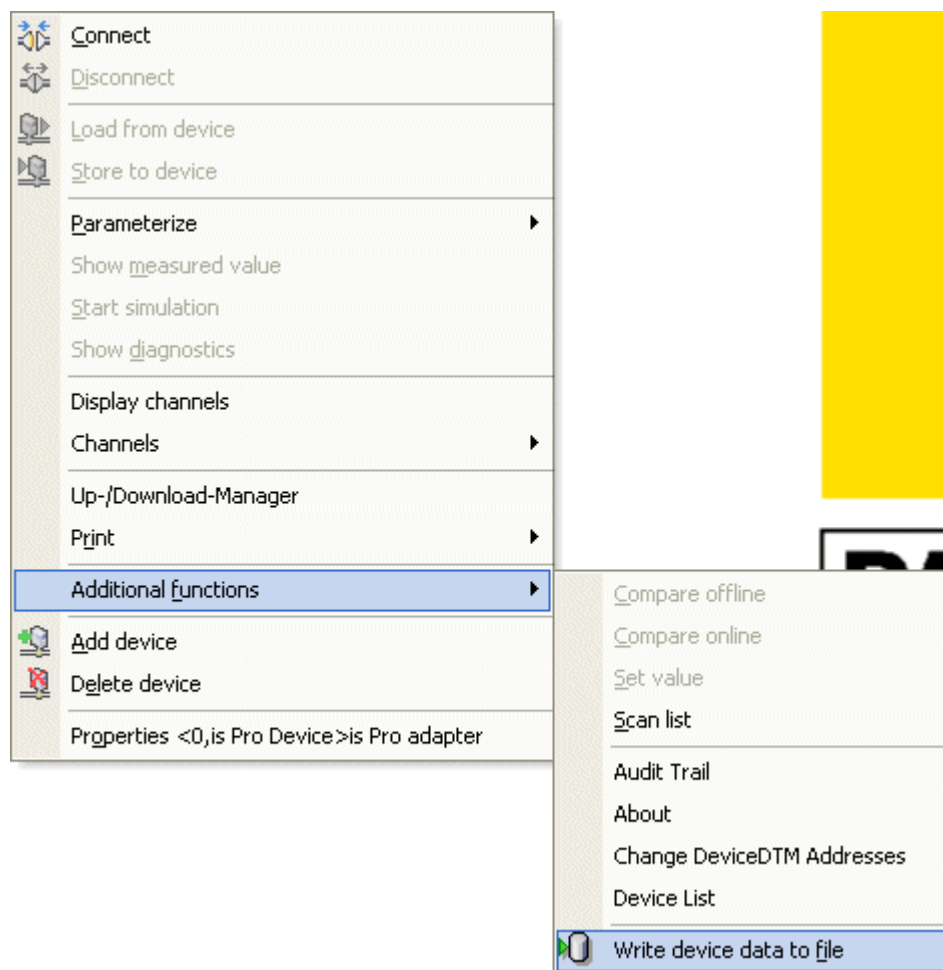
Information about the program version and the location of the components of the **PACTware** program are displayed via entry **About** of the **Help** menu.



## Functions

### 3.2 Context Menu

A **context menu** is provided for each DTM in the project. It consists of entries which are predefined by **PACTware** and entries which are defined by the respective **DTM**. The look of the context menu therefore changes from DTM to DTM.



When a function is not applicable, the associated menu item is displayed in gray color. Functions can be inaccessible owing to the **User Rights** (user role or license), the DTM properties or the communication status of the DTMs.



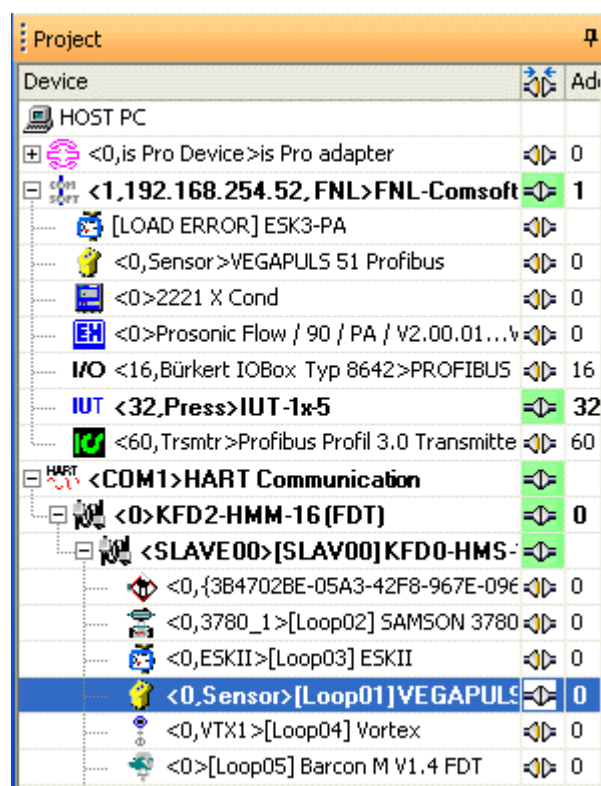
## Functions

### 3.2.1 Connection between DTM and device

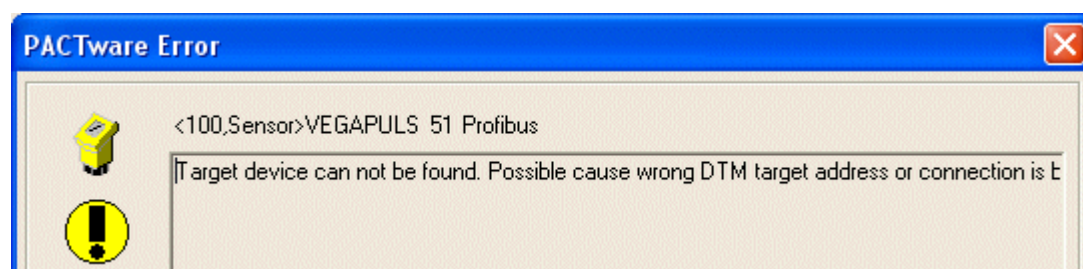
The following two menu items in the context menu are provided by each **DTM**.

#### Connect

A connection between the DTM and the device is started via the communication channel which is defined in the project. The project window displays all involved DTMs and the **CommDTM** in bold letters. When the connection was successful, the respective icon is displayed.



An error message is displayed when the initial communication with the device was not terminated successfully, because e.g. device and DTM are not compatible.



#### Disconnect

After using the device, the connection can be disconnected via this function. The connection is disconnected automatically when PACTware is exited.

Disconnecting a **CommDTM** or **Gateway DTM** results in a simultaneous disconnection of all connected DTMs.





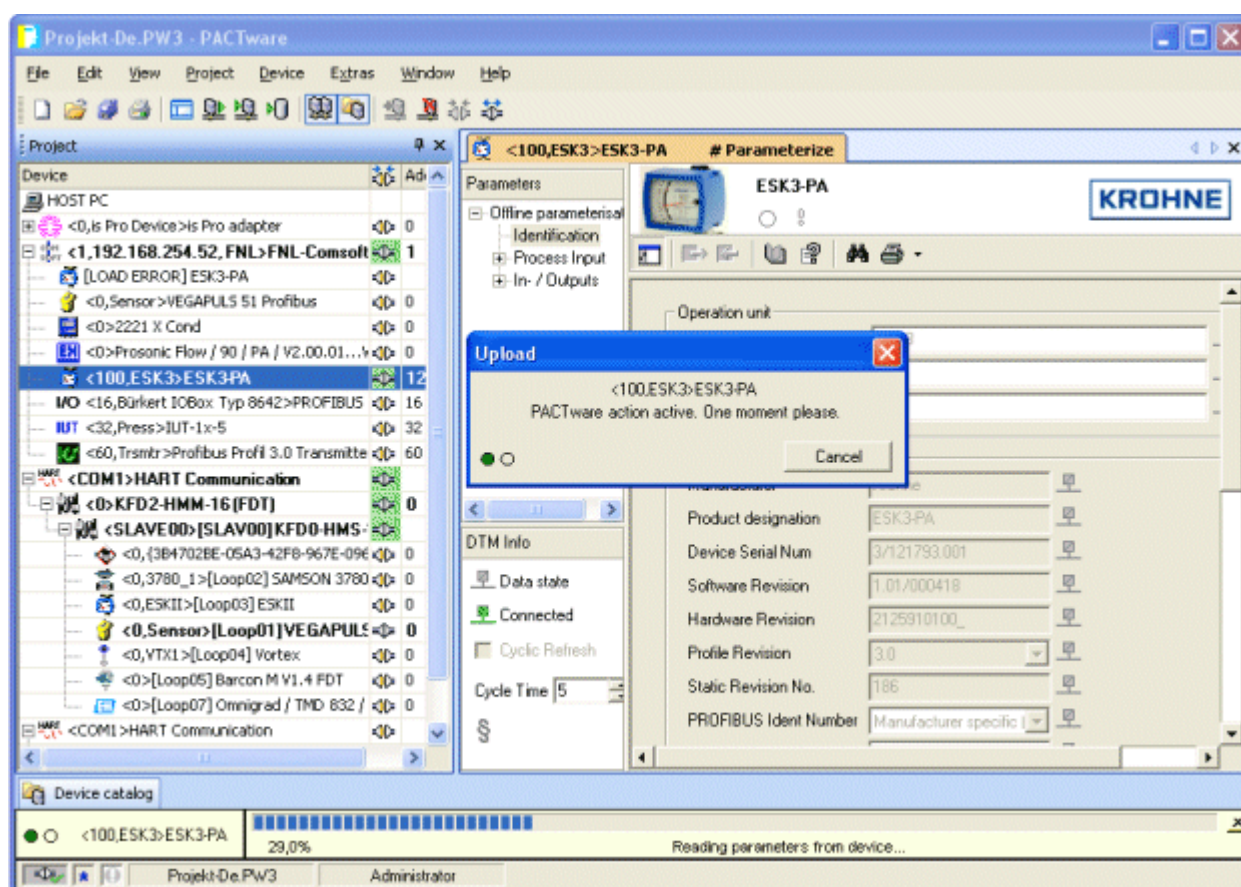
## Functions

### 3.2.2 Data exchange between DTM and device

The following two menu items are provided by each **DTM**. In order to load data from device or to store data to device, the device must be connected.

#### Load from device

After successfully establishing a connection, the DTM starts to load data from the device. A message displays this progress.



The data to be loaded from the device is defined in the DTM. Different data can be loaded depending on the user role. Data that was successfully loaded from the device can be displayed in the DTM window.

No DTM window must be opened to load data from a device.

Data from several field devices can be loaded using the **Up/Download Manager Add-In**.

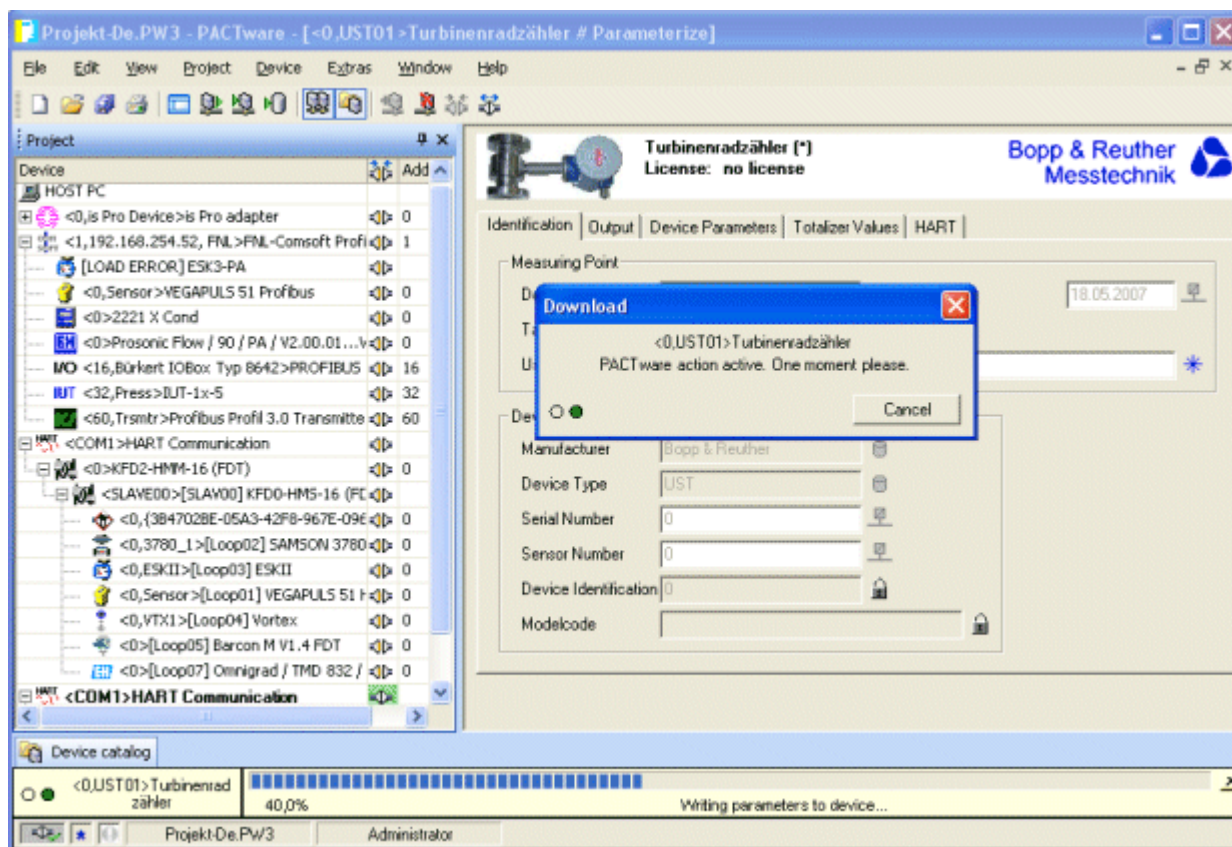




## Functions

### Store into device

When the connection was successfully established, the DTM starts to store data to the device. The progress is displayed in a message.



The data to be stored to the device is defined in the DTM. Different data can be stored depending on the user role.

The DTM window(s) must not be opened to store data to the device.

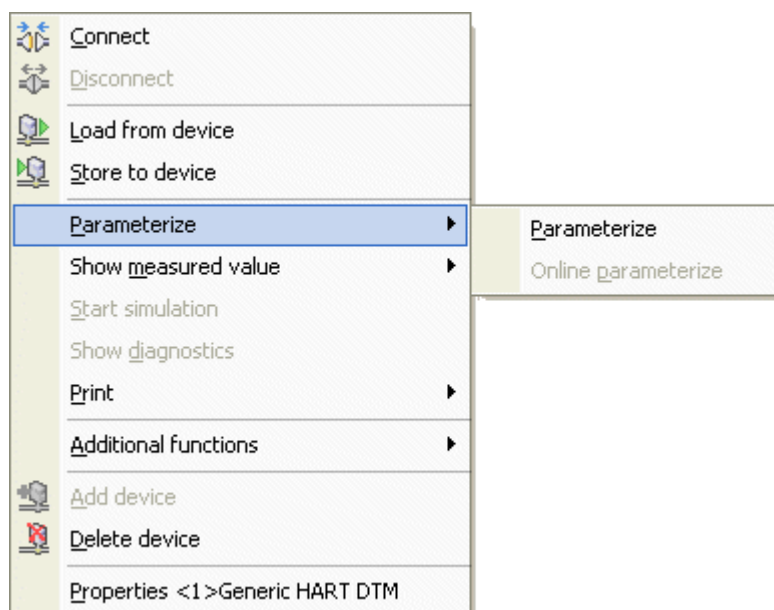
The [Up/Download Manager Add-In](#) allows to store data to several field devices.



## Functions

### 3.2.3 Edit device data with a DTM

The first menu item of this group is provided by each **DTM**. The other menu items are only offered by the DTM if the field device possesses the respective functions or if the DTM supports these functions.



The realization of the supported functions and the look of the displayed dialogs depend on the implementation of the DTM.

#### Parameterize

A distinction can be made between **Parameterize** and **Online parameterize**. If a connection has been established with a DTM, the online parameterization is automatically displayed otherwise a window for Parameterization of the device is displayed.

In the parameterization all parameters of a device are projected, which can also be defined without a connected device. In this manner, a project with all its devices can already be completed before the system start-up.

The online parameterization changes parameters during the plant operation, e.g. to set control parameters.

#### Measured value

The display of measured values is performed via a scaled measured value display or also by a trend display if a the measured values can be called cyclically.

#### Start simulation

The simulation allows to test a field device during its operation. Given states are set in the field device via DTM in order to detect e.g. malfunctions. A connection to the field device must be active.

#### Show Diagnostics

Field devices often provide substantial information on their status. This information can be called and displayed via this menu item. A connection to the field device must be active.



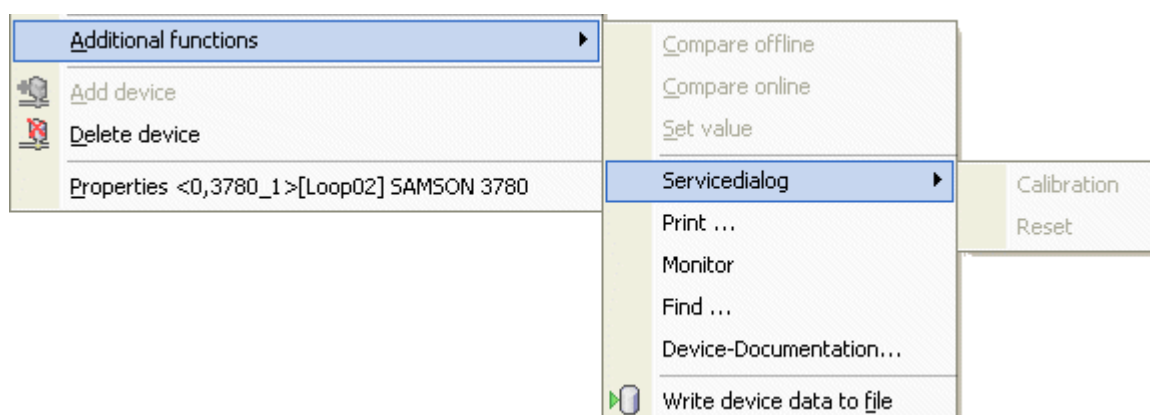
## Functions

### Print

A hard copy is made for predefined functions. Its form can be defined in so-called style sheets. The form of the printout can be defined individually by each DTM. The printout is displayed as preview in a window and can then be output on a printer.

### 3.2.4 Additional Functions

Menu item **Additional Functions** displays a submenu providing all device-specific functions or functions which are used less frequently. The submenu is DTM-dependent and is divided into several groups.



The first group contains three menu items which are provided for all **DTMs**. These functions are only active when they are supported by the DTMs.

The second group contains all device-specific DTM functions.

The third group is displayed in the event of a **Gateway DTM**, e.g. which edits a HART-Multiplexer.

The last group of the menu items is mandatory to all DTMs.

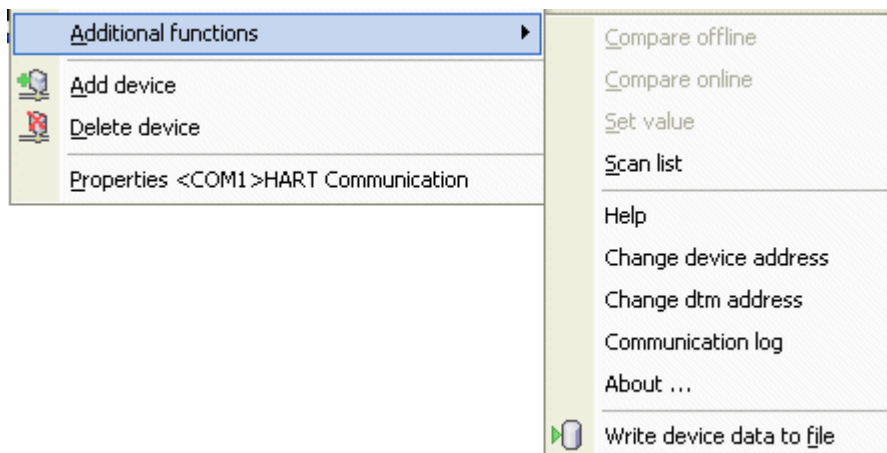
#### **Write device data to file**

This function allows to save parameter changes which were made using the DTM.



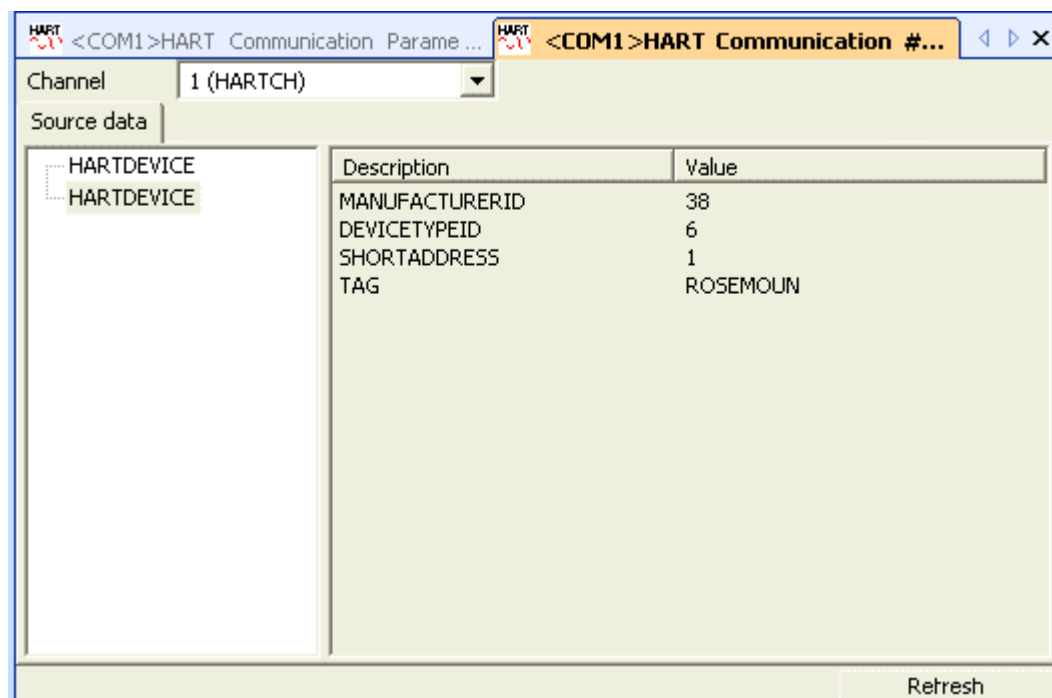
## Functions

The **Scan list**, a function offered by **CommDTMs**, lists all field devices which are connected to a bus.



The possible number of the connected field devices may vary depending on the bus structure. The scan may therefore take some time.

A window displays all detected field devices.





## Functions

### 3.2.5 Add device or delete device

These menu items are accessible if at least the user rights of a planning engineer are set and the project structure can be extended at this position or a DTM is selected for deletion. Devices may be added to a **CommDTM**, which implements a protocol or to field devices such as Multiplexers or Remote I/O-Systems. If a CommDTM or **Gateway DTM** is removed, the associated subproject is also deleted.

### 3.2.6 Device properties

Every **DTM** provides information about itself and about the device it can be applied to. 2 pages are offered in the window. The first page contains information on the project entry of the DTM.

The screenshot shows a software window titled 'HART <COM1>HART Communication # P...' with a sub-header '<0, WEGABA64>[Loop01] VEG...'. The window has two tabs: 'DTM Info' (selected) and 'History'. The 'DTM Info' tab is divided into two sections: 'Device' and 'DTM'.

Device	
Device	VEGABAR 64 HART
Variants	
Vendor	VEGA Grieshaber KG
Extended version	- /
Info	Pressure transmitter with flush CERTEC

DTM	
DTM	Pressure/Hydrostatic-DTM (Service)
Vendor	VEGA Grieshaber KG
Version	1.53.0.0 / 2007-02-07
FDT Version	1.2.0 Addendum
Component	vvoDruckP2.CDruckP2DTM
File	G:\Programme\VEGA\VEGADTM\bin\vvoDruckP2.ocx

A 'Close' button is located at the bottom right of the window.



## Functions

The second page contains the history of the DTM instance as well as a comment which is entered to the project database. This comment is displayed in the printout of the project of the respective DTM.

HART <COM1>HART Communi... <0,Sensor>[Loop01]... HART <COM1>

DTM Info History

Generated 22.02.2007 12:38:38

Last changed 22.02.2007 12:38:38

Entries made on this page are not saved to device.

Comment Sensor will be replaced soon|

Close



## 4. Working with PACTware

**PACTware** is designed for the configuration and parameterization of field devices which are used in an automation system. PACTware allows to configure projects reproducing the structure of the automation system.

In the simplest use case only one field device is connected to a PC via a modem or via a bus coupler. Complex projects can comprise several even different bus systems, connecting multiplexer or remote I/O systems to the PC. Field devices which detect the measured values from the process (sensors) or influence the process sequence (actors) are connected to the multiplexer.

As PACTware is a frame application according to the **FDT** Specification, **DTMs** of different manufacturers and bus systems providing a **CommDTM** can be combined in one project.

With the objective of optimally supporting the user in his work, PACTware contains a **Layout Management** to save the arrangement of the **PACTware Windows** and the **DTM Windows** in profiles. The layout can always be reloaded when continuing an interrupted operation or when changing between use cases.

In addition, a profile contains the status of connections between DTM and field device, such that the connections can also be automatically established when opening a project or when changing to another profile.



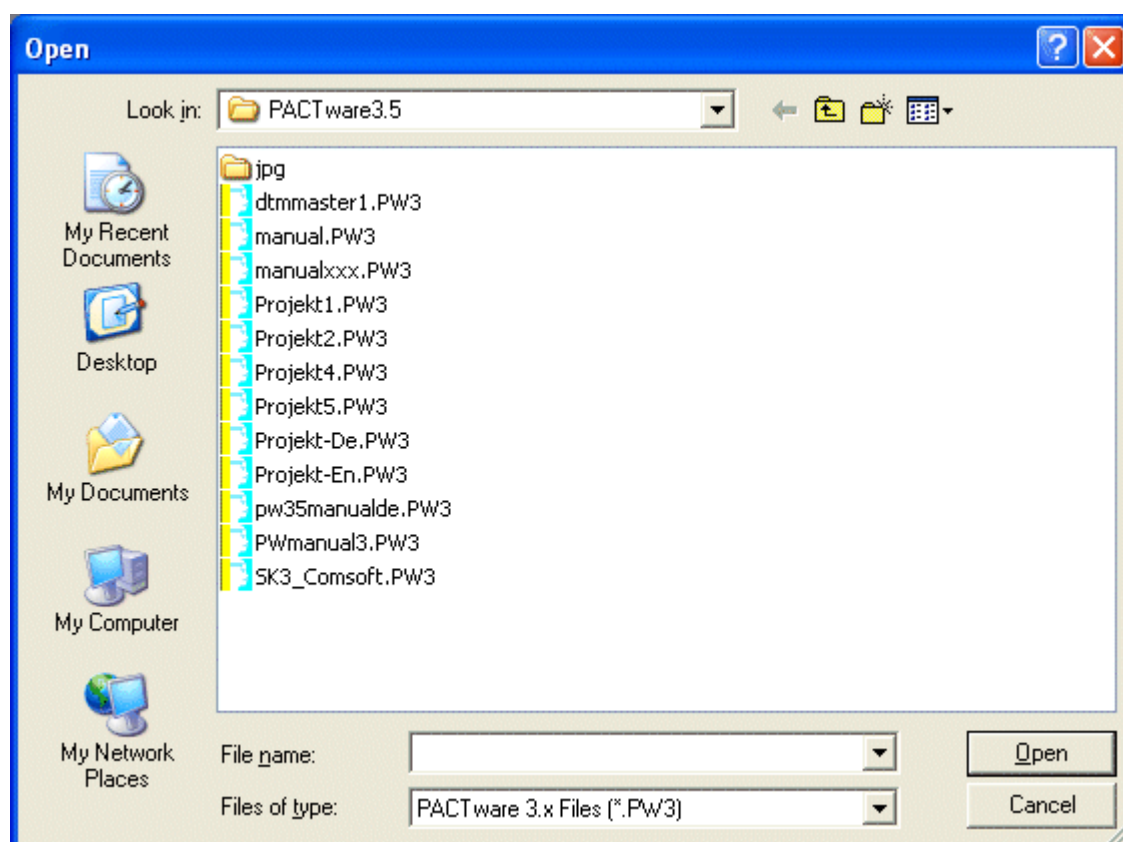
## 4.1 Generate/Open project

A new project is generated via menu item **New** in menu **file**. The project has no name and only consists of the HOST PC.



An existing project is either opened via menu item **Open...** in menu **File** or via the adjacent tool icon of the toolbar. A standard selection dialog displays existing projects of data type PW3.

Projects which were saved in PACTware Version 2.4 can be displayed and opened directly in file type PW.



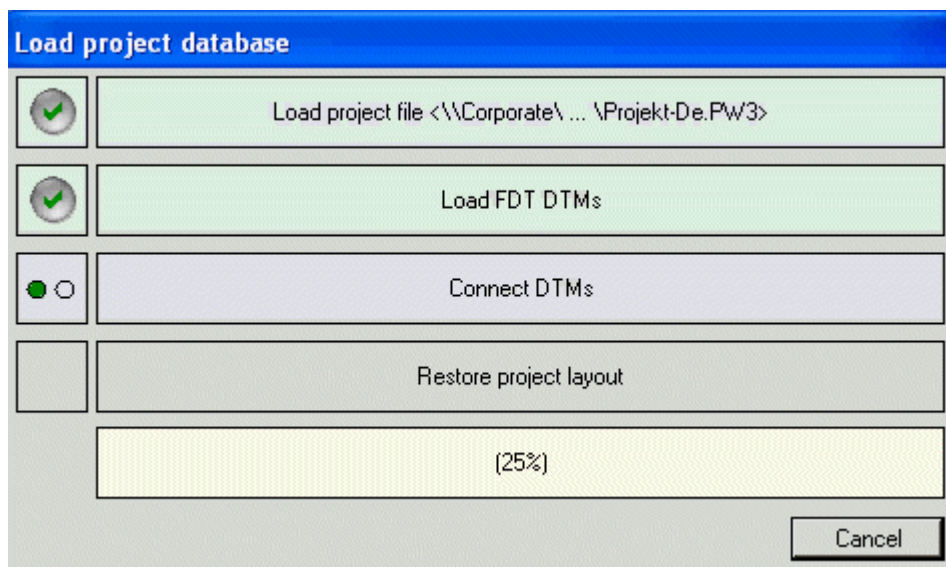
If a project is contained in the list of the most recently edited projects, it can also be opened directly via menu item **File**.





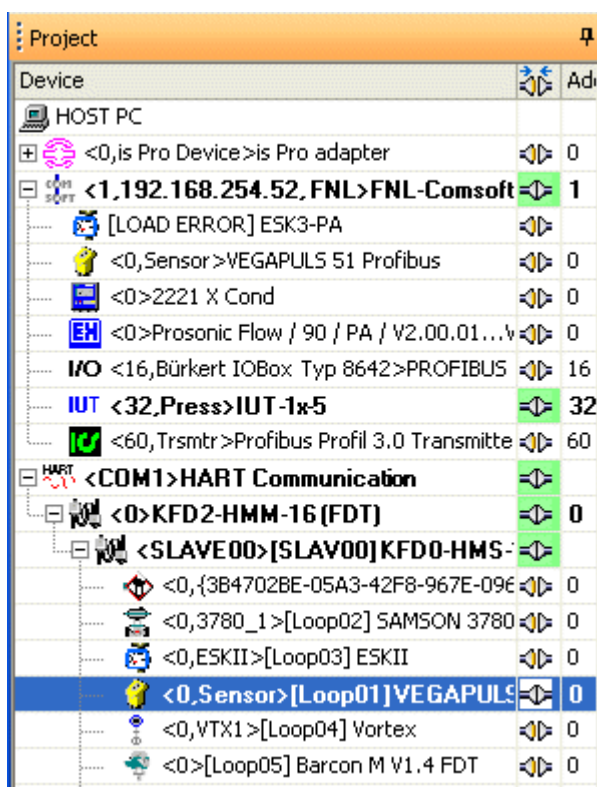
## Working with PACTware

A progress display is opened while the project is opened providing information on the loading phases. If PACTware stops in a phase of the project buildup, the procedure can be canceled.



Dialog **Options** defines whether the steps "Connect DTM's" and "Restore project layout" are to be executed when opening the project.

The project structure is displayed in the project window, the name of the project is displayed in the status bar and in the title bar.





## 4.2 Device Catalog

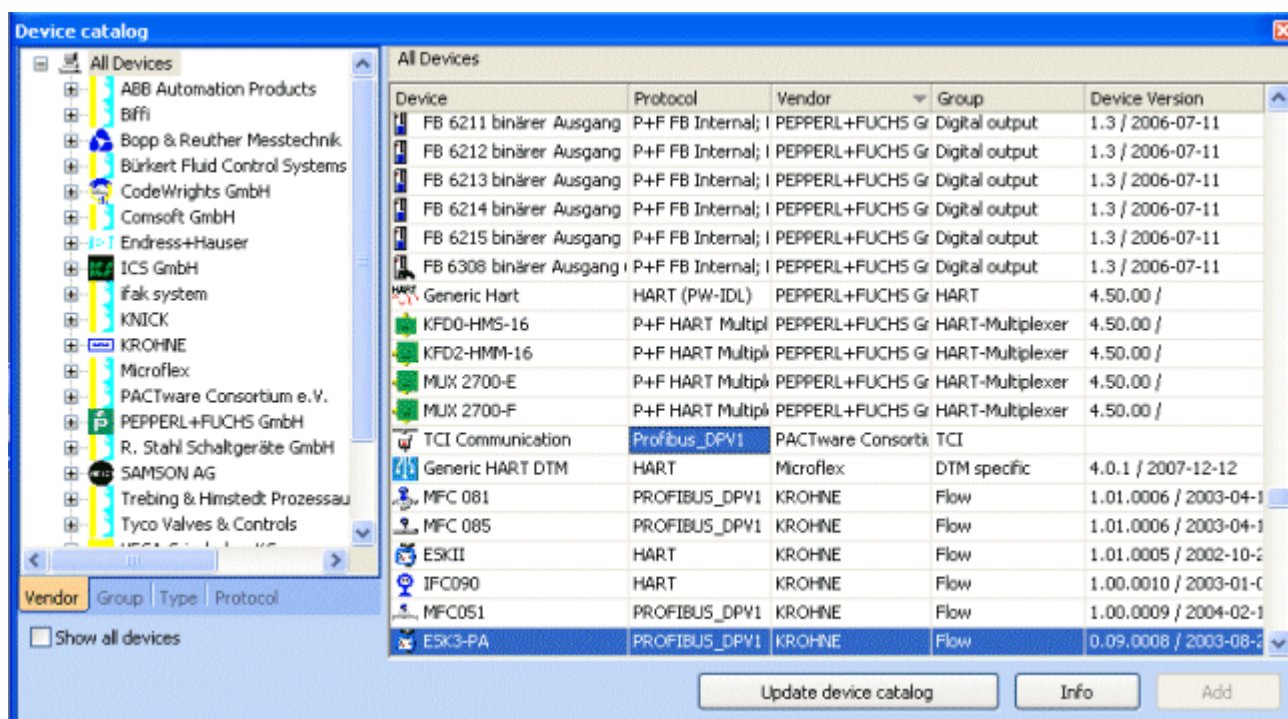
The **device catalog** displays all **DTMs** which are available for the configuration of a project. The device catalog can be displayed as follows:

- using function key **F3**
- via menu item **Device catalog** in menu **View**



- using the adjacent icon in the toolbar

The device catalog is displayed in a window providing an overview of all DTMs grouped by categories in tree structure on the left and the currently selected DTM group in tabular form on the right. The tree structure can be arranged by vendors, DTM-group, DTM-type and communication protocol.



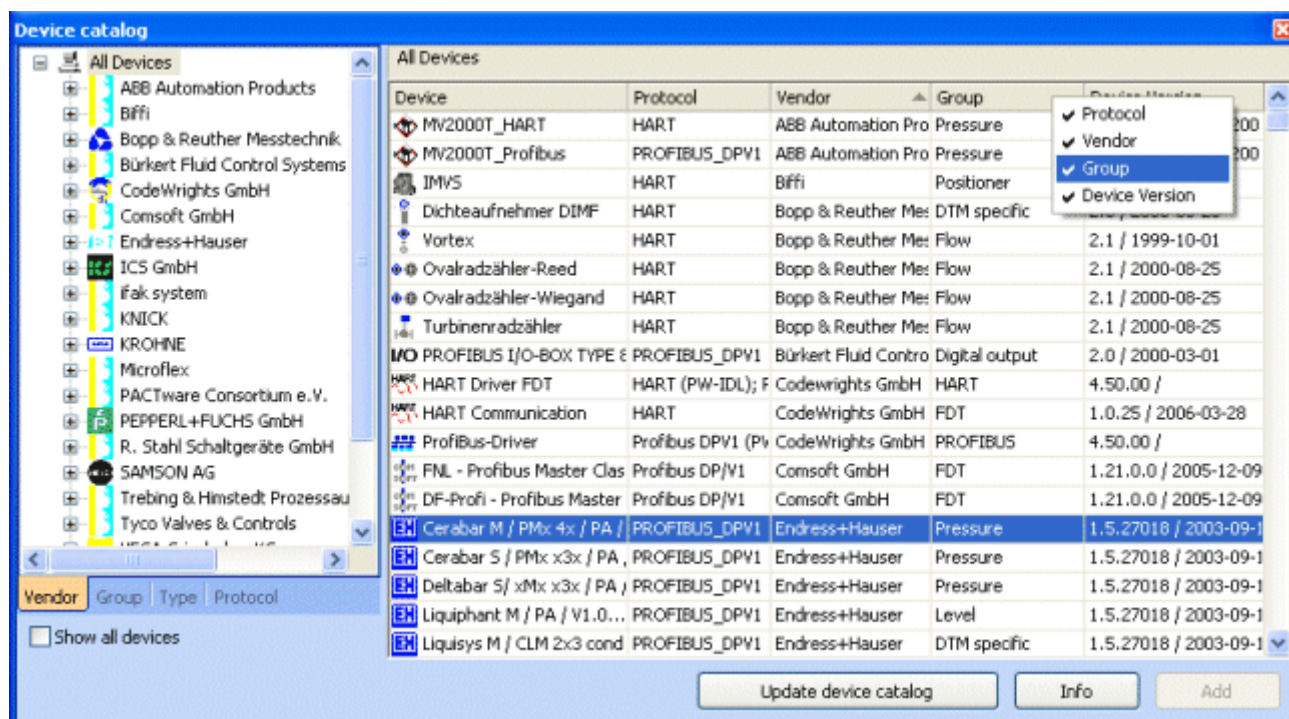
At the initial display of the device catalog all available DTMs are sorted by vendors.



## Working with PACTware

### 4.2.1 Working with the Device Catalog

The device catalog is displayed in a window which contains several panes. The content of the panes and the operability of the buttons depends on the particular user rights.



The left section of the catalog contains all available devices arranged in tree view according to categories. When selecting a node of the tree, the associated devices or DTMs are displayed in the right section of the catalog.

A distinction is made between the categories

- vendor of a device or DTM
- group e.g. flow, pressure, positioner
- type e.g. device, driver for communication devices
- protocol e.g. HART, Profibus

the categories vendor, group and protocol reappear as columns in the table on the right.

Checkbox **Show all devices** is only available to the administrator who can administer the device catalog. The ticked-off checkbox displays a table on the right with a column containing all those devices from the total number of DTMs installed to the PC which are accessible to the planning engineer.

The table in the right window section can be sorted alphabetically by columns. The header in the requested column must therefore be selected. An arrow shows the sort order.

Columns can be hidden using the context menu. The order of the columns can be changed by drag&drop.



## Working with PACTware

Button **Update device catalog** allows to enter DTM's to the device catalog which were additionally installed to the PC. This procedure must be executed each time a new DTM is installed. This function requires the **User Rights** of a planning engineer.

Button **Info** provides information on the currently selected DTM and the device type it works with.

**Prosonic Flow / 90 / PA / V2.00.01...V2.02.02 Info**

**FDT DTM Information**

**Device**

Device: Prosonic Flow / 90 / PA / V2.00.01...V2.02.02

Varianten: [Empty list box]

Vendor: Endress+Hauser

Extended version: 1.5.27018 / 2003-09-19

Info: COMPANY INFORMATION  
Endress+Hauser Flowtec AG  
CREATED by  
PUBLISHED by Endress+Hauser Process

**DTM**

DTM: DDCPBHFDT12Lib

Vendor: CodeWrights GmbH

Version: 1.5.27 / 2003-09-19

FDT Version: 1.2.0 Addendum

Komponente: DDCPBHFDT12Main.CFDT12B0.1

Datei: G:\Programme\Gemeinsame Dateien\DTMstudioPB\DDCPBHFDT12Mai

OK

Button **Add** allows to add the selected DTM to the current position of the project structure. This function requires at least **User Rights** of a planning engineer.





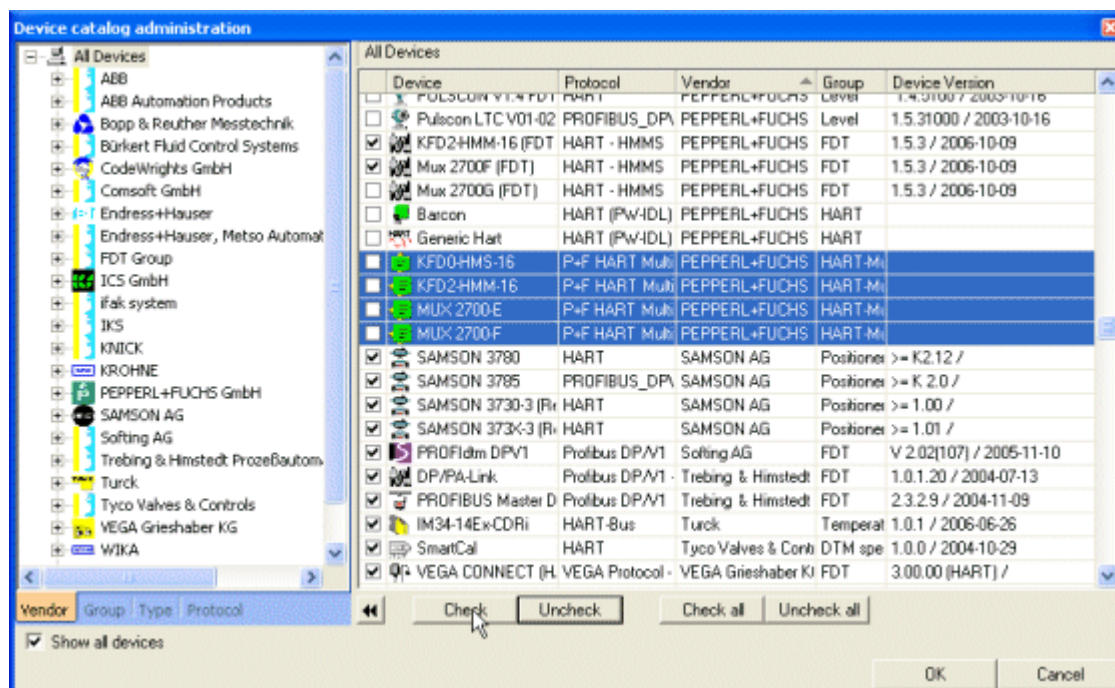
## 4.2.2 Administer Device Catalog

This function requires administrator **User Rights**.

The device catalog can be clearly arranged by restricting the number of DTMs installed on the PC. All installed DTMs are presented in a window by selecting menu item **Device catalog administration** of menu **Extras**.

DTMs to be displayed in the device catalog can be selected from this window. They are checked.

The user is supported in the selection of the requested DTMs by a number of selection criteria. The DTMs can be selected from the left pane of the catalog, sorted in the table and individually using the mouse or selected in groups. A group is selected using control keys Shift and Ctrl like in the Windows Explorer.



The left pane of the catalog can be hidden using this button.

Button **Check** adds DTMs to the selection, button **Uncheck** removes them from the selection.

**Check all** selects all DTMs which are displayed following **Update device catalog** (see above). **Uncheck all** deselects all.

If the selected DTMs were changed during the administration they are displayed in blue color.

After closing this window the device catalog is reorganized. Subsequently, all user roles see the reorganized device catalog.



## 4.3 Project View

After opening or after creating a new project, its structure can be edited by adding or deleting a **DTM** or by editing parts of the project.

Even if a field device is connected, additional DTMs can be added to the project. When DTMs are to be removed from a project, active connections with the respective DTMs must be disconnected.

The project window displays the structure of the project with **CommDTM** and field devices. Starting point for the project structure is the HOST PC to which one or several communication modules are connected.

Field devices, remote I/O systems or multiplexers are assigned to the communication modules. The field devices are arranged in the lowest level of the hierarchic project structure.

Every device has a number of properties, providing information on the position in the project and the status of the DTM.

Device	Device tag	Channel	Address	Device type (DTM)
HOST PC				
<COM1>HART Communica	COM1			HART HART Communication
<0>KFD2-HMM-16 (FDT		HARTCH	0	KFD2-HMM-16 (FDT)
<SLAVE00>[SLAV00] SLAVE00		SLAV00		KFD0-HMS-16 (FDT)
<0,{E7724B24-81: {E7724B24-8113-4F27		Loop00	0	T32
<0,3780_1>[Loop 3780_1		Loop02	0	SAMSON 3780
<0,ESKII>[Loop03 ESKII		Loop03	0	ESKII
<0,Sensor>[Loop0 Sensor		Loop05	0	VEGABAR 64 HART
<0,VTX1>[Loop04 VTX1		Loop04	0	Vortex
<0>[Loop06] Barc		Loop06	0	Barcon M V1.4 FDT
<0>[Loop07] Omn		Loop07	0	Omnigrad / TMD 832 / V1.1 ...
<COM1>HART Communica	COM1			HART HART Communication
<0,UST01>Turbine met	UST01	HARTCH	0	Turbine meter

Columns to appear in the display are selected via the context menu of the table. The order of the columns can be changed in the column heading by drag&drop.

Device tag

✓ Data changed in project

Data changed in device

Online state

Channel

✓ Address

Device type (DTM)

✓ Tree view

Table view

Column **Device** is always displayed. This column allows to switch between **tree view** and **table view** of the project.

The **Device tag** displays the device description in the first column, the **Device type** and the name of the DTM.

The state of the dataset is identified by a pen icon when data is changed in the project or in the device. The **Online state** shows if a DTM is connected to device.

**Channel** and **Address** specify the unambiguous name via which a device can be addressed in the communication structure. In multiplexers or remote I/O gateways a channel name is entered, in bus-oriented communication channels an address number is stated.



## Working with PACTware

The following figure shows the structure and the connection status of DTMs in a project:

Project		
Device		Adi
HOST PC		
<0, is Pro Device> is Pro adapter		0
<b>&lt;1, 192.168.254.52, FNL&gt; FNL-Comsoft</b>		<b>1</b>
[LOAD ERROR] ESK3-PA		0
<0, Sensor> VEGAPULS 51 Profibus		0
<0> 2221 X Cond		0
<0> Prosonic Flow / 90 / PA / V2.00.01...		0
I/O <16, Bürkert IOBox Typ 8642> PROFIBUS		16
IUT <32, Press> IUT-1x5		32
<60, Trsmtr> Profibus Profil 3.0 Transmitter		60
<b>&lt;COM1&gt; HART Communication</b>		
<0> KFD2-HMM-16 (FDT)		0
<SLAVE00> [SLAVE00] KFD0-HMS-		
<0, {3B4702BE-05A3-42F8-967E-09E...>		0
<0, 3780_1> [Loop02] SAMSON 3780		0
<0, ESKII> [Loop03] ESKII		0
<b>&lt;0, Sensor&gt; [Loop01] VEGAPULS</b>		<b>0</b>
<0, VTX1> [Loop04] Vortex		0
<0> [Loop05] Barcon M V1.4 FDT		0

In column **Device** the DTM-Name is preceded by a designation (so-called Tag in <> )

The display of a line in the table identifies the current editing status of the DTM:

- a selected DTM is assigned a blue background
- a DTM, which was edited is assigned a gray background
- a DTM which can execute online functions is displayed bold. The icon in column **Online state** is assigned a green background if DTM and device are connected.

The **Toolbar** contains several tools which are always accessible when they are displayed in color. The icons are used to edit the project and have the following meaning:



Opens the DTM to edit the device data



Adds an additional device DTM to the DTM selected in the project



Deletes the selected DTM from the project structure



Connects the DTM to the device



Disconnects the DTM from the device

### 4.3.1 Add DTM

First select the position in the project structure to which an additional DTM is to be added.



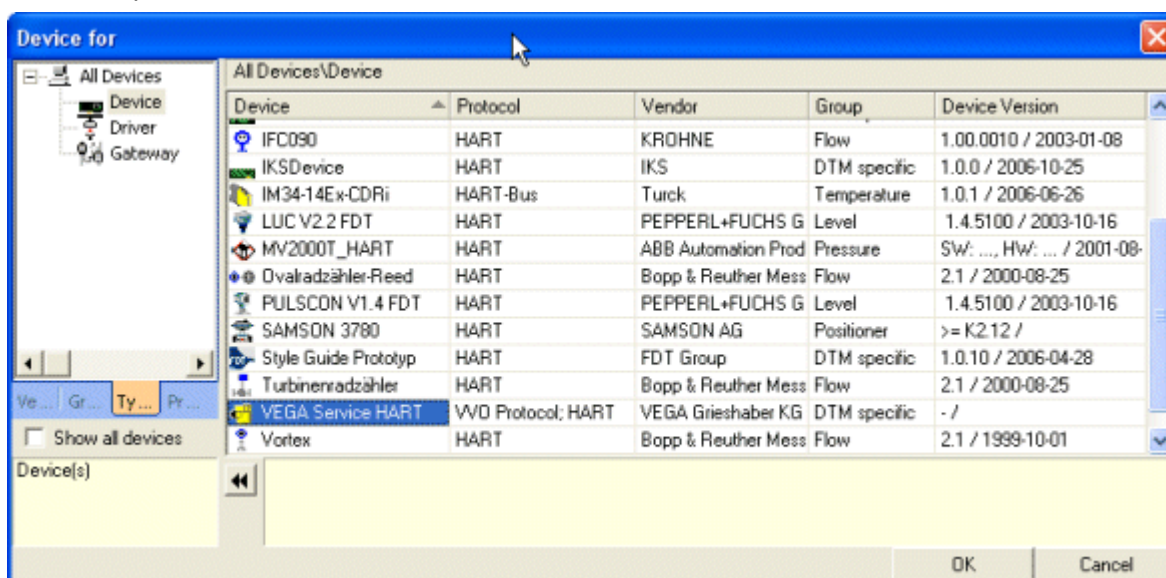
## Working with PACTware

The following options allow to add a DTM to the project:

- by using button **Add** in the device catalog
- by double-clicking on a DTM in the device catalog
- by 'drag and drop' from the device catalog to the project window
- by the adjacent tool icon which is located in the toolbar
- by using menu item **Add device** in the context menu or in the device menu of a DTM



When using one of the latter two options, a list of the admissible DTMs is displayed to select the requested DTM.



If a DTM can be added to the selected position of the project structure depends on the following conditions which are examined by **PACTware**:

- the **User Rights**
- the type of DTM, to which a new DTM is to be added.

PACTware verifies that e.g. only DTMs for profibus-capable devices a added to a Profibus **CommDTM** or only DTMs for HART-capable devices are added to a HART-Multiplexer. If that is not the case, an error message is displayed.

### 4.3.2 Delete DTM

The following options allow to remove a **DTM** from the project structure:



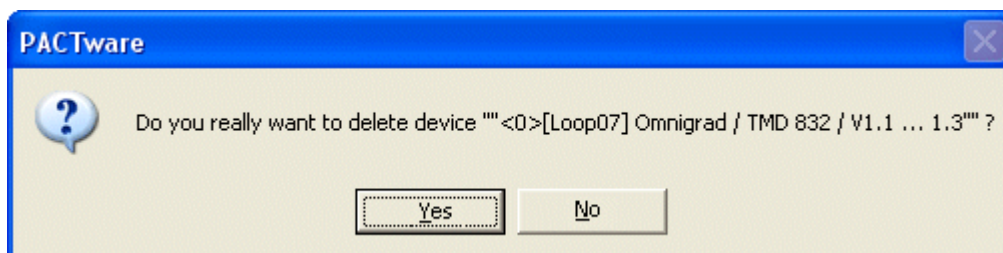
- by using the adjacent tool icon contained in the toolbar
- by using the DEL key on the keyboard
- by using menu item **Delete Device** in the context menu of the DTM





## Working with PACTware

Before a DTM is removed from the project, a query is displayed to avoid an erroneous removal of the DTM.



If you delete a **CommDTM** or **Gateway DTM** to which additional DTMs are assigned, the entire project part is deleted.

**Caution:** **PACTware** offers no Undo function.

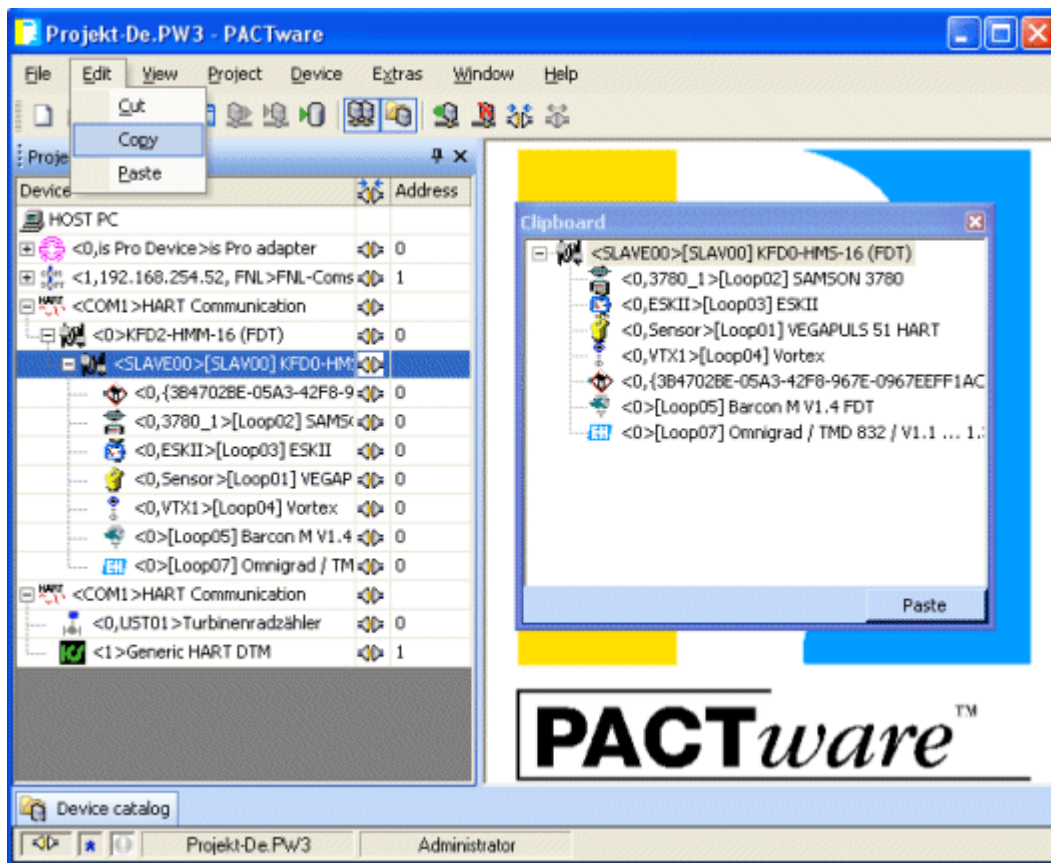


## Working with PACTware

### 4.3.3 Add part of a project

When a project consists of multiple similar parts, the configuration can be accelerated considerably by copying parts of the project.

In the project illustrated below SLAVE00-String was selected. This part project was copied to the **PACTware Clipboard** by using menu item **Copy** of menu **Edit**.

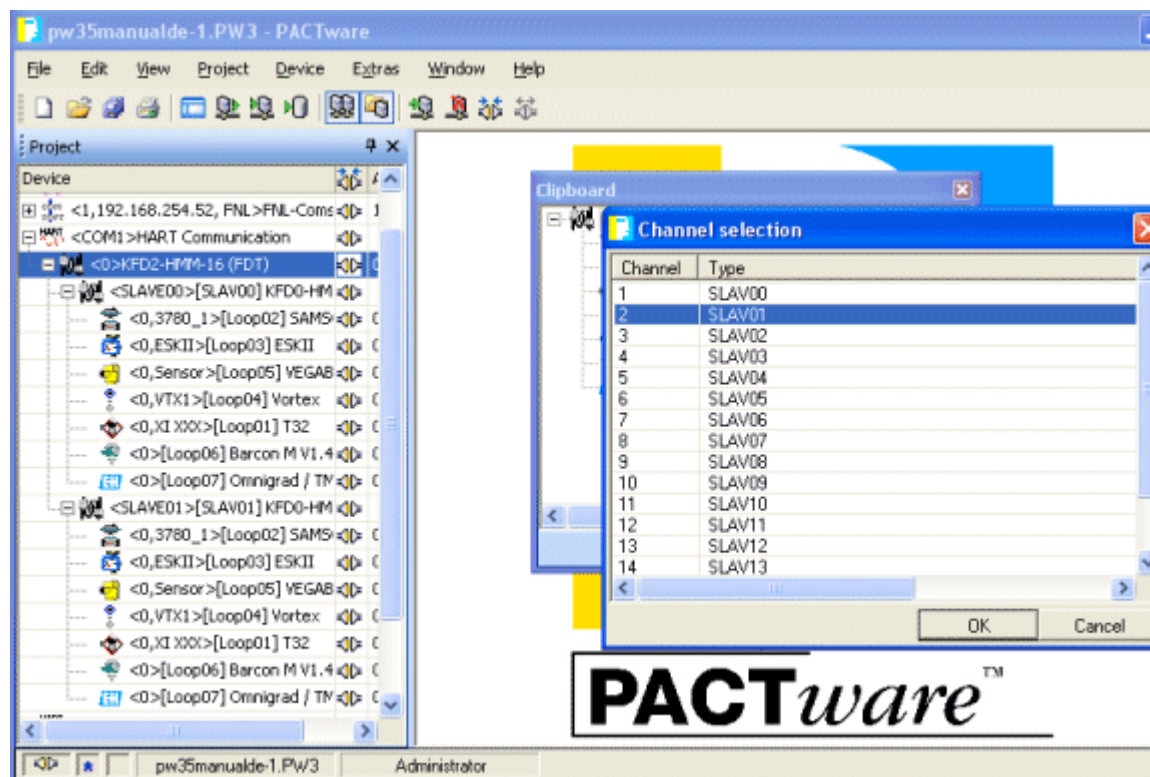


The content of the PACTware Clipboard can now be inserted to a previously designated position of the project by using the **Paste** button of the clipboard window. This function requires the **User Rights** of a planning engineer.

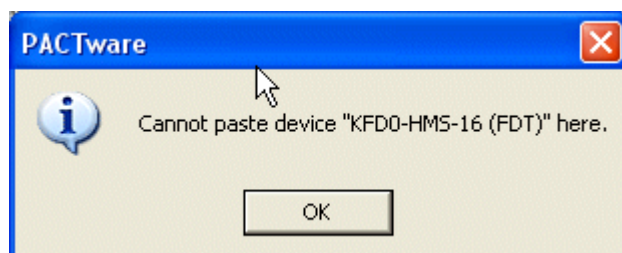


## Working with PACTware

The result created following the selection of the channel can be viewed on the left in the figure below.



PACTware now checks if the part project can be pasted to the selected position of the project. In the event of an error, the following message may e.g. be displayed:



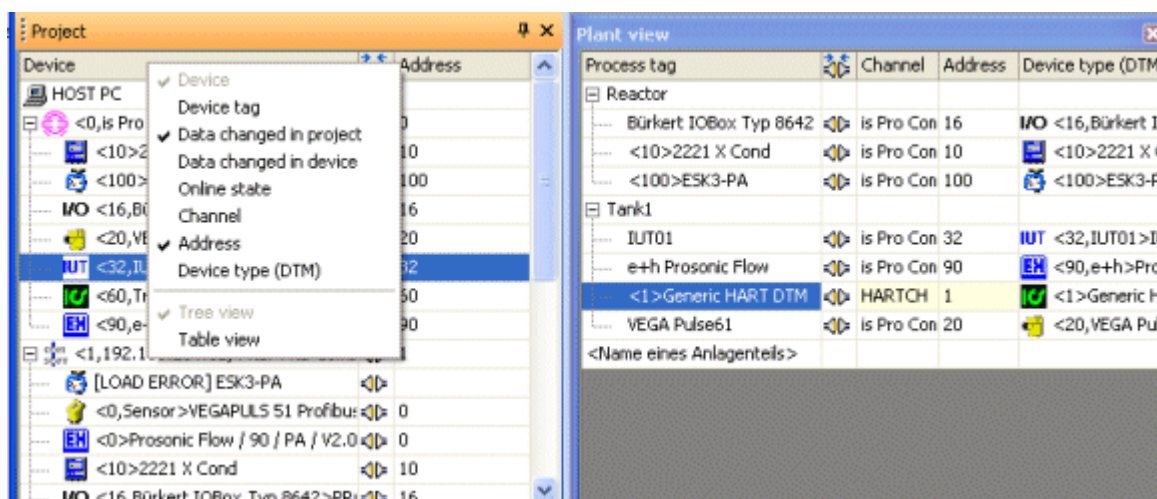


## Working with PACTware

### 4.4 Plant View

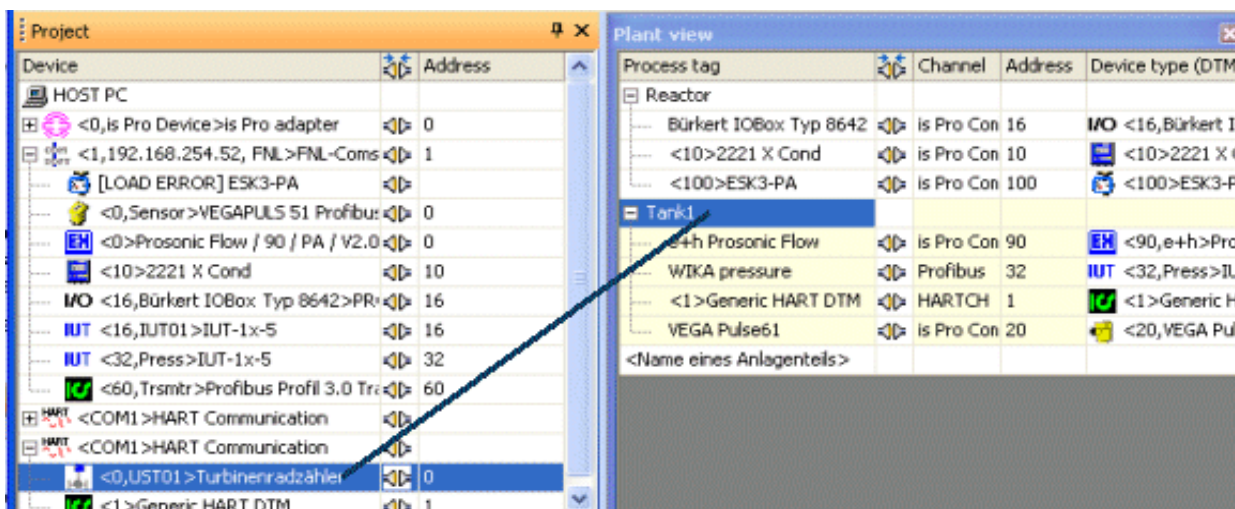
As the project view displays the structure of a plant with regard to the communication between PC and field device, the plant view focuses on the technical aspect of a plant. In the plant view, devices which are listed in the project view are entered redundantly. The plant is structured hierarchically with additionally inserted descriptions.

The layout of the tables of the plant view and the project view are completely identical except the tag and the device column in the project view.



In both views, the columns to appear in the display can be selected separately from the context menu of the table. The order of the columns is changed in the column headers by Drag&Drop.

The plant view of a project is composed of the name of plant parts and DTMs of the project.



DTMs are copied from the project window to the requested position of the plant view using Drag&Drop. The process tags are initialized by tags of the DTMs and can be edited.

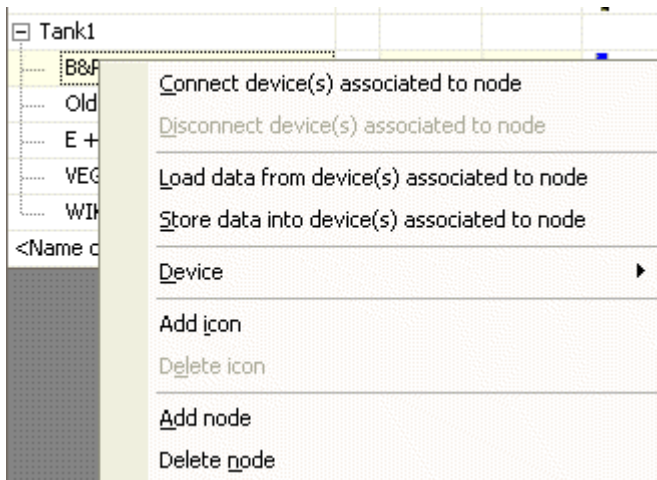


## Working with PACTware

In the following figure, text "B&R" was added to process tag "UST01".

Plant view				
Process tag		Channel	Address	Device type (DTM)
Reactor				
Bürkert IOBox Typ 8642		Profibus	16	I/O <16,Bürkert IOBox Typ 8642>P
<10>2221 X Cond		Profibus	10	<10>2221 X Cond
Krohne Flow		Profibus	100	<100,Krohne Flow>ESK3-PA
Tank1				
B&R UST01		HARTCH	0	<0,UST01>Turbinenradzähler
Old Rosemount Pressure		HARTCH	1	<1>Generic HART DTM
E + H Prosonic Flow		Profibus	90	<90>Prosonic Flow / 90 / PA / V.
VEGABAR 64		Loop05	0	<0,Sensor>[Loop05] VEGABAR
WIKA pressure		Profibus	32	IUT <32,Press>IUT-1x-5
<Name of a plant part>				

The order of the nodes in the plant view can be changed by Drag&Drop. The hierarchy level of the moved node in the tree remains unchanged if it is moved to a node of the next higher hierarchy level. Otherwise an additional hierarchy level is created.



By using the context menu of the plant view

- field devices can be connected or disconnected
- data from field devices can be loaded or stored to field devices and
- the device menu can be opened.

Icons can be inserted before the process tag to e.g. graphically identify e.g. plant parts.

If a node is added, a new entry is displayed one hierarchy level under the node on which the context menu was opened. The new node contains a tag which is entered using the keyboard. The deletion of a node to which additional nodes are assigned results in the deletion of the entire subtree.



## 4.5 Edit device

Due to the variety of existing field devices (sensors, actors, remote I/O) a multitude of different DTMs is available providing optimal support to the user in his use cases. All field devices can generally be parameterized "offline" i.e. without connected device. After editing parameters, the modified parameter set can be stored in the project or written to the field device.

DTMs which were implemented in compliance with the Device Type Manager Style Guide or the FDT Group support the user when editing parameter values and point out differences between parameter values in the device and in the project.

### 4.5.1 Parameterize device

A distinction is made between **Parameterization** and **Online Parameterization**. When a DTM and a field device are connected **Online Parameterization** is automatically displayed, otherwise a window for the parameterization of the device is displayed.

All parameters of a device which can also be defined without a connected device are projected in the parameterization. In this manner, a project with all its devices can already be finalized before the system startup.

The Online Parameterization is used to change parameters during the plant operation, e.g. to set control parameters.

The following options allow to display the parameterization of a device:

- via menu item **Parameterize** in menu **Device data**
- menu item **Parameterize** in the context menu of the DTM
- via the adjacent toolbox icon
- via a double-click on the DTM name in the project window



The layout of the parameterization window depends on the respective DTM. Depending on the complexity of the DTM the parameters can be displayed in different windows. In this case following the selection of the parameterization a submenu could be displayed to select the requested window.

### 4.5.2 Load from device

In order to read parameters from a field device, a connection must be set up. Error messages which are displayed when a connection attempt fails, are **DTM-dependent**.

A connection to a field device can be established in the following ways:

- by using menu item **Connect** in menu **Device data**
- by using menu item **Connect** in the context menu of a DTM
- implicitly via the icon **Load from device**
- implicitly by using menu item **Load from device** in menu **Device data**
- implicitly by using menu item **Load from device** in the context menu of a DTM





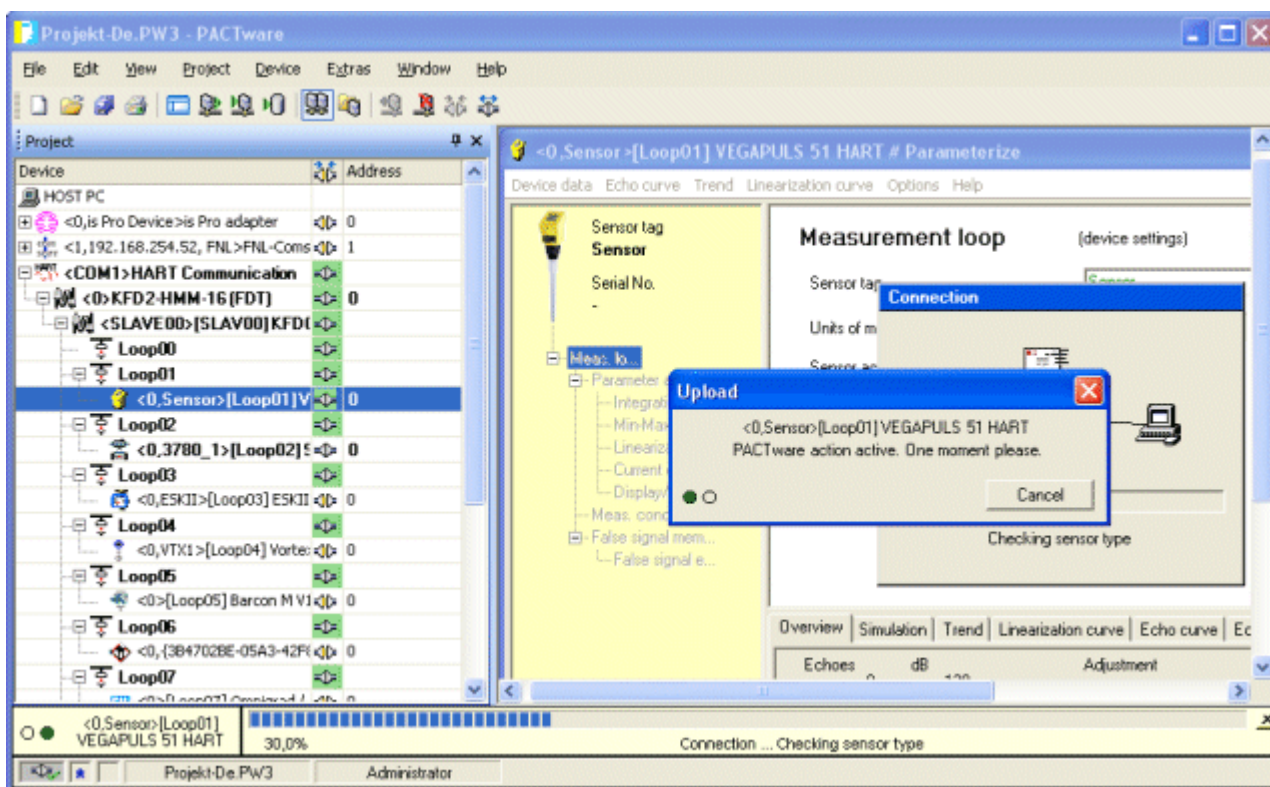


## Working with PACTware

After successfully connecting a field device to a DTM, all DTMs involved in the communication line are displayed in bold characters in the project window. Simultaneously in the status line an icon "connected" is displayed and the tools in the toolbar are assigned their respective operating status.

Several field devices can be connected simultaneously.

Loading parameters from a field device is triggered by the associated icon or menu item **Load from device** in menu **device data** or via the context menu of a DTM. The following form is displayed with a progress bar:



If the respective DTM allows to cancel loading, the progress bar must subsequently be closed using the Close button.

### 4.5.3 Store into device

In order to store parameters to a field device, a connection must be setup. It depends on the DTM what type of error messages are displayed to the user when a connection fails.

A field device can be connected in the following ways:

- via menu item **Connect** of menu **device**
- via menu item **Connect** of the context menu of a DTM
- implicitly via icon **Store to device**
- implicitly via menu item **Store to device** in menu **Device data**
- implicitly via menu item **Store to device** via the context menu of a DTM



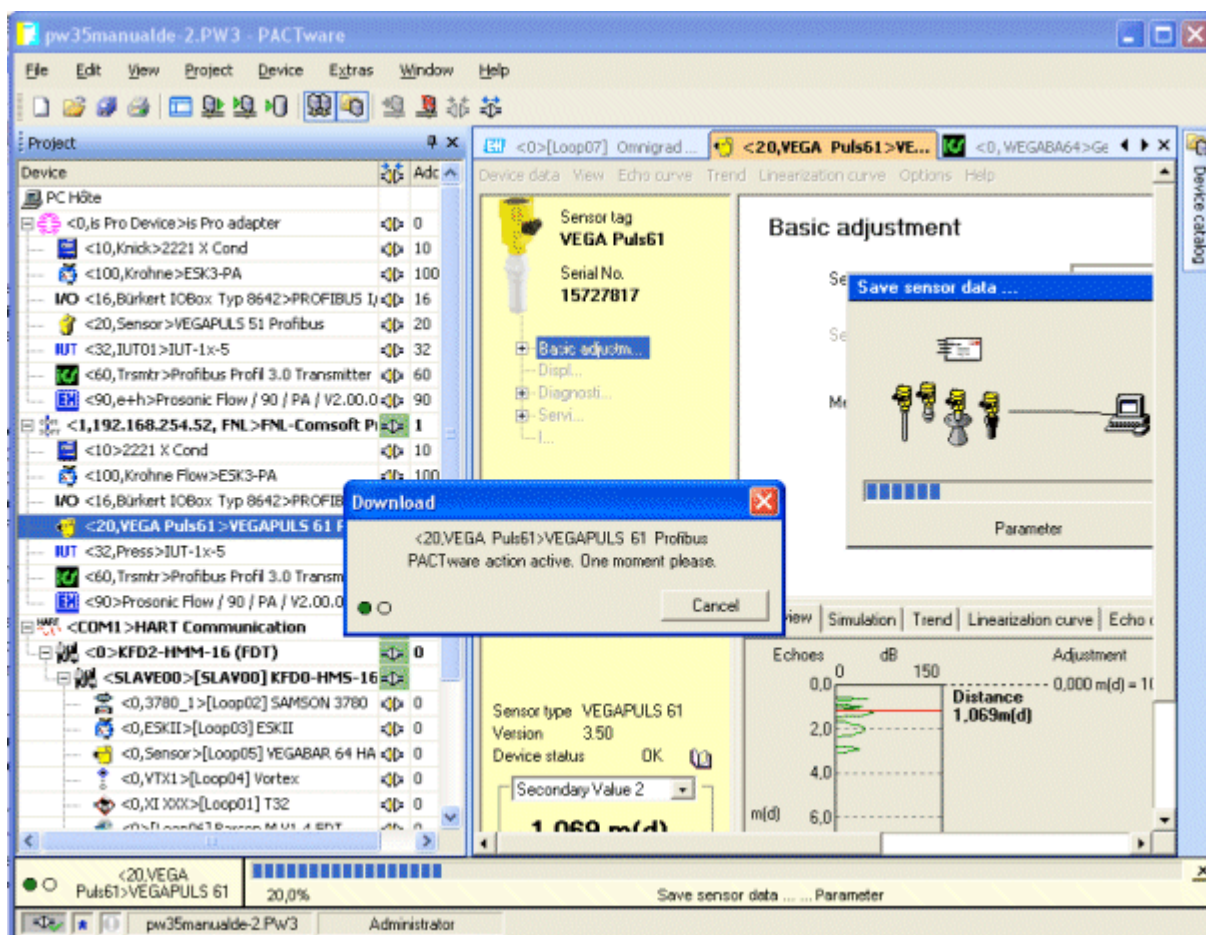


## Working with PACTware

When a field device is connected, all DTMs involved in the communication line are displayed in the project window in bold character. Simultaneously in the status line an icon "connected" is displayed and the icons in the toolbar are assigned their respective operating status.

Multiple connections to several field devices can be set up simultaneously.

Parameters are stored to a field device when the corresponding icon of menu item **Store to device** in menu **Device data** or via the context menu of a DTM is activated. The following form is displayed with a progress bar:



If the DTM allows to cancel the download, the progress bar must subsequently be closed with the close button.

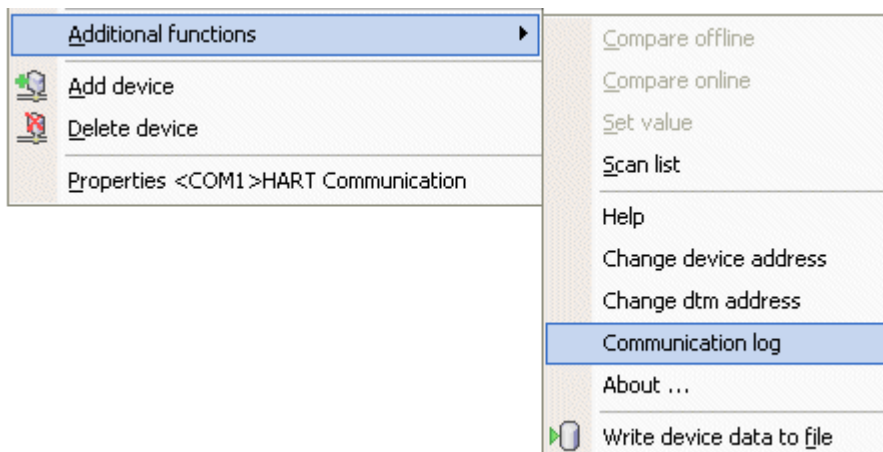




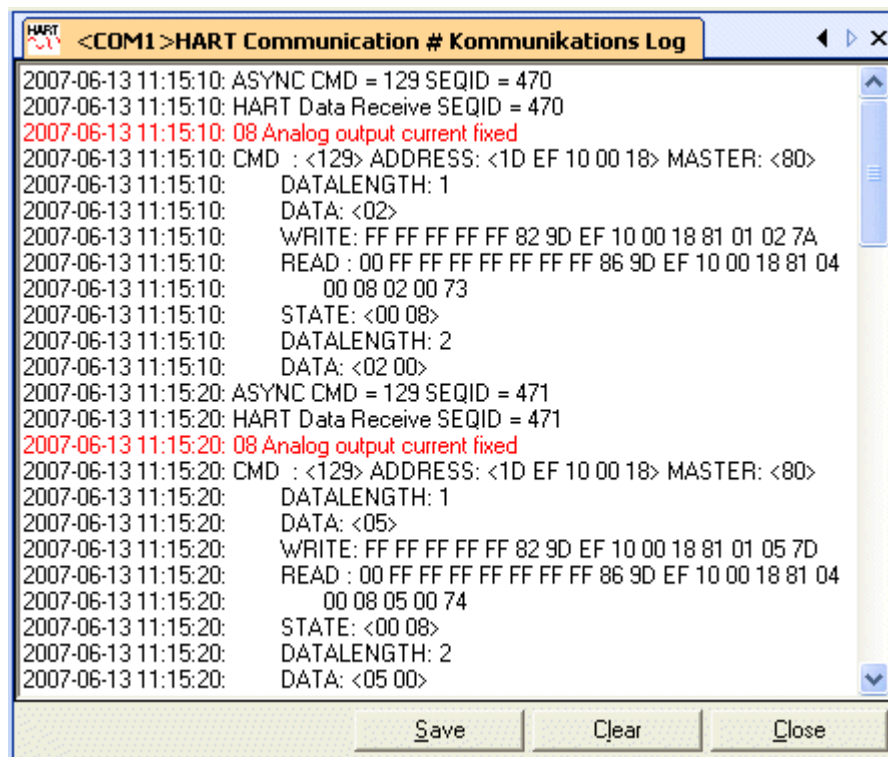
## 4.5.4 Communication log

CommDTMs like e.g. the HART Communication DTM which are contained in the basic PACTware software pack, include a communication protocol to log the data traffic between DTM and field device.

The log is called via a menu item of the context menu:



The log is displayed in output in DTM window.

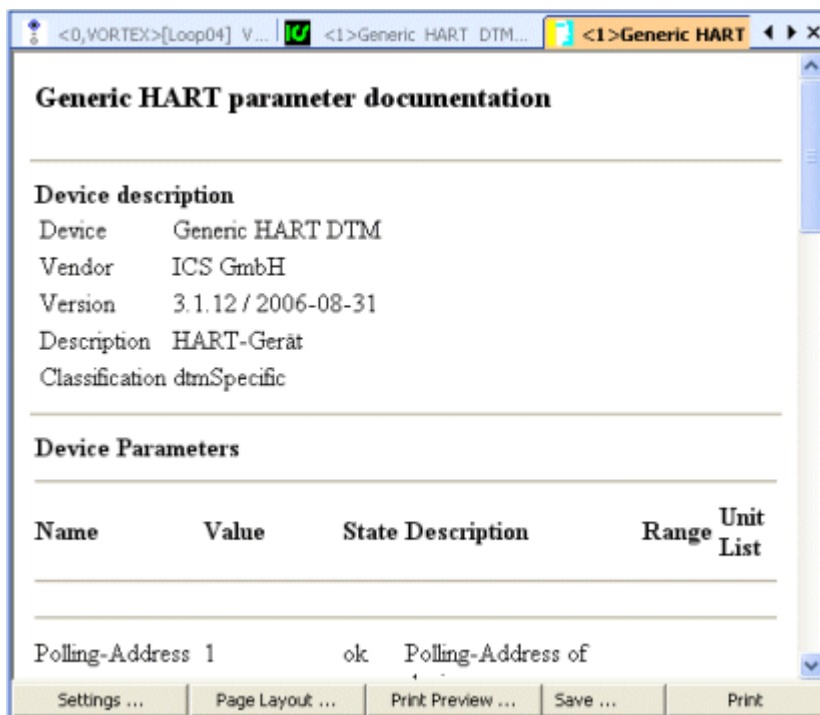


The log can be saved to a file and sent to a specialist for evaluation.



## 4.5.5 Print device parameters

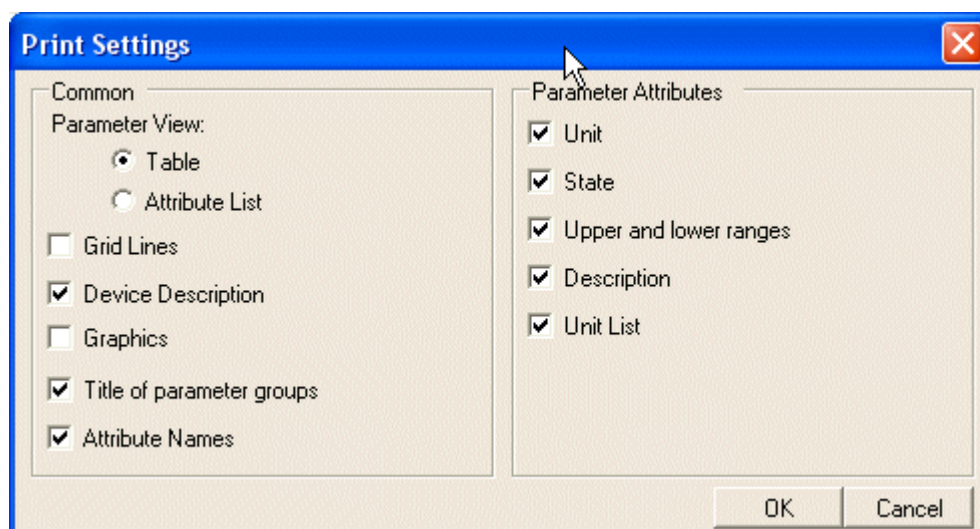
Function **Print** displays all parameters or a subset of the parameters in a DTM window directly displaying the effects of the settings.



The control buttons in the DTM window are available to prepare the parameter print.

### Settings

The print of device parameters can be configured in the following dialog:



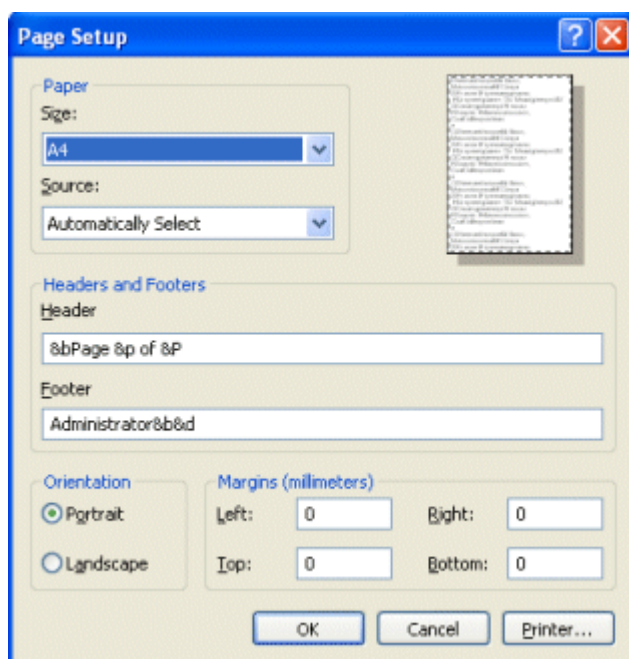
The defined print settings are applied to print the parameters of all field devices in the same manner such that a standard printout is produced.



## Working with PACTware

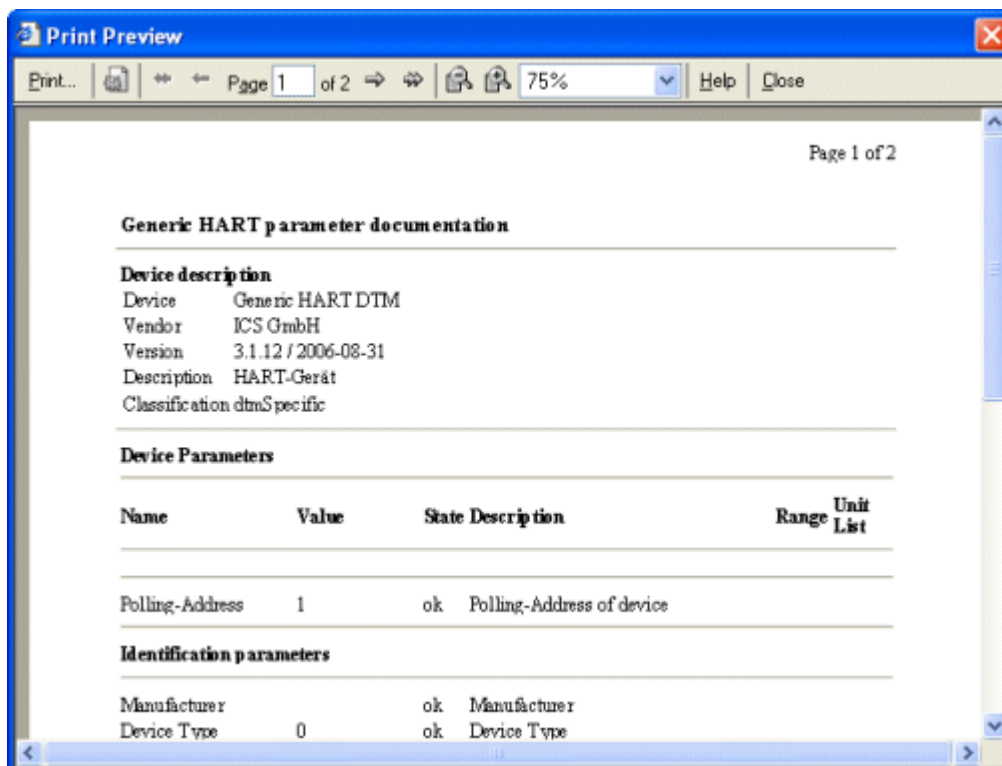
### Layout

The page layout is defined using the dialog of the browser (Microsoft Internet Explorer):



### Print Preview

The parameter print preview is displayed in a browser window.



The parameter print preview can be saved as text file, HTML-file or can be printed.



## 4.6 Save project

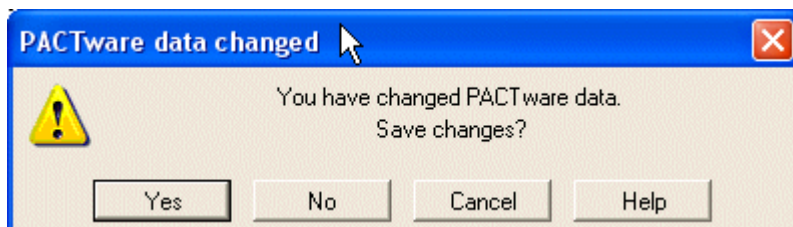


The project can be saved any time via the adjacent icon or the menu items **Save** or **Saves as...** in menu **File**.

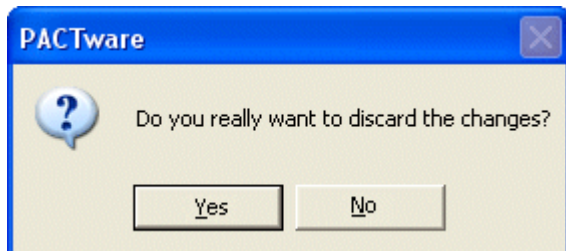
The data of a project comprise 4 categories:

- the project structure
- the values of the device parameters
- the plant view
- the profiles of all layouts of this project

When the project is closed using menu item **Close** in menu **File** or when **PACTware** is exited and if data was changed in one of the categories above, the following query is displayed:



When this query is acknowledged using **No** another query is output for safety reasons:

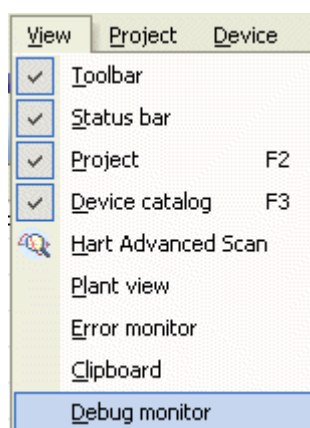


to avoid erroneous loss of parameter modifications.



## 4.7 Debug Monitor

The **Debug Monitor** is used for error analysis. PACTware uses this Add-In to document error states and program flows.



The debug monitor can be displayed via menu **View** when the associated Add-In is loaded. Section **PACTware Add-Ins** describes how to load the Add-In for the debug monitor.

When the Add-In is loaded and the view is displayed, the Debug Monitor logs messages in the background which can be viewed in the monitor window. The recordings end when the Add-In is unloaded.

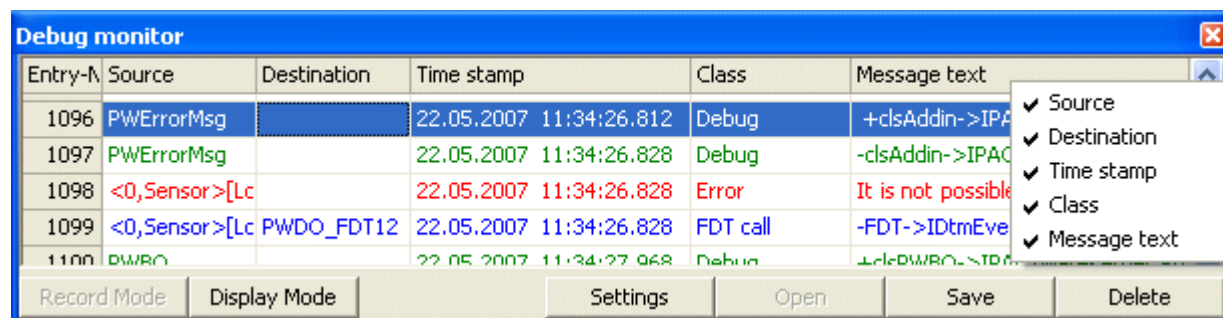
### Caution:

**This window should only be opened for trouble-shooting. Permanent recording in operated systems is not recommended. The performance of PACTware is reduced by permanent logging.**

All messages recorded by the Debug Monitor are displayed in a table which contains the source, the target, a time-stamp and a message class in addition to the message text. The order of the columns can be changed by Drag&Drop. Single columns of the table are displayed or hidden by a context menu.

The message classes deviate in color so that they can be distinguished more easily when scrolling messages. The following message classes exist

- Error (red)
- Debug (green) to record processes within PACTware
- Trace (black) includes all messages which are output by PACTware components
- FDT call (blue) for FDT communication between PACTware and DTM



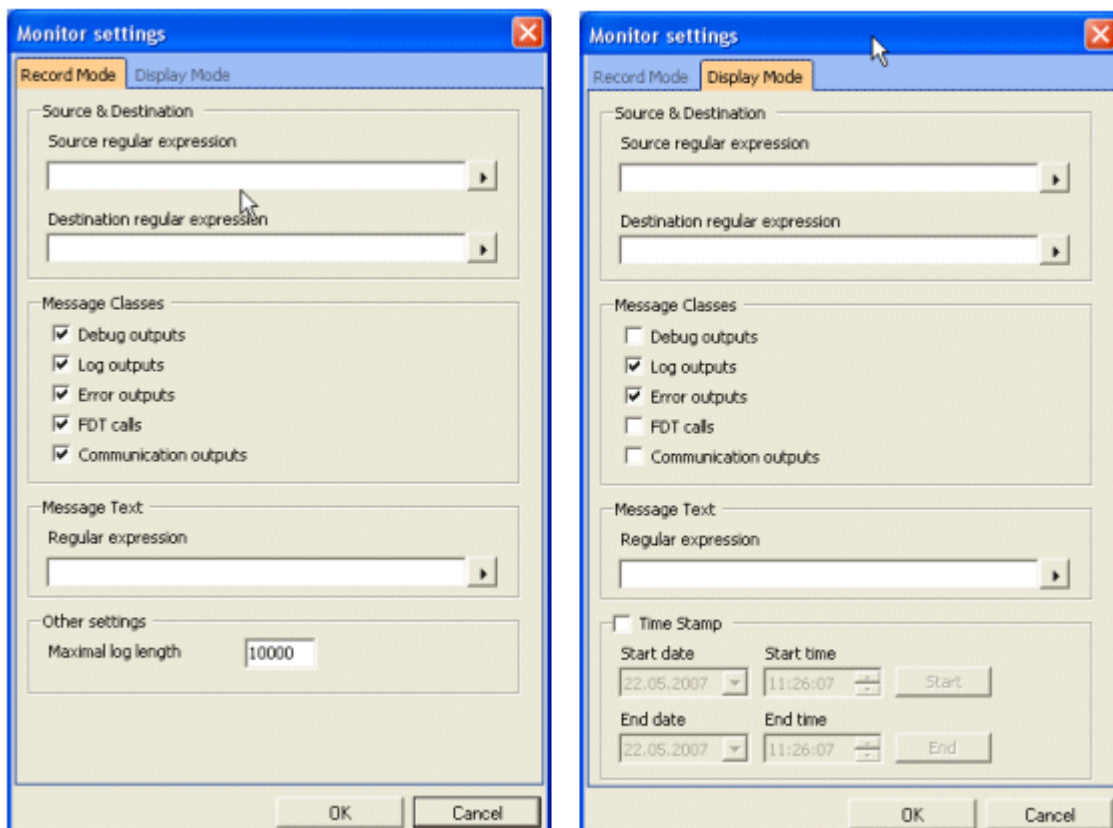
In each column of the table messages can be sorted in ascending or descending manner. The entry number shows the entry order of the messages. If messages are filtered, the entry order is interrupted.



## Working with PACTware

Control button **Settings** allows to filter messages in **Recording mode** which are to be stored in the protocol following different criteria. Similarly, a filter in **Display Mode** allows to select messages from the protocol for display in the Debug Monitor window. The log is such compressed in many respects. The logged messages are not affected.

The settings of the two independent filters are defined in the following dialogs:



Source, target and messages texts can be filtered even more detailed by defining a regular expression. Adjacent to the input field a help for the definition of regular expressions is provided.

A maximum log length is predefined for the recording mode. The log defined is as ring buffer. In display mode a time interval in the log can also be assigned as display default setting.

The recorded data is saved to a text file using button **Save**. Saved logs are reloaded using **Open** and displayed in the Debug Monitor.

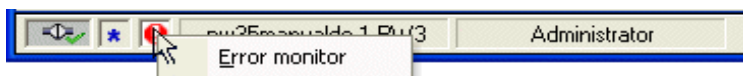
Control button **Delete** deletes the messages from the monitor window.



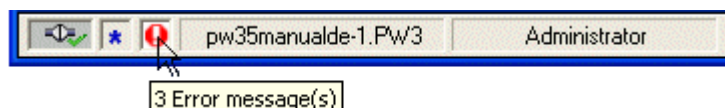


## 4.8 Error Monitor

All error messages output by PACTware and by the DTMs are entered to a list. The list is either displayed via menu item **Error Monitor** in menu **View** or via the context menu of the error display in the status line.

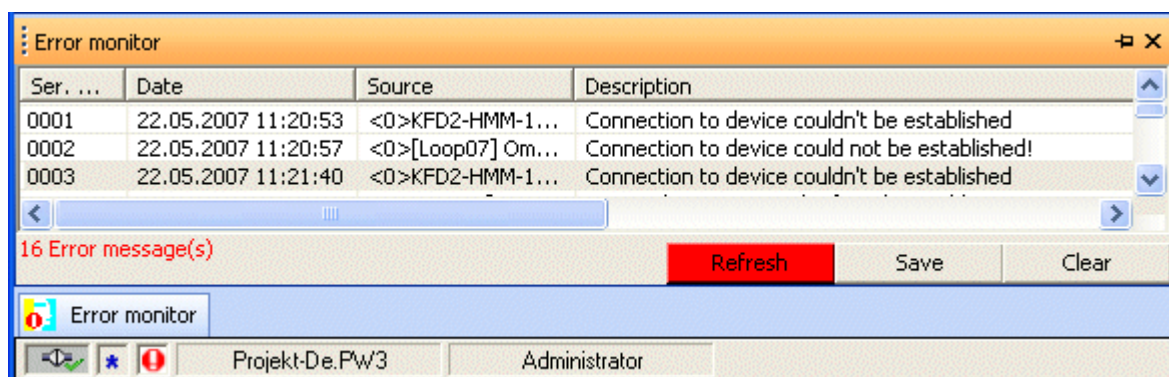


The tooltip of the error display contains the number of the collected messages.



The respective Add-In must be loaded to display the error monitor.

The error monitor displays all error messages which occurred since the start of PACTware or since the last time the error list was acknowledged by using the **Delete** button.



The error list can be sorted in columns by clicking on the heading of one of the four columns. The sorting sequence can be changed by another click on the heading.

A new error is signalled by a flashing exclamation mark in the status bar. At the same time, the number of errors is displayed on the error monitor. Button **Refresh** lists all pending errors in the error monitor. Button **Save** outputs all error messages in a text file.

Long error texts can be displayed via a double-click on an error message in the error monitor using this dialog:

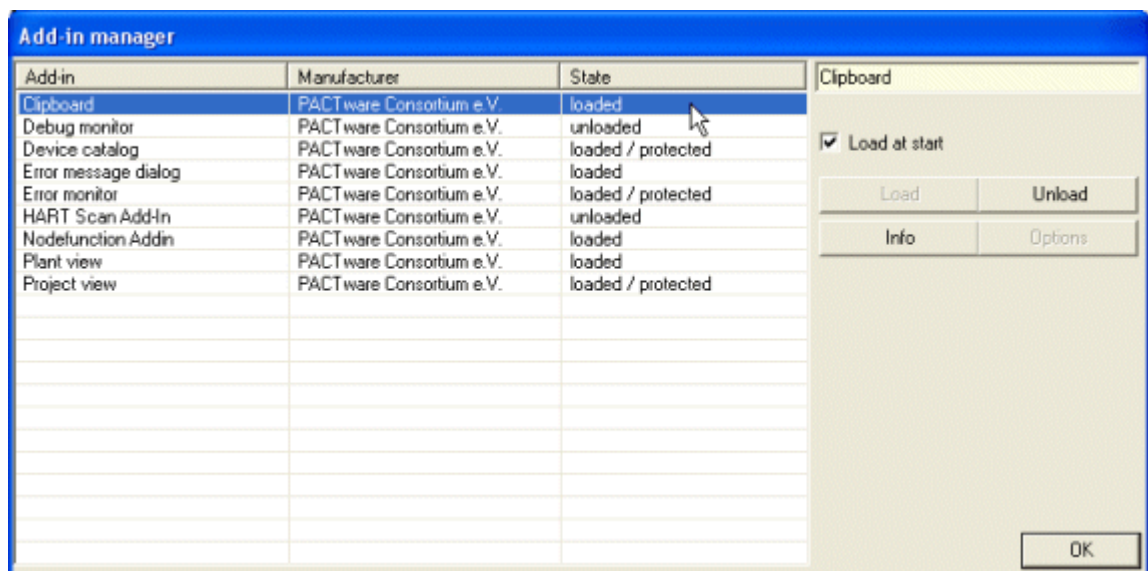






## 5. PACTware Add-Ins

The functions of PACTware can be modified and extended by so-called Add-Ins. Menu item **Add-Ins** in menu **Extras** lists and administrates all known Add-Ins.



These functions require Administrator **User Rights**.

All Add-Ins shown in the figure are included in the PACTware software pack. Some Add-Ins must always be loaded to make PACTware function. They are characterized by status loaded/protected.

Functions like e.g. the error monitor are not available when the associated Add-In is not loaded.

The **Clipboard** function is described in **Add part of a project**. The error monitor is detailed in section **Error Monitor** and the Trace Monitor in section **Debug Monitor**.

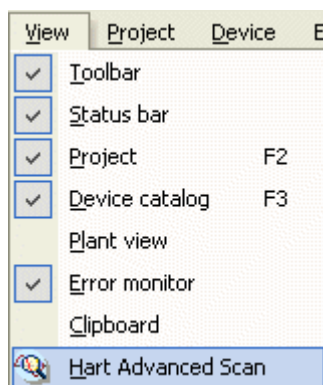
While PACTware is running, Add-Ins can be loaded or unloaded. The functions of the Add-In are immediately available after loading and are respectively no longer available after unloading. Add-Ins, that should be available after every PACTware start are marked **Load at start**.



## 5.1 HART Advanced Scan Add-In

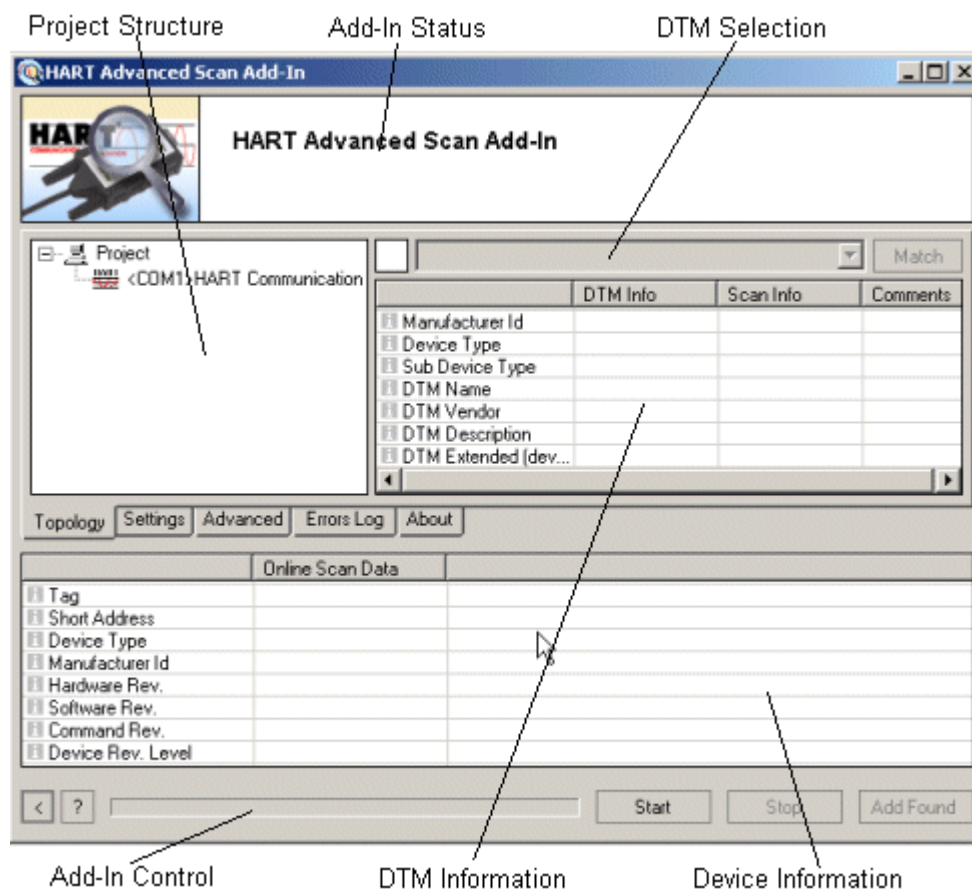
This Add-In detects field devices which are connected to a HART modem in point-to-point or in multidrop mode. A suitable DTM is searched in the device catalog and entered to the project.

### 5.1.1 Start Add-In



Menu **HART Advanced Scan** in menu **View** starts the HART Scan Add-In. The menu item is only visible in the menu when the Add-In is loaded.

Following the start, a window with the following components is displayed in the operating range to support the manual scan procedure:





## PACTware Add-Ins

The **Topology** displays all CommDTMs of the project which are edited with the Add-In. When a CommDTM is switched online, all DTMs associated to the detected devices are displayed after the scan procedure.

The **Add-In Status** provides general information about the current activity of the Add-In.

If the scan procedure detects devices to which no unique DTM can be assigned automatically, a suitable DTM of the **DTM Selection** can be selected from the set of suggested DTMs and assigned to the device.

The **DTM Information** supports the DTM selection by displaying information loaded from device and information about the selected DTM adjacent to one another.

The **Device Information** provides additional information which was loaded by a connected device.

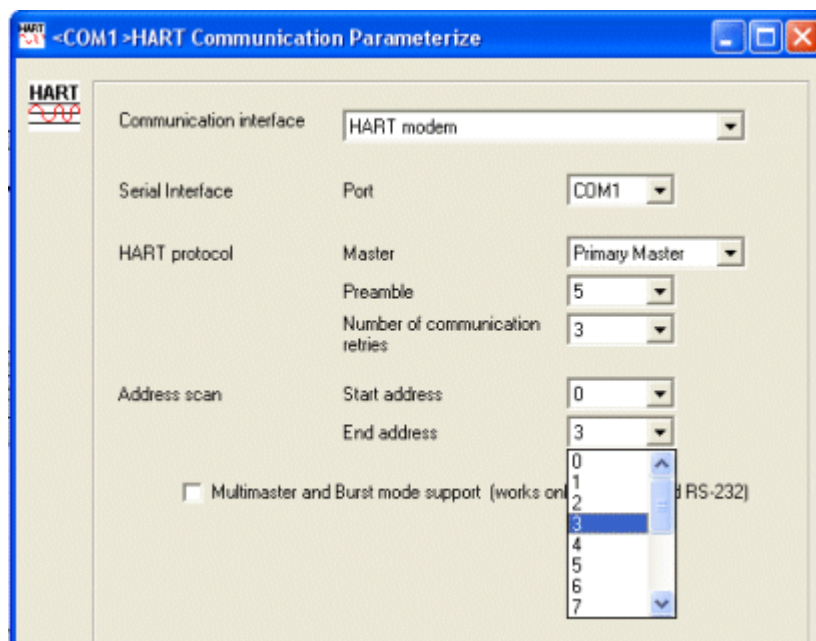
The following buttons are contained in the **Add-In Control**:

	the Add-In window is minimized or maximized
	the Online Help of the Add-In is opened
	the Scan is started
	the Scan is stopped
	the detected DTMs are added to the project

The scan progress is displayed by a bar.

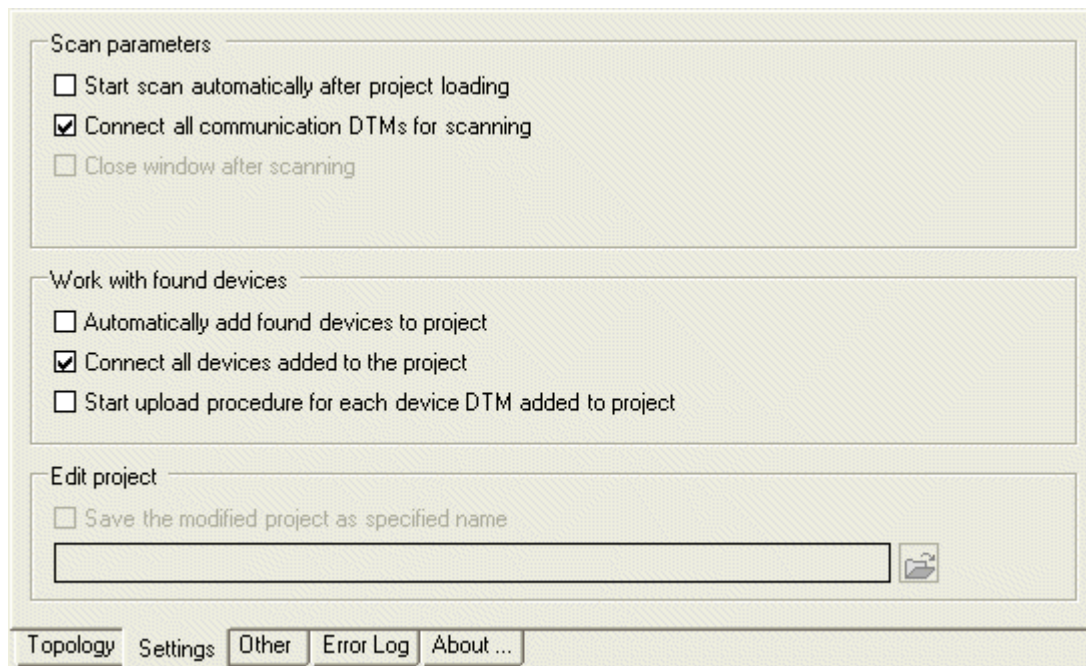
### 5.1.2 Prepare Scan

Initially, the HART network addresses to be scanned must be set in the HART CommDTM. The duration of the scan can such be minimized.





The settings of the Add-In allow to define the scan mode.

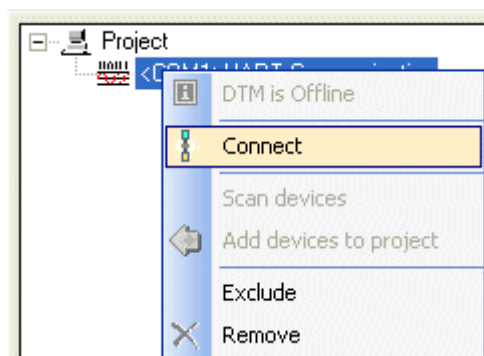


Following the scan it is such possible to create a project completely automatically, to load the data from the connected devices and to save the project with all parameter values. A successful automatic run, however, requires that all DTMs which match the devices are contained in the catalog and all devices are unambiguously identified.

If a HART network map is to be created automatically in the scan procedure, the project to which the found DTMs are entered may only contain CommDTMs at the scan start. Otherwise additional DTMs are entered to the DTMs already contained in the project and address conflicts may result.

### 5.1.3 Execute Scan

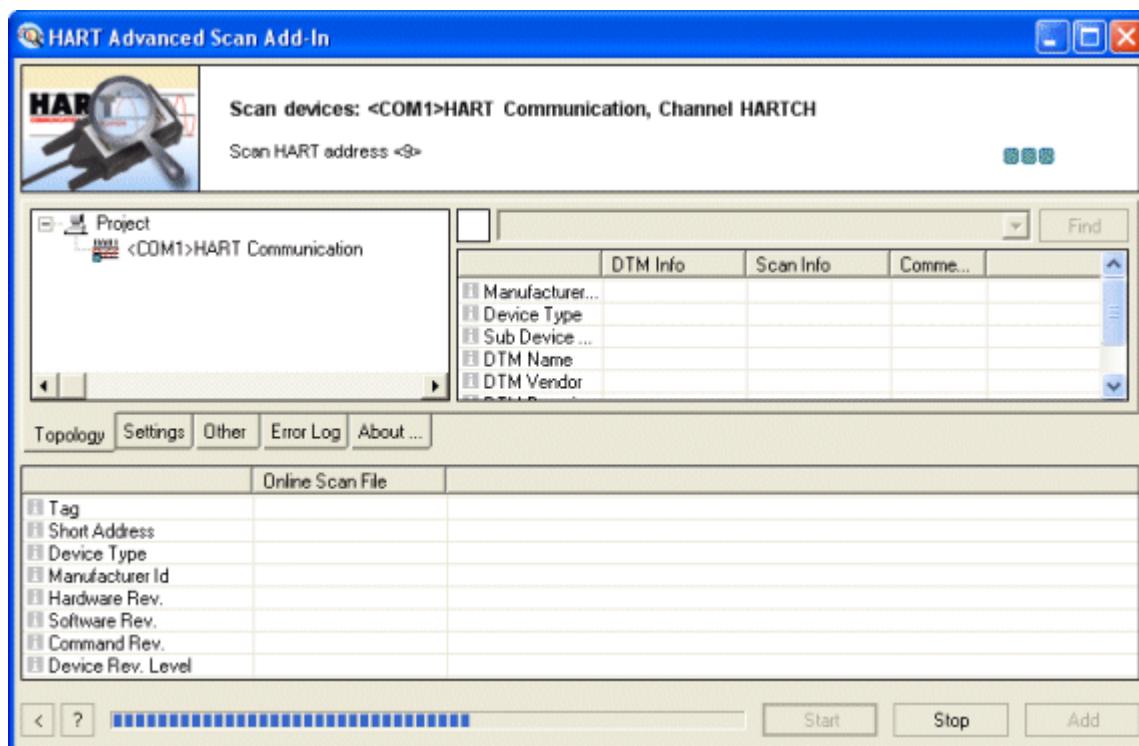
The scan operation is either triggered manually or automatically when opening a project. For a scan a CommDTM must be switched online automatically or manually. At the start of the scan operation the topology displays those CommDTMs whose devices are to be scanned.





## PACTware Add-Ins

After switching the CommDTM online, a green dot is displayed in the icon of the CommDTM and the Icons of the HART Channel is displayed in the topology.



During the scan operation a progress bar is displayed in the Add-In control. The Add-In Status displays the currently edited HART address.

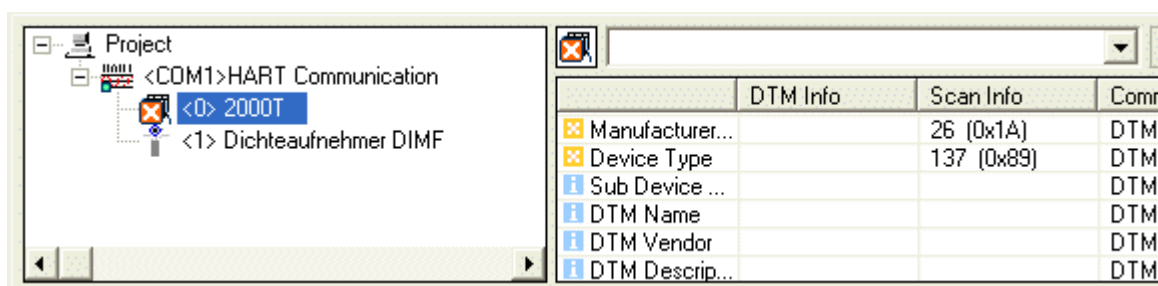
### 5.1.4 Identify DTMs of detected devices

At the end of the scan operation all detected devices including device icon and address are displayed in the topology. Subsequently, PACTware attempts to allocate the devices and DTMs contained in the device catalog. The following results may be obtained:



#### **No DTM found which matches the vendor Id or device type of the device**

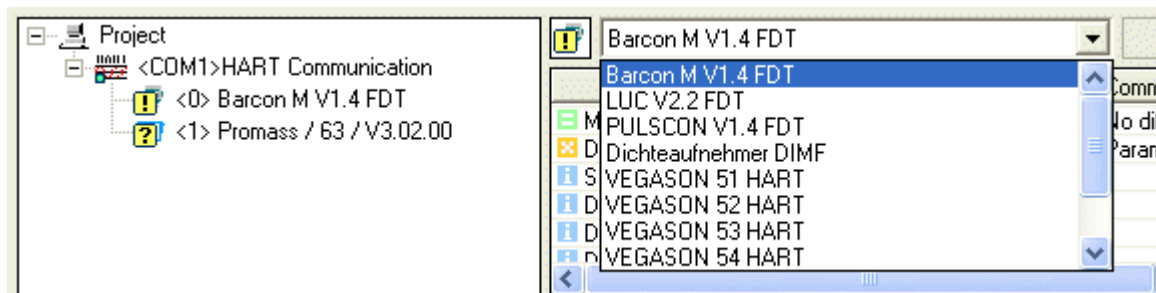
Vendor Id and device type are respectively identified in the DTM information. The DTM selection is empty.





### **DTM found which matches the vendor Id or device type of the device**

Vendor Id and device type are respectively identified in the DTM Information. The located device information (Scan Info) as well as information about a selected DTM (DTM Info) is entered to the table.

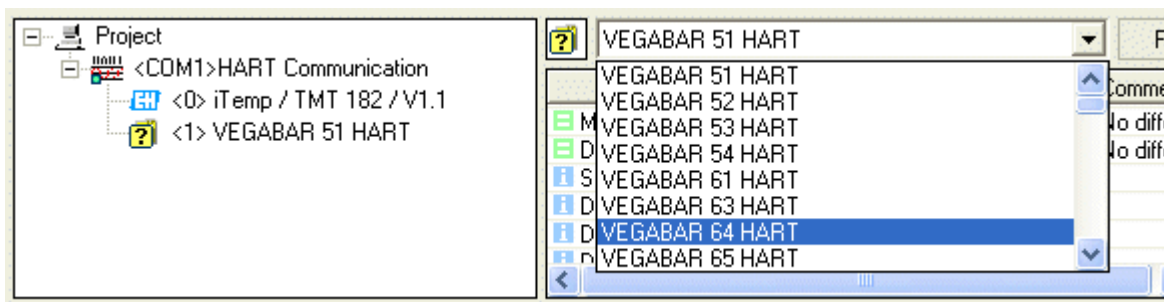


Find

After selecting the device icon a list is displayed in the DTM selection. A compatible DTM can be selected from this list either automatically by using button 'Find' or by manual selection.

### **More than one DTM found which matches the vendor Id and device type**

If several DTMs are found the associated DTM is to be selected via the Sub Device Type.



Following the selection of the device icon a list is displayed in the DTM selection. The matching DTM can be selected manually.

A DTM can be automatically assigned to a matching device with Sub Device Type, when the required information was read using command 0.



## PACTware Add-Ins

Alternately, an XML-file can be entered using tab **Additional Settings**. This XML file describes what command is to be used to read the Sub Device Type and which DTM is to be assigned to the response.

Additional settings

☒ Use Additional .XML file to identify SubDeviceType

```
manufacturerId="98"><!--Device type VEGABAR hart--><deviceType
DeviceTypeId="236"><DataExchangeRequest commandNumber="128">
<CommunicationData byteArray="0104025D00" /></DataExchangeRequest>
<subDeviceList><subType SubDeviceTypeId="51040"><DataExchangeResponse>
<CommunicationData byteArray="04002800" /></DataExchangeResponse>
</subType><subType SubDeviceTypeId="51041"><DataExchangeResponse>
<CommunicationData byteArray="04002900" /></DataExchangeResponse>
```

Load Clear

Topology Settings Other Error Log About ...



**Exactly one DTM found which matches the vendor Id and the device type of the device**

In the topology all unambiguously identified DTMs are labeled with the device Icon

Project

- <COM1>HART Communication
  - <0> iTemp / TMT 182 / V1.1
  - <1> VEGABAR 64 HART

VEGABAR 64 HART Find

	DTM Info	Scan Info	Comm
Manufacturer...	98	98 (0x62)	No diff
Device Type	226	226 (0xE2)	No diff
Sub Device ...	51064		
DTM Name	VEGABAR 64 ...		

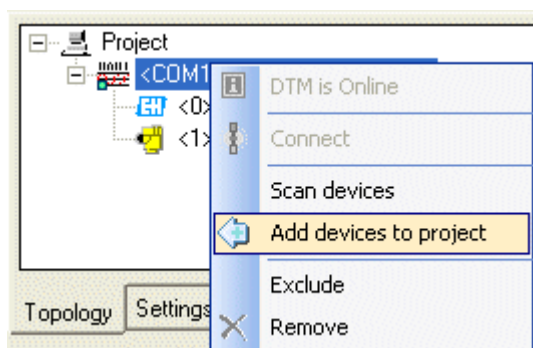
If a DTM is selected in the topology, any associated information is displayed in the DTM Information.



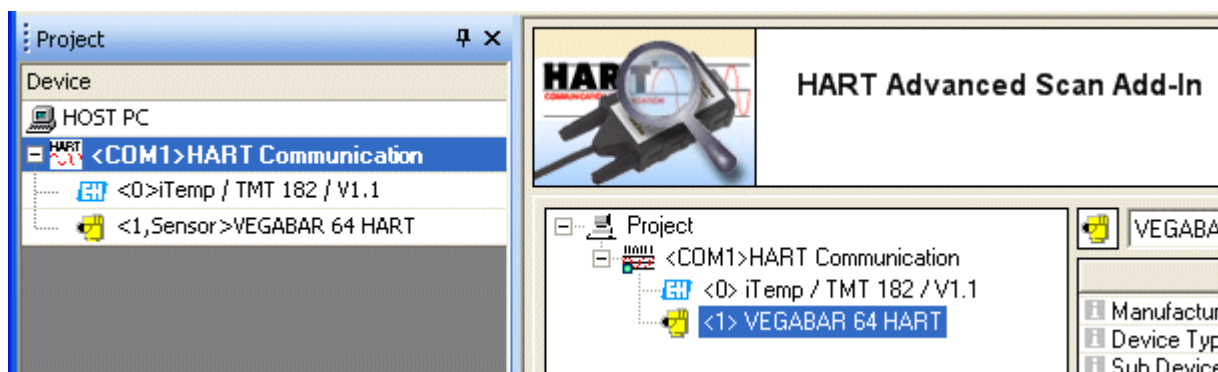


### 5.1.5 Add detected DTMs to a project

All unambiguously detected DTMs can be added to a project in one step. This function is called via the context menu of the CommDTM. All remaining ambiguously detected DTMs are not applied from the topology.



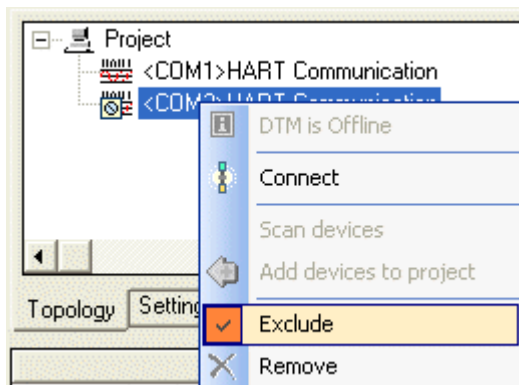
If the respective entry in the settings of the Scan Add-In is marked, all added DTMs can be automatically switched online. The parameters of the devices can also be automatically read out and saved to the project.





### 5.1.6 Edit topology

A CommDTM can temporarily be excluded from the scan or entirely removed from the topology tree. CommDTMs which are excluded from the scan are identified by a symbol.



Before DTM's of the topology are manually entered to the project, individual DTM's can be removed.

### 5.1.7 Close Add-In, Stop Scan

The Add-In is closed via the close button in the title bar.

If the device communication is interrupted during the scan operation, the progress bar pauses for some time. In this case, the **Stop** button stops the scan operation. This button can also be used to cancel the scan.



## 5.2 Up/Download Manager Add-In

As loading parameters from device and storing parameters into several devices can be very time-consuming in large projects with slow communication channels and the user is tied to the PC for the execution of functions of some field devices PACTware offers an Add-In which prepares these tasks and automatically runs them.

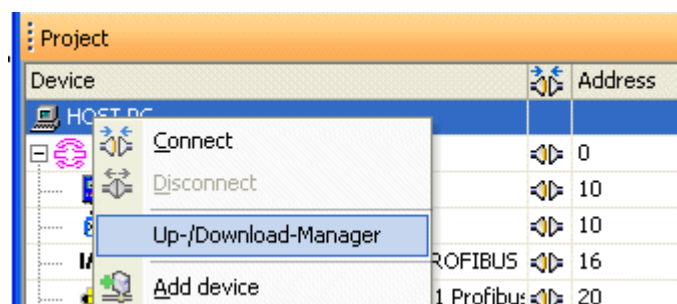
Depending on the definition of the project a part of the plant, which is e.g. edited via a protocol with corresponding communication devices, can be selected. The function is then started by the plant part using the Add-In and the user can monitor the clearly arranged result following the function run.

If errors occur in the execution, they are logged. At the beginning, you must define if you want to continue or if you want to stop in case of execution errors.

Once a triggered function runs, no other operations can be executed in PACTware. PACTware becomes accessible again when the function is cancelled or when it is successfully terminated and the window of the Add-In has been closed.

### 5.2.1 Start Add-In

Prior to using the Up/Download Manager Add-In, it must be loaded (see [PACTware Add-Ins](#)). It is started from the context menu of the HOST PC, a CommDTMs or a Gateway DTM window or via the plant view.



### 5.2.2 Edit several field devices

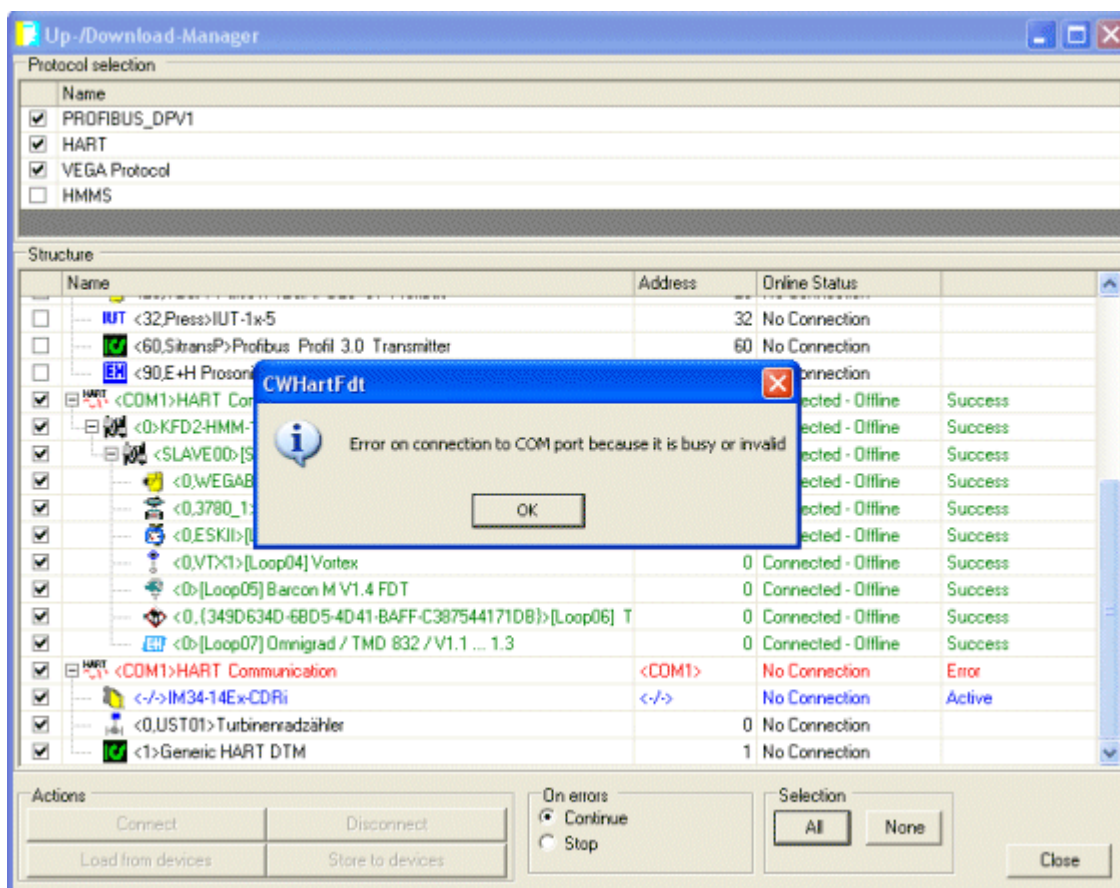
Following the start of the Add-In, a window is displayed in which all logs which appear in the project part are listed in the section above and all DTMs pertaining to the entire project or to the respective CommDTM or Gateway DTM from which the Add-In was started are displayed in the table below.

The lower section of the window offers a number of buttons to start functions like the behavior in the execution of functions.



## PACTware Add-Ins

According to the protocols selected from the list, all DTMs which support these protocols are selected. The set of selected DTMs can be modified by selecting or deselecting individual DTMs. The control buttons in field Selection select all DTMs or no DTM.



Buttons of field **Actions** starts the selected function. A communication with e.g. all selected DTMs is established.

The associated message and changed font color displays if a function for a field device has been executed, if it has been terminated successfully or if an error occurred.

If an error occurred, the process can be continued or stopped. In both events displayed error messages must be acknowledged to reopen the Add-In.

The online/offline state between DTMs and field devices is displayed in the Add-In as well as in the project window and in the plant view.

Button **Close** closes the Add-In.



## 6. Glossary

### **CommDTM**

Communication Device Type Manager

A software component which must be provided once for each communication protocol used in a project (e.g. HART, Profibus). In the project structure all other DTMs used for field devices, multiplexers or Remote I/O-systems are assigned to the CommDTMs.

### **DTM**

Device Type Manager

A Software component that executes the parameterization, configuration, calibration or the test of field devices depending on the individual device type. The DTM may have a graphical interface. A DTM that was developed in accordance with the FDT-specification may be integrated into Engineering Tools, Control Systems or configuration software like PACTware.

The DTM Style Guide of the FDT Group ([www.fdt-group.org](http://www.fdt-group.org)) describes the design of the user interface and the use of a DTM.

### **FDT**

Field Device Tool

The FDT Specification of the FDT Group ([www.fdt-group.org](http://www.fdt-group.org)) describes how a DTM communicates with a frame application. All interfaces between DTM and frame application are described in detail.

### **Gateway DTM**

Gateway Device Type Manager

Gateways are a special class of devices. Several field devices can be connected to them. HART Multiplexers or Remote I/O Systems are typical representatives of this device class. Gateways may also contain modules in addition to forwarding of communication protocols. Cascading of gateways is also possible.

### **PACTware**

Process Automation Configuration Tool

Configuration software available as Open Source to every device vendor who is a member of the PACTware Consortium e.V.. For the first time, it is such possible to configure and parameterize all field buses and field devices of a plant regardless of the vendor by using one single engineering tool. The further development of this configuration software is sponsored by the PACTware Consortium e.V.

PACTware is a frame application according to the definition of the FDT Specification.

### **Tabbed MDI**

Windows are combined in a matrix in "Multiple Document Interface" style. Each window has a tab. Only the window selected via the tab becomes is displayed in a set of windows.

### **Classic View**

Windows are displayed in a own window with title bar in "Multiple Document Interface" style. The windows can be minimized or maximized.



## Glossary

### User Rights

A differentiation is made between 5 user roles for editing projects, parameterization and configuration of field devices and the user administration:

Observer, Operator, Maintenance, Planning engineer and Administrator.

The following tables lists the actions each user role may execute using PACTware.

Action	Observer	Operator	Maintenance	Planning engineer	Administrator
<b>Menu File</b>					
New	-	-	-	X	X
Open...	X	X	X	X	X
Close	X	X	X	X	X
Save	-	-	-	X	X
Save as...	-	-	X	X	X
[last projects]	X	X	X	X	X
Exit	X	X	X	X	X
<b>Menu Edit</b>					
Cut	-	-	-	X	X
Copy	-	-	-	X	X
Paste	-	-	-	X	X
<b>Menu View</b>					
Toolbar	X	X	X	X	X
Status bar	X	X	X	X	X
Project window	X	X	X	X	X
Device catalog	X	X	X	X	X
[Add-In]	X	X	X	X	X
Error monitor	X	X	X	X	X
Clipboard	X	X	X	X	X
Debug Monitor	X	X	X	X	X
<b>Menu Project</b>					
Load from device(s)	-	-	X	X	X
Store to device(s)	-	-	X	X	X
Print	X	X	X	X	X
Profile	X	X	X	X	X





## Glossary

Action	Observer	Operator	Maintenance	Planning engineer	Administrator
<b>Menu Device</b>					
Connect	X	X	X	X	X
Disconnect	X	X	X	X	X
Load from device	-	X	X	X	X
Store to device	-	-	X	X	X
Parameter	-	-	X	X	X
Measured value	X	X	X	X	X
Simulation	-	-	X	X	X
Show Diagnostic	X	X	X	X	X
(Compare offline)	X	X	X	X	X
(Compare online)	X	X	X	X	X
(Set value)	-	X	X	X	X
[Up-/Download Manager]	-	read only	X	X	X
Print	X	X	X	X	X
Write device data to file	-	-	X	X	X
Add device	-	-	-	X	X
Delete device	-	-	-	X	X
Properties	X	X	X	X	X
<b>Menu Extras</b>					
User administration	-	-	-	-	X
Device catalog administration	-	-	-	-	X
Options	X	X	X	X	X
Add-Ins	-	-	-	-	X
<b>Menu Window</b>					
Classic View	X	X	X	X	X
Next Window	X	X	X	X	X
Close all windows	X	X	X	X	X
<b>Menu Help</b>					
Contents	X	X	X	X	X
About	X	X	X	X	X



## Index

### A

About 1-7, 3-8  
Add device 3-4, 3-16, 4-6  
Add DTM 4-9  
Add part of a project 4-12  
Add-In 3-6, 4-23, 4-25, 5-1  
Add-In Status 5-3  
Add-Ins 3-2  
Additional Functions 3-4, 3-14  
Arrange all 3-8  
Arrange windows 3-8

### C

Change Password 3-6  
Clipboard 3-2, 4-12, 5-1  
Close 3-1, 4-22  
Close all windows 3-8  
Connect 4-16, 4-17  
context menu 3-9  
Copy 3-2, 4-12  
Cut 3-2

### D

Debug Monitor 3-2, 4-23  
Delete 4-24  
Delete device 3-5  
delete device 3-16  
Delete DTM 4-10  
Device 3-4  
Device catalog 3-2, 3-6  
Device catalog administration 4-7  
Device Information 5-3  
Device properties 3-16  
Diagnostics 3-13  
Disconnect 3-10  
Display Mode 4-24  
DTM Information 5-3  
DTM Selection 5-3

### E

Edit 3-2  
Error Monitor 3-2, 4-25  
Exit 3-1  
Extras 3-6

### F

File 4-2

### H

HART Advanced Scan 3-2, 5-2

Help 3-8

### I

Info 4-6

### L

language 3-7  
Load from Device 3-4  
Load from device 3-3, 3-11, 4-16

### M

Measured value 3-13

### N

New 3-1  
New project 4-2  
Next window 3-8

### O

Online Parameterization 4-16  
Open 3-1, 4-24  
Open project 4-2  
Options 2-9, 3-7

### P

Parameterization 4-16  
Parameterize 3-13, 4-16  
Parameterize online 3-13  
Paste 3-2, 4-12  
Plant view 3-2  
Print 3-3, 3-14  
Profil 2-8  
Profile 3-4  
Project window 3-2  
Properties 3-5

### R

recording mode 4-24  
Refresh Error Monitor 4-25

### S

Save 3-1, 4-22, 4-24  
Save as... 3-1  
Saves as... 4-22  
Scan 5-3  
Settings 4-24  
Start simulation 3-4, 3-13  
Status bar 3-2  
Store into device 3-12  
Store to device 3-3, 3-4

### T

Toolbar 3-2  
Topology 5-3



## U

Update device catalog 4-6, 4-7

User administration 3-6

## V

View 3-2, 4-23

## W

Window 3-8

Write device data to file 3-14, 4-17