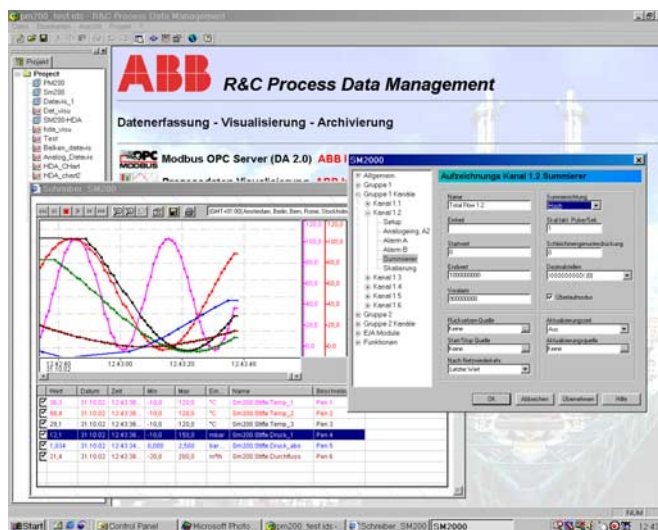


Data Archiving Tool HDA100

R&C Process Data Management Software



Data Archiving Tool HDA100

Operating manual

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1 Installation and maintenance

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- Uninstalling or customizing the program
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1.1 System requirements

The following hardware and software components are required to install and run the program properly:

- PC, IBM compatible, at least Pentium processor, 166 MHz,
- 64 MB RAM,
- 20 MB free hard disk space,
- SVGA card, at least 256 colors,
- Windows 98, NT
- CD-ROM drive for installing the program
- InternetExplorer Version 5.01 or higher

1.2 Starting the setup program

Insert the CD in your CD-ROM drive. The setup program will be started automatically. You can also start the setup program manually by following the instructions below:

On the CD you will find the Setup.exe program in the roots directory.

Double-click on Setup.exe to start the setup program. The Windows Installer dialog box appears. If the Windows installer should not yet be available on your system, it is automatically installed then. After this, your system needs to be restarted. After the restart the setup program will start again automatically to continue the installation. Note: Some systems do not permit an automatic restart of the setup program. In this case, manually start Setup.exe as described above.

1.3 Installing the program - installation steps

1.3.1 Language Selection dialog box

When the setup program has been started, the Language Selection dialog box will pop up. In this dialog you can select the language for both the R&C Process Data Management and the installation program.

Select a language from the list and confirm with OK to continue. (Note: The selected language can be the same as your system language, but does not need to be).

1.3.2 Welcome dialog box

A setup wizard started with a welcome screen will help you to install the program. To ensure proper installation it is strongly recommended to exit all other applications before running the setup program. Be sure that this is the case before selecting "Next". Otherwise, the current setup procedure should be cancelled.

1.3.3 User Information and User Rights dialog box

Enter your full name and organization in the respective fields.

Note that special user rights can only be assigned by the system administrator of the PC on which the software is to be installed.

If the menu option "All users" is selected, the program will always appear in the start menu, no matter who is currently logged on.

When selecting the "Me only" option the program will only appear in the start menu when you are logged on under your personal account.

1.3.4 Target Folder dialog box

In this dialog you can define the target drive and folder in which the program is to be installed. Click on the "Browse" button to change the default drive and folder.

1.3.5 Installation Type dialog box

In this dialog box you can select to install Typical, All or Custom products.

Typical

Installs the R&C Process Data Management with the following products: Modbus, Visu, Konfi Device Type Manager (DTM) for Datavis for device configuration and control (Prog1 and Prog2 functionality)

All

Installs all products

Custom

Product selection as required. You can select the products you want to install from the next dialog box.

1.3.6 Starting the installation

When all necessary entries and settings have been made, you can start installation. The installation procedure may take some time. When installation is complete, a message appears indicating that the installation was successful. The menu item "R&C Process Data Management " is now available in the start menu.

1.3.7 Uninstalling or customizing the program

There are two possible ways to uninstall the program or to install/uninstall specific program components:

- Start the Setup.exe program or
- Select [Settings -> Control Panel -> Add/Remove Programs] from the Start menu and then double-click on the "R&C-Process-Data-Management " option.

In both cases the Setup program is started, and the Application Maintenance dialog box appears.

1.3.8 Application Maintenance dialog box

This dialog box provides several service and maintenance options for your program:

Customize

Add or remove components

Repair

Re-install or add components that have been purchased at a later time

Uninstall

Completely uninstall the program.

2 Workspace

- R&C Process Data Management Software
- Workspace and software concept
- Starting the workspace
- Workspace components
- Project and project tree
- Working with the project tree (Edit current project)
- Editing the project name
- Creating a new element in the project tree
- Creating a device
- Integrating external applications
- Editing remarks
- Linked documents
- File menu
- Creating a new project
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- Saving the current project
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- Saving a copy of the project
- Sending a project to
- View menu
- Dialog language
- Showing/hiding the toolbar and status bar
- Showing/hiding the project view
- Project menu
- Defining the fieldbus segments
- Options
- Help Menu

2.1 R&C Process Data Management Software

The R&C Process Data Management Software from ABB Recording & Control includes the following PC software packages for measured value processing:

- Modbus OPC Server (DA 2.0 Standard),
- Device Bus OPC Server (DA 2.0 Standard) for devices that exclusively support the H&B Device Bus (from version 3 and higher)
- Process Data Visualization (OPC client)
- OPC HDA Server for recording and handling historical values (from version 3 and higher)
- R&C Process Web Server for process data visualization via the Internet (from version 3 and higher)
- FDT Device Configurator and Device Type Manager for device management and configuration

The following tasks for small automation applications are fully covered by this software:

- Process data acquisition
- Archiving (from version 3.0 and higher)
- Visualization
- Device management and configuration

All products of the R&C Process Data Management Software use the following standards and trends of advanced process automation:

- OPC (OLE for Process Control) for process data acquisition,
- OPC-HDA (Historical Data Access) for process data archiving (Version 3 and higher)
- Web and browser technologies (HTML, DHTML, JavaScript, ActiveX components technology, etc.) for process data visualization
- FDT (Field Device Tool) Standard for device configuration

Due to its compliance with the above-stated standards the R&C Software Suite is an open system providing the following features:

- trouble-free cooperation of different software packages
- preservation of you investment in already purchased ABB devices
- integration of bus-compatible devices from other vendors
- integration of OPC servers for other fieldbuses (e.g. Profibus, FoundationFieldbus, InterbusS etc.)

- free access throughout the network to all process data on recorders, controllers and indicators from process control systems or other visualization systems

2.2 Workspace and software concept

All software packages of the R&C Process Data Management Software share a common R&C instrumentation software library. The library is installed with the first product of the software suite, and may be updated if required when a new product of the R&C Process Data Management software package is installed. Among other items the library contains all communication components like OPC and FDT.

To ensure user-friendliness and convenient control all software packages use a common graphical user interface, the so-called workspace. This does not apply to the ProcessWebServer which does not need a user interface. The workspace is installed with the first product of the software suite, and may be updated if required when a new product of the R&C Process Data Management software package is installed.

2.3 Starting the workspace

The menu item "R&C Process Data Management Software " is available in the start menu under "Programs". Click on the "Workspace" menu item to start the program.

2.4 Workspace components

After starting the workspace the user interface appears (refer to the illustration). The project tree is displayed in the left section of the window. It is the main tool for navigating and for controlling the installed software packages. Moreover, it is the starting point for all functions related to data acquisition, visualization and device parameterization. The right sub-window is the Web browser display area, where any Web site selected can be displayed. The installed and licensed software packages are shown here by default.

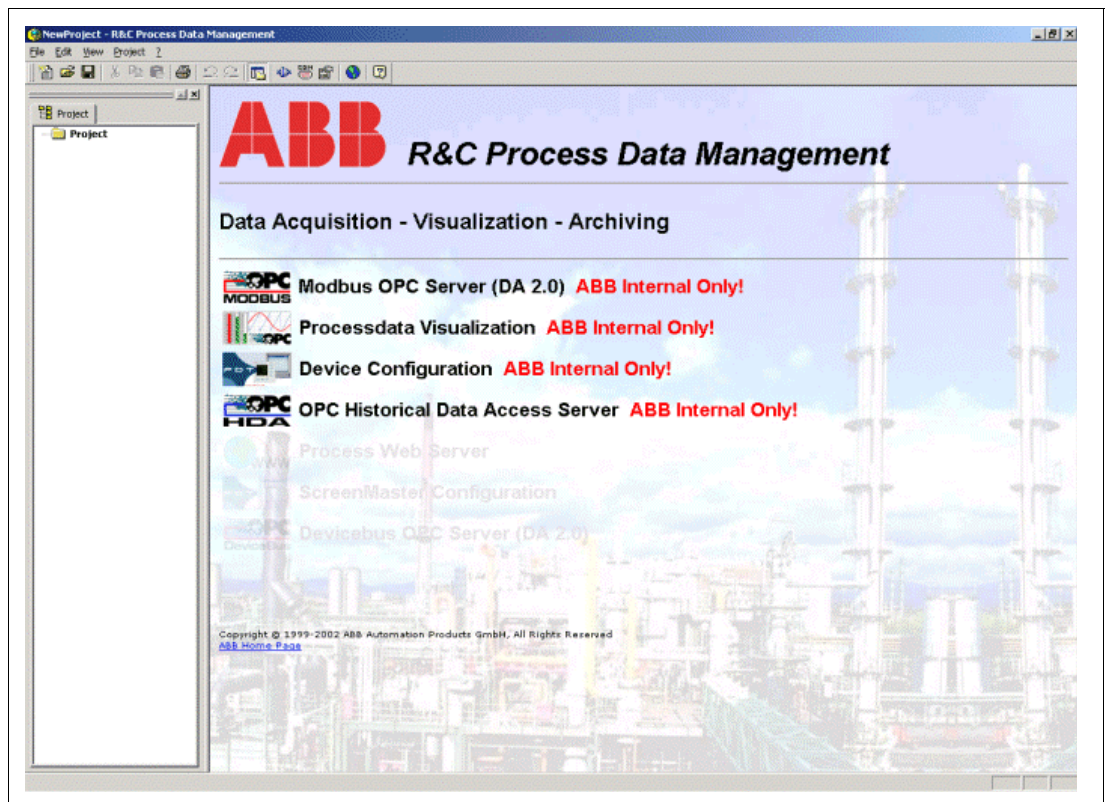


Fig. 2-1 Work space components

2.5 Project and project tree

The project tree is the main tool for navigating and is used for organizing and handling all devices, plants and applications in a structured hierarchy, as seen in the illustration.

Example

The example shows a plant hierarchy in the project tree. The project may contain any number of folders and subfolders. Devices, visualization pages and subfolders can be arranged in every folder such that they represent the structure of the actual plant.

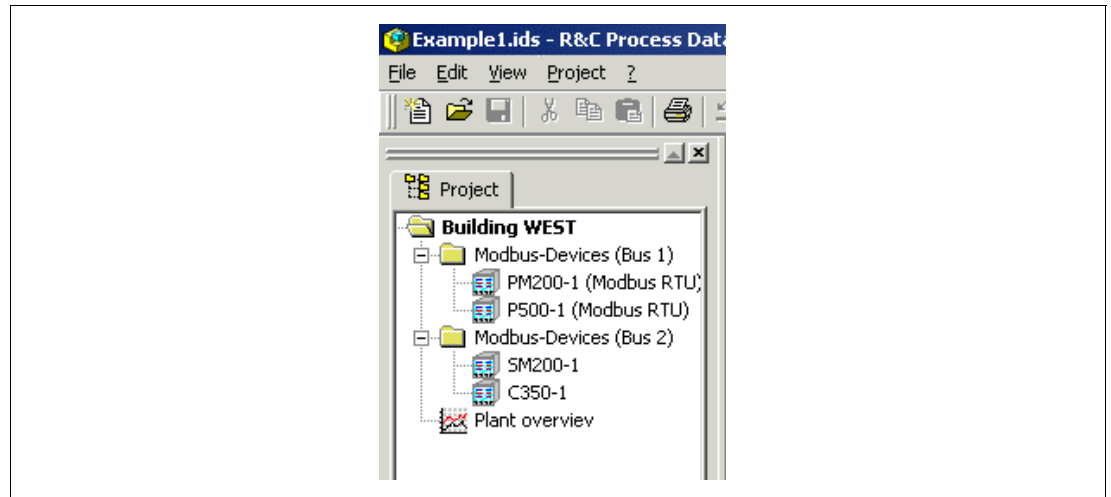


Fig. 2-2

2.5.1 Working with the project tree (Edit current project)

Upon loading or creation of a project the project tree can be designed or adapted freely to meet the requirements of the respective application. You can create hierarchies, change names, and add elements like plants, devices, servers or visualization pages.

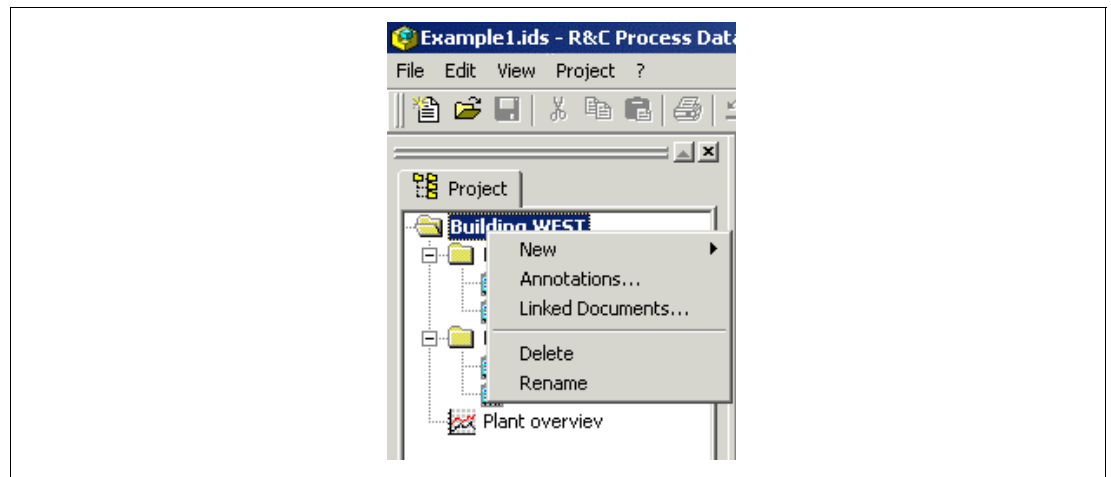


Fig. 2-3

All these action can be performed in the project tree. Right-click on the appropriate node in the project tree. A shortcut menu adapted to the respective node type appears, where all actions can be performed.

2.5.2 Editing the project name

Right-click on the root directory. Select "Rename" from the shortcut menu that appears. You can edit the project name directly in the tree view, then.

Note

As a rule, every element in the project tree can be renamed in this way.

2.5.3 Creating a new element in the project tree

Right-click on the folder icon to open the shortcut menu. Then select "New". A pull-down menu with various options for creating a new project element will pop up. The following menu options can be selected:

Folder

Creates another hierarchy level, where other elements can be.

Device

Creates a new device. The device type can be selected from a device selection list. The selection list contains all Device Type Managers (DTMs) installed on your PC and the virtual devices like the R&C Modbus OPC Server.

External application

Permits to integrate any external 32-bit program, e.g. Paralane200. This feature is especially designed for supporting devices for which no DTM complying with the FDT standard exists yet.

Visualization page

Permits to create visualization pages by using one of the 11 pre-configured standard visualization pages as a template, and to integrate user-defined HTML pages.

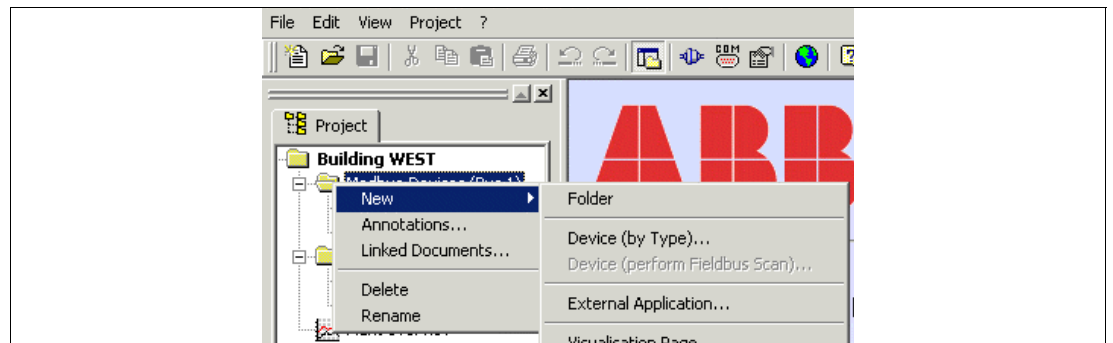


Fig. 2-4

2.5.4 Creating a device

Right-click on the folder icon to open the shortcut menu. Then select "New". A pull-down menu with various options for creating a new project element will pop up. Select "Device (by type)" to open the dialog box for selecting the device type (see the illustration (see Fig. 2-5)).

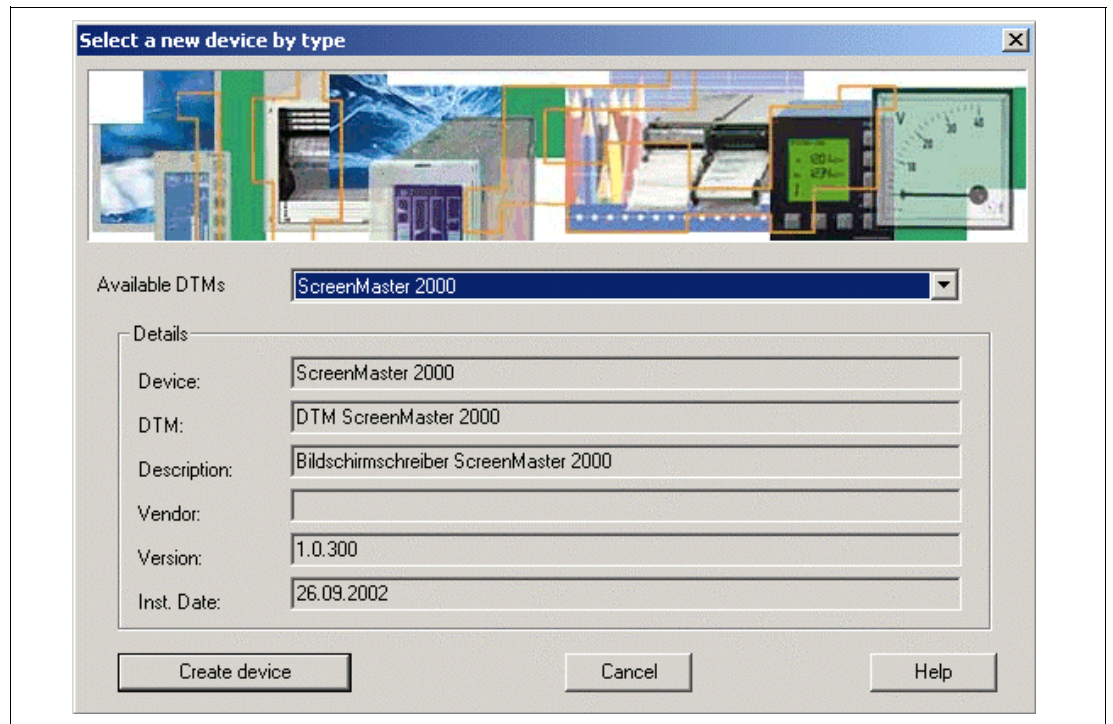


Fig. 2-5

Select a device from the list of available devices. Press the "Create device" button to confirm. The device will be created in the selected folder with the name "New device". Directly upon creation the edit mode will be active, i.e. you can change the node name according to your needs.

Note

The name is freely configurable, independent of the device type. Names like "Datavis-1", "Datavis (heater A)", or simply "Tag 01" are valid without any limitations.

Double-click on the menu item to start the device-specific Device Type Manager with all parameter definitions of the device. See topic "Device Type Manager" for details.

2.5.5 Integrating external applications

The program permits to integrate any external 32-bit program, e.g. Parapoint200. This feature is especially designed for supporting devices for which no DTM complying with the FDT standard exists yet. You can also integrate any other 32-bit program, e.g. Excel.

Right-click on the folder icon to open the shortcut menu. Under "New" a select list for creating a new project element can be called up. Select "External application". The dialog box for integrating external programs appears.

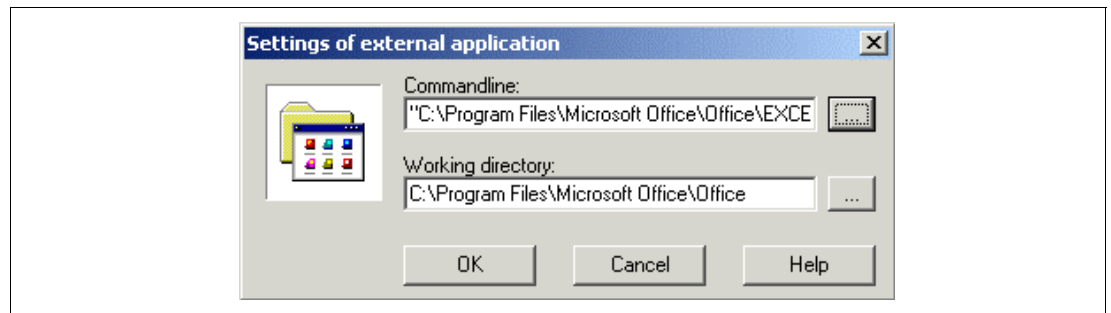


Fig. 2-6

Command line

Enter the program name with full path information in the command line.

Work directory:

If you don't want to use the program folder as your work directory, you can enter a path for your work directory here.

Confirm with OK. The new item appears in the tree. Double-click on the item to start your application.

Editing remarks

A remark can be stored for every node in the project tree. Select the "Remarks" menu item from the shortcut menu to open the Remarks dialog box.

You can enter simple texts without attributes in this dialog box. Confirm with OK. The text is taken over and allocated to the node.

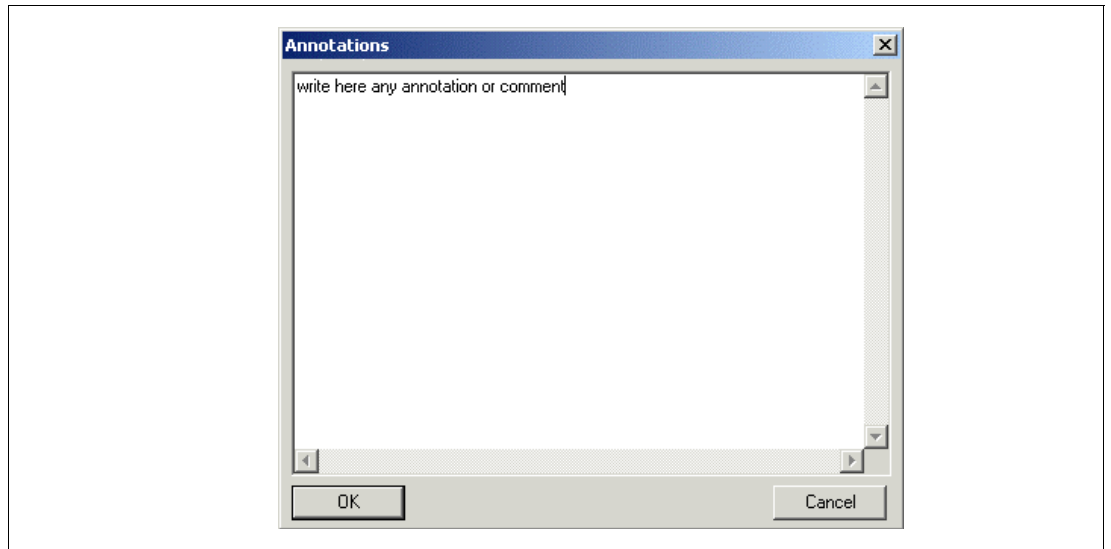


Fig. 2-7

Linked documents

Documents like operating instructions for the device, logs, etc. can be linked with every node. Click on the "Linked documents" menu item to open the "Documents linked with this element" dialog box where you can add, remove or open documents.

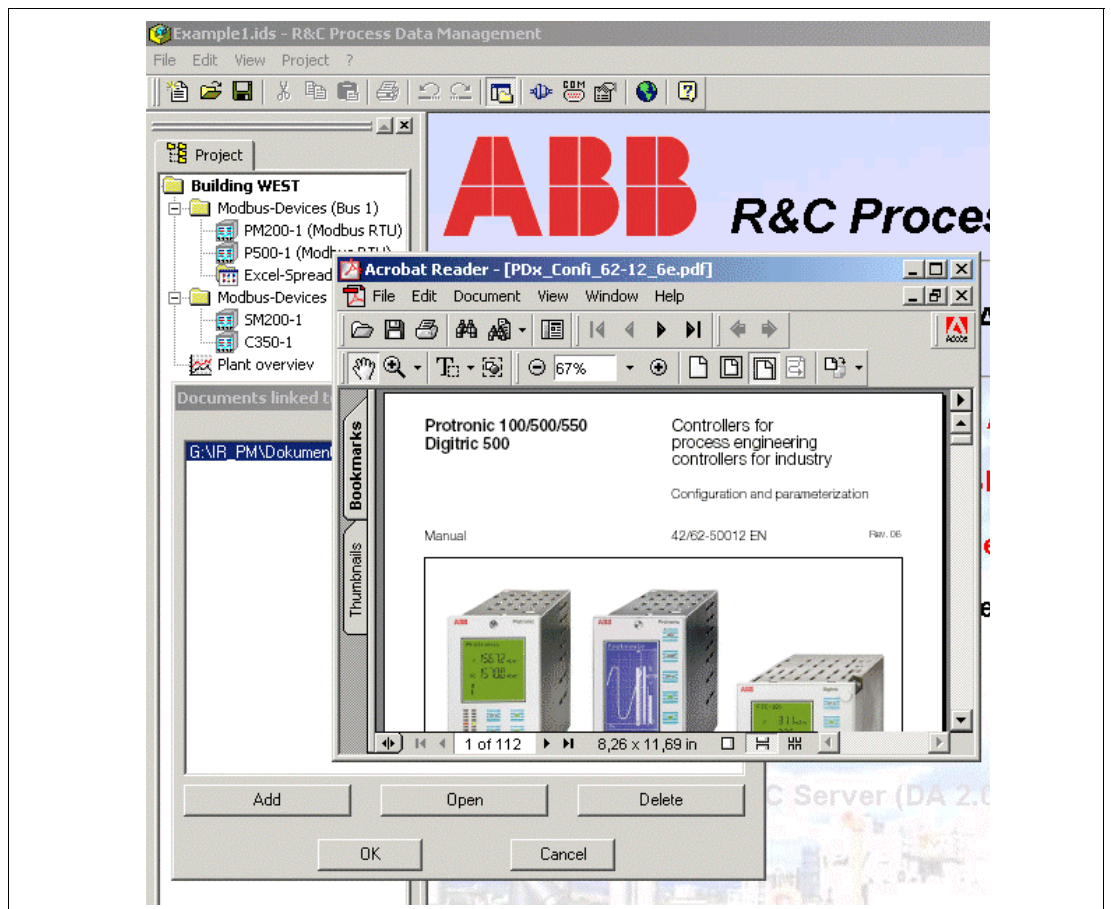


Fig. 2-8

2.6 File menu

The workspace offers a project management function for creating, loading and saving projects. This allows you to work with different projects. The file menu of the workspace (see illustration) is used for project management (see Fig. 2-1).

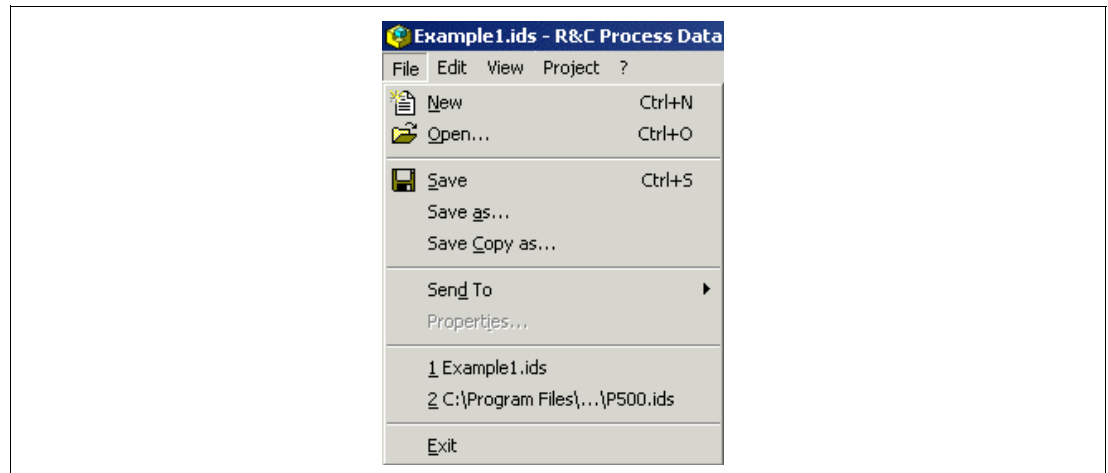


Fig. 2-9

2.6.1 Creating a new project

In order to create a new project open the File menu and select "New". If you have already opened a project and have not yet saved it, you will be asked if you want to save that project before creating a new one. If yes the File dialog box appears, if no the current project is closed without saving, and the new project is created immediately.

The new project is first created with the default name "New project", which can be changed as required. Refer to the topic "Editing the project name" for details.

2.6.2 Opening an existing project

In order to open an existing project open the File menu and select "Open...". If you have already opened a project and have not yet saved it, you will be asked if you want to save that project before opening another one. If yes the File dialog box appears, if no the current project is closed without saving. The "Open file" dialog box appears where you can select the respective file and then load it into the workspace. Project files have the extension ".ids".

2.6.3 Saving the current project

In order to save the current project open the File menu and select "Save". The project will be saved without further prompts. If the project is saved for the first time, the "Save as" dialog box will appear, where you can enter a new name for your project.

2.6.4 Saving a project under a new name

Select the "Save as..." menu option from the File menu if you want to save the current project under a new name. The "Save as" dialog box will appear, where you can enter a new name for your project. After this the project will appear in the workspace under the new name.

2.6.5 Saving a copy of the project

Select the "Save copy as..." menu option from the File menu if you want to save a copy of the current project under a new name. The "Save as" dialog box will appear, where you can enter a new name for your project. The project name that already exists in the workspace will not be changed.

2.6.6 Sending a project to

Under "File" -> "Send to" "E-mail address" you can send your project as an e-mail to an addressee. The mailing program is opened. A new mail is created automatically, and the project file (.ids) is already attached to it. Enter an e-mail address and send off the mail.

2.7 View menu

In the View menu you can adapt the workspace to your needs. You can select the dialog language and show/hide the toolbar, the status bar, and the project tree (Project view).

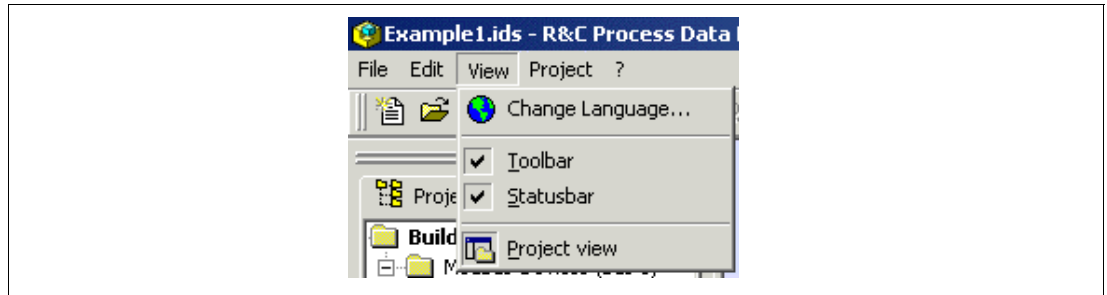


Fig. 2-10

2.7.1 Dialog language

Select the "Change language" menu item to change the dialog language. The "Change language" dialog window appears.

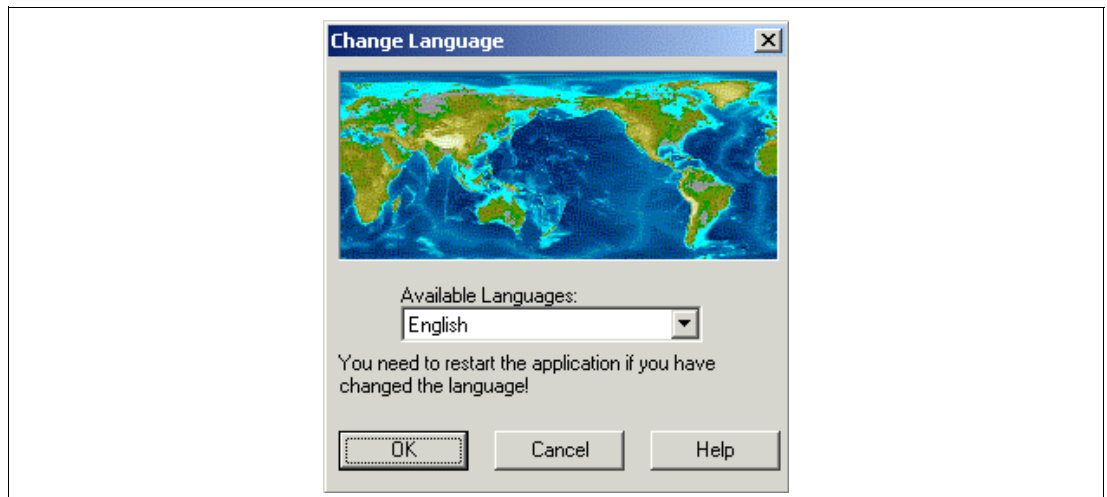


Fig. 2-11

Select a language from the list of installed languages and confirm with OK. The new language setting will be activated when the program is started the next time. Terminate/restart your program.

2.7.2 Showing/hiding the toolbar and status bar

Click on the "Toolbar" menu item to show/hide the toolbar.
Click on the "Status bar" menu item to show/hide the status bar.

2.7.3 Showing/hiding the project view

Click on the "Project view" menu item to show/hide.

2.8 Project menu

In the project menu you can set the project-specific parameters.

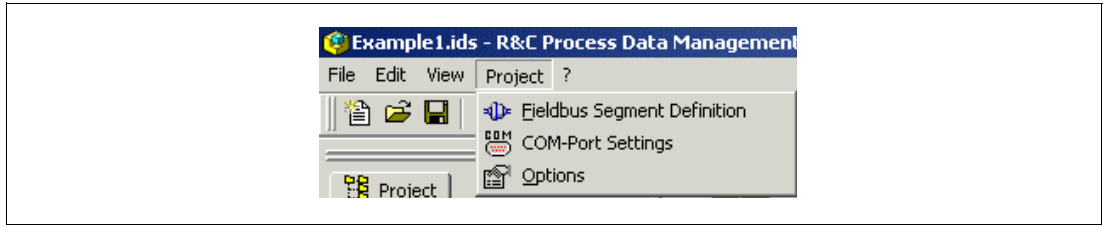


Fig. 2-12

2.8.1 Defining the fieldbus segments

A fieldbus segment represents the configuration of serial PC or bus segment interface. If the PC has several serial interfaces, you can define several fieldbus segments with different settings (e.g. for the baud rate). In the device configuration a fieldbus segment can be allocated to the respective device.

Select the "Define fieldbus segment" menu item from the "Project" menu.
A dialog box appears where the defined fieldbus segments are listed.

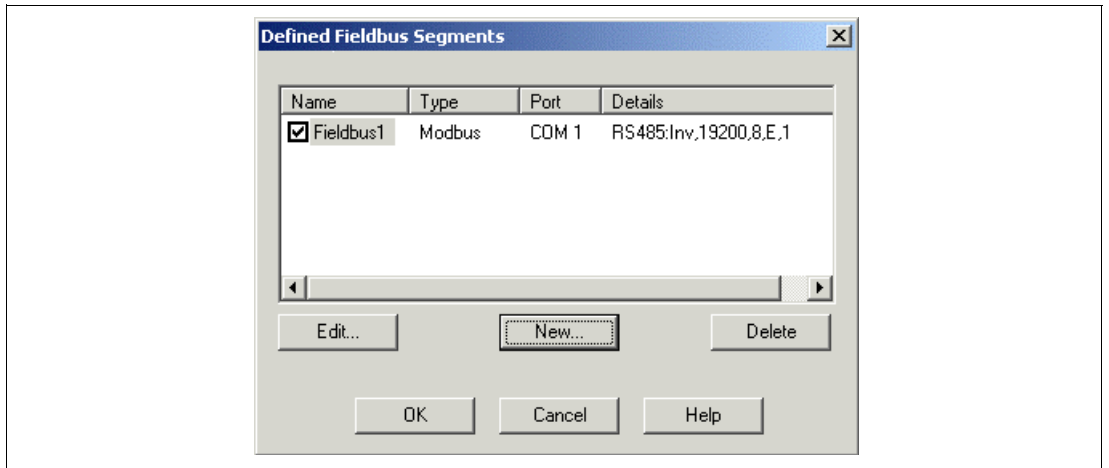


Fig. 2-13

Select the name of the link, the protocol (under fieldbus type) and the COM interface in the "Fieldbus segment" dialog box.

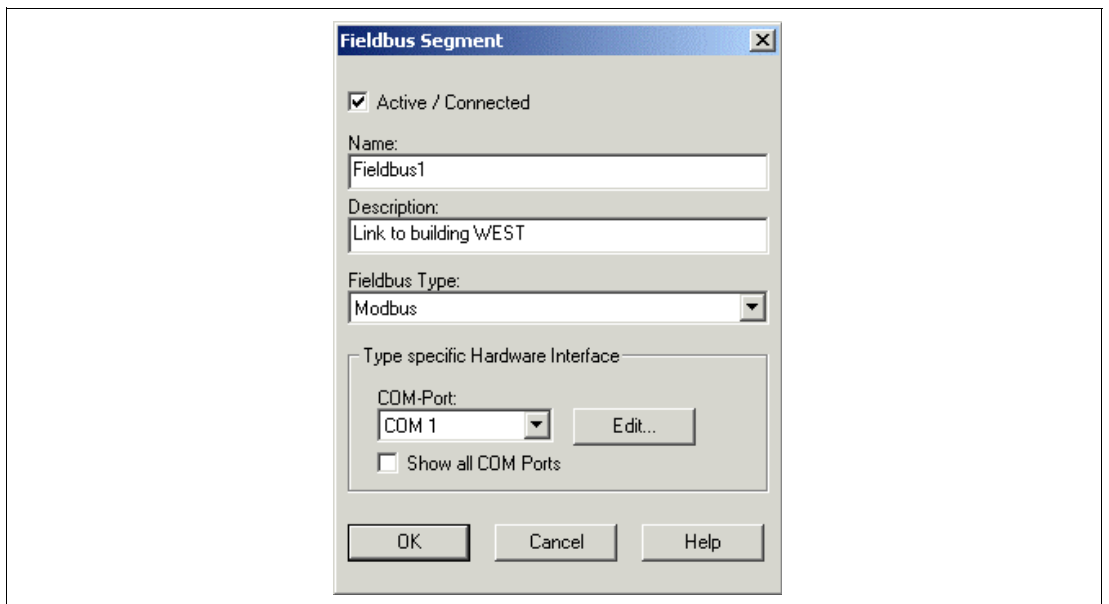


Fig. 2-14

Click on "Edit".

A window appears, where you can define the interface settings: RS 232 or RS 485, baud rate, etc.

Remark

Usually, RS 232 is the correct setting, even if the device is connected to the RS 232 interface of your computer via an RS 485 converter. RS 485 has to be selected only if a so-called hardware flow control is required, e.g. for a non-automatic RS 485/RS 232 converter.

2.8.2 Options

In the Project options dialog box you can define that the last accessed project is automatically opened when the workspace is started.

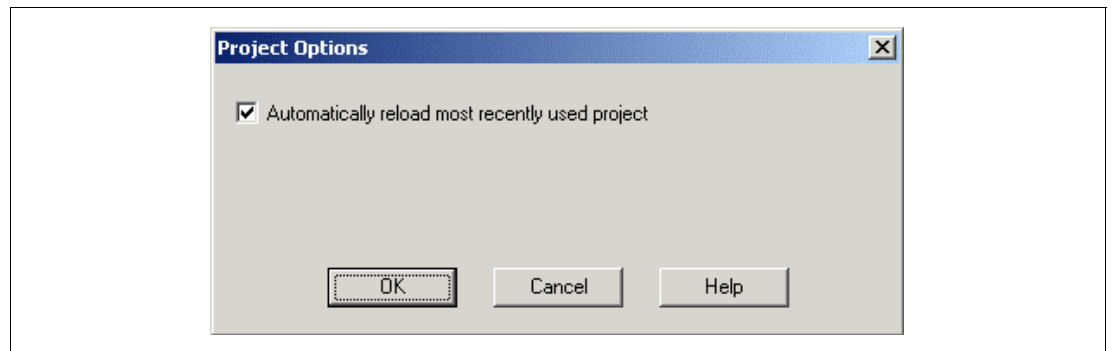


Fig. 2-15

2.9 Help Menu

The Help Menu contains the item Help and Register with that one can open the license dialog.

The Help for the License dialog can be opened by pressing the help button available on this dialog.

Comment

The Licensing software is a common ABB software independent of the R&C Process Data Management. This is the reason why it has his own separate help.

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3 OPC HDA Server for Process Data Archiving

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3.1 OPC (OLE for Process Control)

What is OPC?

OPC is an approach for data access via standardized interfaces.

In the past, every software and application engineer had to develop proprietary interfaces, servers or drivers for the data exchange with fieldbus instruments. The problem was due to the large variety of different field instruments, bus systems and data recording stations available on the market, resulting in incompatible proprietary solutions. OPC defines a common, open interface doing away with this. Special drivers are no longer needed. OPC allows for standardized access to any fieldbus from either HMI, SCADA or open control systems.

OLE for Process Control (OPC) thus enables standardized data exchange between heterogeneous automation instruments and different PC applications. OLE stands for Object Linking and Embedding and is a software interface for displaying and embedding information from one program in other applications. OPC is sustained by the OPC Foundation who has worked out the technical specifications and nowadays has more than 140 members, among them big companies like ABB, Siemens, etc.

3.2 OPC HDA Server

The OPC HDA server (HDA = historical data access) requires an OPC DA server (DA = Data Access to online data). The HDA server saves the process data from the allocated channels (OPC DA items) in an archive and provides them to the PC world on the network via the OPC HDA interface.

3.2.1 Notes for Installation

When the OPC HDA server is installed on your system, the work environment common to all R&C Process Data Management products is installed as well. If it should already reside on your system (since another product of this series has been installed before) it is updated, if required.

3.2.2 Data Archiving Tool Concept and Operating Principle

Data archiving is based on the OPC HDA server concept. The OPC HDA server receives data from an OPC DA server (e.g. the Modbus OPC server), stores them in a file archive, and provides the stored data to the application programs (OPC HDA clients) on request. A typical application is e.g. process data visualization using line charts.

The mechanism for recording and playing back process data is realized by the so-called HDA data recorders in the user interface. HDA data recorders are virtual devices created and integrated in the project tree of the Process Data Management. The channels to be recorded, the archive directory, and the operating mode (recording and playback, or recording only) can be set via these HDA data recorders as well.

Starting the HDA-Server /Standby Mode

The OPC HDA server is started together with the ABB Process Data Management program, provided that an HDA data recorder already exists in the project tree. The HDA server status can be polled via an icon in the Windows task bar. Seen from the technical point of view, the HDA data recorder is used to configure the ABB OPC HDA server. Data recording and playback can be started for the configured channels by selecting the "OPC HDA recorder active" menu item from the device shortcut menu. This establishes a link between the "Device" (i.e. the data sources configured in the data recorder) and the OPC HDA server. The archived data are then directly made available to all OPC HDA clients (e.g. the Data Visualization program) throughout the system. When the "OPC HDA recorder active" menu item is unselected, the OPC-HCA server does not "know" the respective data recorder, and the data recorder is more or less in **Standby Mode** (data recording and/or data playback stopped).

Data Recording and Playback

When OPC communication is active, the data recorder can be run in two modes:

- In the "Data recording" mode (default setting) the values measured in online mode are stored in a specific directory.
- In the "Data playback" mode no new measuring values are recorded; only already recorded (historical data) are made available to the HDA clients upon request. The data playback mode can be activated by ticking the "Data playback only" check box on the "Archive" configuration page of the HDA data recorder.

Terminating Data Archiving

Data archiving can be terminated in the following ways:

- **Terminating / Canceling data archiving for a specific device:**
Simply disable OPC communication via the shortcut menu of the respective HDA data recorder. The OPC HDA server will continue operation.
- **Switching off the OPC HDA server:**
Usually, the OPC HDA server **is not closed down when the program is closed** or the project is changed. However, this default setting can be changed by selecting the "Stop HDA server when project is closed" option in the Project/Options menu. With this setting, the HDA server will be closed down when the R&C Process Data Management program is exited. At the same time, data archiving will be interrupted as well.
Additionally, the OPC HDA server can be stopped separately. Right-click the OPC HDA icon in the task bar to open the "Server context menu" window and then actuate the "*Shutdown*" button in this window. Answer the system prompt with "Yes". The OPC server will be closed down.

3.2.3 Creating a New OPC HDA Recorder

In the project tree, the OPC HDA server is represented by one or more HDA data recorders, through which the OPC HDA server can be configured.

Data recording and archiving via the OPC HDA server can be achieved in two ways:

- Using OPC DA servers as data source
- Importing data files via the HDA data recorder (Rev. 3.1 or higher)

Using OPC DA servers as data source

Basically, any OPC DA server in accordance with OPC DA standard 2.0 can be used as a data source. Refer to the respective help system for more information about the ABB R&C MODBUS-OPC DA server.

Proceed as described below to create an HDA data recorder in the project tree:

Right-click on the folder symbol to open the context menu. Select "New" to create a new project element.

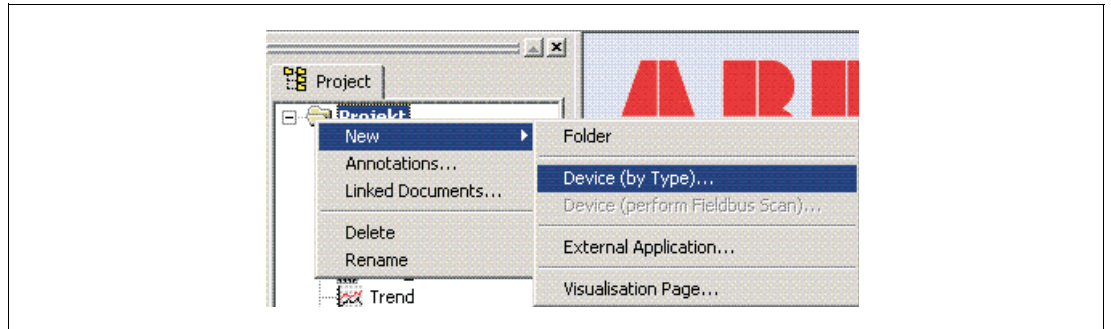


Fig. 3-1

Select "Device (acc. to type)" from the pull-down menu to call the dialog box for choosing the device type.

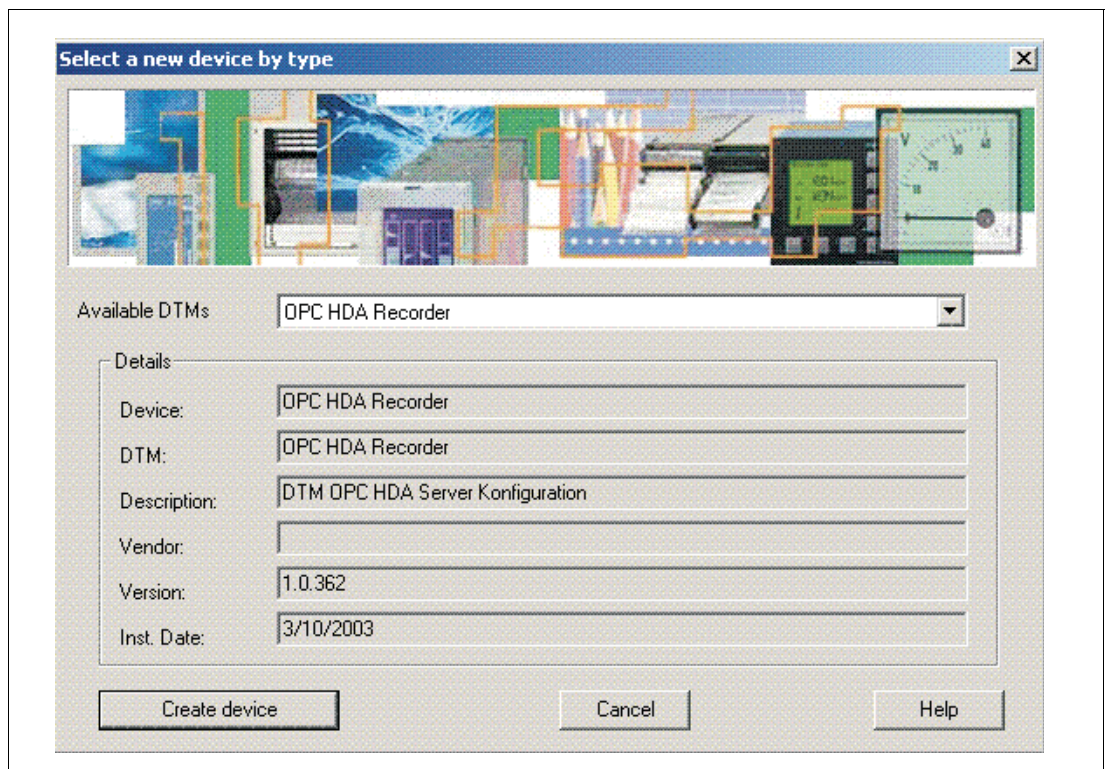


Fig. 3-2

Select "OPC HDA recorder" from the list box and click on the "Create device" button to close the dialog box and create a new device node in the project tree.

Directly upon creation of the node, the edit mode is active and you can change the device name if required.

HDA Data Recorder Shortcut Menu

Right-click on the HDA data recorder device node to open the data recorder shortcut menu.

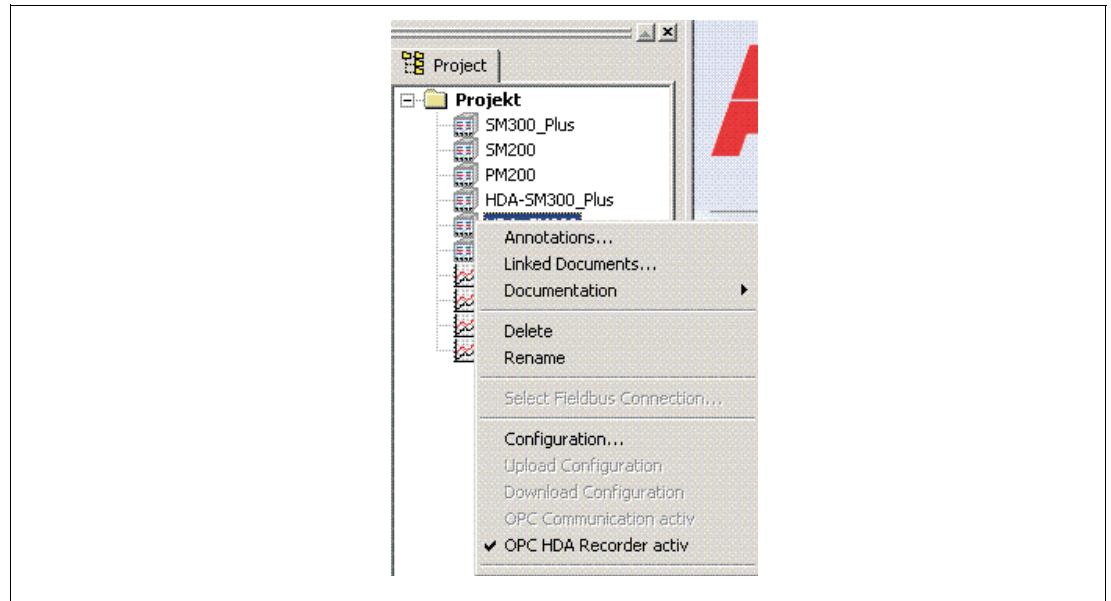


Fig. 3-3

The menu items "Comments", "Linked documents", "Delete", "Rename", and "Select fieldbus link" are general and beyond the scope of this help system. Please refer to the help system of the work environment for details.

Configuration

Selecting the "Configuration" item will open the HDA data recorder configuration dialog.

OPC HDA recorder active

This function is usually ticked (on the left hand side) and, thus, active. "OPC HDA recorder active" means that the defined process variables of the device are available in the OPC name area of the OPC HDA server and can be called by all OPC HDA applications throughout the system.

Deactivating OPC communication is in some cases useful e.g. if configured process variables temporarily shall not be accessible.

3.2.4 OPC HDA Data Recorder Configuration Dialog

Double-click on the HDA data recorder node in the project tree to start the HDA data recorder configuration dialog. The navigation tree appears in the window section on the left hand side.

Click on the navigation tree items to call up the individual dialog sheets.

Archive Dialog

The Archive dialog is used to set the following data recorder features:

- the mode (data recording and playback or data playback only, without recording)
- the directory where the measured values are to be saved (mandatory!)
- the ring buffer size and overflow protection (Rev. 3.1 and higher)

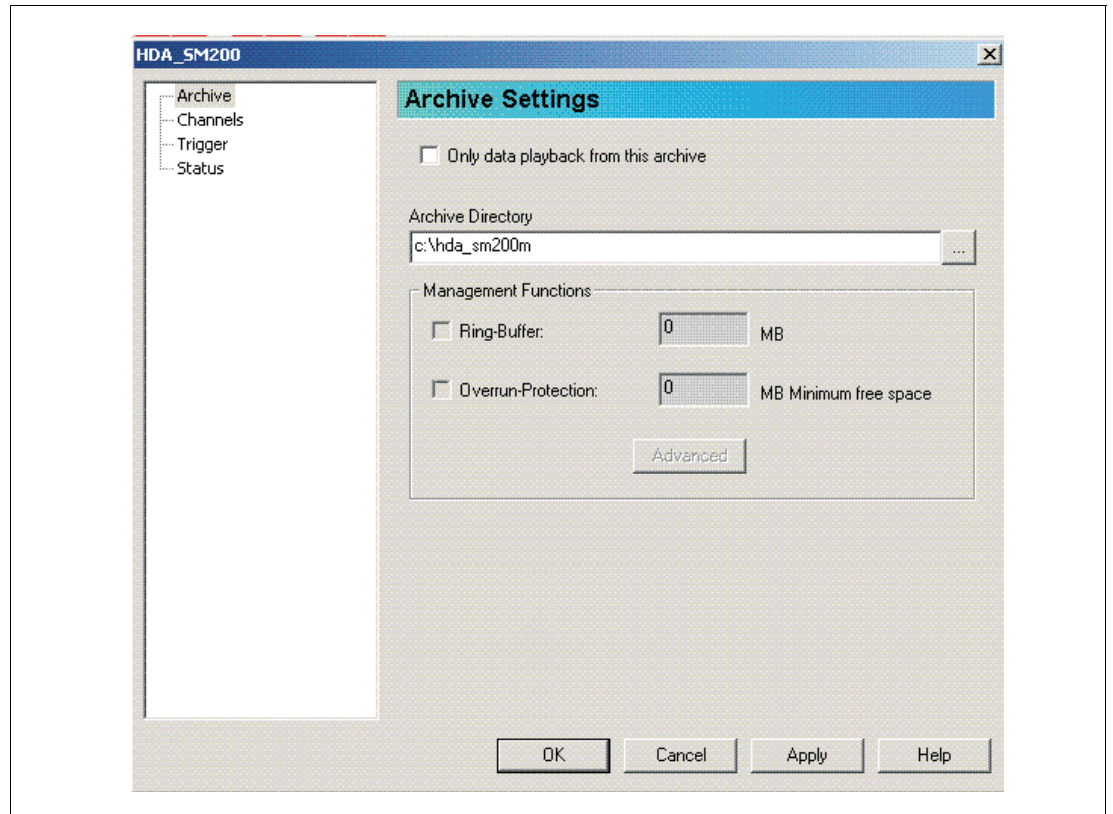


Fig. 3-4 Archive settings

Channels Dialog

The following settings can be made in the Channels dialog:

- The process variables to be archived (OPC DA server as data source). Press the "..." button to open the OPC browser window. For details about channel selection please refer to the help system for the visualization pages.
- In the "OPC HDA item ID" window the designation of the selected channel (highlighted gray in the lower window section) can be modified.
- In the "Description" window the item description taken over from the DA server can be edited.
- "Unit" is the engineering unit of the process variables (e.g. m³/h etc.)
- The "Scale low" and "Scale high" values can be used e.g. by HDA clients for pre-configured scales.
- The "Update rate" indicates, how often a new value is saved, under the proviso that the deadband is zero.

The deadband is a settable value (indicated as a percentage of the measuring span) by which a value must differ from the previous one in order to be transmitted to the HDA server by the DA server.

Example:

The tolerance band is set to 1%, with a scale of 0...200. The previous value transmitted to the HDA server is 50. If a new value differs by at least 2 from 50, it is transmitted to the HDA server. The time interval between the individual polls is given by the update rate.

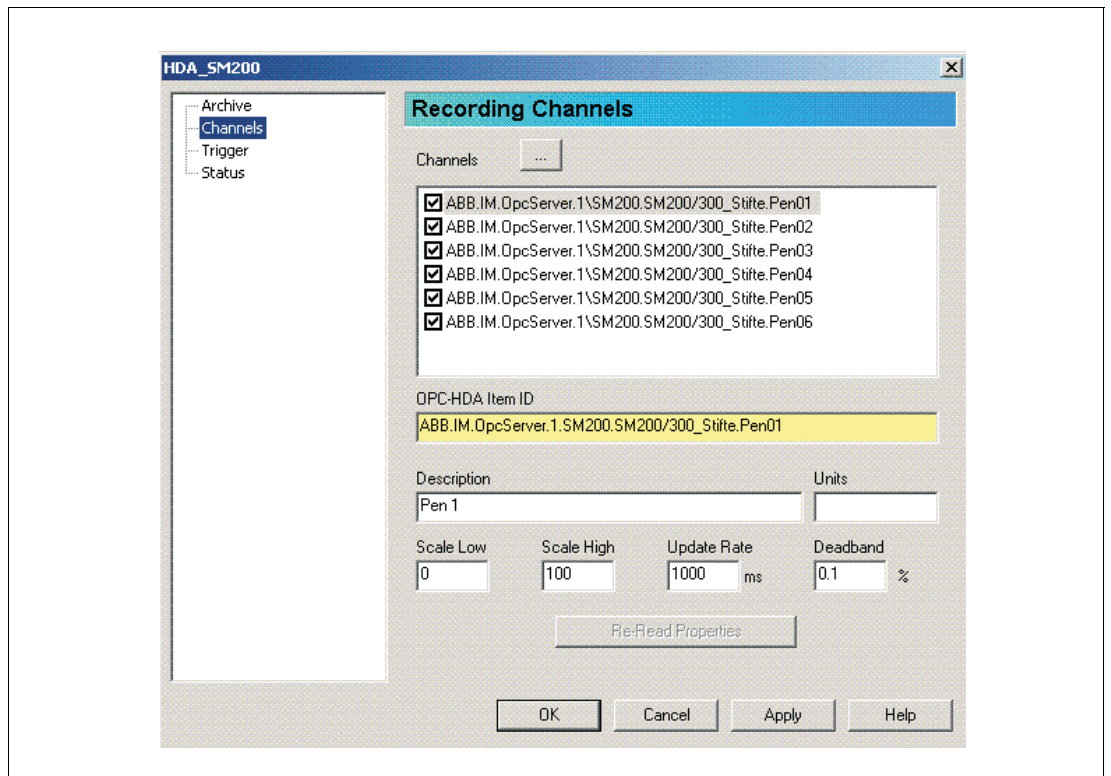


Fig. 3-5

Trigger Dialog

The Trigger dialog (Rev. 3.1 and higher) is used to set the data recorder start/stop conditions. Data archiving can be started either immediately or at a defined time later on. If "Never" is selected here, the data recorder will not record any data.

Analogously, data archiving can be stopped at a given time, after a defined recording time, or manually.

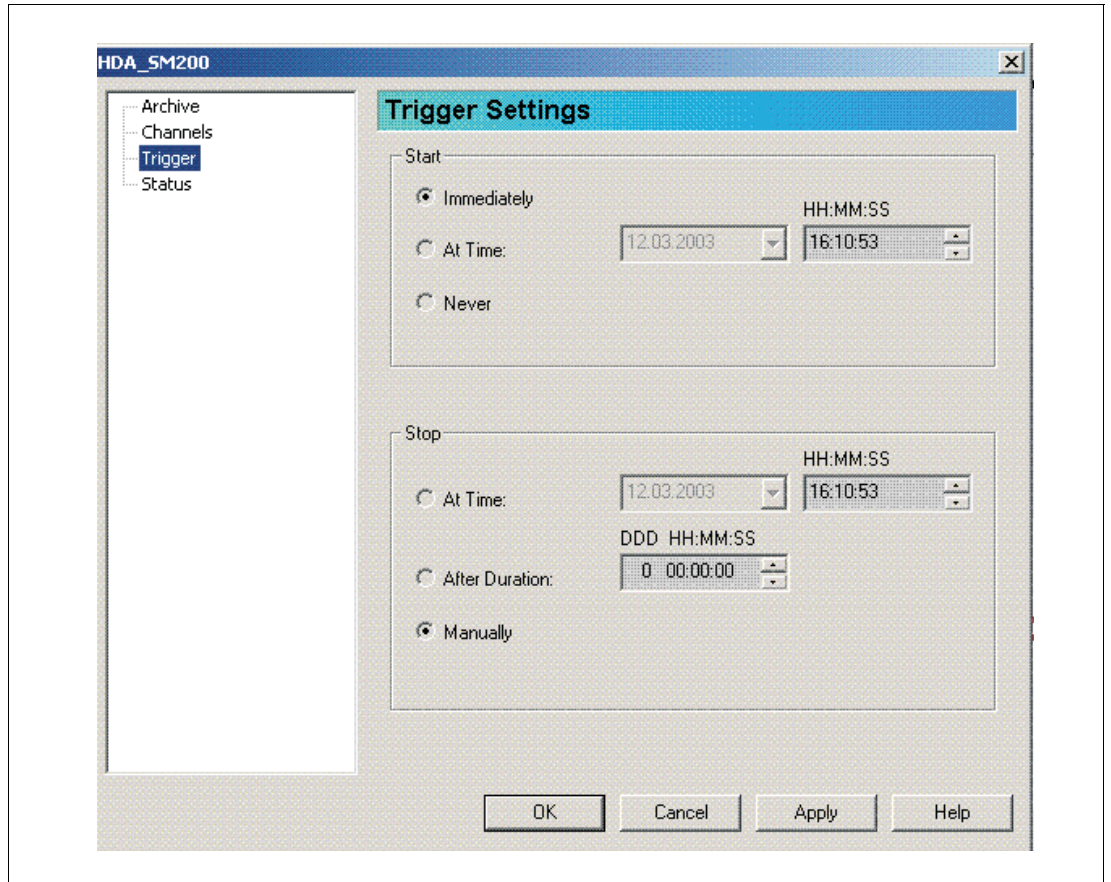


Fig. 3-6

Status Dialog

The Status dialog window is used to display the current HDA server status.

The following items are listed:

- OPC HDA server start time
- HDA data recorder status (recording active/not active/standby)
- configured OPC DA channels (measuring channels)
- the names of all channels archived in the specified folder

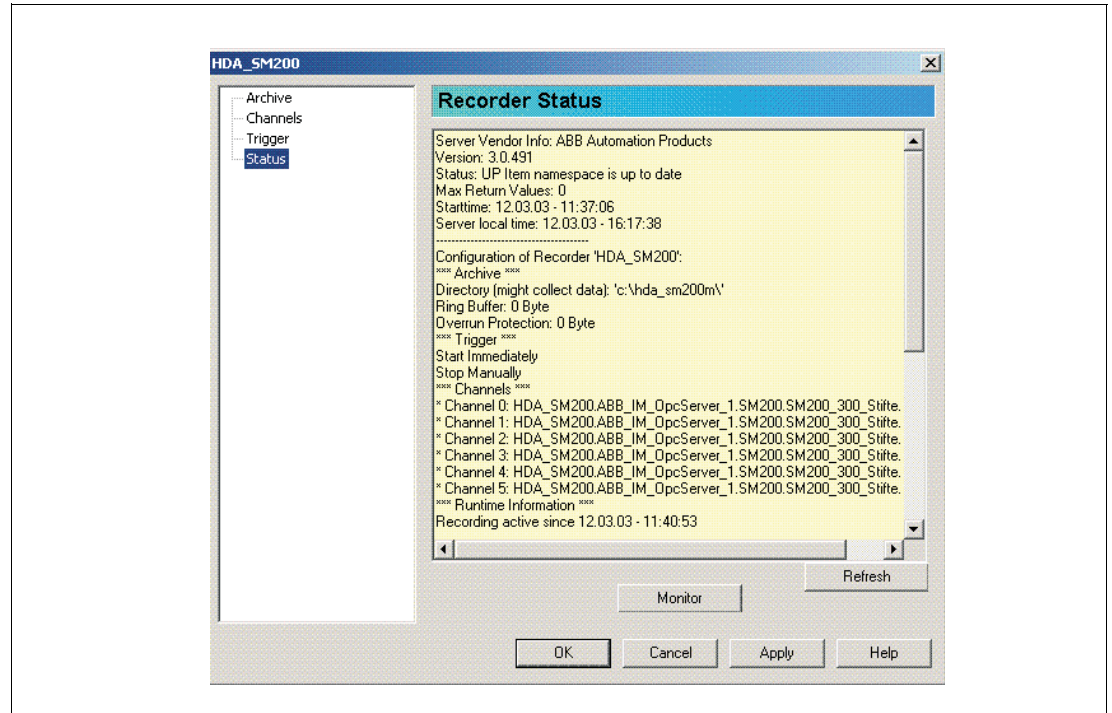


Fig. 3-7

After the configuration has been confirmed with "OK" the recorder is ready for data recording, and the process variables listed in the Channels dialog are then available to all OPC HDA clients throughout the system.

3.3 Files and Directories

The measured values are stored in the directory specified in the configuration dialog window of the HDA data recorder. One sub-directory is created for every recorded channel, and a separate file with recorded data is created in this sub-directory for every day. This is done automatically directly upon recording start, without requiring any user interaction. The naming conventions listed below are valid.

For the subdirectory:

"data_recorder_name.OPC_server_name.OPC_DA_item_ID"

Description:

- data_recorder_name: the name of the HDA recorder for data recording integrated in the project tree (in this example: sm200-hda)
- OPC_server_name: the name of the OPC DA server used for data recording (in this example: ABB_IM_OpcServer_1)
- OPC_DA_item_ID: the name of the data recording device under which it is listed in the project tree (in this example: Sm200.SM200_300_Stifte.Pen06)

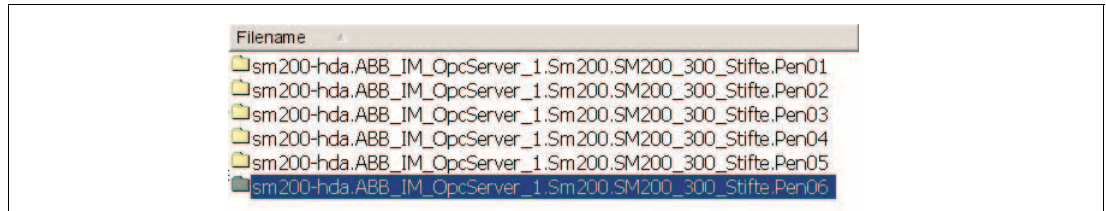


Fig. 3-8

Due to these naming conventions, the entire recording path can be traced back to the recording source.

The archive directory can be named or selected as required. Also, the data can be moved from one directory to another at a later time. The new directory can then be accessed by simply creating a data recorder and entering the respective directory name. The server will then browse the entire directory including all sub-directories to find the respective data files and will then make available the data throughout the system in accordance with the conventions listed above.

The data files stored in these subdirectory follow the same naming conventions and structure, but the names additionally contain the current date.

The data files are binary files with a digital signature which ensures that the data can be validated. Manipulated data sets are considered as invalid and marked accordingly, e.g. in the HDA Chart Control of the Process Data Management Visualization.

3.4 Archive Backup and Recovery

If considerable archive data are to be saved on a CD ROM or similar, the respective data can be copied to the storage medium and then deleted from the archive directory.

Data recovery can be achieved by simply copying the historical data to an any appropriate archive directory or by creating a recorder pointing to the CD ROM drive.

Note

The directory tree within the archive directory can be modified at any time by renaming or moving folders - even while the system is running - without affecting operation.

The exact names of directories and files have NO effect on data consistency or accessibility.

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