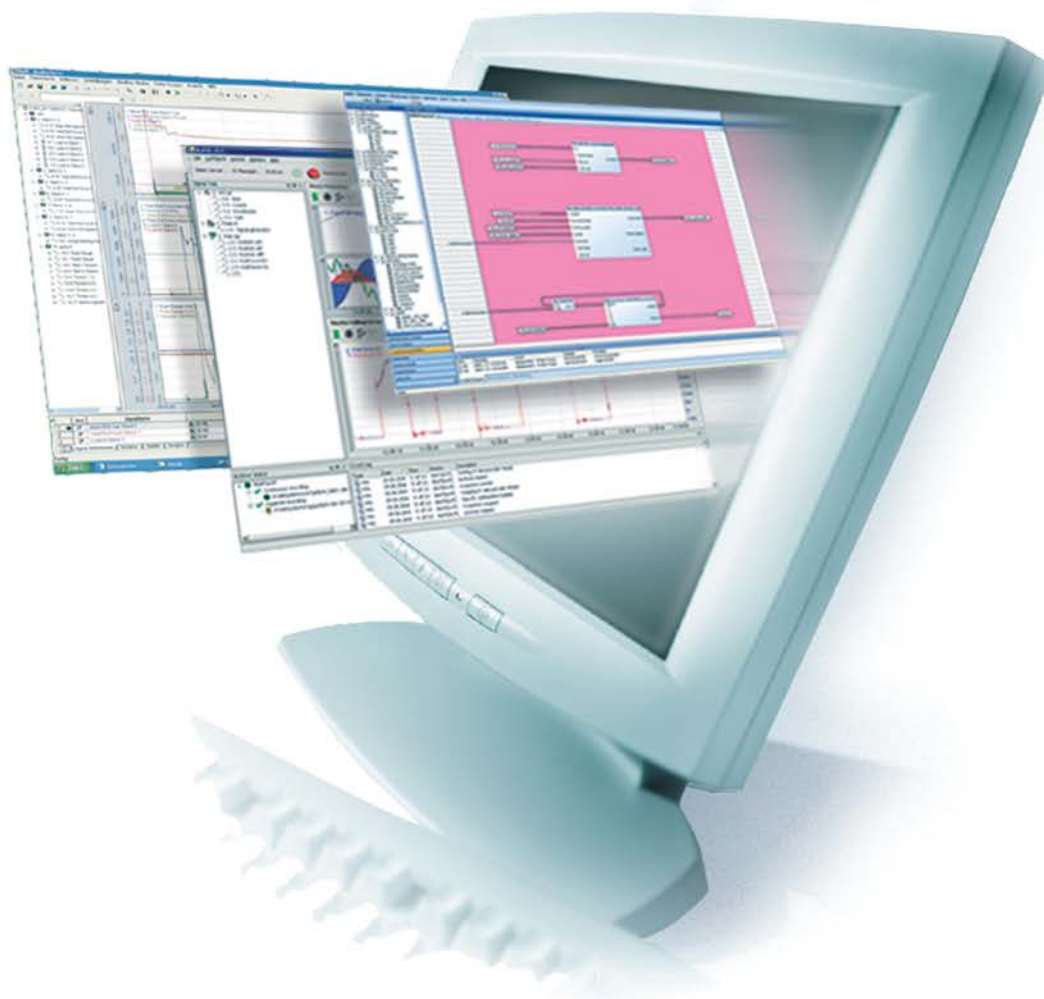


ibaDatManager

Database-related Search for Measurement Files



Manual

Issue 1.4

Measurement and Automation Systems



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The current version is available for download on our web site <http://www.iba-ag.com>.

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1 About this manual

This documentation describes the function, the design and the application of the software product *ibaDatManager*.

1.1 Target group and previous knowledge

This documentation addresses persons concerned with the evaluation of measured and process data. Since other iba products provide and analyze the data, the following previous knowledge for the configuration of *ibaDatManager* is required or helpful:

- ☐ Windows operating system
 - ☐ ibaAnalyzer
 - ☐ ibaAnalyzer-DB (for extracting the data to a database)
 - ☐ ibaAnalyzer report generator (if reports are to be configured, too)
 - ☐ SQL queries (for being able to check SQL queries when configuring)
- Detailed knowledge of databases is not required but can be helpful.

1.2 Notations

In this manual the following notations are used:

Action	Notation
Menu command	Menu <i>Logic diagram</i>
Calling the menu command	<i>Step 1 – Step 2 – Step 3 – Step x</i> Example: Select the menu <i>Logic diagram - Add - New function block</i> .
Keys	<Key name> Example: <Alt>; <F1>
Press the keys simultaneously	<Key name> + <Key name> Example: <Alt> + <Ctrl>
Buttons	<Key name> Example: <OK>; <Cancel>
File names, paths	"Filename", "Path" Example: "Test.doc"

1.3 Used symbols

If safety instructions or other notes are used in this manual, they mean:

DANGER

The non-observance of this safety information may result in an imminent risk of death or severe injury:

- ☐ From an electric shock!
 - ☐ Due to the improper handling of software products which are coupled to input and output procedures with control function!
-

WARNING

The non-observance of this safety information may result in a potential risk of death or severe injury!

CAUTION

The non-observance of this safety information may result in a potential risk of injury or material damage!



Note

A note specifies special requirements or actions to be observed.



Important note

Note if some special features must be observed, for example exceptions from the rule.



Tip

Tip or example as a helpful note or insider tip to make the work a little bit easier.



Other documentation

Reference to additional documentation or further reading.



Example

Configuration and application examples for a better understanding

2 Introduction

The *ibaDatManager* application is a configurable search tool for specific data files that were created with ibaPDA-V6, ibaLogic or ibaFiles and stored locally or in the network. The relevant data files are filtered by specific parameters of interest for the customer and can be opened directly with the ibaAnalyzer program. In doing so, *ibaDatManager* can access the data-file paths of several ibaPDA systems. A database aided synchronization mechanism ensures that the fund of data files is always up to date.

Depending on interests and demand, different search masks, so called views, can be defined and designed for the user. Therefore, the *ibaDatManager* program provides different users with a uniform view of all recorded data in the complete network; the individual user does not need to know the location where the data are stored.

In a clearly structured graphical interface, search functions and filter criteria lead quickly to the desired result:

- ☐ Time periods can be limited with the calendar function.
- ☐ Selection templates provide pre-defined characteristic values for filter criteria.
- ☐ Additional data fields can be queried.
- ☐ The search function can be limited to data from individual stages of the production chain.

It is also possible to search for files that belong to a specific production, alloy or campaign number. By one click, all data files meeting the search criteria are shown in a table. Afterwards, one or more files can be selected and via one click continuously and directly analyzed in ibaAnalyzer according to a pre-defined analysis.

The function of *ibaDatManager* is based on the availability of a database, in which the measured values are extracted from different generating systems, e. g. via ibaDatCoordinator and ibaAnalyzer-DB. The parameters for the search and filter function have to be already set as table columns in the database for selection in *ibaDatManager*. When extracting with ibaAnalyzer-DB, these columns are called "computed columns" and "info columns".

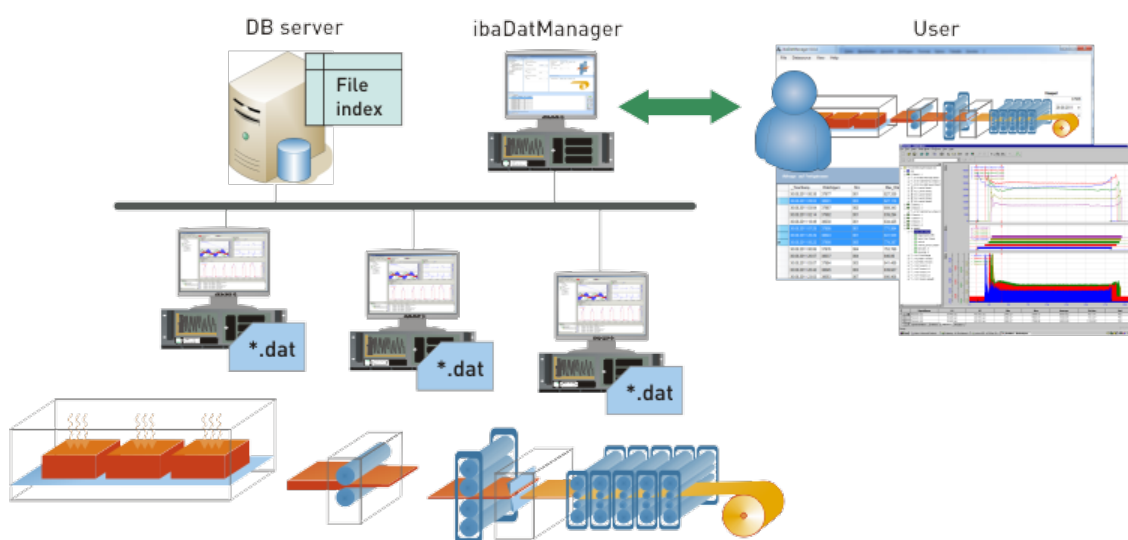


Figure 1: Overview of Using ibaDatManager

3 System requirements

3.1 Hardware

- ❑ PC, multicore CPU 2 GHz, 2048 MB RAM, 100 GB HDD
The application requires approx. 60 MB HDD space for installation.

3.2 Software

- ❑ Windows XP SP3, Windows 2003 Server, Windows 2008 Server, Windows Vista, Windows 7, Windows 8.1

- ❑ Microsoft .NET Framework 4.0

For an overall functionality, the *ibaDatManager* application requires several other programs, which should be installed beforehand.

- ❑ Database, e.g. Microsoft SQL Server, MySQL, ORACLE, MS Access via ODBC or another ODBC database as datasource (local or in the network).

- ❑ ibaAnalyzer version 6.2 or higher

- ❑ ibaDatCoordinator

ibaDatCoordinator and *ibaAnalyzer-DB* are used to extract data files into the database and therefore need to be installed on the data-generating systems or on the database server. In order to analyze the search results, *ibaAnalyzer* should also be installed locally on the same computer on which *ibaDatManager* is installed. It should be ensured that the computer on which analysis is performed has access to the database and the locations of the data files.

Also required:

- ❑ a dongle with unlocked license, locally connected to the computer, or
- ❑ license approval via ibaLicenseService-V2 in the network

3.3 Licensing

The *ibaDatManager* application is generally licensed with a dongle. It can only be used if there is a single or group license present. The following licenses are available:

Name	Art. no.	Description
ibaDatManager system bundle	34.010600 On request	Basic license for 1 user + ibaAnalyzer-DB-Extractor
ibaDatManager 1 User	34.010601	ibaDatManager single license for 1 user
ibaDatManager 5 User	34.010605	ibaDatManager group license for 5 users
ibaDatManager 10 User	34.010610	ibaDatManager group license for 10 users
ibaDatManager 50 User	34.010650	ibaDatManager group license for 50 users

Table 1: ibaDatManager licenses

If you do not have a suitable license or if your dongle is not connected, a dongle symbol appears in the menu bar indicating "No license":



Connect a licensed dongle on the USB interface and re-start the *ibaDatManager* so that the dongle is detected. Alternatively, you can wait approximately 1 minute after the connection until the cyclic dongle query detects the dongle.

4 Installation and Startup

4.1 Installation

1. Execute the "ibaDatManagerInstall_vx.x.x.exe" file.
2. In case of a security warning, click the <Execute> button.
This will prepare the installation and the installation wizard will start.
3. Click the <Next> button to proceed to the next step.
4. In the second step, you can select the program path or confirm the default path. If you are unsure about the path, you can open an overview by clicking on <Storage location>. You will then be shown all available harddisks as well as the available and the required disk space. Finally, you can choose for which users the program is to be installed.
5. Click <Next> to proceed to the last step.
6. Click the <Next> button to start the installation.
A progress bar will indicate the installation progress.
7. After the installation is finished, click the <Close> button to complete the process.

The following table shows the most important information about installing the program. When using software deployment systems or installing via the command line, a switch for silent installation can be indicated.

Installation folder	x86: C:\Program Files\iba\ibaDatManager x64: C:\Program Files (x86)\iba\ibaDatManager
Registry key for local settings	HKEY_CURRENT_USER\Software\IBA\ibaDatManager
Log files/settings	Local user area - LOCALAPPDATA e.g. – C:\Users\Name\AppData\Local\iba\ibaDatManager
Moreover	Supports installation via the command line with the argument: [S] – silent installation mode with default settings

Table 2: IT information about the program installation

4.2 Starting the program

Start the program

- ☐ by clicking the icon on the desktop



- ☐ via the start menu

Start – All programs – iba – ibaDatManager – ibaDatManager

5 Program interface

5.1 Screen

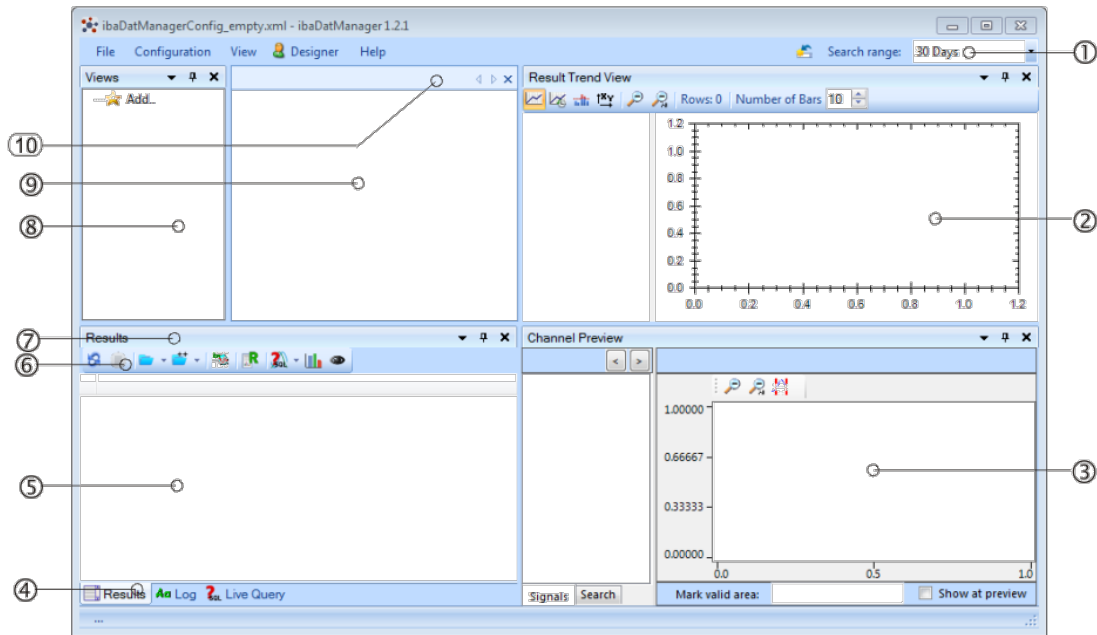


Figure 2: Default program interface

- 1 **Menu bar:** the menu bar provides access to the main configuration functions as well as controls to limit the search range.
- 2 **Result trend view:** The *Result Trend View* window can be opened or closed at any time using the bar graph button on the toolbar of the result window or from the *View* menu. If the result window contains entries, the result columns will be shown in a signal tree structure in the result trend view. If required, one or several of these results can be displayed in a trend graph.
- 3 **Channel preview:** The *Channel Preview* window shows the signal curve of any signal of a measuring file selected in the result table. The window can be opened or closed at any time from the *View* menu.
- 4 **Tab bar display window:** if several windows (Results, Log, Live Query, etc.) are arranged one behind the other as tabs, these tabs are shown here.
- 5 **Display area:** depending on the type of display window, search or query results and the event log and organizational structure, respectively, are displayed here.
- 6 **Command buttons:** depending on the type of display window, these buttons provide additional commands, e.g. for interaction with ibaAnalyzer.
- 7 **Header of the display window:** the header identifies the display window currently selected (Results, Log, SQL query or Organization).
- 8 **Organization area:** here, all views and groups of views are displayed in form of a tree and administered. Groups and views can be added, removed, copied or moved.
- 9 **View area:** here you'll find the configured views and control elements
- 10 **Views header:** in case of multiple views, each of them will be indicated by a tab. This allows switching between the different views.

Each of the sub windows can be moved and docked anywhere else by using the mouse.

5.2 Menus

5.2.1 File menu

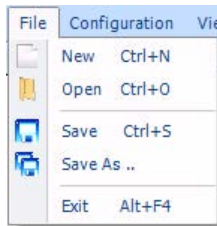


Figure 3: File menu

By means of the *File* menu, configuration files are created, loaded and saved.

The path of the current Windows user is offered by default as file location for the configuration file(s):

C:\Documents and Settings\User\Application Data\iba\ibaDatManager\Version\...

With the "Save" command, the current configuration is always written into this path.

Use "Save as..." if you want to store the configuration file at another location.



Note

The commands "New", "Save" and "Save As" are available only if the user is logged in as "Designer".

5.2.2 Configuration menu

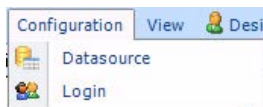


Figure 4: Configuration menu

The "Configuration" menu opens the dialogs for the configuration of the datasource and users settings.

➤ See also chapter "*Configuration and use of data sources*, page 20"

➤ See also chapter "*User configuration*, page 16"



Note

This menu is available only if the user is logged in as "Designer".

5.2.3 The view menu

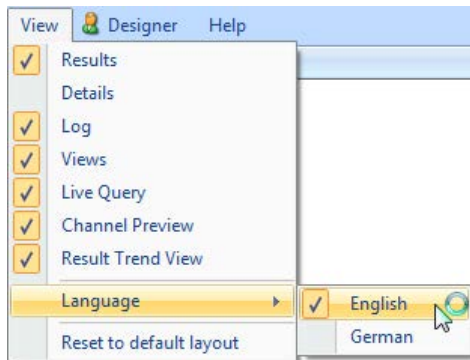


Figure 5: The view menu

Via the "View" menu, you can choose which display windows are to be shown or hidden. All these windows are docking windows that can be placed at different positions or arranged one behind the other in form of tabs.

Moreover, you can use this menu to change the language of the program interface.

The language switch is applicable not until restarting the program.

If you want to go back to the default layout, click *Reset to default layout*. Your projected views remain unaffected of course.

5.2.4 User menu



Figure 6: User menu

Actually, the "User" menu is just a button for opening the user login dialog. This button displays the currently logged in user.

5.2.5 Help menu

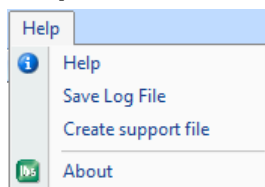



Figure 7: Help menu

This menu provides information about the program and the licensing. Here, you will also find the online help. By using the "Save log file" and "Create support file" functions, you can save the most important data for diagnostics as text or zip file to send them to the iba Support in case of trouble.

➤ See also chapter "*Troubleshooting*, page 105"

5.2.6 Deleting input values

Using the button,  the contents in all value and check boxes of the current view are deleted so that the parameters have to be entered or selected again for a new search query.

5.2.7 Search range

Select from the drop-down list the number of days or years in the past to which the search query should refer. Older entries are not taken into consideration when querying. Limiting also affects the display of the value selection in the control elements. If, for example, there are no database entries for the time set, the selection lists of the control elements (e. g. value selection) do not provide any values.

6 Procedure

Basically, the procedure for the configuration and usage of *ibaDatManager* is as follows. Furthermore, the following requirements must be fulfilled:

- ☐ A database (DB) containing the files extracted from the system/the process should exist.
- ☐ Measurands and measured values relevant for the database search should be known and already set as columns in the DB tables.
- ☐ Search and query criteria should be defined.

1. Start *ibaDatManager*.
2. Log in as user with "Designer" role.
3. Add and rename view.
4. Datasource Configuration: setup Database Connection.
5. Datasource Configuration: select index table and (optionally) columns.
6. Datasource Configuration (optional): specify the analysis file (*.pdo) for analyzing the data file found and/or activate the report option, if desired.
7. Switch to design mode for views.
8. Place control elements.
9. Configure properties of control elements (layout, data and behavior).
10. Exit design mode.
11. Set/select preferred values in the control elements.
12. Run search (automatically with every change of search criteria).
13. Check search results and, if necessary, open preview or open data file with *ibaAnalyzer*.

7 User login and permissions

The *ibaDatManager* program can be used by two different user types. Depending on the user role, different functions are available.

❑ User role: "USER"

In the "USER" role, the user can select and manage existing and shared views only as well as create and run SQL statements for data query.

❑ User role: "DESIGNER"

In the "DESIGNER" role, the user can access the configuration menu where data and user configuration can be carried out. Furthermore, the "DESIGNER" role has the same permissions as the "USER" role.

The following table shows an overview of the permissions:

"DESIGNER" role	"USER" role
All user rights + configuration of user-specific views + configuration of datasources + user configuration	Search/Query for data files using control elements in the views Open data files with ibaAnalyzer Print report Specific database query via SQL statements (Live Query) Change own password if permitted by 'Designer'
Tools: Tools collection and tool bar in the design mode	Tools: Configured interface with views in the user mode

Table 3: User role credentials

7.1 User selection

The program starts up with the last logged in user.

Via the "User" menu it is possible to switch between the configured users.

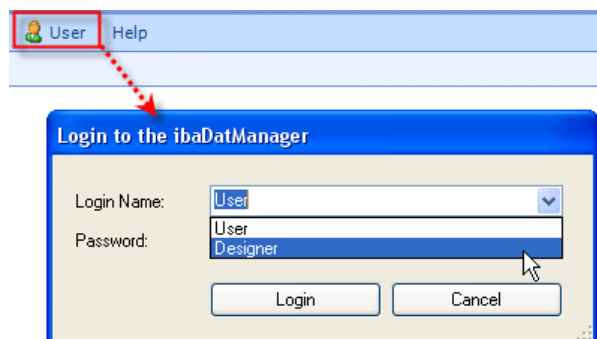


Figure 8: Select user

After clicking on the "User" menu, you select the preferred user type from the drop-down list in the "Login to the ibaDatManager" dialog. If required, enter a password and click the <Login> button.

7.2 User configuration

By means of the *Login Configuration* dialog, user roles can be changed and passwords assigned. Moreover, further users can be added, renamed or deleted.

The user configuration can only be carried out by a user with "designer" role.

The user configuration dialog can be opened via the *Configuration - Login* menu:

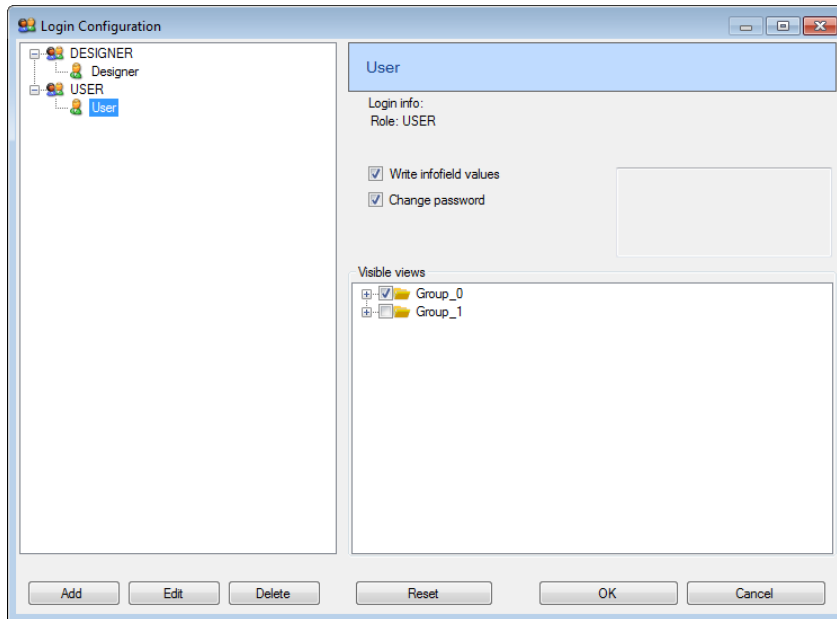


Figure 9: User configuration dialog

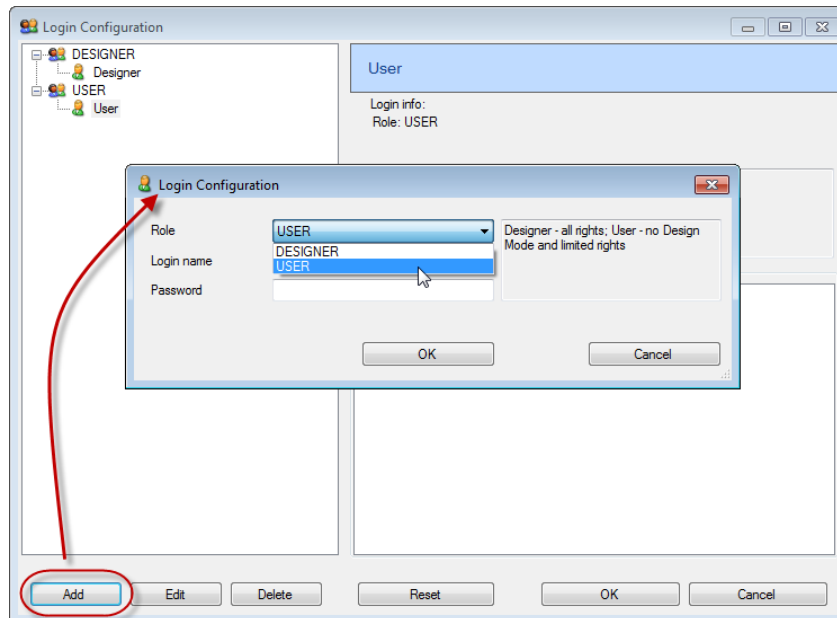
The two default user roles "User" and "Designer" are shown in a tree. The projected views and groups are displayed in another tree on the right where it is defined whether single users (with "user" role) can be granted or denied view access.

With the <Reset> button, you undo all configuration modifications having been made after opening the dialog.

7.2.1 Add, delete, edit an user

Add user

1. Open the dialog for configuring the user.
2. Click on <Add>. An input window for the user data opens.
3. Select the role of the new user from the selection list, e. g. "User".
4. Enter the name of the new user.
5. Enter password, if desired.
6. Click on <OK>.



Delete user

The logged in user and the user to be deleted must not be identical.

1. Select the corresponding user in the tree.
2. Click on <Delete>.

Change user data

If you wish to change the name, the password or the role of a user, please proceed as follows:

1. Select the corresponding user in the tree.
2. Click on <Edit>.
3. Make modifications.
4. Click on <OK>.

7.2.2 Access permissions for views

A check mark in front of a group or view means that access is granted. The following figure shows an example of 5 views in 2 groups whereas user "User_2" can only see the "View_1.0" and "View_1.2" views.

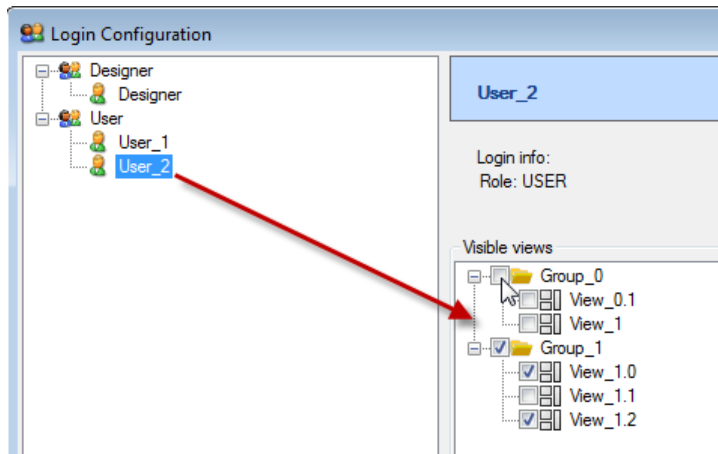


Figure 10: Example of view permissions

7.2.3 Changing the password

For a safe login, you can assign passwords. Every user with the "Designer" role can create and change passwords for himself and other users.

The user with the "Designer" role can determine in the settings for the user login, which users are allowed to change their password themselves.

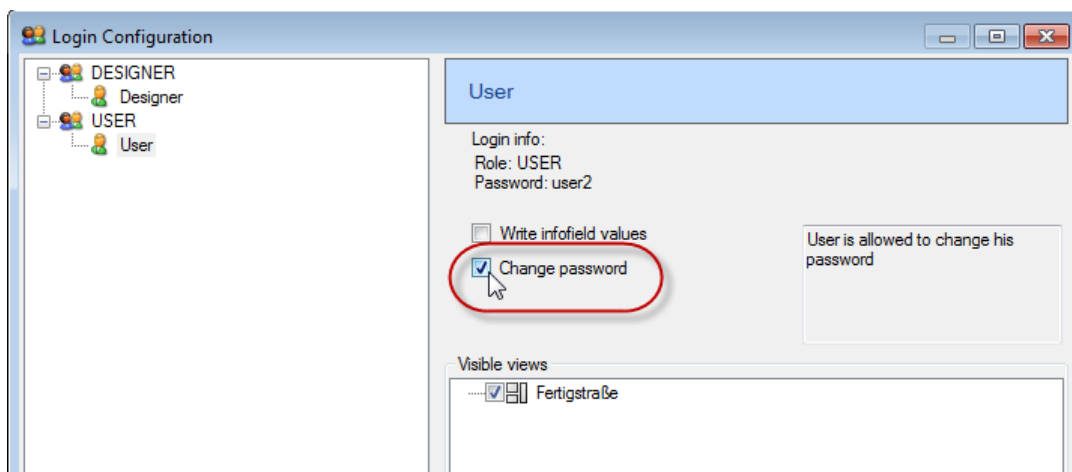


Figure 11: Authorizing users to change their own password

Every user who is authorized can change his password using the "Change password" dialog.

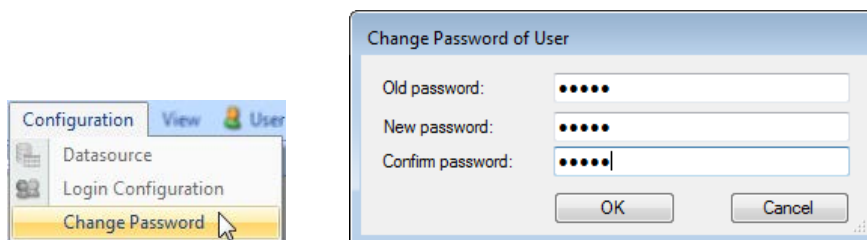


Figure 12: Dialog for changing your own password

**Note**

The new password becomes valid immediately.

7.2.4 Authorization for writing Info fields

You can authorize users with the "User" role to edit columns which are defined as writeable.

With this authorization, a user can change released values or texts later in the details view of the query results. These changes are adopted then in the database as well as in the respective measurement data file (Info fields).

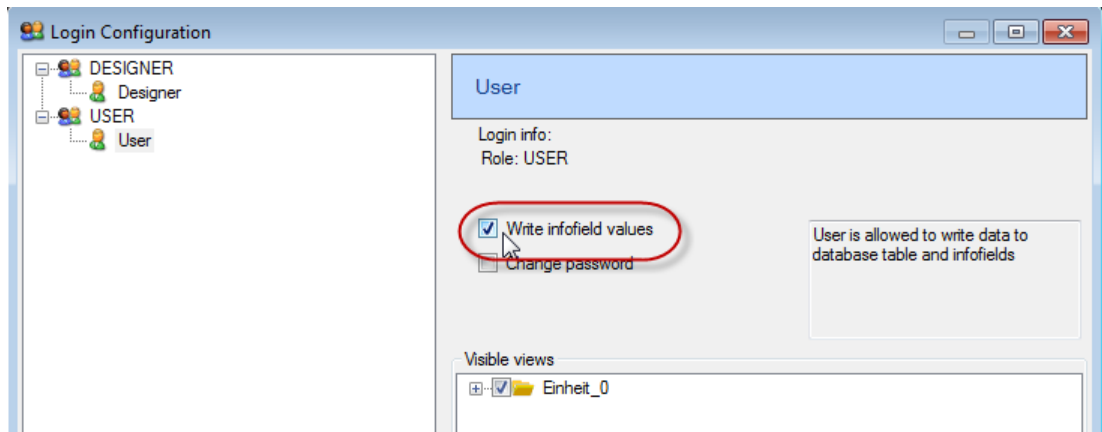


Figure 13: Assign authorization for writing Info field values

➤ For more information about writeable columns, please see chapter *Column "Writeable"*, page 26

8 Configuration and use of data sources

There is one universal datasource for *ibaDatManager* to which all actions refer. This data sourcedatasource has to be a compatible database. This database must contain all tables of the ibaAnalyzer-DB extraction, also in case of several ibaPDA systems or plants. For every view, *ibaDatManager* then uses one of these tables as a what is known as "index table", which contains the relevant query parameters and creates a link to the data files.

ibaDatManager exclusively works with the extraction tables of "Files" type, as only these contain the relevant characteristic values and reference to the data file.

You'll find a short exemplary description of creating an appropriate database in the chapter *Information on the structure and filling of a database*, page 91.



Other documentation

For detailed information on the database structure and table structure, please refer to the ibaAnalyzer-DB documentation.

8.1 Setup database connection

First, the connection to a database needs to be established. The database can be installed locally or on a database server in the network.



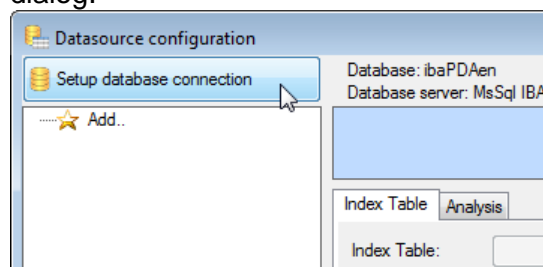
Note

Only one database can be used for all views. Different views can access different tables in the same database. Only one table can be assigned as data source per view.

The dialog for setting up the database connection can be opened in various ways.

Setup database connection via the configuration menu

1. Open the *Configuration – Datasource* menu.
2. Click <Setup database connection> in the menu bar of the "Datasource configuration" dialog.



3. Make all necessary settings in the "Database connection" dialog.

Setup database connection via the view wizard

1. Right-click on "Add..." in the organization area and select "Add view".
Alternatively, this can also be done in the organization area of the "Datasource configuration" dialog (see above).
2. If no database connection has been set up so far, the dialog for configuring the database connection opens immediately. Make all necessary settings in the "Database connection" dialog.

Database connection dialog

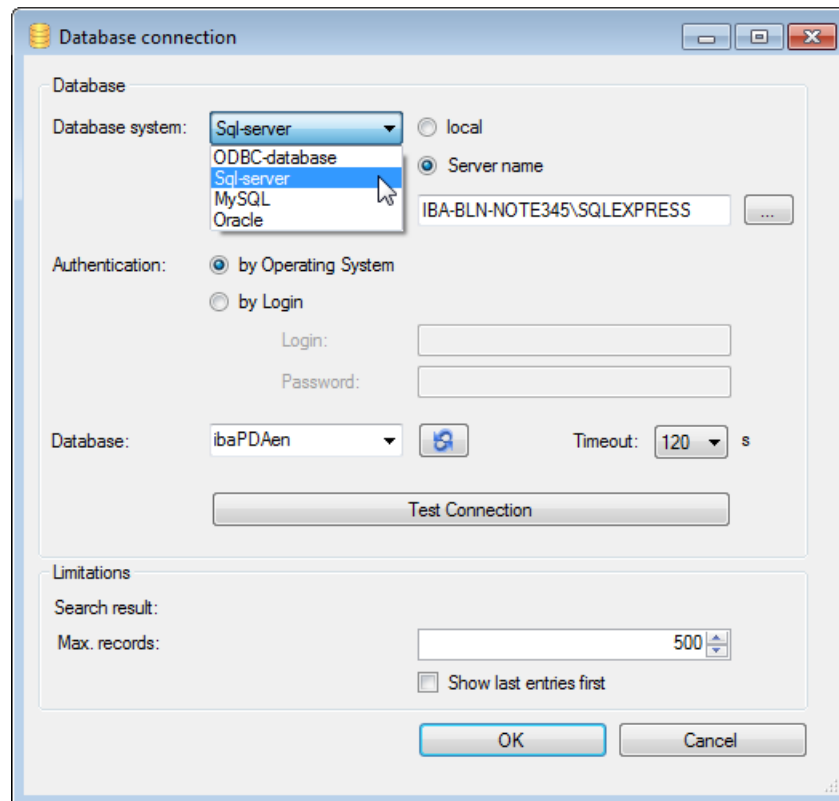


Figure 14: Dialog for setting up the database connection

☐ Database system

Select the database type of your database from the selection list. Available databases are:

- Microsoft SQL Server
- MySQL
- Oracle
- MS Access from ODBC datasource
- Other ODBC compatible databases from a local ODBC datasource

The tables, that have to be filled with data extracted from ibaAnalyzer, have to be in the same database. For further settings of the datasource, the tables should already be created by ibaAnalyzer-DB.

☐ Local / Server name

Select here, whether the database is stored locally on the same computer as *ibaDatManager* or on a DB server in the network.

When using a DB server in the network, the entry of the server name should be as follows:

SERVER-COMPUTER\DB-SERVER

You can also search for available DB servers by clicking on the browser button <...> next to the name field. Click <Update list> in the "Database server" dialog in order to search for available DB servers. Select then the preferred server from the drop-down list.

☐ Authentication

Depending on the configuration of the database, the basic Windows authentication might be sufficient or it might be necessary to enter a specific user name and password in order to access the database. If a specific user login is required, you can get this information from your database administrator and enter it here.

☐ Database

Select here the preferred database from the drop-down list. All databases of the selected server will be listed. To ensure the topicality and completeness of this list, click on the button on the right side of this field.

☐ Timeout

Using the timeout setting, you can adjust the waiting time for database queries. The waiting time starts with executing a DB query. If the database does not reply during the time set, an error message will be displayed. Default value is 15 s. Depending on the size of the database and/or network status, selecting higher timeout values might make sense.

☐ <Test connection>

Clicking this button will test the connection to the DB server and the availability of the database.

Limits

☐ Max. number of entries

Here, you can delimit the number of database entries queried during a query cycle. This may help you to reduce the query response time. Default: 500.

8.2 Datasource settings for separated views

Once the database connection is established, the table that contains the relevant data must be selected from the many tables available in the database for each view. These so called index tables provide data for the views. A view always requires an index table. Each view is assigned exactly one index table. Different views can either use different index tables or the same.

The "Datasource configuration" configuration dialog can be found either via the "Configuration - datasource" menu or, if you want to add a new view using the wizard, via the button <2. Table and Columns>.

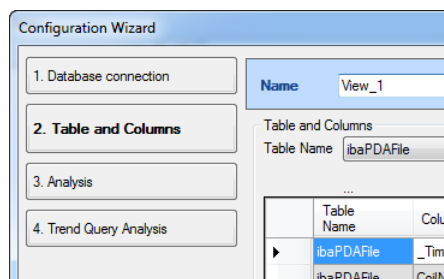


Figure 15: Configuring tables and columns in the configuration wizard (new view)

If views already exist, you can change the setting any time in the "Datasource configuration" dialog. First, you need to select the view you want to configure in the organization tree. The name of the view is additionally shown above the "Index table" and "Analysis" tabs. If you have not yet created a view, do it now by clicking on the "Add" branch.

8.2.1 "Index table" tab

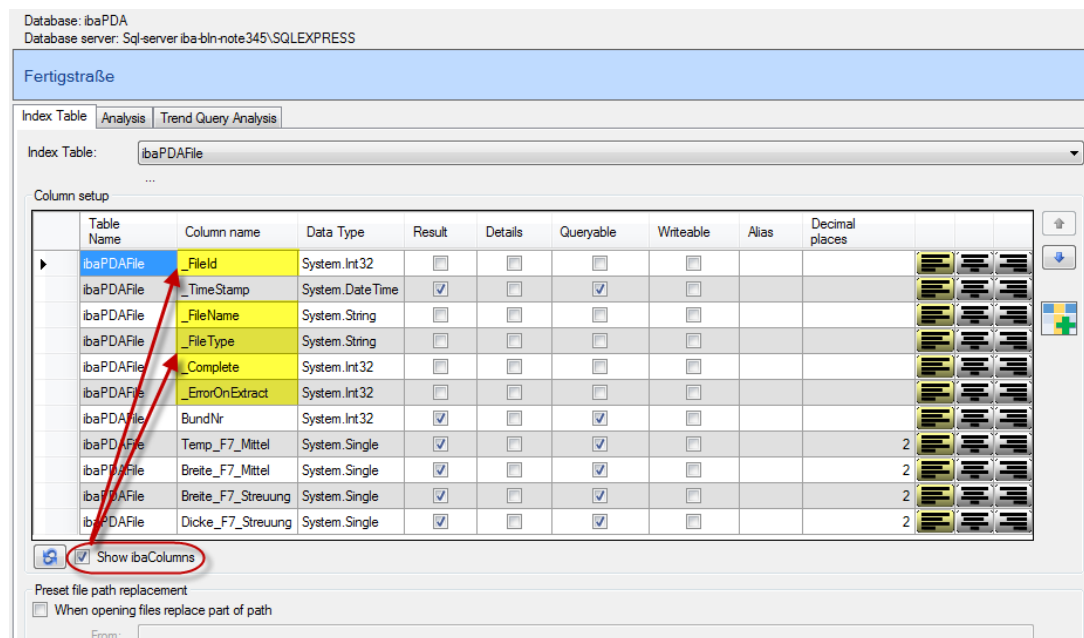


Figure 16: Index table configuration

Select the relevant table from the "Index table" drop-down list. *ibaDatManager* automatically provides only suitable tables ("...File" type). Only tables of this type contain the extracted characteristics obtained from a measuring process, especially "Computed columns" and "Info columns".

In this table, there is also a reference to the related data file.



Further documentation

You can find more information about the relevancy, the projecting and the extraction of the mentioned columns in the documentation on ibaAnalyzer-DB.

8.2.1.1 Column settings

After you have selected a table as an index table, those columns that are contained in the table will be shown in a window below. Each row in the table corresponds to a column in the index table in the database.

You can now decide for every column whether it should be visible in the result list and/or available in the view for formulating the query. This depends on the functions you wish to realize with the respective view.

8.2.1.2 "Result" and "Queryable" columns

If you tick off "Result", the column in question and its values, respectively, are always shown in the search and query results.

If you tick off "Query", this column is available as datasource in the properties of control elements. The user can then specify the query by means of the values of this queryable column. More information on control elements can be found below.

To facilitate the work, you can open a context menu in the "Result" and "Queryable" columns to select or deselect all lines.

With the "Show iba columns" option, you can display further columns that are contained in the index table due to the systemic nature (highlighted yellow in the figure above). If you do not select this option, only the computed columns, the columns with info fields and the column with the timestamp are listed.

If a column is already used in a view by a control element (queryable), the "Query" option cannot be changed in the list of the respective view. You need to cancel the assignment of columns to the control element first or remove the control element.

In addition, the selection of the index table cannot be changed as long as one column of this table is linked to a control element in the view.

8.2.1.3 "Alias" column

For the columns of the index table, other aliases can be assigned. These aliases are then used as column header in the result table. You can replace cryptic column names from the database definition by comprehensible real names.

Column setup								
	Table Name	Column name	Data Type	Result	Details	Queryable	Writeable	Alias
▶	ibaPDARFile	_TimeStamp	System.DateTime	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Timestamp
	ibaPDARFile	CoilNo	System.String	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Coil number
	ibaPDARFile	Temp_F7_avg	System.Single	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Avg Temperature F7
	ibaPDARFile	Width_F7_avg	System.Single	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Avg Width F7
	ibaPDARFile	Width_F7_scatter	System.Single	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Width scatter F7
	ibaPDARFile	Thickn_F7_scatter	System.Single	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Thickness scatter F7

Results						
	Timestamp	Coil number	Avg Temperature F7	Avg Width F7	Width scatter F7	Thickness scatter F7
0	9/10/2012 1...	4200	877.65	12.17	1.52	12.26
1	9/10/2012 1...	4200	864.63	13.60	1.95	19.38
2	9/10/2012 1...	4203	875.08	7.87	1.80	25.23
3	9/10/2012 1...	4202	862.64	13.22	1.85	18.55
4	9/10/2012 1...	4202	862.34	12.50	1.71	14.86
5	9/10/2012 1...	4200	877.65	12.17	1.52	12.26

Figure 17: Alias as column header in the result table

8.2.1.4 Text alignment buttons

With this setting, you determine whether the entries in the result table are left-aligned, centered or right-aligned.



Figure 18: Alignment of the tabular values



Note

The program is preset such that the contents of numerical values are automatically entered right-aligned and the texts left-aligned.

8.2.1.5 "Details" column

In this column, you can mark database columns that you want to have displayed later in the details window of the results.

➤ For more information, please see chapter *Details View*, page 63

8.2.1.6 Column "Writeable"

You can mark any column of the database as writeable on the "Index Table" tab in the "Configuration - Datasource" dialog.

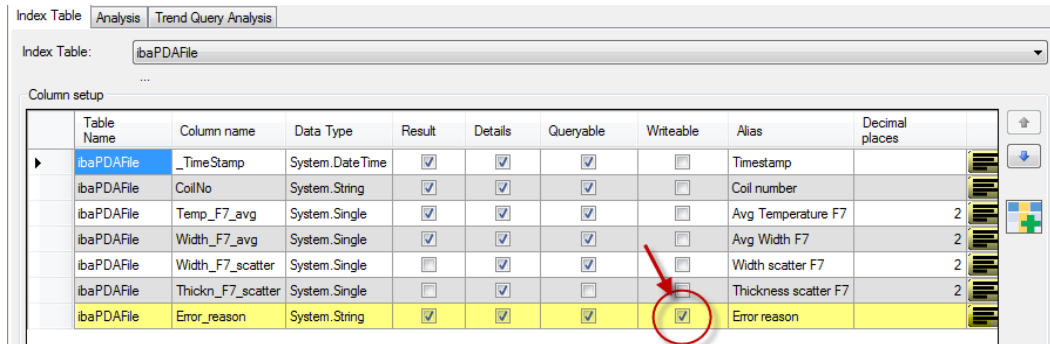


Figure 19: Configuring a column as "Writeable"

Columns that are marked as writeable offer in the details window a possibility for changing the values manually.

With columns which were not initially available in the database and which you have created in the *ibaDatManager* first, you can enter information in the system subsequently in an easy way.

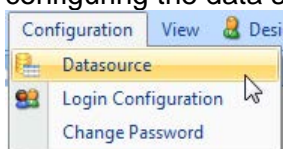
Values of columns which are already existing and Info fields can also be changed.

8.2.1.7 Adding a new database column

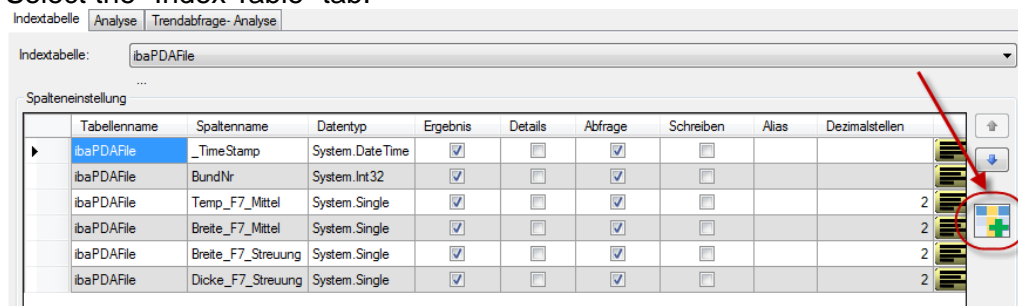
In the dialog of the index table, the user with the "Designer" role can add columns. These columns can be used for adding additional information (values or texts) to the database by user entries. When the user is writing in the columns, for the additional database column(s) an Info field is created automatically in the measurement data file which is marked in the result table.


Procedure

1. When you are logged in as user with the "Designer" role, you open the dialog for configuring the data source.



2. Select the "Index Table" tab.



3. Click on the button for adding a column .

- In the following dialog, you assign a name to the new column, select the required data type and define in the case of text ("string" type) the permitted text length (number of characters), if needed.

- Close the dialog by clicking on <OK>.
- The new column is added in the dialog of the index table as row.

Tabellennamen	Spaltenname	Datentyp	Ergebnis	Details	Abfrage	Schreiben	Alias	Dezimalstellen
ibaPDARFile	_Time Stamp	System.DateTime	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
ibaPDARFile	BundNr	System.Int32	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
ibaPDARFile	Temp_F7_Mittel	System.Single	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		2
ibaPDARFile	Breite_F7_Mittel	System.Single	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		2
ibaPDARFile	Breite_F7_Streuung	System.Single	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		2
ibaPDARFile	Dicke_F7_Streuung	System.Single	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		2
ibaPDARFile	Neue Spalte	System.String	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		

Simultaneously, the table column is added to the database.

Besides the "Result" and "Queryable" options, also the "Details" and "Writeable" options are enabled automatically. Hence, the user can later see and change the information of the new column.

8.2.1.8 Preset file path replacement

In the case of the database extraction of data files with ibaAnalyzer, the absolute path and file name of the corresponding data file at the time of the extraction is always stored in the database. If the data files are then moved to another location or drive names have changed, *ibaDatManager* cannot restore the connection to the data file anymore.

If you want the data file suitable for a search result to be opened with ibaAnalyzer, the display would remain empty.

This problem can be avoided by means of the preset replacement of path name and file name.

Enter all characters of the path and file name, which have equally changed for all data files into the first line. In the second line, enter the new path until the characters that remained unchanged. The path is replaced exactly character by character, i.e. even parts of the file name can be affected.

If the new storage location is a network share or a remote server you may enter the login data below, which are needed for accessing the files.



Example

Preset file path replacement

☒ When opening files replace part of path

From: D:\dat\HSM\RM1

To: \\DATA-SERVER\MeasuringFiles\HotRollingMill\RoughingMill1

Username: hsmuser

Password: ...

?

Here, the original local path is replaced by a UNC path of a file server because the data file was copied to the file server after successful extraction.

Instead of the file `D:\dat\www\V1\xyz.dat`, the file `\\DATA-SERVER\MeasuringFiles\HotRollingMill\RoughingMill1\xyz.dat` is now loaded into ibaAnalyzer.

The access on the server is performed under the username "hsmuser". Click on the <?> button in order to verify the credentials.

8.2.2 "Analysis" tab

Datasource configuration

Setup database connection

Database: ibaPDAen
Database server: Sql-server iba-bln-note345\SQLEXPRESS

Finishing Mill

Index Table Analysis Trend Query Analysis

☒ pdo from file ☐ pdo from Database

Analysis

Analysis file

D:\Demos\ibaDatManager\DM_DemoData\12_pdo\FinishingMill_en.pdo

Username:

Password:

?

Analysis from group

Technology

- doku_boolbitwise.pdo
- Export_HGC_Aluminium.pdo
- Extract_Bo.pdo
- rpt Test.pdo
- rpt Test2.pdo

Optional

☐ Open report

Output format: pdf

☐ Overwrite existing files

OK Cancel

Figure 20: Configuration of the analysis, source file system

In the *Analysis* tab, you can determine which analysis is to be used for opening a data file from the search results of this view with ibaAnalyzer. The same analysis is used when calling up the *Trend Query Overview*.

The analysis file can be stored on a local drive or on a network share. When using a network share specification of an UNC path is recommended.

If the storage location of the analysis file is a network share or a remote server you may enter the login data below, which are needed for accessing the files.

☐ *.pdo from file

Check this option if it is your particular aim to use an analysis (*.pdo) that is stored in the file system. Enter the file path or browse the file system with the button left of it.

If, beforehand, an analysis tree was created with ibaAnalyzer on the same computer where also *ibaDatManager* is running (signal tree window – *Analysis* tab), you can find this analysis tree also in this dialog. For selecting the analysis, just click on the corresponding node in the tree. The path and file name of the analysis file are then automatically entered in the input field.

☐ *.pdo from Database

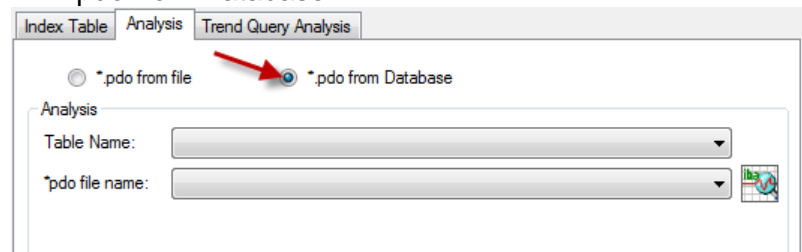


Figure 21: Analysis configuration, source database

Check this option after you have saved the selected analysis with ibaAnalyzer in the database. The table with analyses has to be in the same database as the one previously configured in *ibaDatManager*. First, select the right table from the drop-down lists and then the preferred analysis.




Further documentation

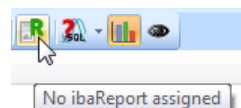
More information on saving analyses in a database can be obtained from the manual or the online help of *ibaAnalyzer*.

☐ Generate report

Enable this option if you want to generate a report based on the specified analysis. The analysis file selected above has to contain the report configuration and is to be linked with a corresponding report layout file (*.lst).

If this option is enabled, using the button  generates a report for each selected result row (= data file).

If this option is not enabled, using the button  will only open ibaAnalyzer, without generating a report. You are also informed about that on the button in the tooltip:



☐ Output format

Select here the desired output format for the report. When generating reports, the format set, e.g. pdf, is transferred to ibaAnalyzer and a corresponding file is output by the report generator.

☐ Overwrite existing files

If you enable this option, report files having the same name contained in the report target folder are overwritten. You specify the target folder for the reports after clicking on the report button.

8.2.3 Trend query analysis tab

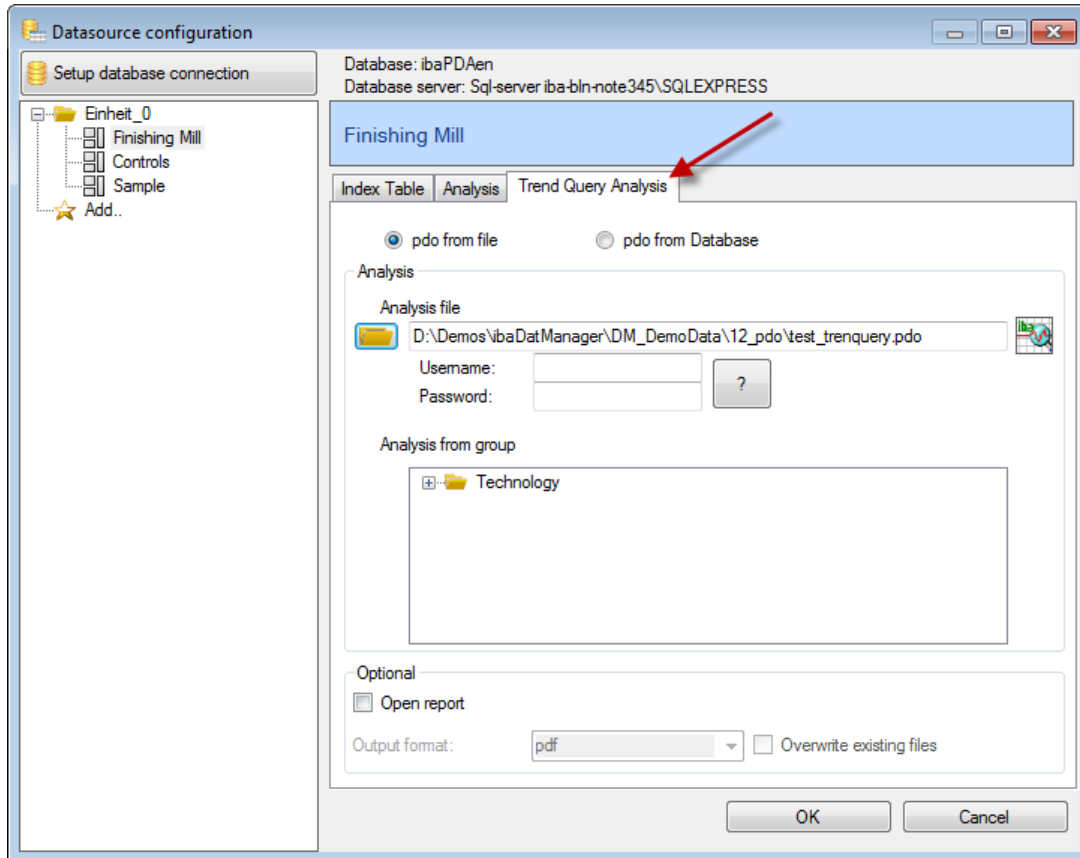
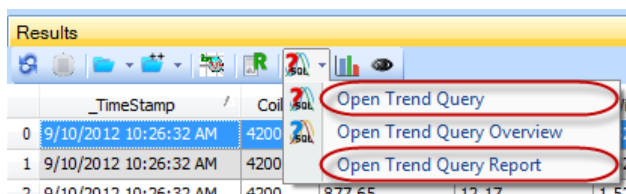


Figure 22: Configuration of the analysis for trend queries, source file system

In the *Trend Query Analysis* tab, you can determine which analysis is to be used if you start a trend query in the result display.

With this function, all current results from the table are displayed in ibaAnalyzer as trend graph in the signal strip or in the overview window.

The analysis set is used with two types of the trend query (trend query and trend query report).



In case of the *Trend Query Overview* function, the analysis set in the *Analysis* tab is used.

☐ Generate report

Enable this option if you want to generate a report based on the specified analysis. The analysis file selected above has to contain the report configuration and is to be linked with a corresponding report layout file (*.lst).

If this option is enabled, you can generate a report for the trend query through all results in the selected output format using the *Open Trend Query Report* command.

If this option is not enabled, a dialog window opens after clicking on *Open Trend Query Report* for selecting and specifying the target path, file name and output format of the report file. After entering the required information, close the dialog with <Save> and the report will be generated.

For the rest of the settings in this dialog, the above description applies.

➤ For more information on trend queries, see chapter *Trend queries*, page 74

9 Synchronization

9.1 Introduction

Using the *ibaAnalyzer-DB* to extract values from a data file into a database will create for each file a record at the index table (*ibaFile* table). This record contains next to the user defined values for infofields and evaluated columns a number of other information for each data file, such as the filename with full file path.

The filename is used by *ibaAnalyzer* or *ibaDatManager* as reference for the drill down to the detailed original data.

For access on the data files the path and file names extracted from *ibaAnalyzer* must have the following format:

- ❑ \\ServerName\ShareName\FolderName\FileName.dat
- ❑ Drive:[FolderName]\FileName.dat, where the drive can be local or a network drive. (If the drive is mapped and the user access data defined, they will be used for accessing the data files).

A file reference could become invalid by moving the original dat file to another folder or removing the file completely from the system, e.g. by a cleanup job.

Therefore, the file reference should be verified and cross-checked with the database entries on a regular basis.

In order to do so, you need the application *ibaDatCoordinator* and the special plugin *DBSync*. The plugin *DBSync* provides for a new kind of task, which can be configured in a scheduled job.

The plugin *DBSync* will verify the file references from the index table in the database by checking for the existence of the corresponding data files. The result of this check of the validity of the reference can be registered in an additional column of the index table. The status '1' for a record of this column will say that the file reference is valid and '0' that the file could not be found at the referenced file path.

Another option in the *DBSync* plugin allows the deleting of the records where the dat file could not be found.

In the result window of *ibaDatManager* you can choose what to do with entries without valid file reference.

- For more information about the representation in the *ibaDatManager* result table, see chapter *Display options referring to synchronization with DBSync*, page 88

A detailed description of how to use *ibaDatCoordinator* and how to create a scheduled job can be found in the manual of *ibaDatCoordinator*.

In the following you will find a short description of installation and usage of the plugin *DBSync* in the *ibaDatCoordinator* application.

9.2 Install the DBSync plugin

ibaDatCoordinator version 1.23 or higher must be installed on the computer.

Execute the installation file *DBSyncPluginInstaller_v1.x.x.exe* and follow the instructions.

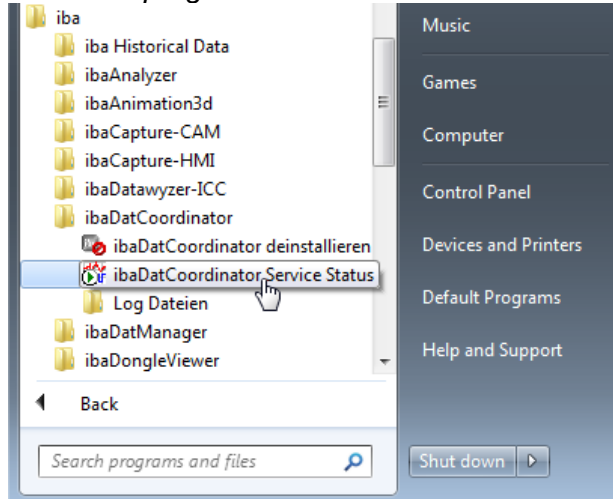
9.3 Create a scheduled job in *ibaDatCoordinator*

Start *ibaDatCoordinator* if not yet started.

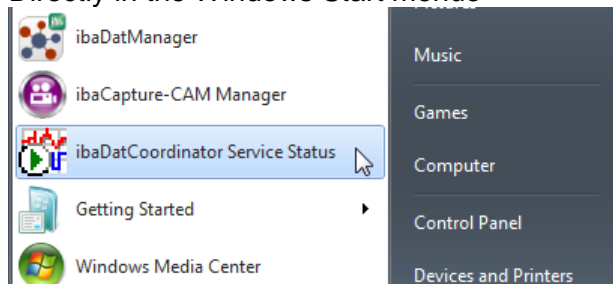
You can start *ibaDatCoordinator* in different ways:

- ❑ In the Windows program list:

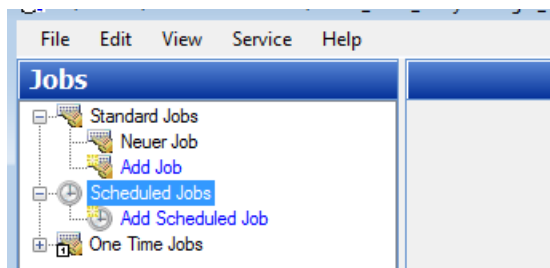
Start – All programs – iba – ibaDatCoordinator – ibaDatCoordinator Service Status



- ❑ Directly in the Windows Start menu



Next, create a new scheduled job in *ibaDatCoordinator*.



Besides the general setting of a name the scheduled job provides the option to set up a schedule for the job execution.

This example shows the daily execution of the job every 8 hours starting 30th Oct 2015 at 8 am.

Schedule

☒ Enabled ☐ Automatically start on load

☐ Retry failed operations of previous session

☐ Retry failed operations every 10.0 minutes

☐ Retry failed operations maximum 10 times

Trigger

Start: 10/30/2015 8:00:00 AM

Recur every: 1 days

☒ Repeat trigger Indefinite times every 8 hours 0 minutes

GO STOP Trigger now

It is not necessary to configure an HD-Server connection to use the *DBSync* plugin and run the synchronization process. You can leave the entry fields blank.

HD Connection

Server: [dropdown] Port: 9180

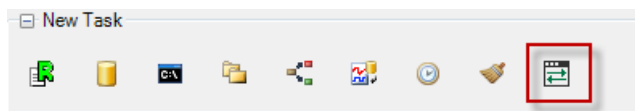
Store: [dropdown]

Server auto-detect

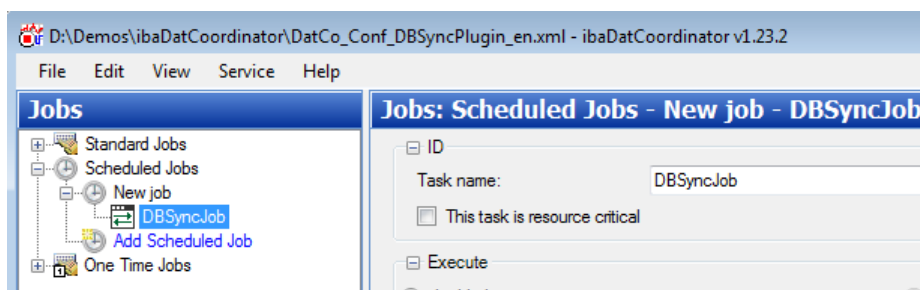
Server	IP address	Port	Version
IBA-BLN-NOTE345	127.0.0.1	9180	1.5.2

Search

Click on the *DBSync* plugin icon to add a new DBSync task to the scheduled job.



The symbol of the task DBSyncJob appears at the scheduled job tree.



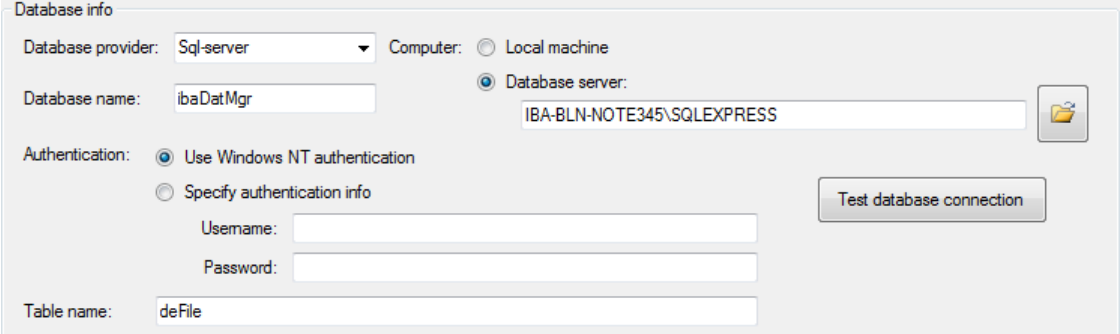
If needed, you may rename the task.

9.4 Configure the DBSyncJob task

The DBSync job provides a configuration mask to set the database connection and the task specific parameters.

9.4.1 Database connection

Set up the data base connection:



The screenshot shows the 'Database info' configuration window. It includes the following fields and options:

- Database provider:** A dropdown menu set to 'Sql-server'.
- Computer:** Radio buttons for 'Local machine' and 'Database server'. 'Database server' is selected.
- Database name:** A text field containing 'ibaDatMgr'.
- Authentication:** Radio buttons for 'Use Windows NT authentication' (selected) and 'Specify authentication info'.
- Username:** A text field.
- Password:** A text field.
- Table name:** A text field containing 'deFile'.
- Database server path:** A text field containing 'IBA-BLN-NOTE345\SQLEXPRESS'.
- Test database connection:** A button.



Note

In order to use the results of the synchronization in the *ibaDatManager* application the database connection must refer to the same database and the same index table, which is configured in *ibaDatManager*.

If you are using different views in *ibaDatManager*, which refer to different index tables then you should create a separate DBSync task for every index table.

❑ Database provider

Selection between SQL-Server, Oracle, DB-2 or ODBC (Access, MySql)

❑ Computer

Local machine or a specific database server

❑ Database name

Database name or DSN (ODBC connection)

❑ Authentication

By operating system (NT Authority) or using login and password

❑ Table name

Name of the index table (ibaFile table)

Click on the button <Test database connection> in order to verify the database connection.

9.4.2 Parameters

☐ Delete records where no file can be found

Disabled: An additional column named **FILE_REFERENCE_VALID** is set to '1' for valid references and '0' for files, which cannot be found.

Enabled: The records in the file table marked with '0' in the column **FILE_REFERENCE_VALID** are going to be deleted from the table.

☐ Replace part of reference file path

Disabled: The path as stored in the database column **_filename** is used for accessing the file.

Enabled: For accessing the file the first part of the reference (path) in column **_filename** ("from") will be replaced by a new path ("to").

FILE_REFERENCE_VALID is set '1' if the file is located in the target path ("to:").

FILE_REFERENCE_VALID is set '0' if the file is located in the original path ("from:") and not in the target path.

☐ From

Part of the original path name, which should be replaced.

☐ To

New part of the path name (where the file is supposed to be stored)

☐ UNC credentials

In case the *ibaDatCoordinator* needs to access a shared folder the login and password of an authorized user can be set here.



Note

The column **FILE_REFERENCE_VALID** will be created automatically by *ibaDatCoordinator* if it does not exist.

In *ibaDatManager* you can see the column in the configuration dialog of the data source, provided you have enabled the "Show ibaColumns" option:

ibaPDFile	Thickn_F7_scatter	System.Single	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ibaPDFile	AVAILABLE	System.Int32	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ibaPDFile	Error_reason	System.String	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
ibaPDFile	FILE_REFERENCE_VALID	System.Int32	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

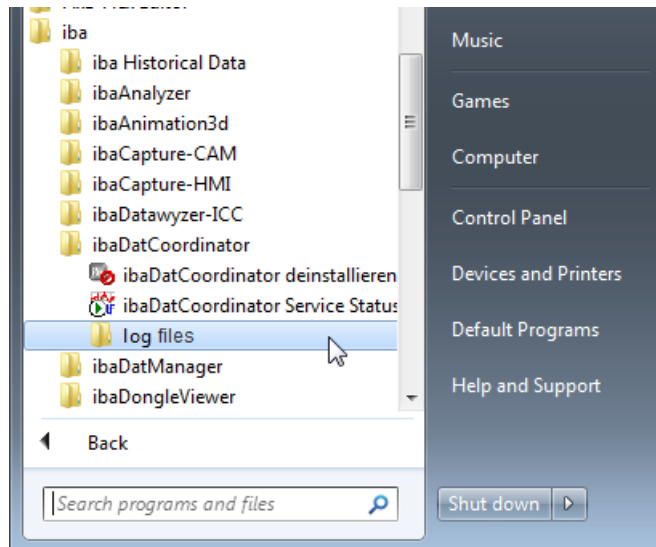
☒ Show ibaColumns

9.4.3 Logging

During the execution of a task *ibaDatCoordinator* logs all internal processes and stores the log in log files on the harddisk.

You can easily access the log files folder via the Start menu:

Start – All Programs – iba – ibaDatCoordinator – log files



If *ibaDatCoordinator* is installed as a service you will find the log files in the following folder:

C:\ProgramData\iba\ibaDatCoordinator

If *ibaDatCoordinator* is installed as a program the log files are stored in the application data folder of the corresponding user:

C:\Users\username\AppData\Local\iba\ibaDatCoordinator

The name of the current log file is **ibaDatCoordinatorLog.txt**. Previous log files have names with date and time included.

The log files of the *DBSync* plugin are stored in a special subfolder ...**DBSyncPlugin**.

10 Views

Views are the actual user interface for the *ibaDatManager* program. All control elements in a view are used for formulating a SQL query.

In a special design mode, only available to users with "designer" role, check boxes and control panels can be customized for individual needs. The user ("designer" role) can freely arrange numerous design tools, such as check box, combo box, pick-lists, calendar functions, etc., and link them to the info-fields of the database. Also graphic objects can be integrated in order to visualize, for example, the layout of the own plant.

10.1 Views and operation

All control elements that can be used by the user in order to adjust key parameters for a database query have to be nested in a so-called view. Any number of views can be defined and created. Views can be organized equally or in groups.

Groups and views cannot only be added to the dialog of the datasource configuration, but also directly to the organization tree.

To add a group or a view, click on the "Add" branch and then on the requested entry in the following menu.

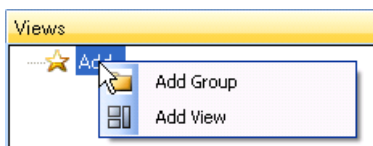


Figure 23: Context menu "Add"

By right-clicking on the View and Group branches, you can also open a context menu.

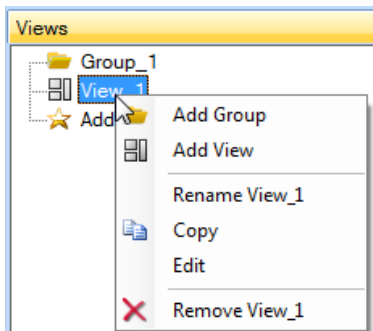


Figure 24: Context menu "Group" or "View"

Also with this, you can add a group or view:

- ☐ If you have opened the context menu by right-clicking on a view, a view or group is added on the same level.
- ☐ If you have opened the context menu by right-clicking on a group, a view or group within the group (i.e. one level down) is created.

Views and groups can be moved within the organization area by means of drag & drop at any time and be assigned to a group or extracted from a group.

Moreover, you can copy or delete the selected element as well as open the configuration dialog for the datasource directly from the context menu without having to go via the main menu.

Views are made available by selection in the organization area. The name of the view is displayed as a tab in the upper display area. In case of grouped views, the tabs of all related views are displayed and can be used to switch views.

As all areas within the user interface of *ibaDatManager* are designed as docking windows, views can also be arranged on top of each other and side by side within the display area.

The user has to be logged in as "Designer" in order to create and design views. After a view has been created via "Add" in the organization area, it can be designed. To this end, you have to switch to design mode.

In order to switch to design mode, right click in the view area and select "Design mode" from the context menu.

Alternatively, you can also press the keys <Ctrl>+<D> to put the current view into design mode, provided it has the mouse focus on the design pane.

10.2 Placing control elements.

After switching to design mode, an additional tool bar is shown in the view window and a tools collection is offered.

10.2.1 Designer tool bar

The designer tool bar provides various helpful functions for view designing as well as for the arrangement and positioning of the control elements.





















Button	Description
	Exit design mode.
	Hide / show toolbox
	Open object properties
	Show instance names of the control elements
	Remove
	Copy
	Paste
	Undo / redo
	Align selected objects to the left
	Center selected objects horizontally
	Align selected objects to the right
	Align selected objects to the top
	Center selected objects vertically
	Align selected objects to the bottom
	Make selected objects the same width
	Make selected objects the same height
	Equal horizontal distance between the selected objects
	Equal vertical distance between the selected objects
	Selected object into foreground
	Selected object into background

Table 4: Buttons of the designer toolbar

10.2.2 Tools collection/control elements

The tools collection contains the available control elements, which can be moved into the view window by drag & drop or a double click and be freely placed there.

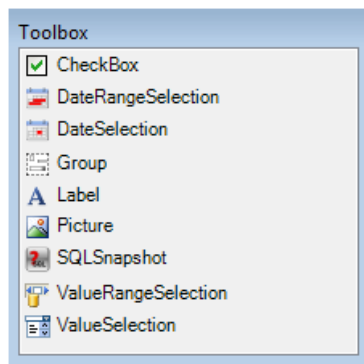


Figure 25: Tools Collection

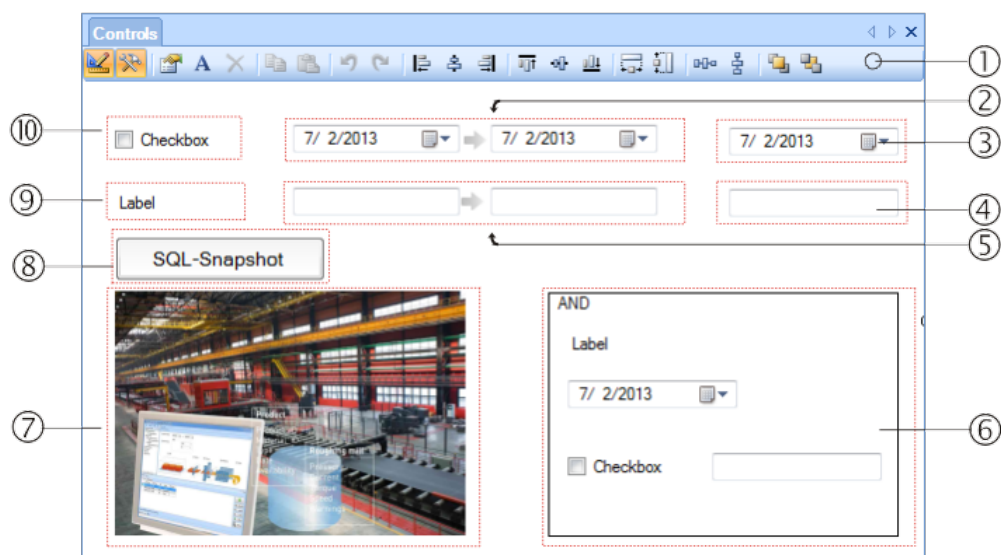


Figure 26: Control elements for views design, design mode

- 1 Designer tool bar
- 2 Date range selection element (from...to...)
- 3 Date selection (on...) element
- 4 Value selection element
- 5 Value range selection element (from...to...)
- 6 Group element (container for grouped control elements)
- 7 Picture element (image file .bmp, .jpg, .png, etc.)
- 8 Button element for SQL snapshot
- 9 Label element (tag/label, static text)
- 10 Check box element

10.3 Setting the properties of the control elements

The properties of the view and the control elements are set by means of corresponding dialogs. You can open these properties dialogs either

- ☐ by double clicking the placed element
- ☐ via the context menu (right click) of a placed element
- ☐ or by clicking the "Properties" button in the designer tool bar for a selected element.

You can open the view (background) properties by right-clicking into the background or via the "Properties" button if there is no element available or selected in the view.

According to their type, the elements have different properties which are, however, often grouped in 3 or more categories:

- ☐ Layout
- ☐ Files
- ☐ Behavior

The following table gives an overview over the control elements and their properties.

Element	Layout	Data	Behavior
Group	Size/Position Font Type Colors	-	Reacts only to check boxes (is activated/deactivated) Log. Operator AND/OR
Label	Size/Position Font Type Backcolor Text, Text Color	-	-
Check box	Size/Position Font Type Backcolor Text, Text Color	Link to a column, depending on an operator	-
Value selection Value range selection Date selection Date range selection	Size/Position Font Type Backcolor Text Color	Link to a column, depending on an operator; separate setting for result and query values (not with range selections); sorting order, date-time-format	Link to a column to limit the values;
Button	Size/Position Font Type Backcolor Text, Text Color	SQL statement	-
Picture	Size/Position Font Type Backcolor Picture	-	-

Table 5: Properties of controls

10.3.1 Label

The label element has the function of a tag or a label. Only layout properties are available.

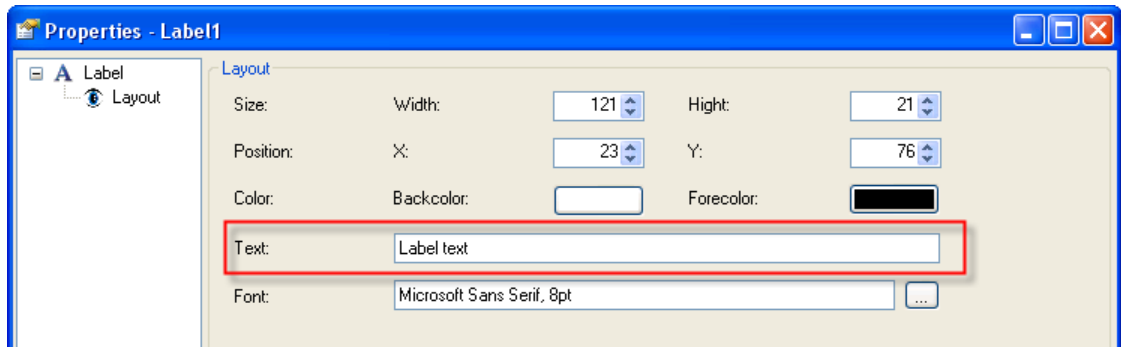


Figure 27: Label element, layout properties

Layout properties

☐ Size/Position

Size and position of the element can be easily adjusted with the mouse. In case you need exact values, you can enter them here. Specification in pixels, anchor point is the upper left corner of the view.

☐ Back- and fore color

Select the colors for the background of the element and the text. Click the colored buttons for color selection.

☐ Text

Enter here the text to be shown.

☐ Font

Select here the font, the font style and size.

10.3.2 Check box

Several functions can be realized by means of a check box:

- ☐ When activating/deactivating the check box, the binary state of the element is set to TRUE (log. 1) or FALSE (log. 0). This state can be used as validation condition for editing a group, if the check box is specified as behavior parameter in the group element.
- ☐ Additionally, activating/deactivating a check box can be linked with a defined value for a specific column. If the check box is enabled, the exact configured value is taken into account as condition for the SQL query.

For basic, fixed selection criteria that do not or only rarely change, the check box is often more suited than a "Value selection" or "Value range selection" control element because the operation is easier for the user.

View Properties

As with the "Text field" element. The text should be selected in such way that it describes the activated state. For example, "Include customer data" if customer data is to be taken into account additionally for a query, which can be specified by control elements in a linked group.

Or "Stainless steels only" if a SQL query shall only take into account entries for stainless steels and if a corresponding column for material designations exists in the database.

Data Properties

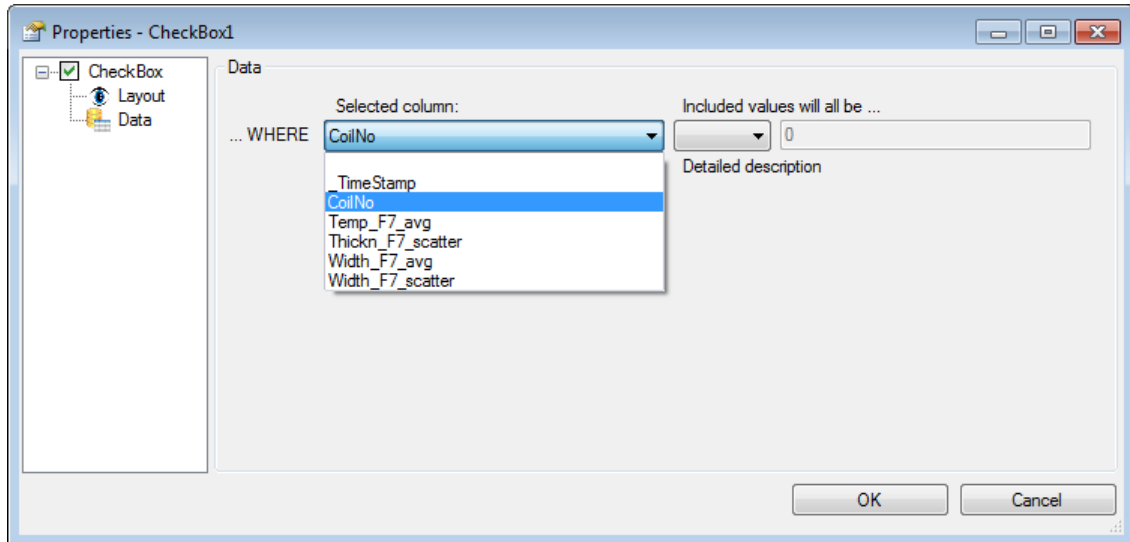


Figure 28: Check box element, data properties, assignment of columns

In the data properties of the check box, the reference to a column can be created to include or exclude specific values for an SQL query.

Selected Column

Select a column from the drop-down list to use this as query criterion, like the coil number in this example.

You can then select a relational operator in the field nearby. Enter the preferred value in the third field.



Note

The choice of relational operators depends on the datatype in the selected column. In case of strings (e.g. datatype “char”) there are more operators available, such as “like”, “not like” and “is not”.

Every time the check box is enabled in the view, this condition is taken into consideration when querying.

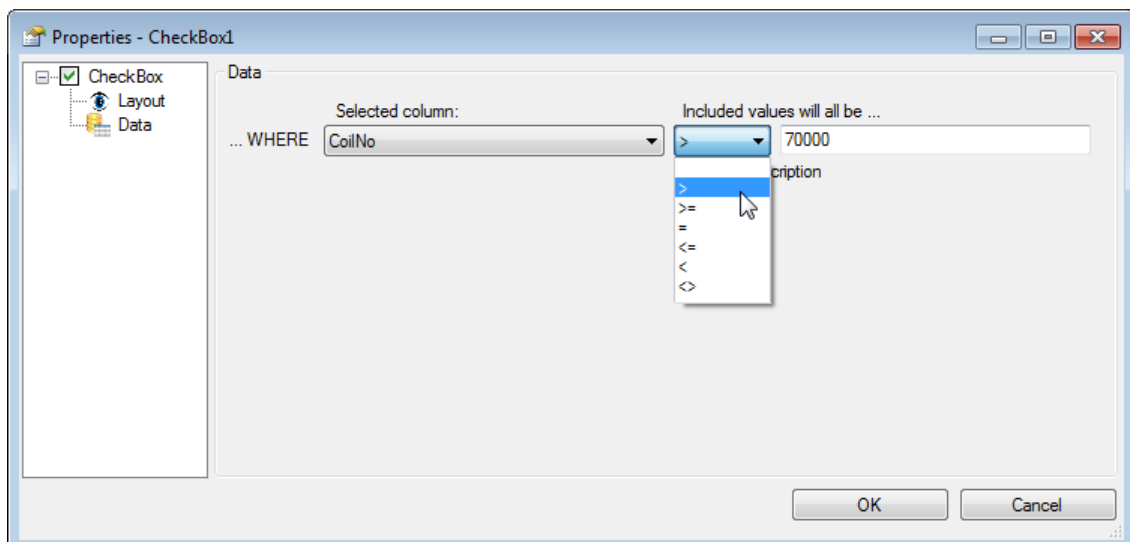


Figure 29: Check box element, data properties, relational operator

If the check box was enabled, the query would be: display all entries with coil numbers greater than 70000.

10.3.3 Date selection and date range selection

The elements for selecting a date or a date range are the first group of important query elements for formulating the query. In the data properties of these elements, the reference to the index table is created.

- ☐ Date selection and date range selection refer only to calendar dates, i. e. to the timestamp of a database entry.
- ☐ For the selection in user mode, different date/time formats regarding the date range selection element can be selected.

Layout Properties

As with the element "Label", yet without text input.

Data Properties

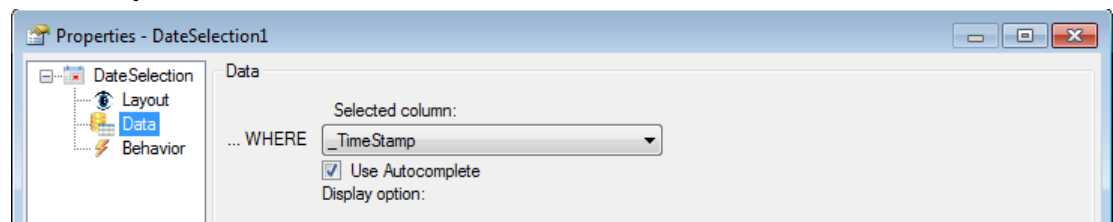


Figure 30: Date selection element, data properties

☐ Selected Column

According to the element type, only the timestamp column (_TimeStamp) is offered in the drop-down list "Selected Column".

Select the column.

☐ Use Autocomplete

If you enable this option the available values of this column will be presented in a drop-down list later in operation mode, hence to be selected easily. If you disable this option the full value must be entered by the operator.

➤ See also in *Value selection and value range selection*, page 47

Proceed accordingly regarding the date range selection element. However, this element has another setting option.

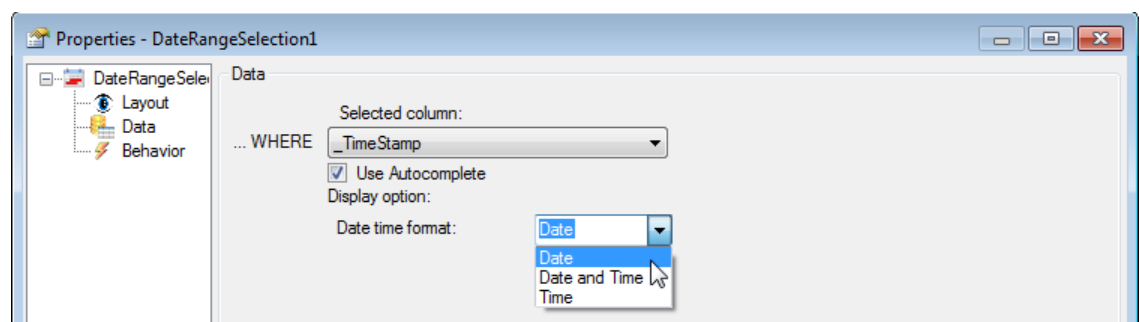


Figure 31: Date range selection element, data properties

☐ Date Time format (only date range selection)

For the date range selection, the time display can be changed and therefore also the query. You can select between the date, the date with time indication or only the time indication.

Behavior Properties

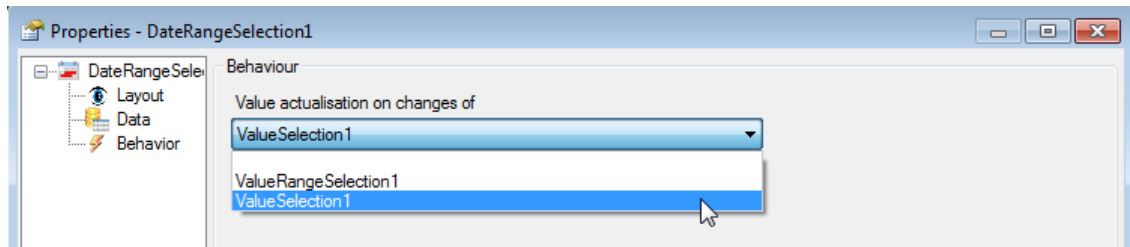


Figure 32: Date selection element, behavior properties

If you want to limit the date selection to values of another column, select the corresponding control element from the drop-down list of elements, which are available in the view. Later, in user mode the application then only offers values for selection matching the actual value of this column.

The same applies to the date range selection element.

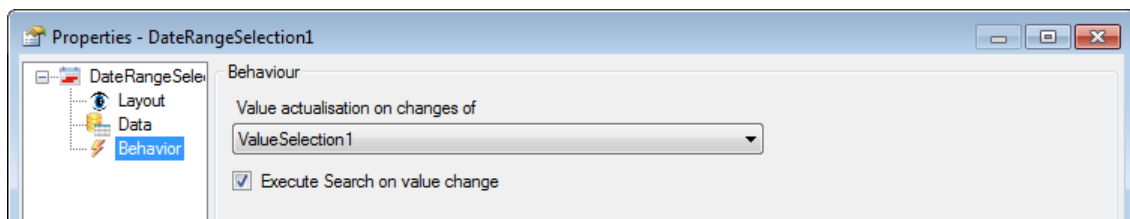


Figure 33: Properties, behavior, options

☐ Execute search on value change

If you enable this option a new search will be executed as soon as the value of this field changes, i. e. when selecting or entering a new value. If you disable this option you have to start the search manually or use another control.

10.3.4 Value selection and value range selection

The elements for selecting a value or a value range are the second important group of query elements for defining the query. With them, the search is defined by means of the values of computed or measured process sizes. Not only numerical values but also text can be processed.

The reference to the index table is created via the data properties of these elements. Value selection and value range selection refer to table columns in the index table.

Both elements can be switched from the selection list to input field. Instead of a selection list with predefined values, the user can define a value or text.

View Properties

As with the "Text field" element, yet without text input.

Data Properties

The data properties of value selection and value range selection differ.

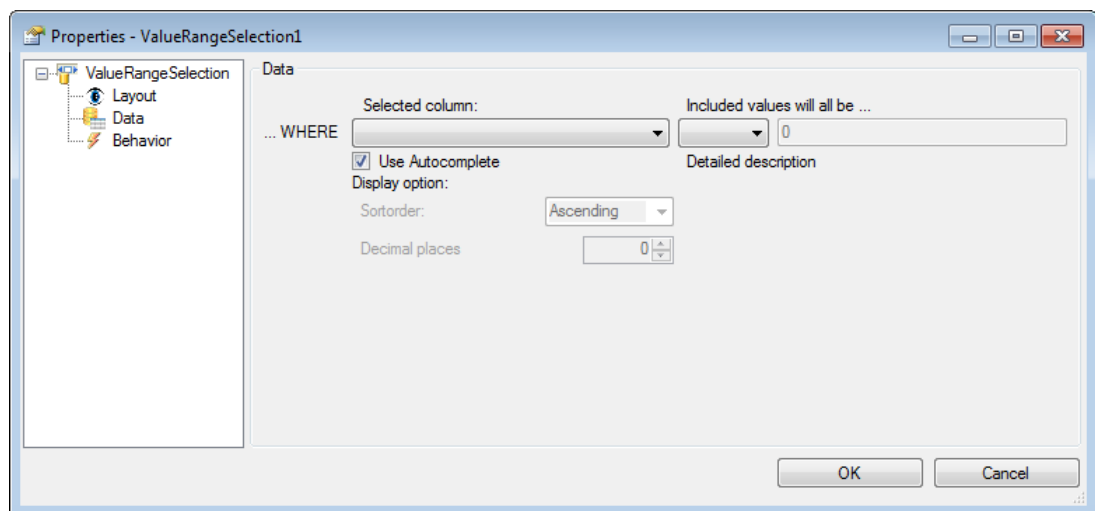


Figure 34: Value range selection element, data properties

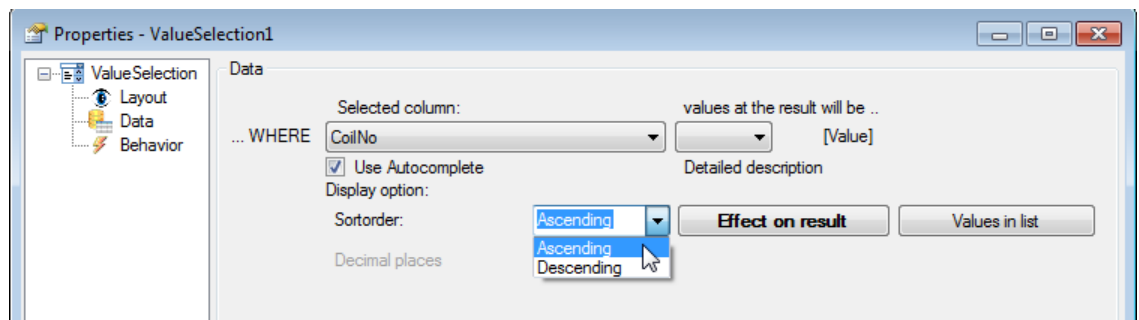


Figure 35: Value selection element, data properties

Selected Column

According to the element type, all columns of the index table are offered in the drop-down list "Selected Column": Select here the column that you want to use as search criterion and the values of which are to be displayed later in the control element.

□ Relational operator and comparative value in case of value range selection

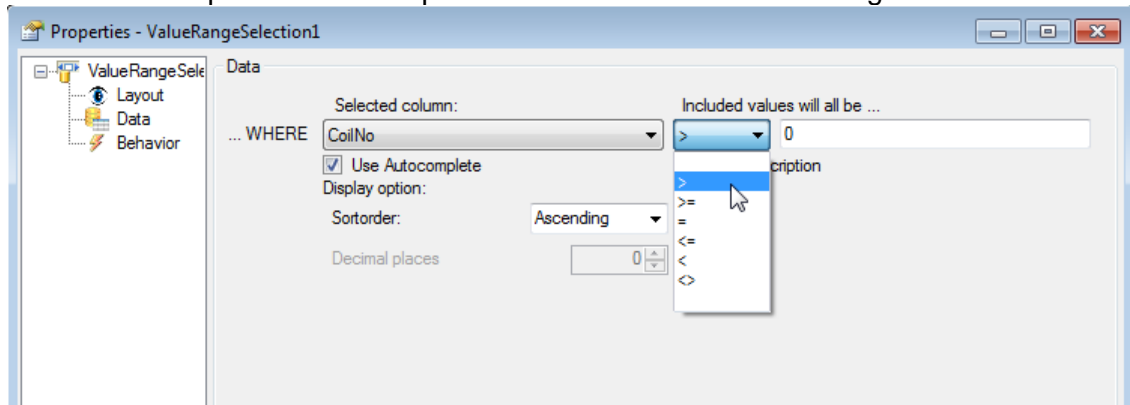


Figure 36: Value selection element, data properties - relational operator

By selecting a relational operator and comparative value, you can limit the offered values of a control element.

For example, if a control element shall only display all positive values, choose the combination > 0 . This also applies to negative values, values not equal to zero, etc. Accordingly, you can limit the values offered to any other value by entering this value as comparative value. Values that do not meet the criterion will not be visible in the application mode. If you do not wish any restrictions, do not select an operator.

Texts or strings are subject to a lexicographic order.

□ Relational operator and comparative value in case of value selection

In case of the value selection element, the limitations for the values offered in the user mode (query values) and for the search itself (result values) can be separately specified.

If you have clicked on the **<Result values>** button (in bold, see figure below), you define whether and how the search query is limited with reference to the value currently set by selecting the relational operator.

Thus, for example, the search can be limited to values being equal to, smaller or greater than the value currently set.

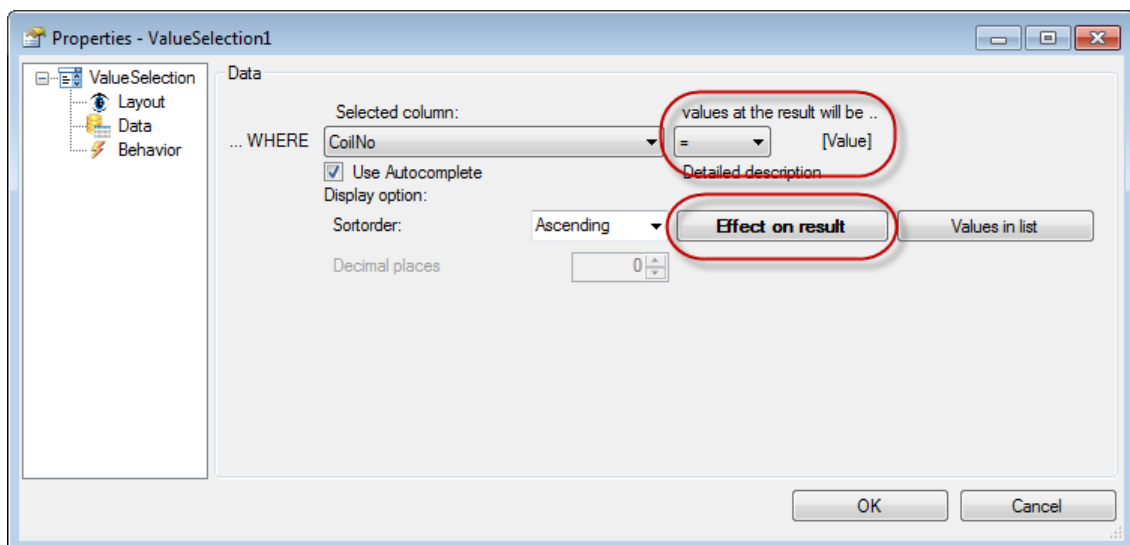


Figure 37: Value selection element, data properties - relational operator for result values

If you have clicked on the <Query values> button (see figure below), you define whether and how the list containing the values offered for the search is limited by selecting the relational operator and a specified value.

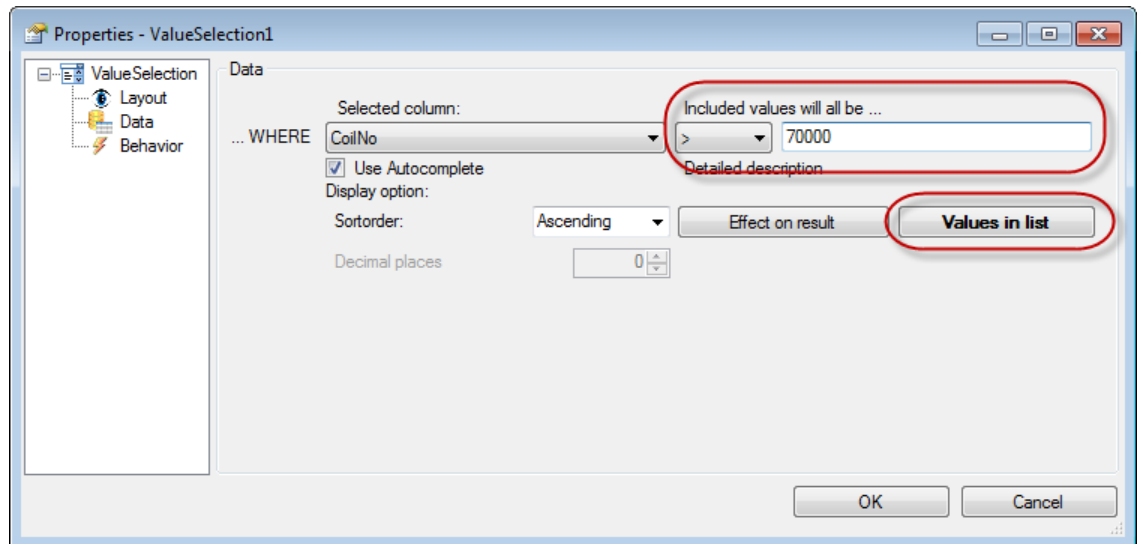


Figure 38: Value selection element, data properties - relational operator for query values

In this example, the user is only offered coil numbers greater than 70000.



Tip

By setting the condition for the query values, the selection lists in the user mode can be reasonably reduced. In case of large databases, in particular, the selection lists can contain several thousand values. Searching for the preferred values might then be time-consuming.

☐ Use autocomplete

With this option, you can control the behavior of the element when selecting the values in the user mode.

If you activate this option, the elements in the user mode are displayed as selection lists showing the available values. If the option is disabled, the elements are displayed as text input fields where you can enter the desired value or text.

Values or texts can be entered both completely or in part, completed by wild cards or jokers. The database query can be further limited, e.g. to product IDs beginning with 123... only. Texts or strings are subject to a lexicographic order.



Example

The coil number in our example has values between 704200 and 704319. To simplify matters, no further query conditions shall apply.

Wild card or joker character with MS SQL server is "%".

Text input: 704% result: all entries for all above-mentioned coil numbers

Text input: 7043% result: entries for coil numbers 704300 to 704319

Text input: 704%05 result: entries for coil numbers 704205 and 704305

Text input: 70 result: no entries

You can also enter multiple values if you separate them by semicolon.

☐ **Sorting order**

The sorting order refers to the values in the selection lists being displayed in the user mode. It can be switched between ascending and descending.

Texts or strings are sorted in alphabetical order.

☐ **Decimal places**

With this setting, you determine how many decimal places of the numerical values are displayed in the selection lists. A smaller number of decimal places provides a better overview when selecting the values in the user mode. The input option for the number of decimal places is only available if the "Selected column" is a floating-point value. This setting is not available for integer values or strings.

Behavior Properties

As with the date selection.

10.3.5 Group

The group element forms a framework that can contain other elements (including further groups). Besides View Properties, there are also Behavior Properties.

View Properties

As with the "Text field" element, yet without text input.

Behavior Properties

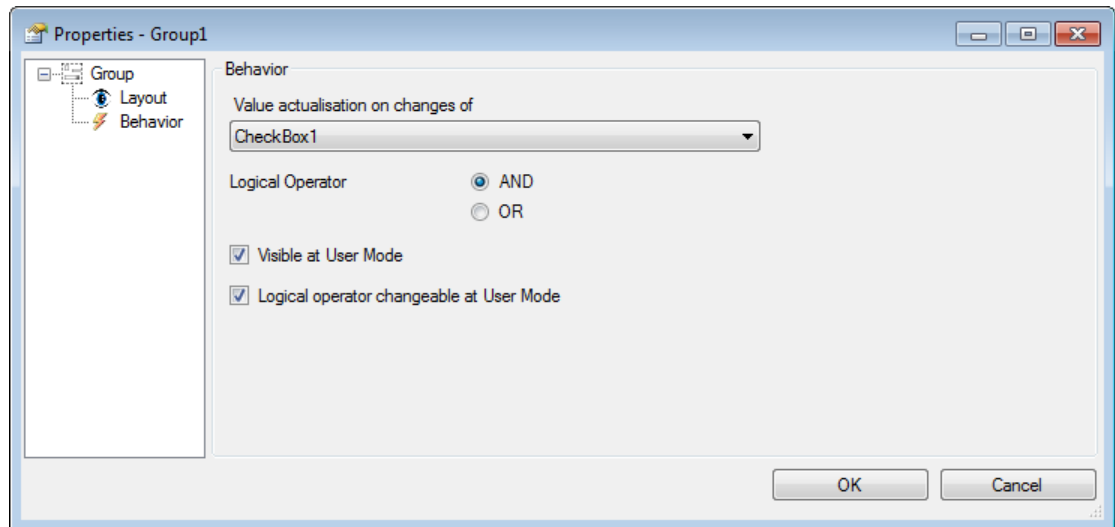


Figure 39: Group element, Behavior Properties


☐ Updating values in case of changes of

In this drop-down list, the check boxes are provided that have already been placed in the view.

Select a corresponding check box if the group is only to be edited when the relevant check box is activated.



Tip

Prior to that, activate the display of the instance name of the control element in the design mode in order to ensure a clear identification of the control elements. Click on the  button in the designer tool bar.

☐ Logical Operator

Using the logical operator (AND/OR), you define how the elements in the group are linked to create the query condition.



Tip

The logical operator can be switched both in the design mode and in the user mode if the corresponding option is enabled!

☐ Visible in the user mode

This selection determines whether the limiting line and back color of the group are displayed in the view. The elements contained in the group are always displayed. By hiding the line and color, the view can be clearer even if the elements are linked by group arrangements.

☐ Logical operator changeable at User Mode

This selection determines whether the logical operator can be switched by mouse-click also in the user mode. This option can only be activated, if the visibility in the user mode is also activated.

➤ For further information on groups, please refer to chapter *Grouping of control elements*, page 58

10.3.6 SQL Snapshot

Using this button, a specific pre-defined SQL statement can be executed.

Layout Properties

As with the "Label" element.

Data Properties

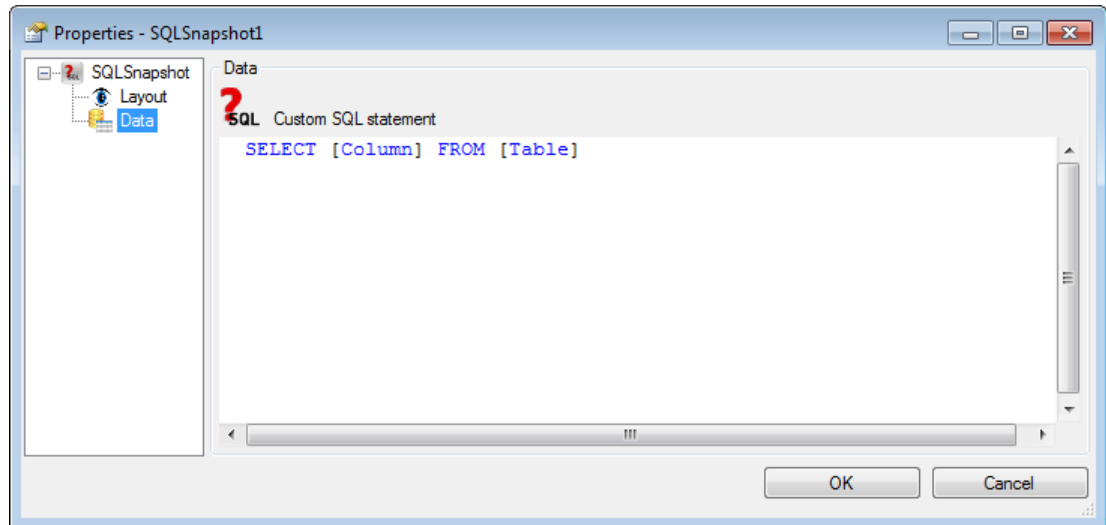


Figure 40: SQL snapshot element (button), data properties

In the empty field on the right, you can enter a specific SQL statement. After switching to the user mode, this statement can then be executed by clicking on the button. The query result is shown in the result table.

10.3.7 Image

With the image element, you can add a graphic or a photo to a view in order to design it in a more informative way. The image element has only view properties.

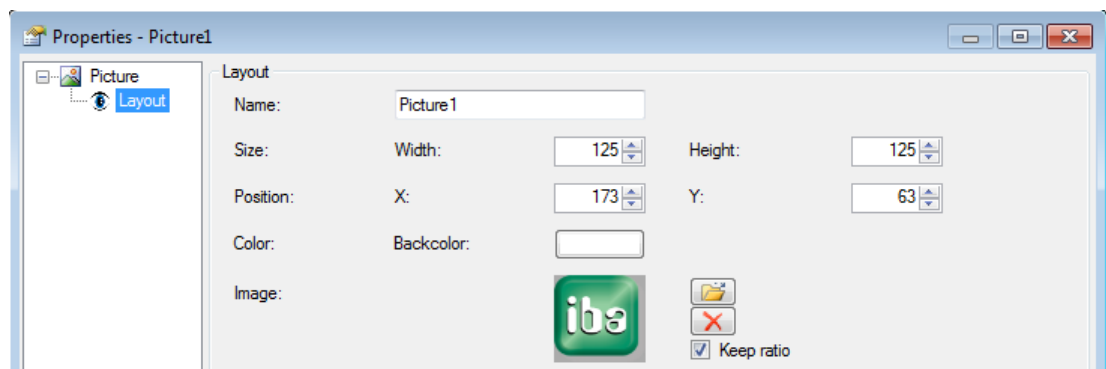


Figure 41: Image element, view properties

View Properties

As with the "Text field" element, yet without fore color and font but with a file selection function instead of text input for the image file.

Click the button <Open file> (see figure above) and select the desired file. All common graphic files are supported (bmp, png, jpg, gif, etc.).

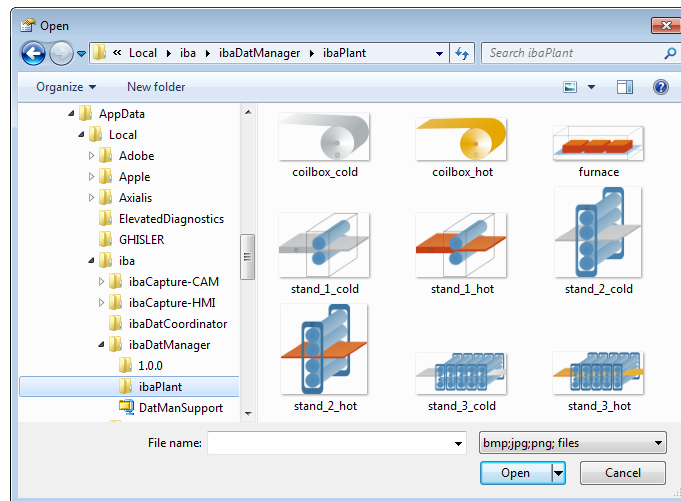
Activate the "Keep Ratio" option in order to prevent distortion when scaling the image.



Tip

The application *ibaDatManager* also installs a number of graphics from the systems engineering area on the computer. You can use these graphics for displaying different systems. iba is continuously expanding the collection.

The graphics are contained in the "ibaPlant" folder in the application data of *ibaDatManager* in the user directory.



10.3.8 Background

The background of a view has only layout properties. You can choose between a backcolor or an image.

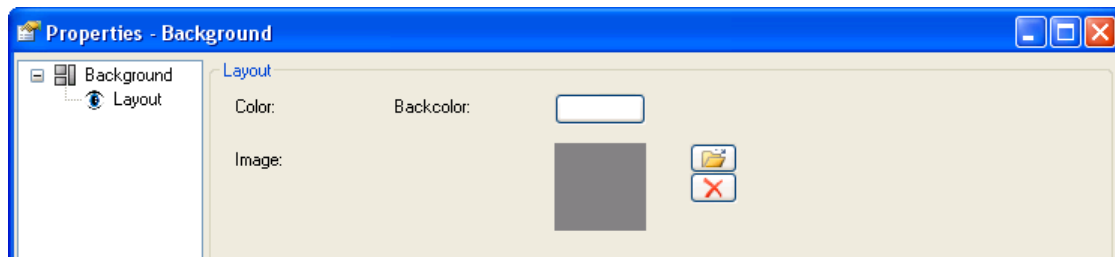


Figure 42: Background, Layout Properties

☐ Color

The standard backcolor is gray. Click the colored button for color selection. Besides the offered standard Windows colors, you can define 16 colors of your own choice.

☐ Image

Click the button <Open file> (see figure above) and select the desired file. All common graphic files are supported (bmp, png, jpg, gif, etc.).



Tip

The graphic will be scaled to the size of the view window in order to fit the entire background. Please keep that in mind when selecting the image. Proportions might change, scale is not guaranteed. Quality of the image (pixel, resolution) should suffice the final display size.

10.4 Processing logic

The settings (values) of all control elements are taken into account as query conditions in the form of logically designed AND/OR operations.

In the case of an AND connection, all search criteria involved must be met to obtain a result. In the case of an OR connection, only one of the search criteria involved must be met to obtain a result.

Here, the placement of the elements is a decisive factor:

- ❑ The conditions of all control elements and groups that lie in one view are logically linked with AND.
- ❑ Control elements placed in a view and there within a group are linked in such a way as defined by the logical operator in the group properties (AND or OR). The resulting condition of the group is again linked to the surrounding elements with AND.
- ❑ In the case of nested groups, the resulting condition of the inner group is linked to the elements of the surrounding group in such a way as defined by the logical operator in the group properties of the surrounding group (AND or OR).
- For more information on the logical operator, please refer to chapter *Modifying the logical operator of a group*, page 59

10.5 Relationships between control elements

Some control elements can be brought into relationship with or dependence on other elements by means of behaviour properties. According to the parent-child principle, the parental element determines the set of values for the child element.

The following example will show how such a dependency of control elements (also known as "control parenting") works.



Example

Two ValueSelection-type elements relate to two different columns of the index table:

- Name: ValueSelection1, Column: Coil no. (Coil number), Operator: >, default: 0
- Name: ValueSelection2, Column: Temp_F7_ mean (temperature mean value at F7), Operator: >, default: 0

Without a dependency between the two elements, they show all values based on the selected columns and operators (Data Properties).

Thus, it is not possible to establish an assignment between the coil number and the temperature values. The aim is the display of the temperature value(s) that occurred at a specific coil number.

In the control element for temperature values, the first control element (value selection1) is now selected in the "Value actualisation on changes of" field in the behaviour properties.

The picture of the operation is then different.

The value display in the second element is limited in such way, that both conditions are fulfilled. Temp_F7_mean > 0 AND coil number = selected value.

**Important Note**

Circular references are not allowed.

Relationships like Element1 --> Element2 --> Element3 --> Element1 are examined and not accepted.

10.6 Grouping of control elements

Several control elements can be combined by means of the element type "Group". Slightly different conditions apply to a group.

Thus, the editing of a group can be made dependent on a check box that is placed outside the group. If the check box is activated, the settings of the control elements within the group are taken into account when creating a query condition. If the check box is not enabled, the group and the elements contained in it are ignored.

If a group is not linked to a check box, the elements in this group will always be processed.

Another special feature is the possibility to link the conditions within a group differently from the group element. Within a group, the type of the connection of its members among each other can be determined by means of the logical operator AND/OR of the group. Only the resulting condition is linked with AND to elements outside the group unless the group is part of a bigger group. In this case, the connection of the logical operator of the surrounding group applies.

Group elements can be nested. Overlaps of groups are not permissible and are displayed with a red frame in the design mode.

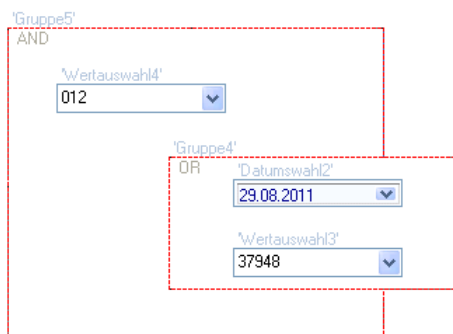


Figure 43: Impermissible overlap of two groups

10.6.1 Placing group elements

1. In the design mode, drag the "Group" element from the tools collection into the view.
2. Drag the other elements in the frame of the group element.
3. Adjust the size of the group element if necessary. All elements of a group have to be completely within the group frame.



Tip

Attention when moving: In order to make sure that all elements will be moved, select the group element and all contained elements before you move a group.

10.6.2 Modifying the logical operator of a group

When placing a group, the AND logical operator is set by default. Contrary to the other control elements, the logical operator is also displayed in the user mode in case of the group, if this option is enabled in the group's properties.



Tip

The logical operator can be switched both in the design mode and in the user mode if the corresponding option is enabled in the group's properties!

In order to switch the logical operator of the group from AND to OR, simply click on the line that contains "AND". The cursor will change into a hand symbol at the right place. Vice versa, this functions accordingly.

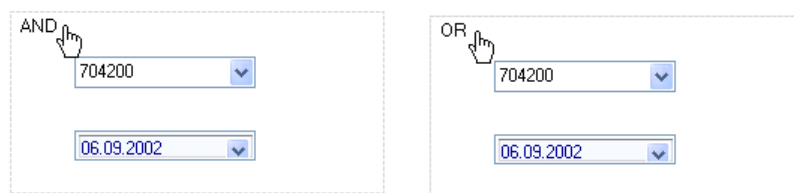


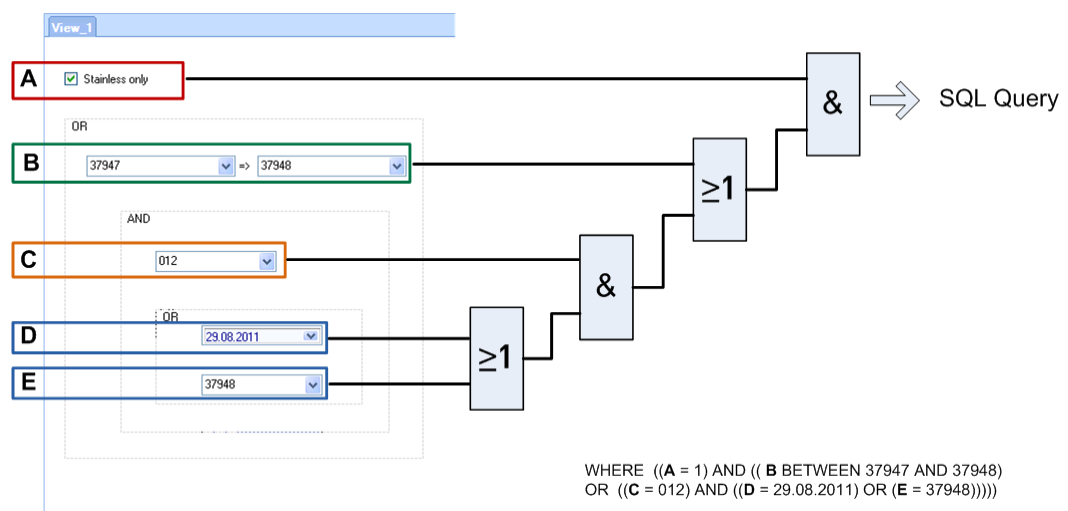
Figure 44: Switching from AND to OR

In the designer mode, the switching is performed in the properties dialog.



Example

The following graphic exemplifies the principle behind the linking of conditions of grouped and not-grouped control elements:



The bottom right image shows an excerpt from the resulting SQL statements (with simplified descriptions).

11 Database query

After a view has been fully designed, you can perform any queries in the user mode based on the value selection made in the control elements. The query will always be executed as soon as you have acknowledged a value entry or selection or changed an entry field by pressing the <TAB> key. Furthermore, you can simply click the <Execute search> button in the results window. *ibaDatManager* will then automatically formulate a SQL query that contains the set conditions.

All entries of the corresponding index table that fulfill the conditions of the control elements in the view will be listed as results.

Moreover, it is possible to refine the automatically created query by switching to the window "Live Query".

There you will find the latest, currently used SQL statement. You can then edit the statement to expand or limit conditions. After that, click the button <Search> in the same window and you will receive the respective results.

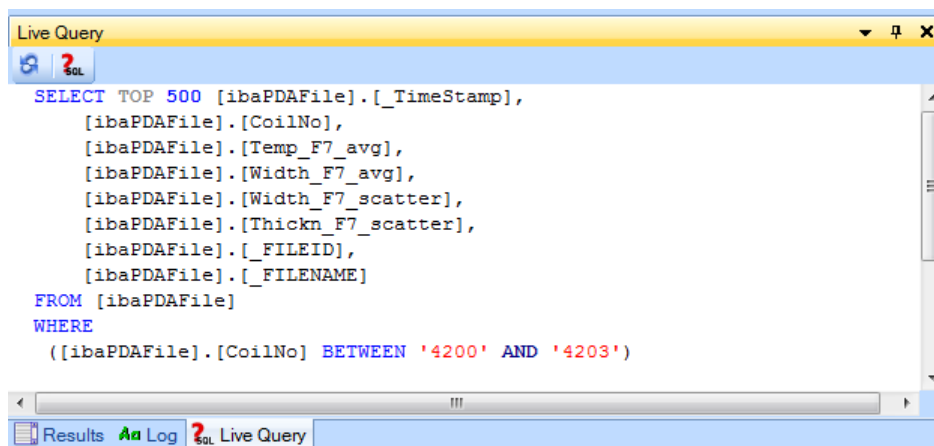


Figure 45: Live Query on the basis of a automatically created SQL statement.



Tip

The window "Live Query" may also be helpful for the configuration as you could have a query created correspondingly to the current view at any time by clicking "Build SQL statement" without performing a search. Already during the view creation, this allows you to control whether the query logic is correct.

12 Presentation of the results

12.1 The result window

The results of the database query are listed in a table in the result window. Every result row is linked to a corresponding data file.

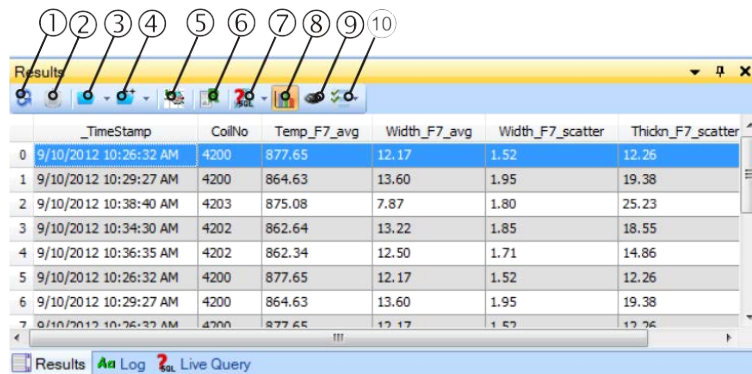


Figure 46: Control elements in the result window

- 1 Run search:** start SQL query according to the values set in the view.
- 2 Stop search:** cancel SQL query. Results found by then remain unaffected.
- 3 Open *.dat file:** open the file(s) selected in the results list with ibaAnalyzer. By clicking on this button, a selection menu for the opening types of the files opens:
 - a) Open as Group (ibaAnalyzer version 6.0 and higher)
The first of the selected files is opened in the signal tree of ibaAnalyzer, the other files are entered into the group window.
 - b) Open *.dat File
The selected data file opens. In case several files are selected, these are opened at the same time and on the same level in the signal tree of ibaAnalyzer.
 - c) Append New Data File
The selected data file opens. In case several files are selected, these are opened at the same time but appended to each other in ibaAnalyzer.
- 4 Add *.dat file:** add the file(s) selected in the result list to an ibaAnalyzer already running. A click on this button opens a selection menu where you can select how the files are to be added:
 - a) Add to File Group (available from ibaAnalyzer version 6.0 and higher)
The file(s) is/are added into the group window.
 - b) Add Data File
The selected data file(s) is/are added to the same level in the signal tree of ibaAnalyzer and opened.
 - c) Append New Data File
The selected data file(s) is/are appended and opened.
- 5 Start ibaAnalyzer:** open a new window of ibaAnalyzer.
- 6 Generate report:** generate a report for each of the selected data files. Prerequisite: in the "Analysis" tab of the view configuration, an analysis (*.pdo) with report configuration needs to be entered. Moreover, the "Generate report" option has to be enabled and a report output format set (see chapter 8.2.2 or 8.2.3).
- 7 Open trend query, trend query overview or trend query report in ibaAnalyzer:** display the entries of the result table as trend query either in the signal tree or in the *Overview* window in ibaAnalyzer. The trend query might optionally be output as report.
- 8 Result of trend view:** show or hide the window for the result trend view.
- 9 Hide empty columns:** hide empty result columns.
- 10 Display options for invalid data file references:** After synchronization of database and file system by means of ibaDatCoordinator and plugin DBSync the entries without a valid file reference can be hidden or marked.

Context menu

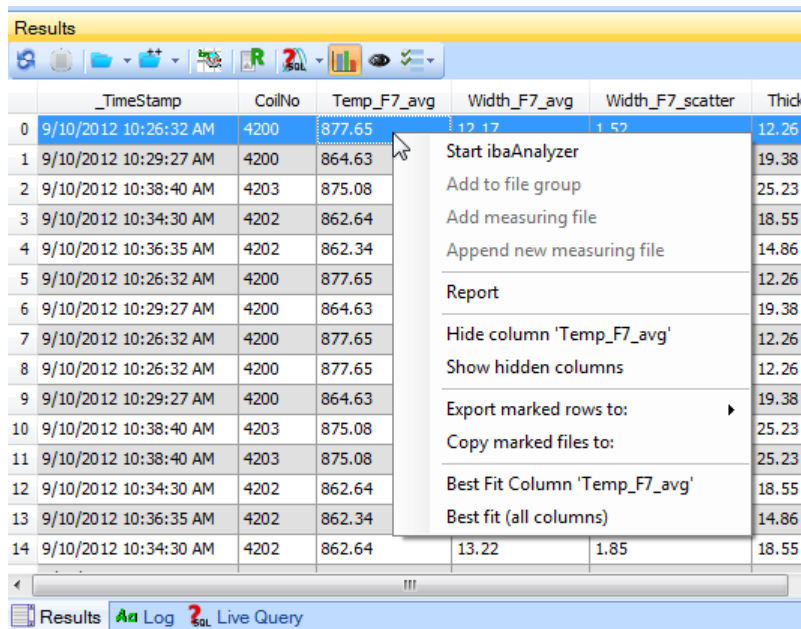


Figure 47: Context menu in the result window

In addition to the functions for starting ibaAnalyzer as well as adding and appending data files, you can use the context menu to hide and show the columns, optimize the column width as well as to export the result rows. The "Add Data File" and "Append New Data File" commands are only available if a data file has already been opened in ibaAnalyzer. There is the option to hide the column in which you have opened the context menu. With the "Show hidden columns" command, you open a dialog listing all columns available in the index table of the database which are hidden for the current view.

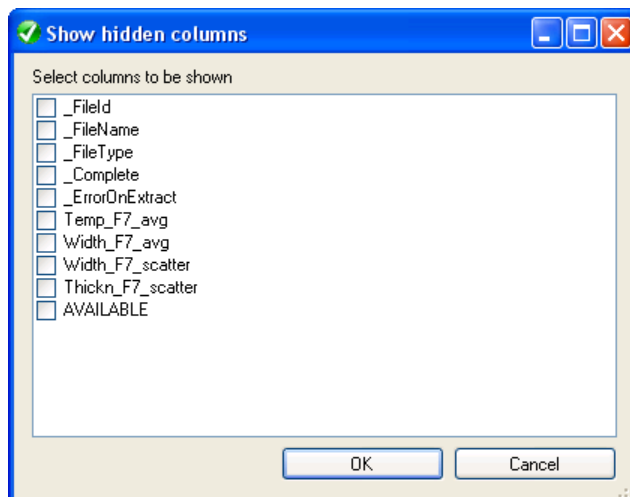


Figure 48: Dialog for showing the result columns (via context menu)

Here, you can select the columns to be shown.

The settings made for "Hide" and "Show" apply to the configuration table of the corresponding view, "Result" column. With the *Best fit* commands, you may set the column width of the respective column or all columns so that column headers and/or field entries are fully legible.

➤ See also chapter *Datasource settings for separated views*, page 23

➤ See also chapter *Exporting results*, page 72

12.2 Details View

Additionally to the result table, there is the "Details" display window. You can show or hide the details window in the *View* menu.

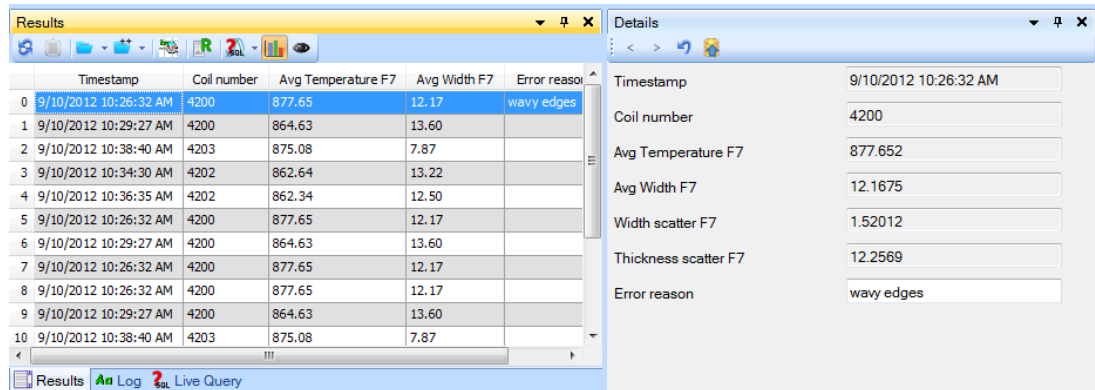


Figure 49: Result table (left) and details window (right)

All information that is available as table column can be enabled or disabled for display in the details window.

If you want to view the content of a column in the details window, then set a checkmark in the respective row of the "Details" column on the "Index table" tab in the "Datasource configuration" dialog.

When you remove the checkmark, the information is removed from the details window.

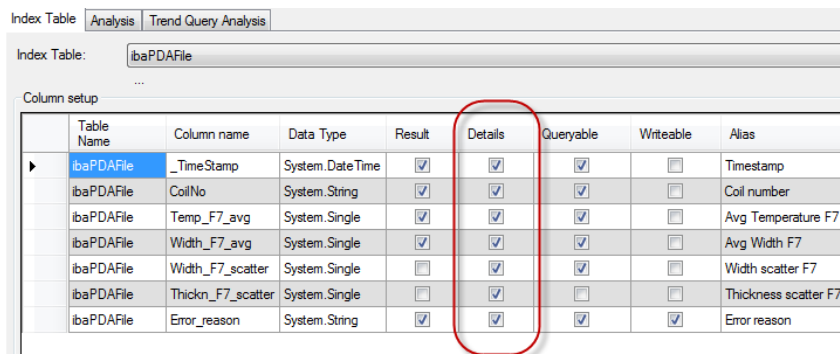


Figure 50: Selecting the columns for display in the details window.

This applies to all columns, hence also for the columns you have added subsequently in *ibaDatManager*.

12.3 Changing database values and Info fields

If a column or an Info field has been configured as writeable and the current user is authorized to change it, you can see this by means of a white input field on the details window. Just click on the field and enter the value or text you want.

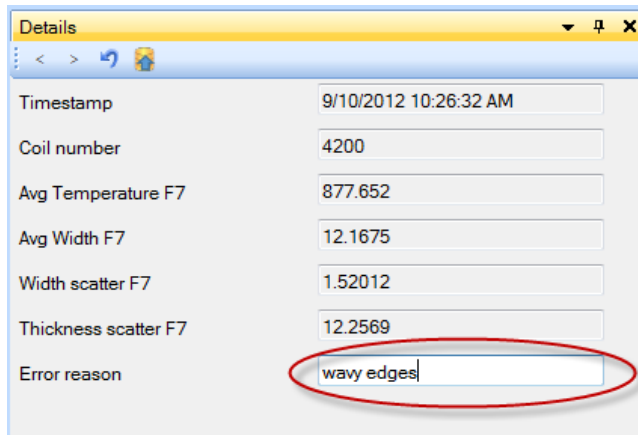


Figure 51: Details field in the input mode

By means of a special button in the toolbar of the details window, the entered values are adopted in the database and the measurement data file.

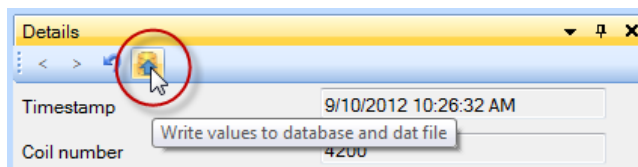


Figure 52: Button for adopting the entry

If you open the measurement data file after having adopted the entry, this will look e.g. as follows:

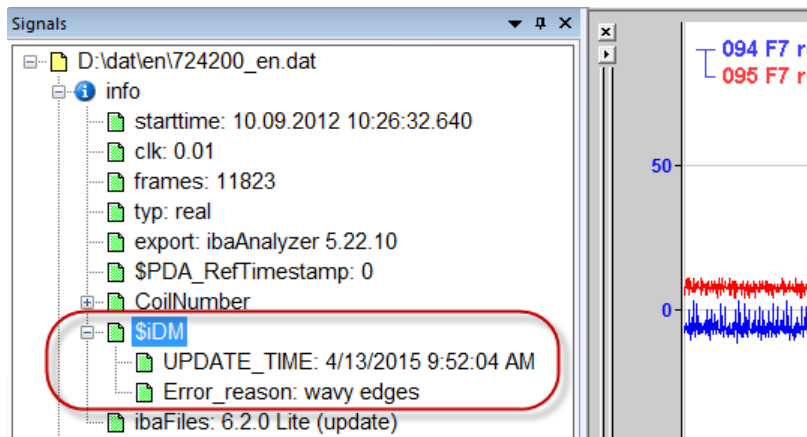


Figure 53: Entries from ibaDatManager in the measurement data file

In the Info section, there is a special „\$iDM" branch, where you can find the information that has been entered by *ibaDatManager*. Moreover, the time of the last change is recorded.

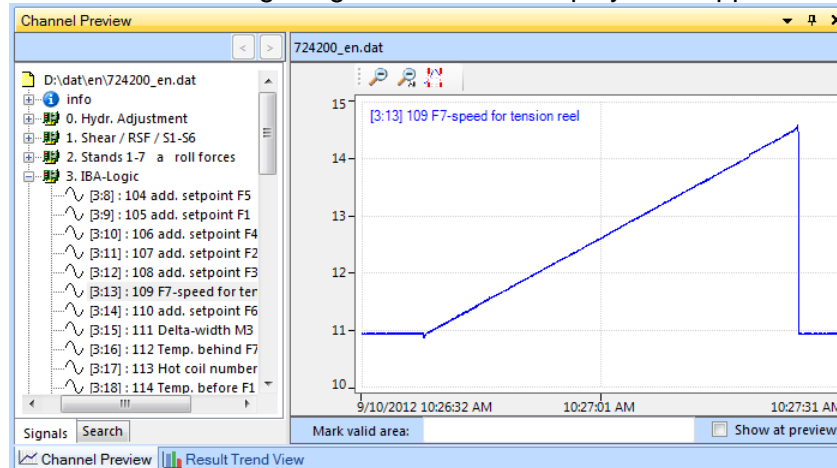
12.4 Preview of the data file (channel preview)

ibaDatManager offers an integrated channel preview for data files. You can open and close the channel preview via the *View* menu. The channel preview only serves as means of orientation or pre-selection. Only one signal (time-based or length-based) at a time can be displayed. Open the data file(s) with *ibaAnalyzer* for further evaluation functions.

Show channels

1. Select the requested line in the result table. If the channel preview is not yet opened, open the *View* menu and select *Channel preview*.

A window containing a signal tree and a display area appears.



2. Expand the modules in the signal tree so that you can see the signals and select a signal of interest.

The signal is then presented in the display area on the right.

3. If you have selected several result rows, all relevant data files are loaded in the preview so that you can look at the files one after the other.

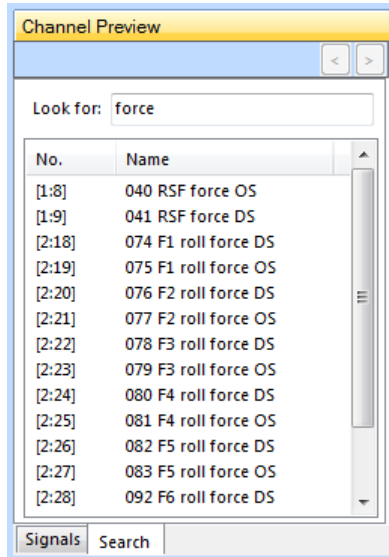
In this case, the arrow buttons in the menu bar of the preview are available:



Click on these buttons to switch between the data files.

Search channels

Like in ibaPDA and ibaAnalyzer, there is a search function available in the signal tree window of the channel preview.



Click on the **Search** tab. Enter a complete signal name or parts of it in the entry line.

Press <RETURN>.

The result list shows all signals containing the search item entered.

If you click on a signal in the search results, it is loaded in the preview.

Zoom

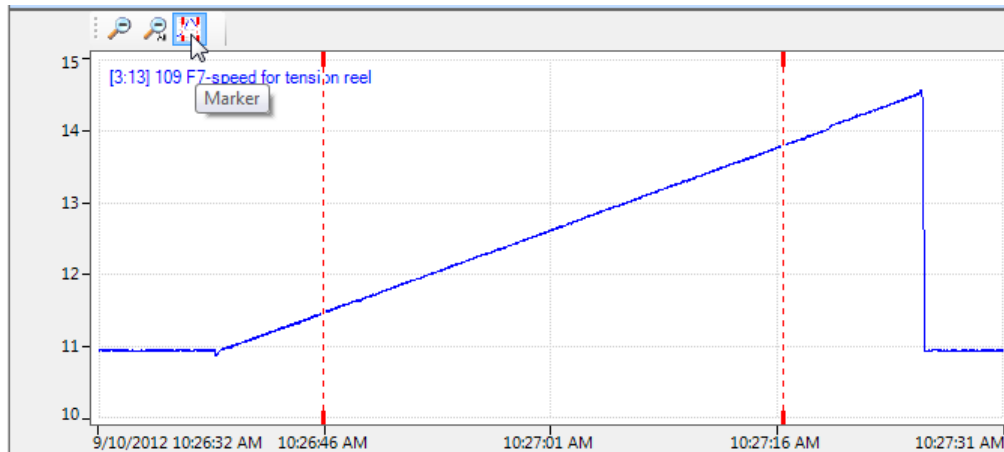
You can zoom in the channel preview to show more details in the signal curve. For zooming, just draw a rectangle using the mouse.

For zooming out, the known magnifying glass icons for zooming out step by step and completely are available above the trend display.

Using the mouse wheel, you can zoom in and out in X direction if the mouse pointer is positioned in the trend display or on the X axis. Reference point for zooming is the position of the mouse pointer in X direction.

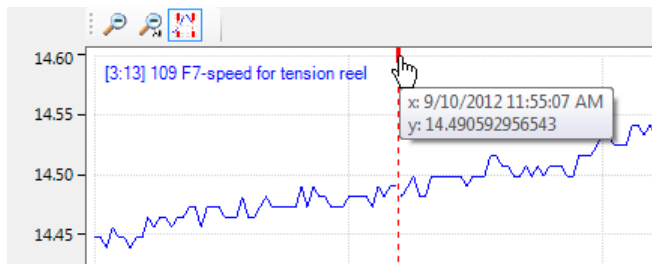
Marker

Above the trend display, there is a button for activating and deactivating two markers.



If you click on the thick ends of the markers, you can move them along the X axis.

In doing so, the X value (date and time) and the Y value of the signal are displayed in accordance with the position of the mouse pointer.



Tip

If you hold down the <SHIFT> key during shifting, both markers are shifted in the same distance.

Select valid ranges

The channel preview provides the opportunity to highlight positions or ranges along the signal curve where certain conditions are met (= TRUE). Below the trend display, there is an input field for a condition to be freely defined, according to the *XMarkValid* function in ibaAnalyzer. This way, you can, for example, compare signal values with a limit value and have the ranges highlighted where the limit value has been infringed.

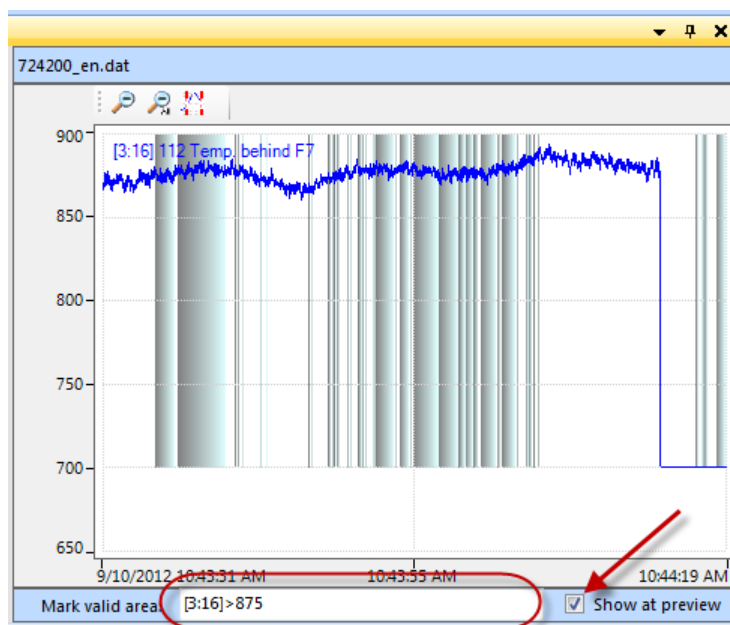
In particular, if you have selected several result rows (= data files) in the table, you can quickly check the selected signal across many data files by means of the scrolling function.

Formulating the condition is not limited to the displayed signal. As a basic principle, you can benefit from the entire function list of the expression builder in ibaAnalyzer. The only condition is that the result of the expression can only be TRUE or FALSE.



Example

In the channel preview, all positions are to be highlighted where the temperature value (here channel [3:16]) exceeds 875 °C.



For the ranges to be highlighted, enable the “Show in preview” option. If you temporarily do not wish the highlighting, just disable the option.

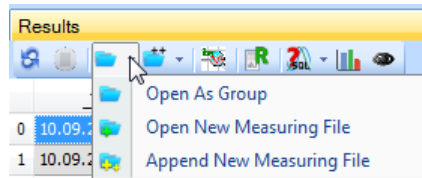
By the way, the highlighting is also maintained if you select another signal for the channel preview. The highlighting is only affected by the entered expression.

12.5 Opening data file with ibaAnalyzer

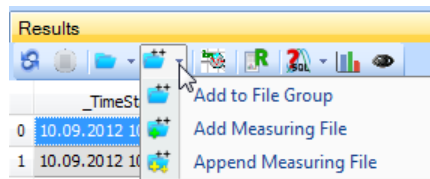
In order to use this function, ibaAnalyzer has to be installed locally on the *ibaDatManager* computer.

The tool bar of the result window provides different methods for opening the data files with ibaAnalyzer. It is also selected whether ibaAnalyzer is to restart with the current selection of results or the results currently selected are to be added to an ibaAnalyzer already opened.

To restart ibaAnalyzer with the current selection of results, use the following button:

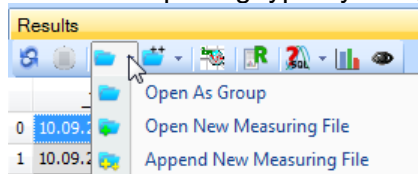


For adding the current selection of results to data files in an opened ibaAnalyzer, use the following button:




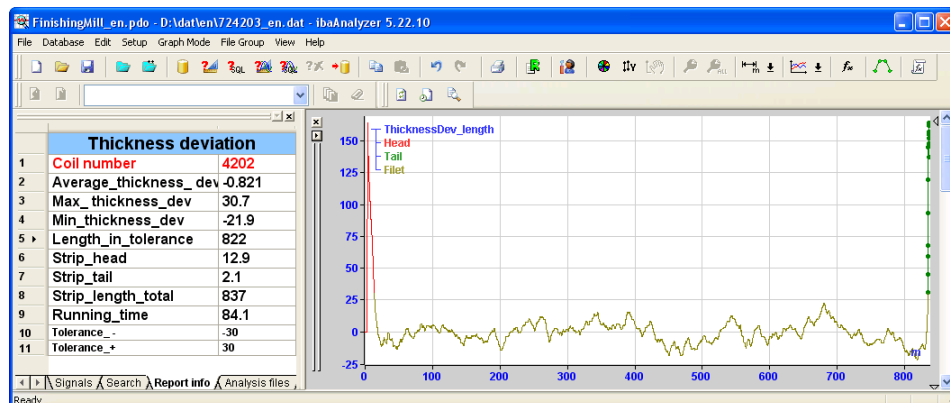
12.5.1 Opening one or more data files

1. Check one or more lines containing results in the result window.
2. Select the opening type by using the button and following menu:



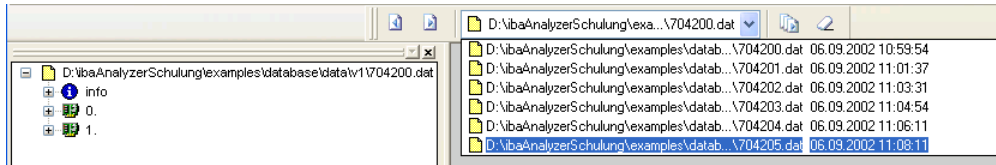
If you want to open only one file, the opening type is not important. If you want to open several data files, you have to carefully choose the opening type.

3. Click on the <Open new measuring file> menu command . ibaAnalyzer starts with the corresponding data file and the analysis, which was configured for the concerning view ("Configure Datasource" – "Analysis" tab). In case of several files, they are arranged on the same level in the signal tree.



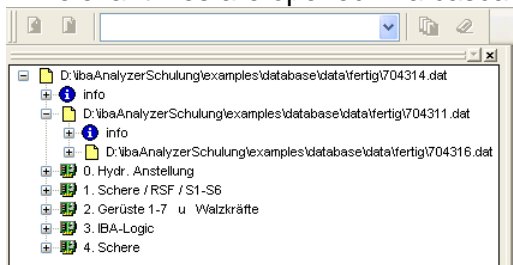
12.5.2 Opening one or more data files as a group

1. Check one or more lines containing results in the result list.
2. Select the opening option "Open as group" by using the button and the following menu.
3. The first file is opened in the signal tree of ibaAnalyzer, the other ones are in the group window.
4. Click on the <Previous File> or <Next File> buttons in ibaAnalyzer to switch between the data files.



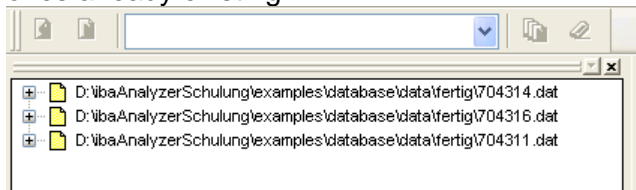
12.5.3 Opening and appending several data files

1. Select several lines containing results in the result list.
2. Select the opening option "Append new measuring file" by using the button and the following menu.
3. All relevant files are opened in a cascaded manner in the signal tree of ibaAnalyzer.



12.5.4 Adding and opening further data files

1. Check one or more lines containing results in the result list.
2. Select the opening option "Add measuring file" by using the button and the following menu.
3. All relevant files are opened equally in the signal tree of ibaAnalyzer in addition to the ones already existing.



12.5.5 Adding one or more data files to an existing group

1. Check one or more lines containing results in the result list.
2. Select the opening option "Add to file group" by using the button and the following menu.
3. The file(s) is/are added to the group.

12.5.6 Appending one or more data files to already existing ones

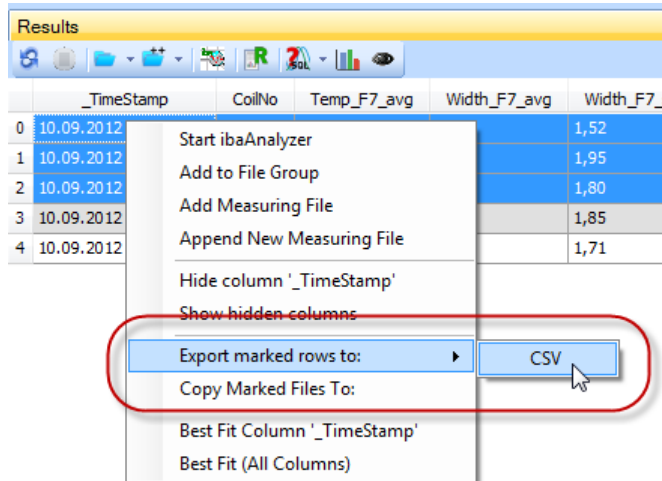
1. Check one or more lines containing results in the result list.
2. Select the opening option "Append measuring file" by using the button and the following menu.
3. The file(s) is/are appended to the existing files (cascaded arrangement in the signal tree).

12.6 Exporting results

For documentation purposes or further processing, e. g. with MS Excel, the query results can be exported from the result table to a CSV file.

Proceed as follows:

1. Select all lines in the result table that you want to export.
2. Open the context menu by right-clicking into the selected area and select "Export marked rows to: - CSV".



3. In the following dialog, define the path and file name under which the export file is to be saved.
4. Click on <Save>.

The export file can now be opened with, e.g., MS Excel and edited.

	A	B	C	D	E	F	G	H
1	[_TimeStamp]	[Coil number]	[Average temperature Stand F7]	[Average strip width at stand F7]	[Strip width scatter at stand F7]	[Thickness scatter at stand F7]	[_FILEID]	[_FILENAME]
2	9/10/2012 10:36	4202	862.34	12.5	1.71	14.86	-1303603304	D:\dat\en\724203_en.dat
3	9/10/2012 10:34	4202	862.64	13.22	1.85	18.55	-1303808132	D:\dat\en\724202_en.dat
4	9/10/2012 10:38	4203	875.08	7.87	1.8	25.23	-1304447202	D:\dat\en\724204_en.dat
5	9/10/2012 10:29	4200	864.63	13.6	1.95	19.38	-1305063496	D:\dat\en\724201_en.dat
6	9/10/2012 10:26	4200	877.65	12.17	1.52	12.26	-1305476334	D:\dat\en\724200_en.dat

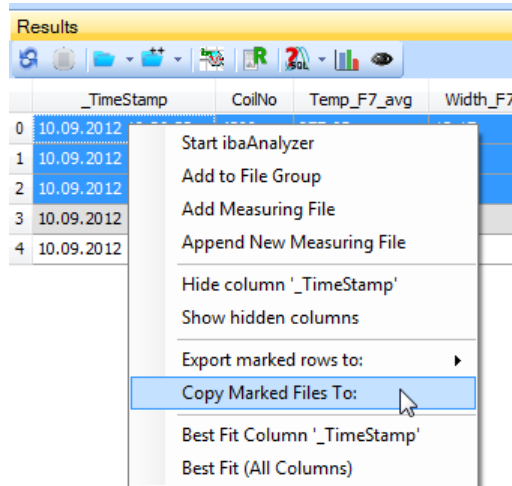
Figure 54: Example of an export file in MS Excel

12.7 Copying the result files

For archiving purposes or further processing, the data files of the query results can be copied from the result table to another location.

Proceed as follows:

1. Select all lines in the result table whose data files you want to copy.
2. Open the context menu by right-clicking into the selected area and select "Copy marked files to:".



3. In the following dialog, select the desired target folder to which the data file(s) is/are to be copied.
4. Click on <OK>.

The copy process begins. In case of considerable copy processes, a window showing a progress bar appears.

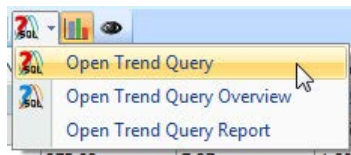
12.8 Trend queries

The toolbar of the result table provides a drop-down menu with commands for different ways of displaying trends in ibaAnalyzer. The last-selected icon is shown in the toolbar. Available for selection are:

- Open Trend Query
- Open Trend Query Overview
- Open Trend Query Report

These trend queries do not show the contents of the data files but the contents of the result table in curve shape.

12.8.1 Open trend query



A click on this icon opens ibaAnalyzer. The contents of the result table are shown as trend in ibaAnalyzer. The calculated values from the table columns are listed in the signal tree just like normal signals. By double-clicking on the listed signals in the ibaAnalyzer program or via drag & drop, the trends can be opened in the signal strips.

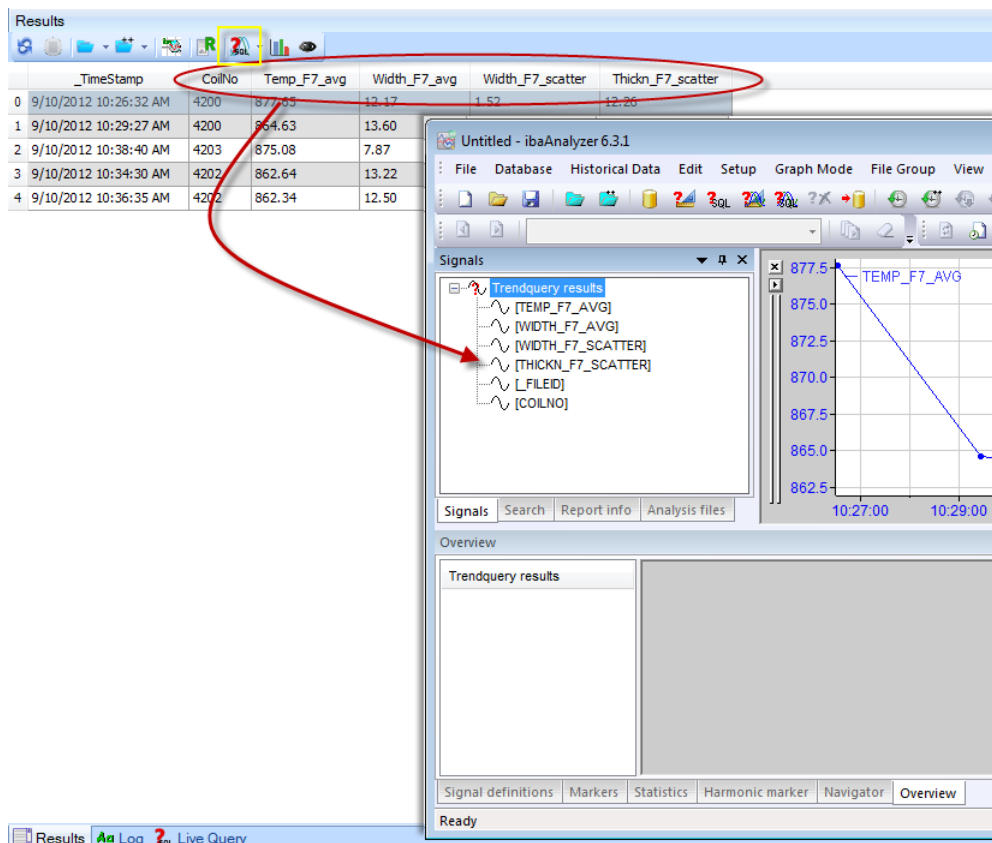


Figure 55: Starting the ibaAnalyzer trend query

The function is only used for display. No report is generated.

If you have entered an analysis in the *Trend Query Analysis* tab when configuring the datasource in *ibaDatManager*, this analysis will be loaded.

FinishingMill

Index Table Analysis Trend Query Analysis

☒ pdo from file ☐ pdo from Database

Analysis

Analysis file

D:\Demos\ibaDatManager\DM_DemoData\12_pdo\test_trenquery.pdo

Username:

Password:

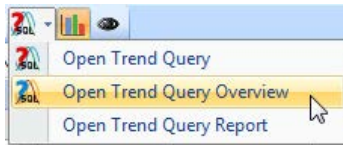
Analysis from group

Analysen

➤ See also chapter *Trend query analysis tab*, page 30

If no analysis had been configured, ibaAnalyzer starts with the last loaded analysis.

12.8.2 Open trend query overview



A click on this icon opens ibaAnalyzer. The contents of the result table are displayed as trend in the trend overview, i. e. in the *Overview* tab in the area of the signal table in ibaAnalyzer. The calculated values from the table columns are listed in the signal tree of the overview. With a tick you can decide which values are displayed as trend graph in the overview. The default signal tree window remains empty.

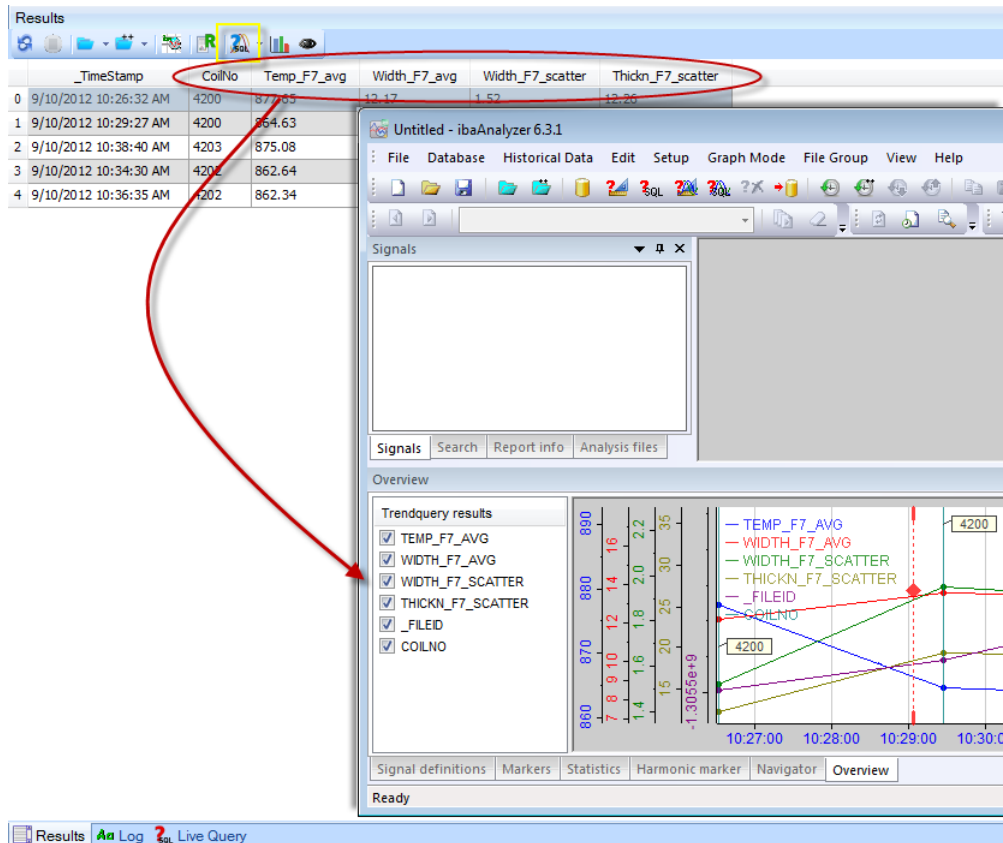
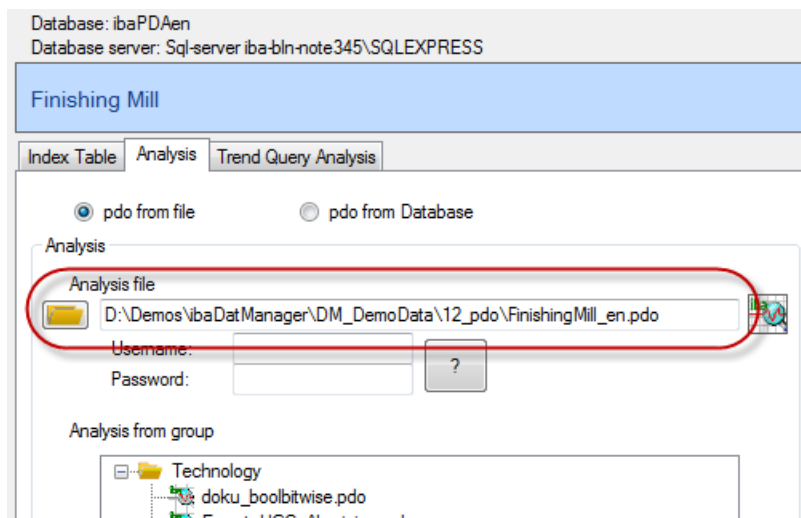


Figure 56: Starting the ibaAnalyzer trend query overview

The function is only used for display. No report is generated.

If you have entered an analysis in the *Analysis* tab when configuring the datasource in *ibaDatManager*, this analysis will be loaded.



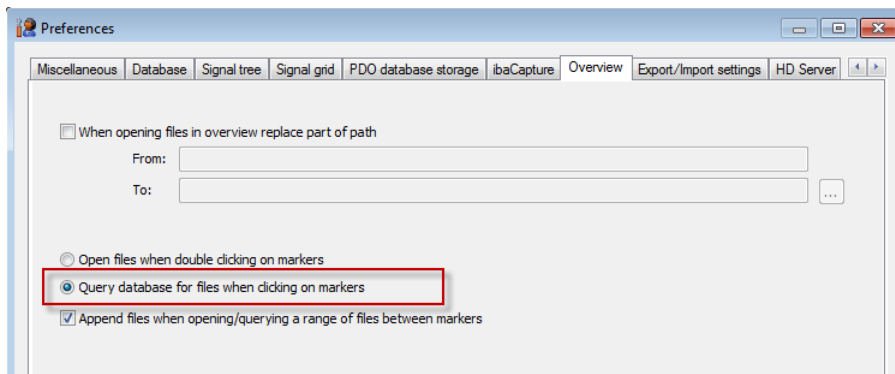
➤ See also chapter "*Analysis*" tab, page 28

If no analysis had been configured, ibaAnalyzer starts with the last loaded analysis.

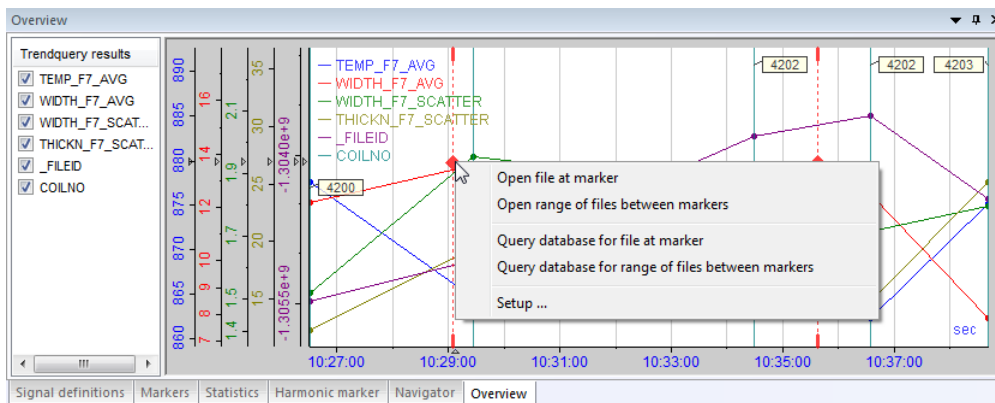
The standard functions of this view in the ibaAnalyzer program allow you to open one or several specific data files for more detailed information.

Information on setting and using the trend query overview in ibaAnalyzer

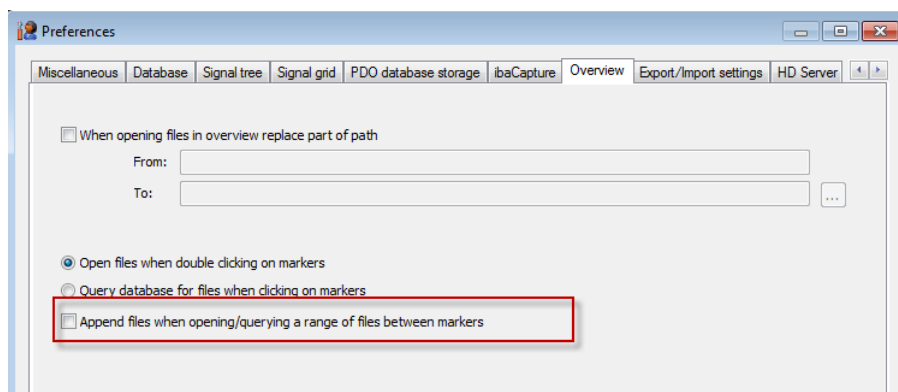
- ❑ Double-click on the red diamond of a marker
 Default setting: the data file belonging to the points on which the marker is positioned will be opened. If you want the extracted data file to be opened instead of the original data file, change the overview settings in ibaAnalyzer.



- ❑ Right-click on the red diamond of a marker for opening the context menu

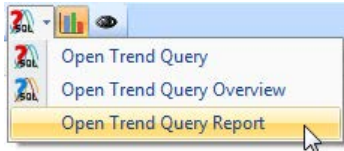


- Open file at marker
Opens the data file on whose points the marker is positioned.
- Open files between markers
Opens all data files whose points are laying between the two markers. By default, the files are appended in ibaAnalyzer. If you do not want the files to be displayed appended but one below the other, disable this function in the Overview settings.



- Query database for file at marker
Opens the extracted file containing the measured values extracted to the database instead of the original data file, on whose points the marker is positioned.
- Query database for range of files between markers
Same function as "Files between..." above with the exception that the extracted files are opened instead of the original data file.

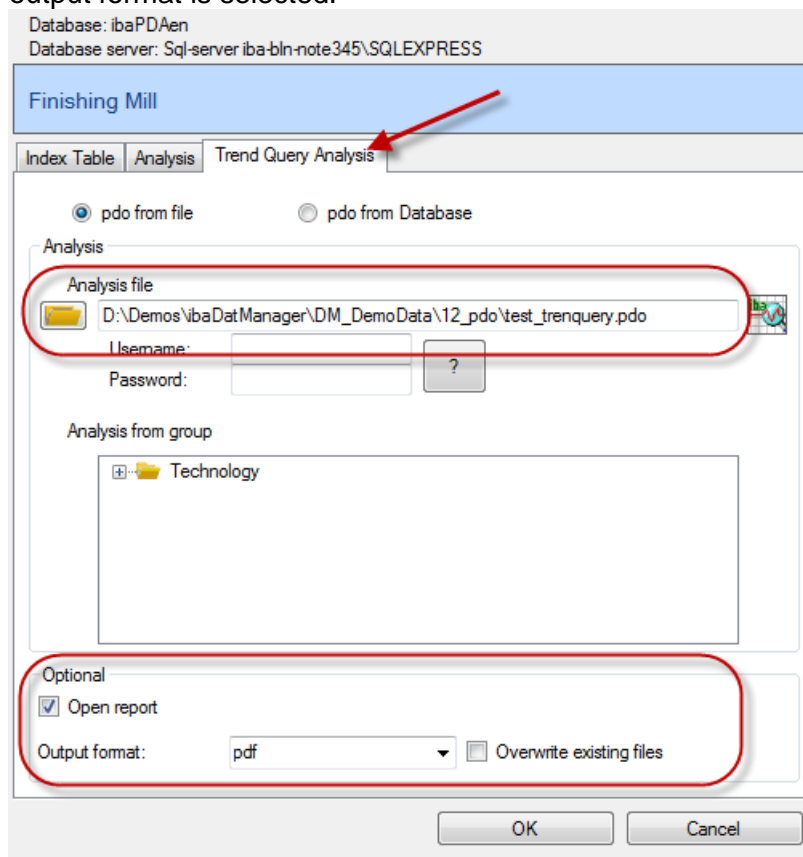
12.8.3 Open trend query report



A click on this icon opens ibaAnalyzer. The contents of the result table are shown as trend in ibaAnalyzer. The calculated values from the table columns are listed in the signal tree just like normal signals. A report is generated at the same time.

Preconditions:

- Analysis is entered in datasource configuration, *Trend Query Analysis* tab.
- Report is configured in analysis file and report layout file is linked.
- "Generate report" option in *Trend Query Analysis* tab is enabled and the desired output format is selected.

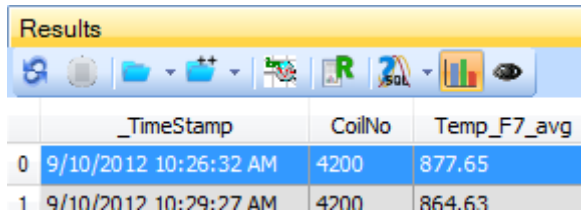


If these conditions are met, a window opens after calling up the function where you can select the target path and file name for the report. If required, you can also specify the output format here by changing the file extension.

12.9 Result trend view, histogram and X/Y plot

ibaDatManager provides an instant view of the result values in form of trends, histograms and XY diagrams.

Using the *Result Trend View* (bar chart icon) in the toolbar of the result table, you open or hide the window for these display types.



	_TimeStamp	CoilNo	Temp_F7_avg
0	9/10/2012 10:26:32 AM	4200	877.65
1	9/10/2012 10:29:27 AM	4200	864.63

Figure 57: Opening the result trend view



Note

In the result trend view, all **numerical** result columns are automatically applied. Contents of text columns cannot be displayed.

12.9.1 Common functions of the result trend view

Statistical values

In the signal tree of the result trend view, the statistical values Minimum (Min), Maximum (Max), Average value (Avg) and Standard deviation (StdDev) are also displayed for each available numerical column of the result table.

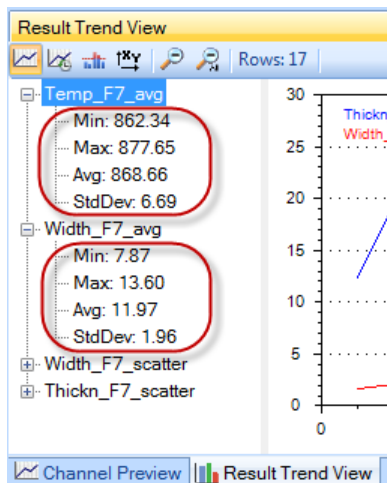






Figure 58: Statistical values of the result columns

Context menu

By right-clicking in the display area, a context menu with the following functions opens:

Function	Description				
Copy	Copies the diagram as chart to the Windows clipboard	✓	✓	✓	✓
Save as	Saves the diagram as image file (.emf, .png, .gif, .jpg, .tif, .bmp)	✓	✓	✓	✓
Page setup	Settings for the expression of the diagram	✓	✓	✓	✓
Print	Opens the printer selection and prints the diagram. The image will be scaled to the printable area set.	✓	✓	✓	✓
Show values	Shows time stamp and signal value during mouse over in the curve field	✓	✓	✓	✓
Show dots	Highlights the position of the data file-related values on the displayed trends	✓	✓	-	1)
Unzoom ²⁾	Zoom out one step	✓	✓	✓	✓
Undo all ²⁾	Zoom out completely	✓	✓	✓	✓
Set Default Scale	Resets both axes to default value	✓	✓	✓	✓

1) only dot display ²⁾ only available if it had been zoomed in before

Table 6: Functions in the context menu of the result trend view

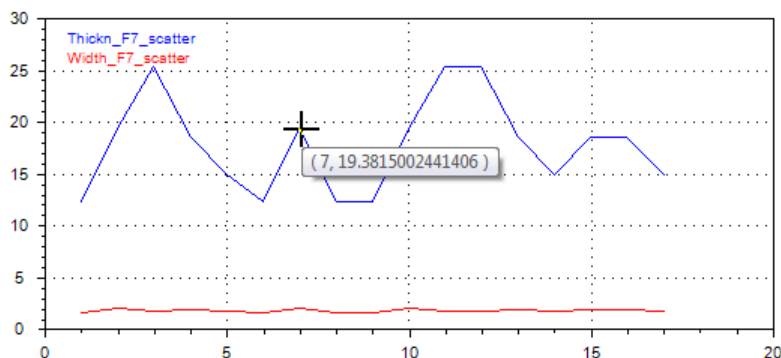
The functions *Copy*, *Save as*, *Page setup* and *Print* primarily serve the documentation.

For operating, in particular the following functions are interesting:

☐ Show Values

If this function is enabled, the time stamp and the value of the measurands are indicated at the mouse pointer as soon as the mouse pointer is positioned on a measuring point in the graph.

For standard trend, the values are indicated in the format (**X value, Y value**); for trend over time, the format is (**dd.mm.yyyy hh:mm, Y value**).

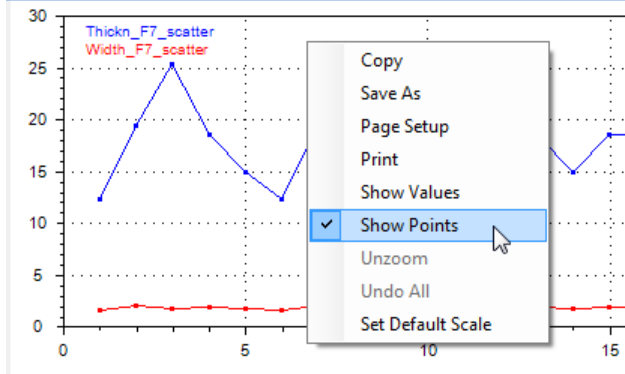


In the Histogram view, the range is indicated in the tooltip on a bar by the lowest and highest X value (the range is represented by this bar), including the number of contained results.

Values are indicated in the format (**min: value max: value**) = **number**.

☐ Show Points

If this function is enabled, the measuring points in the graph are highlighted.



This function is not available for histogram and XY diagram.

12.9.2 Standard trend

In the *Trend* view, one value for every row of the result table is entered. The scaling of the X axis depends on the number of the result rows. The automatic scaling of the Y axis depends on the highest and lowest value of the signals shown.

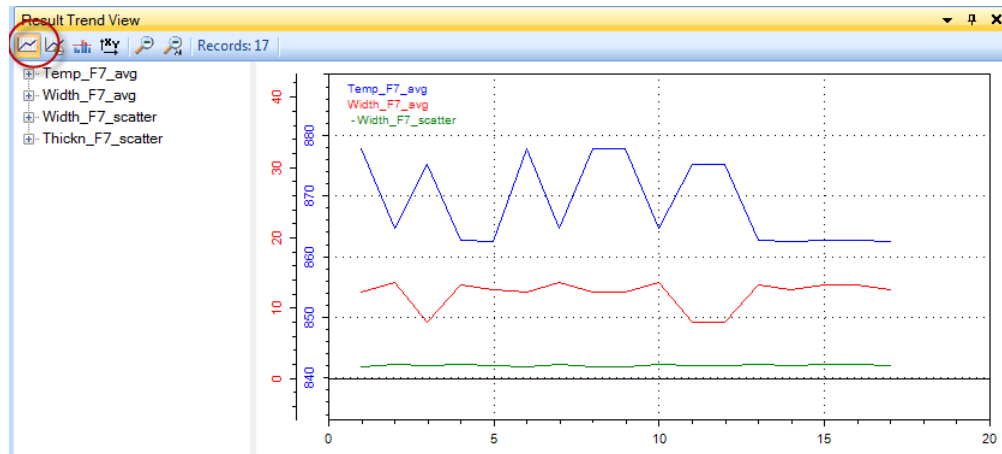


Figure 59: Standard trend of the results

The operation of the trend pane is similar to the operation in ibaAnalyzer.

In order to depict a trend curve draw the selected signal from the tree into the diagram and let it drop.

Each signal gets its own Y-scale. If you drop a signal on the legend of a present one, the signals will share a Y-scale. The color of the Y-scale refers to the signal which provides for the scale values.

You can change the Y-scale by using the mouse wheel while the mouse cursor is over the scale. Hold down the mouse key to shift the scale's zero position.

The order in which the values are entered from left to right in the diagram is based on the order in the result table.

The following figures show the result for different orders:

Figure above: ascending, sorted by time

Figure below: ascending, sorted by column "thickness_F7_spread"

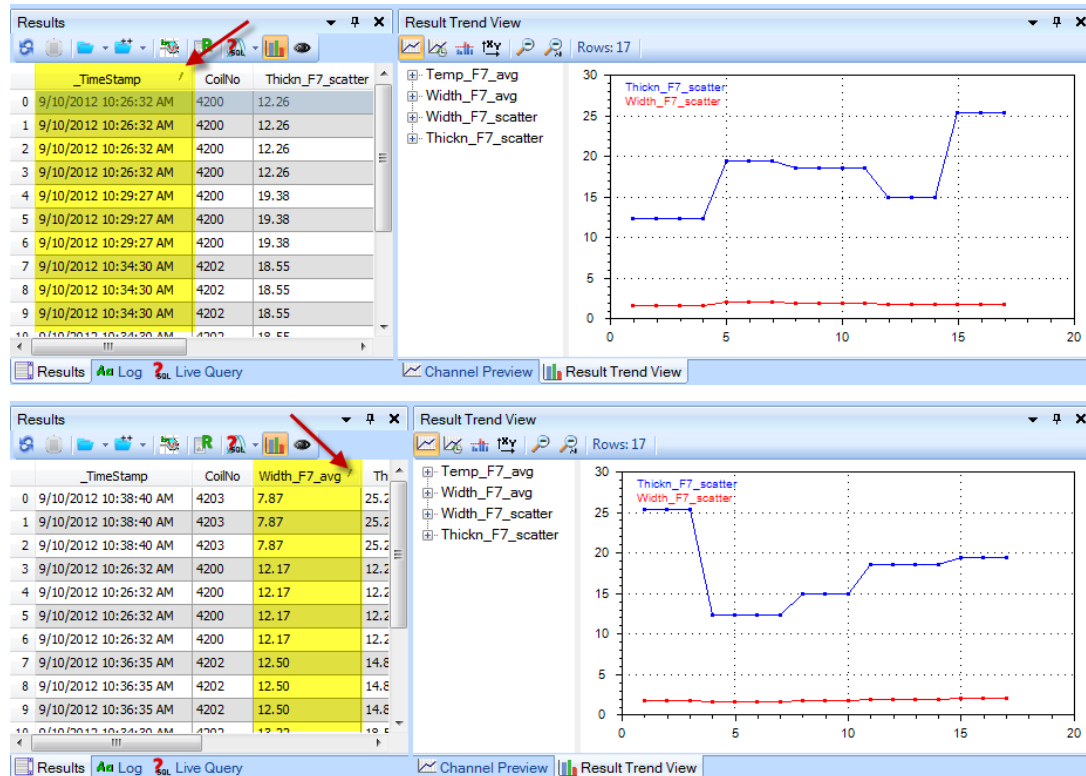


Figure 60: Impact of different orders on the result trend view

12.9.3 Time based trend

In the *Time Based Trend* view, the result values are plotted on the time axis. The values are sorted according to the *_TimeStamp* or *I_TimeStamp* table columns.

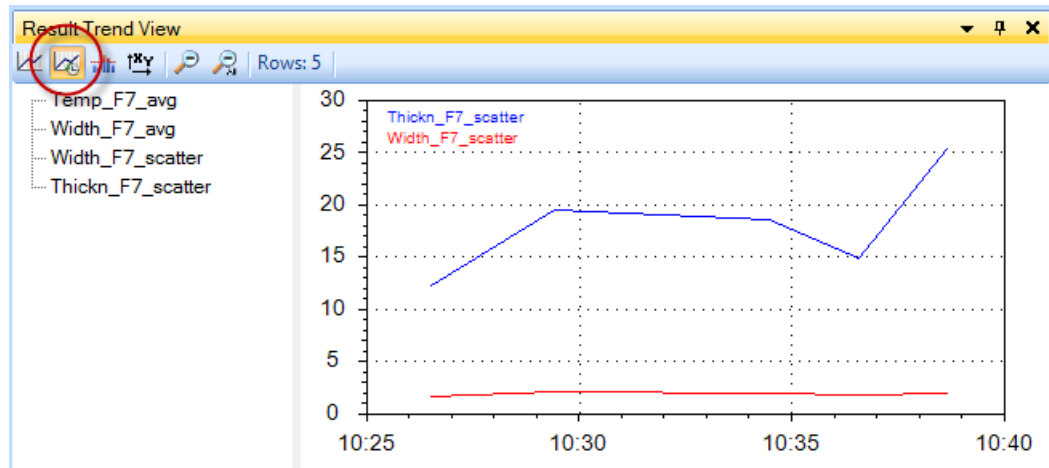


Figure 61: Trend Over Time of the results

Information on day, month or year is only added to the x-axis, if the result report contains more than one day/month/year.

12.9.4 Histogram

In the *Histogram* view, the value distribution based on the number of result rows for each signal is presented as a number of bars. The bar color complies with the signal color. The scaling of the x-axis depends on the highest and lowest value of the signals shown. The y-axis is scaled in percent.

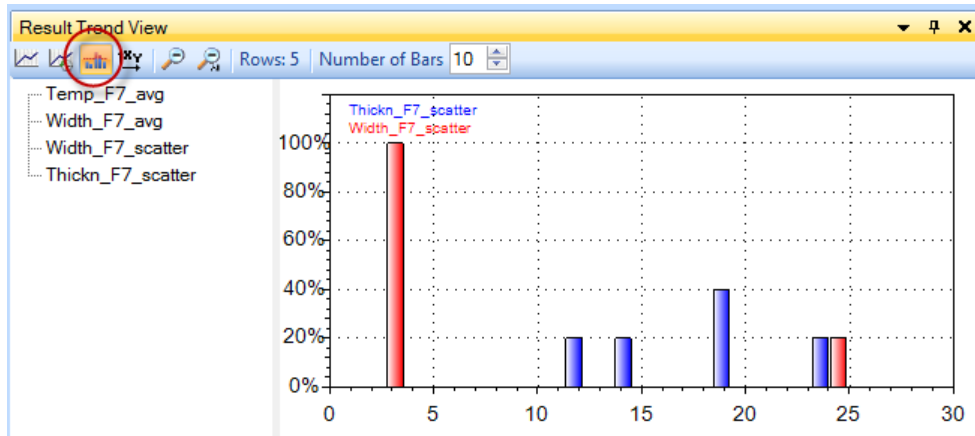


Figure 62: Histogram of the result values

You may show or hide the number of the related results for each bar by clicking on the signal name in the trend field.

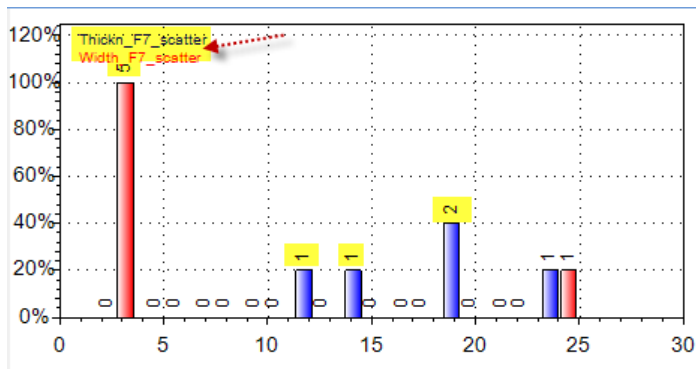


Figure 63: Histogram showing the number of results for each bar

The number of bars can be set, e.g. for refining the histogram.

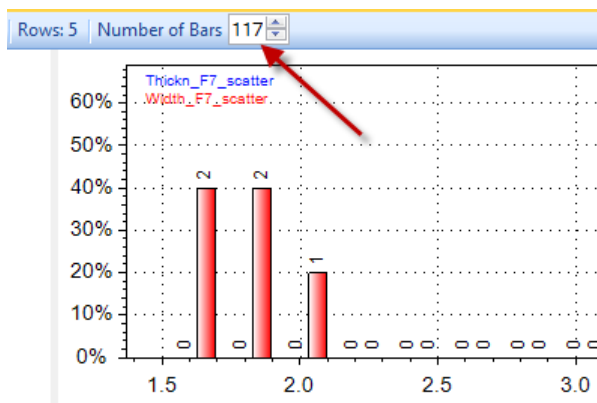


Figure 64: Histogram with customized number of bars

If you double-click on a bar the corresponding data files (rows) will be highlighted in the result table.

12.9.5 x/y plot

In the *x/y plot* view, you may use one of the signals as x-axis for identifying correlations between the signals. The scaling of the x-axis depends on the signal selected as basic signal. The scaling of the y-axis depends on the highest and lowest value of the signals shown. The value pairs are displayed as point cloud.

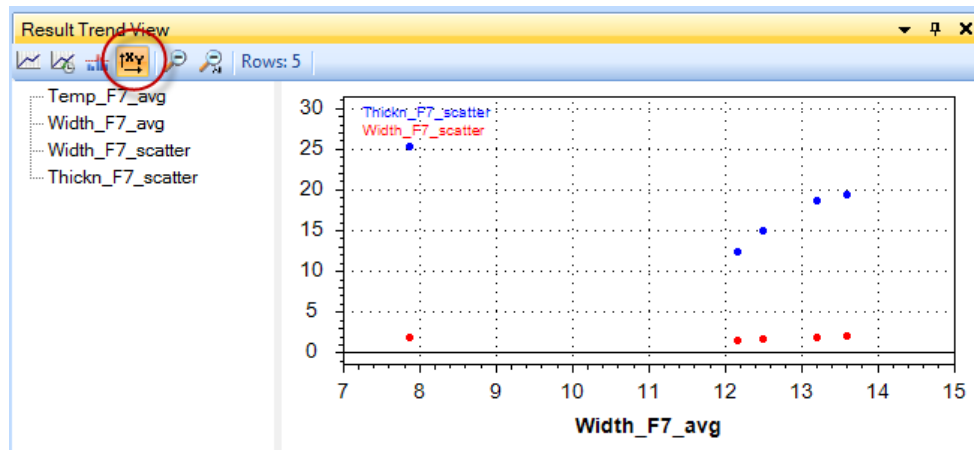


Figure 65: x/y plot of the result values

In order to change the base of the x-axis, simply drag the desired signal from the signal tree onto the x-axis.

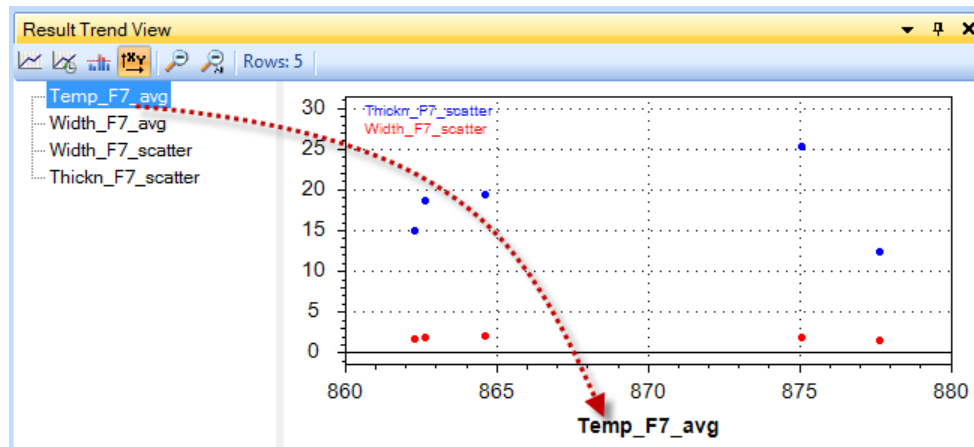


Figure 66: x/y plot: definition of the basis used for the x-axis

Each dot in this diagram refers to one data file. If you double-click on a dot the corresponding row will be highlighted in the result table.

12.9.6 Zooming

In all display types of the Result Trend View, zooming is possible. The following ways are possible for zooming:

- ☐ Use the mouse to draw a rectangle in the diagram area in order to zoom in the view. Zoom out by pressing the magnifier buttons in the toolbar.
- ☐ When using a mouse with scroll wheel, you may zoom in or out by positioning the cursor over the x-axis or y-axis and scrolling the mouse wheel.
- ☐ Beside the buttons, there are also two commands in the context menu of the view available for zooming out.

12.10 Display options referring to synchronization with DBSync

➤ For information about synchronization, see chapter *Synchronization*, page 32

Starting with version 1.4 of *ibaDatManager* there is a new button in the toolbar of the result table. You can choose between different options from a drop-down menu:

- Show all
All entries, either with or without valid file reference will be displayed.
- Show valid references only
Entries with invalid file references will be hidden.
- Mark invalid file references
Entries with invalid file reference will be highlighted.

The content of the column **FILE_REFERENCE_VALID** is analyzed and depending on the selected option in the tool bar menu, it is indicated in the result table.

	_TimeStamp	CoilNo	Temp_F7	Thickn_F7_scatter
5	9/10/2012 10:26:32 AM	4200	877.65	12.26
6	9/10/2012 10:29:27 AM	4200	864.63	19.38
7	9/10/2012 10:26:32 AM	4200	877.65	12.26
8	9/10/2012 10:26:32 AM	4200	877.65	12.26
9	9/10/2012 10:29:27 AM	4200	864.63	19.38
10	9/10/2012 10:38:40 ...	4203	875.08	25.23
11	9/10/2012 10:38:40 ...	4203	875.08	25.23
12	9/10/2012 10:34:30 AM	4202	862.64	18.55
13	9/10/2012 10:36:35 AM	4202	862.34	14.86
14	9/10/2012 10:34:30 AM	4202	862.64	18.55
15	9/10/2012 10:34:30 AM	4202	862.64	18.55
16	9/10/2012 10:36:35 AM	4202	862.34	14.86

Figure 67: Example of 2 entries with invalid file references

13 Saving and loading of user views

All actions that the user performs while in "Designer" role will be saved in an XML configuration file. The last configuration file used will be automatically loaded when starting *ibaDatManager*. The path of the current Windows user is used by default as file location for the configuration file(s): e. g.

C:\Documents and settings\User\ApplicationData\iba\ibaDatManager\.

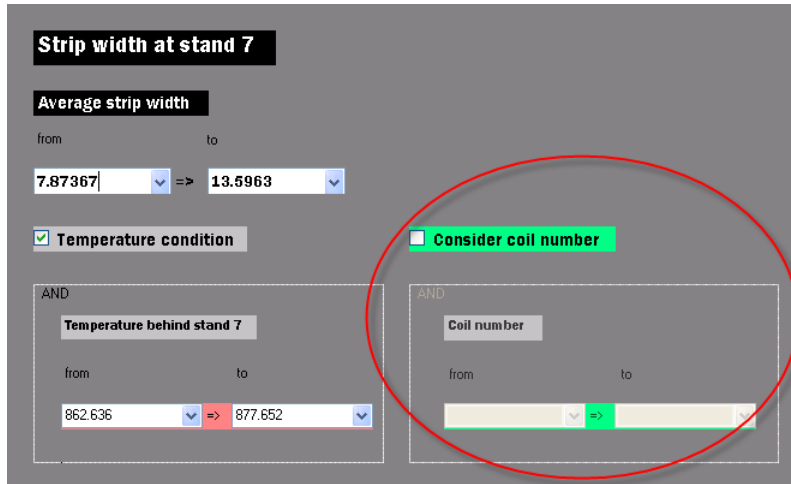
With the "Save" command in the "File" menu, the current configuration is always written into this path. Use "Save as..." if you want to store the configuration file at another location.

You can save a modified configuration in the "File" menu under the same or a different name. When starting the application the next time, the saved view will be loaded again. Thus, you have also the opportunity to continue the work on an already created configuration.

14 Examples

In this chapter you will find some configuration examples with explanation of the intended use and/or function.

14.1 Conditional evaluation of a group



Task

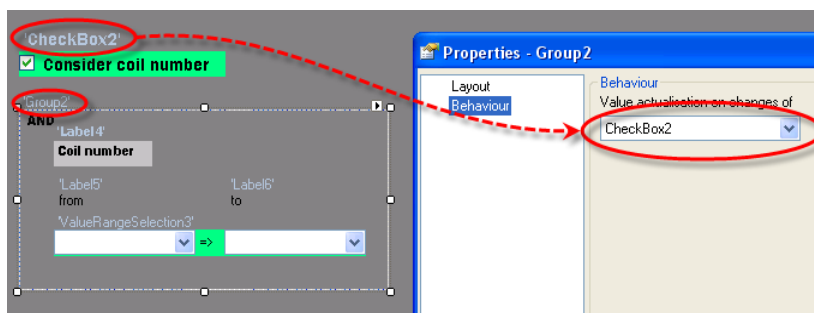
A value range selection is to be active only when enabled.

Control elements

- ☐ Check box
- ☐ Group
- ☐ Value range selection

Projecting

1. Placing and labeling of the check box in the view.
2. Placing the group element in the view.
3. Placing the value range selection (coil no.) within the group.
4. Selecting the relevant check box under Behavior properties of the group element.



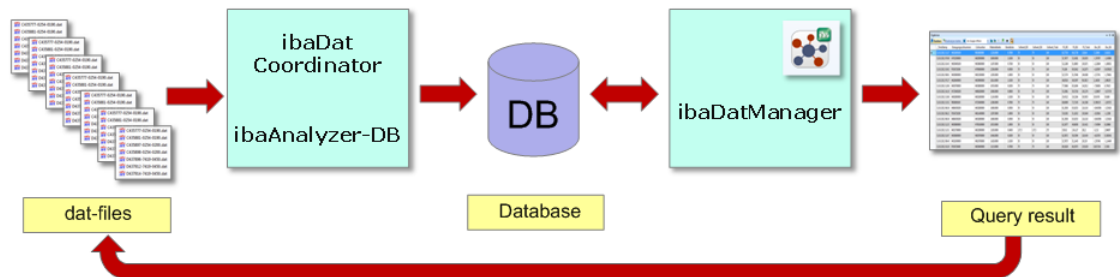
Result

In user mode, the value range selection for the coil number can be operated only if the check box "Consider coil number" has been activated.

15 Information on the structure and filling of a database

15.1 Introduction

ibaDatManager is used to quickly search iba data files (dat files). This search is database-based, i. e. all data files to be searched, of one or more ibaPDA systems, have to be extracted into a database before the search.



For extracting the data into a database, you need a license for ibaAnalyzer-DB.



Other documentation

The structure of the database and the methods for extraction are described in detail in the ibaAnalyzer-DB manual. The following briefly explains the most important steps.

15.2 Database

15.2.1 Type

The following databases are supported by ibaAnalyzer:

- SQL server
- Oracle
- DB2-UDB
- MySQL
- MS Access
- other ODBC compatible databases

15.2.2 Table structure

The tables used in the database must have a certain format so that ibaAnalyzer and ibaDatManager can read them. When building a database, ibaAnalyzer can automatically create the tables. ibaAnalyzer-DB offers two different database structures out of which one is already selected when installing the program. Which structure you want to use depends on your demands. From ibaDatManager's point of view, it does not matter which database structure you choose, as ibaDatManager solely uses the "File" table that exists in both structures.

15.2.2.1 Standard database scheme

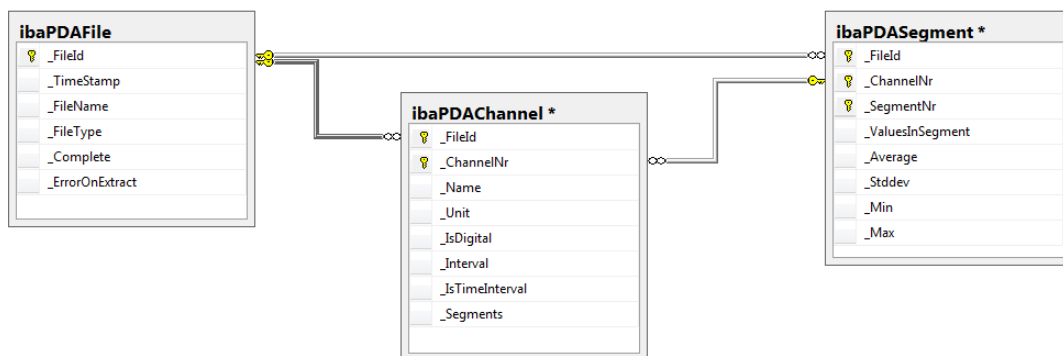


Figure 68: Standard database scheme with 3 tables

Table	Contents	Remarks
"File"	<ul style="list-style-type: none"> - File ID (key reference), - time stamp of the DB entry, - complete path and file name of the data file, from which was extracted, - info columns and computed columns 	depending on the extraction
"Channel"	File ID (key reference) names and numbers of the measuring channels signal types (analog/digital), signal units	
"Segment"	File ID (key reference) Measured values and statistical values	All values of all channels in one table!

Table 7: DB tables following the standard database scheme

15.2.2.2 MC ("Multi Column") database scheme

In contrast to the strictly vertical structure of the standard scheme, the MC scheme has a horizontal component. The statistical values are written in separate tables and, additionally, divided into time-based and length-based values.

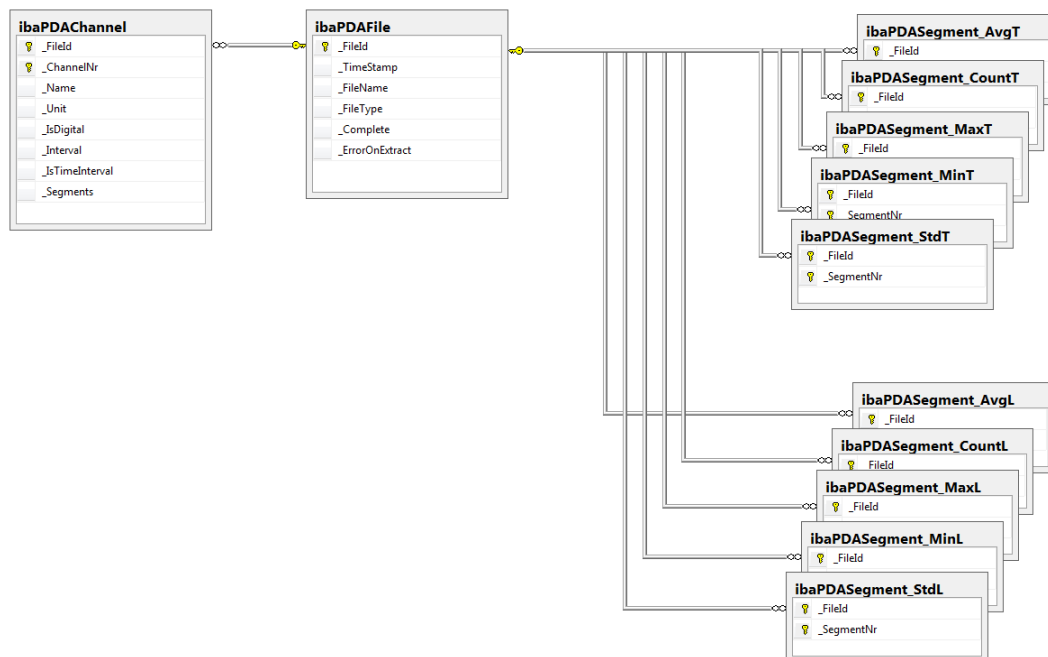


Figure 69: Multi Column (MC) database scheme

Table	Contents	Remarks
"File"	<ul style="list-style-type: none"> - File ID (key reference), - time stamp of the DB entry, - complete path and file name of the data file, from which was extracted, - info columns and computed columns 	depending on the extraction
"Channel"	File ID (key reference) names and numbers of the measuring channels signal types (analog/digital), signal units	
"Segment AvgT"	File ID (key reference), mean values time-based	
"Segment MinT"	File ID, minimum values time-based	
"Segment MaxT"	File ID, maximum values time-based	
"Segment StdT"	File ID, standard deviation time-based	
"Segment CountT"	File ID, number of samples in the segment, time-based	
"Segment AvgL"	File ID, mean values length-based	
"Segment MinL"	File ID, minimum values length-based	
"Segment MaxL"	File ID, maximum values length-based	
"Segment StdL"	File ID, standard deviation length-based	
"Segment CountL"	File ID, number of samples in the segment, length-based	

Table 8: DB tables following the MC database scheme

15.2.3 "File" table type for ibaDatManager

Particularly relevant for the use with ibaDatManager is the "File" table type which is used as index table in ibaDatManager.

This table contains the key reference, the reference to the data file and all values, which were extracted as info column or computed columns.

FileId	TimeStamp	FileName	FileType	Complete	ErrorOnExtract	CoilNo	Temp_F7_avg	Width_F7_avg	Width_F7_scatter	Thickn_F7_scatter
-1305476334	2012-09-10 10:2...	D:\dat\en\724200_en.dat	real	1	0	4200	877.652	12.1675	1.5201	12.2009
-1305063496	2012-09-10 10:2...	D:\dat\en\724201_en.dat	real	1	0	4201	864.629	12.5963	1.9502	19.3815
-1304447202	2012-09-10 10:2...	D:\dat\en\724201_en.dat	real	1	0	4201	875.082	7.8767	1.9502	25.2313
-1303808132	2012-09-10 10:2...	D:\dat\en\724201_en.dat	real	1	0	4201	862.636	13.2175	1.9502	18.5454
-1303603304	2012-09-10 10:2...	D:\dat\en\724201_en.dat	real	1	0	4201	862.336	12.5012	1.9502	14.8613

Figure 70: Example of a "File" table

- 1 Timestamp
- 2 Path and filename of the data file
- 3 Info column
- 4 Computed columns

15.3 Preparing the data extraction

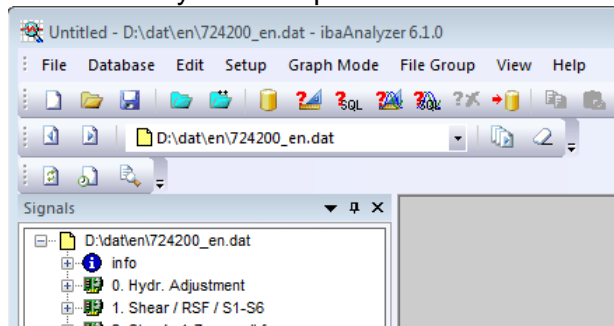


Note

For using the database functionality, you need an ibaAnalyzer-DB license on the dongle.

15.3.1 Loading data file

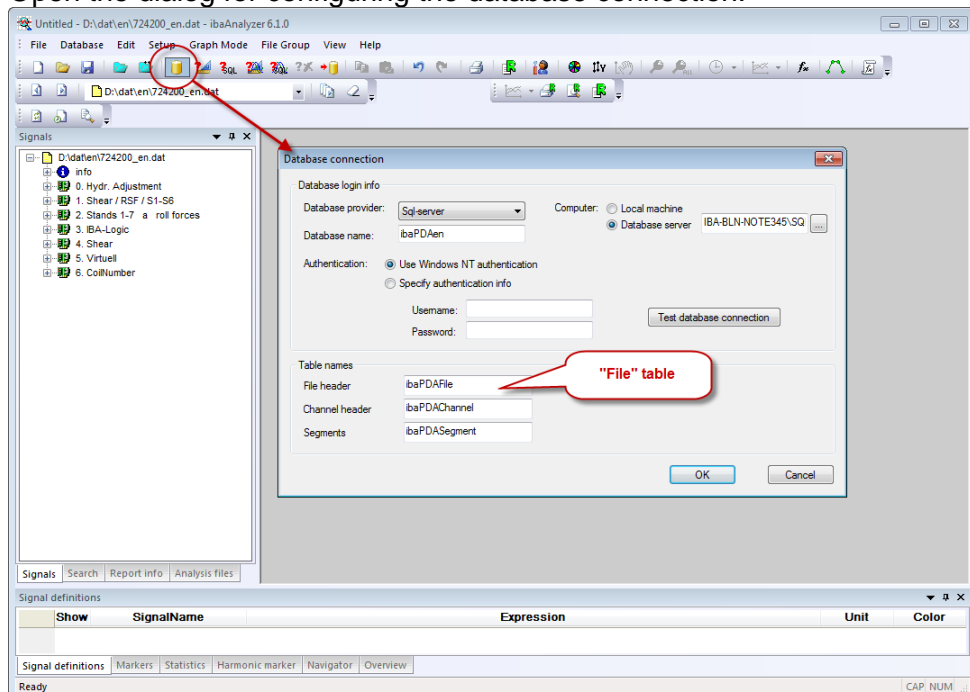
1. Start ibaAnalyzer and open a data file containing the desired data.



15.3.2 Establishing a database connection

Prerequisite: The database must already exist.

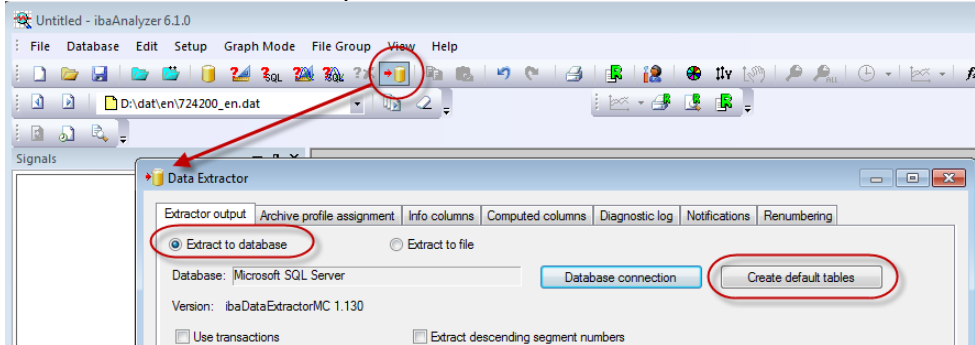
1. Open the dialog for configuring the database connection.



2. Configure the settings for the database system (type), the database name and database server.
3. Add the data for the user login, if necessary (ask database administrator).
4. Click <Test database connection> to test the availability of the database.
5. Then enter the names of the tables to be able to clearly identify the tables later on.
6. Close the dialog with <OK>.

15.3.3 Generating default tables

1. Open the dialog for extracting the data.
2. Click on the "Extractor output" tab and select the "Extract to database" radio button.



3. Then click on <Create default tables>. The tables are created in the database. First, they only contain the standard columns.
4. For the subsequent extractions, you can still select what information is to be used for the names of the columns:
channel numbers, channel names or the comments. Channel numbers are the default name.

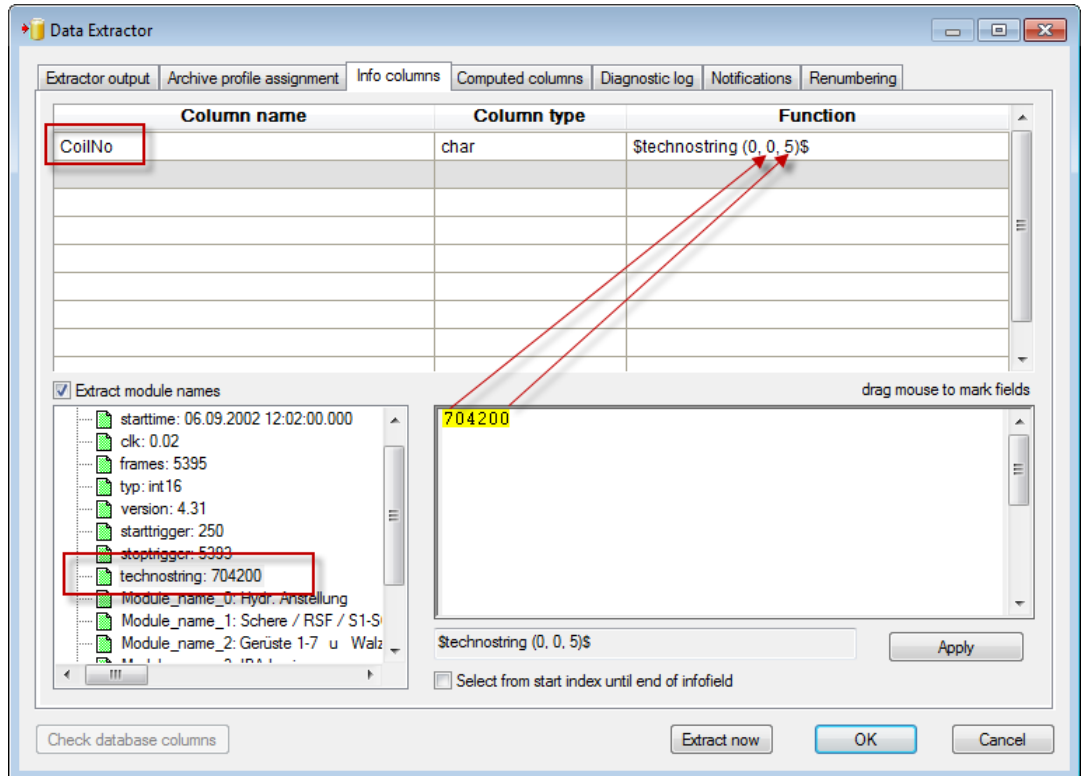
15.3.4 Archiving profiles

This setting solely concerns the measured values and is thus only relevant to a database-based evaluation of measuring data. This is not important for the functionality of ibaDatManager, as ibaDatManager only uses the first table ("File" type) as index table and not the tables containing measured values.

15.3.5 Setting up data assignments

The info columns are part of the data which ibaDatManager can use. Per data extraction, only one value per info column is extracted. Any number of info columns can be configured.

1. Click on the "Info columns" tab.



With the info column, you can readout information from the info branch of the data file as independent value or text and extract it into the database. The info branch contains data such as start time of the data file, time base or module names as well as technostrings.

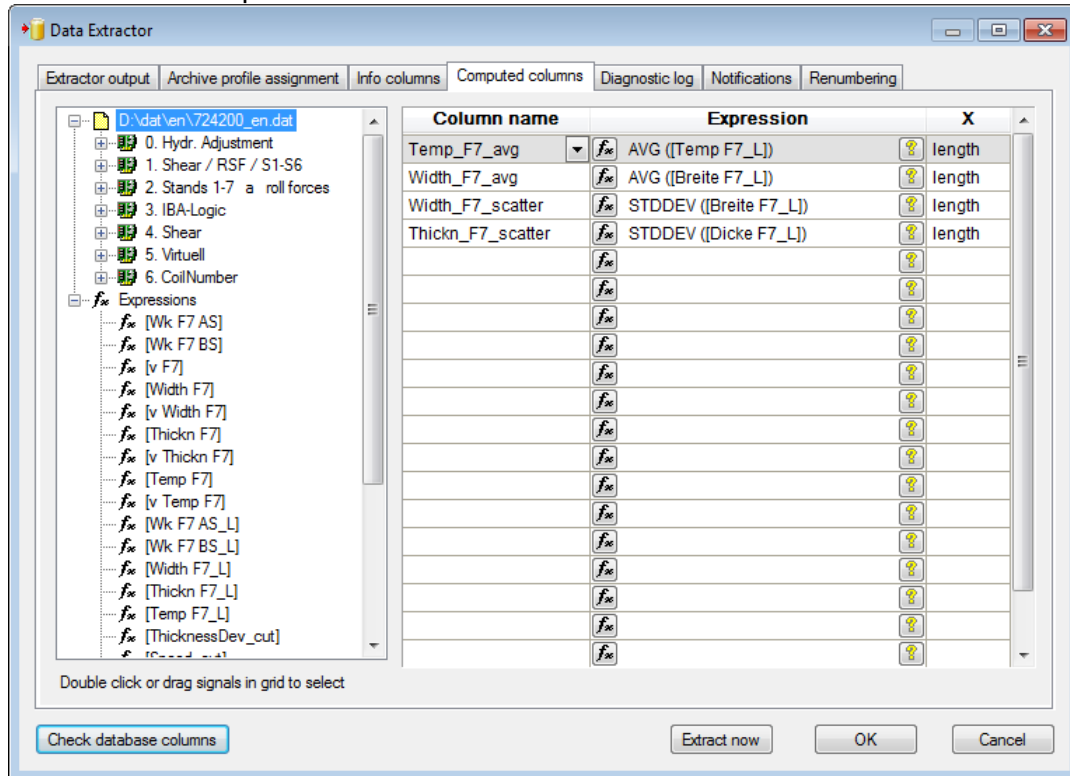
In the above figure, the coil number was transmitted to the ibaPDA system via technostring and saved in the data file.

2. To define an info column, select an info field in the signal tree, e. g. "technostring".
3. Select the desired characters in the text window (here: 704200).
4. Click on <Apply>. The corresponding function is entered in the table (here: technostr(0,0,5)\$).
5. Set the right data type (here: char) and designate the column (here: CoilNo).
6. If all required info columns are configured, click <Check database columns>. A separate column is now created in the DB table for every info column.

15.3.6 Configuring computed columns

The computed columns are part of the data which ibaDatManager can use. Per data extraction, only one value per computed column is extracted. Any number of computed columns can be configured.

1. Click on the "Computed columns" tab



By means of the computed columns, you can determine a value for any number of measured signals, virtual signals or computed expressions (as in this example) which is written in the database with every extraction.

In this example, mean values and standard deviations of temperature value, width value and thickness value were calculated.

2. To enter the computation formula, you can use the expression builder in the expression column.
3. Enter the names of the columns. These names will later designate the table columns in the database and the search parameter in ibaDatManager.
4. Select the correct X axis reference (time, length, frequency, 1/length) according to the expression.
5. If all required computed columns are configured, click <Check database columns>. A separate column is created in the DB table for every computed column.

15.3.7 Saving the analysis

All settings for "Database connection" and "Data extraction" configured by you are part of the analysis and should definitely be saved ("File – Save analysis as..." menu).

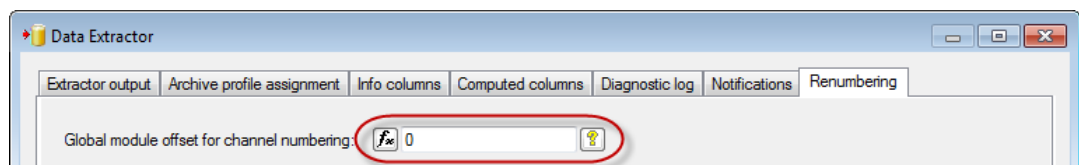
In our example, we name the file **Extraction_FinishingMill.pdo**.

When configuring the extraction job, enter the name of this analysis file (*.pdo) in the ibaDatCoordinator to be able to automate the data extraction.

15.3.8 Special features when extracting several ibaPDA systems

The particular benefit of the database lies in the central storage of the data of several ibaPDA systems. The data of the different ibaPDA systems, e. g. in case of a hot rolling mill of roughing mill, finishing mill and tension reel, can be saved in individual tables or in the same set of tables. Since every ibaPDA system has another I/O configuration (signal tree), you have to define an individual analysis for the extraction for every ibaPDA system. This is why the data files of the different ibaPDA systems have to be stored in different folders so that only the data file matching the analysis is extracted into the database during an extraction process.

With regard to ibaDatManager, the advantage of storing the data of the different ibaPDA systems in the same set of tables is that within a view, the data files of different ibaPDA systems can be found. Since all extractions are stored in a "File" table (= index table of the view). If you want to implement this variant, you have to indicate the same database tables for all extraction rules when configuring the database connection. Additionally, you have to define a different module offset for every extraction rule in the "Renumbering" tab in the "Data extractor" dialog so that the values are stored correctly separated when extracting even in case of identical channel numbers.



For the hot rolling mill example, the module offset could be set as follows:

- Extraction roughing mill: Module offset = 0
- Extraction finishing mill: Module offset = 1000
- Extraction tension reel: Module offset = 2000

Recommendation

The storage of the data of the different ibaPDA systems in different sets of tables provides advantages regarding administration and database. However, also the selection of the search criteria and results within a view in ibaDatManager is limited to only one ibaPDA system, since only one index table per view can be selected. In the case of a hot roughing mill, there would be three index tables for roughing mill, finishing mill and tension reel.

If a cross-system search within a view of ibaDatManager is still to be realized, this can be done using database functions, e.g. a database view, combining the three "File" tables.

15.4 Extracting the data with ibaDatCoordinator

You can manually trigger the extraction of the data after configuring the settings explained above. For doing so, just click <Extract now> in the data extractor dialog. This is acceptable for test purposes in case of a single data file. In case of many data files or automatic operation, the manual extraction is impractical.

This is what ibaDatCoordinator is for.

With ibaDatCoordinator, you can automate the extraction processes as so-called jobs and integrate them in the manufacturing process.

You can also configure a one-time job enabling you to manually start one single extraction of several data files.

Basically, ibaDatCoordinator does the following activities for you:

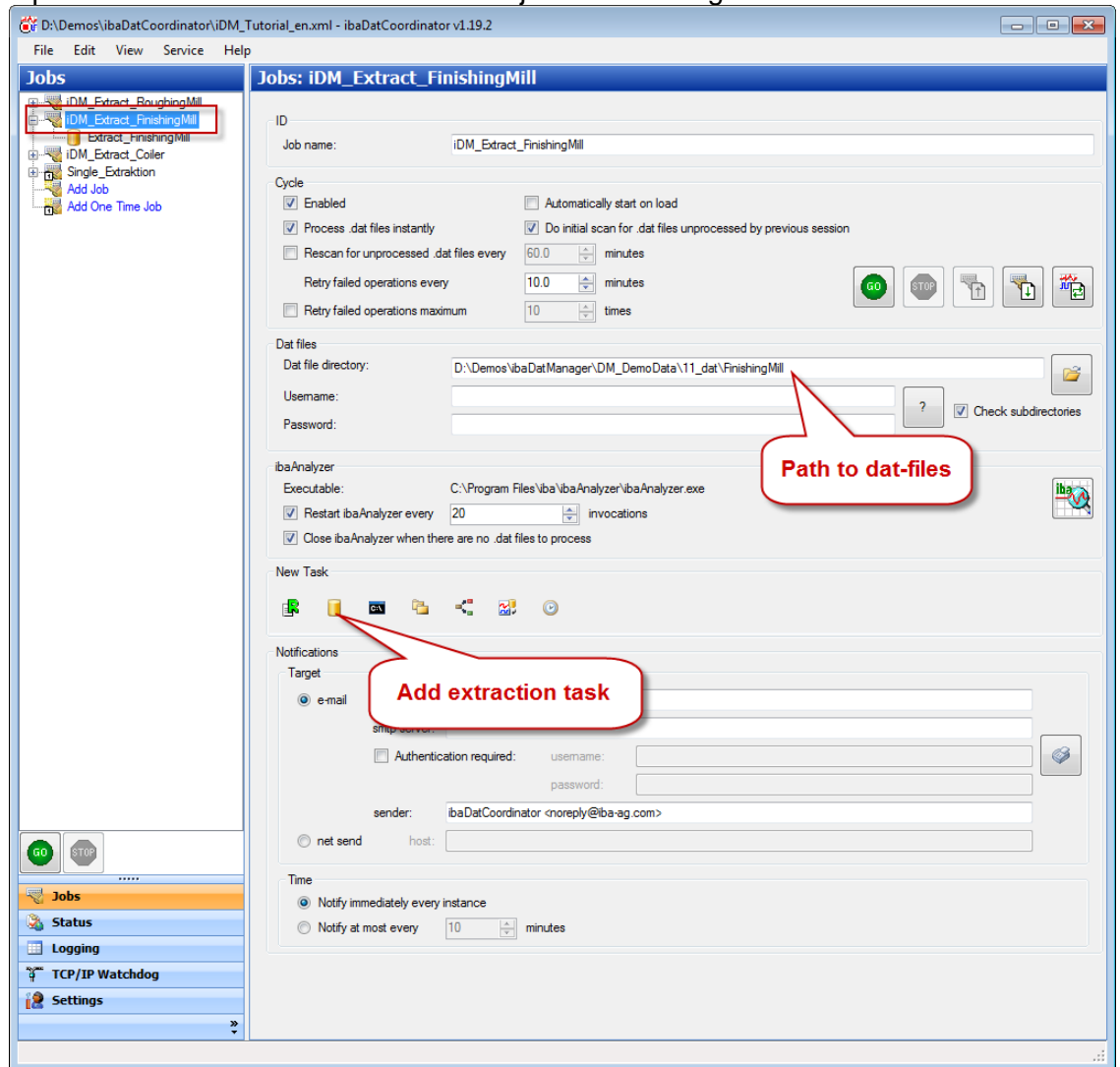
- Loading of the extraction rule/analysis file (*.pdo)
- Searching for unprocessed data files
- Opening the data file
- Starting the extraction
- Closing the data file
- Logging the processing

Furthermore, ibaDatCoordinator can perform other tasks as well, such as generating reports, copying data files, executing scripts, etc.

For how to install and start ibaDatCoordinator, please refer to the corresponding manual.

15.4.1 Defining the job

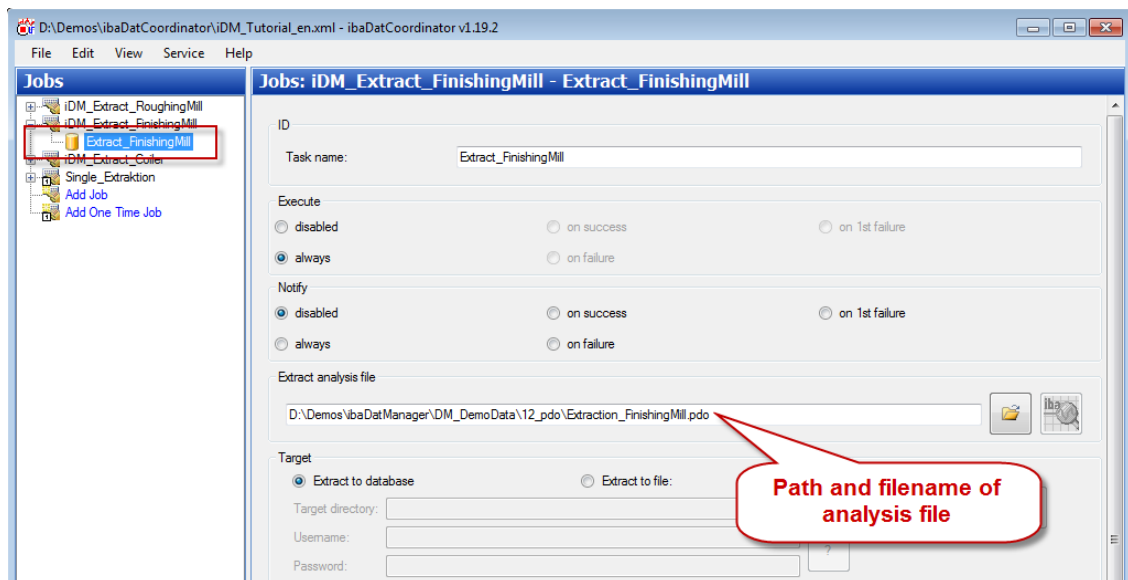
1. Open ibaDatCoordinator and click "Add job" in the navigation area.



2. Give the job a name so you can identify it more easily later on.
3. Select the suitable options in the "Cycle" area to automatically recognize unprocessed data files and process them (not available for a one-time job). The "Enabled" option has to be selected for the job to be executed.
4. In the "Dat files" area, enter the full path name for the folder containing the data files to be used for extraction. Please note that there must not be other data files than that matching the extraction rule (*.pdo). In case of a hierarchical folder structure, additionally enable the "Check subdirectories" option.
5. Add an extraction task by clicking on the corresponding icon in the "New task" area.

15.4.2 Defining an extraction task

By adding a new task, the dialog for configuring the task is automatically opened.



Give the task a name so you can identify it more easily later on.

Enter the full path and file name of the analysis in the "Extract analysis file" area containing the corresponding settings for the extraction. To check whether the correct analysis file is entered, click on the ibaAnalyzer tool button. ibaAnalyzer is then opened with the corresponding *pdo file.

Select the "Extract to database" radio button in the "Target" area. With this, further settings for the extraction are hidden, since all required settings are contained in the analysis.

15.4.3 Starting the extraction

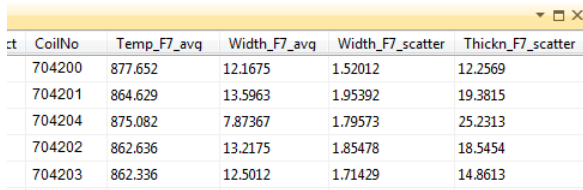
You can start the extraction job by clicking the <GO> button .

Click this button in the dialog for the job configuration and the corresponding job will be started. A cyclical job remains active and monitors the folder of the data files to automatically perform an extraction as soon as a new data file is placed in the folder. A one-time job continues until all existing data files are processed.

If you click the <GO> button in the navigation area of ibaDataCoordinator, all jobs will start.

15.4.4 Result

After performing the job, the database tables should contain an entry with the info columns and computed columns for every extracted data file.



ct	CoilNo	Temp_F7_avg	Width_F7_avg	Width_F7_scatter	Thickn_F7_scatter
	704200	877.652	12.1675	1.52012	12.2569
	704201	864.629	13.5963	1.95392	19.3815
	704204	875.082	7.87367	1.79573	25.2313
	704202	862.636	13.2175	1.85478	18.5454
	704203	862.336	12.5012	1.71429	14.8613

Figure 71: View of the database table (here from MS SQL Management Studio)

The same column names and values can be found in ibaDatManager for configuring the query conditions:

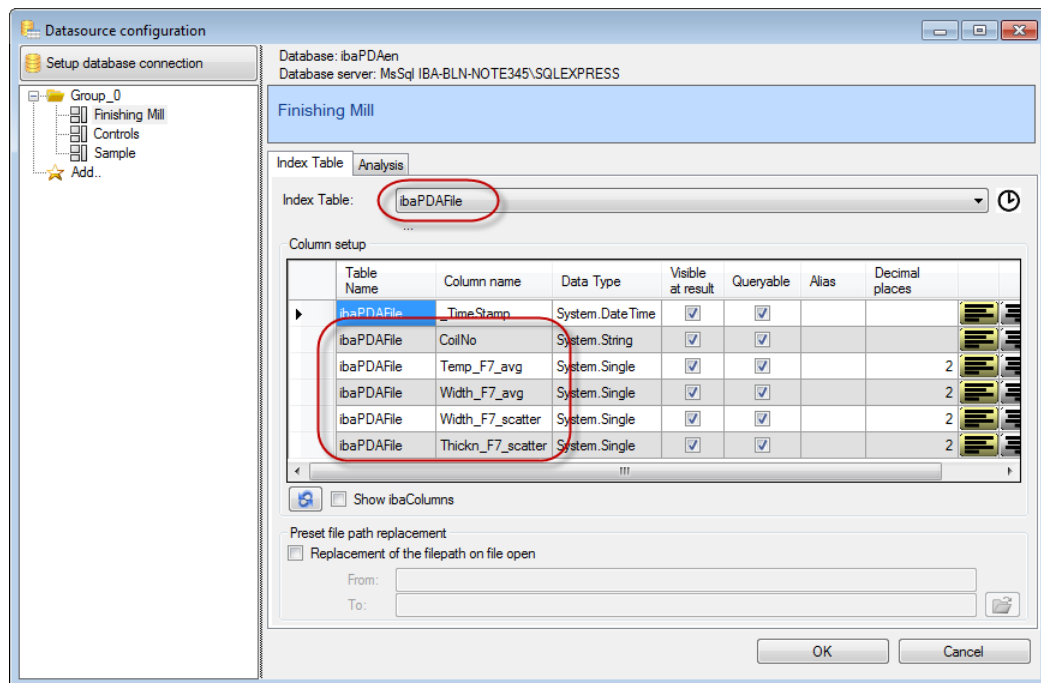


Figure 72: Info columns and computed columns when configuring the datasource

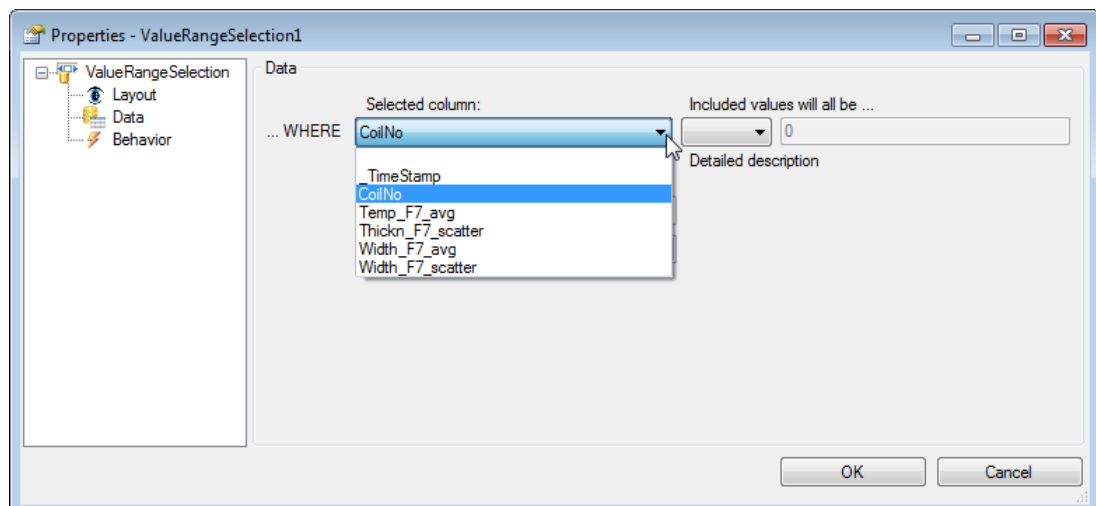


Figure 73: Info columns and computed columns when configuring the control elements

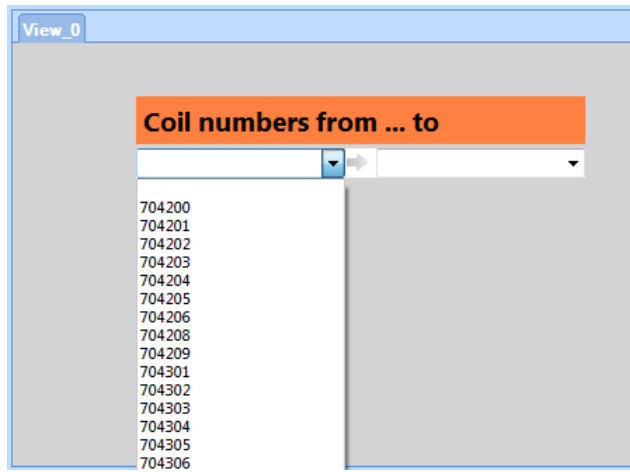


Figure 74: Values of info columns and computed columns as query criterion

16 Troubleshooting

In case of malfunction of the program, please contact the iba AG Support department.

To carry out a fault diagnosis as accurately as possible and to be able to provide optimum support, the program offers to pack certain information into a support file by using the help menu.

You can email these files to the support department.

System log

With the "Help - Save log file" menu, you can save a complete log from the last program start to the current point in time. All actions executed by the program are logged:

- Start/stop the *ibaDatManager*
- User logins
- SQL queries
- Configuration modifications of all kinds (datasource, views, control elements, etc.)
- Other operations

You can freely define the file location and file name in a dialog. The log file is saved by default in the application data for *ibaDatManager* stored in the folder of the Windows user currently logged in.

The standard file name of the log file is: Log_*Date_Time*.txt.

A current log file is automatically part of the support file.

Support file

With the "Help - Create support file" menu, you can generate a snapshot of the current program configuration. *ibaDatManager* automatically compiles all relevant data in a zip file:

- Screenshot of the current view
- Current configuration
- Log file (see above)
- Last SQL query
- Result table
- Registry entries

You can freely define the file location and file name in a dialog.

The log file is saved by default in the application data for *ibaDatManager* stored in the folder of the Windows user currently logged in.

The standard file name of the support file is: DatManSupport.zip.

Configuration file

As mentioned before, the entire configuration of *ibaDatManager* is stored in an XML file. For an advanced user it may be interesting to be able to read or to edit this file.

Basically, such an XML configuration file comprises 3 main sections:

- ❑ Data host section
 - Database configuration section
 - Organizational units
 - Datasources
 - Columns and data type definitions
 - Data indexes
 - Synchronization definitions
- ❑ Layout section
 - Views
 - Control elements with Layout, Data and Behavior Properties
- ❑ User with encoded login information and role definitions (user type)

An XML configuration file can look, for example, as follows.

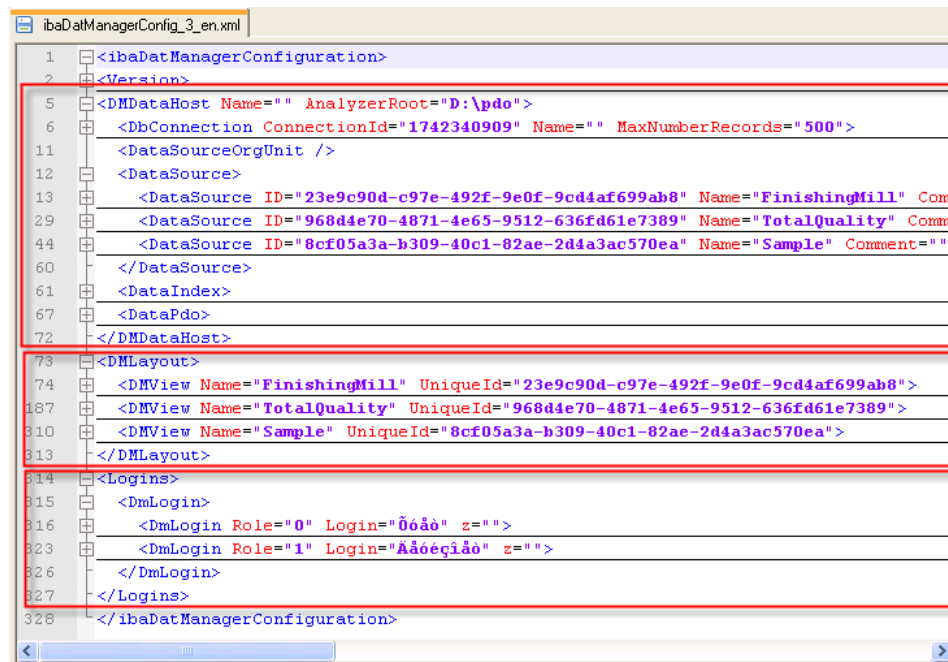


Figure 75: Example of an XML configuration file

17 Support and contact

Support

Phone: +49 911 97282-14
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Note

If you require support, indicate the serial number (iba-S/N) of the product.

Contact

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