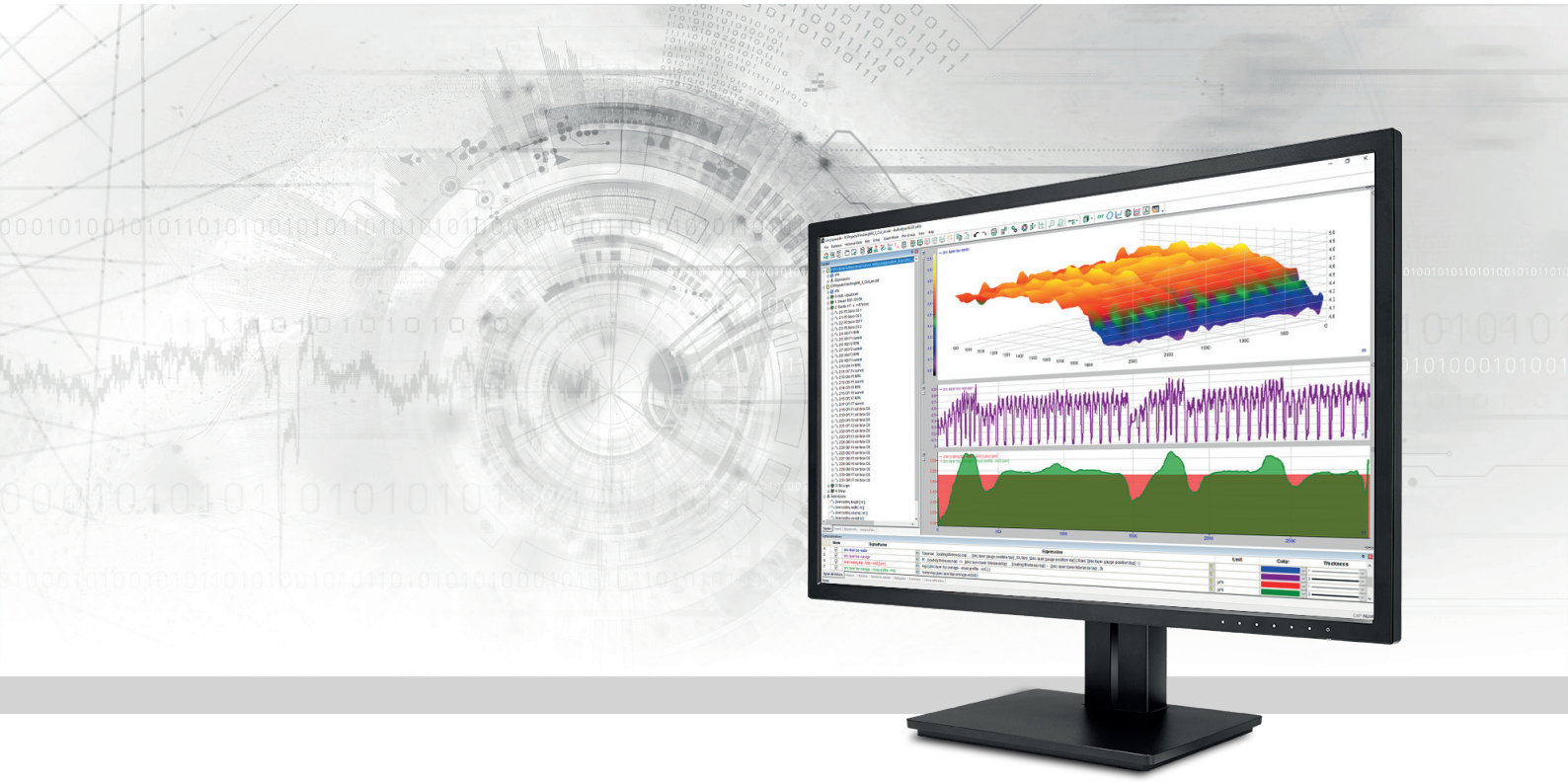


ibaAnalyzer

Introduction and Installation

Manual Part 1

Issue 8.3

Measurement Systems for Industry and Energy

www.iba-ag.com

Manufacturer

iba AG

Koenigswarterstrasse 44

90762 Fuerth

Germany

Contacts

Main office	+49 911 97282-0
Support	+49 911 97282-14
Engineering	+49 911 97282-13
E-mail	iba@iba-ag.com
Web	www.iba-ag.com

Version	Date	Revision	Author	Version SW
8.3	06-2025	Windows Server 2025 supported, new installer, installation via command line	rm, mm	8.3.0

Contents

1 About this documentation

This documentation describes the function and application of the software

ibaAnalyzer.

1.1 Target group

This documentation is aimed at qualified professionals who are familiar with handling electrical and electronic modules as well as communication and measurement technology. A person is regarded as professional if he/she is capable of assessing safety and recognizing possible consequences and risks on the basis of his/her specialist training, knowledge and experience and knowledge of the standard regulations.

This documentation addresses in particular professionals who are in charge of analyzing measured data and process data. Because the data is supplied by other iba products the following knowledge is required or at least helpful when working with *ibaAnalyzer*:

- Operating system Windows
- *ibaPDA* (creation and structure of the measuring data files)

1.2 Notations

In this manual, the following notations are used:

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

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:

- Observe the specified measures.

Warning!

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

- Observe the specified measures.

Caution!

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

- Observe the specified measures

Note

A note specifies special requirements or actions to be observed.

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.

1.4 Documentation structure

This documentation describes the functionality of the *ibaAnalyzer* software in detail. It is designed both as a tutorial as well as a reference document.

In addition to this documentation, you can examine the version history in the main menu, *Help – Version history* (file `versions.htm`), for the latest information about the installed version of the program. This file not only lists the bugs that have been eliminated but also refers to extensions of the system in note form.

In addition, special "NewFeatures…" documentation comes with any software update that includes significant new features, which provides a more detailed description of the new features.

The state of the software to which the respective part of this documentation refers is listed in the revision table on page 2.

The *ibaAnalyzer* documentation (PDF version) is divided into six separate parts. Each part has its own section and page numbering beginning at 1 and is updated independently.

Part	Title	Content
Part 1	Introduction and Installation	General notes, licenses and add-ons Installation and program start User interface
Part 2	Working with *ibaAnalyzer*	Working with data file and analysis, presentation features, macro configuration, filter design, preferences, printing, export, interfaces to *ibaHD-Server*, *ibaCapture* and report generator
Part 3	Expression editor	Directory of all calculation functions in the expression builder, including explanation
Part 4	Database interface	Working with data from databases, connecting to the database, writing iba measurement data to databases, extracting the data from the database and analyzing the data.
Part 5	Interface for file extraction	Functions and settings for extracting data from iba data files to external file formats
Part 6	Application examples	*In preparation*

2 About ibaAnalyzer

ibaAnalyzer is a powerful tool for analyzing complex data that were recorded using the *ibaPDA*, *ibaQDR*, *ibaLogic* or *ibaFiles* recording programs as well as with products from other manufacturers (such as VISTA).

ibaAnalyzer supports fast analysis of large volumes of data and offers a variety of functions and algorithms to correlate measurement data from a process and interpret it meaningfully.

In addition to the traditional task of being able to present measured values from the process, mainly for fault analysis or machine evaluation, *ibaAnalyzer* fulfills a number of other features.

ibaAnalyzer is thus a powerful tool for quality data management and analyzing product-related data. With the upgraded functions of the database interface and of the report generator, *ibaAnalyzer* constitutes the fully integrated link between process-based and time-based measuring data ("Level 1") on the one hand and product-related quality data ("Level 2/3") on the other. Because of its underlying structure, quality data management systems can be implemented, covering both individual plants or machines and plant-wide, factory-spanning networks.

When purchasing an online data acquisition system from iba, you will receive *ibaAnalyzer* for free, with no restrictions in terms of copying or number of installations. License fees apply only for specific upgraded or additional features, such as those enabling automated data extraction to files or databases or the processing of data from external sources.

2.1 ibaAnalyzer standard functions (no license required)

ibaAnalyzer is a software with an easy-to-use, intuitive interface, featuring dockable windows and drag-&-drop functionality. The following features and properties are available by default for comprehensive analysis of acquired measurement data.

2.1.1 General functions

- Any number of graphs (trend views), each enabling the selection of the following modes:
  - Time based mode (X axis = time axis)
  - Length based mode (X axis = length axis)
  - X-Y mode with two or more signals, where each signal can be defined as X-axis
  - FFT mode
- Simple placement of any number of signals in the graphs using the drag & drop functionality (compliant with IEC 1131)
- Combination of data originating from different measuring processes or data sources, analog or digital signals as well as text signals
- Automatic or manual selection of colors for the curves
- Individual scales for every signal within a graph, or scaling of a signal in relation to any other signal on the same Y-axis within a graph
- Permanent display of the X-/Y-values for two markers as well as for the most important statistical values (min, max, average, standard deviation) for all the signals displayed

- Zooming and moving of the section in a Navigator window
- 3D view and 2D top view (profile view) of vector signals (arrays)
- Powerful logical, mathematical and technological functions for linking, combining, calculating and creating signals
- Generation of virtual signals, even multi-dimensional ones (array)
- A powerful digital, graphic filter designer with integrated signal generator for filter testing
- Flexible export function for generating new iba data files (for example, with combined or mathematically modified signals) and for generating text or COMTRADE files (.txt, .csv) for further processing by other programs (for example, document generation, spreadsheet processing, etc.)
- Powerful report generator for the free design and layout of analysis, quality, production and fault reports with different output formats
- Information window: large-sized and alphanumeric display of important, calculated parameters or textual information
- Macro function for simplifying and reusing comprehensive analysis functions and calculations.
- Versatile marker functions for highlighting special measurements, including measurement and display of on / off times of digital signals or distances between markers
- Efficient management of the analyses for flexible use
- Multilingual program interface, switchable
- *ibaHD-Server* query
- Database interface
- Search and reference function

2.1.2 Expression builder

ibaAnalyzer has the so-called expression editor for the analysis of the recorded acquired values and execution of various calculations. This is a formula editor that offers a number of logical, mathematical and technological features that can be used in *ibaAnalyzer* at various points.

Other documentation

You can find a detailed documentation about the expression editor in part 3 of the manual and supplementary application examples in part 6.

2.1.3 Map view

The map view can display geographical positions and movements based on GPS data. You can use recorded geographical longitude and latitude data to evaluate the positions or routes of goods or equipment and correlate them with high-resolution measurement data from industrial processes.

With *ibaAnalyzer* v8.2 or higher, this function no longer requires a license (formerly *ibaAnalyzer Maps*).

For more information, see *ibaAnalyzer* manual part 2, chapter *Map view*.

2.1.4 Report generator

The *Report generator* is an independent tool that is integrated into *ibaAnalyzer*. You can use the report generator license-free to configure, generate and publish customized reports.

Other documentation

You can find a detailed description of the functions and application in the *ibaAnalyzer-Reportgenerator* manual.

2.1.5 ibaCapture

With *ibaAnalyzer*, you can also view measured value recordings and video recordings that *ibaCapture* has recorded synchronously with the measured values.

Other documentation

You can find a detailed description of the functions and application in the *ibaCapture* manual.

2.1.6 ibaHD-Server

In addition to the analysis of iba data files, *ibaAnalyzer* also offers the possibility to analyze data from records that were recorded with *ibaHD-Server*.

Using HD queries, you can call up the data from the HD store and then evaluate it as with normal data files.

Other documentation

You can find a detailed description of the functions and application in the *ibaHD-Server* manual.

2.2 ibaAnalyzer functions requiring a license

The functional extensions for *ibaAnalyzer* listed below require licenses. It is possible to subsequently enable the licensed features at any time.

You can obtain licenses for the functions via the usual channels.

- for *ibaAnalyzer* v8.0.0 or higher: WIBU licenses (CmStick on dongle, CMActLicense as soft license) via the CodeMeter Runtime program
- USB dongle from MARX on the computer
- Central *ibaLicenseService-V2* in the network

2.2.1 Database interface in ibaAnalyzer

The *ibaAnalyzer* database interface is a default function that can be used interactively without an additional license. This interface provides ETL functions (Extract Transform Load) for commonly used database providers and thus enables trend and detail analyses based on databases. The *ibaAnalyzer* report generator can also process data from the database interface.

An additional license is only required if you want to automate the data exchange with the database. As the *ibaDatCoordinator* program is usually used in practice for the automated processing of measurement data, an *ibaDatCoordinator-DB* license is needed.

To read or query databases, the *ibaAnalyzer-DB-Read* license is needed.

ibaAnalyzer supports SQL Server, Oracle, MySQL/Maria DB, PostgreSQL, IBM DB2, MS Access and SQLite.

Order number	Name	Comment
33.010003	ibaAnalyzer-DB-Read	Read or query data from databases (only one user)
33.010008	ibaAnalyzer-DB-Read-5	Read or query data from databases for 5 user at a time
34.010510	ibaDatCoordinator-DB	Automated data extraction to databases (per task)

Table 1: Licenses for the database interface

Other documentation

The detailed documentation on the database interface can be found in Part 4 of this manual.

2.2.2 Data extraction into files with ibaAnalyzer

The file extract function in *ibaAnalyzer* is a standard function that you can use interactively without an additional license. The function allows you to extract measurement data acquired in the iba data file format into standard formats, which in turn can be imported by other programs. The measurement values and data calculated in *ibaAnalyzer* can thus be made available to other systems or analysis tools (e.g. MS Excel). The following formats are supported:

- iba data file (.dat)
- Text files (.txt, .csv)
- COMTRADE (.cfg)
- TDMS
- Apache Parquet
- Matlab (.mat)

An additional license is only required if you want to automate the data extraction. As the *ibaDatCoordinator* program is usually used in practice for the automated processing of measurement data, an *ibaDatCoordinator-File-Extract* license is needed.

Order number	Name	Comment
34.010511	ibaDatCoordinator-File-Extract	Automated data extraction to DAT files or other file formats such as CSV, COMTRADE, Parquet, Matlab, TDMS etc. (per task)
34.010521	ibaDatCoordinator-File-Extract-10	Bundle for automated file extract (10 tasks)

Table 2: Licenses for the data file extraction

Other documentation

The detailed documentation on the interface for file extraction can be found in Part 5 of this manual.

2.2.3 Reading foreign formats (ibaAnalyzer-E-Dat)

In order to enable the analysis of data recorded using a system other than an iba system, iba offers an additional license (*ibaAnalyzer-E-Dat*) under which the import of the following file formats is possible:

- ASCII (.txt, .csv)
- COMTRADE CFF (*.cff)
- NI TDMS (.tdm, .tdms)
- Vista Control (*.varc)
- FDA (*.das)
- Apache Parquet
- Matlab (.mat)
- Universal 58 binary files (*.bunv, *.uff) and universal 58 text files (*.unv)
- Vold Trace (*.tra), Vold Torsion (*.tor) and Vold Spline (*.spl)

This upgrade also enables the combination of data from the most varied sources in one analysis, such as the results of process model calculations with real process data.

Order number	Name	Comment
33.010445	ibaAnalyzer-E-Dat	Upgrade for the reading of external file formats

Table 3: Licenses for external file formats

Other documentation

You can find a detailed description of the functions and application in the *ibaAnalyzer-E-Dat* manual.

2.2.4 Display of InSpectra modules (ibaAnalyzer-InSpectra)

ibaInSpectra is integrated into *ibaAnalyzer* with the InSpectra Expert view (FFT) and the Orbit view. Here you can create profiles and test calculations offline.

With the *ibaAnalyzer-InSpectra+* license, the results of the InSpectra calculations become available in *ibaAnalyzer* as signals, can be exported to databases and used for further processing in reports or with *ibaDatCoordinator*.

Order number	Name	Comment
33.010410	ibaAnalyzer-InSpectra+	Exchange of calculation profiles with *ibaInSpectra* (*ibaPDA*); Calculation results as signals

Table 4: Licenses for ibaInSpectra extensions

Other documentation

You can find a detailed description of the functions and application in the *ibaInSpectra* manual.

2.2.5 Display of InCycle modules (ibaAnalyzer-InCycle)

ibaInCycle is integrated into *ibaAnalyzer* with the InCycle Expert view. Here you can create profiles and test calculations offline.

With the *ibaAnalyzer-InCycle+* license, the results of the InCycle calculations become available in *ibaAnalyzer* as signals, can be exported to databases and used for further processing in reports or with *ibaDatCoordinator*.

Order number	Name	Comment
33.010411	ibaAnalyzer-InCycle+	Offline analysis of cyclic processes: Trending and output of InCycle results in *ibaAnalyzer*

Table 5: Licenses for ibaInCycle extensions

Other documentation

You can find a detailed description of the functions and application in the *ibaInCycle* manual.

3 Installation and program start

This chapter provides information about the system requirements, the installation and about starting the program.

3.1 System requirements

- PC, multi-core CPU, 2 GHz or better
- 4 GB RAM or more for extended analyses (with video etc.)
- 350 MB or more available hard disk space for the program
- Additional hard disk capacity for data files and analyses, depending on your particular application
- Operating system: MS Windows 10 (x86/x64), 11 (x64);
  Windows Server 2016 (x64), 2019 (x64), 2022 (x64), 2025 (x64)
- .NET Framework v4.8 or higher

3.2 Installation

You can install the software either by using the installation wizard or by using the command line.

3.2.1 Standard installation

If an older version of *ibaAnalyzer* is already installed, you can simply install the new version. The older version of the program will be removed automatically after a query and confirmation. Settings and configurations made with the older version will be retained.

If you have a ZIP file of the new *ibaAnalyzer* version available (e.g. after a download), unzip it into any (temporary) directory.

The "iba Software & Manuals" data storage medium has all required program files in a directory …\01_iba_Software\ibaAnalyzer.

Which version should you install?

You can install *ibaAnalyzer* in the 32-bit version and in the 64-bit version. The installer file contains both variants.

The x64 version can only be installed on 64 bit operating systems.

The x86 version can be installed on both 32 bit and 64 bit operating systems.

Note

The 32 bit and 64 bit version of *ibaAnalyzer* **cannot** be installed on the same computer at the same time!

The features of the 64 bit version compared to the 32 bit version are:

- More memory can be reserved for more extensive analyses.
- *ibaCapture-HMI* is not supported. You can therefore no longer view any *ibaCapture-HMI* videos with the 64 bit version. Only *ibaCapture-ScreenCam* is supported.
- The formats Apache Parquet and FDA are supported.

Installation steps

Note

Some installation options only appear for the initial installation and not for updates. To obtain these options, you can uninstall the program manually before the update.

1. Run the file `ibaAnalyzerSetup_vx.y.z.exe`.
   Follow the instructions of the installation wizard.
2. Accept the license agreement.
3. Select the installation folder.
4. Select the components to be installed:
   - *ibaDongleViewer*
     This is not a component of *ibaAnalyzer* but a separate tool with which you can easily query the data of the license dongle (only Marx dongles, no WIBU dongles). It is offered for installation with all iba programs, is optional and only needs to be installed once on a computer.
   - *ibaManagementStudio Agent*
     If you have an *ibaManagementStudio* server in the network, you can manage this *ibaAnalyzer* installation with *ibaManagementStudio*. Activate this option to install the *ibaManagementStudio* Agent. If the program is already installed on the computer, you do not need to activate this option.
5. Select the mode in which the program is to be executed (only for initial installation).
6. Select whether a desktop icon should be created.
7. Click on <Next>.

→ The program is installed.

8. Finish the installation with <Finish>.

3.2.2 Installing by command line

You can also start the installation of *ibaAnalyzer* via a command line. This is helpful for the central software administration or when using deployment systems.

You can control how the installation proceeds with the command line switches, which are set after calling up the installation program.

Example Notation

```
ibaAnalyzerSetup_vx.y.z.exe [/VERYSILENT /SUPPRESSMSGBOXES] [/DIR="xx"]
```

/HELP	This switch shows a message box containing all supported command line parameters.
/SILENT	This switch installs the software in "silent mode", i.e., interaction is not required during installation. All installer pages are skipped except the Installing page showing the installation progress. The installer runs without specifying additional parameters, as if <Next> were always pressed in the dialog.
/VERYSILENT	Works like "/SILENT" but nothing is shown.
/SUPPRESSMSGBOXES	Suppresses all pop-up messages. Use this option especially in combination with /VERYSILENT to guarantee a completely GUI free installation.
/TASKS=	This switch allows you to specify whether a desktop icon should be created during installation. Examples: /TASKS=desktopicon /TASKS=nodesktopicon
/DIR=	Use this switch to specify the installation folder, i.e. the program folder. Example: /DIR="C:\Programme (x86)\iba\ibaProduct"
/LANG=	This switch sets the language of the installer (by default, the language of the operating system is used). Possible options: de, en, es, fr, it, ja, pt, ru, zh. Examples: /LANG=en /LANG=de

/COMPONENTS	Use this switch to specify the components to be installed. Possible options: ibadongleviewer, ibamanagementstudio Example: /COMPONENTS=ibadongleviewer, ibamanagementstudio
/ForceClientClose	This switch forces the closing of running *ibaAnalyzer* instances that would otherwise block the installation in order to enable the installation. Please note that data from the terminated instances may be lost.

3.3 Program start

After *ibaAnalyzer* had been installed, you can start the program in different ways.

3.3.1 Starting in Windows

After installation, you can open the *ibaAnalyzer* program as follows:

- Double-click on the *ibaAnalyzer* icon on the desktop if available
- Via the Start menu *All programs – ibaAnalyzer – ibaAnalyzer*

Program symbol:

3.3.2 Starting with command line

You can also start *ibaAnalyzer* with a (DOS) command line. This means that the program can also be started via batch files or from within other programs, such as *ibaDatCoordinator*.

You can pass various parameters at startup to perform various tasks with *ibaAnalyzer*. For example, *ibaAnalyzer* can directly perform specific analyses, generate reports, write data to a database, refresh the display cyclically with each new data file and much more.

In general, the *ibaDatCoordinator* program is better suited to carry out the above-mentioned tasks of post-processing measurement files. *ibaDatCoordinator* offers advantages in configuring the post-processing tasks and ensures their safe execution.

With the scripting task of *ibaDatCoordinator*, you can also call *ibaAnalyzer* via command line in scripts or batch files that are executed with *ibaDatCoordinator*.

3.3.2.1 Command line syntax with unprotected data files

```
ibaAnalyzer.exe datfilename1 [datfilename2] … [datfilenamen] [pdofilename] [/switch]
```

One or more measurement files (datfilename), an analysis (pdofilename) and a switch parameter (switch) can be included in the call of the program. The complete path and file names must be entered for data files and analysis files.

Instead of data files you can also enter HD query file names (.hdq).

3.3.2.2 Command line syntax with password protected data files

One or more data files (datfilename) can be opened, which are protected by a password. In case of different passwords per data file, the password and the data filename (separated by a pipe/ vertical bar) must be entered in quotes.

You get the vertical bar character by [Shift]+['] on a Windows IBM PC keyboard layout or by [Alt]+[0][1][2][4].

If the same password applies to all data files, only the first data file should be attached the password and all other data filenames follow without password and quotes.

An analysis (pdofilename) and a switch parameter (switch) can be included in the call of the program as well. The complete path and file names must be entered for data files and analysis files.

With different passwords per data file

```
ibaAnalyzer.exe "datfilename1|pw1" "[datfilename2]|pw2" … "[datfilenamen]|pwn"
[pdofilename] [/switch]
```

With the same password

```
ibaAnalyzer.exe "datfilename1|pw1" [datfilename2] … [datfilenamen] [pdofilename]
[/switch]
```

With HD query files referring to ibaHD-Server with active user management

```
ibaAnalyzer.exe "hdqfilename|user|pw" [pdofilename] [/switch]
```

3.3.2.3 Using the scripting task in ibaDatCoordinator

When using the scripting task in *ibaDatCoordinator*, you have to use a placeholder instead of the data file name to be able to access the last data file:

```
ibaAnalyzer.exe %f [pdofilename] [/switch]
```

`%f`: Last data file, complete path and file name (e.g. `d:\dat\pda001.dat`)

`%g`: Last data file, only file name (e.g. `pda001.dat`)

`%h`: Last data file, file name without suffix (e.g. . `pda001`)

3.3.3 Using the switches in the command line

The switches are particularly important when using the scripting task in *ibaDatCoordinator* because you can use the switches to automate complete analysis processes. However, you can also use the switches when starting the program manually.

Note

You need licenses to use switches for the following actions:

- Query data from databases with license *ibaAnalyzer-DB-Read*
- Extract data into databases with license *ibaDatCoordinator-DB*
- Extract data into files with license *ibaDatCoordinator-File-Extract*

You can load data files or analysis files from databases without a license via command line switches.

Possible combinations of the most important switches

Combination permissible or useful?	/sql	/reuse	/append	/print	/extract	/report	/trendsql	/overviewsql	/nominmax	/autoreload
/loadnewfiles	No	No	Yes	No	No	No	No	No	Yes	No
/autoreload	No	No	Yes	No	No	No	No	No	Yes	
/nominmax	Yes	Yes	Yes	No	No	No	Yes	Yes		
/overviewsql	Yes	Yes	No	Yes	No	Yes	Yes			
/trendsql	Yes	Yes	No	Yes	No	Yes				
/report	Yes	No	Yes	Yes	Yes					
/extract	No	No	Yes	Yes						
/print	Yes	No	Yes							
/append	Yes	Yes								
/reuse	Yes									

Table 6: Switch combinations for the command line call-up

3.3.3.1 Command line switch /reuse

If this switch is included in the program call, *ibaAnalyzer* starts, loads the specified data files and, if applicable, displays the results as determined by an analysis file. If another program call with /reuse switches follows, the new data files and, if applicable, also a new analysis are loaded into the existing instance of *ibaAnalyzer* with the old data being overwritten. This means that the existing instance is reused and prevents the opening of further instances.

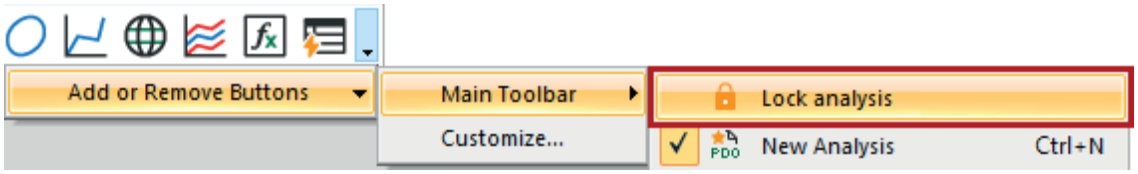
If you automate this process, e.g. via the scripting task of *ibaDatCoordinator*, you can constantly update an analysis display with the latest measurement data.

When starting *ibaAnalyzer* with the /reuse switch, a lock button appears on the left-hand side of the toolbar. If you click on this button, you prevent the automatic update. This allows you to view data at your own speed, for example. If you click on the button again, the data is updated again.

Example /reuse

```
C:\Program Files (x86)\iba\ibaAnalyzer\ibaAnalyzer.exe
D:\IBA\dat_files\pda_training021.dat D:\IBA\DBExt.pdo /reuse
```

If the button is not displayed, you can activate it via the menu *Add or remove buttons*.



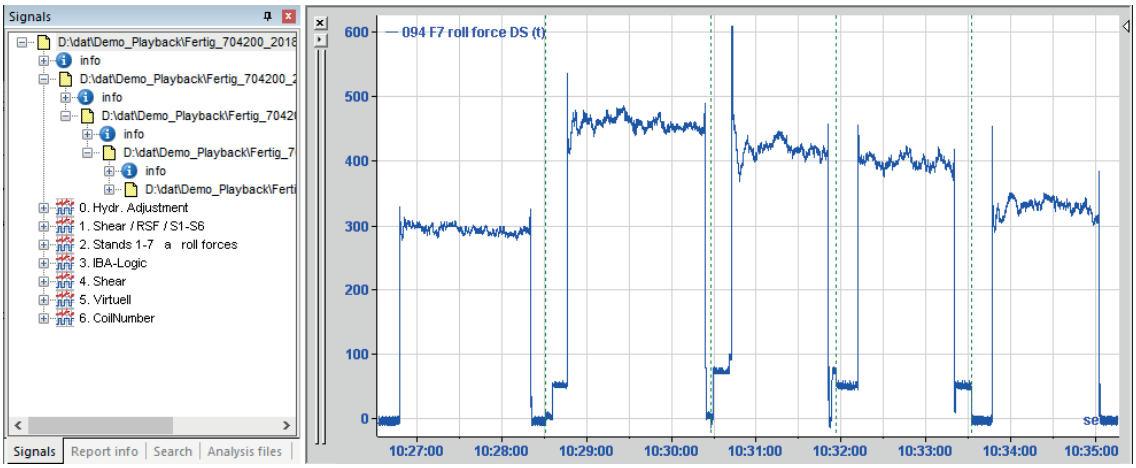
3.3.3.2 Command line switch /append

This switch appends defined data files to one another. *ibaAnalyzer* then displays the data files without gaps, one after the other in the X-direction.

In connection with the /sql switch, the results from database queries are appended to each other. You do not need a license to query files from a database.

Example /append

```
"C:\Program Files (x86)\iba\ibaAnalyzer\ibaAnalyzer.exe"
D:\IBA\dat_files\pda_training021.dat D:\IBA\dat_files\pda_training022.dat D:\IBA\
DBExt.pdo /append
```



3.3.3.3 Command line switch /print

This switch ensures that the measuring data can be printed as a record or log in the format defined in the selected analysis file. The Windows default printer is used.

When the printout is finished or the print job is sent, *ibaAnalyzer* closes. In the case of an error, however, *ibaAnalyzer* remains open to display the error message.

Example /print

```
C:\ibaAnalyzer.exe C:\dat\pda040.dat C:\iba\speed.pdo /print
```

3.3.3.4 Command line switch /extract[:filename]

The /extract switch starts *ibaAnalyzer* and loads the specified data file. Subsequently, the measuring data is processed in accordance with the specified analysis and extracted into a database. During this process, no *ibaAnalyzer* windows are opened on the screen, i.e. the extracting process takes place in the background. The prerequisites are that you have previously configured the database connection and that you have saved this database connection in the analysis file. For extracting data into a database, a particular license is required (*ibaDatCoordinator-DB*).

You can also extract the data into a file, instead of a database. In this case, you have to add the desired file name as parameter. For extracting data into a file, a particular license is required (*ibaDatCoordinator-File-Extract*).

Example /extract[:filename]

Extracting into a database

```
C:\ibaAnalyzer.exe C:\dat\pda040.dat C:\iba\dbextract.pdo /extract
```

Extracting into a file

```
C:\ibaAnalyzer.exe C:\dat\pda040.dat C:\iba\txt.pdo /extract:"c:\output.txt"
```

3.3.3.5 Command line switch /report[:filename]

With this switch, *ibaAnalyzer* starts, loads a specified data file and performs an analysis in accordance with the specified analysis. Thereafter, the integrated report generator is started, and the data is printed on the Windows default printer using a report layout specified in the analysis if the [:filename] option was not used with the switch.

If you use the [:filename] switch option, the report is written to a file instead of being printed. You specify the desired file type using the file name extension. Many customary formats are supported, including, for example, .pdf, .htm, .rtf, .tiff, .jpg, .xls.

Example /report[:filename]

Print report

```
C:\ibaAnalyzer.exe C:\dat\pda040.dat C:\iba\rep.pdo /report
```

Save report to PDF

```
C:\ibaAnalyzer.exe C:\dat\pda040.dat C:\iba\rep.pdo /report:"c:\repout.pdf"
```

You can also create the report using database queries. After a standard or trend query, you can create a report with the selected data. Use the corresponding file extensions .sql or .pdo.

Example /report[:filename] using a database query

```
C:\ibaAnalyzer.exe /sql:"C:\iba\merge.sql";sync:"STRIP_ID" 8 C:\iba\strip_rep.
pdo /report:"c:\tmp\repout.pdf"
```

3.3.3.6 Command line switch /sql:filename.sql[;sync:"syncFieldName"]

This switch is used for database queries. You can use the :filename.sql parameter to transfer SQL statements to be used for the database query. You can use the additional, optional sync parameter to specify a grouping criterion for the query data. For querying data from a database, a particular license is required (*ibaAnalyzer-DB-Read*).

Example /sql:filename.sql[;sync:"syncFieldName"]

```
C:\ibaAnalyzer.exe C:\iba\dbquery.pdo /sql:"C:\iba\query.sql"
```

`query.sql` from in this example could read like this:

```
SELECT * FROM PDA_File order by [_Timestamp] DESC;
```

Example with sync parameter

```
C:\ibaAnalyzer.exe C:\iba\dbmerge.pdo /sql:"C:\iba\merge.sql";sync:"STRIP_ID"
```

The `query.sql` file from the example must be a text file in the SQL language supported by the database system specified in the PDO file (e.g. Oracle, SQL Server, DB2).

The second example shows the use of the /sql switch together with the sync parameter. The name of the sync field (here "STRIP_ID") corresponds to the sync field of the database that was specified in the SQL queries dialog. See also part 4 of the *ibaAnalyzer* manual, chapter *Query builder*.

If data files are specified and the /sql switch is used, all data files from the second line onwards are placed in the signal tree. If the query was successful, the first position contains the first file in the query result. Otherwise, the first line is empty.

3.3.3.7 Command line switch /trendsql:filename.sql[;sync:"syncFieldName";msec]

In comparison to the /sql:filename.sql switch, the /trendsql:filename.sql switch is used to query the info fields and computed columns from a database. You can use the :filename.sql parameter to transfer SQL statements to be used for the database query. A *TimeStamp* column must be selected in this query. For querying data from a database, a particular license is required (*ibaAnalyzer-DB-Read*).

ibaAnalyzer starts and queries the database specified in the PDO file with the SQL statement from the `trend.sql` file. The query results, i.e. signals with measuring points from the time stamp column as well as info fields and computed columns, are displayed in the *Trend query result* node and can be used in the analysis.

The `filename.sql` file must be a text file in the SQL language supported by the database system specified in the PDO file (e.g. Oracle, SQL Server, DB2). You can load and execute this file using the *Trend query* dialog, among other things.

In addition, the SQL statement returns a result set with a timestamp field and at least one numeric field. In addition, the statement must contain an ORDER BY clause for the timestamp. The included SQL statement must have at least one numeric field and one result set with a timestamp field. (Several result sets can be present, but only the first entry is referenced).

Optionally, a synchronization field can be transferred with the sync parameter for the query.

If you use the msec option, the first numerical column of the query is used as the microsecond value of the timestamp.

Example /trendsql:filename.sql[;sync:"syncFieldName";msec]

```
C:\ibaAnalyzer.exe C:\iba\dbtrend.pdo /trendsql:"C:\iba\trend.sql"
C:\ibaAnalyzer.exe C:\iba\dbtrend.pdo /trendsql:"C:\iba\trend.sql";sync:"SID"
```

3.3.3.8 Command line switch /overviewsql:filename.sql[;sync:"syncFieldName";msec]

This switch is similar to the /trendsql:filename.sql switch. The difference is that it displays the query results in the *Overview* tab and not in the signal tree. See also part 4 of the *ibaAnalyzer* manual, chapter *Trend queries*.

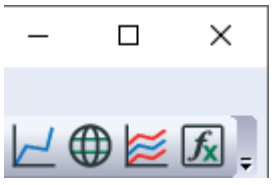
You can combine the /sql switch with the /overviewsql switch. This enables you to start *ibaAnalyzer* with an overview and query files from the database at the same time. In this case, you must specify separate SQL statements for the overview and the file query in different text files. For querying data from a database, a particular license is required (*ibaAnalyzer-DB-Read*).

Example /overviewsql:filename.sql

```
C:\ibaAnalyzer.exe /overviewsql:"C:\iba\overview.sql" /sql:"C:\iba\query.sql"
```

3.3.3.9 Command line switch /nominmax

This switch starts *ibaAnalyzer* without the buttons for minimizing and maximizing the program window.

Start without switch	Start with /nominmax switch
	

3.3.3.10 Command line switch /autoreload

This switch is used for automatically and periodically reloading the data files while they are still being written.

This function is equivalent to clicking the *Auto reload files* button.

For more information, see part 2 of the *ibaAnalyzer* manual, chapter *Process-synchronous analysis*.

3.3.3.11 Command line switch /loadnewfiles

This switch is used for the automated search and loading of a data file that is still being written in the set folder.

The function is equivalent to clicking the *Automatically load new data files from specified directory* button.

For more information, see part 2 of the *ibaAnalyzer* manual, chapter *Process-synchronous analysis*.

3.3.3.12 Command line switch /dbPDO

This switch opens analysis (*.pdo) that are stored in a database. You only need to configure the database connection. Loading the analysis from the database does not require a special license.

Only add the desired analysis name – as it was stored in the database – after the colon.

Example /dbPDO

```
C:\ibaAnalyzer.exe /dbPDO:AnalysesSpeed
```

For more information about database connections, see part 2 of the *ibaAnalyzer* manual, chapter *Opening an analysis*, and part 4, chapter *Configuring the database connection*.

3.3.3.13 Command line switch /filetree

This switch starts *ibaAnalyzer* with a predefined signal tree or file tree. Using this switch, you can open several measurement files both on an equal footing and attached to each other.

Example /filetree

```
C:\ibaAnalyzer.exe /filetree:MyFileTree.txt
```

You must have previously exported the desired configuration of the file tree as a text file (here `MyFileTree.txt`). This file is transferred as parameter with the switch.

You can find information on exporting and importing a file tree in part 2 of the *ibaAnalyzer* manual, chapter *Exporting/importing the file tree*.

3.3.3.14 Command line switch /language

This switch starts *ibaAnalyzer* in the specified language. If no language is specified, *ibaAnalyzer* starts in the system language or in English.

At the moment, the following variants are available:

- /english
- /german
- /french
- /spanish
- /russian
- /chinese
- /italian
- /japanese

4 User interface

This chapter provides information about the main screen, menus, tool bars and hot keys.

4.1 The screen

The start screen of *ibaAnalyzer* offers various areas for your tasks. The following chapters describe the individual areas in detail.

1	Menu bar
2	Toolbar
3	Recorder window/Signal window
4	Signal table (Signal definition, Markers, Statistics) + Navigator + Harmonic markers + Overview of trend query + Cross-reference
5	Tabs to switch windows of pos. 4
6	Status bar
7	Signal tree + Search function + Report information + Analysis files

4.1.1 Smart Docking

You can freely move and dock (smart docking) all partial windows or tabs (numbers 4, 5 and 7 in ↗ *Program start*, page 20). You can also arrange the menu bar, toolbars, video windows of *ibaCapture* or *ibaInSpectra* windows freely. Only the recorder window and status bar cannot be moved.

The windows can be:

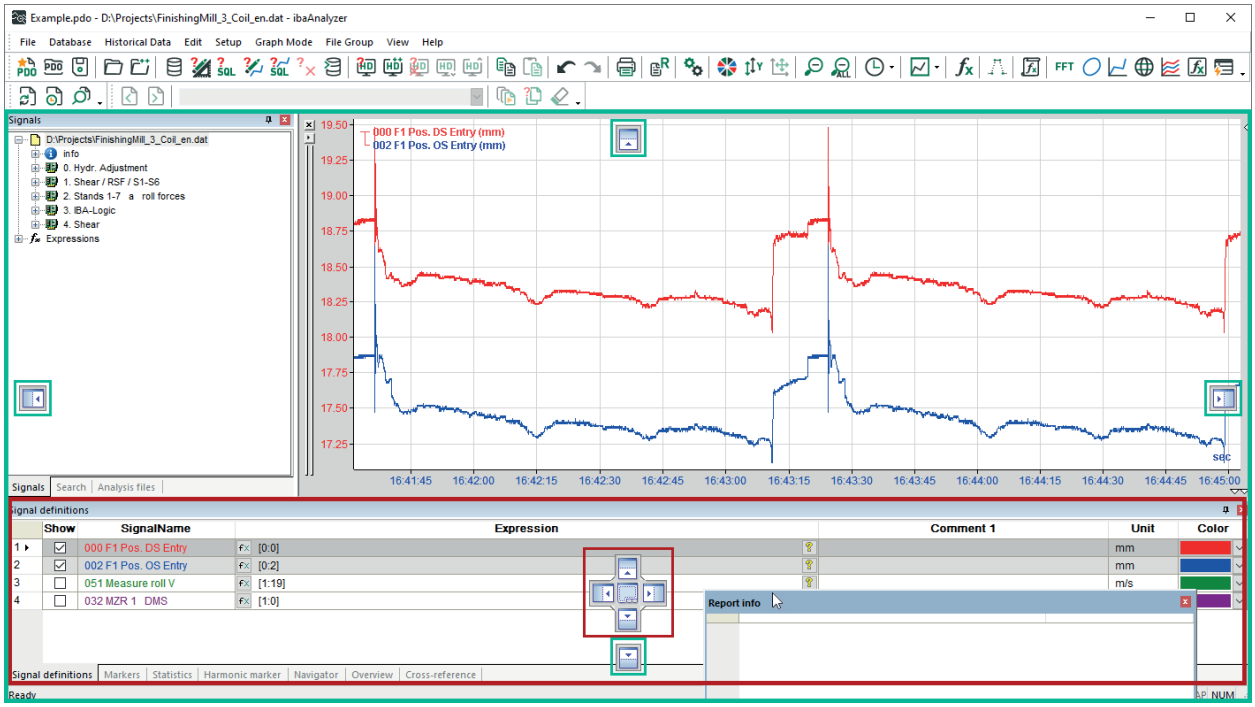
- Free-floating, independent of the main window
  (i.e. also outside the main window)
- Docked to the border of the main window (above, below, right or left)
- Docked to another partial window
- Grouped as tabs in a new partial window which in turn can also be docked or placed freely floating.

Use the smart docking function using of drag & drop by clicking with the mouse on the caption of a partial window or a tab and dragging the mouse.

The partial window will be released and is now freely floating. Indicators appear at the same time. For each window the mouse is currently placed on, suitable indicators are displayed. Usually, 4 indicators for the edge positions within the main window appear and 5 indicators for the partial window (edges and tab) on which the mouse is currently being placed.

For docking, position the window/mouse on the desired indicator and drop it.

In the above figure, the *Report info* tab was released from the compound of the signal tree window and positioned on the window of the signal table. The indicators of the main window (green) and of the partial window (red) appear.



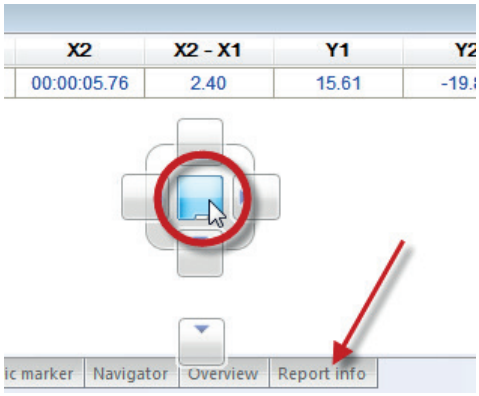
Tip

Using the command *Reset window layout* in the *View* menu, you can reset the arrangement of the windows back to the default setting.

4.1.2 Generating and moving tabs

With smart docking, you can group the partial windows as you wish and place them on top of each other as tabs. For this purpose, drop the released partial window on the central indicator of the desired target window.

The partial window is then inserted in the window as last tab.

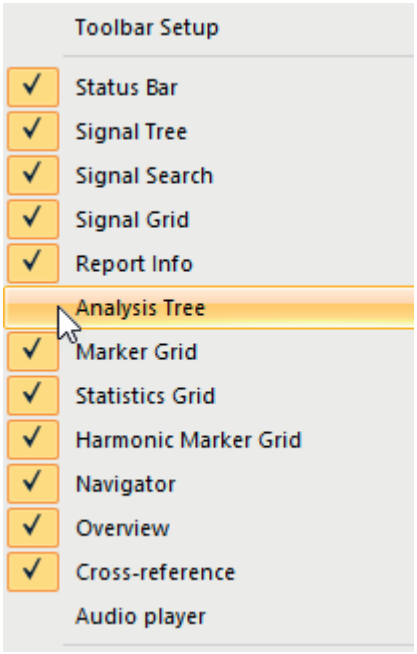


You can change the tab order using drag & drop. Make sure not to leave the tab area, as otherwise the window will be released again.

4.1.3 Hiding windows manually

You can close or hide partial windows and tabs by clicking on the <x> button.

In order to reopen partial windows, select the *View* menu. All partial windows are listed here. A checkmark in front of the names shows that a window is being displayed. Activate the box again if you want to reopen the window.



4.1.4 Hiding windows automatically

Each partial window can be configured in such a way that it automatically disappears if it is not needed.

Such a window only becomes visible if you place the mouse on the corresponding tab at the border of the main window. As soon as the cursor is placed on the tab, the window opens and thereby covers other windows. If you move the cursor from the tab or the window, the window closes again unless you put the focus on the window with only a mouse click.

As long as the window has the focus, it remains open. If you click on another window or execute another function, the window closes again.

To configure a window for automatic hiding, click on the pin icon in the window caption.

If the automatic hide function shall be deactivated, click again on the pin icon while the window is open.

Depending on where the windows are docked, the tabs of the hidden windows are displayed at the border of the main window.

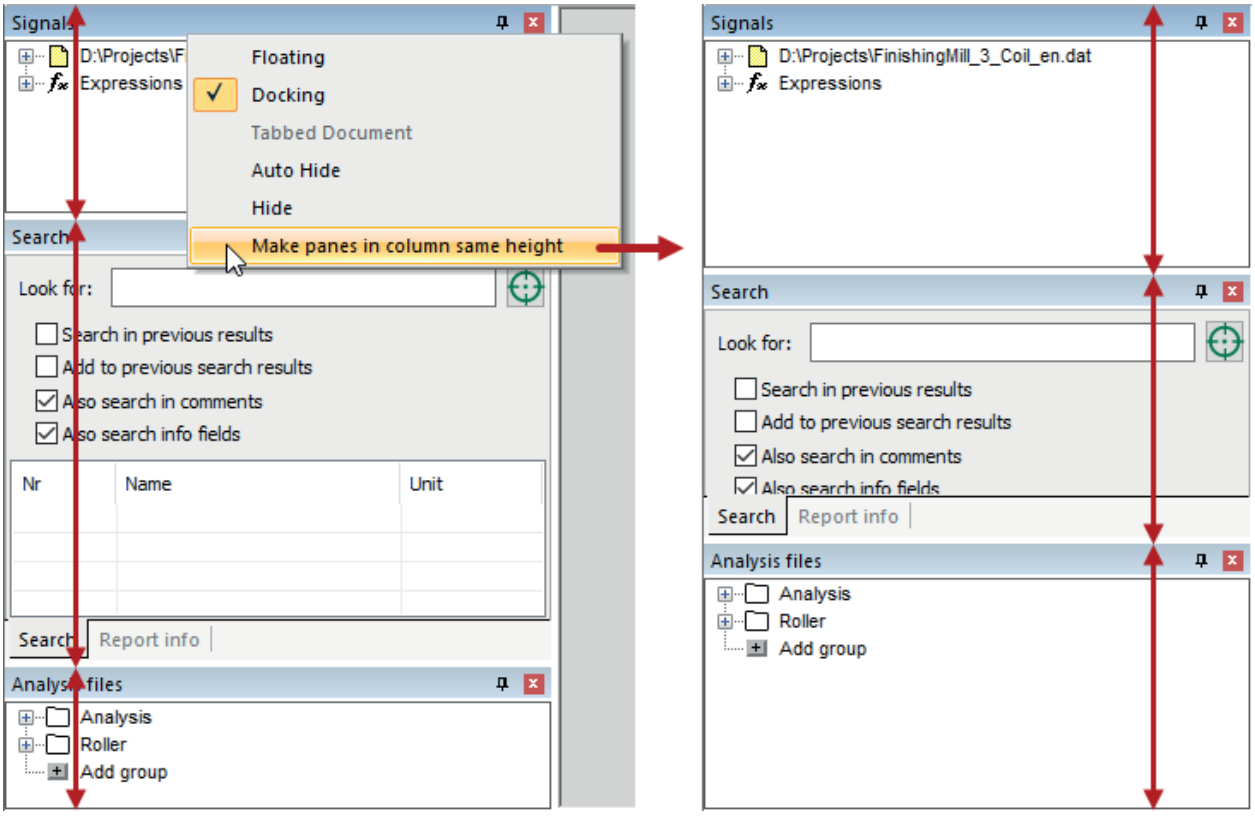
4.1.5 Scaling windows automatically

If you have opened several windows in tiled windows, it might make sense to arrange them at the same height or width in columns or rows.

There is an automatic function that simplifies the arrangement of an analysis view, e.g. if you want to show a lot of *ibaCapture* windows.

1. Roughly arrange the windows in columns or rows.
2. Right-click on the caption of one of the windows in the column/row.
3. Select *Make panes in row same width* or *Make panes in column same height* in the opening context menu.

→ As shown in the example figure, the windows are then distributed at the same height across the column.



4.2 The menu bar

The following chapters explain the functions of the individual menus.

When you click on the *ibaAnalyzer* symbol in the upper left corner (window header), a menu appears where you can minimize, move, resize or close the current window of *ibaAnalyzer*. The *Close* command or double-clicking the icon closes the current window.

4.2.1 The File menu

In the menu *File*, you can find the following functions.

You can select most functions both via the menu as well as via the corresponding buttons in the toolbar.

Analysis file functions

Symbol	Function	Description
	New analysis	Discards all current views, analysis functions, newly created signals and expressions, database configurations, etc., deletes the graphs and clearing the signal table. Loaded data files are retained in the signal tree.
	Open analysis	Open an existing analysis file (*.pdo) via browsing function.
	Save analysis	Saves the current analysis file.
	Save analysis as	Saves the current analysis in an analysis file with a new name (via browsing function).
	Retrieve analysis from database	Open an analysis that had been stored in a database.
	Store analysis in database	Save the current analysis in a database.
	Analysis password protection	Opens the dialog to edit the password for protection of the analysis (create, change or remove a password).

For further information, see part 2 of the *ibaAnalyzer* manual, chapter *The Analysis*.

Data file functions

Symbol	Function	Description
	Open data file	Open one or more existing data files (*.dat) using the *Open new data file* dialog.
	Add new data file	Open further data files, which are displayed in the signal tree window on the same level, using the *Add new data file* dialog.
	Replace data file	Replace the file that is marked in the signal tree window with a new file using the *Replace the selected data file* dialog.
	Append data file	Open further files and append these to the existing files using the *Open data file* dialog. *ibaAnalyzer* displays these files in a cascaded form in the signal tree window and the measured-value trends of the individual files one after another along the time axis.
	Close selected file	Closes the file that is marked in the signal tree window and removes it from the signal tree window. Analysis settings and expressions remain unaffected.
	Close all data files	Closes all files in the signal tree window and removes them from the signal tree window. Analysis settings and expressions remain unaffected.
	Reload data files	Reloads (refreshes) the file that is marked in the signal tree window.
	Auto reload data files	Automatically reloads the first (topmost) file in the signal tree window cyclically according to a set time, even if this file is currently being written by *ibaPDA* (process-synchronous analysis).
	Auto load new data files	*ibaAnalyzer* searches in a pre-set directory for the data file that is currently being written by *ibaPDA* and loads it (process-synchronous analysis).
	Clear data file password	Deletes any saved data file passwords. The next time, you open a password protected file, you need to enter the password again.

For further information, see part 2 of the *ibaAnalyzer* manual, chapter *The data file*.

Export

Symbol	Function	Description
	Export	Opens the dialog for exporting the measuring and analysis data into another file format.

For further information, see part 2 of the *ibaAnalyzer* manual, chapter *Data export*.

Print and report functions

Symbol	Function	Description
	Print	Starts the Windows print function
	Print preview	Shows the anticipated result of the print process. In the print preview, you can add additional information from the file information as well as literal text to be printed. You can save these additions in the analysis.
	Print setup	Opens the Windows printer setup dialog.
	Report	Opens the configuration dialog of the report generator. The report generator offers more design options for analysis reports than the simple print function. For this, also see the manual *ibaAnalyzer-Reportgenerator*.

For further information, see part 2 of the *ibaAnalyzer* manual, chapter *Print function (Hardcopy)*.

Further Functions

Function	Description
Recent analysis files	Shows a list of the recently opened analysis files for quick access to these files.
Recent data files	Shows a list of the recently opened data files for quick access to these files.
Exit	Exits *ibaAnalyzer*.

4.2.2 The Database menu

This menu contains all functions for the database interface of *ibaAnalyzer*.

Symbol	Function	Description
	Database connection	Opens the dialog for configuring the database connection. See also part 4, chapter *Configuring the database connection*.
	Query builder	Opens the dialog for the standard query without SQL knowledge. See also part 4, chapter *Query builder*.
	SQL query	Opens the dialog for the query in SQL syntax See also part 4, chapter *SQL queries*.
	Trend query builder	Opens the dialog for the trend query without SQL knowledge. See also part 4, chapter *Trend query builder*.
	SQL trend query	Opens the dialog for the trend query in SQL syntax See also part 4, chapter *SQL trend queries*.

Symbol	Function	Description
	Abort query	Cancels all currently running queries.
	Data Extractor	Opens the dialog for configuring the data extraction. Here you can extract data to a file or a database. See also part 4 and part 5 in the chapter *Data extractor*.

Detailed information on this menu and the database interface can be found in part 4 of the *ibaAnalyzer* manual.

Detailed information on file extraction via the Data extractor can be found in part 5 of the *ibaAnalyzer* manual.

4.2.3 The Historical Data menu

You can select most functions both via the menu as well as via the corresponding buttons in the toolbar.

Symbol	Function	Description
	New HD Query	Opens the dialog for configuring a new HD query. After executing the query, the result is displayed in the signal tree. Data files or former HD queries available in the signal tree are replaced.
	Add HD Query	Opens the dialog for configuring a new HD query. After executing the query, the result is displayed in the signal tree in addition to possibly existing data files or former HD queries.
	Replace File by HD query	Opens the dialog for configuring a new HD query. After executing the query, the result replaces a data file or HD query having been marked in the signal tree before.
	Append HD query	Opens the dialog for configuring a new HD query. After executing the query, the result is appended to the bottommost data file or HD query in the signal tree. If one of several data files or HD queries in the signal tree was marked beforehand, the result of the new HD query is attached to the checked file or HD query.
	HD Signal Condition Query Abort	Cancels an ongoing HD query for signal condition, e.g. if it takes too long due to too much data.

For further information, see part 2 of the *ibaAnalyzer* manual, chapter *Configuration of ibaHD-Server connection and HD queries*.

4.2.4 The Edit menu

You can select most functions both via the menu as well as via the corresponding buttons in the toolbar.

Symbol	Function	Description
	Undo Redo	These commands undo actions, e.g. accidentally deleting expressions. You can also restore undone actions (redo). You can enable or disable this function in the Preferences or Graph setup under *Signal grid*. There you can also set the number of operation steps in the undo stack. See also ↗ *The signal table*, page 67.
	Copy	Copies the current content of the recorder window to the Windows clipboard, i.e. the visible graphs and the signal table. From there, you can insert the content as an HTML object into other Windows programs, e.g. Word or Excel. This allows you to use analyses in other documents. See also part 2, chapter *Using views in other programs*.
	Paste	Pastes the content of the clipboard into the current *ibaAnalyzer* window. If you have previously copied in *ibaAnalyzer*, you can add the same graphs and table rows to the view again.

4.2.5 The Setup menu

You can select most functions both via the menu as well as via the corresponding buttons in the toolbar.

Symbol	Function	Description
	Graph setup	Opens the dialog window *Graph setup* for the settings available for the graph currently selected (X-axis, Y-axis, display types, etc.). A change in current graph settings does not lead to a change in Preferences. See also part 2, chapter *Settings*.
	Preferences	Opens the dialog window *Preferences*, which summarizes all possible settings for the graph together with some general settings. The preferences are applied to a new analysis or when creating a new graph. See also part 2, chapter *Settings*.
	Export/import preferences	Export and import the current preferences as INI file. In this way, you can save optimized preferences and make them available to other users. When executing these commands, specify the path and file name of the INI file. In the *Preferences* dialog under *Export/Import*, you can find further settings for the export and import of the preferences have to be configured. See also part 2, chapter *Export/import settings*.

Symbol	Function	Description
	Autoscale all	Automatically scales all the signals displayed in the Y-direction on all displayed graphs. The X-axis is not affected by this operation, so that a zoomed time section remains unchanged.
	Restore manual scale	Restores the original manual scaling of the graph if you have specified manual scaling in the *Graph setup* but you have changed the view in the graph, e.g. by changing the scale or zooming. This effect of this command is limited to the currently selected graph.
	Auto map signal colors	Automatically assigns preset colors to the different signal curves within the currently selected graph. You can change the coloring in the *Preferences* under *Colors*.
	Logical expressions	Opens the dialog for logical signal definitions, where you can define artificial or "virtual" signals as well as multidimensional signals (arrays). See also part 2, chapter *Logical expressions*.
	Digital filter design	Opens the graphic editor for digital filter design. See also part 2, chapter *Filter editor*.
	Macro design	Opens the dialog for generating macros. You can combine extensive calculations and complex analysis functions in macros so that you can use them more easily and repeatedly. See also part 2, chapter *Macros*.

4.2.6 The Graph Mode menu

You can select most functions both via the menu as well as via the corresponding buttons in the toolbar.

X-axis mode
Using the toolbar you can select different X-axis modes.

These commands apply to the graph currently marked.

The current settings of the graph in focus when calling up the menu are highlighted in the menu.

Symbol	Function	Description
	Time based	Sets the X-axis as time axis (default setting) from the time of commencing the recording process until the end of recording in the data file. In the *Graph setup*, you can switch between absolute time values (hh:mm:ss) and relative time (0 … n s). See also part 2, chapter *X-axis modes Time based and Length based.*

Symbol	Function	Description
	Fast Fourier (time based)	Shows a FFT representation of the signals in the respective graph with a frequency axis (1/s, Hz) as the X-axis. The amplitudes of the frequency spectrum are displayed in Y-direction. The transformation and scaling functions are carried out as set in the preferences. See also part 2, chapter *X-axis mode FFT*.
	Length based	Divides the X-axis into length units (m) related to the displayed signal. As a requirement for display, the signal to be presented must have been converted from a time to a length base, for example, by a *TimeToLength* function. See also part 2, chapter *X-axis modes Time based and Length based*.
	Fast Fourier (length based)	Shows a FFT representation of the signals in the respective graph with a reciprocal length axis (1/m) as the X-axis. The amplitudes of the frequency spectrum are displayed in Y-direction. The transformation and scaling functions are carried out as set in the preferences. See also part 2, chapter *X-axis mode FFT*.
	X - Y	Only available when a graph contains at least two signals. This mode ignores the time or length axis and plots one signal above the other. In this way, it is possible to show dependencies of one or more signals on another signal. Which signal is plotted on the X-axis and which signal is plotted on the Y-axis depends on the signal arrangement in the graph. The function is available for both time based and length based signals. See also part 2, chapter *X-axis mode X - Y*.

For information on time-length-conversion, see part 3 of the *ibaAnalyzer* manual, chapter *Expression builder*, chapter *Conversion from time to length reference (TimeToLength)*.

Views

Symbol	Function	Description
	Standard view	The standard displays a two-dimensional curve and is selected by default. See also part 2, chapter *Standard view*.
	2D top view	Despite 2-dimensional presentation, this view also offers information on a third dimension by displaying the amplitudes of the measured values in colors. This view is particularly suitable for the presentation of profiles (temperature, thickness, shape profiles, etc.). For this, also see part 2, chapter *2D top view*.

Symbol	Function	Description
	3D wireframe	This view shows the measured signals as a three-dimensional "mountain" which solely consists of lines that connect the samples to each other. In the setup for the 3D display (*Preferences* or *Graph setup*), you can change the resolution of the line mesh (B-Splines). See also part 2, chapter *3D Wireframe*.
	3D surface	This view shows a three-dimensional false-color presentation of the measured signals. Different colors (as selected in the setup) are assigned to amplitudes of the signals. Depending on the settings in the *Preferences* or *Graph setup*, you can display the spaces between the measured values sharply separated or with color transitions. See also part 3, chapter *3D Surface*.
	Markers	Opens the configuration dialog for the X-axis markers and the commands for setting markets at the current positions of linear X1 and X2. In addition, you can clear the existing markers. See also part 2, chapter *Markers*.
	Intervals	Opens the configuration dialog for displaying defined intervals and the command for the interval display between current existing markers. In addition, you can clear the existing intervals. See also part 2, chapter I*ntervals in graphs*.
	Show cross profiles	This command is only available in the 2D top view and enables/disables the display of cross profiles. See also part 2, chapter *2D top view*.

4.2.7 The File Group menu

The menu items are only activated if a group of data files is opened.

You can select most functions both via the menu as well as via the corresponding buttons in the toolbar.

Symbol	Function	Description
	To Trend query	Opens the trend query dialog for info fields of the elements in the file group. See also part 2, chapter *Trend query from file groups or time periods*.
	Clear	Deletes the group of data files.
 	Next/ Previous	Loads the next or previous data file in the group relative to the file currently loaded in the signal tree.
	Slide Show	Starts and stops the automatic display of all the data files in the group of files (successively). See also part 2, chapter *Slide show*.

For further information, see part 2 of the *ibaAnalyzer* manual, chapter *Defining groups of data files*.

4.2.8 The View menu

You can select most functions both via the menu as well as via the corresponding buttons in the toolbar.

Screen settings

Function	Description
Toolbar Setup	Opens the dialog for customizing the toolbars (similar to Microsoft programs).
Status Bar, Signal Tree, Signal Search, Signal Grid, Report Info, Analysis Tree, Marker Grid, Statistics Grid, Harmonic Markers Grid, Navigator, Overview, Cross-reference, and Audio Player	Switches the corresponding screen areas on or off (toggle), e.g. to create more space for the graph display. Sub-windows that had been bound to certain areas as tabs before are placed and enabled individually.
Reset window layout	Resets all changes to the layout since the last start of *ibaAnalyzer*.

Views

Symbol	Function	Description
FFT	InSpectra-Expert	Opens an FFT view for InSpectra Expert modules in a new window, which can be positioned freely. You can find a detailed description in the documentation about the product *ibaInSpectra*.
	InSpectra-Orbit	Opens an Orbit view for InSpectra Orbit modules in a new window, which can be positioned freely. You can find a detailed description in the documentation about the product *ibaInSpectra*.
	PDA trend	Opens a trend view like in *ibaPDA* in a new window, which can be positioned freely.
	Maps	Opens a map view in a new window, which can be positioned freely.
	InCycle-Expert	Opens an InCycle-Expert view for InCycle Expert modules in a new window, which can be positioned freely. You can find a detailed description in the documentation about the product *ibaInCycle*.
f_x	Computation module	Opens a computation module view in a new window, which can be positioned freely.
	Event table	Opens an ibaHD event table in a new window, which can be positioned freely.

Zoom functions

Symbol	Function	Description
	Zoom out	Zooms out one zoom level (incrementally) from a zoomed-in display. The command affects the currently selected graph and all other graphs that have the same X-axis basis (time, length, FFT).
ALL	Zoom out all	Resets all zoom factors in all graphs, regardless of which graph is selected and whether there are different X-axes.

Drill-down functions (HD-Query)

Drill-down functions only apply to trend graphs of HD-Queries.

Symbol	Function	Description
HD	Drill down	This command is only available after a trend graph of an HD-Query has been zoomed in. It provides for higher resolution measured data in the zoomed area by reloading the data from the HD store.
HD	Undo Drill down	This command is only available after a trend graph of an HD-Query has been zoomed in. The drill-down is undone, and the view is fully zoomed out.

Symbol	Function	Description
	Update info fields	This command is only available for queried time periods and it opens a dialog in which you can update the info fields of the time periods.

For more information, see part 2 of the *ibaAnalyzer* manual, chapter *Access to HD data with ibaAnalyzer*.

General view settings

Function	Description
Language	In the sub-menu, you can select the display language for *ibaAnalyzer*. When switching languages, *ibaAnalyzer* restarts automatically. The *System* option uses the region and language settings of the Windows control panel.
Application style	In the sub-menu, you can select a different style for the user interface of *ibaAnalyzer*. Available are different display styles and color schemes with reference to different Microsoft products. The changes apply to colors and shades of windows and controls. *ibaAnalyzer* immediately adopts a change in the application style without restarting.

4.2.9 The Help menu

Function	Description
Help	Opens the Help file.
Support	Opens a page with the contact information for iba locations worldwide.
Save information for iba support	Creates a ZIP file that contains all important information for the iba support, e.g. log files, license information and software information. You can also select files for the iba support, e.g. analysis files and measurement files. It is generally recommended that you send a current support file to the iba support if a problem occurs.
Version history	Opens a page that chronologically documents all changes of the *ibaAnalyzer* program up to the current version. In addition to bug fixes, you can also find key information on improvements and new features.
About ibaAnalyzer	Shows information about the version of *ibaAnalyzer*.

4.3 The toolbar

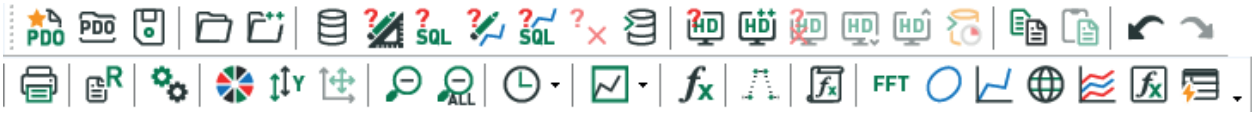
ibaAnalyzer offers several toolbars so that you can use all functions. You can show, hide and change the toolbars and add user-defined toolbars.

The functions of the buttons in the toolbar are similar to the corresponding menu items, see ↗ *The menu bar*, page 33.

4.3.1 Symbols and functions

You can select most functions both via the menu as well as via the corresponding buttons in the toolbar.

Main toolbar



This toolbar contains all basic functions which can be grouped by different categories.

File functions

Symbol	Function	Description
	New analysis	Discards all current views, analysis functions, newly created signals and expressions, database configurations, etc., deletes the graphs and clears the signal table. Loaded data files remain in the signal tree.
	Open analysis	Open an existing analysis file (*.pdo).
	Save analysis	Saves the current analysis as analysis file.
	Open data file	Open one or more existing data files (*.dat) using the *Open new data file* dialog.
	Add new data file	Open further data files, which are displayed in the signal tree window on the same level, using the *Add new data file* dialog.

Database functions

Symbol	Function	Description
	Database connection	Opens the dialog for configuring the database connection. See also part 4, chapter *Configuring the database connection*.
	Query builder	Opens the dialog for the standard query without SQL knowledge. See also part 4, chapter *Query builder*.
	SQL query	Opens the dialog for the query in SQL syntax See also part 4, chapter *SQL queries*.

Symbol	Function	Description
	Trend query builder	Opens the dialog for the trend query without SQL knowledge. See also part 4, chapter *Trend query builder*.
	SQL trend query	Opens the dialog for the trend query in SQL syntax See also part 4, chapter *SQL trend queries*.
	Abort query	Cancels all currently running queries.
	Data extractor	Opens the dialog for configuring the data extraction. Here you can extract data to a file or a database. See also part 4 and part 5 in the chapter *Data extractor*.

Historical data

Symbol	Function	Description
	New HD query	Opens the dialog for configuring a new HD query. After executing the query, the result is displayed in the signal tree. Data files or former HD queries available in the signal tree are replaced.
	Add HD query	Opens the dialog for configuring a new HD query. After executing the query, the result is displayed in the signal tree in addition to possibly existing data files or former HD queries.
	Abort HD signal condition query	Cancels an ongoing HD query for signal condition, e.g. if it takes too long due to too much data.
	Drill down	This command is only available after a trend graph of an HD-Query has been zoomed in. It provides for higher resolution measured data in the zoomed area by reloading the data from the HD store.
	Undo Drill down	This command is only available after a trend graph of an HD-Query has been zoomed in. The drill-down is undone, and the view is fully zoomed out.
	Update info fields	This command is only available for queried time periods and it opens a dialog in which you can update the info fields of the time periods.

For more information, see part 2 of the *ibaAnalyzer* manual, chapter *Access to HD data with ibaAnalyzer*.

Editing and printing

Symbol	Function	Description
	Copy	Copies the current content of the recorder window to the Windows clipboard, i.e. the visible graphs and the signal table. From there, you can insert the content as an HTML object into other Windows programs, e.g. Word or Excel. This allows you to use analyses in other documents. See also part 2, chapter *Using views in other programs*.
	Paste	Pastes the content of the clipboard into the current *ibaAnalyzer* window. If you have previously copied in *ibaAnalyzer*, you can add the same graphs and table rows to the view again.
	Undo Redo	These commands undo actions, e.g. accidentally deleting expressions. You can also restore undone actions (redo). You can activate or deactivate this function in the preferences or graph setup *Signal grid*. You can also set the number of operations to be undone there. See also ↗ *The signal table*, page 67.

Preferences

Symbol	Function	Description
	Preferences	Opens the *Preferences* dialog, which summarizes all possible graph settings and some general settings. The preferences are applied to a new analysis and when creating a new graph. See also part 2, chapter *Settings* here.

Display functions

Symbol	Function	Description
	Auto map signal colors	Automatically assigns preset colors to the signal curves within the currently selected graph. You can change the coloring in the *Preferences* under *Colors*.
	Autoscale all	Automatically scales all displayed signals in the Y-direction in all displayed graphs. The X-axis is not affected by this operation, so that a zoomed time section remains unchanged.
	Restore manual scale	Restores the original manual scaling of the graph if you have specified manual scaling in the *Graph setup* and have changed the view in the graph, e.g. by changing the scale or zooming. This effect of this command is limited to the currently selected graph.
	Zoom out	Zooms out one zoom level (incrementally) from a zoomed-in display. The command affects the currently selected graph and all other graphs that have the same X-axis basis (time, length, FFT).

Symbol	Function	Description
	Zoom out all	Resets all zoom factors in all graphs, regardless of which graph is selected and whether there are different X-axes.
	X-axis mode	Set the X-axis mode of the selected graph here. See also ↗ *The Graph Mode menu*, page 38.
	View mode	Set the view mode of the selected graph here. See also ↗ *The Graph Mode menu*, page 38.

Logical signal definition

Symbol	Function	Description
	Logical Expressions	Opens the dialog for the logical signal definitions, where you can define artificial or "virtual" signals as well as multidimensional signals (arrays). See also part 2, chapter *Logical expressions*.

Filter editor

Symbol	Function	Description
	Digital filter design	Opens the graphical editor for the digital filter design. See also part 2, chapter *Filter editor*.

Macro designer

Symbol	Function	Description
	Macro design	Opens the dialog for creating macros. You can combine extensive calculations and complex analysis functions in macros so that they can be used more easily and repeatedly. See also part 2, chapter *Macros*.

Views

Symbol	Function	Description
	InSpectra-Expert	Opens an FFT view for InSpectra Expert modules in a new window, which can be positioned freely. You can find a detailed description in the documentation about the product *ibaInSpectra*.
	InSpectra-Orbit	Opens an Orbit view for InSpectra Orbit modules in a new window, which can be positioned freely. You can find a detailed description in the documentation about the product *ibaInSpectra*.
	PDA trend	Opens a trend graph like in *ibaPDA* in a new window, which can be positioned freely.
	Maps	Opens a map view in a new window, which can be positioned freely.

Symbol	Function	Description
	InCycle-Expert	Opens an InCycle-Expert view for InCycle Expert modules in a new window, which can be positioned freely. You can find a detailed description in the documentation about the product *ibaInCycle*.
	Computation module	Opens a computation module view in a new window, which can be positioned freely.
	Event table	Opens an ibaHD event table in a new window, which can be positioned freely.

Data file group

Symbol	Function	Description
	Next/ Previous	Loads the next or previous data file in the group relative to the file currently loaded in the signal tree.
	Slide show	Starts or stops the automatic display of all data files in the file group (one after the other). See also part 2, chapter *Slide show*.
	To trend query	Opens the trend query dialog for info fields of the elements in the file group. See also part 2, chapter *Trend query from file groups or time periods*.
	Clear	Deletes the data file group.

Reloading

Symbol	Function	Description
	Reload data files	Reloads the file that is selected in the signal tree window (refresh).
	Automatically reload measurement file(s)	Automatically reloads the first (topmost) file in the signal tree window cyclically according to a set time, even if this file is currently being written by *ibaPDA* (process-synchronous analysis).
	Automatically load new data files	*ibaAnalyzer* searches in a pre-set directory for the measurement file that is currently being written by *ibaPDA* and loads it (process-synchronous analysis).

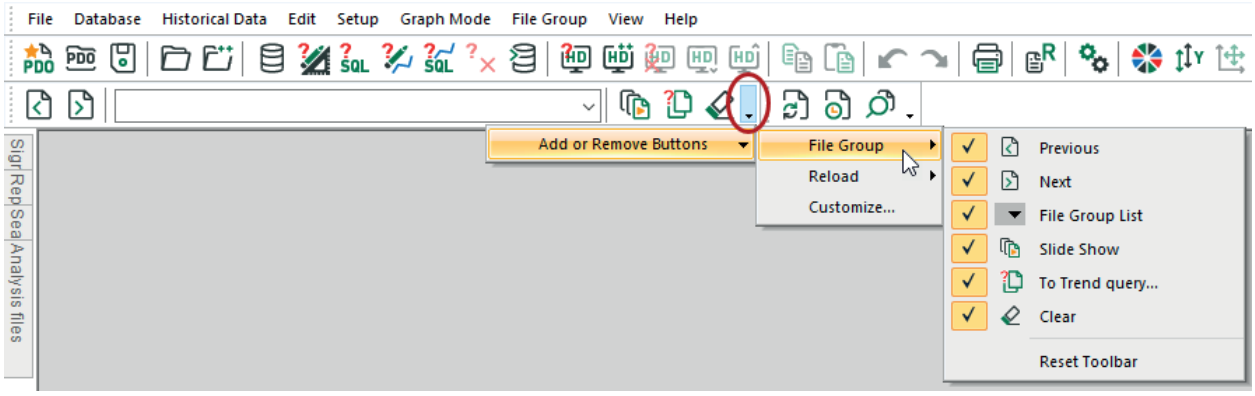
Locking

Symbol	Function	Description
	Locking	Locks view to prevent overwriting. Only possible in reuse mode, see ↗ *Starting with command line*, page 20.

4.3.2 Customizing the tool bars

You can customize the toolbars according to your needs and make frequently used functions quickly and easily accessible.

Customizing the toolbar with the default settings

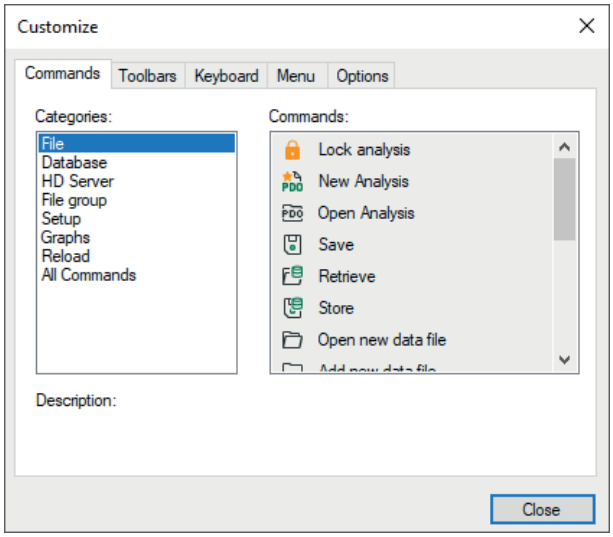


1. Click on the arrow button at the end of a toolbar.
2. Go to the desired toolbar via *Add or Remove buttons*.
3. Select the standard buttons that you want to show or hide.

Customizing the toolbar via the dialog

You have the following options for opening the customization dialog:

- Click on the arrow button at the end of a toolbar and click on *Add or remove buttons* – *Customize*.
- Open the *View* menu – *Toolbar setup*.



Customize toolbar and menu commands

In the *Commands* tab, you can drag and drop commands from various categories onto a toolbar or into a menu in order to insert them there – as in various Windows programs, e.g. MS Office.

As long as the *Customize* dialog is open, you can add or remove commands from toolbars or menus.

To remove commands from toolbars or menus, drag the commands out of the toolbar or menu. You can also change the menu bar in this way, e.g. to remove commands that are not required.

Showing, hiding and creating toolbars
You can show and hide toolbars in the *Toolbars* tab.

Using the <Reset> button, you can reset the selected toolbar to the default settings. Use the <Reset all> button to reset all toolbars.

To create your own toolbars, proceed as follows:

1. In the *Toolbars* tab, click <New>.
2. Enter a name for the toolbar and click <OK>.

→ A floating toolbar without commands appears.

3. Drag the toolbar to the toolbar area.
4. Go to the *Commands* tab and drag the desired commands to the new toolbar.

Further customization options
You have the following options in the *Menu* tab:

- Set animation when opening
  The differences regarding animation are only noticeable on close inspection, as this is very quick.
- Set shadow for menu
- Reset menu bar to factory settings

You have the following setting options in the *Options* tab:

- Specify tooltip information (quick info) on toolbars
- Display large icons

Define keyboard shortcuts for commands
You can assign keyboard shortcuts to the toolbar commands in the *Keyboard* tab.

1. First, select the command category and then the command to which you want to assign a keyboard shortcut. If an assignment already exists, the current keyboard shortcut is displayed in the field next to it.
2. Click in the field *Press new shortcut key* and then press the desired keys.
3. Click <Assign>.

Using the <Reset all> button, you can reset the default settings.

For more information, see ↗ *Hot keys (keyboard shortcuts)*, page 52.

4.4 Mouse and key commands

The following chapters describe various ways in which you can operate *ibaAnalyzer* more easily and quickly.

4.4.1 Drag & Drop

At many points in *ibaAnalyzer*, you can use the intuitive Drag & Drop functionality. Simply click and mark the object (file name, signal name, graph, etc.). Then drag the object keeping the mouse key depressed and drop it where you want to place it.

The Drag & Drop function is, for example, available for the following operations:

- Adding a data file from the Windows Explorer to the signal tree window of *ibaAnalyzer*; applies also to archived data files (*.pdc, *.zip etc.)
- Moving one or more data files into the group window within the *Open data file* dialog
- Moving signals from the signal tree to a new graph or adding signals to an existing graph
- Moving signals within the same graph or between different graphs
- Moving graphs

4.4.2 Context menus

ibaAnalyzer offers context menus in various areas of the screen. Context menus contain commands that you can apply to the area in which the cursor is currently located.

These areas include context menus:

- Signal tree window
- Graphs (trend views)
- Axes
- Signal grid
- Navigator

A click with the right mouse key opens the context menu.

4.4.3 Hot keys (keyboard shortcuts)

In addition to using the mouse, you can also use keyboard shortcuts. However, in *ibaAnalyzer*, these shortcuts are mostly limited to standard Windows functions.

If available, the tooltip (quick info) displays additional keyboard shortcuts.

If needed, you can assign custom shortcuts through the menu *View – Toolbar setup – Keyboard* tab, see also ↗ *Define keyboard shortcuts for commands*, page 50.

Shortcut	Function
<Ctrl> + <C>	Copies the currently visible content of the recorder window to the clipboard.
<Ctrl> + <V>	Pastes the content previously copied to the clipboard into the recorder window.
<Ctrl> + <I>	Inserts an interval between marker positions X1 and X2.
<Ctrl> + <M>	Inserts a static marker at the position of marker X1, visible only in the selected graph.
<Ctrl> + <Alt> + <M>	Inserts a static marker at the position of marker X2, visible only in the selected graph.
<Ctrl> + <N>	New analysis (analysis file *.pdo).
<Ctrl> + <O>	Open existing analysis
<Ctrl> + <S>	Save current analysis
<Ctrl> + <Z>	Undo
<Ctrl> + <Y>	Redo
<Ctrl> + <D>	Open data file
<F5>	Reload data files
<Ctrl> + <P>	Opens the print dialog to print out the current view.
<Alt> + <F4>	Exits *ibaAnalyzer*.

4.4.4 Combinations of mouse and key operation

In *ibaAnalyzer*, you can also use a combination of keys and mouse clicks to use certain functions.

LM = left mouse key RM= right mouse key

Key	Mouse	Function
<Shift> +	LM (double click)	On signal in the signal tree: Adds the signal to the selected graph and appends it to the Y-axes of the bottommost signal.
<Ctrl> +	LM (double click)	On signal in the signal tree: Adds the signal to an existing and marked graph and gives it its own Y-axis.
<Ctrl> +	LM (depressed)	In 3D appearance moving/rotating the graph
<Shift> +	LM (depressed)	In 3D appearance Zoom
<Ctrl> +	LM	When moving a marker in the marker view: Marker locks in at next signal point (can be adjusted in the preferences menu).
<Shift> +	LM	When moving a marker in the marker view: Both markers keep on moving simultaneously.
<Shift> + <Ctrl> +	LM	Combination of both preceding features

4.4.5 Tooltips

ibaAnalyzer displays tooltips in various places, which you can also configure accordingly.

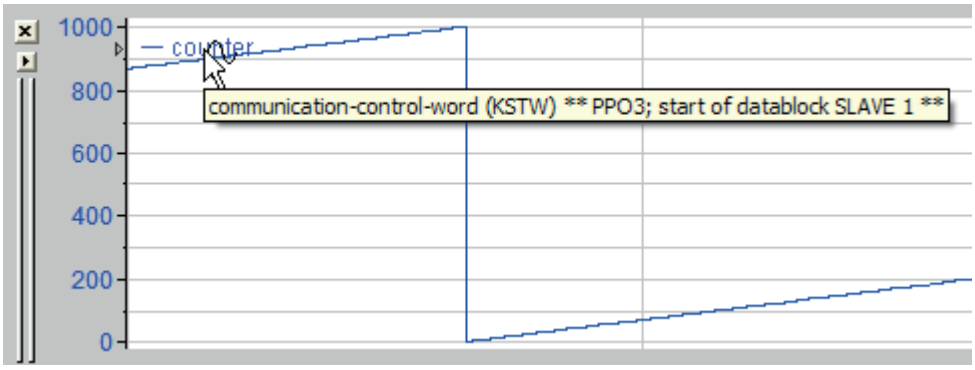
Tooltips for the toolbar

If you hold the cursor over a button in the toolbar, a short explanation (tooltip) appears.

You can activate and deactivate tooltips for the toolbar in the *View* menu – *Toolbars* – *Options* tab.

Tooltips for the signal legend

If you hold the cursor over the legend of a signal, a tooltip can also appear. To do this, you have to activate the function in the preferences or graph setup and define the content of the tooltip.



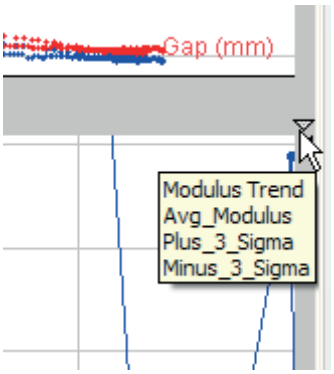
Available information that you can add to the tooltip of the legend:

- FFT prefix
- Signal name
- Signal unit
- Comments 1 and 2
- X values of markers 1 and 2
- Difference between markers-X-values
- Y values of markers 1 and 2
- Difference between markers-Y-values
- Sampling interval
- Expression

For more information about configuring the legend tooltips, see part 2 of the *ibaAnalyzer* manual, chapter *2D view*.

Tooltips for hidden graphs

If you have hidden a graph in the recorder window, you can display the content of the graph (signal names) by placing the mouse pointer over the small triangle (pointing downward = graph hidden).



4.5 The signal tree window

The signal tree window has multiple functions, which you can select by the tabs on the lower edge of the window:

- The *Signals* tab shows the data files that are currently opened – including the signals contained therein.
  See ↗ *Signals tab: Tree with data files and signals*, page 56.
- In order to find signals inside a data file, you can use the *Search* tab.
  See ↗ *Search tab: Function for searching signals*, page 64.
- The *Report info* tab displays calculated characteristic values or graphics.
  See ↗ *Report info tab: Display of characteristic values*, page 65.
- The *Analysis files* tab provides shortcuts for analysis file selection.
  See ↗ *Analysis files tab: Quick access to PDO files*, page 67.

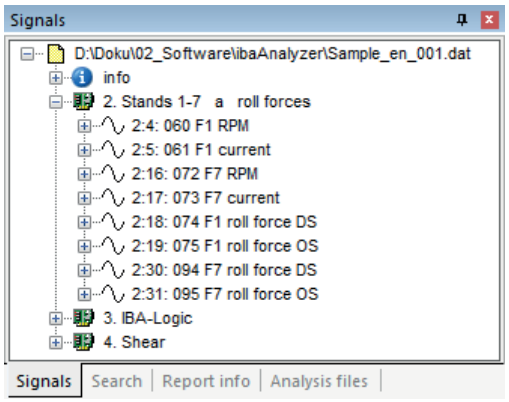
The signal tree window has a standard arrangement of sub-windows in the form of tabs. You can release each tab with drag & drop and position it as a separate window.

4.5.1 Signals tab: Tree with data files and signals

The *Signals* tab shows the currently open data files with the signals they contain. In addition to the analog and digital signals, you can also find text channels, virtual signals, logical expressions and info columns for the signals here in the signal tree.

Note

Correspondingly, the following explanations also apply to the HD query results.



In order to view the individual signals, click the plus symbol at a module icon.

Tip

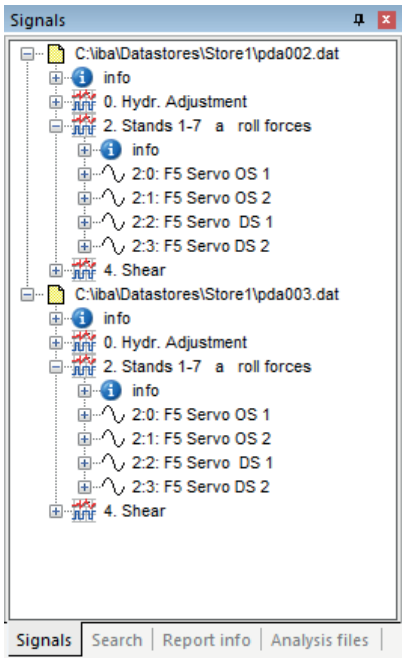
If you hover the mouse over the signals, tooltips show the signal comments, provided they have been configured in *ibaPDA*.

4.5.1.1 Displaying data files in the signal tree

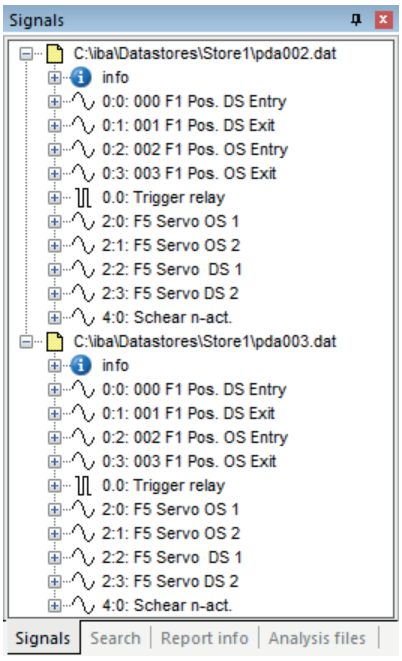
The signal tree window can display data files in different ways. The display method depends on how you have opened the data files and which view you select.

Displaying module names or linear numbering

Signal tree with modules



Signal tree with linear numbering



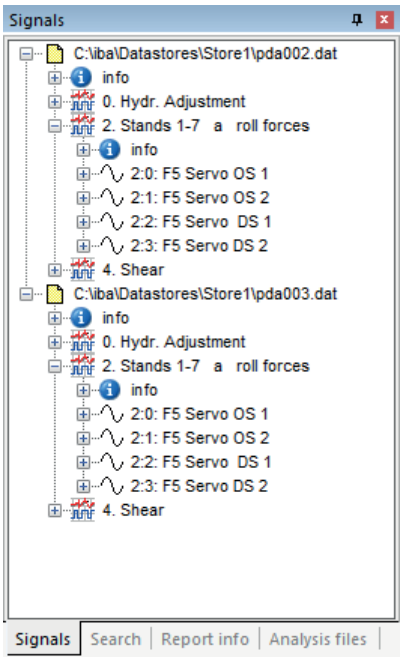
The image on the left shows the signal tree with modules. This highlights the technological structure of the signals, as specified in *ibaPDA*, for example. The corresponding module and signal trees can be extended for every file. Signal curves of the same signal in different data files can be displayed at the same time and compared.

The image on the right shows the linear numbering. All the signals of a data file are listed consecutively without the module names. The difference between analog signals and digital signals is still visible. The linear numbering option should be used if many signals of the same type and belonging to the same technological process units cover several modules, such as the 72 measuring zone values of a flatness measuring roll. This is an advantage for creating arrays or vector signals (logical signal definitions) for the presentation of profiles.

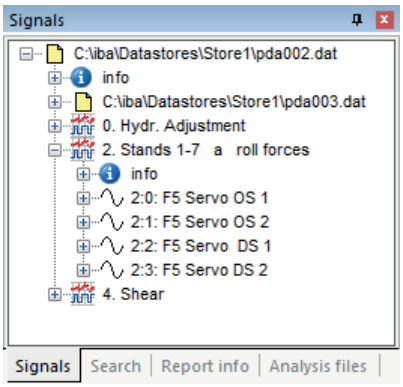
Displaying data files opened in parallel and appended data files

You can open several data files next to each other or attach several data files to each other depending on your application.

Data files opened in parallel



Appended data files



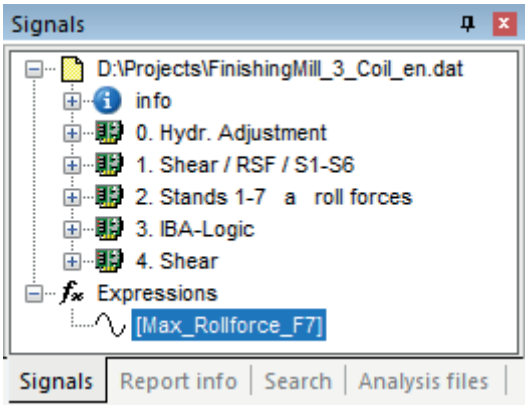
As the appended data files are displayed one after the other, the signals of the files are only listed once in the signal tree, although each file contains signals. You can also display appended data files with linear numbering.

For more information about appended data files, see part 2 of the *ibaAnalyzer* manual, chapter *Appending data files*.

For more information about opening multiple data files, see part 2 of the *ibaAnalyzer* manual, chapter *Opening multiple data files*.

4.5.1.2 Presentation of expressions

In addition to the original signals from the data file, the signal tree window also displays expressions and virtual signals if you created them in the dialog *Logical Expressions* or imported them with the data file.



Note

In the signal table in the *Signal definitions* tab, you can also create expressions with the expression editor (via *Add signals*). The signal tree window does not display these expressions, and they are lost if you delete these expressions from the signal table or if you delete the signals on which the expressions are based.

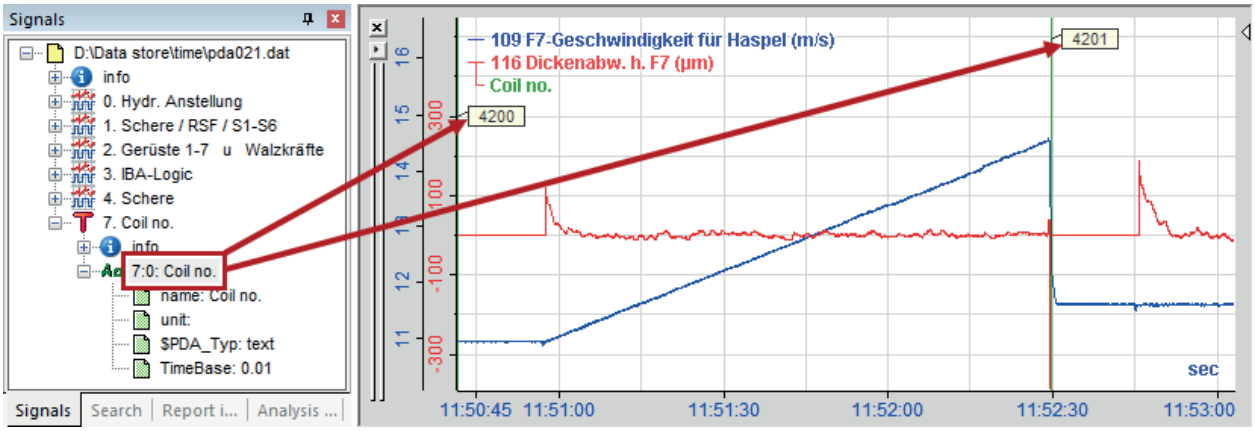
However, you can also declare each expression as a virtual signal via the *Logical expressions* dialog. The expressions then appear in the signal tree like the original signals and are an integral part of the analysis file.

4.5.1.3 Other channel types

In addition to normal numerical values, you can also display texts and vectors as signals in the signal tree.

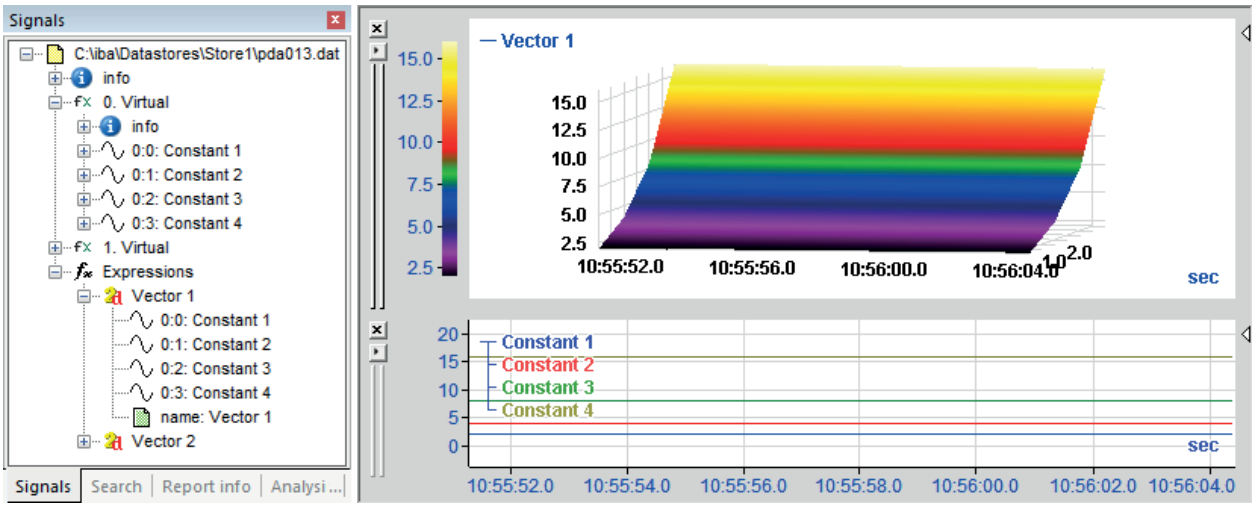
Text signals

You can use text signals in the same way as conventional signals. Like the fixed markers, text signals have an individual designation (flag).



Vector signals

The signal tree window displays vectors in the *Expressions* node. Vectors consist of individual signals combined in groups. If you have created the vector signals in *ibaPDA* and the signals are available in the data file, *ibaAnalyzer* displays the signals used in the signal tree.

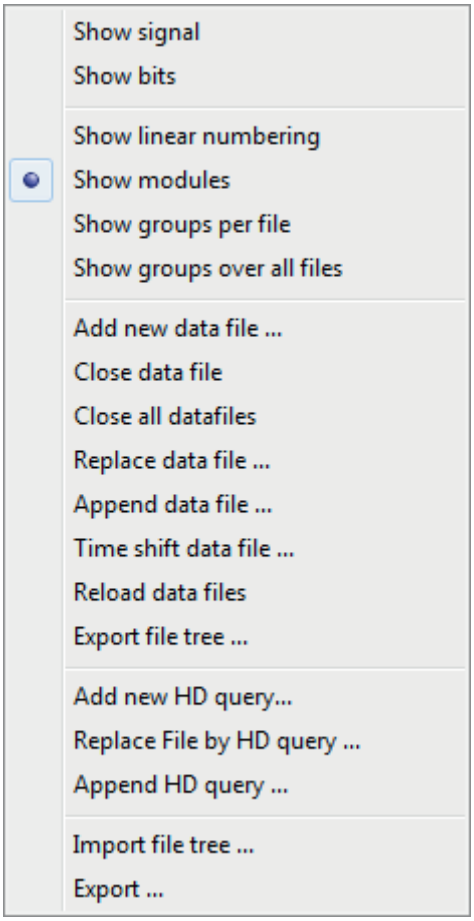


You can also create the vectors later in *ibaAnalyzer* in the *Logical expressions* dialog. In this case, you cannot find the associated signals in the signal tree, but only in the *Logical expressions* dialog.

For more information on vector signals in *ibaAnalyzer*, see part 2 of the *ibaAnalyzer* manual, chapter *Creating vector signals*.

4.5.1.4 Context menu in the Signals tab

This context menu basically contains the familiar commands for data files as the *File* menu, see ↗ *The File menu*, page 33. Depending on the area where you click, reduced menus may appear.



Menu commands referring to data files or HD queries usually apply to the file or HD query in which the context menu was opened or that was marked at the time the context menu was opened.

Important commands in the context menu

Show signal
Use this command to display the signal on which you right-click in a graph.

Show bits
This option is only available for analog signals. Use this command to display the bits of the signal as individual digital signals. In this way, you can, for example, display digital information that is packed into a 16-bit integer signal as individual signals again. This works for 32 bit floating point values, too.

Show linear numbering, Show modules
These functions switch between linear numbering and the module view.

Show groups per file, Show groups over all files
You can use these display options if the signals are already divided into different groups when recording the measurement values in *ibaPDA*. The signal-group-assignments are stored in the data file.

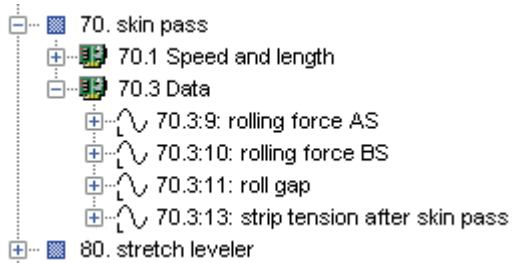
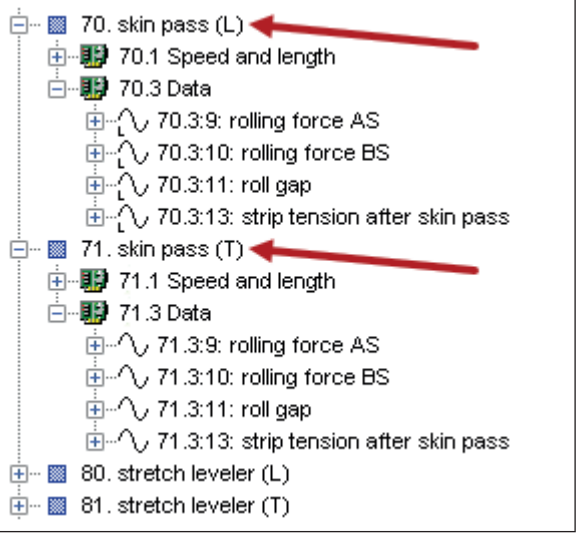
Show groups per file: The signal tree window displays the data files at the top level and the respective signal groups below.

Show groups over all files: The signal tree window displays the signal groups as the top level.

In this way, you can define signal groups that contain the signals for a specific analysis purpose, regardless of their physical module assignment. The signal name then no longer needs to contain the technological affiliation in order to identify a signal.

Show length and time-based signals separately
This option is only visible if a data file from an *ibaQDR* system with length-based and time-based signals is opened. This option divides the nodes of the measuring locations in the signal tree into nodes for length-based signals (L) and time-based signals (T). The nodes of the measuring locations with length-based signals automatically receive the numbers x, the nodes of the measuring locations with time-based signals receive the numbers x + 1.

Prerequisite: The archiving profile in the *ibaQDR* data recording has a length-based and a time-based store.

ibaQDR data file with length-based signals only	*ibaQDR* data file with length-based and time-based signals
	

Time shift data file
This command opens the dialog for configuring the time shift of data files. If more than one file is opened in *ibaAnalyzer*, you can arrange them one below the other.

For more information, see part 2 of the *ibaAnalyzer* manual, chapter *Time shift of data files*.

Reload data files
This command reloads the previously selected file in the signal tree window (refresh).

Export file tree/Import file tree
These commands can export the file tree to a text file or import it from a text file.

For more information, see part 2 of the *ibaAnalyzer* manual, chapter *Exporting/importing file tree*.

Add new HD query
This command adds a new HD query to the signal tree.

Replace File by HD query
This command replaces the (selected) data file or HD query with a new HD query.

Append HD query
This command appends a new HD query to the selected file or HD query.

Export HD query file
This command is only available if the signal tree contains an HD query. This command exports the parameters of the HD query to a text file.

For more information, see part 2 of the *ibaAnalyzer* manual, chapter *Export and import of HD queries and time periods*.

Export
This command opens the configuration dialog for exporting the data files to other file formats.

For more information, see part 2 of the *ibaAnalyzer* manual, chapter *Data export*.

4.5.1.5 Alternative signal names

For displaying the signal names in the signal tree, it is possible to use alternative titles, e.g. to display clearer titles or another language. The prerequisite is that corresponding info fields for each signal in *ibaPDA* have already been filled with information, e.g. comment1 and comment2.

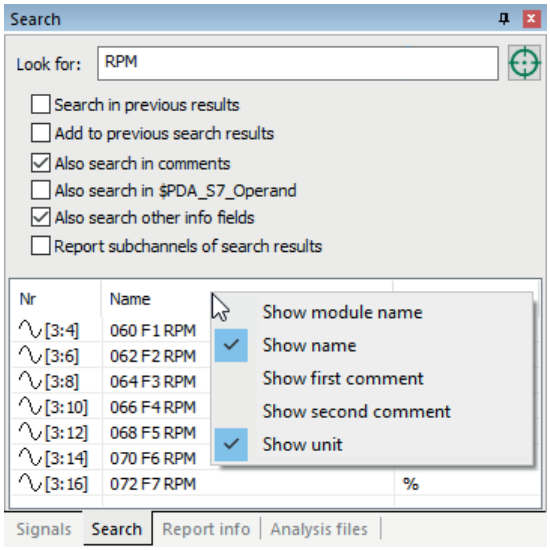
For more information, see part 2 of the *ibaAnalyzer* manual, chapter *Signal tree*.

4.5.2 Search tab: Function for searching signals

If a data file contains many signals, it can be hard to find a particular signal. The search function helps you to find signal names, expressions, logical signal definitions or markers.

To search for signals in general, you can enter a character string from the signal name or the comments as a search term. To identify individual signals in a trend view with many graphs, it is best to use the target search.

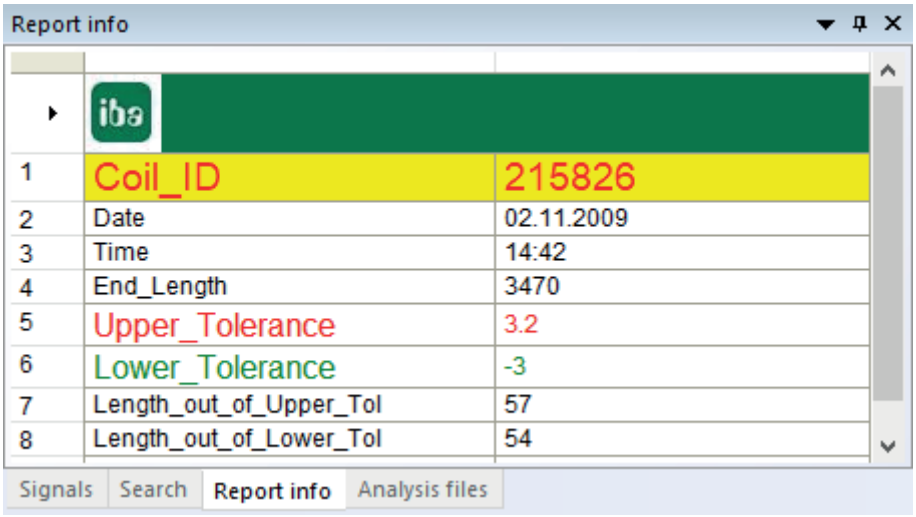
In addition to the columns *Nr*, *Name* and *Unit* (standard), you can also display other columns in the results table (*Module name*, *Comment 1* and *Comment 2*).



For more information, see part 2 of the *ibaAnalyzer* manual, chapter *Searching for signals*.

4.5.3 Report info tab: Display of characteristic values

The *Report info* tab of the signal tree window enables the display of calculated characteristic values resulting from a measuring series.



You can define the typestyle format (font, character size, color, etc.) individually so that you can create a clear and easy-to-read display. The values are determined and provided via the dialog for the report generator.

Other documentation

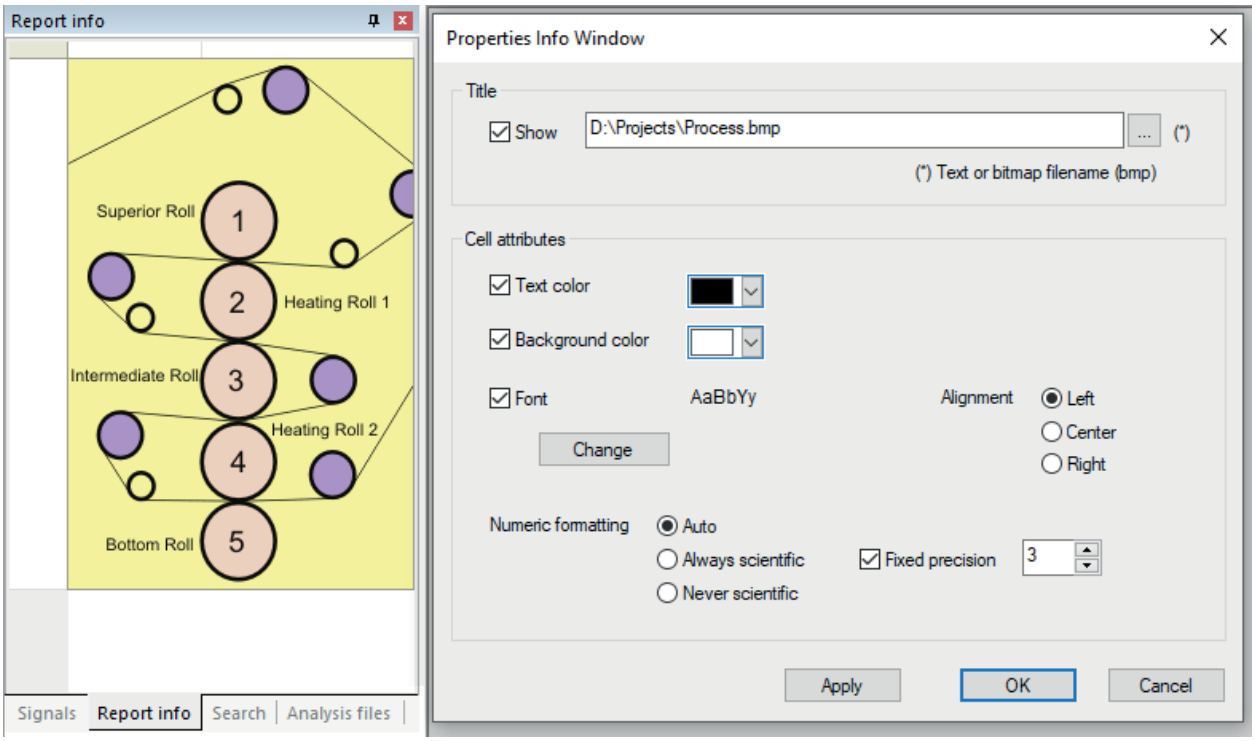
For more information, see the *ibaAnalyzer-Reportgenerator* manual.

4.5.3.1 Displaying images on the Report info tab

In addition to or instead of the calculated characteristic values and info assignments, the tab can also display a graphic. In this way, you can integrate a lot of valuable information into the analysis, e.g. about the structure of a machine.

The graphic must be available as a bitmap (.jpg, .png, .bmp, .gif).

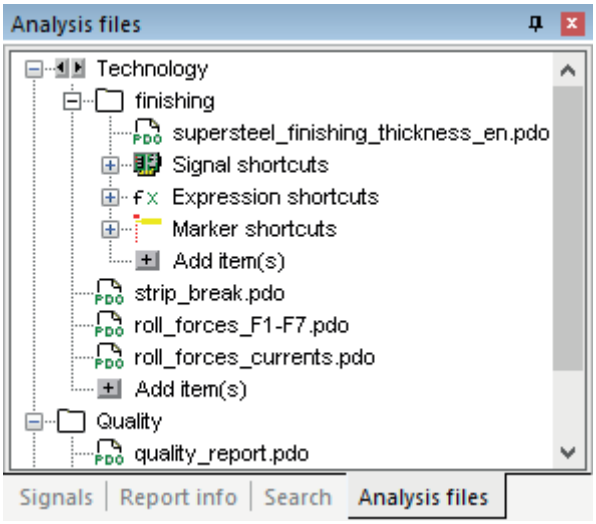
1. To add a graphic, open the *Properties* via the context menu of the *Report info* tab.
2. In the *Title* area, enter the file path and file name of the graphic file.
3. Confirm the entries with <OK>.



4.5.4 Analysis files tab: Quick access to PDO files

On this tab, you can configure a tree structure with an arbitrary number of selectable analyses. You can apply each of these analysis files to a loaded data file by a double-click.

In addition, you can add further shortcuts to the analysis tree, e.g. to signals, expressions and markers.



For more information, see part 2 of the *ibaAnalyzer* manual, chapter *Quick access to analyses and more*.

4.6 The signal table

The signal table, i.e. the lower part of the screen, offers several display and analysis aids to quickly display the desired values and additionally create logical signals (expressions) for display. The different control levels can be selected via tabs on the lower margin.

The signal table window represents a default grouping of the partial windows as tabs. You can release each tab by means of drag & drop and position it as a separate window.

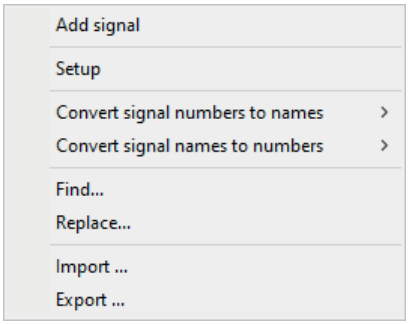
You can adjust the width of the columns in the table. These settings are saved in the analysis file.

In the signal table, the lines of those signals that are part of the currently selected graph are highlighted gray.

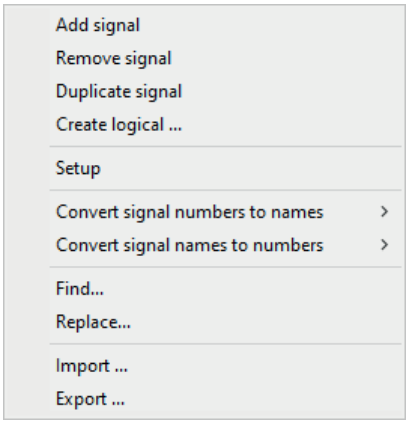
4.6.1 Context menu in the Signal definitions tab

Open the context menu with a right mouse click in the tab.

General context menu in the tab



Context menu for signals



The context menus differ depending on where they are opened.

If you click in the empty area of the table or on the header, you can perform the following actions. These actions are also available for individual signals.

- *Add signals*: Adds a new signal as an empty row in the table.
- *Setup*: Opens the preferences for an empty table or the graph setup of the active graph for existing signals.
- *Convert signal numbers to names* or *Convert signal names to numbers*: You can apply this function to the selected signal or all signals. In the *Expression* column, the usual [Module:Channel] designations are then replaced with the plain text signal name and vice versa. A signal calculation (formula expression) may become more comprehensive but longer as well.
- *Find*, *Replace*: Using these functions, you can search through the configured signal names, expressions, comments and units and optionally replace the found occurrences by another string.
- *Import*, *Export*: You can import the signal definitions from a text file or export them to a text file.

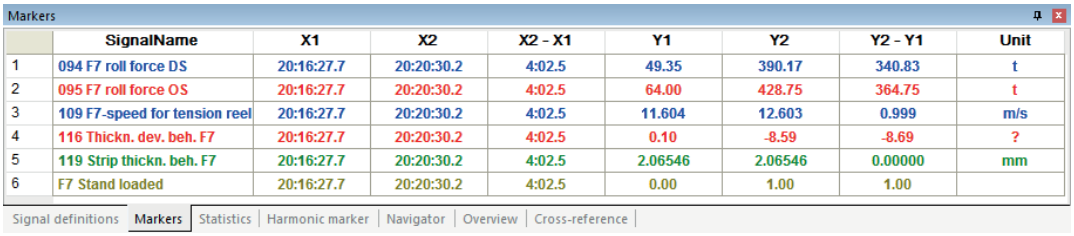
A right click on a signal row opens the menu as shown in the image to the left. Additionally, you can perform the following actions:

- *Remove signals*, *Duplicate signals*
- *Create logical*: Opens the *Logical expressions* dialog. The signal name and the expression in the line are given as suggestions in the dialog.

For more information, see part 2 of the *ibaAnalyzer* manual, chapter *Signal grid*.

4.6.2 Markers tab

If you select the *Markers* tab, two vertical red rulers (X1 and X2) appear in the recorder window. You can move these two markers independently from each other using the mouse. When pressing the <Shift> key while moving one of the two markers, the other one follows in the same distance.



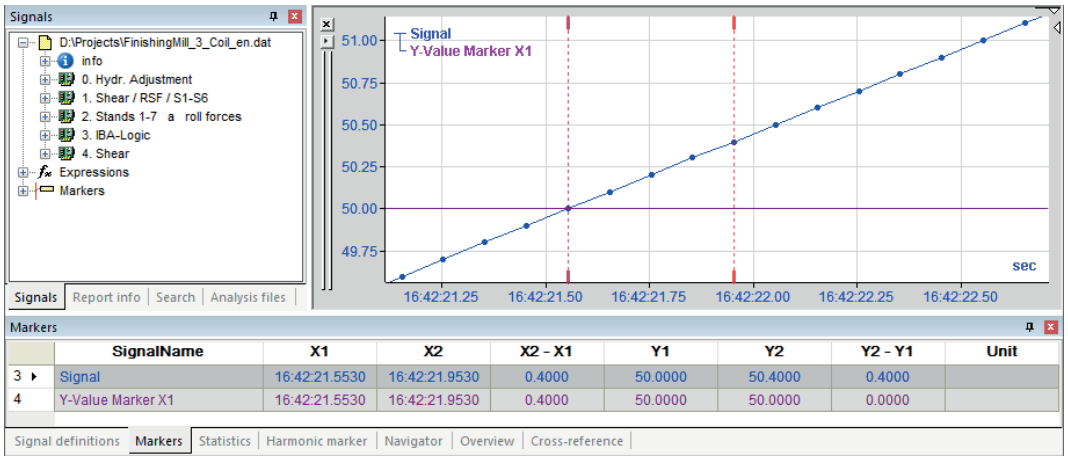
The signal table shows the X-values and Y-values for each signal at the markers, as well as the difference between the two markers in the X-direction and Y-direction. In this way, the curves displayed can be easily measured and time sections can be determined.

Exact determination of individual signal points

Proceed as follows to determine individual signal points exactly or to mark them precisely ("snapping"):

- Enlarge the signal view so that the individual signal points become visible.
- Hold down the <Ctrl> key while moving one of the two markers with the mouse: The marker jumps to the signal point closest to it on the first signal in the graph. You can thus precisely determine each signal point in the X-direction.
- If you press the <Shift> + <Ctrl> keys simultaneously while moving one of the two markers with the mouse, the second marker follows the first at a constant distance from signal point to signal point.

If the signal points are not visible (insufficient magnification of the graph section), these functions are not supported.



You can also move the markers with the arrow buttons of the keyboard. The following additional functions are applicable:

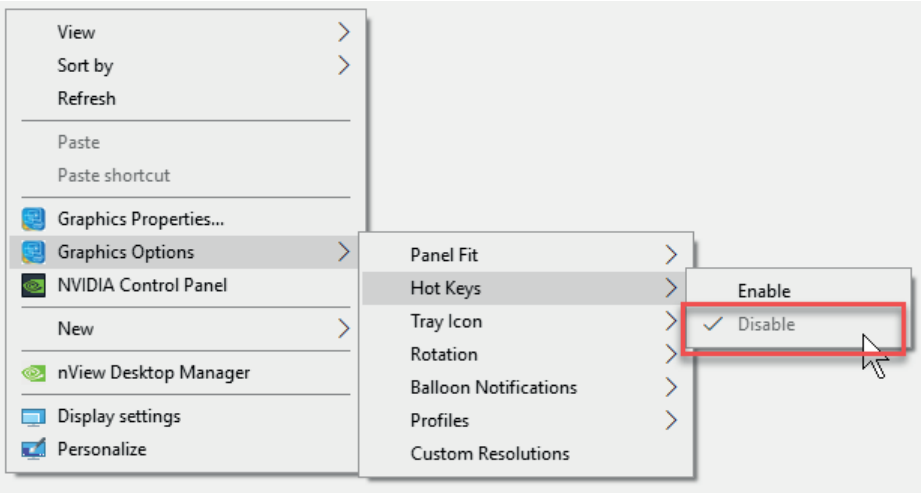
Shortcuts	Function
Arrow keys	Marker X1 moves left/right.
<Alt> + arrow key	Only marker X2 moves.
<Shift> + arrow key	Both markers move simultaneously.
<Ctrl> + arrow key	Marker X1 jumps from signal point to signal point.
<Ctrl> + <Alt>/<Shift> + arrow key	Marker X2/both markers jump from signal point to signal point.

Note

Under certain conditions, there may be overlaps of the shortcuts with other hotkeys on the part of the operating system, which leads to unexpected responses. The best way is to try the shortcut to see whether there are unexpected responses.

With Windows 10, for example, if you are using the onboard graphics card, it is advisable to deactivate the hot keys for the "Graphics Options", because otherwise the entire desktop rotates when you press <Ctrl> + <Alt> + arrow key.

You can configure the settings by right-clicking on the desktop:



When using different graphics cards, these menu items may not appear. In this case, refer to the documentation about your graphics card.

4.6.2.1 Context menu in the Markers tab

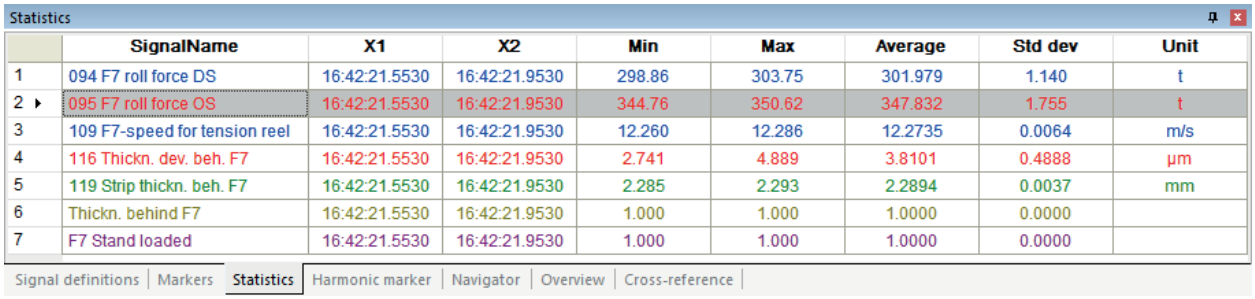
Hexadecimal
You can use the context menu to switch the display of the Y-values to hexadecimal values. This can be an interesting option if, for example, integer values are used for transmitting binary control information. The hexadecimal representation helps to identify which bits are set.

The hexadecimal value of the stored data type is displayed.

Find
You can use this command to search through the markers using a text search.

4.6.3 Statistics tab

This table offers a quick overview of the most important statistical values, i.e. minimum, maximum, average and standard deviation.



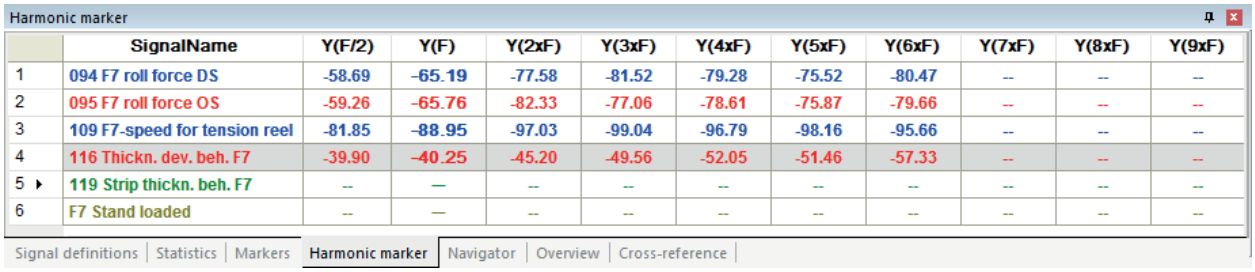
	SignalName	X1	X2	Min	Max	Average	Std dev	Unit
1	094 F7 roll force DS	16:42:21.5530	16:42:21.9530	298.86	303.75	301.979	1.140	t
2	095 F7 roll force OS	16:42:21.5530	16:42:21.9530	344.76	350.62	347.832	1.755	t
3	109 F7-speed for tension reel	16:42:21.5530	16:42:21.9530	12.260	12.286	12.2735	0.0064	m/s
4	116 Thickn. dev. beh. F7	16:42:21.5530	16:42:21.9530	2.741	4.889	3.8101	0.4888	µm
5	119 Strip thickn. beh. F7	16:42:21.5530	16:42:21.9530	2.285	2.293	2.2894	0.0037	mm
6	Thickn. behind F7	16:42:21.5530	16:42:21.9530	1.000	1.000	1.0000	0.0000	
7	F7 Stand loaded	16:42:21.5530	16:42:21.9530	1.000	1.000	1.0000	0.0000	

The red markers are also displayed when the *Statistics* tab is selected. You can use the markers to limit an area to which the statistical functions in the signal table should refer. The values in the *Min*, *Max*, *Average* and *Std dev* columns only apply to the range between the two markers. When the marker position changes, you can easily see that the values are calculated on an ongoing basis and updated immediately.

This is hence a relatively simple way of determining averages or maximum/minimum values of parts of the chart or to exclude invalid values, for example, at the beginning of measurement.

4.6.4 Harmonic marker tab

This table shows the FFT result values of the main frequency Y(F) and its harmonics for each signal that is displayed in the recorder window on an FFT axis (1/s or 1/length).

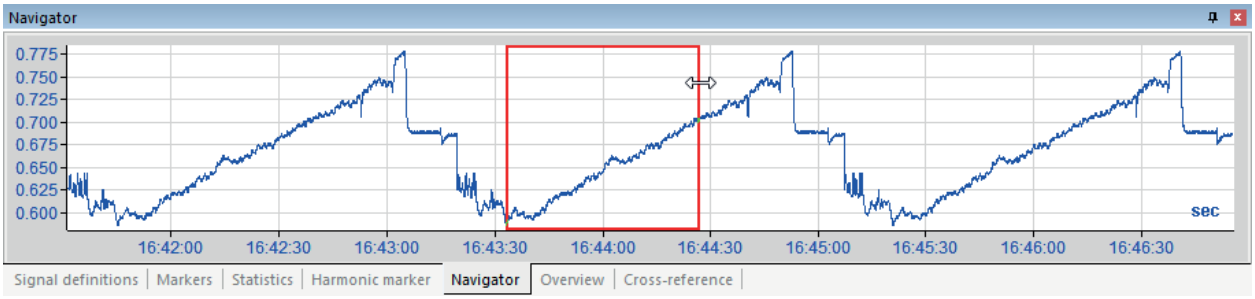


	SignalName	Y(F/2)	Y(F)	Y(2xF)	Y(3xF)	Y(4xF)	Y(5xF)	Y(6xF)	Y(7xF)	Y(8xF)	Y(9xF)
1	094 F7 roll force DS	-58.69	-65.19	-77.58	-81.52	-79.28	-75.52	-80.47	--	--	--
2	095 F7 roll force OS	-59.26	-65.76	-82.33	-77.06	-78.61	-75.87	-79.66	--	--	--
3	109 F7-speed for tension reel	-81.85	-88.95	-97.03	-99.04	-96.79	-98.16	-95.66	--	--	--
4	116 Thickn. dev. beh. F7	-39.90	-40.25	-45.20	-49.56	-52.05	-51.46	-57.33	--	--	--
5	119 Strip thickn. beh. F7	--	—	--	--	--	--	--	--	--	--
6	F7 Stand loaded	--	—	--	--	--	--	--	--	--	--

For more information, see part 2 of the *ibaAnalyzer* manual, chapter *Harmonic markers*.

4.6.5 Navigator tab

The *Navigator* tab always shows the complete content of the data file with time or length axis for the graph appearing at the topmost position in the recorder window.

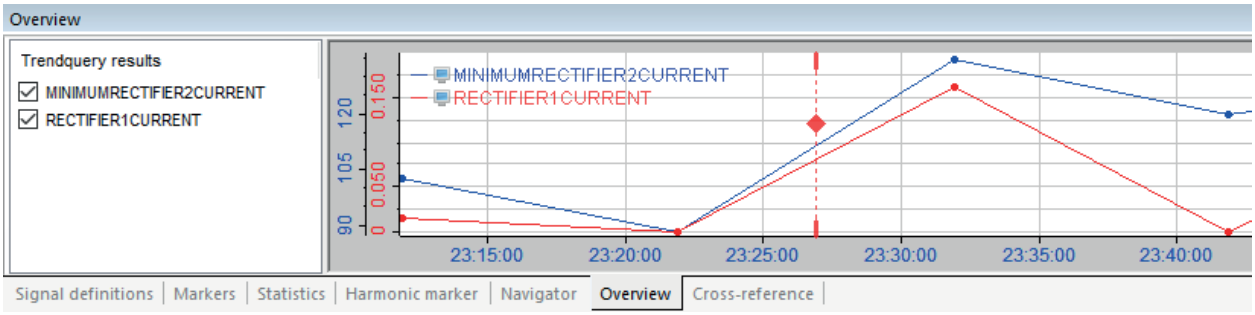


The red frame in the window represents the section that is visible in the recorder window. This helps you to better navigate in the data file, especially when using the zoom function.

In turn, you can adjust the red frame to zoom into the graph. For more information, see part 2 of the *ibaAnalyzer* manual, chapter *Using the Navigator*.

4.6.6 Overview tab

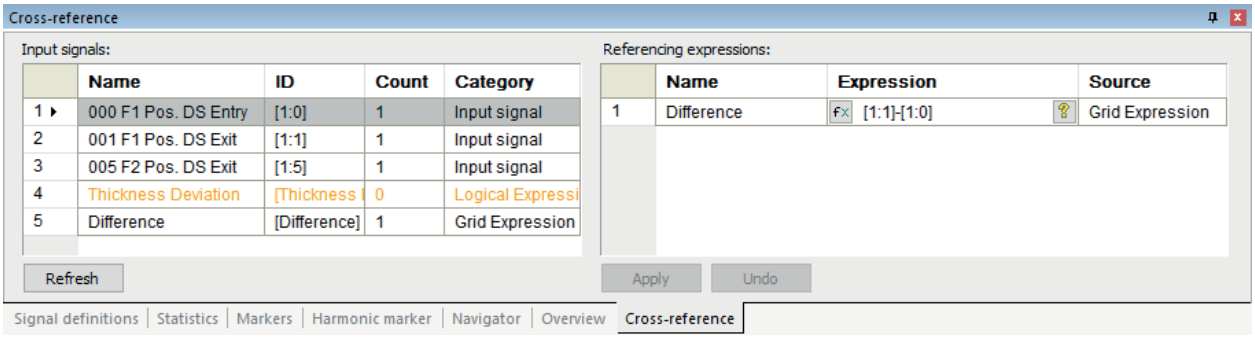
The *Overview* tab shows the results of trend queries from databases or from file groups.



For more information, see part 4 of the *ibaAnalyzer* manual, chapter *Trend queries in Overview window*.

4.6.7 Cross-reference tab

In the *Reference* tab, you can review the use and referencing of input signals and logical expressions. The tab shows a list of all input signals and expressions as well as their use in expressions and calculations. You can edit the expressions directly in the *Referencing expressions* table.



Input signals table

The *Input signals* table lists all signals from the signal tree that are referenced. Not referenced input signals are not listed. All logical expressions from the *Logical expressions* dialog are also listed, regardless of whether they are referenced or not.

You can sort the table in ascending or descending order by clicking on a column header.

If you double-click on a row in the table, *ibaAnalyzer* navigates to the origin of the signal and highlights it, e.g. in the signal tree or in the *Logical expressions* dialog.

You can use the <Refresh> button to update the table if the input signals changed.

The columns contain the following:

- *Name*: Name of the input signal
- *ID*: The ID is used in expressions when this signal is referenced.
- *Count*: Number of expressions referencing this signal (corresponds to the number of rows in the *Referencing expressions* table for this signal)
- *Category*: Type of the input signal. The following categories are available:
  - *Input signal*: Input signal from currently loaded data file
  - *Logical expression*: Logical expression from the *Logical expressions* dialog

    Not referenced expressions are marked orange. They have a count of "0". To optimize the analysis, you can remove the expressions that are not required.

    Duplicates in the list are marked in red. There is either a signal or an expression with the same name. Duplicates cannot be referenced correctly, so you have to edit the duplicates marked in red.
  - *Grid expression*: Referenced expression from the signal table

    Grid expressions that reference input signals directly are not listed, as these expressions usually only visualize the signal and do not calculate it.

    Duplicates in the list are marked in red. There is either a signal or an expression with the same name. Duplicates cannot be referenced correctly, so you have to edit the duplicates marked in red.
  - *Trend query*: Channel that results from a trend query of a database and that appears in the signal tree instead of in the overview.
  - *View result*: Channel that results from *ibaInSpectra*, *ibaInCycle* or the calculation module and that is referenced. Not referenced channels are not listed.

Referencing expressions table

The *Referencing expressions* table lists all expressions that reference the selected input signal.

If you double-click on a row in the table, *ibaAnalyzer* navigates to the origin of the signal and highlights it, e.g. in the signal tree or in the *Logical expressions* dialog.

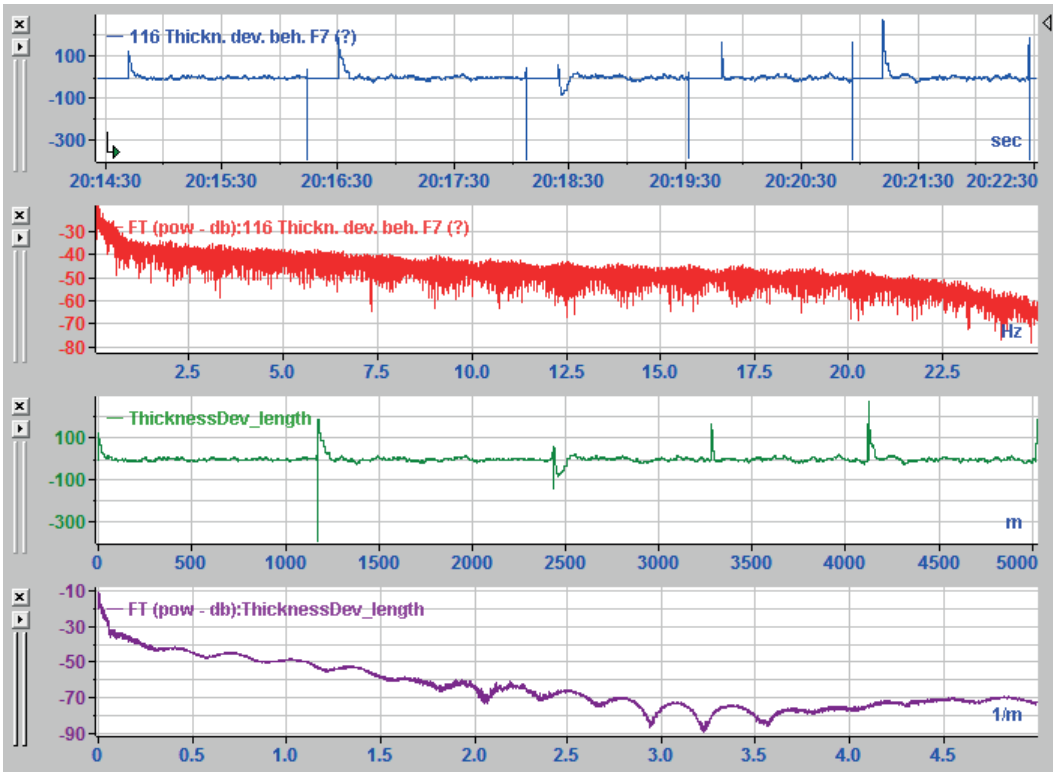
You can edit expressions directly in this table. Use the <Apply> button to save the changes directly in the source without having to open the source. Use the <Undo> button to discard all unsaved changes.

The columns contain the following:

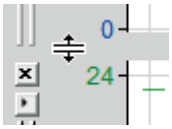
- *Name*: Name of the expression
- *Expression*: Expression itself, which you can edit. You can open the expression editor and the diagnosis of the expression from here.
- *Source*: Location where the expression is defined. The following sources are available:
  - *Grid expression*: Expression from the signal table
  - *Logical component*: Expression with at least one logical component (logical expression)
  - *X-axis marker*: Calculated static marker
  - *X-axis interval*: Interval
  - *Report Computed Value*: Calculated column in the report generator
  - *Extract Computed Value*: Calculated column in the data extractor
  - *X-axis manual scale*: Calculated scale of the X-axis
  - *Y-axis manual scale*: Calculated scale of the Y-axis
  - *View input*: Input signal of a view e.g. Maps, *ibaInCycle*, *ibaInSpectra*, calculation module
  - Empty field: not all possible sources are currently implemented

4.7 The recorder window

The recorder window is the central area for value display. The graphs form the basic structural element within the recorder window. The program tries to arrange all the graphs in the visible area of the recorder window until a minimum graph height is reached and scales them accordingly. If the number of graphs becomes too large, a scrollbar appears on the right margin. The figure shows measured values with X-axis modes Time, Frequency, Length and 1/length (from above).

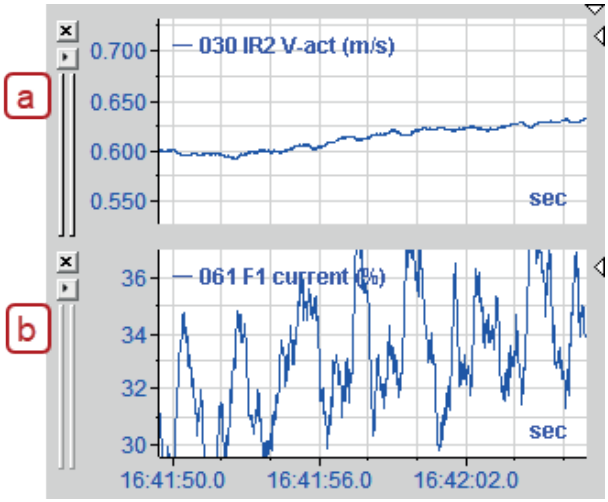


You can also manually change the height of a graph using the mouse in the area below the scale.



You can display one or more signals in one graph. If several signals share the same graph, they always have a common X-axis and either a common or separate Y-axis. (See also part 2, chapter *Displaying signals*.)

If several graphs are displayed, one of them is active. Active here means that a graph is selected (is in focus) to which certain commands in the menus or on the toolbar are then applicable, such as graph settings or automatic color assignment. You can tell which graph is active by the shaded header (see image: a is in focus, b is not in focus).



You can select the basic variable for the X-axis (time, length, frequency or 1/length) separately for each graph. Just click the small arrow button to the left of the Y-axis and select the basis. In the case of several graphs with different basic variables, there is only *one* general time axis, *one* length axis and *one* frequency axis.

You can scale the X-axes and Y-axes (see part 2, *Settings* chapter).

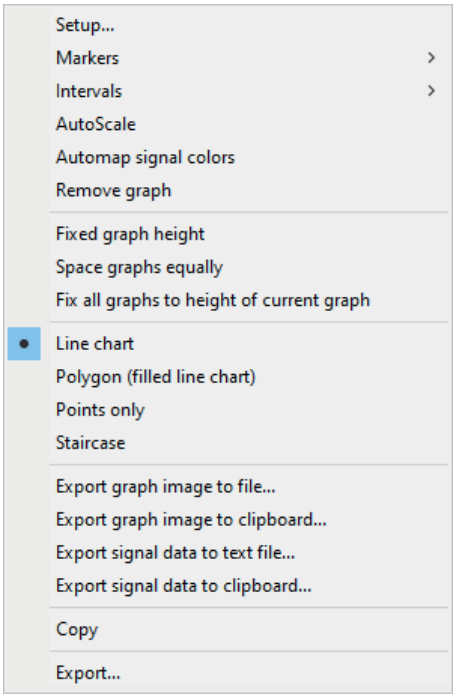
Note

Clicking the <x> button in the upper left corner of a graph removes the graph and its signals from the display. It is then no longer possible to display any derived expressions that were generated in the signal table (*Signal definitions*). In order to hide a graph, click the small arrow on the right margin of the respective graph.

4.7.1 Context menu in the recorder window

There are different context menus in the recorder window depending on the position of the cursor when the right mouse button is pressed.

Curve area of a graph



As you can see from the picture above, the context menu offers a selection of relevant setting options for the graph in question. Further setting options are available for FFT displays.
In the zoomed-in condition, commands for autoscrolling and zooming out are additionally offered.

For more information, see part 2 of the *ibaAnalyzer* manual, chapter *Settings*.

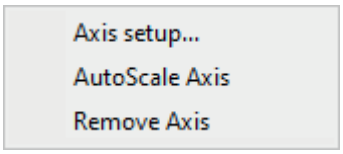
The following menu items allow you to document the displayed signals by copying or exporting them.

- Export graph image to file
- Export graph image to clipboard
- Export signal data to text file
- Export signal data to clipboard
- Copy
- Export

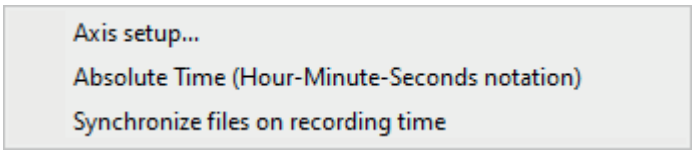
For more information, see part 2 of the *ibaAnalyzer* manual, chapters *Using views in other programs* and *Data Export*.

X-axis and Y-axis areas

Y-axis



X-axis (time)



To access the context menus for the axes, position the cursor directly on the respective axis.

For more information about axis setup, see part 2 of the *ibaAnalyzer* manual, chapter *Settings*.

Options in the context menu of the time axis (picture on the right):

- *Absolute time (Hours – minutes – seconds notation)*
  toggling between absolute and relative time display on the scale.
- *Synchronize files on recording time*
  This option is important in the case of appended files: This option does not append the signal curves one after the other without gaps but arranges them according to their time stamp on the time axis. This allows you to recognize and display recording gaps between two data files.

For more information, see part 2 of the *ibaAnalyzer* manual, chapter *Appending data files*.

4.8 Status bar

The status bar, the lowest element of the *ibaAnalyzer* screen, shows the position of the cursor when it is in the curve field. The position indicator allows you to easily read the measured value – regardless of the selected register or markers.

Corresponding to the X-axis mode, the X-coordinate also shows the correct physical unit. In the case of a time axis, a distinction is made between absolute and relative time.

Status bar, cursor position for graph	Example
with time axis: relative time	x: 20.3 sec y: 4.07
with time axis: absolute time	x: 21:39:18.0 sec y: 4.07
with length axis	x: 126.08 m y: 23.81
with frequency axis (FFT)	x: 1.032 Hz y: -26.34
The third dimensional coordinate also appears in the 2D top view (sonogram). "y" is the index coordinate, for example, the strip width, the position of the temperature scanner or the zone number of a flatness measuring roll for the purposes of a strip flatness presentation. "z" represents the value of the real measured signal (e.g. thickness, temperature or flatness).	x: 21:39:41.7 sec y: 7.83 z: 583.51

You can switch the status bar on or off in the *View* menu.

5 Support and contact

Support

Phone: +49 911 97282-14

Email: support@iba-ag.com

Note

If you need support for software products, please state the number of the license container. For hardware products, please have the serial number of the device ready.

Contact

Headquarters

iba AG
Koenigswarterstrasse 44
90762 Fuerth
Germany

Phone: +49 911 97282-0

Email: iba@iba-ag.com

Mailing address

iba AG
Postbox 1828
D-90708 Fuerth, Germany

Delivery address

iba AG
Gebhardtstrasse 10
90762 Fuerth, Germany

Regional and Worldwide

For contact data of your regional iba office or representative
please refer to our web site:

www.iba-ag.com