

New features in ibaAnalyzer v6.0.0

1 Restyled GUI for the main window

The main ibaAnalyzer window has been restyled to give a more contemporary look and feel.

1.1 Panes

In previous versions of ibaAnalyzer, by default two panes were present. One pane was docked to the left containing:

- The signal tree, displaying the available channels hierarchically (per file, per module or per group).
- The search grid, enabling one to search for channels.
- The report info tab, showing info fields and computed columns defined in the report generator.
- The analysis tree, where favorite analyses, .dat file directories and signals could be defined.

Another pane was docked to the bottom containing:

- The signal definitions table, where info of the depicted channels was present and expressions could be defined.
- The markers table, showing basic information about the markers.
- The statistics table, showing statistics about the signals between the markers.
- The harmonic table, for FFT signals, showing information about the frequency at the harmonic marker and the harmonics of that frequency.
- The navigator grid, enabling one to quickly navigate to parts of a signal.
- The Overview, where trend queries can be displayed.

Additional temporary panes were created to display ibaCapture-CAM and ibaCapture-HMI windows.

The windows in the left and bottom pane were tabbed and no two windows in the same pane could be shown simultaneously.

In the current version of ibaAnalyzer, all these windows are individual panes that are initially tabbed in the same manner as previous ibaAnalyzer versions, but can now be rearranged at will by the user.

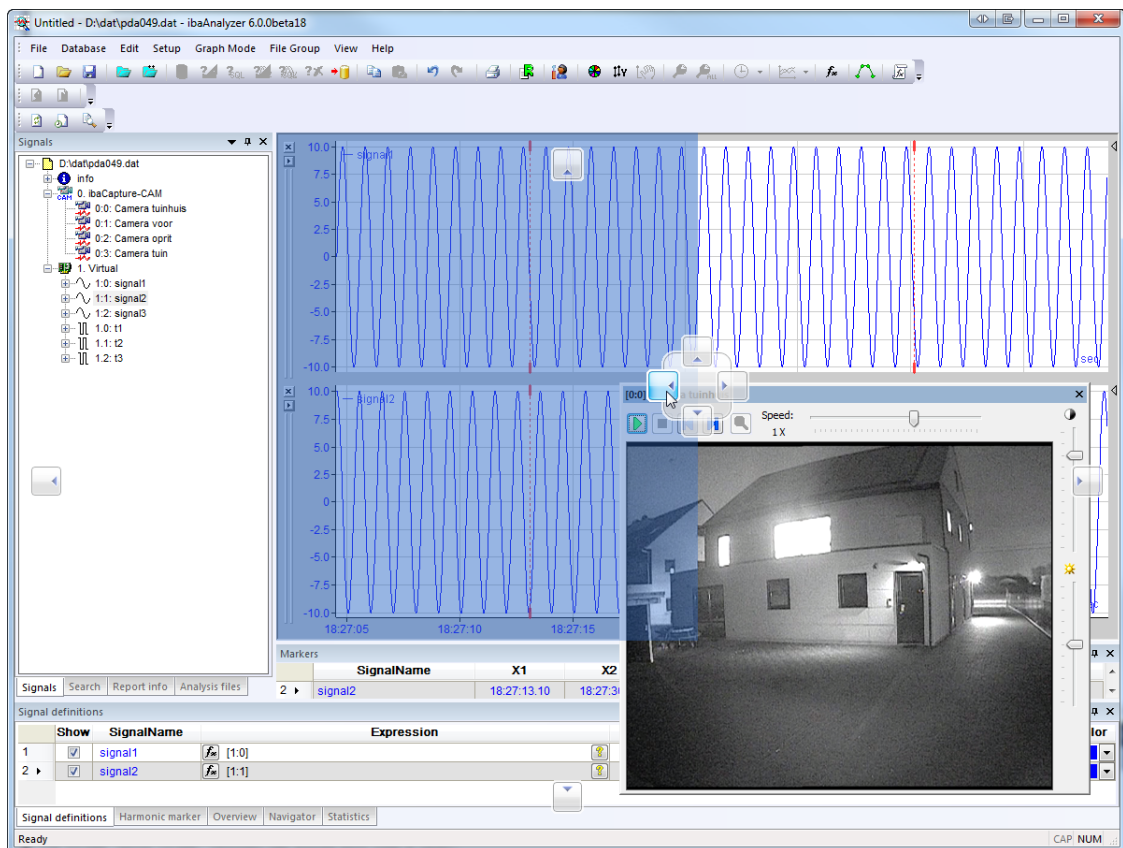
The arrangement of panes is persistent over ibaAnalyzer sessions; when closing ibaAnalyzer, the pane arrangement is stored on the computer and will be reloaded when starting ibaAnalyzer again.

1.1.1 Smart docking

The panes can be in the following states:

- They can be free floating, independent of the main window.
- They can be docked to the sides (top, bottom, left and right) of the main window
- They can be tabbed to each other, creating a new pane which itself can be docked, floated or tabbed.
- One pane can be docked to the sides of another pane.

Rearranging panes happens through **smart-docking**, while dragging the pane to reposition it; a visual indication is given where the pane will end up.

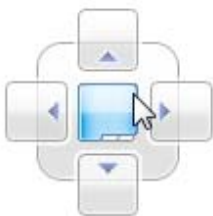


In previous versions of ibaAnalyzer, ibaCapture-CAM or ibaCapture-HMI panes had to be created by double clicking the CAM signal or the HMI-module in the signal tree or by dragging and dropping them in the recorder window. This always created initially a floating pane which then could be docked. So creating and docking a video pane was always a two-step process.

In the current version of ibaAnalyzer when one drags the CAM signal or HMI module, the pane is immediately created and smart-docking is started; so one can dock the video window in one operation.

1.1.2 Creating and rearranging tabbed panes

During smart-docking one can create a tabwindow of tabbed panes or add a pane to a tabwindow by dragging a pane in the tab icon:




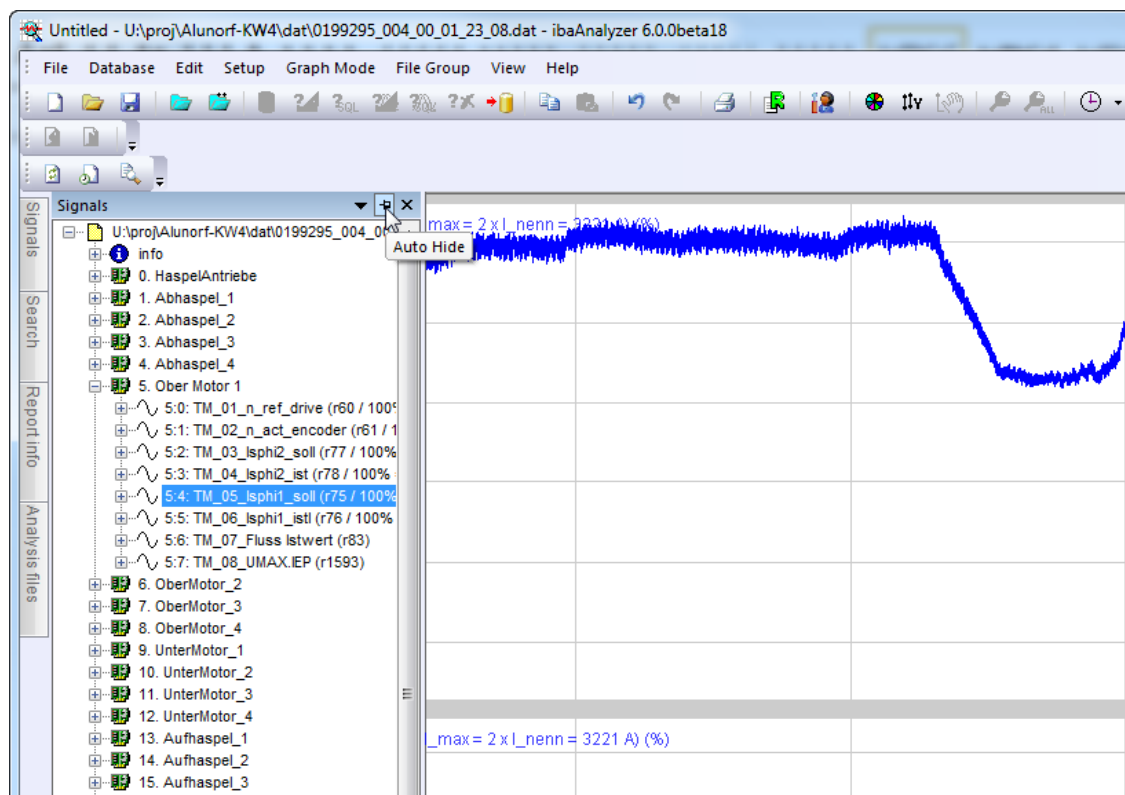
The dragged pane is added as the last tab in the tabwindow, however you can reorder the tabs at will by dragging and dropping the tab labels. Here one must be careful not to move the mouse out of the area of the tab labels or the pane is removed from the tabwindow and smart-docking is started.

| Signal definitions | | | |
|---|-------------------------------------|-----------------------------------|--|
| | Show | SignalName | |
| 1 | <input checked="" type="checkbox"/> | [9:0] | f_{sc} [9:0] |
| 2 | <input checked="" type="checkbox"/> | [9:3] | f_{sc} [9:3] |
| 3 | <input checked="" type="checkbox"/> | [9:1] | f_{sc} [9:1] |
| 4 | <input checked="" type="checkbox"/> | [9:2] | f_{sc} [9:2] |
| 5 | <input checked="" type="checkbox"/> | n VorwärtsFahrt | f_{sc} XMarkValid ([0:22],[0:22] > . |
| 6 | <input checked="" type="checkbox"/> | n VorwärtsFahrt zu klein markiert | f_{sc} XMarkValid ([n VorwärtsFal |
| 7 | <input checked="" type="checkbox"/> | n VorwärtsFahrt OHNE Rampen | f_{sc} Shl([n VorwärtsFahrt Diff] < |
| <div> Markers Signal definitions Harmonic marker Overview Navigator Statistics </div> | | | |
| Ready | | | |

1.1.3 Auto-hidden panes

When panes are docked to the side of the main window, they can be auto-hidden. When auto-hidden, the pane is not visible unless one hovers with the mouse over its tab on the side of the main window. This allows for more space for the main window. When hovering over the side pane tab, the pane will slide out. Unless the pane has focus, it will slide back in as soon as one moves the mouse out of the area of the tab or pane.


Enabling or disabling auto-hide mode is done by clicking the little pin icon  in the title bar of the pane.

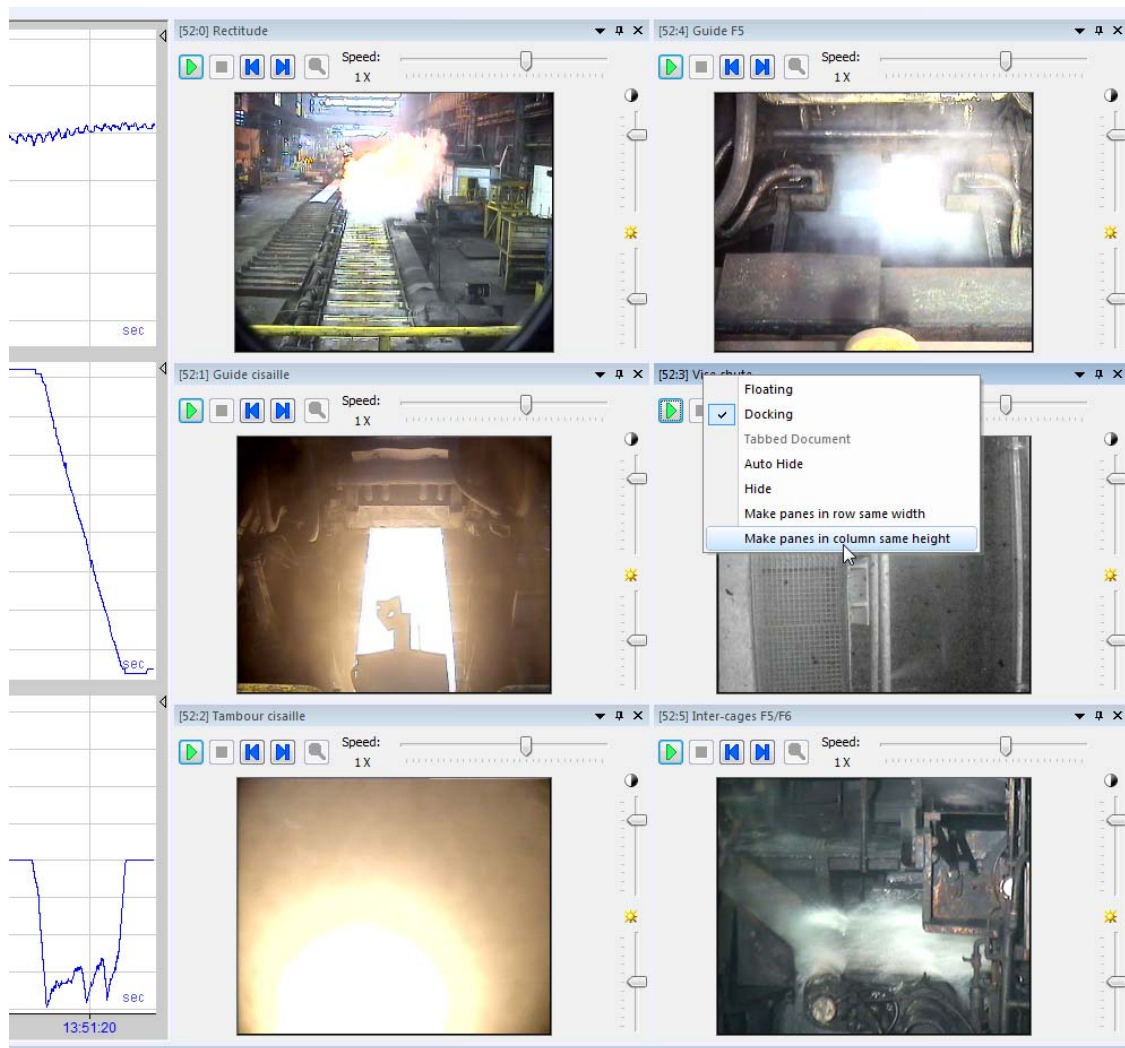


1.1.4 Auto sizing panes


When panes are docked in a row, one has the option to make all panes in that row the same width. Likewise when panes are docked in a column, one has the option to make all panes in that column the same height. When the panes are docked in a row of columns or a column of rows, both options are available; here one of the options is then assumed to operate on the outer row or column.

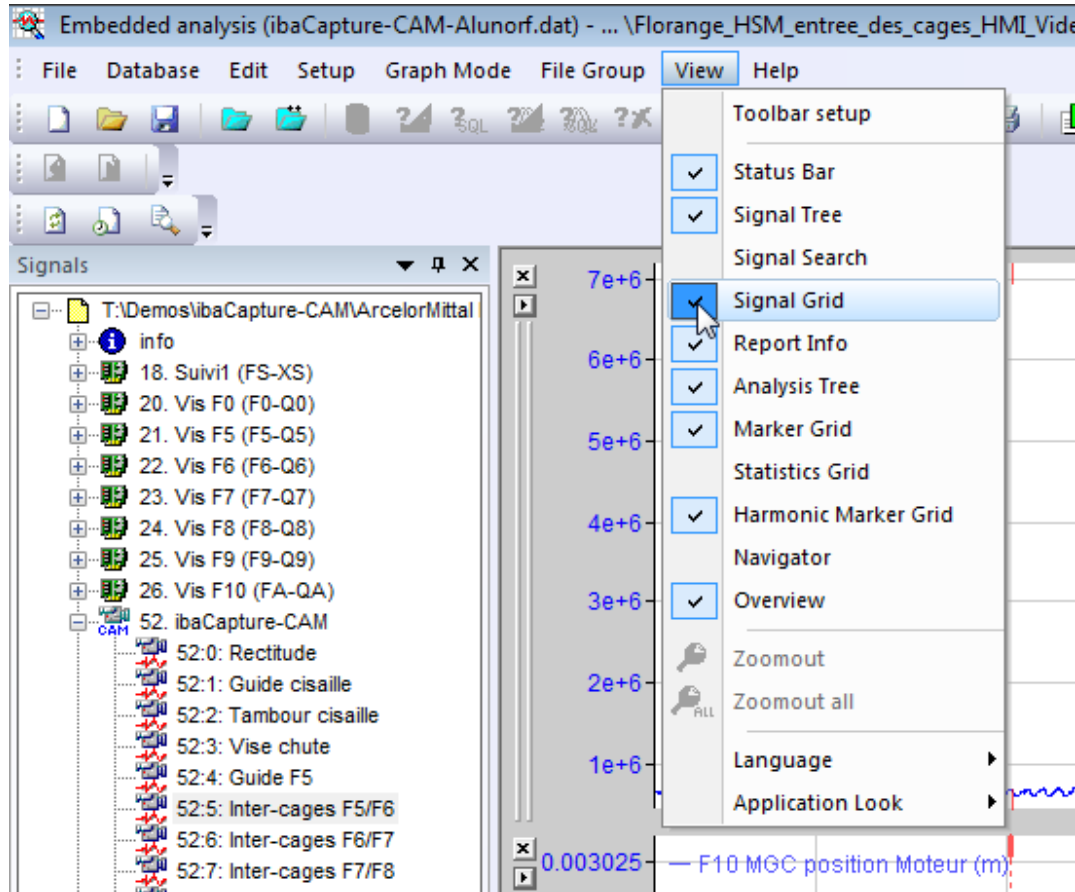
Especially with ibaCapture-CAM or –HMI panes these options greatly assist in laying out the analysis.

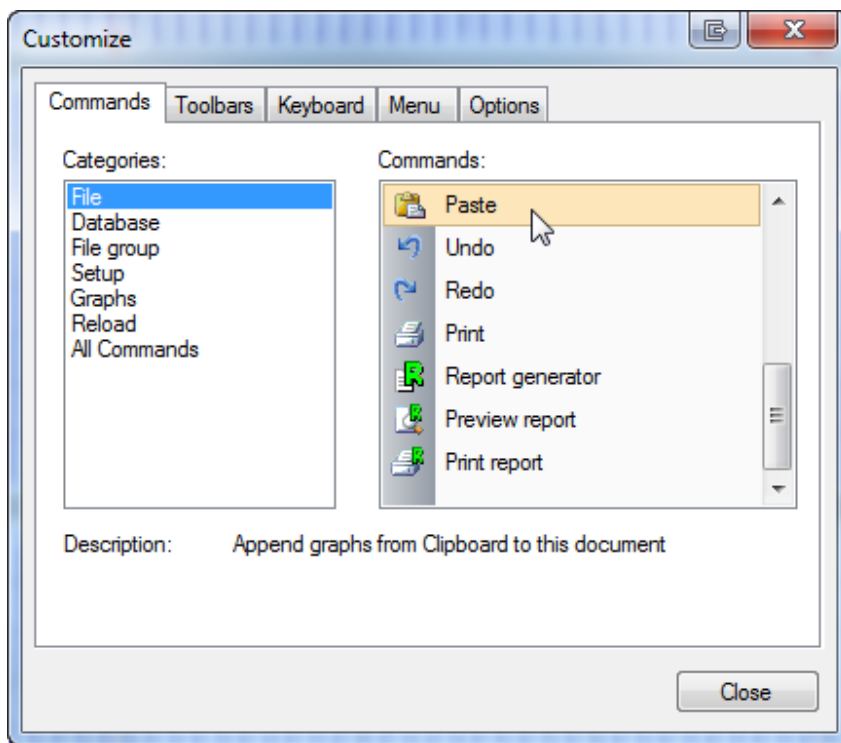
The option is available from the pane context menu, which one gets to by right-clicking on the title bar of the pane or by left clicking the down pointing little arrow  in the title bar.



1.1.5 Hiding panes

For ibaCapture-CAM or –HMI panes, clicking the little cross  will close the pane. However, for the standard panes, they are merely ‘hidden’ and can be made visible again from the “View” submenu in the main menu. Panes can also be hidden in this menu.



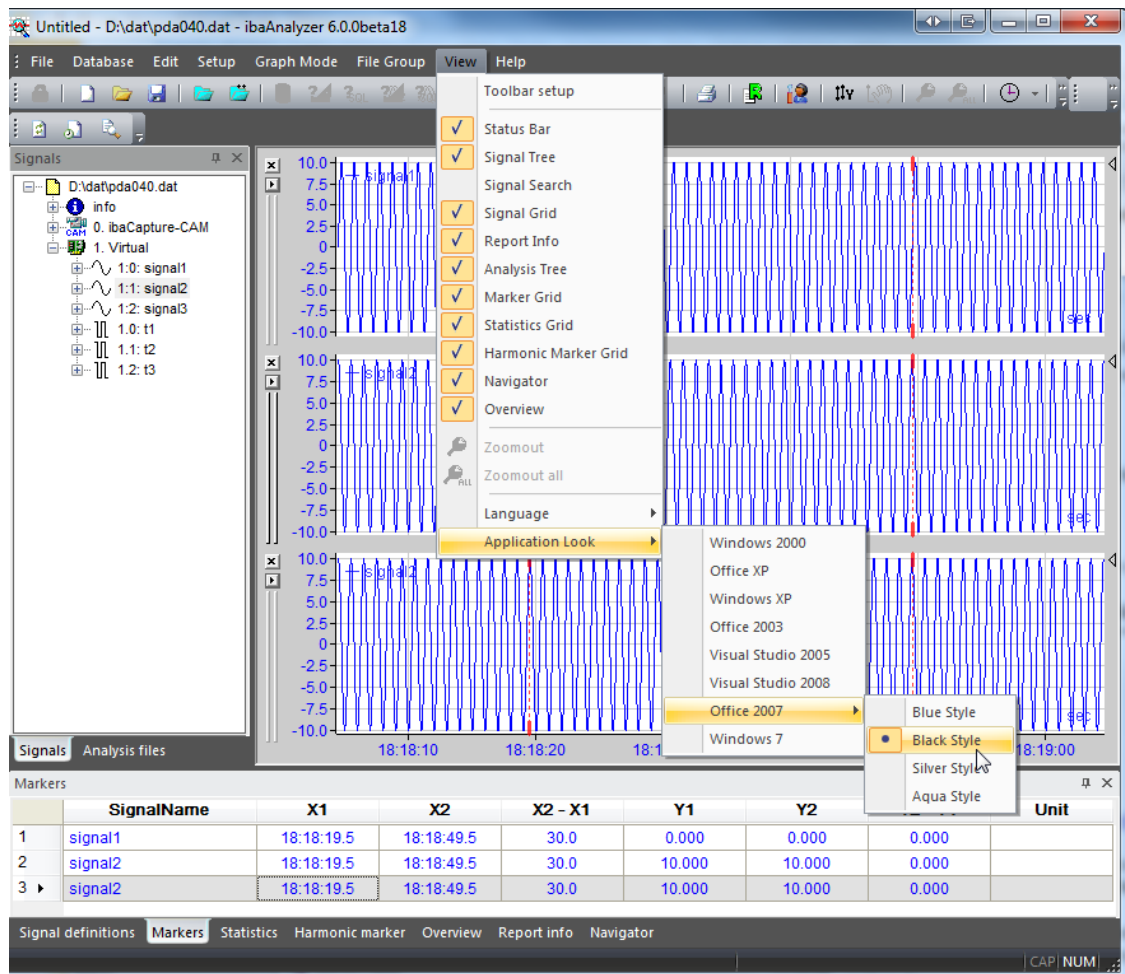


While the *Customize* dialog is open, one can also drag and drop commands from and to toolbars to reorder them, move them to a different toolbar, remove them from a toolbar (by drop in an area that is not a toolbar) or copy them to a different toolbar (by holding Ctrl key). One can also exchange commands between the menu and the toolbars. Also while the *Customize* dialog is open, one can right-click on a command in a toolbar or menu which opens up a context menu with additional options to modify the appearance of the command.

The toolbar and command customization is persistent over ibaAnalyzer sessions; when closing ibaAnalyzer, the configuration is stored on the computer and will be reloaded when starting ibaAnalyzer again.

1.3 Application look

From the 'View' submenu of the main menu one can open the 'Application look' submenu where a style can be selected. The style defines how the main window and its panes, menus, smart-docking and toolbars look. One has the option to have ibaAnalyzer mimic the appearance of several well-known Microsoft products or older versions of MS Windows. By default 'Visual studio 2008' is selected.



2 New Functions

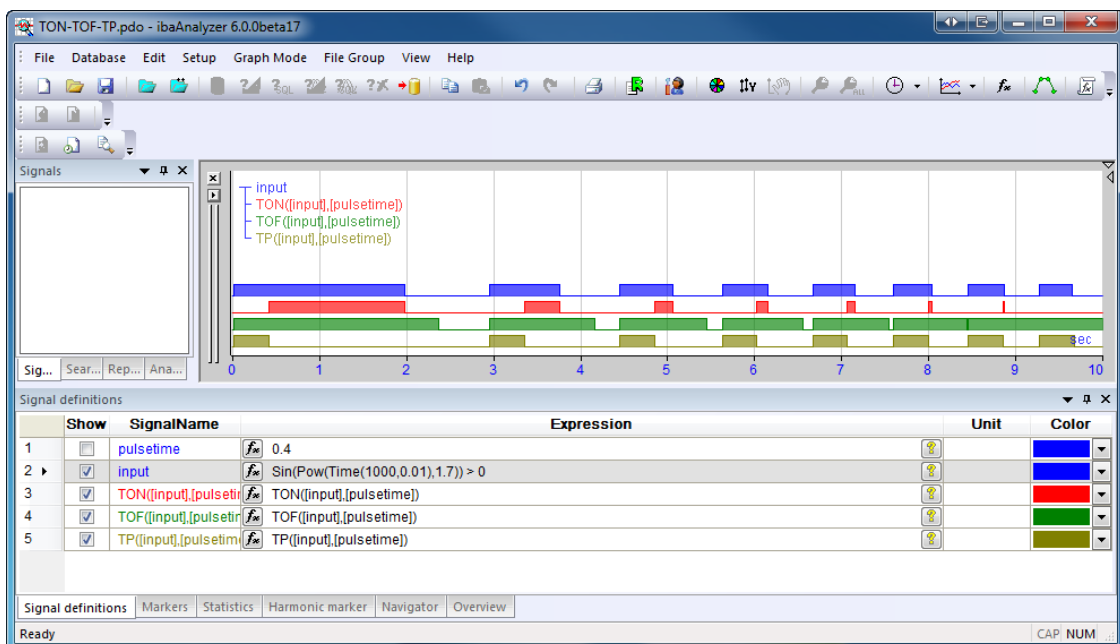
2.1 IEC 61131-3 functions

The IEC 61131-3 functions TP (Timer **P**ulse), TON (Timer **O**n Delay) and TOF (Timer **O**ff Delay) are implemented.

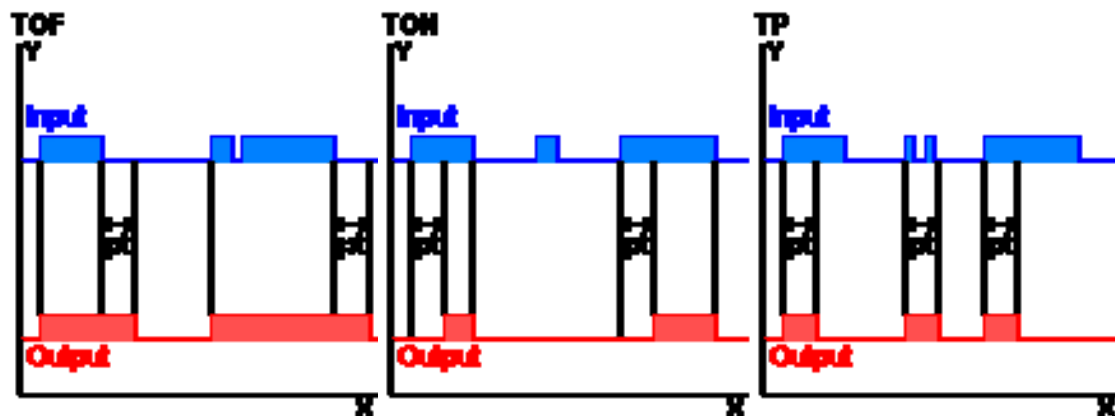
These functions take the following arguments

- **IN**: Digital input signal
- **PT**: Timer interval in seconds

and return as output the digital signal described in the standard as **Q**.



- **TP**: Returns pulses of PT size. The first pulse starts at the first rising edge of IN or at signal start if IN was TRUE at signal start. Following pulses start at the first rising edge of IN after the previous pulse has finished.
- **TON**: Returns TRUE if IN has been TRUE for PT time. Returns FALSE again immediately when IN is FALSE.
- **TOF**: Returns TRUE immediately when IN is TRUE. Returns FALSE again when IN has been FALSE for PT time.



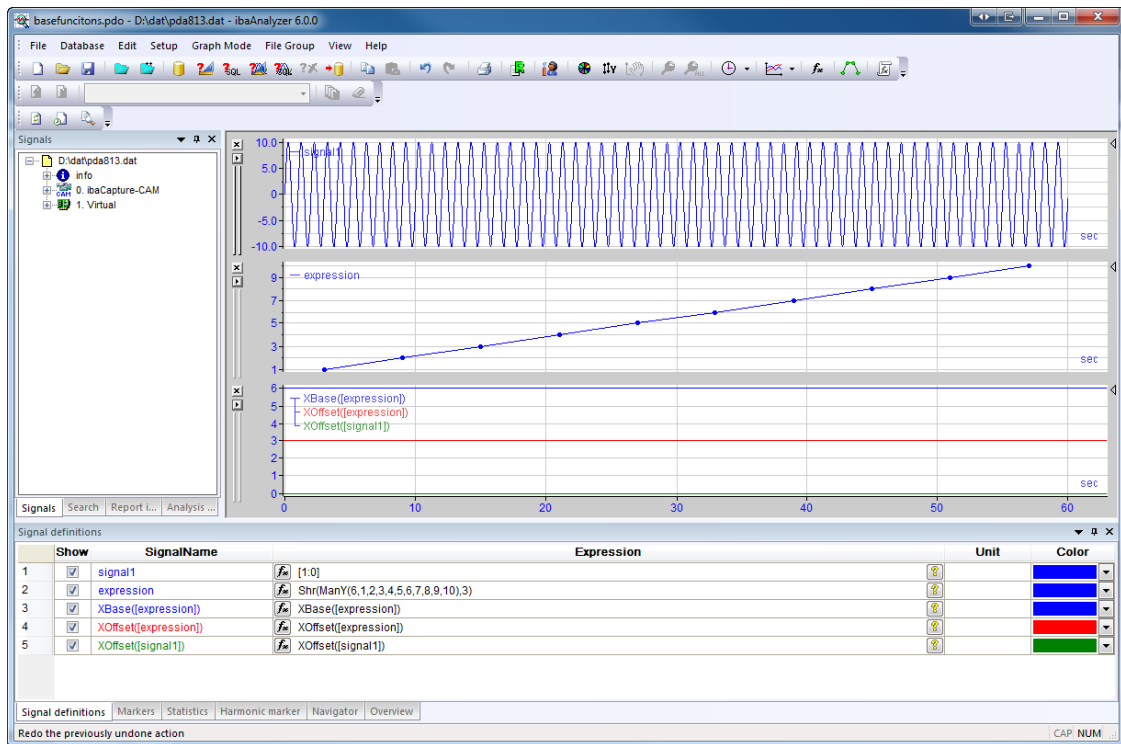
2.2 XBase and XOffset

The '**XBase**' function returns for an equidistantly sampled signal, the sampling interval in X-axis units. For a non-equidistantly sampled signal it returns the sampling interval that will be used when the signal needs to be resampled to an equidistantly sampled signal (e.g. to be used in a function that does not support non-equidistantly sampled signals). By default this is the smallest distance between any two samples. The function takes only one parameter, namely the signal for which to determine the sampling interval from.

The '**XOffset**' function returns the amount of time a signal is offsetted from the file it belongs to. This value is negative if the signal begins earlier and positive if the signal begins later. If multiple files are opened and the option to '*synchronize on recording time*' is set, the offset is not necessarily calculated from the beginning of the signal's own file but from the beginning of the file that starts earliest. The function takes only one parameter, namely the signal for which to determine the offset from.

Offsets can be caused by the following reasons:

- Having multiple files open and having the option '*synchronize on recording time*' set.
- An offset different from zero is specified in the '*xoffset*' infofield of a channel.
- *SHR* and *SHL* functions.



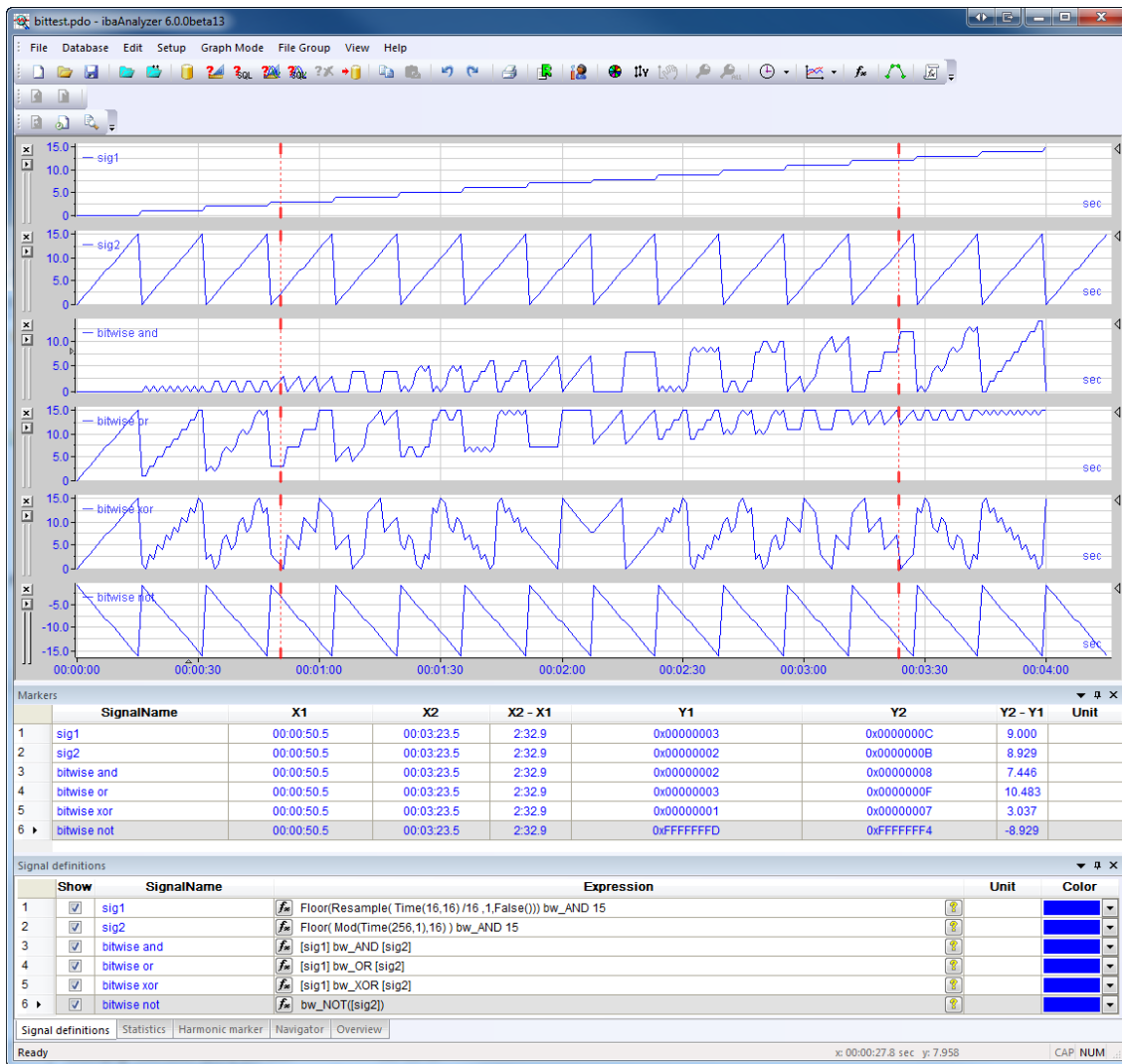
2.3 Bitwise logic functions

The following operations perform bit-operations on the bit field representation of their arguments.

- **bw_AND**: For each bit position, the bit in the result will be 1 if both bits in the arguments in that position are 1.
- **bw_OR**: For each bit position, the bit in the result will be 1 if one or both bits in the arguments in that position are 1.
- **bw_XOR**: For each bit position, the bit in the result will be 1 if exactly one of the bits in the arguments in that position is 1.
- **bw_NOT**: All bits of the argument are inverted in the result.

bw_NOT is an unary operator that requires its only argument between parentheses, similar as the logical *NOT* function. *bw_AND*, *bw_OR* and *bw_XOR* are binary infix operators, i.e. they require to be written between their two arguments, similar as the logical *AND*, *OR* and *NOT* function.

The functions return a 32-bit integer result and expect their arguments to be 32-bit integers as well. If their arguments are not integers the decimal part of the arguments will be truncated before the operation is performed. If the arguments are too large in absolute value to fit in 32-bit integers, the operation will only be performed on the 32 least significant bits of the arguments.



2.4 ChannelInfoField and ChannelInfoFieldText

The functions '*ChannelInfoField*' and '*ChannelInfoFieldText*' are entirely similar to the functions '*InfoField*' and '*InfoFieldText*' except that they use the infofields of a channel rather than the infofields of a .dat file. '*ChannelInfoField*' will return for a selected infofield from a selected channel as a numerical constant if only one file is opened and as a varying signal if files are appended; i.e. the result will change at each timestamp a file ends and a new appended file starts. '*ChannelInfoFieldText*' will return for a selected infofield from a selected channel, that infofield as a text channel.

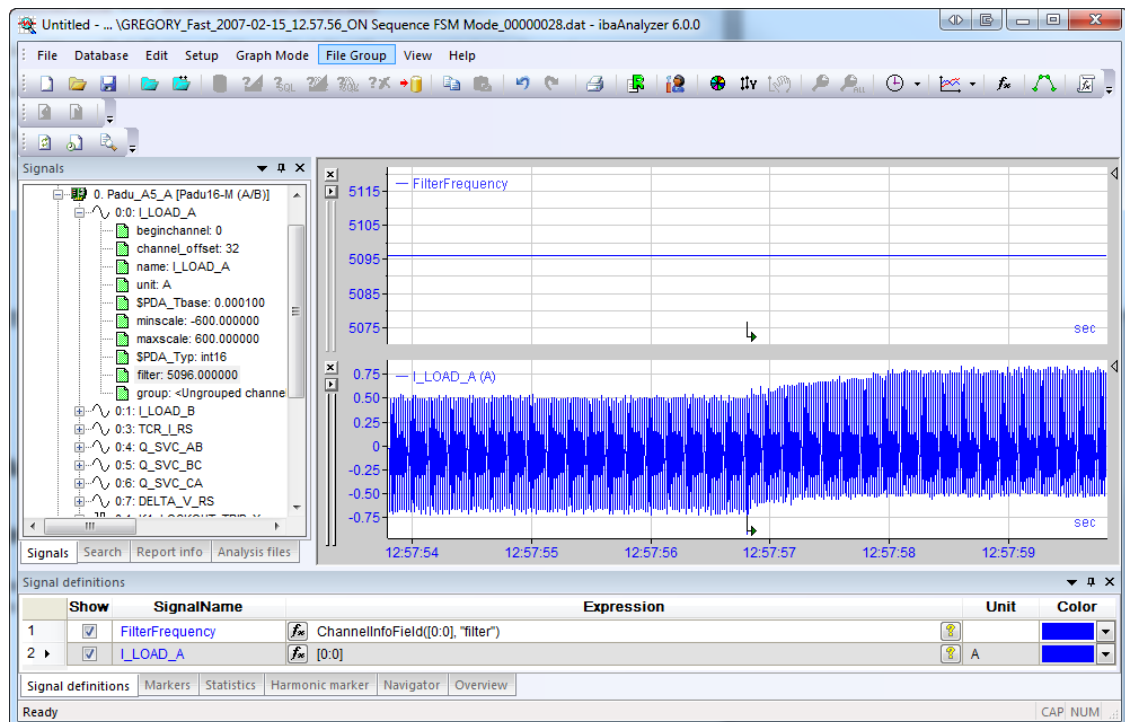
The function '*ChannelInfoField*' takes the following parameters:

- **Channel:** The channel to take the infofield from.
- **InfoField:** The infofield to take from the channel.
- **Begin:** Zero based index of the first character to take from the infofield. This parameter is optional, if it is omitted, the entire infofield will be taken.
- **End:** Zero based index of the last character to take from the infofield. This parameter is optional, if it is omitted, the entire infofield starting from *Begin* will be taken.

The function '*ChannelInfoFieldText*' takes the same parameters as '*ChannelInfoField*'.

Similarly as double-clicking or dragging a file infofield from the signaltree to the recorder window, doing so on a channel infofield will create the necessary expression in the signal table and depict that expression in the recorder window.

Additionally, the contents of the infofield will be inspected to determine if it is a numerical value or not. In the latter case *ChannelInfoFieldText* will be used rather than *ChannelInfoField*. This additional functionality has also been implemented for file infofields (i.e. the '*InfoField*' and '*InfoFieldText*' functions).



3 Extract

3.1 Renumbering potential duplicate channels

When having multiple files opened and extracting several signals from several files, it is likely that multiple channels will have the same ID number and hence need to be renumbered or otherwise they will not be able to be uniquely identified in the exported media.

ibaAnalyzer can do this renumbering automatically but will give a warning if it has to do so before proceeding with the extraction.

The channel IDs are comprised of a module number and a position within the module. The current version of ibaAnalyzer allows specifying an offset of the module numbers for each file, hence enabling the user to prevent ID collisions and avoid automatic renumbering.

The screenshot shows the 'Data Extractor' dialog box with the 'Renumbering' tab selected. The dialog has several tabs: 'Extractor output', 'Archive profile assignment', 'Info columns', 'Computed columns', 'Diagnostic log', 'Notifications', and 'Renumbering'. The 'Renumbering' tab contains the following elements:

- 'Global module offset for channel numbering: f_{∞} 0' with a help icon.
- 'Module offset per file:' label above a table.
- A table with 3 columns: 'Active', 'File', and 'Expression'. It lists 13 rows of data.
- 'Suffix for expressions: f_{∞} ' with a help icon.
- Buttons at the bottom: 'Check database columns', 'Extract now', 'OK', and 'Cancel'.

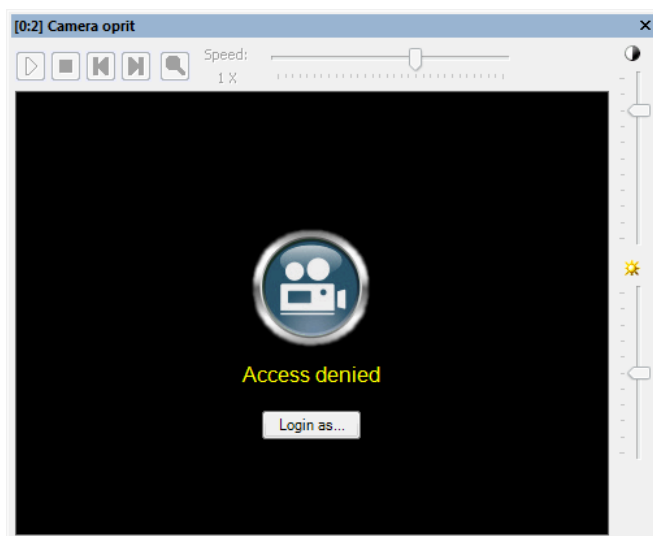
| | Active | File | Expression |
|----|-------------------------------------|-------------------|-------------------|
| 1 | <input checked="" type="checkbox"/> | D:\dat\pda798.dat | f_{∞} 0 |
| 2 | <input checked="" type="checkbox"/> | D:\dat\pda797.dat | f_{∞} 1000 |
| 3 | <input checked="" type="checkbox"/> | D:\dat\pda796.dat | f_{∞} 2000 |
| 4 | <input checked="" type="checkbox"/> | D:\dat\pda795.dat | f_{∞} 3000 |
| 5 | <input type="checkbox"/> | D:\dat\pda794.dat | f_{∞} |
| 6 | <input type="checkbox"/> | D:\dat\pda793.dat | f_{∞} |
| 7 | <input type="checkbox"/> | | f_{∞} |
| 8 | <input type="checkbox"/> | | f_{∞} |
| 9 | <input type="checkbox"/> | | f_{∞} |
| 10 | <input type="checkbox"/> | | f_{∞} |
| 11 | <input type="checkbox"/> | | f_{∞} |
| 12 | <input type="checkbox"/> | | f_{∞} |
| 13 | <input type="checkbox"/> | | f_{∞} |

This can be done in a new tab of the extract dialog titled 'Renumbering'. A grid is present that lists the open .dat files in the second column. In the third column you can specify the offset (which can be an ibaAnalyzer expression). In the first column the 'Active' check must be checked for the offset to be actually performed on the extraction.

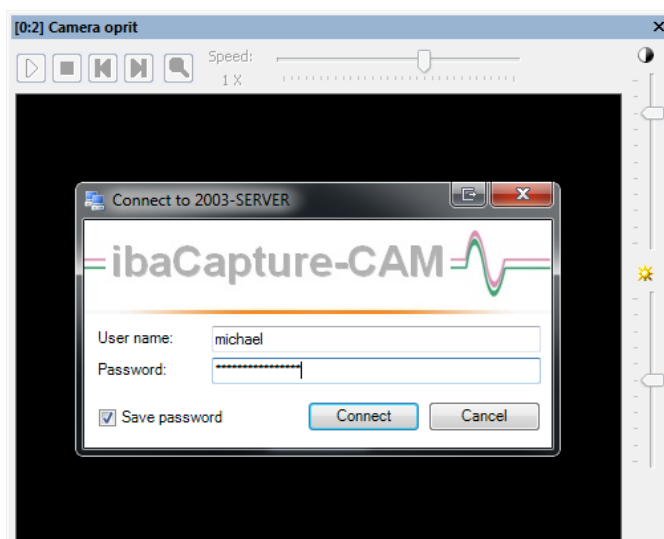
4 ibaCapture-CAM

4.1 User management

In ibaCapture-CAM 3.4.0 user management is introduced, possibly restricting the user from viewing or exporting video if he does not have sufficient privileges. If such user management is activated, the ibaCapture-CAM component used in ibaAnalyzer will show initially a black screen with the text “Access denied” and a login button.

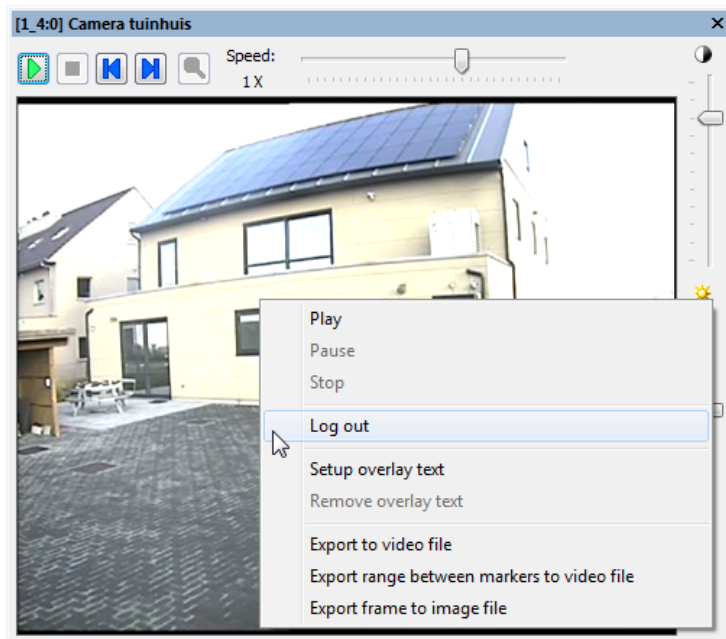


Pressing the login button and specifying correct user credentials (User name and Password) will then show the video if the user has sufficient privileges or return to the “Access denied” screen.



If you have multiple video windows open, you only need to specify login credentials in one video window per video server, ibaAnalyzer will automatically apply the login credentials to the other video windows that are connected to the same video server as the video window where you successfully entered user credentials.

Once successfully logged in, you can return to the “Access denied” screen by logging out to specify other user credentials. One can choose to log out from the context menu when right clicking on the video. If you have other video windows opened connected to the same video server, they will also automatically be logged out.

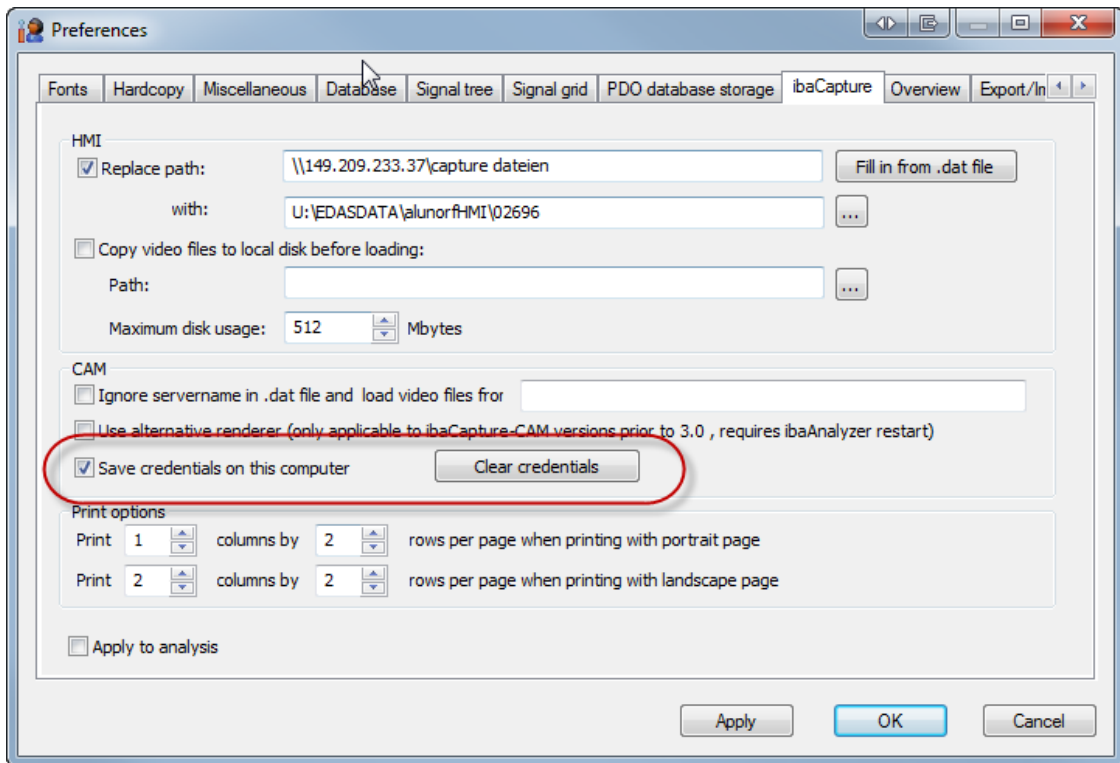


Any credentials specified during an ibaAnalyzer session will be cached and automatically applied when opening a video from the same video server, skipping the “Access denied” screen when the user has sufficient privileges for the opened video.

These credentials will be remembered until one closes ibaAnalyzer or specifically selects to ‘log out’ on a video.

Additionally, one can select the option “Save password” in the login dialog; this causes the password to be stored (encrypted) in the analysis when the analysis is saved. On loading such analysis, all saved credentials stored in the analysis will be added to the credentials cache of the ibaAnalyzer session. This is useful when performing automated operations like generating reports with video stills present in it or extracting .dat files with embedded video through ibaDatCoordinator. For security reasons, the credentials stored in the analysis will be ignored if the analysis is opened on another computer than the computer where the analysis was saved.

Additionally to storing the user credentials in the analysis one can also specify in the ibaCapture-CAM preferences to remember the credentials between ibaAnalyzer sessions by selecting the checkbox “*Save credentials on this computer.*”

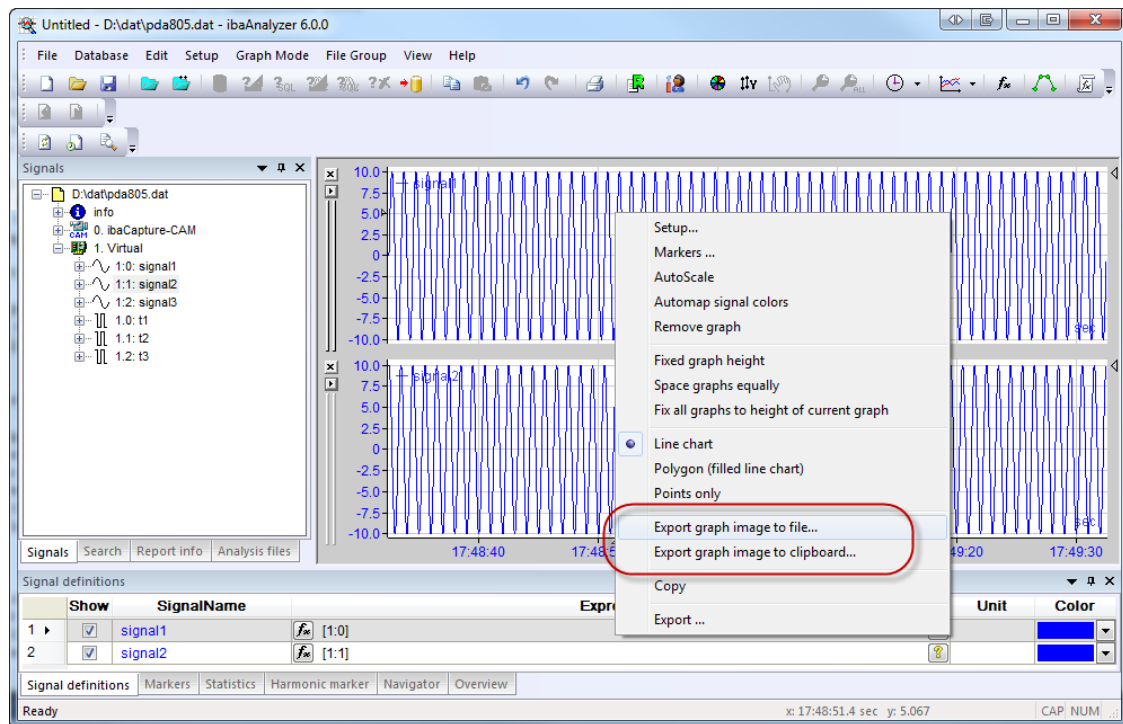


There is also a button present labeled ‘*Clear credentials*’ which when clicked will cause the credentials stored on the system to be removed.

5 Miscellaneous new features

5.1 Exporting graphs

Graphs can be exported to a file or to the clipboard by right clicking the graph and selecting that option from the popup context menu.



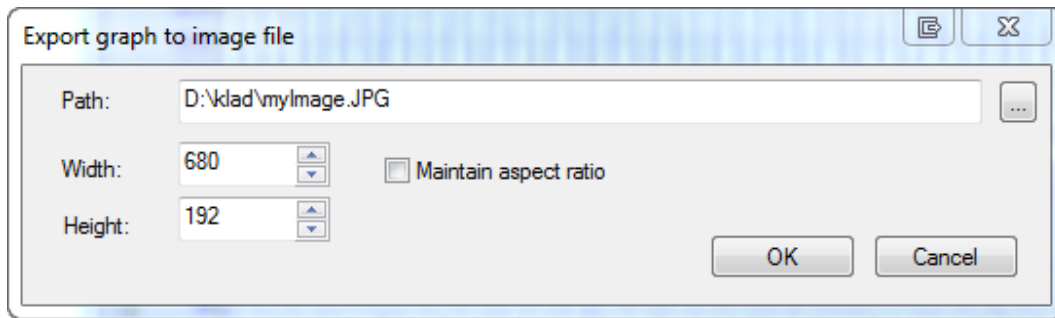
5.1.2 Export graph image to file

When selecting to export the graph to a file one gets a dialog where you can specify the location of the file in the first text box. A browse button is also available.

The following image formats are supported:

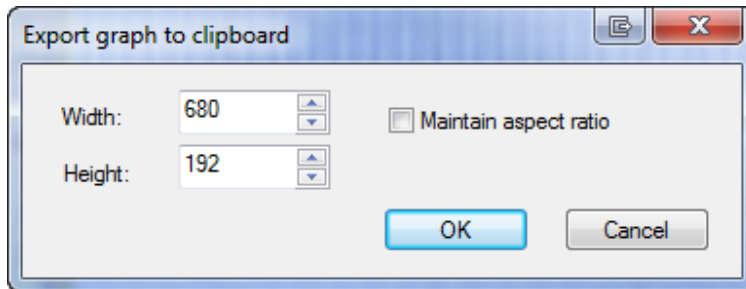
- BMP
- JPEG
- GIF
- TIFF
- PNG

One can specify the dimensions (*Width* and *Height*) of the image file in pixels. One can check the checkbox '*Maintain aspect ratio*' so that while modifying one dimension, the other dimension is modified accordingly so that the aspect ratio is preserved.



5.1.3 Export graph image to clipboard

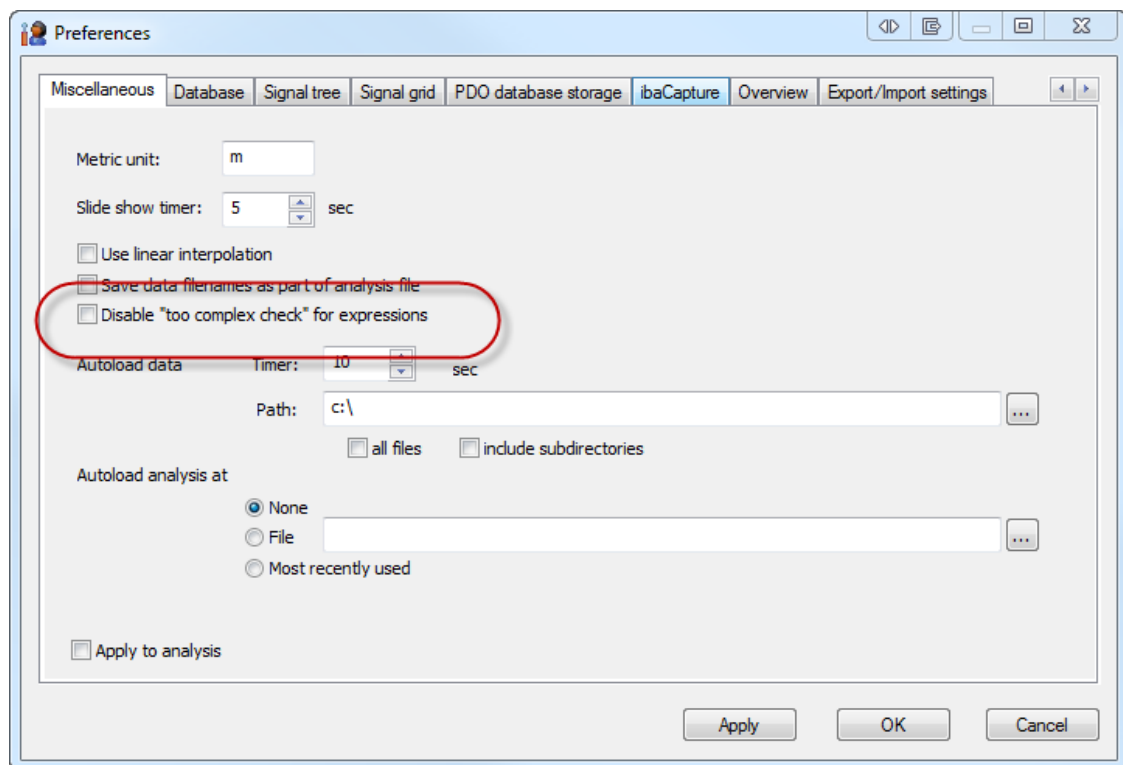
When selecting to export the graph to the clipboard, one gets a dialog where one can specify the dimensions (*Width* and *Height*) of the image in pixels that will be placed on the clipboard. One can check the checkbox '*Maintain aspect ratio*' so that while modifying one dimension, the other dimension is modified accordingly so that the aspect ratio is preserved.



After having placed the image on the clipboard, one will be able to paste the picture in any text editor or image editor that supports pasting images from the clipboard.

5.2 Ability to disable the ‘too complex’ check for expressions

When opening multiple .dat files and the mode ‘synchronize files on time’ is set, it is possible that the entire length of the signals becomes too long because of holes between the files. Performing computations on such signals might take too long and hang ibaAnalyzer or deplete the available memory. Normally ibaAnalyzer checks for this and will refuse to perform to do the calculation if it deems the signals too long. However, in some scenarios this test might be too stringent. For that reason you are now able to disable the test in the preferences. The checkbox to disable the check is located in the miscellaneous tab of the preferences dialog.



5.3 Chinese language

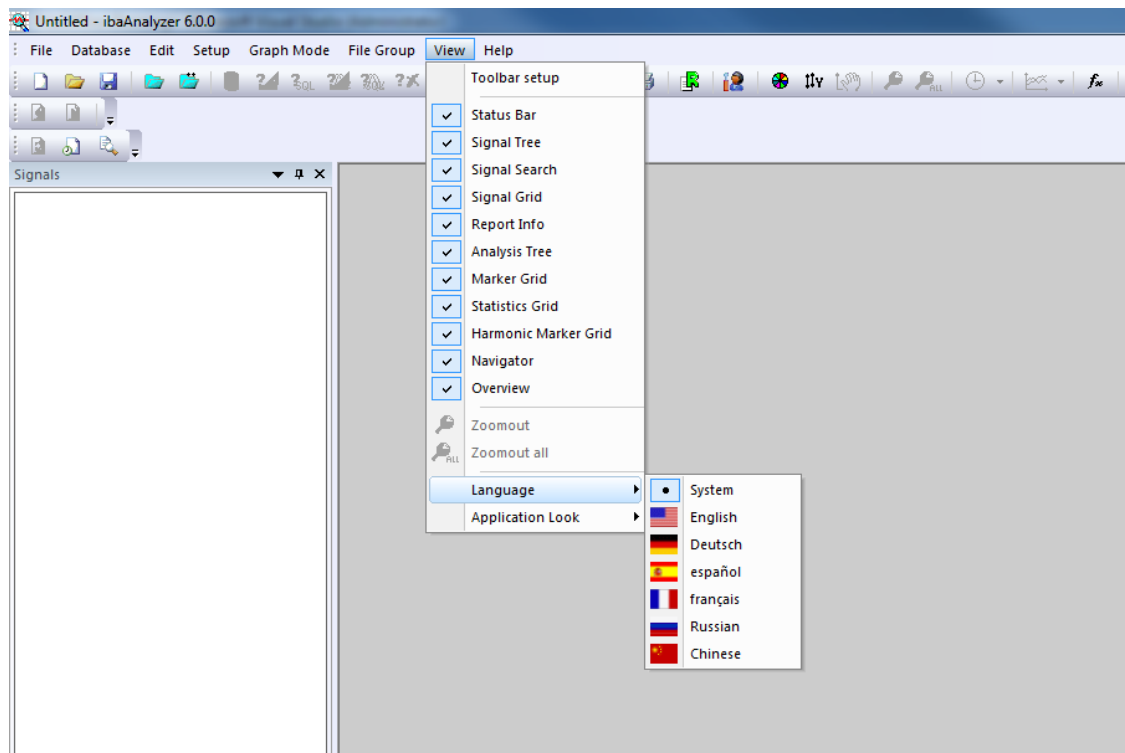
IbaAnalyzer can now show menus and dialogs in Chinese (simplified Chinese PRC). To depict the Chinese characters correctly, Windows must be set to use the Chinese character set for non-unicode languages. Under Windows XP and Windows 2000, ibaAnalyzer will only start in Chinese if the entire system is set to Chinese. From Windows Vista on, you can start ibaAnalyzer in Chinese specifically by specifying “/chinese” as a command line option when starting ibaAnalyzer.

5.4 Language switch

Important Note: This functionality is not available under Windows 2000 or XP.

You can set the language ibaAnalyzer will show in dialogs and menus in the main menu.

Main menu -> View -> Language.



The option 'System' means that the language is selected from the currently set UI language.

After having selected a language different from the previous selected language, ibaAnalyzer needs to be restarted. ibaAnalyzer will ask your permission to restart itself; any opened analysis or .dat files will be reloaded. You'll also have the option to save the currently open analysis at this moment if it has been modified since the last save.