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1 About this manual

This documentation describes the function and application of the software ibaPDA.

1.1 Target group and previous knowledge

This manual 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.

1.2 Notations

In this manual, the following notations are used:

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<td>File names, paths</td>
<td>&quot;Filename&quot;, &quot;Path&quot;</td>
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<td></td>
<td>Example: &quot;Test.doc&quot;</td>
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</table>
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**

ℹ️ 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 fully describes the functionality of the *ibaPDA* system. It is designed both as a tutorial as well as a reference document. The sections and chapters essentially follow the procedure for configuring the system.

In addition to this documentation, you can examine the version history in the main menu, Help – changes (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 *ibaPDA* system documentation (PDF and printed version) is divided into seven separate parts. Each part has its own section and page numbering beginning at 1, and is updated independently.

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2 Introduction

ibapDA offers different types of views for different ways of representing data. The term "view" basically refers to the frame containing certain display types and relevant data. Views can be arranged in different ways on the screen, as further described below.

Available view types:

- Trend graph
- FFT view
- Scope view
- QPanel
- Camera view
- HD trend graph
- HD event table
- Numeric text display
- Text digital display
- PQU spectrum
- PQU phasor view

Things such as screen layout, docking windows arrangement, number and arrangement of views, number and presentation of individual signals, view settings and different layouts are saved in the layout configuration file.

This section describes the general handling of the views and their settings and properties.
3 General handling of views

3.1 Add view
A new view can be opened by clicking on one of the buttons with the green + sign in the main toolbar or by selecting the desired view type in the menu View – Add view. The new view opens in its own window.

3.2 How to remove a view
If there is only one view in the window (one tab), click on the little cross in the upper right corner.

If there is more than one view in the window (several tabs), select the view to be removed first (indicated by bright black letters in the tab and in the foreground). Then click on the little cross in the upper right corner.

Or right-click on the tab of the relevant view and choose "Close" from the context menu in order to remove a view.

If you just want to hide a view to save space, the best way is to shift it to another view so it can be in the background as a tab.

3.3 How to rename a view
You can name and rename a view. The name is displayed on the tab. Right-click on the tab of the relevant view and choose "Rename" from the context menu. Enter the name into the "New name" dialog field and click <OK>.

3.4 How to move a view
All visible windows in the ibaPDA user interface are dockable windows. So are the signal monitors (views). You can move, drag or squeeze the views as you like. Or they can be arranged on top of one another as tabs.

For doing so, use the drag and drop option or the context menu.

Combining multiple views in one window (creating a monitor group)
Click on the tab of the view you would like to move, hold the mouse key and drag the view in the middle of the requested window until a cross-shaped group of docking pads appears. Place the mouse over the central pad. A blue area indicates where the view will be placed. Release the mouse button and the view becomes part of the monitor group. Use the same method for moving the views to the side, above or beneath other views.
Separating views
In order to separate views from a joint window, just click on the corresponding view’s tab and drag it to a position out of the center of the current window. As soon as a blue frame appears in the upper, lower, left or right part of the window, let it drop. The view is opened in a new window. All windows are automatically rescaled to provide optimal fit on the screen.

3.5 Arranging views by context menu
Right-click on the tab label of the view to open the context menu.

Beside the Close, Rename, Print, Copy and Paste commands, there are also Prominent and Rebalance.
Select *Prominent* if the respective view is to be shown in full size in the window. This hides all other views, such as trend graphs, FFT, oscilloscope or QPanel views. To switch back to the previous view, click *Rebalance*.

Depending on the number of views and their arrangements, the options in the context menu differ.

As soon as you have multiple tabs arranged, the *Move to Next Tab Group* command or *Move to Previous Tab Group* command appears. "Next" and "Previous" refer to a clockwise manner. If you click on one of these commands, the tab in question is added to the next or previous tab group.
4 Selecting and displaying signals

The methods of selecting and displaying measured signals is optimized for mouse keys. Many actions can be performed by drag & drop or via the context menu (right mouse button).

4.1 Selecting signals

There are two basic methods to select signals for display:

- A double-click on the desired signal in the signal tree.
  - If no view has been opened yet, a new trend graph containing this signal is opened.
  - If one or more trend graph(s) are already opened, the signal will be added to the focused trend graph.
  - If another view is active, e.g. FFT or scope view, the signal will be added to this view.

You can also drag and drop the signal into the display window. This method also applies to many other views, not just to the trend graph.

With regard to the trend graph, these two methods offer further helpful variants for daily use. Often, it does not make sense to open a separate chart for each signal, as the display window is filled quiet quickly and therefore hard to read. So, you can position several signals in one trend view and decide whether the signals get their own Y-axis or a joint one.

- Select the first signal:
  Drag the desired signal into an open range of the trend graph.

- Select another signal to be displayed in a new signal chart:
  Drag the desired signal in the area of the X axis in the display window or double-click on the signal name in the tree.

- Presenting another signal in an existing graph:
  Simply drag the desired signal into the area of the desired graph. The signal is displayed in the same graph but with its own Y-axis.

Tip

If you want multiple signals to be displayed quickly in a chart with separated Y axes, press <Ctrl> while double-clicking on the relevant signal names.

- Select another signal to be displayed in an existing chart, but with respect to the same Y axis as the existing signal:
  Drag the desired signal in the area of the Y-axis of the requested chart. Both signals now use the same Y-axis. A new color is automatically assigned to the new signal. In the upper left corner of the chart, you will find the signal names (legend). Signals with a common axis are linked by a line.
Tip

If you want multiple signals to be displayed quickly in a chart with a common Y axis, press <Shift> while double-clicking on the relevant signal names. Each new signal is added to the Y axis of the lowest signal in the legend.

4.2 How to search for signals

For finding and selecting signals to be displayed, there is a search function available in the signal tree window.

Just click on the Search tab at the bottom.

Enter a complete signal name or parts of it in the entry line.

Then press <RETURN>.

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

If there are too many results, enable the "Search in previous results" option, refine your search term and restart the search.

If you want to keep the results of several search processes, check the "Add to previous results" option before any further search.

Additionally, you can search for the specified string in the comments 1 and 2.

Besides the "Name" column in the result list, you can show or hide the columns for comments using the context menu.

The signals can be dragged directly from the result list into the view.
5 Trend graphs

A trend graph in the context of ibaPDA is a display of a certain combination of signal charts and curves. Similar to a recorder, trend graphs are used to show live measured data.

Each trend graph view can basically consist of an arbitrary number of curves. The signal curves can be zoomed in and the scales changed.

The pause button can be used to stop a current trend graph, for example, in order to consider the measured values. The data storage continues in the background.

The default configuration shows a trend graph view without a graph, X or Y axes. After you configured the signals in the I/O manager, they are immediately available for display. For better clarity, you may open several views, which can be arranged in different windows side by side or in tabs.

In addition to the normal trend graph, there are also trend graphs for displaying data from the ibaHD server ("HD-trend graph") and existing measurement files ("offline trend graph"). The basic operation of trend graphs is the same for all types.

5.1 Controls of a trend graph

5.1.1 Toolbar

Each view has a couple of control buttons in its own toolbar.

Depending on the display type, the toolbars for trend graph, oscilloscope, FFT view, camera view or QPanel differ.

The following describes the trend graph toolbar. For description of the other tool bars, please refer to the corresponding chapters.

![Signal Monitor Toolbar](image)

The functions are (from left to right):

Start scrolling
Only enabled if <Pause scrolling> button was pressed before. Restarts the scrolling of the display at the current time.
Shortcut key: <F6> (toggle)

Pause scrolling
Only enabled if the display is scrolling. Stop the continuous display. After clicking this button, the display stops scrolling. A signal table ("Marker table") appears below the signal chart and two rulers are shown in the signal display. The rulers can be moved with the mouse along the X-axis. The corresponding Y-values are displayed in the table below the trend view. The X-axis can be moved with the mouse. This enables the user to see values from the past. For more pause mode control options, see X-axis buttons, page 20.
Shortcut key: <F6> (toggle)
Automatically assign signal colors
All curves of this display are colored per signal chart according to the standard scheme.
Also see Settings, chapter Trend graph, page 127

Autoscale all
All curves of this display are automatically scaled per signal chart and Y axis.
Shortcut: <F5>

Redo manual scale
Only enabled if a manual scaling has been defined in the settings of the signal chart. The manual scaling are restored (where defined) after an autoscaling or zooming action.

Zoom out one step
Only enabled if the display has been zoomed. Return to the previous zoom factor (reduce).
Shortcut: <F3>

Zoom out all
Only enabled if the display has been zoomed. Will zoom out to initial (automatic) zoom level (no zoom) according to axes settings.
Shortcut: <F4>

Change legend style
With every click on this button, the legend in the trend graph changes between transparent, opaque and invisible.

Change orientation of graphs
Drop-down menu for selection of scrolling orientation.

5.1.2 Context menu
You can open a context menu by right-clicking in the area of a trend graph.
The context menu provides further control options for the view and may look as follows:

Some menu commands correspond to the functions of the toolbar buttons as described above, like Live mode/Pause, Auto scale and Auto map signal colors. However, the first 4 commands from top only apply to the trend graph the context menu was opened in.
**Fixed graph height**
In order to avoid up or downsizing of a trend graph while resizing the view window, you can fix the height of the signal chart individually. When enabling this option, the current height of the signal chart is maintained.

In case of resizing a window vertically, all charts are subject to resizing except for the signal charts, whose heights are defined by this option. If this option is enabled for all signal charts of a view, the minimum height of the display window will always comply with the overall height of all graphs.

**Space graphs equally**
If you click this command, all charts in the view lose their fixed heights and are automatically scaled to fit equally in the view window.

In the next block of the context menu, you can display or hide the indicating elements of a signal monitor:

**Show toolbar (1)**
Show or hide the toolbar of the view where the context menu was opened.

**Show signal values in legend (2)**
Show or hide the signal values at the end of the signal legend. This commend applies to all trend graphs within the view where the context menu was opened.

**Show bars (3)**
Show or hide the value bars along the Y axes. This commend applies to all trend graphs within the view where the context menu was opened.
Show zoom and pan buttons
Show or hide the zoom and pan buttons on the X axis of the view where the context menu was opened.

For more information on controlling zoom and pan buttons, please refer to “X-axis buttons”, page 20.

Properties...
If you click on this command, you will enter the Properties dialog for setting up of the trend graph view.

For more information, see “Trend graph”, page 127.

5.1.3 X-axis buttons
The X axis can show the <Zoom>, <Pan> and <Go to> buttons. You can enable and configure these buttons in the properties of the X axis. For immediate showing or hiding the buttons, you can use the context menu of the view (see above).

Controlling the zoom buttons
The <+> button zooms in on the middle of the X axis in pause mode and on the most recent part of the X axis in live mode. The <-> button zooms out. The zoom factor is by default 2 (relative). This means that when zooming in, the X axis range becomes half of the original range. When zooming out, the range becomes double the original range. These buttons can also be controlled by the keyboard.

<table>
<thead>
<tr>
<th>Button</th>
<th>Shortcut key</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;+&gt;</td>
<td>&lt;+&gt;</td>
<td>Zoom in</td>
</tr>
<tr>
<td>&lt;-&gt;</td>
<td>&lt;-&gt;</td>
<td>Zoom out</td>
</tr>
</tbody>
</table>

Zoom factor can be configured in the properties of the X axis.
For more information, see “X-axis”, page 135.

Controlling the pan buttons
There are 4 pan buttons: pan left large, pan left small, pan right small and pan right large. The "Pan left" button moves the X axis to the right, so the data is displayed on the left from the current position. The "Pan right" button shows the data on the right of the current position. With the scrolling oriented vertically, the buttons act upwards and downwards accordingly.

By default, the "Small pan" buttons pan 0.75 times the X axis range and the "Large pan" buttons 2 times the X axis range. So, if the range is 100 s and the current time stamp is 10:00:00, the small pan left will go to 09:58:45 and the large pan left to 09:56:40 (provided scroll orientation is left to right). These buttons can also be controlled by the keyboard.
<table>
<thead>
<tr>
<th>Button</th>
<th>Shortcut key</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt;PAGE UP&gt;</td>
<td>Pan small step to the left (only in pause mode)</td>
</tr>
<tr>
<td></td>
<td>None</td>
<td>Pan large step to the right</td>
</tr>
<tr>
<td></td>
<td>&lt;PAGE DOWN&gt;</td>
<td>Pan small step to the right (only in pause mode)</td>
</tr>
<tr>
<td></td>
<td>None</td>
<td>Pan large step to the right</td>
</tr>
</tbody>
</table>

The pan factors can be configured in the X axis properties. For more information, see X-axis, page 135.

Panning is possible in paused mode only. When pressing one of the pan buttons in live mode, the display will switch to paused mode automatically.

**Controlling the zoom <Go to> button**

For certain time leaps, there is the <Go to> button. When clicking on this button, an entry field opens where you can enter a specific target date for the leap. A further click on the little arrow button opens a calendar making the selection of a certain date and thus leaping much easier.

![Calender](image)

Fig. 2: Selection of the target date for the time leap

After you entered or selected the target date, click on the button to leap.

A time leap is possible in paused mode only. When pressing the jump button in live mode, the display will switch to paused mode automatically.
5.1.4  Markers and signal table ("marker grid")

5.1.4.1  Markers

In pause mode, there are two markers, i.e. X1 and X2, available in the graph. You can move the markers individually in order to check the Y values and differences between the X and Y values of the markers.

There are two modes to control the position of the markers. The markers can be anchored to the X axis or not. These settings can be changed in the trend graph properties.

If the "Anchor markers on X-axis" option is disabled, the markers will remain at the same pixel while moving the X-axis and are positioned on a new time stamp, e.g. when dragging or panning.

If the option is enabled (default), the markers will remain at the same time stamp. So, if the X axis is moved, the markers will also move. If the X axis is moved so far that the time stamp of the marker is no longer visible, the marker will be moved to the edge of the graph and the grab handles will become lighter. The table still shows the correct position of the marker. You can drag the marker from the edge of the graph back into the current X axis range at any time.
5.1.4.2 Signal table (marker grid)

The signal table is disabled in live mode by default. It pops up automatically as soon as the view switches into pause mode.

However, you can change this behavior in the preferences or properties of the trend graph.

![Figure 5: Display options for the signal table](image)

5.2 Move signals

Signals can be shifted between the graphs and even beyond the limits of the window. This means that a signal can be dragged from one graph to another graph that already has a signal.

Here is how it works:

1. In the graph, put the mouse pointer on the signal name to be moved. The cursor indicates with a wavy line that it has acquired the signal.

![Image of moving Sinus 1 Hz signal](image)

2. Now press the mouse key, hold it and drag the signal into the other graph and let it drop in a free area.

![Image of moving Cosinus 1 Hz signal](image)

3. The result: two signals, each with its own Y-axis.
4. If, in step 2, the signal is not dropped, but dragged on the already existing signal (cursor shows a little arrow), the shifted signal will be assigned to the same Y axis.

5. The result: two signals with a common Y axis.

6. By shifting a signal from one graph to the other, the color will not change automatically. In order to get different colors, click on the “Auto color assignment” toolbar button.

7. If you want to separate signals, just click on the corresponding signal in the legend and drag it into the free area of the display window's X axis. A new graph is opened with that signal.
5.3 How to remove a signal from display

In order to remove a signal, right-click on the signal name in the legend and choose "Remove signal" from the context menu.

Alternatively, you can make a right mouse click on the Y axis of the corresponding signal and choose "Remove Y axis" from the context menu ("Remove axis" in case of FFT and oscilloscope view).

But remember: But remember: by deleting the Y-axis, all signals assigned to this axis are deleted.

5.4 Show and hide signals

If you do not want to remove signals in a trend curve but just temporarily hide them, you can use the function for hiding and displaying a signal.

You have the following options:

- By right-clicking on the signal name in the legend, you can display or hide a signal in the context menu.
- If the signal table below the trend curve is open, remove the check mark in the far left column (monitor icon).
- If you have enabled the "Show icons to hide signals" option in the properties of the trend display, you can show and hide the signal by clicking on the monitor icon in the signal legend.
If a signal is hidden then the signal bar is also empty and no marker or actual values are displayed in the signal table.

5.5 Using common or separate Y-axes

This description only applies to trend graphs.

You can link a signal to another one, as described in the "Shifting signals" section, to get a common Y axis.

In order to separate Y axes, drag the signal into the free area of the graph, then let it drop.
5.6 Bar graph on Y-axis

This description only applies to trend graphs.

Bar charts on the Y axis are another option of signal display.

You can enable the bar graph display either by using the context menu by clicking in the trend graph and select "Show bars", or in the "Properties" dialog Trend graph – Show signal bars.

5.7 How to shift a graph

This description only applies to trend graphs.

You may change the top-down order of the charts inside a trend graph view. For a vertical scrolling orientation of the trend graph, the following applies to the right-left order of the charts.

1. Click on the caption bar (gray double line) of the chart you want to move. Hold the mouse key and slightly move the mouse until a bright black frame around the chart appears.

2. Keep mouse key depressed and move the chart up or down, for example, until the frame touches another chart. At first, only the black frame moves and shows above which chart the moved one will be inserted if you drop it.

3. Release the mouse button and the order is changed.

5.8 Remove Graphs

This description only applies to trend graphs.

You can remove a graph from a trend graph view with the following methods:

- Click on the little cross top left of the caption bar of the chart.
- Right-click in the free area of the graph to open the context menu and choose Remove graph.
5.9 How to scale the axes

Autoscaling
In order to display a signal between its amplitudes in a graph, use the autoscale function. Make a right click in the graph you would like to scale and choose "Autoscale". All signals, i.e. all Y axes of this graph, will be scaled with respect to the highest and lowest amplitude. If you would like to autoscale all graphs in a view, press <F5> or click on the button in the view’s toolbar.

Scaling with the mouse
You can change the Y scale with the mouse. Position the mouse cursor near the upper end of the Y axis until two blue arrows and a dot appear.

Mouse click (hold down) on the up-arrow: the scale is stretched (zoom in).
Mouse click (hold down) on the down-arrow: the scale is compressed (zoom out).
Mouse click on the dot: the scale is autoscaled.

If you use a mouse with scroll-wheel, you only need to place the mouse cursor on the Y scale and move the wheel up or down for changing the scale. This also works on the X axis. There is also such a function for the FFT and oscilloscope views.

Scaling in the graph's properties
Right-click in the graph you want to rescale. Choose Properties from the context menu. A dialog opens which shows the settings of this graph. On the Y axis node you can set a scale by manually entering a lower and upper limit. If a graph has separate Y axes, there is one node for every Y axis in the dialog.

Note
You can open the dialog for the display properties also via the Configuration - Preferences main menu. The settings you make there will generally apply to new views and graphs. Views and graphs already there will not be changed.
5.10 How to shift scales

Move the mouse cursor to the Y axis until the hand symbol appears. Keep the left mouse key depressed to move the scale up or down. In the pause mode of the display, the X-axis can be moved in the same way.

5.11 Title for signal chart (curve)

You can define a title within a trend graph view for each signal chart (graph).

To do this, right-click in the desired signal chart and select Properties... In the Properties dialog, select the graph for which you want to define a title. Now, you can enter a title and determine the font, color and alignment of the title bar.

More curves, which are part of the trend display, can be reached in the same dialog. Each graph or graph group in a trend display can receive its own title.
6 FFT view

The FFT view is a spectrum analyzer included as a standard view in ibaPDA. It can be used to display the frequency spectrum of one or more signals on multiple value axes.

The FFT view can be used for normal analog signals as well as the modules of ibaInSpectra add-ons. Some display features are only available in conjunction with an InSpectra module, as indicated in the corresponding section.

If you use ibaInSpectra, you can drag a complete InSpectra module from the signal tree to an FFT view. The settings and mathematical parameters for the FFT view will then automatically taken from the InSpectra module settings.

Other documentation

Detailed information on ibaInSpectra is contained in the ibaInSpectra product manual.

6.1 Opening an FFT view in ibaPDA

Use the button to add a new FFT view:

You can move individual or several highlighted signals from the signal tree to the main view of the FFT view using drag & drop. In the case of an InSpectra module, you can drag the entire module into the FFT view. In doing so, relevant parameters for the FFT view are copied from the module settings.

Fig. 10: Dragging an InSpectra module in the FFT view

The following hotkeys are available for dragging new signals into a FFT view:
- <Shift>: When you press the <Shift> button while dragging several signals into the FFT view, all signals are placed on a joint Y-axis.

- <Ctrl>: When you press the <Ctrl> key when dragging one or more signals into the FFT view, the existing signals are replaced with new signals. If there are more signals in the view than new signals, the first signals will be replaced. If there are more new signals, the additional signals will be appended.

The description of the FFT view can be found in chapter FFT view overview, page 32
6.2 FFT view overview

The FFT view offers a number of special graphs and tables, which can be individually displayed or hidden as needed.

![FFT view example](image)

**Legend**

1. Toolbar
2. Main window, signal spectrum of the input signal
3. Spectrum slave graph (bands, frequency domain) \(^1\)
4. Spectrum slave table (data, frequency domain) \(^2\)
5. Time slave graph (graph, time domain)
6. Time slave table (table, time domain)
7. Spectrum parameter table
8. Slice slave\(^3\)
9. Marker spectrum slave\(^3\)

\(^1\) With ibaInSpectra, additional static values, warning and alarm limits
\(^2\) Can only be used with ibaInSpectra
\(^3\) Slice slaves and marker spectrum slaves can exist several times
The main window is always displayed at the top. The additional windows for graphs and data of spectrum and time domain are grouped in pairs. In analogy to normal trend views, their position can be changed at the header bar by using the mouse. You can display or hide the individual graphs and tables within the FFT view by means of the buttons as shown in the above figure.

**Toolbar**

<table>
<thead>
<tr>
<th>Button</th>
<th>Description</th>
</tr>
</thead>
</table>
| ![Play/Pause](play_pause.png) | Start FFT view / Pause FFT view (only ibaPDA)  
Stop or continue the FFT display update |
| ![Reset](reset.png) | Reset all painted data (only ibaPDA)  
The display is cleared only once and all values are set to zero until the next FFT calculation is completed |
| ![Plane](plane.png) | Determine plane count automatically (only ibaAnalyzer) |
| ![Auto](auto.png) | Auto color signals |
| ![Auto](auto.png) | Auto scale value axis |
| ![Manual](manual.png) | Restore manual scale 1) |
| ![Zoom](zoom.png) | Zoom out one level / Zoom out all 1) |
| ![Menu](menu.png) | Toggle display type in the FFT main window (single spectrum / waterfall / contour)  
Open the sub menu for showing/hiding the windows  
Main window with/without waterfall (graph, frequency domain)  
Spectrum slave graph (graph, frequency domain)  
Spectrum slave table (table, frequency domain)  
Time slave graph (graph, time domain)  
Time slave table (table, time domain)  
Display spectrum parameter table  
Add slice slave...  
Add marker spectrum slave... |
| ![Marker](marker.png) | Toggle interactive marker visibility  
No function for configured markers |
| ![Order](order.png) | Switch to the order spectrum (if speed signal and parameters of the order calculation are configured)  
1) Individually affects the main window, spectrum or time slave graph, depending on the focus |
6.3 Main window

In the main window, the result of the FFT of the signal to be examined is shown in the frequency domain. The standard view for the main window is the individual spectrum.

![FFT View](image)

Fig. 12: Main window of the FFT view

You can enable an interactive marker that you want to use to read frequency values and the associated amplitudes along the X-axis.

When switching to the waterfall or contour view, the individual results of the frequency analysis are displayed spatially offset. This provides an overview of the history of the frequency response curve.

Detailed information can be found in chapter Waterfall, page .35
### 6.3.1 Waterfall

The main window of the FFT view can be converted to an isometric perspective. In this mode, the successive FFT events of a spectrum are displayed on a Z-axis, with the newest result closest to the axes origin, in order to create a waterfall effect. The display is restricted in **ibaPDA** to 262144 data points, in **ibaAnalyzer** configurable via memory use per FFT. However, note that using a waterfall appearance demands more resources than using a single spectrum.

You can switch to the waterfall perspective via the corresponding button in the toolbar of the FFT view.

![Single spectrum, Waterfall, Contour](image)

Alternatively, you can switch perspectives in the properties dialog of the FFT view as well.

![Display configuration in the properties window](image)

![FFT view with enabled waterfall perspective](image)

In the above figure, you can see the results of the last 100 calculations and it is clearly visible how the spectrum changed in the course of time.

By using the `<Up>` and `<Down>` cursor keys or by scrolling with the mouse wheel, you can move through the planes and have displayed the related spectra and parameters.

When moving the mouse with the `<Ctrl>` key pressed, you can change the angle and perspective of the view. If you press the `<Shift>` key at the same time, then the display pans to 0 degrees. The axis position settings are overwritten in this mode.
If you have set the desired perspective, you can save this and re-enable it again later at any time. See chapter “Settings in the FFT view, page 65.

Scales are always displayed at the side of the chart not overlapping with the perspective flow direction. Several spectra can have different sample rates or bin values and thus the clock in which the FFT results are available may vary. That is why it is pre-set that every spectrum moves on the Z-axis at its own pace.

However, there is the option to synchronize the Z-planes across several spectra. With this option enabled, the FFT view will not allow a spectrum to advance over the Z planes until all spectra have generated a new FFT result. While the view is waiting for certain spectra to generate results, the other spectra keep showing their newest results on the front plane.

While the waterfall perspective is enabled, the label, marker and zoom rectangle functionality is limited to the foremost plane.

The appearance options of the waterfall display is determined in the properties window in the node Time axis. See chapter “Time axis, page 80.

### 6.3.2 Contour view

The contour view corresponds to a 2D top view of the waterfall, where the amplitude height is represented by colors.

![Contour View](image)

Fig. 15: Example contour view

The color scheme can be configured in the properties of the value axis. Both pre-defined schemes can be selected here and separate color schemes can be created.
6.3.3 Zoom

The scale of an axis can be manipulated in three ways.

- **Autoscale**
  You can perform an autoscale via the context menu of the axis or by using the middle mouse button to click on the axis.

- **Shift**
  You can shift an axis by dragging it with the mouse.

- **Zoom**
  Using the mouse wheel, you can zoom in and out in the area of the cursor.

You can change the scale via the pop-up buttons on the axis too. These buttons appear when you move the mouse over the right side of a horizontal axis or over the top of a vertical axis.

The outermost symbols halve/double the scale range based on the average. The arrows have a similar function, but with a smaller zoom factor. The button in the middle autoscales the axis.

In addition, you can zoom into a certain area of the diagram using the zoom rectangle (click with mouse and drag). The zoom rectangle enables the zoom buttons in the view toolbar, which allow you to return to previous zoom levels.
6.3.4 Legend

The legend indicates which signals are added to the view. The first part of the legend is the tree structure of the value axis. This shows which spectra are shown on which axis. The second part of the legend shows a visual representation of the percentage buffer fill grade for each signal. The last part indicates the signal name, listed by signal ID and calculation mode. If a signal is invalid, this is indicated by an exclamation mark at the end of the signal row.

The legend has a drag & drop function. This way, a spectrum can be laid upon different value axes. While dragging the spectrum, an arrow appears in the value axis tree pointing to the tree that will contain the spectrum when it is dropped. If a spectrum is not dropped inside a legend row, the spectrum will be laid upon a new axis.

Right clicking in a legend row makes the context menu of the legend appear.

Clicking on “Remove signal” removes the corresponding signal. Clicking on “Hide signal” hides the signal and shows the signal name transparently. The signal is only temporarily hidden and
can always be displayed again. By clicking on “Visualize signal only” in the context menu, only the selected spectrum remains in the display and all other spectra are hidden. Clicking on “Change main spectrum” makes the selected spectrum the main spectrum.

In the context menu under “Properties,” you can display the selected settings for the spectra.

In the properties of the FFT view (main window), you can also configure and enable a separate legend that contains additional information, such as name, comments and sampling time of the input signal, marker values or any literal text.
6.4 Spectrum slave graph and spectrum slave table

In addition to the main window, you can open a graphical and/or tabular display of the data of the frequency spectrum. Click on the button for the window menu in the toolbar of the FFT view for this purpose.

Graphical display and data table form one group, as the table always provides the data matching the spectrum in the graph. However, the graph and table can be individually displayed or hidden.

In addition, the graph and data table can be minimized or displayed together. To do this, simply click on the small triangle on the right margin of the display:

![Graphical display and data table](image)

Fig. 20: The graph and table of the spectrum slave are visible (left) and minimized (right)

**Note**

Without InSpectra modules, the spectrum slave shows the same information as the individual spectrum in the main window and the table does not contain any data.

You define general display properties in the properties dialog of the FFT view in node Spectrum slave.
Visibility
You can define here whether the graph and the data table for the spectrum slave are shown as a standard. Even if a view is disabled here, it can be re-enabled later in the FFT view toolbar.

The data table can be sorted automatically. Define the parameter (column) here according to which and in which sequence the table is sorted.

Additional legend
When this option is enabled, another legend is displayed in the spectrum slave window in addition to the normal signal legend. You can define the content of this legend yourself. For example, you can enter a detailed multi-line text, in which placeholders for dynamic information can also be used. The following placeholders are available:

- %sn: Input signal name
- %iu: Input unit
- %su: Spectrum unit
- %c1: Input signal first comment
- %c2: Input signal second comment
- %sp: Input signal sampling period
- %x: X-value at interactive marker
- %y: Y-value at interactive marker
- %xmouse: X-value at mouse cursor
- %ymouse: Y-value at mouse cursor
- %zmouse: Z-value at mouse cursor
- %xmv: X-value of the nearby marker position
- %ymv: Y-value of the nearby marker position
- %tmv: Time value of the nearby marker position
- %nmv: Name of the nearby marker position
- %imn: InSpectra Expert module name
- %n: Band name
- %nb: Band number
- %r: RMS value
- %p: Peak value
- %pf: Peak frequency
- %c: Center frequency
- %d: Delta frequency
- %l: Lower frequency
6.4.1 Spectrum slave graph

The graphical display of the frequency spectrum always shows the last result of the FFT in two-dimensional appearance or the spectrum selected in the waterfall or contour plot. (The selected spectrum in the waterfall view is shown with a different color, marked in the contour plot with a triangle):

- Spectrum
- Frequency bands
- Value bands
- InSpectra bands
- Characteristic values of the InSpectra bands
- Limits of the InSpectra bands

![Fig. 22: Display of 3 different frequency bands](image)

The display shows at least a part of the spectral curves from the main window. You can add additional charts by dragging and dropping them from the main window or from the signal tree via drag & drop. The displays are linked so that all graphs in the small spectral display can also be seen in the main window.

When zooming in, more details can be seen.

![Fig. 23: Frequency band display](image)

The most important parameters of the frequency bands and of the spectrum are shown with dotted and colored lines. You are shown the respective values when you position the cursor on the lines (hovering).
FFT view

<table>
<thead>
<tr>
<th>Lower cutoff frequency</th>
<th>Upper cutoff frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>p=1.392</td>
<td>p=110Hz</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Peak (peak amplitude)</th>
<th>Peak frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>p.Arm=1</td>
<td>p.Warn=0.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Alarm limit</th>
<th>Warning limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>RMS=0.2134</td>
<td>p=1.392</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RMS</th>
<th>Display of all descriptors by selection in the spectrum properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>p.Arm=1</td>
<td>p.Warn=0.5</td>
</tr>
</tbody>
</table>

Table 1: Information in the spectrum slave graph

The configuration of the bands is described in chapter **Bands**, page 68.

You can decide in the spectrum properties (by using the context menu of the display) which markings and parameters are to be displayed (permanently) and whether the graph is to obtain a color change when exceeding the alarm limits.
If there are several spectra in the display, individual display properties can be assigned to every spectrum.

If the spectrum slave graph has the focus (after a mouse click on the header bar), the tool buttons for zooming out and restoring the manual scale relate to this graph and not to the main window. The same applies to the assigned function keys <F3>, <F4> and <F5>.

**Base axis**

The display has a base axis conforming with that of the main window. You can still modify the settings of the base axis in the display properties to, e.g., opt for a logarithmic instead of a linear division or provide for a manual scale. In addition, you can display the period instead of the frequency.

If you zoom in the spectrum slave graph or in the main window, this is usually independent from each other. By using the "Synchronize actual scale with main window" option, you can determine that a zoom action in one of the windows also affects the other, but only in horizontal direction.

**Value axis**

The spectrum slave graph has only one value axis. All charts in the display are displayed on the same scale of values. You can change the settings of the value axis in the properties of the display.
For scaling the value axis, you can choose between linear, decibel and logarithmic.

In the Spectrum x tab, you can determine the display properties for style and filling for each spectrum separately. You can adopt the main window setting or select individual settings from the respective dropdown menu.

6.4.2 Spectrum slave table

The data table regarding the frequency spectrum only contains data if it is an InSpectra module. In case of a simple analog signal, the table remains empty.

In the table, a line is automatically created for every defined band of the displayed InSpectra module.
The parameters and – if configured – the results are shown for each band. Results and alarms for characteristic values are displayed in the area below. A line is created for each parameter.

If there are several InSpectra modules in the spectrum slave graph, the table also shows the data for the bands of the other spectra.

![Spectrum slave table with 2 InSpectra modules](image)

**Fig. 28: Example of a spectrum slave table with 2 InSpectra modules**

You can display or hide the parameter columns via the context menu (right mouse click in the heading).

![Parameter columns](image)

**Fig. 29: Parameter columns**

In every parameter column, the displayed values can be sorted by clicking on the table header. A triangle in the header indicates whether the sorting direction is ascending or descending. The order is automatically re-sorted if the order changes during acquisition.

You define the preference for sorting in the properties dialog of the FFT view in the node Spectrum slave table, see chapter Spectrum slave graph and spectrum slave table, page 40.
Show bands / enable collapsed bands

Use this option to globally decide for all bands whether these are displayed in the frequency spectrum and whether they can be shown as collapsed bands.

If the option *Show bands* is enabled, the display of individual bands in the *Visible* column can be determined separately.

If the option *Enable collapsed bands* is marked, the display of the individual bands in the *Collapsed* column can be determined separately. Collapsed bands are indicated by a triangle at the center frequency.

6.5 Time slave graph and time slave table

In addition to the main window, you can open a graphical and/or tabular display of the data of the input signal in the time domain. Click on the button for the window menu in the tool bar of the FFT view.

Graphical display and data table form a group, as the table always provides the data suitable for the graph in the display. However, the graph and table can be individually displayed or hidden.

In addition, the graph and data table can be minimized or displayed together. To do this, simply click on the small triangle on the right margin of the display.
6.5.1 Time slave graph

In the time slave graph, the time curve of the input signal is graphically displayed. The displayed section contains exactly the samples of the input signal which were included in the FFT calculation.

If the averaging function was enabled in the calculation settings of the profile, then the display shows the time signal of the last internal FFT calculation. The displays of the FFT results in the main window and frequency range, however, are also based on prior values of the input signal.

As a basic principle, the input signal of the InSpectra module is displayed. However, you can also drag further signals from the signal tree into the time slave graph. If there are several signals in the main window already, you can select those in the context menu of the graph.

If the time slave graph has the focus (after a mouse click on the header bar), the tool buttons for zooming out and restoring the manual scale relate to this graph and not to the main window. The same applies to the assigned function keys <F3>, <F4> and <F5>.

Markers

You can also enable a marker via the context menu of the display.

Legend

The legend of the display contains various information:

- Name of the InSpectra module (if present)
- Channel number of the input signal
- Name of the input signal
- Number of samples for the FFT, unit of the input signal

Base axis

The time slave graph has a base axis. When autoscaling, the length of the base axis results from the number of samples and the sampling time. You can modify the settings of the base axis in the properties of the graph.
Value axis

The time slave graph has only one value axis. All curves in the graph are displayed on the same scale of values. You can modify the settings of the value axis in the properties of the graph.

Time parameters

The statistical values (average, minimum, maximum, RMS, crest) determined for the input signal in the shown time range can be displayed in the graph. For this purpose, select the desired parameters in the properties dialog of the graph.

Note

Sometimes, the crest factor and RMS value is not immediately visible in the graph, as it can be significantly higher or lower than the values of the signal curve. Change the scale of the value axis to see the crest factor.
6.5.2  Time slave table

The data table of the time domain shows the same statistical values of the input signal which were described as time parameters above.

![Example of data table of the time domain](image)

6.6  Spectrum parameter table

The spectrum parameter table is used to display the FFT calculation parameters. This allows you to display the calculation parameters you wish to observe without having to open the properties dialog of the FFT view.

You can add the spectrum parameter table to the display using the drop-down menu.

![Adding the spectrum parameter table](image)

Before doing so, you should specify what information will be displayed in the table, as not all parameters are of interest and you can save some space by reducing the number of parameters.

For example, if you do not want to use an order spectrum, the order parameters can remain hidden.

You can configure the settings in the spectrum parameter table node in the properties of the FFT view. All parameters from the calculation profile are available for selection.
Fig. 37: Configuration of the spectrum parameter table in the FFT properties

The result might look like this:
6.7 Slice view

With a slice graph, you can essentially represent the chronological sequence of an FFT for a selected marker position. The amplitude profile of a frequency therefore becomes clear, especially in conjunction with the isometric waterfall view. You add a slice slave using the drop-down menu for the FFT display.

The slice slave can operate in two modes:

- In **Spectrum Mode** you can monitor a spectrum value that changes over time:
  - The temporal dimension corresponds to the number of planes in the waterfall view. The highest-numbered plane contains the most recent data (front plane). The scale of the X-axis shows the plane number.
  - The frequency dimension is specified by an interactive marker or a configured marker, which is connected to a signal, e.g., a speed signal.
In **Marker Mode** you can monitor a frequency value that changes over time:

- Here again, the temporal dimension corresponds to the number of planes.
- Application example: Tracking a speed marker to show the speed history.

The mode of the slice slave is also displayed in the signal legend.
You can add multiple slice slaves for different applications. Once defined, the slice slaves are listed in the drop-down menu and can also be displayed, hidden and deleted there.

The slice slave is specified by a marker. In the properties of the slice slave, you can select any defined marker, including any available harmonic markers. You can also quickly switch between the different markers in the context menu on the slice slave.

In addition, each slice slave has its own interactive marker. The “Link markers with waterfall” option lets you associate the interactive marker with the currently selected plane in the waterfall view. Note that the position of the interactive markers in the slice slave always corresponds to one plane in the waterfall view.

6.8 Marker spectrum display

The marker spectrum display is used to represent the relationship between a dynamic marker (horizontal axis in Hz) and the associated spectrum value (vertical axis).

For each plane of the waterfall view, a point for the value pair is entered in the graph.
This display does not have its own interactive marker. When you hold down the <M> key, the mouse moves over the points and the corresponding values (X, Y, and plane) are displayed in a pop-up.

The point within the currently selected plane is highlighted with a red circle.

You can add multiple marker spectrum displays and configure them differently.

6.9 Markers

For a better evaluation of the frequency analysis, markers can be displayed in the main window and in the spectrum slave graph. The markers mark frequency values along the x-coordinate. Frequencies of interest can be, for example, a constant or variable fundamental frequency, known resonance frequencies or the harmonic components.

There are several types of markers having different functions:

- Interactive marker
  There is an interactive marker. This marker can be switched on or off and manually moved. In the time slave graph, only this type of marker is available.

- Configured marker
  Several markers of this type can be used in a display. This marker cannot be moved manually but its position is not necessarily fixed. The marker position can be set to a constant value or controlled by a signal.

- InSpectra marker
  This marker is configured in the InSpectra Expert module and cannot be moved manually.

For all markers, harmonic markers and sideband markers can be additionally configured.

You can enable or disable the display of the interactive marker by clicking the button in the tool bar of the FFT view. Depending on the focus, the button refers to the main window and the spectrum slave graph or to the time slave graph.

You enable or disable the display of the configured markers and the InSpectra marker solely in the properties dialog of the main window.
The markers are configured in the properties of the FFT view (main window).

For all markers, you can set that the factors are shown in the label of the harmonic markers.

In the waterfall display, you can connect the marker dots between the planes.

The intersections of the markers with the spectrum are displayed by small diamonds. You can hide these with the option Hide marker dots. If Connect marker dots between planes is also selected, the markers are shown as a line in the waterfall and in the contour view.

To distinguish better, you can allocate the different markers (first harmonic, harmonic markers and sideband markers) their own line patterns or the bold mark-up.

6.9.1 Interactive marker

The interactive marker is used for spontaneous reading of X and Y values in a spectrum display. It can be shown or hidden at any time.

When activating for the first time, the marker is displayed at the position 1 Hz. Every time the marker is switched off and on again, it memorizes the last position.

You can change the marker position either by clicking on the thick ends at the top or at the bottom of the marker or by using the cursor keys:

<table>
<thead>
<tr>
<th>Keys</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;Cursor to the left&gt;/&lt;cursor to the right&gt;</td>
<td>Normal step width</td>
</tr>
<tr>
<td>&lt;Shift&gt;+&lt;cursor to the left&gt;/&lt;cursor to the right&gt;</td>
<td>Large steps</td>
</tr>
<tr>
<td>&lt;Ctrl&gt;+&lt;cursor to the left&gt;/&lt;cursor to the right&gt;</td>
<td>Small steps</td>
</tr>
</tbody>
</table>

Table 2: Key operation for marker movement

When you move the mouse over the thickened end of the marker, the cursor changes to a double-arrow symbol. You can then move the marker. In the label with the marker color (default: red), the X value is displayed on the base axis. If there are several base axes, you must specify in the settings of the base axes which axis the marker should refer to (Marker Axis). In addition, X and Y values are displayed at the intersection of the marker with the spectrum.
Center markers

Since the marker has a certain position on the frequency axis, it is possible that it is not visible in the image anymore after zooming. Switching the marker off and on to bring it back into the image is useless, as it does not change its position because of that.

This is what the Center Marker function is for. With this function, you place the marker in the center of the section currently visible.

Click on the arrow symbol at the marker button in the tool bar and then on "Center marker."

Configure marker

In addition to general properties such as color and label, you can also configure harmonic markers and sideband markers in the settings.
Harmonic markers always have a frequency that corresponds to an integer multiple of the main marker. For the harmonic markers, determine the requested number of the harmonic components below and above the current marker frequency. For the harmonic frequencies, further lines are displayed. Additionally, in the “Markers” branch, enable the option “Show harmonic labels” to display the frequency values on the markers.

The above figure shows an interactive marker with 1 harmonic component below and 2 harmonic components above the marker frequency of 26.5 Hz.
The values of the harmonic markers are displayed at the maximum height of the value axis. The unit of these values corresponds to the unit of the base axis (see the chapter Base axes). The view can be configured to show only the frequency of the main marker.

An adjustable number of sideband markers is added symmetrically right and left of the main marker. The distance to the main marker and the neighboring sidebands is the sideband offset, represented in units of the base axis. The sideband offset can be a constant value or an analog signal. The offset can also be changed with the mouse by touching one of the outer markers with the cursor and moving it to the left or right with the mouse button pressed down.

The above figure shows an interactive marker with 3 sidebands and offset of 3 Hz each. Small diamonds indicate where markers and spectra intersect. If the mouse pointer is moved near a diamond, its coordinates (X and Y values) become visible.

Harmonic component and sideband markers can be displayed in combination, too.
Fig. 45: View with a harmonic marker below and two above the main marker. The sideband offset is set to 10 Hz.

**Note**

If the sideband offset is specified by a signal, the value of this signal always has to be >=0. If the value is negative, the offset = 0 and no sideband markers are displayed.

**Note**

You can make the general settings of the markers in the preferences. You will find individual settings for the FFT views in the properties of a view.

For further information, see chapter FFT view overview, page 32.
6.9.2 Configured marker

The so-called configured markers can either be anchored at certain positions on the base axis with fixed values or moved dynamically along the base axis by means of analog signals.

The markers must first be defined and configured. You can configure the markers in the Properties dialog of the FFT view, in the “Marker” branch.

To create a marker, you simply have to enter the required information in the table line. As soon as you click in the empty space below, a new, empty line is added.

**Name**

Enter a clear name to be able to easily identify the marker. The name is shown in the display later on, too.

The entries for fundamental frequency, factor and unit determine the position of the marker on the base axis. The marker position is calculated by multiplying these three parameters.

**Fundamental**

You can enter a fixed value or select a signal for the fundamental oscillation or fundamental frequency. To select a signal, click in the table line and then on the arrow symbol. Select the signal from the signal tree.

If you want to use a signal for controlling the marker position, select a signal complying with the frequency you want to monitor.

In the example of the above image, we have selected a velocity, more precisely the speed of a drive in rpm, to control the marker. In doing so, frequencies of interest can be easily tracked, e.g. during the acceleration and braking phase of a machine. This is especially easy to see in the main window’s waterfall and contour view.

**Note**

If the signal for the fundamental frequency is negative, the marker is not displayed.
**Factor**
The default value of the factor is 1. You can enter another factor if, for example, the marker is to be positioned at a multiple or a fractional part of the fundamental frequency.

**Unit**
As to the unit, you can choose between Hertz (Hz) and revolutions per minute (rpm). Depending on the settings, another, internal factor is taken into consideration:
- Hz: Factor = 1
- rpm: Factor = 1/60

Order can also be selected for order spectra.

**Harmonics**
As with the interactive marker, you can individually determine the number of harmonic markers above or below the marker frequency for every static marker. Additionally, this mode allows you to select whether only the even or odd harmonic components are taken into consideration or both types.

**Sidebands**
As with the interactive marker, you can individually determine the number of sideband markers and the sideband offset for every static marker. Sidebands can have a different unit than the marker itself. You can select the unit here.

---

**Note**
If the sideband offset is specified by a signal, the value of this signal always has to be >=0. If the value is negative, the offset = 0 and no sideband markers are displayed.

---

**Color**
Here, you can allocate an individual color to every static marker.

**Visible**
This option decides whether a fixed marker is displayed or not. This is the only possibility of enabling or disabling static markers for the display. The marker button in the toolbar of the FFT view does not control the static markers!

**“Enable collapsed markers” option**
When you enable this option, an additional column appears in the marker table, in which you can decide for each marker whether it is normal, i.e. it should be displayed as a line and possibly with a label, or only as a triangle based on a spectrum.
InSpectra marker
The InSpectra markers are shown in the table below.

The settings of the InSpectra markers can only be changed in the InSpectra profile. Only the visibility can be set here.
6.10 Settings in the FFT view

In the FFT view of ibaInSpectra (ibaPDA) and ibaAnalyzer-InSpectra, all settings can be assumed node by node in the preferences and are thus applied to the newly opened FFT views. Changes can be saved by pressing the button <Apply node to preferences>. The preferences cannot be viewed separately in ibaAnalyzer. A new FFT view must be opened in order to view preferences. In ibaPDA, you open the preferences via the menu Configuration - Preferences.

The node Main window offers general settings for the display of the calculated FFTs.

Display configuration
Choose whether you prefer the single spectrum, the waterfall view and the contour view of the spectra. The visibility of the main window can also be set here. With the Show close buttons option you can control the visibility of the close buttons and the lines to the left of the display.
Perspective: Drop-down list Custom perspective
If you have saved different perspectives for the waterfall (3D) appearance, then you can select one of them.

Click the button <Manage perspectives> to open the dialog for managing perspectives. This lets you delete existing perspectives, copy them to the clipboard or paste them from the clipboard. Since perspectives are always specific to a FFT view, in order to use a perspective in exactly the same way in another FFT view, it must be copied and pasted to the other FFT view.

The perspective is saved in the display. Once you have configured the desired perspective, select Save perspectives in the context menu of the main window. Give the perspective a name and close the dialog via <OK>.

Additional legend
When this option is enabled, another legend is displayed in the main window in addition to the normal signal legend. You can define the content of this legend yourself. For example, you can enter a detailed multi-line text, in which placeholders for dynamic information can also be used. The following placeholders are available:

- %sn: Input signal name
- %iu: Input unit
- %su: Spectrum unit
- %c1: Input signal first comment
- %c2: Input signal second comment
- %sp: Input signal sampling time
- %x: X-value at interactive marker
- %y: Y-value at interactive marker
- %xmouse: X-value at mouse cursor
- %ymouse: Y-value at mouse cursor
- %tmouse: Z-value at mouse cursor
- %xmv: X-value of the nearby marker position
- %ymv: Y-value of the nearby marker position
- %tmv: Time value of nearby next marker position
- %nmv: Name of the nearby marker position
- %imn: InSpectra Expert module name
- %rms: RMS value of the selected plane (based on incoming values)

By default, all signal-related placeholders are determined based on the first spectrum. To identify another spectrum, use a colon followed by the word “spectrum” and the index of the spectrum, e.g. "%sn:spectrum1", in order to refer to the first spectrum.

Use the optional formatting string “w.p” to specify the format of the numeric parameters, where “w” is the width and “p” is the precision. The width is the minimum number of the char-
acters shown. Precision is the number of decimal places. Example: "%%5.3y1" indicates the Y-value for marker X1 with a width of 5 characters and a precision of 3.

The display always shows the information for the uppermost signal in the main window.

![Fig. 51: Definition of additional legend (right) and display (left)](image)

**Synchronization**
By default, if only one spectrum is displayed in the FFT view, identifiers, markers and zones are synchronized with this spectrum and this setting is not available. If multiple spectra are displayed in the FFT view, you can define the main spectrum here which will be used for synchronization.

**Pause/Continue**
This function is only available in *ibaPDA*. If this option is enabled, the visualization of the FFT is controlled by a digital signal. The FFT calculation is continued.

If the digital signal is TRUE (1), the visualization is paused and the display shows the frozen image of the last result.

If the digital signal is FALSE (0), the visualization continues and the display is updated regularly.
6.10.1 Visuals

In the dialog of the *Visuals* node, you can set the appearance and colors of the FFT view.

![FFT view settings](image)

**Fig. 52: Preference for the visualization of the FFT view**

**Layout**
You can change the alignment of the FFT axes from horizontal to vertical or vice versa by selecting the relevant option from the picklist *Frequency axis*. You can also flip the individual axes.

For a contour view, the color axis (value axis) can be displayed horizontally or vertically next to it.

**Appearance**
This is where you make the settings for colors and fonts. For the coloring of curves, markers and bands, 16 colors are available, which are automatically assigned to the corresponding items one after the other when they are added in the view.

6.10.2 Bands

The display supports frequency and value bands. These bands highlight certain parts of the spectra in a different color. Frequency bands (horizontal) have a static or dynamic average (center frequency) and a delta width. Value bands (vertical) start at a dynamic or static value and either reach upward to the next value band or positive infinity.

The frequency bands can optionally be assigned to individual spectra or to all spectra. Value bands apply to all spectra.
Bands are configured in the properties dialog in the node *Bands*. There are two types of bands:

- You can allocate *custom bands* to any spectrum or all spectra
- *InSpectra bands* are bands that were configured in the calculation profile of an InSpectra module

**Custom bands**

In the *custom bands* tab, you define the frequency bands with a static or dynamic center frequency and a delta frequency. You can allocate a color to the band and a certain spectrum or all spectra.

In the diagram below, you can see the effects of the following settings.

*Example:*

![Fig. 53: Band coloring settings](image1)

![Fig. 54: Example of band coloring](image2)
InSpectra bands

If you use the FFT view with InSpectra, an additional InSpectra Bands tab will appear in this dialog.

**Fig. 55: InSpectra bands settings**

**Band settings**

Display properties of the InSpectra bands can be determined in the Band settings area.

You can enable the collapsed appearance of the bands and whether the band is highlighted on hover. If this option is enabled, the band is highlighted in the display of the frequency spectrum and in the data table.

**Fig. 56: Collapsed bands are indicated by a triangle at the center frequency**

You can determine when the band labels are displayed (never, always or on hover) and what is displayed in the label. If you click the band label text field, a list of parameters appears that you can use for dynamic information in the label text.
The following parameters can be used:

- %n: Band name
- %nb: Band number
- %r: RMS value
- %p: Peak value
- %pf: Peak frequency
- %c: Center frequency
- %d: Delta frequency
- %l: Lower frequency
- %u: Upper frequency
- %ats: Alert status string
- %ams: Alarm status string
- %events: Alert and alarm status string
- %atrmsl: Limit of the RMS alert
- %atpeakl: Limit of the peak alert
- %amrmsl: Limit of the RMS alarm
- %ampeakl: Limit of the peak alarm
- %atrmspc: Percentage of the RMS alert limit
- %atpeakpc: Percentage of the peak alert limit
- %amrmspc: Percentage of the RMS alarm limit
- %ampeakpc: Percentage of the peak alarm limit
You can determine whether the bands should begin at the lower margin and where they should end (at the end of graph, at the peak or at the RMS value). The frequency bands can be shown as a shaded band or non-shaded band or only as a line at the center frequency.

The characteristic values of the bands can be displayed as lines, which can be highlighted on hover. Example:

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>line for peak value</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>line for RMS value</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>line for frequency peak value, highlight on hover</td>
<td></td>
</tr>
</tbody>
</table>

In addition, the band color can be adopted as a curve color both in the spectrum as well as in the main window.

**Event settings**

Display properties for events (alerts, alarms) can be set in the *Event settings* area. Dynamic label texts can also be defined for events. See band settings.

**Bands**

The bands configured in an InSpectra profile are shown in the table below in the dialog. The name, center frequency and delta frequency are already defined in the InSpectra profile and can no longer be changed here. The color and visibility can still be changed here.

<table>
<thead>
<tr>
<th>Band Number</th>
<th>Name</th>
<th>Center</th>
<th>Delta</th>
<th>Color</th>
<th>Visible</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td><em>Angesamt</em></td>
<td><em>(fmax)/2</em></td>
<td><em>(fmax)/2</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>300</td>
<td>300</td>
<td>50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>500</td>
<td>500</td>
<td>100</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

![Example of bands table](image)

**6.10.3 Markers**

You will find the description of the marker settings in chapter *Markers*, page 56.

**6.10.4 Base axes**

You can choose between linear and logarithmic display here and whether the axis unit is displayed or not. Typically, the base axis has the unit Hz in the frequency domain and seconds in the time domain.
The base axis can be inverted so that, for example, the vibration period (T) is shown instead of frequency (f). The following applies here: \( T = \frac{1}{f} \).

**Properties**

![Properties of the base axis of an FFT view](image)

By default, the scaling values are automatically determined. However, you can also make a manual specification.

By default, the table of axes only shows the default Hz axis or order axis with optional setting options for the position (top/bottom), notation (auto/standard/scientific), and axis unit. To change these settings, click on the corresponding cell and select the setting from the drop-down list.

If you have defined several base axes, select which base axis the markers in the display should refer to in the *Marker Axis* column.

Use the *Show* option to control whether the base axis is displayed or not.

You can add and configure other base axes as needed. These additional base axes can have a different scale, reference value or unit. By default, the basic display settings for the base axes are adopted from the main window and from the spectrum slave graph. You can then either change some display settings for the base axes for the spectrum slave graph or synchronize them again with those from the main window.

**Note**

The manual “Minimum” and “Maximum” scale settings always apply only to the main axis (Hz). All other base axes enabled in the FFT view are scaled automatically.

Each axis to be shown in the graph is represented by a line in the table below.

In the following example, two base axes were defined. The first shows the frequency in Hz and the second in rpm. The base axes in the main window (1) are linear. The base axes in the spectrum slave graph (2) are logarithmic.

In addition, the main window was zoomed in.
Note

Axis = 1/scaling factor

Fig. 60: Several base axes and different scale divisions
6.10.5 Value axes

A value axis can contain several spectra. Using the legend, you can change the value axis used by a spectrum by changing the sequence of the signals. A value axis can be deleted via its context menu. This also deletes all spectra on this axis. You can also display the settings for the value axis via the context menu.

Settings for type, scaling and view correspond to the usual settings in ibaPDA and are self-explanatory.

Scaling
Linear, decibel or logarithmic can be set as scale type. This scale type is applied to the appearance of single spectrum, waterfall and contour.

Amplitude scaling
Depending on the requirements for the visualization, it may be useful to either emphasize or suppress the amplitudes for the display. The following methods are available:

- Peak-to-peak
  Amplitude values are practically multiplied by a factor of two

- RMS
  Amplitude values are practically divided by the root 2, thus moving closer to the RMS value.
**Note**

If *Decibel* is selected, the values of the manual scale nevertheless relate to the linear axis. The resulting decibel values are shown next to them.

In addition, the colours of the contour view can also be applied to the waterfall view. To do this, activate the *Apply color-coded amplitudes to waterfall* option. The number of color bands defines the color resolution. A maximum of 50 color bands is possible.

![Example for color-coded amplitudes](image)

**Fig. 62: Example for color-coded amplitudes**

**Note**

If *Apply color-coded amplitudes to waterfall* is enabled, custom value bands are displayed only in the spectrum slave graph.

**Spectrum x**

By default, a *Spectrum 1* tab is available. These settings are used to process a new signal that is dragged into the FFT view. You can drag multiple signals into an FFT view. If the signals share the same value axis, you will find a separate tab for each signal or spectrum. In the properties, the settings for each spectrum can be changed individually. If each signal or spectrum has its own value axis in the display, each spectrum in the tree structure on the left receives its own node for the value axis.
No calculation profile can be configured in the FFT view of ibaAnalyzer-InSpectra. A profile can only be configured for the data acquisition in ibaPDA without ibaInSpectra. This option is only used for the visualization. The results cannot be acquired. The FFT calculation profile, however, is compatible with InSpectra profiles.

**Input**
- Select *Data Source* to specify the signal or InSpectra module to be displayed. If you have already dragged the signal into the display via drag & drop, the field is already populated.
- You only need to enter a *Speed Source* if you want to perform speed-dependent analyses or work with the order spectrum.

**FFT calculation profile**
The way in which ibaPDA calculates an FFT is defined in so-called profiles. A profile is a collection of various parameters that are relevant to an FFT.

Each spectrum can be calculated with a different profile. You can define as many profiles as you wish and save them in the system via the export function. You can also import saved profiles into a spectrum.

In the profiles, parameters are defined, including
- Sensor data (important for vibration measurements)
- Spectrum type (e.g. integrate, differentiate)
- Speed data (important for order analysis)
- Number of samples and lines, overlap
- Basic calculation rules for the FFT (e.g. calculation mode, averaging, window type)

The button <Configure profile> opens the configuration dialog for profiles. The buttons <Export profile> and <Import profile> below can be used to export and import profiles.
The calculation parameters and their meaning are explained in the InSpectra manual, chapter , page .

The information next to the “Profile...” buttons describes the influence of the acquisition parameters:

- Delta frequency:
  Shows the frequency steps between the results of the division of maximum frequency by bin count.

- Max. update rate:
  Time required for update of the FFT view depending on bin count and overlap factor.

In order to avoid having to look at the properties in order to see the profile parameters, the display shows the Spectrum Parameter Table. This table is part of the FFT view and can be activated via the drop-down menu in the FFT view. The parameters from the calculation profile shown in the table can be defined in the Spectrum Parameter Table node in the FFT view properties.

See chapter Spectrum parameter table, page 51
View

A spectrum can be visualized in four different ways:

- Lines,
- Bars,
- Curve or
- Dots

The inner area of a spectrum can be filled with a transparent or opaque color.

The option *Improve isometric visibility* is used to make spectra opaque. This makes some effects in the waterfall view more visible.
6.10.6 Time axis

In the Time axis node you can define the display options for the waterfall view.

Time axis

- **Plane count**
  
  Set the number of planes you wish to be displayed in the Z direction.

- **Synchronize Z planes**

  If you use multiple spectra in an FFT view, the spectra move forward at their own pace by default, depending on their sample rate or bin count.

  With this option you can synchronize the advance rates of the Z planes across multiple spectra. With this option enabled, the FFT view will not allow a spectrum to advance over the Z planes until all spectra have generated a new FFT result. While the view is waiting for certain spectra to generate results, the other spectra keep showing their newest results on the front plane.

- **Position:**
  
  Set the position (left or right) of the time axis.

- **Time axis:**

  You can choose between a manually defined number of planes or whether a new plane will be displayed after a specified time.
7 Scope view

7.1 General

The scope view is an oscilloscope included as a standard view in *ibaPDA*. Each view supports one base axis and multiple signals on multiple value axes.

A new scope view can be added to the view by

- clicking the corresponding toolbar button

- or by using the View – Add view – Add scope view menu

Signals can be dragged from the *ibaPDA* signal tree onto the view to add them. If the signal is dropped on the chart, a new value axis will be created. To add a signal to an already existing axis, drop the signal on that axis. Every value axis will have the same color as the first signal it contains.
7.2 Trigger

The view’s trigger is visualized on the chart by a little circle with a dot inside. If the trigger can be moved, trigger markers appear at the side of the chart, near the base and value axes. The trigger can be moved by dragging these markers.

There are four triggering slopes:

<table>
<thead>
<tr>
<th>Edge type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rising</td>
<td>Trigger can only fire on the rising edges of the trigger signal</td>
</tr>
<tr>
<td>Falling</td>
<td>Trigger can only fire on the falling edges of the trigger signal</td>
</tr>
<tr>
<td>Either</td>
<td>Trigger can fire on both falling and rising edges of the trigger signal.</td>
</tr>
<tr>
<td>Alternating</td>
<td>If the trigger previously fired on the rising/falling edge, it will fire the next time on the falling/rising edge.</td>
</tr>
</tbody>
</table>

There are four trigger modes:

<table>
<thead>
<tr>
<th>Trigger mode</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>Trigger fires every time the trigger signal passes the trigger value</td>
</tr>
<tr>
<td>Single</td>
<td>Trigger fires when the trigger signal passes the trigger value for the first time.</td>
</tr>
<tr>
<td>Auto</td>
<td>Like normal mode, but also fires when a time-out expires.</td>
</tr>
<tr>
<td>Auto level</td>
<td>Like auto mode, but the trigger value is set to the trigger signal’s center value</td>
</tr>
</tbody>
</table>

The trigger mode and slope can be set in the toolbar or in the “properties” dialog of the view.

To enable the trigger, click the “Play” button in the toolbar. To disable the trigger, click the Pause button. If the trigger is disabled, it will not scan incoming samples.
7.3 State indicator

The state indicator shows the state of the trigger. If the trigger is enabled and samples are received, the state graphic will show 2 dots moving in a circle. If the trigger is disabled, the dots do not move in a circle. If a trigger fires, a circle runs through the middle of the dots connecting them. If the auto trigger fires, this circle is smaller, only touching the dots.

<table>
<thead>
<tr>
<th>Scanning</th>
<th>Triggered</th>
<th>Auto triggered</th>
</tr>
</thead>
</table>

Scope status indicator

7.4 Markers

Markers can be enabled or disabled in the toolbar or in the "Properties" dialog. There are two base markers and two value markers. These two marker types can be activated separately.

If a marker type is active, it is displayed on the chart and can be moved. More information on markers is displayed between the markers or in the signal table below the chart.

7.5 Signal grid

The signal table can be found at the bottom of the view. It displays the ID and name of each signal that has been added to the view.

<table>
<thead>
<tr>
<th>Signal</th>
<th>f(X1)</th>
<th>f(X2)</th>
<th>Δf(X)</th>
<th>Y1</th>
<th>Y2</th>
<th>ΔY</th>
</tr>
</thead>
<tbody>
<tr>
<td>[0.0]</td>
<td>2.79194</td>
<td>1.25627</td>
<td>1.53566</td>
<td>7.97447</td>
<td>-1.50742</td>
<td>9.4819</td>
</tr>
<tr>
<td>[1.0]</td>
<td>-0.29137</td>
<td>-0.07576</td>
<td>0.40422</td>
<td>-0.07347</td>
<td>-3.37960</td>
<td>3.30612</td>
</tr>
<tr>
<td>[E:1] sn 5 fase 45</td>
<td>0.89100</td>
<td>-0.75011</td>
<td>1.64111</td>
<td>-0.07347</td>
<td>-3.37960</td>
<td>3.30612</td>
</tr>
<tr>
<td>[3.0]</td>
<td>-2.79033</td>
<td>0.53776</td>
<td>0.58775</td>
<td>2.48046</td>
<td>-2.55859</td>
<td>5.03906</td>
</tr>
<tr>
<td>[5.0]</td>
<td>0.58778</td>
<td>0.12534</td>
<td>0.46245</td>
<td>2.48046</td>
<td>-2.55859</td>
<td>5.03906</td>
</tr>
</tbody>
</table>

To the left beside the signal name column, there are two more permanent columns: The trigger column and the axis column. The trigger column shows which signal is currently being used as trigger signal. You can change the trigger signal by dragging the trigger icon onto another row. The second column visualizes a small list for every value axis in the view distinguished by different colors. Each list item connects the signals contained with the axis it represents. If the base markers are visible and the base axis is in time mode (X-T), the table shows the f(X1), f(X2) and Δf(X) columns. If the base axis is in "Value" mode (X-Y), the grid shows the X1, X2 and ΔX columns.
If the value markers are visible, \( Y_1, Y_2 \) and \( \Delta Y \) are shown. You can click inside the "Name" column to shift a signal to another axis. If the signal being dragged is the only one on its axis, this axis will be removed. In order to remove a signal from an axis, drag it to any position, but not into another column. The signal is put on a new axis and added to the bottom of the signal table.

![Signal Table Image](image)

Fig. 66: \([8:0]\) is added between \([0:0]\) and \([6:1]\) of the blue axis

The signal table's height can be adjusted. When moving the mouse to the top of the table, a resize icon appears. To auto-size the table, double-click if the resize icon is visible.

### 7.6 Memory length

The scope view has a user-defined memory size. It can be set in the view's "Properties" dialog as milliseconds. This determines how many samples are buffered for all of the view's signals. The length is limited, depending on the time bases of the signals currently used in the view. So, by adding a new signal, the memory length might change.

### 7.7 Overview

This component is a visual representation of the memory length. It shows which part of the memory length is currently visible on the diagram. It also shows the position of the trigger.

![Overview Image](image)

The entire width of the overview visually represents the memory length. The large rectangle represents the currently visible part of the memory length. It can be dragged to the left or right to show other parts of the buffered signals on the diagram. If the cursor is above the rectangle, its size can be increased or decreased by scrolling the mouse wheel. The trigger can also be dragged onto a new base position.

### 7.8 Chart

The chart is the part of the scope view displaying the signals and grid lines. In the X-Y mode, a background image can be placed in the diagram. Furthermore, the chart provides a zoom function. You can draw a zoom rectangle within the diagram, when releasing it, it is zoomed in to the drawn range. When zooming in, the trigger will be disabled. The toolbar buttons can be used to zoom out to the previous level or to zoom out entirely. You can also press the Play button to zoom out and enable the trigger.

If a trigger fires, the chart will be updated with new signal data. The maximum update frequency of the chart is 20 Hz. As the visible part of the memory length gets larger, the update...
frequency gets smaller. The reduction degree depends on the number of signals, the width of those signals, the base axis mode and its value signal, and the memory length itself.

7.9 Axes

All of the axes on the view can be panned by dragging them with the mouse. You can also perform an axis center zoom (in and out) by scrolling the mouse as soon as the cursor is placed over the axis. If the scaling mode is set to manual, you can auto scale the axis by clicking the center mouse button.

The base axis can operate in two modes:

- time mode (X-T)
- value mode (X-Y)

In time mode, you can choose to center the axis values around the trigger or to use absolute time values.

Value mode requires a signal to be configured in the properties dialog. The base axis then uses the signal values and thus becomes a value axis instead of a time axis. The signal will not be added to the signal grid.

![Fig. 67: Base axis in "Value" mode](image)

Interacting with the base axis in time mode changes the visible memory length (overview also changes). In value mode, the visible part of the memory length can only be changed by using the overview or by opening the properties dialog.

Note that the axis containing the trigger signal is always placed next to the chart.
7.10  Background image

In the X-Y display mode, the oscilloscope view allows to use a graphic file as background image. In order to set up the background image, open the "Properties" dialog of the scope view via the context menu.

![Image of X-Y view with properties dialog]

In order to enable/disable the image display, check/uncheck the **X-Y chart image** checkbox. Enter the path and file name of the graphic file in the corresponding field or use the browser button to select the file. The *Map to range* option permits to define size and position of the image in the background. By specifying the coordinates x1/y1 and x2/y2, you can map the 4 corners of the image with regard to the X/Y scales in the view. If the *Map to range* option is disabled, the background image will always be scaled to the size of the scope view.

**Example**

A field of characteristic curves (image) as a background for the measured data.
8  ibaQPanel

ibaQPanel is a licensed software add-on for ibaPDA. However, a mini license for two display objects comes with every ibaPDA standard version.

Other documentation

For a full description of ibaQPanel, please read the corresponding manual for the software product ibaQPanel.

8.1  General

ibaQPanel provides an extended range of objects for visualization of measured values, which have been acquired by ibaPDA.

A basic ibaQPanel license is required on the ibaPDA server computer (dongle) for an unlimited number of display objects.

For every computer where the QPanel should be displayed, a QPanel client license and an ibaPDA client license are required. Both single and multi-user licenses are available.

The display objects may be arranged in one or more layers and placed anywhere on the screen with a user-defined configuration in terms of size, color, font, etc.

Images may be used as background graphics and thus enable the user to create HMI-like screens.
8.2 The ibaQPanel view

A new *ibaQPanel* view can be added by

- clicking the corresponding toolbar button

- or by using the *View – Add view – Add QPanel* menu

The new QPanel view opens in the design mode and the toolbox containing all types of display objects is displayed.
In a first step, resize the black background according to your needs, as it provides the area where you can place the objects. You may also change the background color or choose a background image.

Then, start to drag the display objects you need out of the tool box into the panel and set them up.
# 8.3 The display objects

<table>
<thead>
<tr>
<th>Object</th>
<th>Function</th>
<th>Application</th>
</tr>
</thead>
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<td><strong>Views</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bar chart</td>
<td>Display of signal values as single-bar or multi-bar charts&lt;br&gt;Color change for value ranges, dynamic limits, polynomial calculation for profiles</td>
<td>General value display&lt;br&gt;Fill levels&lt;br&gt;Profiles</td>
</tr>
<tr>
<td>Chart</td>
<td>Multifunction object for the combined display of trend curves, graphic objects, markers, harmonics and texts as well as several base and value axes</td>
<td>Machine presentation, layered presentation</td>
</tr>
<tr>
<td>FFT view</td>
<td>Spectrum plot of a signal</td>
<td>Frequency analysis&lt;br&gt;Chatter monitoring</td>
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<tr>
<td>HD event table</td>
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<td>Error and alarm monitoring; search for process events</td>
</tr>
<tr>
<td>HD navigation</td>
<td>Parent toolbar for controlling multiple HD views</td>
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</tr>
<tr>
<td>HD trend graph</td>
<td>Display historical data in a trend view; Connection to any HD server in the network</td>
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<tr>
<td>Camera view</td>
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<tr>
<td>Offline trend graph</td>
<td>Display a trend graph from a data file (no live data)</td>
<td>Comparison of older and current measured values, comparison of current values with reference curve</td>
</tr>
<tr>
<td>Scope view</td>
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</tr>
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<td>PQU spectrum</td>
<td>Display of a complete PQU spectrum module</td>
<td>Spectrum presentation of electrical values with up to 50 harmonics (power quality)</td>
</tr>
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<td>Display of a complete PQU phasor module</td>
<td>Phasor presentation of electrical values in a network (power quality)</td>
</tr>
<tr>
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<td>Display signal values in a trend graph&lt;br&gt;X axis time or length-based; automatic 2D top-down view on vector signals</td>
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</tr>
</tbody>
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### Display elements

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<th>Display of text signals</th>
<th>Large and clear display of text in the style of an LED display</th>
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</thead>
<tbody>
<tr>
<td>Numeric text display</td>
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</tr>
<tr>
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<td>Display of signal values on a classic analog-style gauge Circular, linear and numerical gauges available; numerous design options, free setup of shape, color, scales and pointers.</td>
<td>Highlighted value display Replaces traditional displays</td>
</tr>
<tr>
<td>Multi-state picture</td>
<td>Display of various graphics, depending on the signal value</td>
<td>Status display Security warning</td>
</tr>
<tr>
<td>Multi-state label</td>
<td>Convert a signal value into different states of a label Color change depending on value range(s), text in label</td>
<td>Status indication</td>
</tr>
<tr>
<td>Label</td>
<td>Display signal values in a trend graph X axis time or length-based; automatic 2D top-down view on vector signals</td>
<td>Labeling of the displays Display of the text signal</td>
</tr>
</tbody>
</table>

### Input elements

<table>
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<tr>
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<th>Check box with check mark</th>
<th>Enabling / disabling options</th>
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</thead>
<tbody>
<tr>
<td>Input combobox</td>
<td>Drop-down list with any number of plain text entries. By selecting a list item, a target signal is set to a defined value.</td>
<td>Manual setting of default values</td>
</tr>
<tr>
<td>Button</td>
<td>Execute commands using a button: Close ibaPDA client Toggle view Execute command line Activate application (*.exe) Print (QPanel screen) Pulse digital signal Set signal value Pause (stop one or all views) Start (continue one or all views) Reload layout from server Open user management Connect to ibaPDA server Connect to ibaHD server Change language Commands can be run manually or via signal edges; button text and graphics can be adjusted</td>
<td>Control of QPanel display Execution of other applications or scripts</td>
</tr>
<tr>
<td>Feature</td>
<td>Description</td>
<td>Relevant Feature</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>File picker</td>
<td>Shows the contents of a folder in order to select a file. Name of the selected file is written into a text signal.</td>
<td>Interactive load of a data file in an offline trend curve</td>
</tr>
<tr>
<td>File scanner</td>
<td>Monitors contents of a folder for automatic selection of the last, second to last, third to last (and so on) file. Name of the selected file is written into a text signal.</td>
<td>Automatic display and update of the last x data file(s) in offline trend curves</td>
</tr>
<tr>
<td>Option field</td>
<td>Group of radio buttons</td>
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</tr>
<tr>
<td>Switch</td>
<td>On/off switch; switch appearance can be determined by graphics file. Separate graphics for ON, OFF, disabled ON and disabled OFF state possible. Digital target signal.</td>
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</tr>
<tr>
<td>Text input control</td>
<td>String entry for a text signal</td>
<td>Additional information on data file, printout, further applications, etc.</td>
</tr>
</tbody>
</table>

**Visuals/Layout**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
<th>Relevant Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Image</td>
<td>Embed a graphic object, optionally statically, dynamically (image file name with wildcards) or by order (controlled by folder monitoring)</td>
<td>Process or system presentation</td>
</tr>
<tr>
<td>Shape</td>
<td>Basic geometric shapes (line, rectangle, ellipse, polygon); filling and line configurable, optional flashing mode</td>
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</tr>
<tr>
<td>Tabbed layouts</td>
<td>Summary of multiple ibaQPanel views and layouts with control over tabs.</td>
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</tr>
<tr>
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<td>Integration of vector graphics (.svg) with option to change the line color and thickness, fill color, rotation and scaling</td>
<td>Use of vector graphics</td>
</tr>
</tbody>
</table>

**Web**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
<th>Relevant Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Web browser</td>
<td>Display web pages, PDFs and other browser-enabled files</td>
<td>Display data from ibaDaVIS</td>
</tr>
</tbody>
</table>
9  **ibaCapture camera view**

The *ibaCapture* system consists of hardware and software components and is used for the synchronized recording of measured data and video capture. *ibaCapture* works closely with *ibaPDA*.

---

**Note**

The basic license for the *ibaCapture* server and the license(s) for the permitted number of cameras and image(s) are provided on the dongle of the *ibaCapture* server PC.

If you have subsequently purchased the *ibaCapture* system for an existing *ibaPDA* system, please note the following:

For *ibaCapture* <V4 (*ibaCapture-CAM* v3.x) and *ibaPDA* <v6.36:
send us your *ibaPDA* license number. An interface license and a dongle update for *ibaPDA* are required to release the *ibaCapture* interface in *ibaPDA*.

For *ibaCapture* >= V4 (*ibaCapture* v4.x) and *ibaPDA* >=6.36:
The license for the *ibaCapture* interface in *ibaPDA* is available by default.

The permission for an *ibaPDA* system to access the *ibaCapture* server is licensed in the dongle of the *ibaCapture* server.

If you want to connect multiple *ibaPDA* systems with an *ibaCapture* server, for each connection you will need an *ibaPDA Interface Capture* license in the dongle of the *ibaCapture* server.

---

**Other documentation**

For a full description of *ibaCapture*, please read the corresponding manual for the *ibaCapture* software product.

---

9.1 **General**

The precise linking of measured data and visual information provides a new quality of process analysis when signal trends and video recording can be watched side-by-side in *ibaAnalyzer* in a synchronized manner.

Using the *ibaCapture* player, the camera views of the cameras connected to the *ibaCapture* server can be displayed on the *ibaPDA* client screen allowing you to watch live video streams or video recordings.

In addition, depending on the type of cameras used, control signals for the cameras (e.g. PTZ cameras) can be configured in the I/O-Manager by *ibaPDA*. 
9.2 The camera view

A new camera view can be added by

- clicking the corresponding toolbar button

- or by using the menu View – Add view – Add Camera view

- or by double clicking on a camera in the signal tree (showing immediately the actual picture of the respective camera).

If you choose one of the first two methods, you should add the cameras to the view by drag and drop them from the signal tree.

In ibaPDA, an ibaCapture server is assigned to a so called ibaCapture module. The ibaCapture modules are listed in the signal tree like all other modules. The cameras – up to 64 cameras per module – can take the same position like the measurement signals in other modules.

Fig. 70: Camera view in the signal display area of ibaPDA

Generally, the camera view pane can be moved and rearranged like any other view in ibaPDA (dockable windows).
The tool used for video display is *ibaCapture* Player. In the camera view, you have different functions such as zooming or panning by using the mouse wheel, showing current images (live) or replaying recordings, etc.

If you use an *ibaCapture* camera view either on your normal *ibaPDA* client or on an *ibaQPanel*, you can use text channels for overlay text displays.

For more information, see manual part 2, Using text signals.

---

**Other documentation**

For more information about settings and operation of the camera view, please refer to the *ibaCapture* product manual.
10 Historical data trend graph (HD trend graph)

The HD trend graph is a special trend graph for HD data that lines up from a time in the past until the current moment. It has its own properties, feed and navigation controls and refers to a dedicated HD signal tree.

Only signals supplied by an *ibaHD server* and available in an HD signal tree can be drawn into an HD trend graph. The signal selection of the HD signal tree depends on the HD data storage configuration. The HD data storage is a special type of data storage for recording and representation of historical data. The optional "*ibaHD server*" add-on is required for this feature.

---

**Other documentation**

For more information about configuration of HD server and HD data storage, please refer to the *ibaHD-Server* manual.

---

10.1 Connecting to HD server

Like the *ibaPDA* client must be connected to an *ibaPDA* server for displaying the normal signals, it must be connected to an ibaHD server for displaying historical data. The *ibaPDA* client can connect to one HD server at a time which can be installed on the same *ibaPDA* computer or on a remote computer in the network.

Before you can display historical data, you have to connect to the ibaHD server as follows:

- Open the server selection screen either by clicking on the corresponding toolbar button

![Select HD server](image)

- or by using the *Configuration – Select HD server...* menu

The form looks like the *ibaPDA* server selection form. By default, the server is set to "Not connected". This means that *ibaPDA* will not connect to an ibaHD server.
Use the <Search> button to scan the network for active HD servers and select a server from the table or type in a server address. Click the <OK> button to connect to the ibaHD server. If the HD signal tree has not been visible yet, it will be shown automatically in the ibaPDA client.

By the way, the versions of the available HD servers are checked. Version conflicts are color-coded in the table.

10.2 Adding an HD trend graph

A new HD trend graph can be added by

■ clicking the corresponding toolbar button

■ or by using the View – Add view – Add HD trend graph menu

■ or by double-clicking on a signal in the HD signal tree (if no HD trend graph has been added so far)

If the HD signal tree is not visible, you have to open it by using the View – HD signal tree menu, provided the ibaPDA client is connected to the HD server. The HD signal tree provides the same functions like the normal signal tree, including a search function.
10.3 **Operation of the historical data trend graph**

The historical data trend graph (HD trend graph) almost complies with the normal trend graph. The only difference is the data coming from the ibaHD server instead of the *ibaPDA* server. This means that the scrolling of the X axis is controlled by the *ibaHD server*.

Whenever you add an HD trend graph there is no decision made between a time-based or length-based trend graph. Depending on whether you pull the first signal in an HD trend graph from a time-based or length-based HD recording, the X-axis automatically converts to time or length units. Only signals with the same base (time or length) can then be added.

Whenever you add a new signal to the HD trend graph, you will see all the historical data for this signal. In the normal trend graph, only the data stored in the signal buffer of the client is displayed.

Along with the introduction of the HD server, new control elements were added to the trend view, e.g. panning and zoom buttons as well as a signal table. While these elements can be hidden or activated for the normal trend view, they are always available in the HD trend view.

For more information on controlling zoom and pan buttons, please refer to *X-axis buttons*, page 20.
11 HD event table

The event table is a special display linked to an event-based HD data storage on an HD server. Event-based data recording is a special kind of (HD) data storage for process events and alarms. Events must be configured in the event-based HD data storage configuration dialog before they are available in a separate branch in the HD signal tree. Events can be drawn from the HD signal tree into the event table.

In addition, events can be mapped as text channels and therefore also used in an HD trend graph.

Other documentation.

For more information about configuration of the HD server and event-based HD data storage, please refer to the ibaHD-Server manual.

11.1 Connecting to HD server

Before events can be displayed in an event table, a connection between the ibaPDA client and the HD server where the events are recorded must be established.

See chapter Connecting to HD server, page 97.

11.2 Configuration of events

The events to be recorded in the event-based HD data storage must be configured in a special dialog.

Other documentation

For more information about configuration of events, please refer to the ibaHD-Server manual.

11.3 Adding an event table

A new event table can be added by

- clicking the corresponding toolbar button
■ or by using the View – Add view – Add HD event table menu
■ or by double-clicking on an event in the HD signal tree (if no event table has been added so far)

If the HD signal tree is not visible, you have to open it by using the View – HD signal tree menu, provided the ibaPDA client is connected to the HD server. The HD signal tree provides the same functions like the normal signal tree, including a search function.

11.4 Operation of the event table

The event table can be controlled by means of some buttons as follows:

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>🎁</td>
<td>Starts the live display of the event list. All triggered live events are immediately displayed in the event list.</td>
</tr>
<tr>
<td>🎅</td>
<td>Stops the live display of the event list. It is now possible to mark individual signals in the event list.</td>
</tr>
<tr>
<td>🔨</td>
<td>Opens the editor for creating event queries.</td>
</tr>
<tr>
<td>🔧</td>
<td>Carries out the event query which has been selected in the drop-down list.</td>
</tr>
<tr>
<td>🎉</td>
<td>Acknowledges all events displayed in the event list.</td>
</tr>
</tbody>
</table>

All events configured in the HD event-based data storage and enabled for display appear in the table at the time of their occurrence (trigger). An event can be added from the HD signal tree either by:

- drag and drop from the signal tree into the event table or
- enabling the corresponding checkbox in the properties of the event table. To open the properties, right-click on the event table and chose Properties.

In order to search for historic occurrences of events, you can edit queries.
Other documentation

For more information about configuration of event queries, please refer to the *ibaHD-Server* manual.

After a query had been executed, the event table automatically switches from live mode to pause mode. If you want to return to live mode, you have to press the corresponding button in the toolbar.

For easier control, there is a filter row with some functions below the toolbar:

- **Sorting by mouse click**  
  Click on a column header to sort the events by this column in alphabetical/numerical order. Every click on the header toggles between ascending/descending order.

- **Filtering**  
  You can filter the table by entering the entire name or parts of it in the input field or by choosing from available options. Press <Enter> after your entry and the table will be sorted. To return to unfiltered view, clean the filter row fields.

**Tip**

If you double-click an event in the list, the HD trend graph will jump to the time of the event and enter Pause mode.
12 Numeric digital display

A numeric digital display shows the actual value of an analog signal. Optionally, it can be selected the minimum and maximum values of a signal for display (resettable). It can also show a range bar showing the position of the current value between the minimum and maximum signal value. Minimum and maximum value as well as the range bar can be enabled or disabled in the context menu. The digital displays can be positioned freely floating or docked to a digital meter window. Size, number of digits and color of the value indicator can be configured.

Adding a digital display to the view

Usually, the digital displays are attached to a special window. The digital display panel can be opened using the View – Digital displays menu. If no digital meter has been added yet, the panel will be empty.
You have several possibilities to add a digital display to the panel:

- Drag a signal from the signal tree into the digital meter panel and let it drop. A digital display displaying the actual value is automatically added.

- Click on the corresponding tool button in the toolbar.
The digital display panel opens and a new digital meter is added to it, yet without a signal assigned. The easiest way to transfer a signal to the digital display is to drag and drop the signal out of the signal tree.

Alternatively, you can enter the signal name in the "Properties" dialog of the display.

If you want the digital display to be positioned somewhere else as a floating window instead of being attached to the digital display panel, drag it out of the digital display panel. This allows you to move the digital display, e. g. over the trend views.

Changing the size of the digital display

You can enlarge a digital display in its size by dragging the edges or corners of the display using the mouse. Basically, the size is limited by the screen. If a digital display is docked to a corresponding window, you can reset it back to the default size using the context menu of the digital display window.

A right mouse click in the digital display pane opens the context menu containing 3 functions:

- Clear
  This function deletes all digital displays, docked as well as floating displays.

- Reset size
  This function resets all digital displays docked in the window back to default size.

- Dock all
  This function draws back all floating digital displays and attaches them to the window without resizing.
Setting up the digital display
For setting up the properties of a digital display, open the context menu.
In the Properties dialog, you can specify the following:

- The data source signal and reset signal
- Display update interval
- Display colors
- Style and format of the value display
- Range bar color

All settings are also available in the "Preferences" dialog except the data source and reset signals.

For further information, see chapter “Numeric digital display, page 147.”

Context menu
For individual setup of a digital display, for enabling/disabling the range bar and resetting the min/max values, right-click on a display to open the context menu.

![Context menu of the digital display](image-url)
13 Text digital display

Text digital displays are used to display text signals.

In terms of basic operation, this element is similar to the digital numeric display (see Numeric digital display, page 103). You can also add the digital text display via the view menu or the toolbar and use it in ibaQPanel.

The fundamental difference is that the source signal for the display is text signal. The text can be both received from the outside as well as entered via a text input element in ibaQPanel.

The following figure shows the relationship between the display and the settings:

1. Properties of frame and caption, headline optional

2. Properties of the text display; the font size of the display text is calculated automatically and can only be influenced by resizing the text display (using the mouse).
14 PQU spectrum

If you collect the measurement data from an *ibaPQU-S* device to measure the electrical power quality, you can define spectrum submodules in the configuration of the device module. These modules calculate the harmonics and interharmonics of voltages and currents up to 50th order.

Using the *PQU spectrum* view, the harmonics and interharmonics can be clearly illustrated as a bar chart. The limit values for individual harmonics are displayed as horizontal marks on the bars.

You can also add the PQU spectrum using the *View* menu or the toolbar:

![Fig. 77: Adding the PQU spectrum](image)

You can only assign one PQU spectrum module to one *PQU spectrum* view.

---

Other documentation

You can find more information on the PQU phasor view in the manual for the product *ibaPQU-S*. 
15 Phasor view

If you collect the measurement data from an ibaPQU-S device to measure the electrical power quality, you can define phasor submodules in the configuration of the device module. This module computes the amplitudes and phase angles for voltages and currents for the three phases.

By using the PQU phasor diagram, the voltage and current values are presented clearly. You can also add the PQU phasor diagram using the View menu or the toolbar:

![Add Phasor view](image)

Fig. 78: Adding the PQU phasor chart

You can only assign one PQU phasor module to one PQU phasor diagram.

Other documentation

You can find more information on the PQU phasor diagram in the manual for the product, ibaPQU-S.
16  Zoom function

16.1  Zooming in a trend graph view

The zoom function works on both X and Y direction. Place the left mouse cursor in the graph, hold the mouse key depressed and drag it until the desired area is surrounded by a frame. When releasing the mouse key, the designated area will be zoomed in. If you zoom in a graph, the X axis parts of all graphs located in the same view also get zoomed. A view can always have only one time base for all graphs contained. Only parts of the Y axis can be zoomed individually. In the scrolling display, zooming stretches the time base and enlarges the display. The signals, however, move faster, as the same geometrical length of the X axis now refers to a shorter time slice.

Zooming first applies to the X and Y direction. In the zoomed-in condition, the scale in the Y direction can be changed at any time without affecting the zoomed section of the X axis. Auto-scaling in the Y direction applies to the values in the zoomed area (= visible). Zooming with the mouse keeping the <SHIFT> key pressed will only zoom the X axis.

Zooming out can be carried out in steps using the button or the key <F3>. Every click successively reverses all previous zoom steps.

Use the button or the key <F4> to reactivate the original, non-zoomed display.

16.2  Zooming in the FFT view

It is possible to zoom in to a certain area of the spectrum by drawing a zoom rectangle or using the context menu.

![Zooming in FFT view](image)

Fig. 79: Zooming in FFT view by mouse (left) or using the context menu (right)

![Zooming options](image)

Fig. 80: Zooming in FFT view by mouse (left) or using the context menu (right)
Once zoomed, you can pan the spectrum by dragging one of the visible axes in the desired direction. The pan cursor appears when moving over an axis.

You can also use the mouse wheel to zoom in or out around the center of the axis. Note that you can never move outside the scale extremes of an axis.
17 View preferences and properties

There are two ways to make the view settings:

- Via the Configure – Preferences... main menu or the button in the main toolbar.
  The preferences apply when opening a new view. The preferences determine the general settings of a view, which can be set already before signals are applied. Changing the preferences will not directly affect the views already there. The preferences are stored in the layout configuration.

- Using the context menu of a view, Properties menu item.
  The settings in the properties do only apply to the active view or the view where the context menu was opened. The dialog equals the one of the preferences, except that the available tabs and options are adjusted to the current view (e.g. Y-axes). A change of the display settings immediately applies to the relevant view when clicking <Apply> or <OK>. The changes will not affect the preferences unless you checked the "Apply to preferences" option before clicking <Apply> or <OK>.

In both cases, the dialog is almost the same.

The following describes the preferences for every type of display first followed by the differing properties.

17.1 General

Fig. 83: General preferences

Auto close messageboxes after ... seconds
Here you can choose if and when messages posted by the ibaPDA program (e.g. status or error messages) should be closed. If this option is disabled then the messages must be confirmed manually.
<Enable all messageboxes> button
Press this button if you want to be sure that all message boxes are enabled even those which had been disabled before.

Allow only one instance of the ibaPDA client
If you select this option, ibaPDA client is prevented from launching multiple times on the same computer. Technically this corresponds to the use of the "/reuse" switch when starting via the command line.

Minimum size of signal buffers / Size of text signal buffers
These settings determine the size of each signal buffer, or text signal buffer, on an ibaPDA client. The signal buffer contains a number of samples corresponding to a certain time with regard to the sample time. A setting like the 100000 default value, for example, will enable the ibaPDA client to show a trend graph for 100 seconds for a signal sampled with 1 ms. If you would like to see a longer period over the x-axis, e.g., 10 minutes, you should increase the buffer size accordingly.

Keep in mind that this setting applies to all signals. If you use large buffers for displaying lots of signals in multiple views, you can run into "Out of Memory" errors. If this happens, reduce the buffer sizes.

Signal that controls the selected layout:
The selected layout can be controlled by an analog signal to be selected in this field. Different signal values enable various layouts.

If the value of the signal is 0, the first layout is selected. If the value of the signal is 1, the second layout is selected, and so on. The layout is switched whenever the signal value changes. You can still manually select another layout.

Signal name: default / use comment 1 / use comment 2
By selecting one of these options, you can use other sources for alternative signal names in the signal tree and views. Default value is the signal name as configured in the I/O configuration.

Tip
This feature can be used to give signals different names in different languages. An integrator can use English signal names while his Chinese customer can use Chinese signal names, for example.

HD signal name: including HD server name / including HD store name
By selecting one or both of these options, you can determine how the signal names of historical data should be displayed in the views.

Retrieve view licenses from:
Some views require you to have relevant (client) licenses, e.g., ibaQPanel, ibaHD server and iba-Capture. Here you can select whether or from which servers the licenses should be obtained if a corresponding view is retrieved.
17.2 Print

This dialog configures the color settings for printout of views. If, for instance, a view with a black background works well on a screen, it is a reasonable approach to use a white background in a printout in order to save toner.

General print settings are available on the "Printing" item, followed by subordinated branches for FFT view, trend graph/HD trend graph, camera and scope view; *ibaQPanel* elements, like multi-state picture, label, bar chart, text input control and QPanel.

For all these element types, foreground and background colors can be usually set in general and individually. Some additional color settings are available depending on the element.

---

**Note**

If you want to set or modify the printing options of a specific view, use the "Properties" dialog of the view in question.

---

![Preferences](image)

In order to make a general color setting, select the "Printing" main branch in the tree. Click in a cell in the color column and select the desired color. If you want the new settings to be applied to all types of views, click on the <Apply to all views> button.

Click <OK> to close the dialog.
In order to change the color settings for each element individually, select an element from the tree and click in a cell of the color column. Select the desired color and click <OK>.

**Note**

Changes of the color settings in the preferences apply to newly opened views only.
17.3 HD event table

The event tree (see red frame in figure above) is only available in the properties of an event table.

General Information

Live Row count
Here, you set how many rows are to be displayed in the event list in live mode. A maximum of 1000 rows can be displayed.

Query row count
Here, you set how many rows are to be displayed in the event list after a query (pause mode). A maximum of 1000 rows can be displayed.

Time stamp

- Display date
  By this option you determine whether the date should be displayed in the "Time" column too.

- Use 2-digit years
  For the display of the time stamp in the "Time" column, you can select a two-digit display of the year. Otherwise, a four-digit display is shown.

- Show milliseconds
  For the display of the time stamp in the "Time" column, you can select the display of milliseconds. Otherwise, only seconds are displayed.
Grouping

Group events by field name
This option is only available in the properties of an event table because the setting depends on the configured events.

Here, you can select a dynamic field which has been configured in the event definition and which should be used for grouping the events. Both, in live mode as well as in pause mode the events will be sorted accordingly. A reasonable choice is a field with a limited value range.

![Selection of a field for grouping (example)](image)

If you enable the "Auto-expand groups" option then the occurrence of an event will automatically expand its associated group in live mode.

Columns
Select here which columns are to be displayed in the event list.

Live events
In the properties, not in the preferences, you can see a tree structure of all event-based HD stores of the associated ibaHD server with the events stored therein.

Select here the events to be displayed in live mode in the event list.

Selecting the setting "Auto-select all" always displays all events of all HD stores of the associated ibaHD server in the event list.
17.3.1 Commands

Event lists can be coupled with HD trend curves so that while double-clicking on an event line the desired trend curve stops and is placed on the right position of the time axis.

You can only decide in the preferences whether all HD trend graphs should respond to double-clicking or not.

You can set up different line commands in the Commands branch of the event table's properties.

In the "Command Rule" list, you can set event control conditions carried out by double-clicking on this line. In the column "Commanded views", you can select the trend curves to be stopped and positioned if the conditions are fulfilled.

Other documentation

For more information about configuring commands, please refer to the ibaHD-Server product manual.

17.3.2 Y axis preferences

In the preferences of the HD event list, you can only set standard colors and fonts for the lists. Background and foreground colors also determine the appearance of the normal event messages for which no special rules have been defined.

Properties

In the properties of an event list, you can make other settings that relate to configured events.
Row styles
In this table, you can define individual row styles, which are activated according to certain rules. This allows you to highlight special events in a colorful and typographical manner, e.g., make alarm signals red.

Other documentation
For more information about configuring row styles, please refer to the ibaHD-Server product manual.

17.4 FFT view
The FFT view node provides general settings for the FFT calculation and view.
In the "Preferences" dialog, there is a group of parameters being suitable for all FFT views you would like to open:

![FFT view preferences](image)

Fig. 88: FFT view preferences

Display configuration
Choose whether you prefer the single spectrum, the waterfall view or the contour view of the spectra.

Perspective
Drop-down list custom perspectives
The selection of custom perspectives is only available in the properties of an FFT.
More information about working with the waterfall view can be found in chapter Waterfall, page 35.

Add main window
Select this option so that the main window will be displayed in any case.

Pause/Continue
If this option is enabled, the calculation of the FFT can only be controlled by a digital signal.
If the digital signal is TRUE (1) then the FFT calculation is stopped and the frozen image with the last result is displayed.
If the digital signal is FALSE (0), the FFT calculation is continued and the display regularly updated.
Properties
You will find further additional settings in the Properties dialog of an FFT view. See chapter Settings in the FFT view, page 65

17.4.1 View
In the dialog of the View node, you can set the appearance and colors of the FFT view. This dialog is the same for preferences and properties.

![Preferences for the FFT view visualization](image)

Fig. 89: Preferences for the FFT view visualization

For more information, see chapter Visuals, page 68.
17.4.2 Bands

Note
The "Bands" node is only available in the properties of an FFT view, not in the preferences.

By setting up one or more bands, you can highlight certain ranges on the base or value axis of an FFT view.

Example
The representation below shows what the following settings bring about.

![Fig. 90: FFT band settings](image)

![Fig. 91: FFT view with colored bands](image)

If you have dragged an InSpectra module into the FFT display, an additional InSpectra Bands tab will appear in this dialog.
17.4.3 Base axes

The Preferences dialog only provides basic settings which apply to the majority of FFT views, e.g., base type (linear or logarithmic) and the display of units and notation.

![Fig. 92: FFT view base axes preferences](image)

Properties

Only in the Properties dialog box for a specific FFT view you can make additional settings. See chapter gaben Base axes, page 72
### 17.4.4 Value axes

The basic settings for the value axes, such as position, notation and scaling, are the same in the preferences and properties dialogs. By default, a value axis has a manual scale. The general settings for a spectrum can also be made in the preferences, such as the selection of an FFT calculation profile and view features (color, fill and style). Only the details of the input signal can be made only in the properties of an FFT display.

![Image of value axis settings](image)

Fig. 93: Properties of the value axis, for preferences the group input (red frame) is missing

The settings for type, scaling, and view correspond to the usual settings in ibaPDA and are self-explanatory.

**Scaling**

You can choose between linear, decibel or logarithmic. The **Decibel** setting is beneficial if you have a high dynamic with small and very large values in the signal. Smaller values can be recognized better on a dB scale.

**Amplitude scaling**

Depending on the requirements for the visualization, it may be useful to either emphasize or suppress the amplitudes for the display. The following methods are available:

- **Peak-to-peak**
  Amplitude values are practically multiplied by a factor of two

- **RMS**
  Amplitude values are practically divided by the root 2, thus moving closer to the RMS value.
Spectrum x

There is a Spectrum 1 tab in the Preferences. These settings are used to process a new signal, which is dragged into the FFT display. You can drag multiple signals into an FFT view. If the signals share the same value axis, you will find a separate tab in the properties of the display for each signal or spectrum. The settings for each spectrum can be changed in the properties individually. If each signal or spectrum has its own value axis in the display, each spectrum in the tree structure on the left receives its own node for the value axis. See chapter Value axes, page 75.

FFT calculation profile

The way in which ibaPDA calculates an FFT is defined in so-called profiles. A profile is a collection of various parameters that are relevant to an FFT.

Each spectrum can be calculated with a different profile. You can define as many profiles as you wish and save them in the system via the export function. You can also import saved profiles into a spectrum.

The profile that you determine in "Preferences" is first applied to all new spectra. You can later change the profile in the properties of an FFT display.

The information beside the "Profile..." buttons describes the effect of acquisition parameters:

- Delta frequency:
  Shows the frequency steps between the results of the division of maximum frequency by bin count.

- Max. update rate:
  Time required for update of the FFT view depending on bin count and overlap factor.

In order to avoid having to look at the properties in order to see the profile parameters, the display shows the Spectrum Parameter Table. This table is part of the FFT view and can be activated via the drop-down menu in the FFT view. The parameters from the calculation profile shown in the table can be defined in the Spectrum Parameter Table node in the FFT display properties.

17.4.5 InSpectra

The dialog Preferences is the same as the properties dialog for InSpectra bands. For a description, see chapter Bands, page 68.
17.4.6 Spectrum slave table

The Preferences dialog only offers setting options for displaying the chart and the table. Optionally, the table can automatically be sorted according to a selected column.

Fig. 94: Preferences FFT - ibaInSpectra

Fig. 95: Preferences for FFT - spectrum slave table
17.4.7  Time slave table

The *Preferences* dialog only offers setting options for displaying the chart and the table.

![Fig. 96: Preferences for FFT - time slave table](image)

17.4.8  Spectrum parameter table

The settings for the spectrum parameter table are the same in the dialogs of the preferences and properties. For a description of the settings, see chapter *Spectrum parameter table*, page 51.

![Fig. 97: Preferences for FFT - spectrum parameter table](image)
17.5 Trend graph

The settings in the "Preferences" dialog basically equal the ones in the "Properties" dialog, except for the "Advanced" node, which is not available in the "Properties".

The "Signals" branch in the preferences tree corresponds to the "X graph" branch in the properties tree. The settings for the Y-axis are available separately in the Properties of a trend display for each curve (Y-axis x).

Miscellaneous

Enable smooth drawing:
The curves will be graphically smoothened if this option is selected.

Show toolbar:
This option determines whether or not the toolbar for display control of each view is displayed below the tab.

Show signal bars
By checking this option, a bar graph is displayed near the Y axis. Each signal is displayed by a bar in the corresponding color.

Show gridlines
By enabling/disabling this option, you can show or hide the grid lines in the display. Enabled by default.
**Show close button**
By enabling/disabling this option, you can show or hide the small buttons for closing all signal charts of a display.

Hiding the button provides some more space on the screen and prevents the unintended closing of a signal chart. Enabled by default.

**Show Y-axes**
By enabling/disabling this option, you can show or hide the Y axes of all signal charts of a display. Enabled by default.

**Show signal visibility icons**
If you enable this option then a small monitor symbol is displayed in the signal legend. By clicking on this symbol you can temporarily hide a signal curve without removing it from the trend display. Clicking again makes the curve visible once more.

**Disable Y-axis zoom**
If you enable this option then all the actions for zooming into the display are only applied in the X direction; the Y direction remains unaffected.

**Always show X-axis**
If you select this option then it is ensured that the x-axis is always displayed under the lowest fully-visible signal chart. If this option is not enabled, the x-axis can scroll downwards out of sight when scrolling within the display (if you have created many signal charts).

**Orientation**
The orientation of the "paper feed" in the signal display can be selected from this pick-list.

**Restart scrolling after …. s of inactivity**
Enter a value in seconds between 10 and 6000. In case the pause button was pressed in a monitor to stop scrolling of the charts scrolling will restart after the given time if no operation (incl. mouse movement) has been made since pressing the pause button.

**Update interval**
Enter a value given in milliseconds between 50 and 10000 for the refresh rate of the trend graph display. A fair fluent movement can be achieved with 100 ms and below.

**Marker grid**
Chose from 4 options for displaying the marker table:

- Never visible
- Visible when paused
- Always visible
- Manual
The marker table contains the X-values of the two markers and the corresponding Y-values of all the displayed signals. It is displayed under the x-axis.

**Anchor markers on X-axis**
If you enable this option then the markers stay at the x-axis position where they were placed with the mouse even if you then zoom into the curve or scroll along the x-axis. The markers can therefore disappear from sight. If you do not select this option, the markers always remain visible in the curves window, even if you zoom or scroll. However, they do leave their configured x-axis position.

The markers are only visible in pause mode.

**Align digital signals with legend**
Normally, the digital signals are displayed on the bottom of a signal chart. By enabling this option, you can assign the digital signals with the top of the signal chart.

**Allow text signal overlap**
When displaying text channels in an *ibaQPanel* trend curve, it can happen that, depending on the feed rate and change frequency of text channels, the texts are written one above the other so that they are no longer readable or even overwrite the curves. This cannot always be prevented in the online mode of the display. This option is available for the pause mode.

If you enable this option then overlapping text channel displays also appear overlapped in pause mode. If you disable this option then the texts appear cleanly separated as long as there is enough space.

**Center time axis on last known value**
If this option is enabled and you switch to a different layout during the measuring, the position of the time-axis is saved with the last value captured. If you then later retrieve or load the layout then the trend display in pause mode stays exactly the same as when you left the layout.

If this option is not enabled, the trend display continues to run after a layout change and does not go into pause mode.

**Colors**
This dialog can be used to adjust the colors used for the user interface of the program and for the curves. In order to change the colors, click on the colored buttons and select a color from the palette.

**Background color:**
Color of the area around the graphs, within the view.

**Axis color:**
Color of the scales, for the X axis also color of the labeling (values).

**Gridlines color:**
Color of the grid in the graphs.

**Graph color:**
Background color inside the graphs. Default is monochrome. You can even define a color gradient or shaded background. In order to configure a gradient, double-click on the little squares at the end of the thin color bar in the dialog and select the two colors. If required, double-click on
the color bar to add more color tags and color them; they can also be moved. If you want to remove a color tag, simply click on it to select it (black arrow) and press the <DEL> button.

**Signal colors:**
The colors are the 16 pen colors for the curves. These colors represent the order (top-down) used by the automatic signal color map function. You will find the same colors in a graph’s "Properties" dialog, "Signal" tab, for coloring the signals.

**Fonts**
For labeling the axes and legend, you can select different fonts here. To change a font, click on the browser button in the corresponding input field and choose a font.
17.5.1 Legend

You can make various settings for presenting the signal legend in the Legend node.

Content

Select here what should be displayed in the signal legend.

- Signal name: Only the channel ID and signal name are displayed
- Signal name and value: As above, including the unit of measurement in parentheses. The refresh rate of the value display is lower than that of the graphs (approx. 1 s).
- Custom: User-defined compilation of information according to parameter string.

To create a user-defined legend, select the "Custom" option and click in the input field. A tool tip appears that shows you all the options for designing the contents of the legend.

One by one, enter the desired parameters in the input field. Then, click on <Apply> or <OK>.

Tip

It is best to make these settings in the Properties of an active trend graph and then to click on <Apply> to check the appearance of the legend.
**Style**
Choose between 3 styles of legend display:
- Transparent: Only the legend text is displayed.
- Opaque: The legend is provided with a background that also covers the curves.
- Invisible: The legend is completely invisible.

**Tool tip**
In addition to the legend content, you can also configure a tool tip that appears whenever you are hovering the mouse on the signal legend.

The two signal comments are included in the tool tip by default. Alternatively, you can create a custom tool tip for which you can use the same parameters as for the legend contents (see above). This allows you to keep the signal legend short and still obtain further information about the signal if necessary.

### 17.5.2 Signals

![Signal preferences of the trend graph](image)

In this dialog you can generally define how the curves should be initially displayed. The default setting for curves of analog values is a simple line (line thickness 1), and for digital signals a filled area.
You can also select other styles both for analog and digital signals. Click in the "Style" column. A selection list opens there of the different styles.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
</table>
| ![Analog signals](image1) | Line  
Curve filled up to zero line  
Curve filled to bottom  
Curve filled to top |
| ![Digital signals](image2) | Line  
Curve filled up to zero line  
\  
\  
Symbols are displayed at the rising edge of the signal  
/  
/ |

If you select a symbolic style for a digital signal then this symbol is only displayed on the x-axis where there is a rising edge of the signal. The remaining signal curve (TRUE or FALSE) is not displayed.

Example: strip entry in a 7-stand rolling mill
The symbolic style can be useful if the trend display would be overloaded in the standard style, especially when digital and analog signals are presented mixed.

Transparent colors are used for filled curves to avoid one hiding behind the other. The line width can be adjusted in pixels.

In the "Properties" dialog of a trend graph view, you can set up the style for each curve individually. There you will find one or more "Graph x" branches corresponding to the "Signal" branch. X is the numbering of the different graph charts within a trend graph view. Under the "X-axis" branch, you will find signals with their properties, grouped by the charts in the view.
In the "Color" column, you may change the color of a signal by selection from a pick-list.

### 17.5.3 X-axis

**Fig. 103: Preferences of a trend graph's X axis**

**Time range**

You can configure the time range represented by the X-axis. If you reduce the value, the signal will move faster on the display and changes to an expanded form. If you increase the value, you will see more measuring points in the graph and the signal will move slower. In the preferences, you can only set a static value. In the properties of a specific trend graph view, you can select an analog signal controlling the length of the X axis.
Fig. 104: Trend graph properties, configuration of the X axis time range

**Fixed axis**
Usually, the time axis moves along with the incoming samples (default).

If you enable this option, the signal will be written into the static graph. Once the signal curve has reached the end of the visible time range, the display shifts to the next (empty) time unit and continues to write samples.

**Show date**
By enabling this option, the date (MM/DD/YYYY) is displayed at the ticks of the X axis. Optionally, you can reduce the year by 2 digits (mm/dd/yy).

**Show zoom and pan buttons**
If you enable this option, the zoom and pan buttons will be displayed along the X axis.

Default settings are:
- for small panning steps: 0.75, relative
- for large panning steps: 2.00, relative
- for zooming 2.00

Alternatively, the panning steps can be set as absolute value in the hh:mm:ss time unit.
17.5.4 Y-Axis

In the preferences, you will find the branch for setting up the Y axes. If you open the "Properties" dialog of a trend graph view, you will find one branch for each graph in the view as well as subordinated branches for each Y axis of the corresponding graph (see picture below).

Thus, you can set up all Y axes individually.

**Scientific notation**
Choose from the pick-list in this field:

- **Auto**: Depending on the size of the scale values (number of places before or after the decimal point), the scales are labeled in scientific notation (power of 10) or not.
- **Always**: Scale values in powers of 10
- **Never**: Scale values always with digits before and behind the decimal point.

**Scaling mode**

- **Autoscale**: this is the default setting; if one or more signals are displayed, the Y-axis of the graph is scaled in accordance with the smallest and largest of all values occurring.
- **Dynamic auto scale**: if you enable this option, the scaling is always adjusted to the highest and lowest signal amplitudes in the graph (in both directions).
- Dynamic auto scale (only for enlarging): When you enable this option, the scaling is continuously adjusted with the highest signal amplitudes. If the amplitudes go beyond the trend view again, the scaling still remains unchanged.

- Manual scale: if this option is selected, the Min and Max scale values can be manually entered or selected from the field next to it. Beside a static value, you can also use any known measured or virtual analog signal configured in the I/O manager. In order to select a signal for minimum or maximum scale, open the pick-list of the corresponding field and make the selection in the signal tree.

**Using manual grid lines**
This option is only available if the manual scaling is enabled.

With the parameters to be entered, you can alter the Y axis and grid lines.

- Reference
  Enter any value to be considered as reference for the basic grid line. Usually, the basic grid line is at value 0 (zero). Depending on your needs, the basic grid line can also have, for example, the value 10 or -25.

- Major tick
  Enter a value for the major ticks' distances on the Y-axis. Every major tick is linked to another grid line. The major ticks determine the horizontal grid lines in the graph. Depending on the total scaling, a major tick can be set every 10 s, 100 s or every 0.1 s.

- Number of minor ticks per major tick
  Enter a value complying with the number of minor ticks between two major ticks. This determines the granularity of the Y-axis. Minor ticks will not be linked to grid lines.
Example

<table>
<thead>
<tr>
<th>Reference</th>
<th>Major ticks</th>
<th>Minor ticks per major tick</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>

Trend graph settings for reference, major ticks and minor ticks (example)
17.5.5  Advanced

The advanced options allow you to change the behavior when adding signals to a trend graph by either double-clicking in the signal tree or by drag and drop. The "Advanced" branch is only available in the preferences.

![Preferences]

The default behavior is "Auto". If you add a signal with no key combination pressed, a new graph and a new Y axis will be created for the signal. If you hold the <Ctrl> key while adding a signal, a new Y axis is created in the currently selected graph chart and the signal is added to that new Y axis. If you hold the <Shift> key while adding a signal, the signal is added to the currently selected Y axis.

If you drop multiple signals, this behavior is repeated for all signals.

By selecting one of the advanced options, you can override this default behavior and select one specific behavior that will be used always no matter which key combination is pressed.

17.6  Historical data trend graph

Preferences and properties basically equal those of the normal trend graph.
17.7 Camera view

ibaPDA uses the same software components for the camera views like the *ibaCapture* Player. Thus, you can set up the same properties and features in the preferences of the camera view like you do in the properties of a camera in the *ibaCapture* Manager.

There is no difference in the settings between the preferences and properties dialog.

**Camera information**

By setting/removing a checkmark, you can hide/show the five camera information elements.

- Name
- Play mode
- Replay speed
- Time stamp
- Key frames only

If enabled, the information is displayed at the bottom of the camera view.

**View**

- Uncheck the "Show toolbar" option to hide the replay toolbar in the camera view.

- Check "Select all cameras" to select and lock all camera windows.
  
  For doing so, use the symbol 📡 in the toolbar.
- Show key frames only
  In order to save system resources, you can switch the camera display to reduced pictures in the data flow, e.g. by enabling the "Key frames only" view mode. To this, set a checkmark in the "Show key frames only" option field. This activates the two option fields "All cameras" and "All cameras except selected ones".
  Selecting the "All Cameras" option enables you to set the "Key frames only" view mode for all cameras.
  With the "All cameras except selected ones" option, all cameras except for those selected are set to "Key frames only" view mode, i.e. only the selected cameras show fluid motion.

- Check "Dock time line in view" to display the video time line on the bottom of the camera view window. Specify in the "Refresh interval" input field the update time of the time line. Do not set the update time too low in order to avoid unnecessary network load. For more details about the time line, please refer to the ibaCapture manual.

- Navigation key time step settings
  By entering values given in seconds for the <ß>/<à> and <Page up>/<Page down> keys, you can define short time step and long time step setting when using these keys for navigation on the timeline.

Replay speed
In the "Replay speed" section, the replay speed of the video recordings can be set with the "Replay speed after time jump" option by means of a multiplication factor, related to the original speed. In addition, for operating the (Next image) and (Previous image) buttons, you can set additional replay speed in images per second (fps).

Live
The live streaming settings apply to the streaming protocols between the ibaCapture server and client. Clients can be ibaCapture Manager (camera view), ibaPDA camera view or ibaQPanel camera view.

For setting up the streaming protocol, you can choose between the following options:

- Auto (preference)
  In auto mode, the system starts using the unicast UDP protocol, usually the best choice. If, however, too many frames get lost, the system automatically switches to TCP mode. This could happen, for instance, if the server is running in a Gigabit network while the client is connected over a 100 Mbit network.

- Multicast UDP
  Multicast UDP is not implemented yet.

- Unicast UDP
  Recommended streaming protocol

- TCP
  Recommended streaming protocol if UDP does not work satisfactorily.
17.8 Scope view

Buffering
Memory length
This determines how many samples are buffered for all of the view’s signals. The length is limited, depending on the time bases of the signals currently used in the view. So, by adding a new signal, the memory length might change.

Miscellaneous
These settings determine whether the named view elements are shown or hidden.

Appearance
Setup your preferred colors for the different parts of the scope view, similar to the trend view. In the "Properties" dialog, there is another option available among the display settings.

X-Y chart image

- In order to enable/disable the image display, check/uncheck the "X-Y chart image" checkbox.
- Enter the path and file name of the graphic file in the corresponding field or use the browser button to select the file.
- The "Map to range" option permits to define size and position of the image in the back-
By specifying the coordinates $x_1/y_1$ and $x_2/y_2$, you can map the 4 corners of the image with regard to the X/Y scales in the view.

- If the "Map to range" option is disabled, the background image will always be scaled to the size of the scope view.

17.8.1 Signals

As for trend graphs, you can set up basic properties for displaying analog and digital signals at this stage. On the "Signals" branch in the "Properties" dialog of a scope view, you can also change the color of a signal.

17.8.2 Base axis

The base axis is always the horizontal axis in a scope view.

**Alignment**

Select your preferred position of the base axis scale from the pick-list.

**Mode**

In the preferences, only the "Time (X-T)" mode can be enabled.

The "Center around trigger" option, if enabled, always keeps the trigger level(s) in the middle of the view.

The "Value (X-Y)" mode is only available in the "Properties" dialog. It can be used for X-Y charts.

The "Value" mode requires the selection of analog signals whose values are used for the base axis instead of time.

Like for trend graph view, you can set the notation and scaling mode.
17.8.3  Value axis

In the "Preferences" dialog, you can set the general options for appearance and scaling mode.

The value axis is always the vertical axis of a scope view.

The value axis selection control on top of the dialog is disabled in the preferences. It is only available in the "Properties" dialog.

**Value axis selector**

Fig. 110: Preferences of the value axis in the scope view

In case you have multiple value axes in the scope view, you can select the value axis you would like to set up with the arrow buttons on the left and right side of the selector. The color helps to identify the axis.

Fig. 111: Scope view properties, value axis selection
17.8.4 Trigger

In the "Preferences" dialog, you can set the general options for the trigger, such as the mode (normal, single, auto and auto level) and trigger edge (rising, falling, both and alternating). The signal selection is disabled. The signal for controlling the trigger can be selected in the view's "Properties" dialog.

Data

Memory position
The memory position is a percentage determining the trigger base position, measured from the left side of the view to the right. The default value is 50% and puts the trigger in the middle.

Auto interval
The auto interval is used in "Auto" and "Auto level" trigger modes. If the trigger is fired in one of these modes, it will take up to the given amount of milliseconds before the next trigger fires. Of course, this trigger can also be fired earlier, as up to this moment the trigger keeps on scanning input samples.

Value position
The value position determines the trigger level. You can set a value by using the spinners (going in integer steps) or manually enter any value in this field.

Holdoff interval
The hold-off interval is the amount of milliseconds after the trigger fired where the trigger does not scan any incoming samples. So, in this period the trigger cannot fire.
### 17.9 Numeric digital display

![Image of Numeric digital display properties](image)

Preferences and properties of digital displays are basically the same except for the signal selection. Data signal and reset signal selection is available in the "Properties" dialog only (red frame in the picture above).

**Data**

**Data signal**
Select here the analog signal, whose value is to be displayed in the digital meter display.

**Reset signal**
Select here a digital signal, which is to reset the min/max values of the digital meter.

**Update interval**
The update time determines the refresh rate for the value display. It is recommended setting a reasonable value (between 250 and 1000 ms) with regard to the human eye.

**Show range bar, show min/max** *(Numeric digital display only)*
Enabling this option will add a range bar or the minimum and maximum indicators to the display.

**Frame and labeling**
Here, you can set up the color scheme of the digital display's frame. By default, the digital display is labeled with the name of the related data signal. Alternatively, you can enter a title instead of the signal name. The font setting applies to both the signal name and the title.
**LED display**
Here, you can set up the value display.

**Style**
Choose between a style containing 7 or 14 segments.

**Sign (Numeric digital display only)**
Decide how to deal with positive/negative signs.
- **Never**: Neither "+" nor "–" are displayed
- **Negative only**: "+" is not displayed
- **Always**: Both "+" and "-" are displayed

**Digits and decimals**
The number of digits determines the total number of digits in the display, including the integer part and decimal part. If you select "Negative only" or "Always" for sign, an additional digit will be added automatically.

If you set decimals to 0, the value on display will be rounded to the next integer.

**Colors**
Set up your preferred colors for the different parts of the display.

**Range Bar**
Set up the start color and end color of the range bar in order to get a color gradient from green to red.
17.10 QPanel

As described in ibaQPanel, page 88, the ibaQPanel view is the base for an HMI-like screen design. Beside some special QPanel objects, like multi-state label, multi-state picture, button, label, bar chart, gauge panel and text input control, you can add all other types of views to a QPanel view. Consequently, there are preferences and properties settings for these objects available within the QPanel preferences and properties.

Basically, you can refer to the descriptions of preferences and properties for each view type in the chapters before.

However, some standard views, like the trend graph view, have gained more options and capabilities in the QPanel environment. Only the QPanel-specific features are explained hereinafter.

As for all views, the difference between preferences and properties of a view is mainly the unavailability of signal selection in the preferences.

**Width and height**

This is the size of the QPanel background. All QPanel elements must be placed within this area. The default size is 640 x 480 pixels. The size can be adjusted according to your needs. If you plan to design a full screen QPanel, make sure that width and height match the figures of your monitor.

**Background**

You can set a solid background color or use an image (bitmap) instead.

Note that the image size should fit the QPanel background size (given in pixels). You cannot resize the image in ibaQPanel.

If the image is smaller than the background, it will be tiled.

If the image is larger than the background, you will just see a part of it.
17.10.1 Multi-state label

A multi-state label text display can change color and text depending on the signal value (data source).

While a digital signal can only have 2 values (0 or 1), analog signals can control plenty of states depending on the value range and the granularity you want to obtain.

Each row in the table refers to a state and hence to a value or value range of the data source signal. The "No channel" and "Default" states are mandatory and two states are preset for example.

You can add further states in the table by clicking on the button. You can delete a selected state from the table by clicking on the button.

By entering values in the "Min" and "Max" columns, you set the value or value range for the state.

For each state, you can configure foreground (text), background and border colors.

For each state, you can select text type and text source. You have the choice between manually entered text or text from a text signal.

- Text type = static: enter the text to be displayed on the label in the "Source" column.
- Text type = dynamic: In the "Source" column, select a signal from the signal tree whose value is to be displayed as text.

The "Font" setting determines the font and text size of the label.

Fig. 114: Preferences of the QPanel multi-state label
17.10.2 Button

In this section of the dialog, you design the button.

Enter the text which has to be displayed on the button, set the alignment and choose the font. In addition to or instead of a text, you can use an image (bitmap). Make sure that the image size fits the size of the button. You cannot change the image size in ibaQPanel. Browse for the image file and set the image alignment within the button.

Fig. 115: QPanel button preferences
If you like to combine text and image, you can choose between 5 options for the text/image location:

<table>
<thead>
<tr>
<th>Option</th>
<th>Image</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overlay: (Overlay)</td>
<td><img src="image" alt="Overlay" /></td>
</tr>
<tr>
<td>Image above text: (ImageAboveText)</td>
<td><img src="image" alt="ImageAboveText" /></td>
</tr>
<tr>
<td>Text above image: (TextAboveImage)</td>
<td><img src="image" alt="TextAboveImage" /></td>
</tr>
<tr>
<td>Image before text: (ImageBeforeText)</td>
<td><img src="image" alt="ImageBeforeText" /></td>
</tr>
<tr>
<td>Text before image: (TextBeforeImage)</td>
<td><img src="image" alt="TextBeforeImage" /></td>
</tr>
</tbody>
</table>
Commands
In this section, you can configure the command execution:

One or more commands can be executed by

- clicking the button or
- using a digital trigger signal (rising edge) or/and
- pressing a keyboard shortcut

You can add additional commands in the table below by clicking on the button on the commands table.

Depending on the command you choose, more inputs are required in the field below the table.

<table>
<thead>
<tr>
<th>Command</th>
<th>Function</th>
<th>Additional configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Close</td>
<td>Close ibaPDA client.</td>
<td>None</td>
</tr>
<tr>
<td>Switch layout</td>
<td>Activate further layout</td>
<td>Select the layout for activation.</td>
</tr>
<tr>
<td>Execute command line</td>
<td>Execute a command line, e.g. start ibaAnalyzer</td>
<td>Enter the command line.</td>
</tr>
<tr>
<td>Activate application</td>
<td>Execute any application on the computer</td>
<td>Enter application’s executable like in a command line</td>
</tr>
<tr>
<td>Print</td>
<td>Print out the current screen (views)</td>
<td>Enter document title and/or enable &quot;Print setup&quot; dialog. (default: printing on standard printer)</td>
</tr>
<tr>
<td>Pulse digital signal</td>
<td>Set a digital signal on TRUE for a limited time</td>
<td>Select the digital signal.</td>
</tr>
<tr>
<td>Set signal value</td>
<td>Set a value</td>
<td>Select an analog signal and define the value.</td>
</tr>
<tr>
<td>Pause</td>
<td>Pause scrolling in all views</td>
<td>None</td>
</tr>
<tr>
<td>Start</td>
<td>Start scrolling in all views</td>
<td>None</td>
</tr>
</tbody>
</table>

Commands of the QPanel button
17.10.3 Multi-state picture display

Fig. 116: Properties of the QPanel multi-state picture display

The multi-state picture display enables the display of different pictures in dependence of a signal value. Like for the multi-state label display, you can define different value ranges of a measured signal and assign different pictures to them.

The pictures can be of any bitmap image type, like .bmp, .jpg, .png, etc.

Under "Preferences", you can only set up update interval, tooltip options, background color and mode as well as images for the 2 basic states "Default" and "No channel". Further settings must be made in the "Properties" dialog of a configured object.

In the "Properties" dialog of an object, you may add more states to the list by clicking on the button. You can delete a selected state from the list by clicking on the button.

An arbitrary number of states can be defined. By entering values in the "Min" and "Max" input fields, you set the value or value range for the state. This also identifies the state of the list. Besides the "Min" and "Max" values, each state can be assigned to a mode and a picture. You need to select a state in the list to configure it. Use the browser button in the lower right corner to select the image file of the picture.

You may choose between different (display) modes:
View preferences and properties

<table>
<thead>
<tr>
<th>Mode</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Center:</td>
<td>The picture will always be placed in the middle of the multi-state-picture object with its natural proportion. If the picture has more pixels than the multi-state-picture object in QPanel, it will be downsized by keeping its aspect ratio.</td>
</tr>
<tr>
<td>Fit:</td>
<td>The picture will be scaled up or down for best fit with respect to the object’s frame by keeping its aspect ratio.</td>
</tr>
<tr>
<td>Stretch:</td>
<td>The picture will be scaled up or down with respect to the object’s frame. Horizontal and vertical scaling is done separately, ignoring the picture’s aspect ratio.</td>
</tr>
</tbody>
</table>

Display modes for the QPanel multi-state picture display

17.10.4 Text field

The "Preferences" dialog provides general settings, which can be used as default settings for later works in the QPanel design mode.

Later, these settings can be altered individually for each configured label.

In the "Properties" dialog of a label object, the data source settings become available.
If the label is to display a static text, select this option and enter the text in the input line.

A label can also display dynamic text. If you choose this option, you can open the dropdown list and select a signal or text signal whose value is displayed in the text field. For analog signal values, you can further specify the numerical display format.

17.10.5 Bar chart

With the general settings, you can define the name or title of the bar display, its update time and the number of bars in the chart.

With the "Appearance" settings, you can define the alignment of the bars (horizontal/vertical), the bar style (bar, dot or line) as well as font and position of the axes.

Finally, the colors of the different parts of the bar display and the default colors of the bars can be set here. The "Within limit" and "Outside limit" bar colors refer to the (optional) limit settings in the "Features" branch of the bar display properties. The default colors are used if no color ranges are specified or if the bar value is outside the color range. The "Outside limit" color is only used if specified limits have been exceeded.
Axes

Two modes are available for the base axis:

- **Absolute**
  This mode was especially developed for technological cross profile displays in the steel industry, such as flatness profiles, strip tension profiles or temperature profiles. You can set up the rolling mill width and values for major and minor ticks on the axis given in the unit specified in the corresponding entry field (mm, cm, etc.). The number of bars as specified in the "Bar chart" node is distributed over the base axis. The width of the bars itself can be adjusted in the "Bar values" node in the properties tree.

- **Relative**
  This mode should be used if no metrical ratio is required on the base axis, e. g., for a filling degree display. The number of bars as specified in the "Bar chart" node is always distributed over the entire base axis. In this mode, you can only specify the axis title and the major tick.

Checking the "Center around zero" checkbox places the bars centered around zero, both on the positive and negative side of the X axis. If this checkbox is not checked, the bars are displayed on the positive side only.

Selecting the "Show grid lines" checkbox draws a grid based on the tick values.

Selecting the "Flip scale" checkbox causes the minimum value to be positioned on the right side and the maximum value on the left side.

For the value axis, you can specify the lower and upper end values of the axis (min/max).

All other settings should be made complying with the settings of the base axis.
View preferences and properties

```
Features

In the "Preferences" dialog, only the settings in the red frames are available.

The "Features" branch provides settings for further technological features in the bar display.

The lower and upper limits of the bar display can be set by signals. If constant values are to apply, you can enter the values directly or use virtual signals with a constant value. Otherwise, you can use analog signals to control the limits. The limit values can be displayed by horizontal lines in the graph and they control the color change of a bar to "limit color" provided a color range is used. If no color range is defined, the default color "within the limit" is used if a bar value is in the limit range. The default color "outside limit" is used when a bar value is out of range.

If you enter a value for "Strip width" or select a signal supplying the strip width, the corresponding range is displayed by a different background color ("strip") in the graph when running in "Absolute" mode.

A profile curve can be displayed and calculated using two different modes. In each mode, signals have to be used. In the first mode, these signals represent coefficients of a polynomial of fourth degree. In the second mode, the signals represent values at the center of each bar. If a signal row is left empty, its value is zero. If the "Value array" mode is used, the smoothness of the curves can be adjusted.

As mentioned above, the width of the measured strip can be visualized. The profile curve can be visually restrained to a dynamic range or to the strip width. If the profile is restrained, the range input signals or strip width must be valid for the profile to be displayed.

Fig. 121: QPanel bar chart, "Features" properties
```
**Note**

If the base axis is relative, the measured strip width is interpreted as a relative value. Also, the minimum and maximum profile range signal values are interpreted as bar numbers if the base axis is relative.

---

**Bar values**

![QPControl bar chart properties](image)

The "Bar values" node is only available in the bar chart’s properties. It is possible to assign a separate signal to each bar or to assign a signal array (2D vector signal) to the bar set. This is simply done by dragging the desired signal into the desired row of the signal table. You can also select the line of the required bar and double-click on the signal in the tree.

For an absolute base axis, the ID column displays the center of each bar. If a relative base axis is used, the bar number is displayed.

The width of each bar can be entered. By clicking the "Width" column header, the width value of the selected line is copied to all lines beneath the selected line.

The "Grid line" column is only visible if a relative base axis scale is used. If the checkbox is selected for a given bar, the base axis displays a grid line next to that bar. If the "Restrict base axis labels to grid lines" option is enabled at the lower end of the dialog, the labels at the base axis are only displayed at bars with an activated grid line.
Color ranges

The "Color ranges" node is only available in the bar chart’s properties.

The colors of a bar chart can be customized. The bars can be colored dynamically. This is done by specifying dynamic color ranges. Each range has a minimum and maximum value, a normal color and a limit color displayed outside the limits.

A signal must be assigned to each bar. The signal value is used to determine the bar’s colors with reference to the range settings. The ID column refers to the existing bars. Basically, the same signals as used for the bar values can be used again for the color ranges. Drag the signal to the desired line of the signal table or select the line of the desired bar and double-click on the suitable signal in the tree.

The individual assignment of signals enables you to determine for which bar the color range should apply or not.

However, you may assign other signals for controlling the color than the bar values. For instance, you can define a bar’s color by a state or a fault signal instead of the bar value itself.

Make sure that the "Min range" and "Max range" values comply with the signal assigned in the color range mapping table.

If you leave a line empty, the corresponding bar will use the default colors.

If the value of a signal defined for color range control is outside the range, the bar will be displayed in default colors.

If you like to use limits and the corresponding limit colors, make sure the color range covers the entire signal value range, including values inside and outside the limits.
Example:

![Bar chart 1]

The chart above is the result of the following settings and values.

**Color ranges:**

<table>
<thead>
<tr>
<th>Range Min</th>
<th>Range Max</th>
<th>Color</th>
<th>Limit color</th>
</tr>
</thead>
<tbody>
<tr>
<td>-75</td>
<td>0</td>
<td><img src="#" alt="Red" /></td>
<td><img src="#" alt="Orange" /></td>
</tr>
<tr>
<td>0</td>
<td>100</td>
<td><img src="#" alt="Purple" /></td>
<td><img src="#" alt="Purple" /></td>
</tr>
</tbody>
</table>

![Color Range Mapping]

Fig. 125: QPanel bar chart, color range settings (example)

<table>
<thead>
<tr>
<th>Id</th>
<th>Signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>[4:7] Bar_A</td>
</tr>
<tr>
<td>2</td>
<td>[4:8] Bar_B</td>
</tr>
<tr>
<td>3</td>
<td>[4:9] Bar_C</td>
</tr>
<tr>
<td>4</td>
<td>[4:10] Bar_D</td>
</tr>
<tr>
<td>5</td>
<td>[4:11] Bar_E</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Values</th>
<th>Mapped to color range</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower limit -50</td>
<td></td>
<td>Lower red horizontal line</td>
</tr>
<tr>
<td>Upper limit 60</td>
<td></td>
<td>Upper red horizontal line</td>
</tr>
<tr>
<td>Bar no. 1 55</td>
<td>Yes</td>
<td>In color range 0 – 100, inside limits</td>
</tr>
<tr>
<td>Bar no. 2 80</td>
<td>Yes</td>
<td>In color range 0 – 100, outside upper limit</td>
</tr>
<tr>
<td>Bar no. 3 -27</td>
<td>Yes</td>
<td>In color range 0 – -75, inside limits</td>
</tr>
<tr>
<td>Bar no. 4 -65</td>
<td>Yes</td>
<td>In color range 0 – -75, outside lower limit</td>
</tr>
<tr>
<td>Bar no. 5 -99</td>
<td>Yes</td>
<td>Out of color range, default colors</td>
</tr>
</tbody>
</table>
17.10.6 Text input control

Fig. 126: Preferences for text input elements in the QPanel

Signals
First, a destination signal should be selected. This can be:

- A text signal of a virtual *ibaQPanel text input* module or
- An analog or digital signal of a virtual *ibaQPanel input* module

Both the text as well as the analog and digital signals must have been configured in the I/O Manager beforehand. The value in the text box of the text input control can be applied to the destination signal in 3 ways:

- The user presses <ENTER> in the text box
- The user clicks the <Apply> button
- There is a rising edge on the trigger signal

The trigger signal is optional. In fact, it is only required if the values of several text input controls are to be transferred all at once via a single button click.
Text appearance
How the text is displayed in the text box can be controlled. You can specify font, alignment and colors. The control can work in 2 modes:

- In "Input only" mode, the text in the text box is always entered by the user.
- In "Input/output" mode, the text in the text box shows the value of the destination signal. The user can enter another text and apply that to the destination signal. Whenever the value of the destination signal changes, the text in the text box is updated. You can specify the formatting of the destination signal's value.

Button settings
The appearance of the button can be controlled as described in "Button, page 151." You can specify the text, font, image and alignment. The button can also be hidden.

17.10.7 Trend graph
The preferences/properties of the QPanel trend graph differ from the standard trend graph in several respects.
The "Trend graph", "Signals" and "Y-axis" settings are the same as described in "Trend graph, page 127.

X-axis

Unlike a standard trend graph, X axis in an ibaQPanel trend graph can be time-based or length-based.
Serving as time axis, the time range can be set or controlled by a signal. The X-axis can be fixed or scrolling.

An optional pause signal can be enabled. The pause signal is always a digital signal. As long as the pause signal is TRUE, the scrolling in the QPanel display is paused. A gap is inserted where the pause occurred. The gap is always 20 pixels wide independent of the duration of the pause.

When serving as length axis, more settings are required.

The length range determines the maximum length value on the scale. You may enter a fixed value or – if length range can change from time to time – select a signal providing the length range. For a proper labeling, set the correct length unit (m, mm, etc.).

The actual length should be provided by an analog length signal, which can be selected from the pick-list. You can set a length resolution value to make the length-controlled feed of the graph a bit smoother.

The "Length is reset if it drops more than ... m" parameter determines the threshold for the length signal. If the actual length shows a sudden decrease of more than the specified value, the length is reset and the feed starts again.

Depending on the feeding mode, different behaviors apply:

<table>
<thead>
<tr>
<th>Mode</th>
<th>Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scrolling</td>
<td>The length base value determines the visible range of the base axis. The base axis starts at 0 and scrolls in the specified direction until length value is reset. Then a gap follows which indicates the length reset and the scrolling starts again as soon as the length value increases.</td>
</tr>
<tr>
<td>Fixed and clear at maximum length</td>
<td>The fixed base axis shows a scale from 0 to length range value. The graph is fed in the specified direction. The graph gets cleared when resetting the length signal. If the graph reaches end of scale before length reset (length range is smaller than the actual length), the base axis shifts for another length range.</td>
</tr>
<tr>
<td>Fixed and double length range at maximum length</td>
<td>The fixed base axis shows a scale from 0 to length range value. The graph is fed in the specified direction. The graph gets cleared when resetting the length signal. If the graph reaches end of scale before length reset (length range is smaller than the actual length) the base axis is rescaled to double the length range. The graph continues feeding in the middle of the base axis. If the end of scale is reached again before length reset, the scale is doubled again (4 times the original length range).</td>
</tr>
<tr>
<td>Fixed and start writing with maximum length</td>
<td>The fixed base axis shows a scale from 0 to length range value. The graph is fed in the specified direction. The graph gets cleared when resetting the length signal. If the graph reaches end of scale before length reset (length range is smaller than the actual length), the base axis moves with scrolling speed.</td>
</tr>
</tbody>
</table>
Dynamic curve color

The color of a signal can be dynamic. It can be controlled by another signal. In the signal table of the graph properties, you can determine the signal for the dynamic colors (see figure above). This signal must be an analog signal between 0 and 15. There are 16 different colors available and the color signal selects one of them depending on its value. You can specify the 16 colors in the trend graph properties (see figure below).

![Fig. 128: QPanel trend graph, dynamic color control signal](image)

![Fig. 129: QPanel trend graph, dynamic color selection](image)
In the "Settings" dialog of a trend graph, this branch is only available if vector signals are put on the trend graph.

Unlike the standard trend graph, the ibaQPanel trend graph can display 2D false color diagrams as you might know from ibaAnalyzer.

The red-framed parameters in the figure above are only available in the trend graph’s properties.

The color axis scheme is automatically applied as soon as a vector signal has been assigned to a trend graph. The values of the vector’s signals are displayed by colors.

If you manually scale the color axis, you can set the lower and upper value of the scale. When you press the button <Map colors to manual scale> you can see the correspondence between scale values and colors in the color scheme. You can add, change or delete colors according to your needs.

Enable the <Use intermediate colors> option for a smoother color transition.
2D Y axis

In the preferences, this node is named "2D Y axis". In the properties, it is named "Y axis" below the color axis node.

The 2D Y-axis in the 2D view of a trend graph represents the elements, zones or "tracks" of a vector signal. For a transverse profile measurement of flatness or strip tension in the steel industry, for instance, the 2D Y-axis measures the strip width.

The zone scaling can be set by counting (zones 1 to n) and "zone width" = 1.

It can also represent a physical dimension by entering the real width of a zone, e.g. of a flatness measurement roll.

Example

A flatness measurement roll has 64 measurement zones represented by a vector with 64 signals. Each zone has a width of 20 mm. Thinking in meters, enter 0.02 as the zone width value and the 2D Y-axis will automatically shift from 0 to 1.28, corresponding to the real width of the measurement roll.

17.10.8 Historical data trend graph

The preferences and properties of an HD trend graph correspond to those of the normal trend graph. Only the additional 2D axis for the colored 2D trend graph is not available for HD trend graphs.
**17.10.9 FFT view**

Unlike the preferences of a normal FFT view, only the display properties can be set up for the FFT view in the QPanel.

There are more settings available in the properties of a QPanel FFT view.

For more information, see chapter `FFT view, page 119`.

**17.10.10 Scope view**

Unlike the preferences of a normal oscilloscope view, there is only one color setting available for the oscilloscope view in the QPanel.

There are more settings available in the properties of a QPanel scope view.

For more information, see chapter `Scope view, page 143`.

**17.10.11 Numeric digital display**

In the QPanel digital displays preferences, there are the same settings available like in the preferences for the normal digital displays.

For more information, see chapter `Numeric digital display, page 147`.

**17.10.12 Event list**

Preferences and properties of a QPanel event table are the same like those of a normal event table.

For more information, see chapter `HD event table, page 116`. 
18 Managing layouts

18.1 Use of layouts

The layout management feature enables the user to create and manage many different layouts of the ibaPDA client screen.

Different layouts help to organize the live data screens of ibaPDA according to the particular needs and different purposes. Whether different users with different display preferences use the same ibaPDA system or technical reasons or a large number of signals require several layouts for display.

Everything that is visible in the ibaPDA client must be saved in the layout configuration: The size, position and availability of views, signal tree, status window, toolbars or menus. Layouts enable the user to switch between different view arrangements. All configured layouts are available in a pick-list in the layout tool bar.

18.2 Layout configuration file

All configuration data is stored in an XML file.

The ibaPDA system uses three different configuration files for I/Os, data storage and display (layout). For the layout configuration, ibaPDA always uses the CurrentLayout.lay file. This file is not available right after installation of ibaPDA. The file can be created and stored in 3 different ways:

- Save the layout on the server in the “View” menu, see Save layout configuration on the server, page 171.

- Save the layout in a project, see Save layout in project, page 172.

The layout configuration file is also stored in a client’s specified sub-directory provided you have created a desktop shortcut for the client. The layout is rather related to the client whereas the I/O and data storage configuration are related to the server.

This file is loaded with each start of the ibaPDA client. The file is updated every time the layout configuration is changed. This includes not only changes made in the dialog, but also all rearrangements of signal charts or graphs, including the toolbar layout. The current configuration is therefore always stored in this file without explicitly saving it. An automatic backup file procedure saves the last 10 layouts in a backup directory. Furthermore, you can save the layout configuration under a different name in your file system.

If you have applied a functional layout configuration that fits your needs, it is recommended additionally saving the layout configuration file under another name in a save folder or disk of your choice in order to avoid unintended modifications or loss of configuration data.

18.3 Layout management

If you like to add or delete a layout, you always have to use the layout management.

The ”Manage layouts” dialog can be opened using the “View – Manage layouts...” menu or by clicking on the corresponding tool bar button:
In this dialog, you can specify the width of the layout list in the toolbar. You can do this by either entering the width in pixels in the numeric edit field or by dragging the right edge of the layout list in this dialog.

If you select a layout, you can change its name on the right.

You can also change the foreground and background colors used for this layout in the list. The list in this dialog supports multi-select so you change the colors of multiple layouts at once.

The toolbar buttons have the following function:

<table>
<thead>
<tr>
<th>Button</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Up Arrow]</td>
<td>Move layout up</td>
</tr>
<tr>
<td>![Down Arrow]</td>
<td>Move layout down</td>
</tr>
<tr>
<td>![Add]</td>
<td>Add new empty layout</td>
</tr>
<tr>
<td>![Copy]</td>
<td>Copy layout</td>
</tr>
<tr>
<td>![Delete]</td>
<td>Delete layout</td>
</tr>
</tbody>
</table>

Layout management toolbar buttons

All changes to the layouts will be applied not before clicking <OK>.
18.4 Save a layout configuration in a layout file

1. Choose “View - Save layouts as...” from the main menu
2. In the dialog, select the folder where you want to store the file. We recommend choosing the Client subfolder in the ibaPDA program folder, as the layout configuration is related to the client. But of course you may choose any other folder.
3. Enter a file name (prefix). The file name extension (lay) is automatically added by the system.
4. Click on <Save>.

18.5 Save layout configuration on the server

Saving layouts on the server allows to save a layout for a certain ibaPDA user. This function requires login data to the user management’s client rights.

1. Click on in the main menu on “View - Save layout on server...” The dialog lists all configured ibaPDA users.
2. Select a user.
   The path where the file is saved, i.e. the user it was saved for, can be found in the server’s program files.

Example

Nic, Jason, Carol and Rob are configured as users in the ibaPDA user management.

![Figure 134: User selection form for storing layout on server](image)

Saving the layout on server for Rob will create the following file:
### 18.6 Save layout in project

When storing a project under File – Save project..., make sure that the "Save current layout in project" option is enabled.

![Save project dialog](image)

**Fig. 135: Location of saved user-related layout configuration file**

### 18.7 Load an existing layout configuration

1. Click “View - Open layouts...” in the main menu

2. Select the desired configuration file by using the browser. By default, you find the configuration files in the user directory of the client (e.g. with Windows 7: ...\User\UserName\AppData\Local\iba\ibaPDA). The browser shows files with the extension .lay only. The CurrentLayout.lay file contains the latest configuration.

3. Press <Open>. The configuration is loaded and applied to the screen. Former layouts will be replaced.

### 18.8 Opening layouts from the server

This function is only available either if the user management is disabled or the logged in user has the credentials for "Open layouts from server".

1. Click on menu View - Open layouts from server...

2. The dialog box "Load user layouts" opens. There, you will find - separated for ibaPDA Server and ibaHD Server - the names of users who have saved layouts on the server before.

3. Select the user whose layout you want to load.
4. Click on <Load>. The layout configuration will be loaded and the screen will change accordingly. Former layouts will be replaced.

18.9 Import layouts

Importing layouts from a layout configuration file adds the layouts in this file to the currently loaded layouts. Unlike the "Open layout" command, existing layouts are not replaced.

If there already exists a layout with the same name, you can replace, ignore or rename it.

![Form for conflict resolution when importing layouts](image)

Fig. 137: Form for conflict resolution when importing layouts
19 Support and contact

Support

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Note

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

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