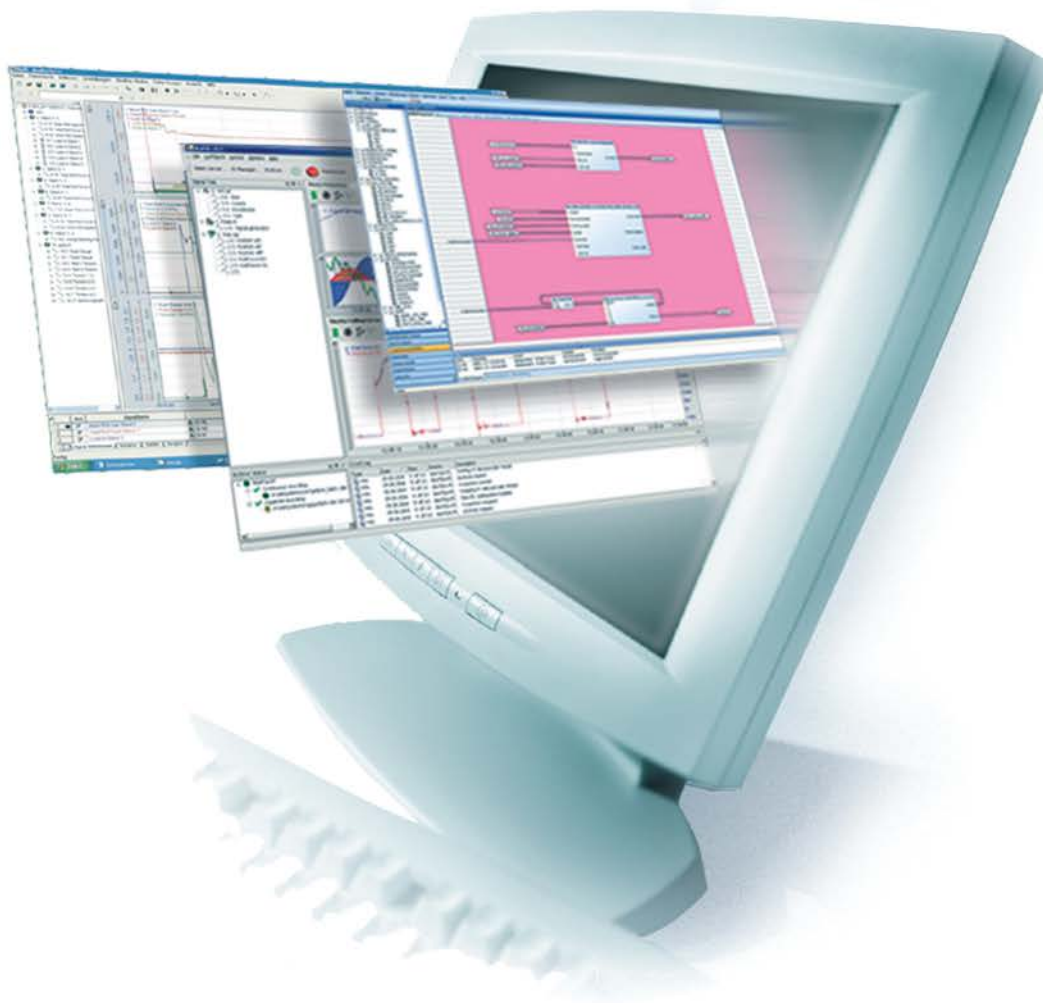


ibaCapture-HMI

Screen Capturing with ibaPDA



Manual

Issue 2.1.4

Measurement and Automation Systems



Manual

ibaCapture-HMI

Screen Capturing with ibaPDA

Issue 2.1.4



iba AG

Manufacturer

iba AG
Koenigswarterstr. 44
90762 Fuerth
Germany

Contacts

Main office	+49 911 97282-0
Fax	+49 911 97282-33
Support	+49 911 97282-14
Engineering	+49 911 97282-13
E-Mail	iba@iba-ag.com
Web	www.iba-ag.com

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The content of this publication has been checked for compliance with the described hardware and software. Nevertheless, deviations cannot be excluded completely so that the full compliance is not guaranteed. However, the information in this publication is updated regularly. Required corrections are contained in the following issues or can be downloaded on the Internet.

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

Issue	Date	Revision	Author	Version SW
2.1.4	06/10/2016	Important note about movie file path specification, chapter 6.2.2	RM	2.1.4

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1 About this manual

This documentation describes the function, the design and the application of the software product *ibaCapture-HMI*.

1.1 Target group

This manual addresses in particular the 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:

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

1.3 Used symbols

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

DANGER

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

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

WARNING

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

CAUTION

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



Note

A note specifies special requirements or actions to be observed.



Important note

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



Tip

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



Other documentation

Reference to additional documentation or further reading.



Example

Configuration and application examples for a better understanding

2 Overview

2.1 Introduction

ibaCapture is an image capture system integrated in the *ibaPDA* data acquisition system. It is an extension of *ibaPDA*, which allows synchronized linking of image data and measured data.

The product *ibaCapture* is available in two formats:

- 1 *ibaCapture-HMI*, for recording of HMI screens or similar contents of monitors.
- 2 *ibaCapture-CAM*, for recording live camera pictures.

The following explanations in this manual apply to *ibaCapture-HMI* only! For more information about *ibaCapture-CAM* please refer to the respective manual.

The synchronized combination of image data and measured data allows relationships between the process and the measurements to be easily recognized and communicated. Additionally, the *ibaCapture-HMI* can be used for training purposes where the recordings of measured data can be shown in relation to the HMI images.

The *ibaCapture-HMI* solution consists of two components:

- ☐ The *ibaCapture-HMI* program, which must be installed on each computer where one wishes to do a screen recording.
- ☐ Specific *ibaCapture-HMI* modules integrated in *ibaPDA* versions 6.13.0 and higher.

The *ibaCapture-HMI* program does the actual screen recording and stores these recordings in a proprietary file format resulting in files with extension .fbr. The *ibaCapture-HMI* program communicates with *ibaPDA* through TCP/IP connections. One connection is initiated by *ibaPDA* to instruct the *ibaCapture-HMI* program to start or stop recording and to parameterize the recordings. Another connection is initiated by the *ibaCapture-HMI* program to communicate data with *ibaPDA* to allow *ibaPDA* to synchronize the image recordings with the measurement data *ibaPDA* is recording.

Along with the measurement data, *ibaPDA* will store the synchronization data and location of the .fbr files in the .dat file it is writing. This allows *ibaAnalyzer* to show the measured data along with the associated image sequences in a synchronized fashion.

The *ibaCapture-HMI* program does not require any license and can be freely installed anywhere. In *ibaPDA* the number of *ibaCapture-HMI* modules is however limited by the number of licenses stored in the license key (maximum 64) that needs to be activated to enable the *ibaCapture-HMI* functionality in *ibaPDA*. Each *ibaCapture-HMI* module communicates with exactly one *ibaCapture-HMI* program and hence the number of *ibaCapture-HMI* programs that can be instructed to record and for which its recordings can be synchronized with the data is limited by the number of licenses in the license key.



ibaCapture must always be installed on the computer where the image sequences are to be recorded.

An installation of *ibaPDA* is not required on this computer.

Since version 2.0.0 of the *ibaCapture-HMI* product and version 6.23.1 of *ibaPDA* it is possible to run multiple instances of the *ibaCapture-HMI* program on the same computer. This allows capturing multiple screens or screen regions on the same computer. For each additional *ibaCapture-HMI* instance an additional *ibaCapture-HMI* module is needed in *ibaPDA* and hence also a license. There is no further limit imposed on the number of screens or regions that can be captured on the same system, however for performance reasons we recommend against running more instances of *ibaCapture-HMI* on the same system than the number of monitors on that system.

2.2 Functional principle

The following diagram shows the functional principle and data flow of *ibaCapture-HMI*.

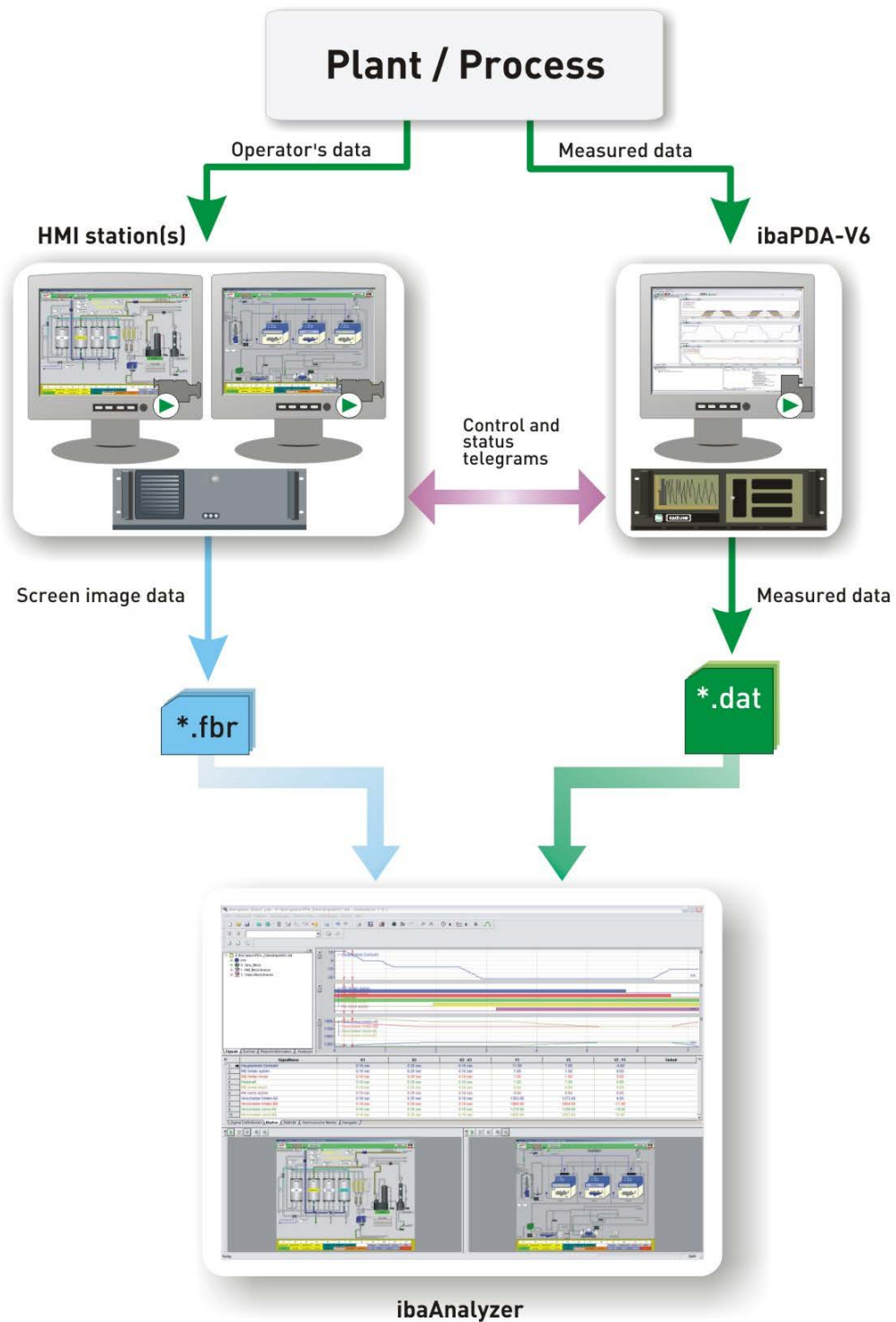


Figure 1: Overview ibaCapture-HMI

The plant or the process delivers various data.

- ❑ Image data for monitoring and operation (*ibaCapture-HMI*)
- ❑ Measured data for *ibaPDA*.

The video information from the HMI screens is recorded by *ibaCapture-HMI* and saved in *.fbr files. The measured data of *ibaPDA* is saved in *.dat files as normal along with

additional data resulting from the synchronization with ibaCapture-HMI through control and status telegrams. *ibaAnalyzer* can access both types of file and shows the information in a synchronized fashion.

2.3 Topology

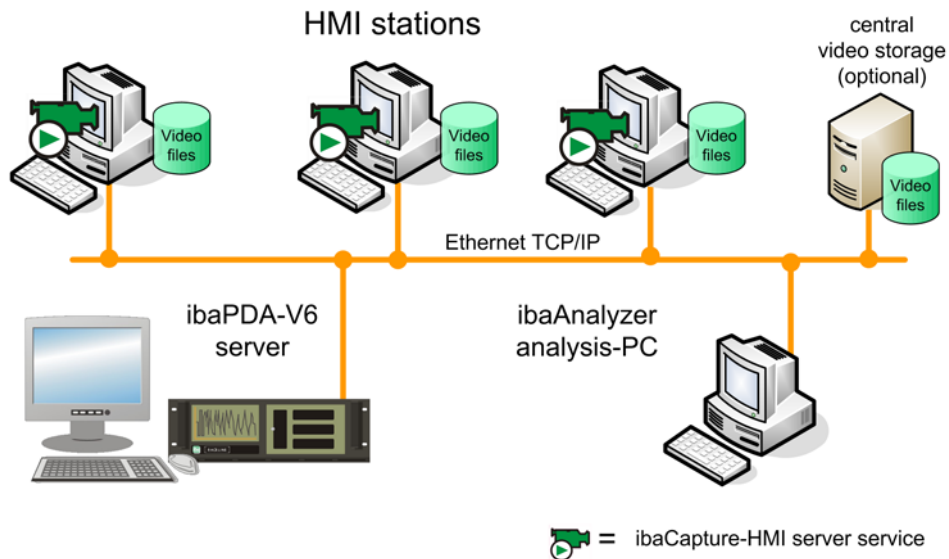


Figure 2: Topology example

With *ibaCapture-HMI*, one can record simultaneously screen pictures of several systems. The access to up to 64 *ibaCapture-HMI* services is possible. The number of permitted *ibaCapture-HMI* modules is licensed in the *ibaPDA* dongle.

A TCP/IP network connection between HMI station (*ibaCapture-HMI* service) and *ibaPDA* is required. Moreover, a central video storage in the network is recommended.

3 Configuring and starting the ibaCapture-HMI instances

On each system, you want to do screen recording you have to run one or more instances of the *ibaCapture-HMI* program. If you are only interested in capturing a single region or screen, only a single instance of the program needs to be started. If you want to capture multiple screens or regions, the same number of instances needs to be started as the amount of regions and/or screens you wish to capture. The instances can be configured manually or through the *ibaCapture-HMI* manager. The latter is recommended but for the benefit of advanced system integration, manual configuration is explained here also.

3.1 Manual configuration

The *ibaCapture-HMI* program is located in the directory where you installed *ibaCapture-HMI* (by default: C:\Program Files\iba\ibaCapture-HMI). The executable is called *ibaCaptureHMI.exe*. This executable takes two command line arguments:

- ❑ „/portNr:“ This argument needs to be followed immediately by an integer between 1000 and 65535. This argument is mandatory, if it is missing an appropriate error message will be shown and the *ibaCapture-HMI* instance will refuse to launch. You use this parameter to specify the TCP/IP port number the instance will use to listen to *ibaPDA* in order to setup a TCP/IP connection. Through this connection over this port number, *ibaPDA* will instruct the instance to start or stop capturing and will also provide the specified parameters (what screen or region, capture mode, location to store the movie files, etc.) You can specify any TCP/IP port number that is not already in use.
- ❑ „/name:“ This argument needs to be followed immediately by the display name you wish to use for this instance. This name will be used to identify the instance in the capture properties dialog in *ibaPDA* and will also be used as the caption of the status window of the instance. If the name contains spaces the name should be bracketed by quotes. This argument is optional; if it is omitted, the display name “ibaCapture-HMI” will be used.

E.g., to start an instance with display name “Left screen capture” listening on the port 9171 you could execute:

```
C:\Program Files\iba\ibaCapture-HMI\ibaCaptureHMI.exe  
/name:"Left screen capture" /portNr:9171
```

3.2 ibaCapture-HMI Manager

The *ibaCapture-HMI* manager enables you to manage the *ibaCapture-HMI* instances running on your system. Besides starting and closing *ibaCapture-HMI* instances, it also allows you to specify instances that will be automatically started when the current user logs in.

You can start the manager from the installation directory, the executable is called *ibaCaptureConfigureTool.exe*. A shortcut to the manager is also provided in the windows start menu (*Start – Programs – iba – ibaCapture-HMI – ibaCapture-HMI Manager*).

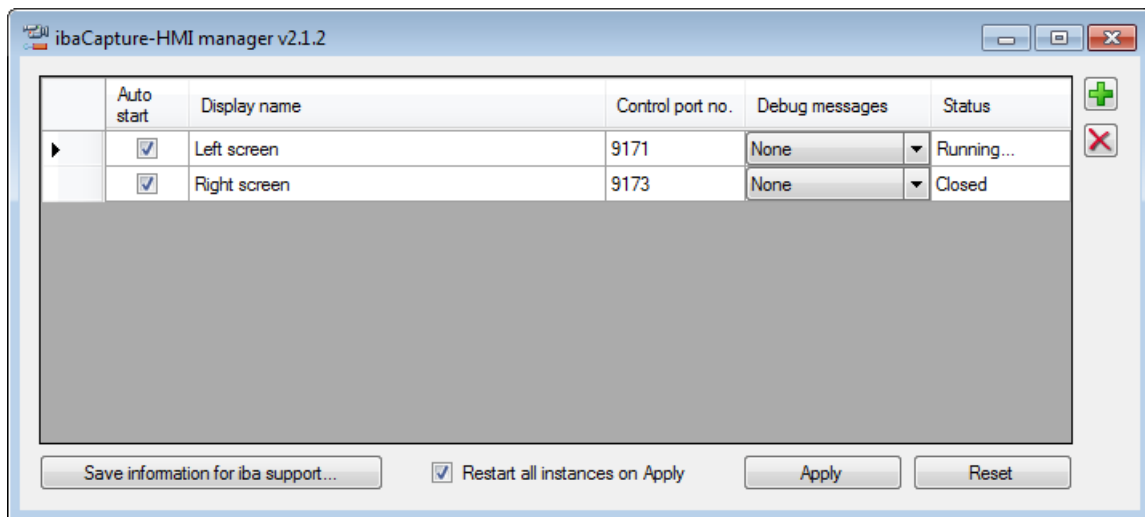


Figure 3: ibaCapture-HMI Manager

When the manager is started or when the <Reset> button is pressed, it will list all currently running *ibaCapture-HMI* instances in a table. It will also read from the registry what instances of *ibaCapture-HMI* are registered to be started when the current user logs on, and list them as well if they are not already listed because they are currently running.

The table listing the instances consists of the following columns:

- ☐ „Auto start”; if the checkbox in this column is checked, the instance will be automatically started when the user logs on.
- ☐ „Display name”; this name will be used to identify the instance in the capture properties dialog in *ibaPDA* and will also be used as the caption of the status window of the instance.
- ☐ „Control port no.”; this is the TCP/IP port number the instance will use to communicate with *ibaPDA*.
- ☐ "Debug messages": in case of failure *ibaCapture-HMI* can display debug messages. Here you can specify, which messages are logged:
 - None
 - Limited: warnings and error messages
 - All: warnings, error messages and all debug messages are stored in the *ibaCapture-HMI* log file (see also section "Log file" below).
- ☐ „Status”, this column indicates whether the instance is running or closed.

You can modify the „Display name”, „Control port no” and „ Auto start” columns, any changes will however only become active after pressing the <Apply> button.

You can add new instances to the listing by pressing the <+> button. An extra line in the listing will be added with default suggestions for the „Display name” and „Control port no”.

You can remove instances from the listing by pressing the <-> button. The row that is currently selected, or if no row is selected, the row of the currently selected cell in the grid, will be removed.

When pressing the <Apply> button, the windows registry is updated to contain only the instances that have the <Auto start> checkbox checked so that they will be automatically started when the current user logs on. If the <Restart all instances on Apply> checkbox

is checked when pressing the <Apply> button, all currently running instances of *ibaCapture-HMI* are closed and the currently listed instances will be started.

Individual instances can be started or closed from the manager by right clicking in the <Status> column and selecting „Start” or „Close”.

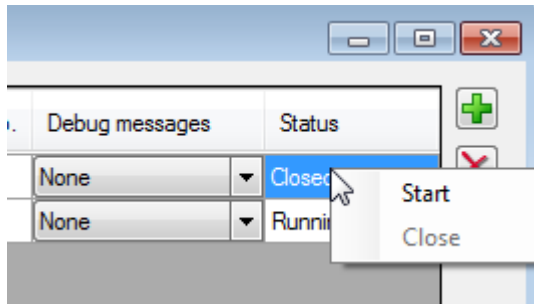


Figure 4: Starting or closing individual instances

The <Save information for iba support...> button provides a special function for your convenience in case of malfunction. It collects useful information and stores it in a zip file that can be sent to iba enabling iba to provide better support. Pressing the button will open a dialog where the user can specify a location to store the zip-file. The zip file will contain the following information:

- ☐ The entire logging generated by the various *ibaCapture-HMI* instances that are running or have run on the system.
- ☐ System information
- ☐ A list of the instances that are currently running on the system and/or the instances that are registered to be started when the current user logs on (i. e. the same information displayed in the *ibaCapture-HMI* manager table).

Log files

A log file is created for each instance of *ibaCapture-HMI* running on a system. The log files are saved in the application directory of the Windows user.

Using Windows 7:

C:\Users\User name\AppData\Local\iba\ibaCapture-HMI\Log\Portno. of the instance\

Using Windows XP: C:\Documents and Settings\User name\Application Data\iba\ibaCapture-HMI\Log\Portno. of the instance\

Status messages, error messages, warnings and debug messages are saved in the log file.



Note

If you activate debug messages, the log files may quickly become very large and use valuable storage space especially when "All" debug messages is selected. We recommend activating debug messages only if you want to investigate a problem with *ibaCapture-HMI*. Otherwise, reduce debug messages ("limited") or switch them off ("None").

4 The ibaCapture-HMI instance status

4.1 The ibaCapture-HMI system tray status icon

For each instance of *ibaCapture-HMI* started on the system, there is an icon in the system tray.



Figure 5: Windows system tray

Symbol	Meaning
	Instance not fully initialised yet or in an error state
	Instance ready for recording but currently not recording
	Instance is recording



Important note

In the unlikely event that the status icon keeps being after several minutes, an unrecoverable error has happened, please contact iba support for further assistance in this case.

Hovering over the icon with the mouse will give an explanatory text for the state the *ibaCapture-HMI* instance is in. If the instance is recording, also the monitor that is currently being recorded will be stated in this explanatory text.

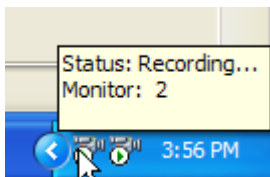


Figure 6: Explanatory text for the icon

Right clicking on the status icon gives you a context menu with the following options

- ☐ „Status”: This opens the status information window which contains more detailed information about the instance's state (see next subchapter). This can also be achieved by double clicking the icon.
- ☐ „Exit”: Closes the corresponding *ibaCapture-HMI* instance, this means of course that *ibaCapture-HMI* is no longer recording for this instance.

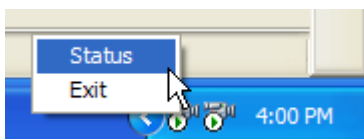


Figure 7: Context menu for the icon

4.2 ibaCapture-HMI status information window

The status information window is obtained by double clicking on the system tray status icon or selecting „Status” from the context menu. The caption of this information window will contain the “Display name” of the associated instance.

When the associated instance is not recording, the window will contain the lines:

- ☐ “Status: Not recording”
- ☐ “ibaCapture-HMI control port number:”, followed by the TCP/IP port number the *ibaCapture-HMI* instance is using to communicate with *ibaPDA*.

When the associated instance is recording, the window will contain the lines:

- ☐ “Status: Recording...”
- ☐ “Monitor:” followed by the number of the monitor ibaCapture is recording.
- ☐ “File:” followed by the file name of the .fbr file that is currently being written.
- ☐ “File recording time:” followed by the amount of time in “hours:minutes:seconds” that the *ibaCapture-HMI* instance has been recording in the current .fbr file.
- ☐ “Total recording time:” followed by the amount of time in “days.hours:minutes:seconds” that the *ibaCapture-HMI* instance has been recording without pause.
- ☐ “ibaCapture-HMI control port number:”, followed by the TCP/IP port number the *ibaCapture-HMI* instance is using to communicate with *ibaPDA*.

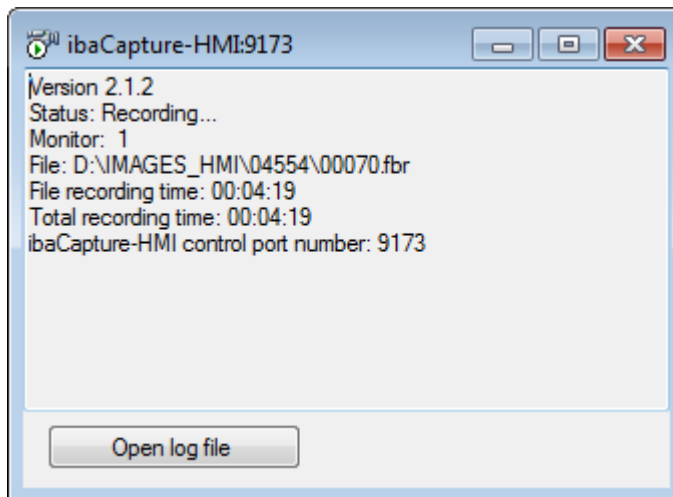



Figure 8: The status information window

5 ibaCapture-HMI interface and modules

After the *ibaCapture-HMI* instances have been properly configured on the systems where one wishes to perform the screen capture, the *ibaCapture-HMI* modules must be added and configured in the I/O manager of *ibaPDA*.

Start the *ibaPDA* client and open the I/O manager. To open the I/O manager, click on the  icon in the toolbar or use the menu Configuration – I/O Manager.

5.1 ibaCapture-HMI interface

The *ibaCapture-HMI* interface can be seen in the I/O Manager if the *ibaCapture-HMI* function has been activated in the *ibaPDA* license key (dongle). You activate the *ibaCapture-HMI* interface by clicking the “ibaCapture-HMI” node in the tree structure to the left of the I/O manager.

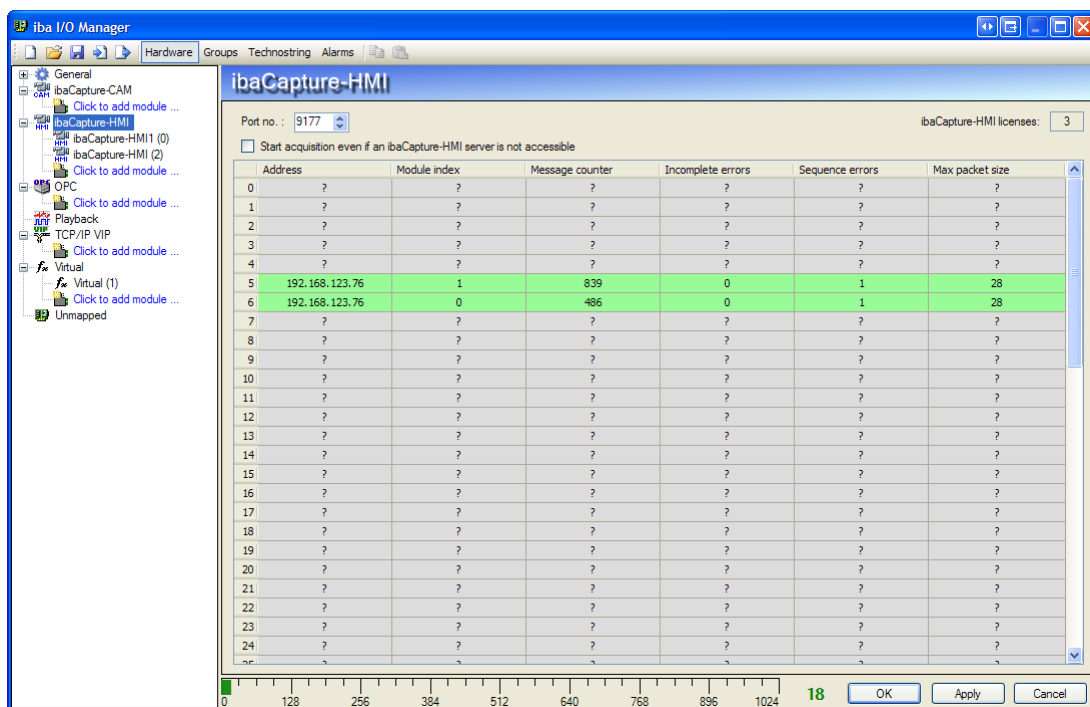


Figure 9: ibaCapture-HMI interface

The *ibaCapture-HMI* interface consists of the following elements:

- ☐ „Port no.“: Here you specify on which TCP/IP port number *ibaPDA* will listen to synchronization data messages from the *ibaCapture-HMI* instances. Under normal circumstances, the default suggested port number is acceptable.
- ☐ „ibaCapture-HMI licenses“: Here the number of available *ibaCapture-HMI* licenses is shown. You need a license for each *ibaCapture-HMI* module.
- ☐ „Start acquisition even if an *ibaCapture-HMI* server is not accessible“: Unless this checkbox is checked, *ibaPDA* will refuse to start the data acquisition if there is an *ibaCapture-HMI* module wherefore a connection cannot properly be established with the corresponding *ibaCapture-HMI* instance. If the checkbox is checked, data acquisition will start regardless if all connection to the *ibaCapture-HMI* instances can be established and *ibaPDA* will periodically retry to establish a connection with the *ibaCapture-HMI* instances for which no connection has been established yet.

- ❑ A table is depicted containing diagnostic information about the currently established connections to the *ibaCapture-HMI* instances. For each established connection a line should be present in the table.

5.2 ibaCapture-HMI modules

ibaPDA provides numerous modules, which are described in detail in the *ibaPDA* manual. *ibaCapture-HMI* modules can be added to *ibaPDA* similarly as other modules.

5.2.1 Creating a new ibaCapture-HMI module

To create a new *ibaCapture-HMI* module, left click on "Click to add module" in "ibaCapture-HMI".

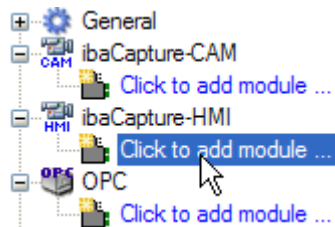


Figure 10: Adding an ibaCapture-HMI module

Enter a module name in the text box and click the <OK> button.



Tip

Choose a name for the module so that the corresponding ibaCapture-HMI instance can easily be identified later.

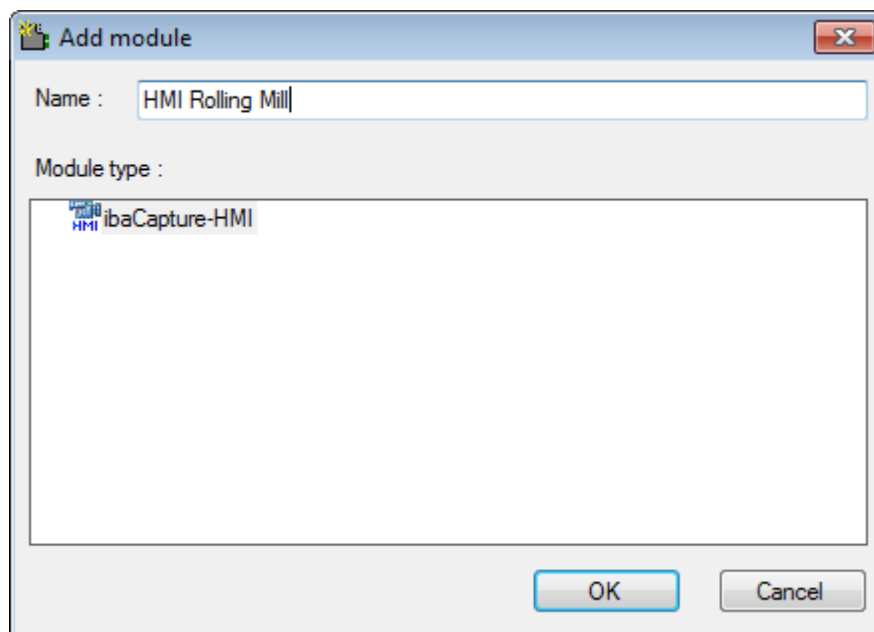


Figure 11: Module name

Once the module has been created, it is shown in the tree structure of the I/O manager.

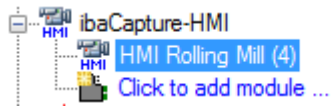


Figure 12: ibaCapture-HMI modules

To configure an ibaCapture module, move the mouse to the module name in the sub branch (see figure above) and click once with the left button on the module.

6 Configuring the ibaCapture-HMI module

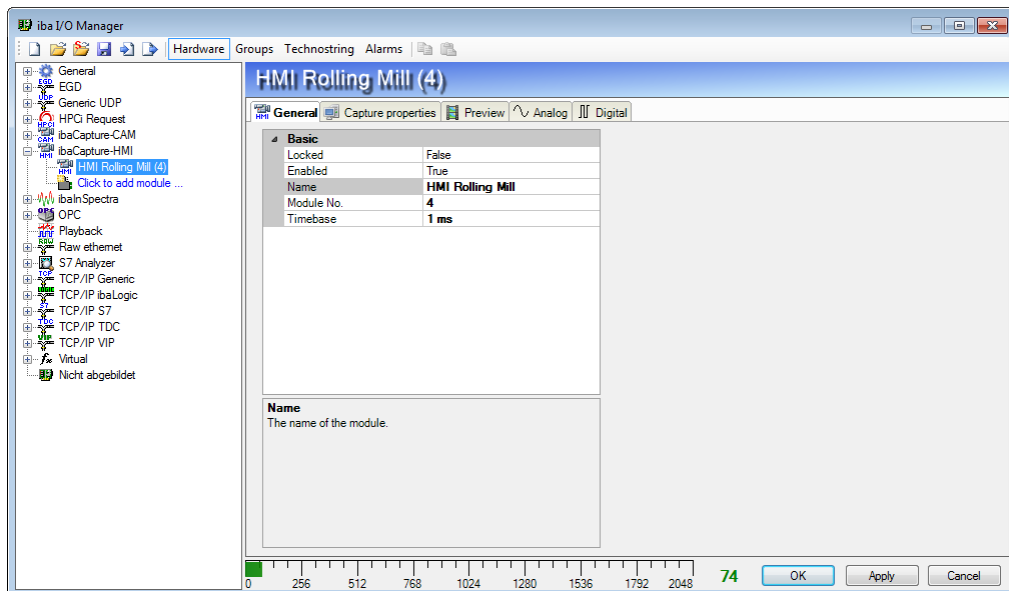


Figure 13: I/O Manager, ibaCapture-HMI module, general dialog

The *ibaCapture-HMI* module configuration dialog consists out of five tabs:

- ☐ „General”: Here the basic settings of the module can be specified, this tab is common to all *ibaPDA* modules.
- ☐ „Capture properties”: Here the parameters specific to *ibaCapture-HMI* should be specified.
- ☐ „Preview”: Here the screen or region that will be recorded can be previewed.
- ☐ „Analog”: A number of analog signals are associated with an *ibaCapture-HMI* module; here you can inspect their current value.
- ☐ „Digital”: A number of digital signals are associated with an *ibaCapture-HMI* module; here you can inspect their current value.

6.1 General information

Basic	
Locked	False
Enabled	True
Name	HMI-Rolling Mill
Module No.	1
Timebase	10 ms

Figure 14: I/O Manager, General tab - basic settings

The basic settings are described in detail in the *ibaPDA* manual. Normally, the preset values do not need to be changed.

6.2 Capture properties

The screenshot shows the 'Capture properties' tab in the I/O Manager. It is divided into three main sections:

- Connection:** Includes a text field for 'Address' (IBA-BLN-NOTE345), a dropdown for 'Port no.' (9171), and a 'Connect' button. Below this is a table listing available instances.

Display name	Computer name	IP Address	Port no.	Version
Left screen	IBA-BLN-NOTE345	127.0.0.1	9171	2.1.2
MainPulpit_1	IBACAPTURE-TEST	192.168.1.61	9171	2.1.2
MainPulpit_2	IBACAPTURE-TEST	192.168.1.61	9173	2.1.2
- Movie files:** Includes a 'Directory' field (\\IBA-BLN-NOTE345\D\$\IMAGES_HMI), 'Username' (pda), 'Password' (***), and a 'Test path' button. A note states: 'It is recommended to use a UNC path (e.g. \\filesrvr\share\moviefiles) for the directory. Otherwise the movie files will NOT be accessible from other computers.' It also has sliders for 'Maximum disk space used by movie files' (10.0 GB) and 'Length of 1 movie file' (5 minutes).
- Capture options:** Includes radio buttons for 'Record mode' (Capture driver, DirectX mode, GDI mode - GDI is selected), 'Frames per second' (5), 'Monitor' (1), and 'Recording area' (Whole screen, Region - 0; 0; 988; 871 - Region is selected). A 'Select region' button is also present.

Figure 15: I/O Manager, Capture properties tab

The "Capture properties" tab has three subsections:

- ☐ Connection
- ☐ Movie files
- ☐ Capture options

6.2.1 Connection

This screenshot shows the 'Connection' subsection. It contains the same 'Address' and 'Port no.' fields as Figure 15. The table below is currently empty, showing only the headers. A 'Search' button is located at the bottom right of the table area.

Display name	Computer name	IP Address	Port no.	Version
--------------	---------------	------------	----------	---------

Figure 16: Capture properties - connection, search for instances

The "Connection" section is where you select the *ibaCapture-HMI* instance this module will use. The connection table (see figure above) shows all available *ibaCapture-HMI* instances.

After a restart or during configuration, if you click the <Search> button the program will search the network for running *ibaCapture-HMI* instances.

A list of all available instances is then generated (see figure below).

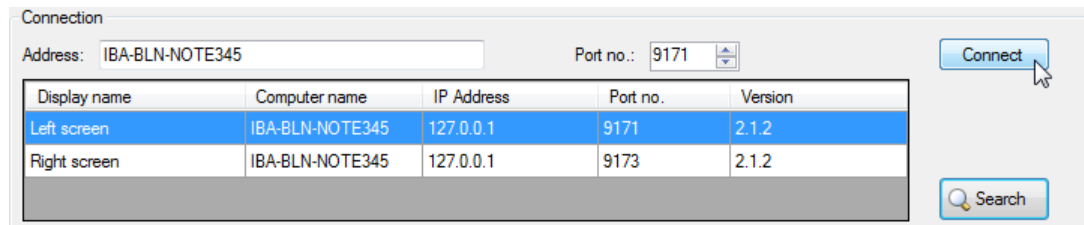


Figure 17: Capture properties - connection, connect to instance

The connection table contains the following information:

- ☐ „Display name”; this is the name the *ibaCapture-HMI* instance was configured with
- ☐ „Computer name”; this is the name of the computer the instance is running on.
- ☐ „IP Address”; this is the IP Address of the computer the instance is running on.
- ☐ „Port no.”; this is the TCP/IP port number the *ibaCapture-HMI* instance is listening to for instructions from *ibaPDA*.
- ☐ „Version”; this is the version number of the program the *ibaCapture-HMI* instance is instantiated from.

Click the left mouse button to select the instance. Click the <Connect> button to connect to the *ibaCapture-HMI* instance (see Figure above). The selected server is shown in the "Address" box.

Click the <Disconnect> button to disconnect again.

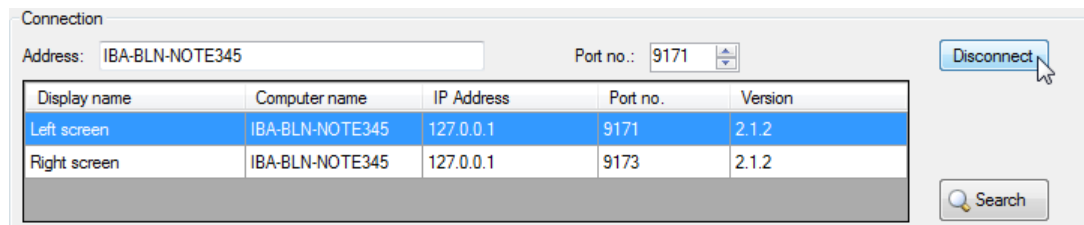


Figure 18: Capture properties - connection, instance connected

6.2.2 Movie files

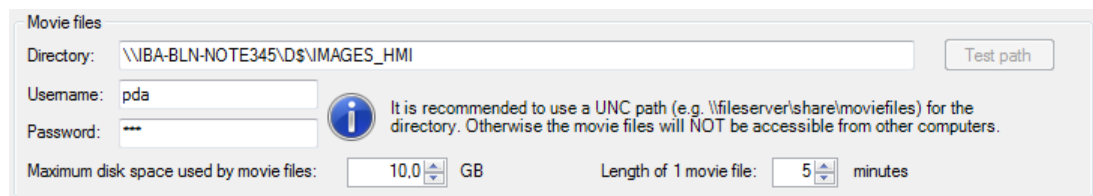


Figure 19: Capture properties - movie files

The "Movie files" section is where you specify where the video or image sequence files are stored.

It is recommended to store the files on a network share and specify an UNC "Uniform/Universal Naming Convention" path to the location. Enter the path as follows:

\\Server name\Share name\Directory

When using an UNC path, you must also enter your user name and password for the file server in the corresponding text boxes.

After you've entered the directory, you can check the path (and user name and password) by clicking the <Test path> button. *ibaCapture-HMI* will attempt to create the directory if it does not already exist.



Important note

Multiple *ibaCapture-HMI* instances must not write in the same folder. If you use more than one *ibaCapture-HMI* instance which write the movie files on a common storage (e.g. file server or network share), you should enter an individual and unique path name for each *ibaCapture-HMI* instance.



Note

The <Test path> button is disabled when there is no connection to the *ibaCapture-HMI* instance. We recommend setting up a connection first in the "Connection" section before specifying the "Movie files" parameters.



Note

It is recommended not to move the video files after they are recorded. The video location is stored in the .dat file and enables *ibaAnalyzer* to locate and display the video files. It is possible to specify an alternative path in *ibaAnalyzer*, but this method is cumbersome.



Tip

It is possible for testing purposes to specify a local path instead of an UNC path to a network share. The files are then stored locally on the computer the *ibaCapture-HMI* instance is running on. In this case you will however not be able to view the video recordings unless you are running *ibaAnalyzer* on the computer where the videos are stored. .

You can enter the maximum size of the memory on the hard drive to be used for video files in the "Maximum disk space used by movie files" box. If the video recordings take up more space than this, the oldest records are deleted.

You can also specify the length of the movie files in minutes. Under normal circumstances, the default suggested value is acceptable.

6.2.3 Capture options

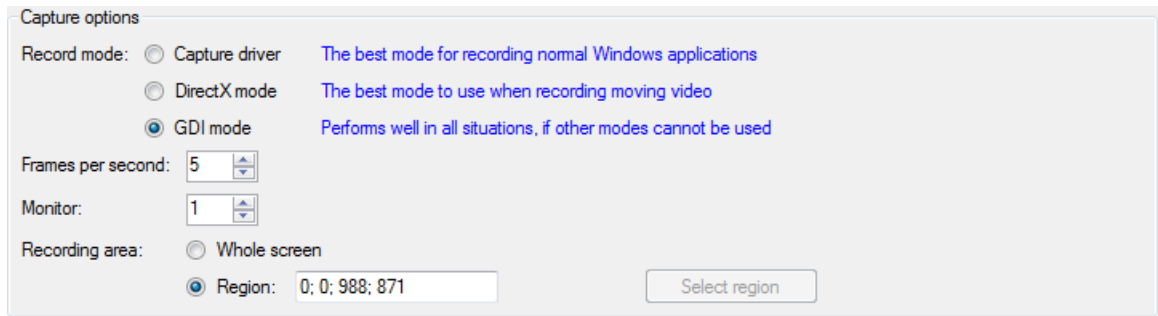


Figure 20: Capture properties - capture options

The following options can be set in the "Capture options" section:

- ☐ Record mode
- ☐ Frames per second
- ☐ Monitor
- ☐ Recording area

6.2.3.1 Record mode

The following modes can be selected:

- ☐ Capture driver

This mode is supported on Windows 2000, WindowsXP and Windows 2003 Server only.

The ibaCapture driver should be used in normal Windows applications. It takes the least system resources while simultaneously generating the smallest video files. There are however some known issues with this recording mode:

- It is not possible to record more than one screen or region (using multiple *ibaCapture-HMI* instances) simultaneously.
- Windows that use hardware acceleration (e.g. transparent or semi-transparent windows) cause difficulty (decrease of performance, poor playback).
- Vista is currently not supported.
- Windows that contain video cannot be captured. (Note that this is in general not a good idea because of performance reasons. iba offers the *ibaCapture-CAM* product as an alternative for video recording.)
- The driver cannot be used if you have the ASUS Enhanced Display Driver installed.

- ☐ DirectX mode

This mode is supported on Windows 2000, WindowsXP and Windows 2003 Server only.

DirectX mode is suitable for multimedia-intensive applications on the Windows platform. DirectX mode should be used for moving video. You can also set the video refresh rate (frames per second) here.

- ☐ GDI mode

This mode is supported on all Windows versions as specified in chapter *System requirements*.

This mode is slightly less performing than the other modes. Use this mode if the other modes cannot be used. You can also set the video refresh rate (frames per second) here.

6.2.3.2 Monitor

The "Monitor" box is where you can enter the monitor from which the *ibaCapture-HMI* instance is to record the video data. This concerns computers with more than one monitor. Windows assigns the monitors a unique designation (number). The monitor numbers can be found in the "Display" dialog in the Windows control panel.

6.2.3.3 Recording area

You can specify either the whole screen or either a rectangular region of the screen as the recording area. When specifying the recording region, you can type a comma separated list of four integers consisting out of respectively

- ☐ The X screen coordinate of the upper left corner of the region.
- ☐ The Y screen coordinate of the upper right corner of the region.
- ☐ The region width in pixels.
- ☐ The region height in pixels.

An easier way to specify the recording region is clicking the <Select Region> button. This will open a dialog depicting the screen to be recorded where you can select the desired recording region with the mouse:

- ☐ Move the mouse pointer to the top left corner of the area you want to select.
- ☐ Click and hold down the left mouse button.
- ☐ Drag the mouse downwards and to the right to select the area.
- ☐ Release the mouse button.

After having finished selecting a region, the *ibaCapture-HMI* automatically switches to the "Preview" tab (See next chapter).



Note

The <Select Region> button is disabled when there is no connection to the *ibaCapture-HMI* instance. We recommend setting up a connection first in the "Connection" section before specifying the recording region.

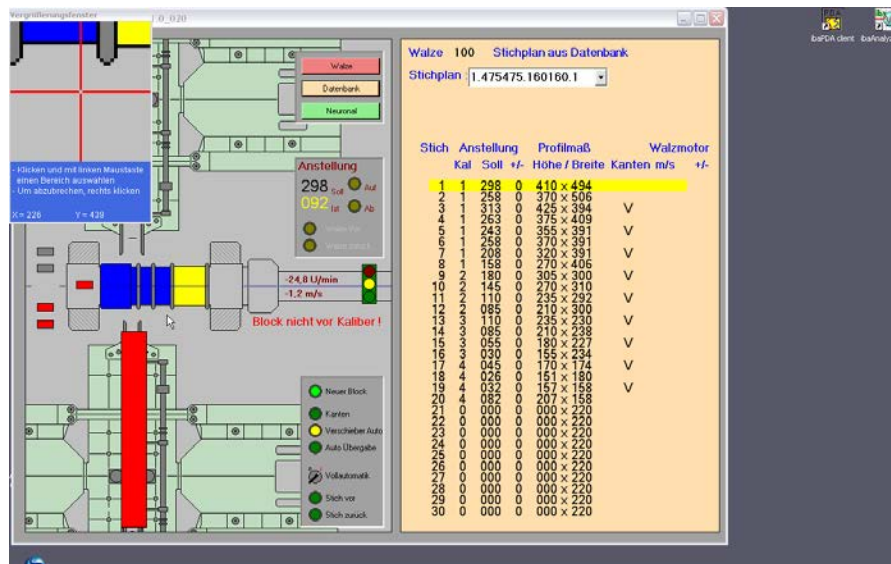


Figure 21: Selecting the recording area using the mouse

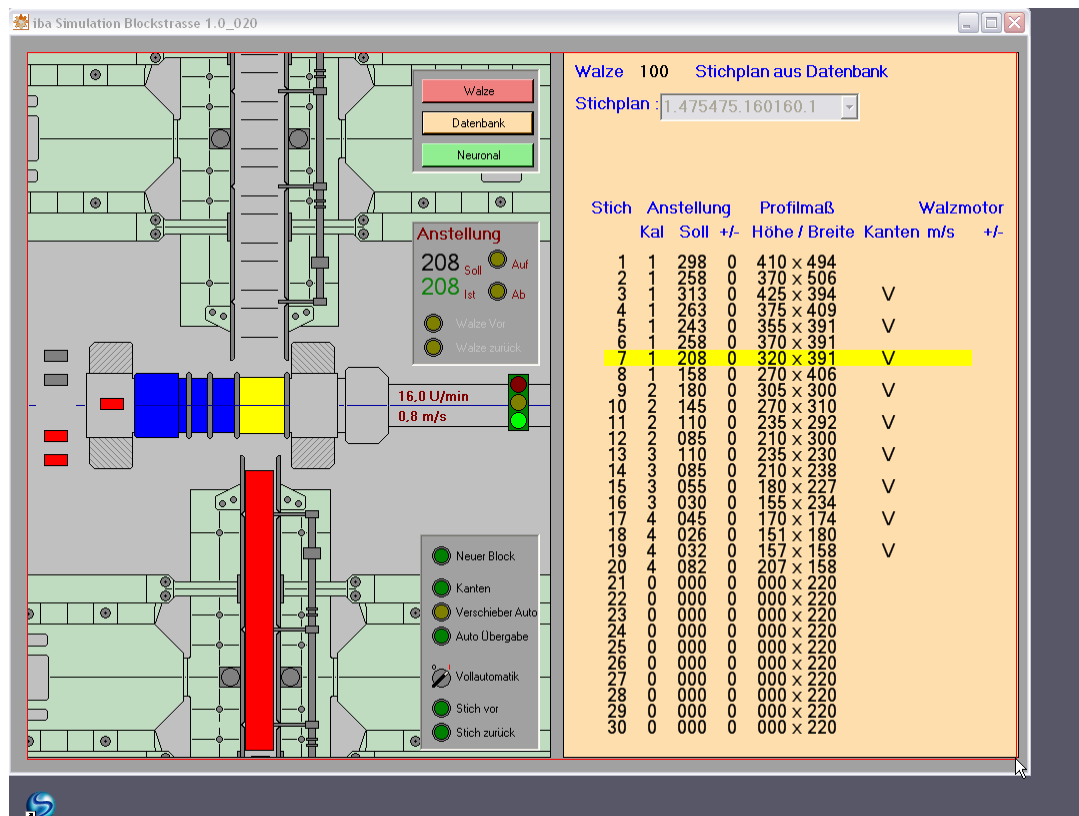


Figure 22: Selected recording area

6.3 Preview

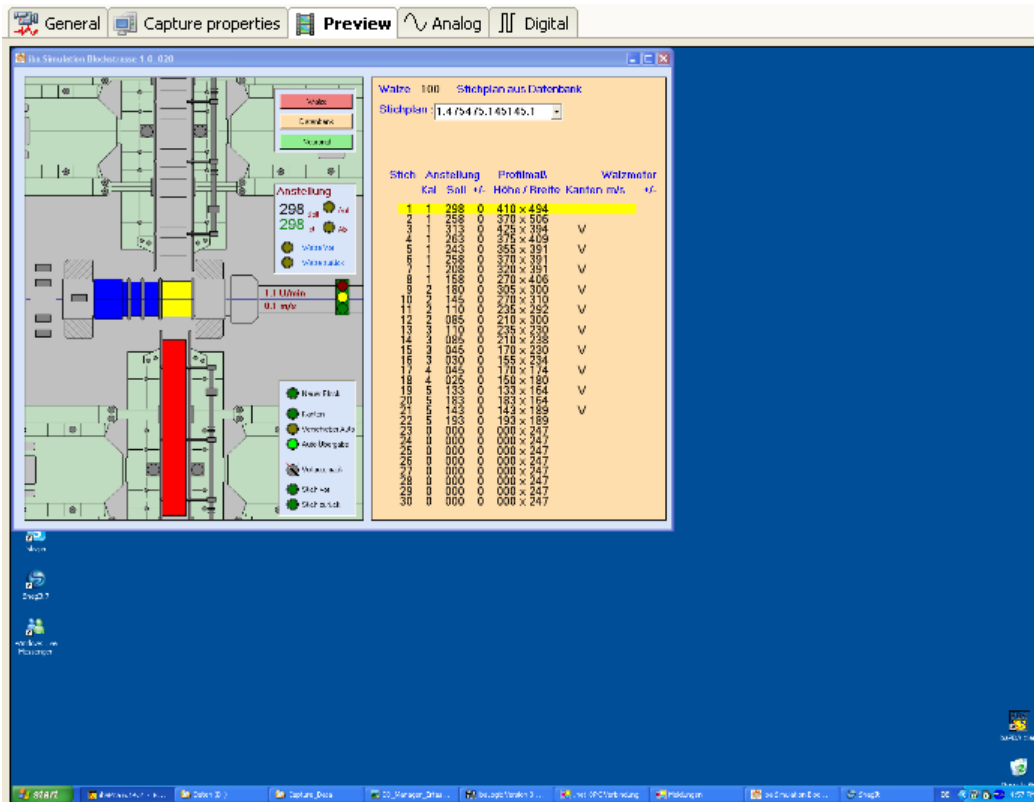


Figure 23: Preview tab

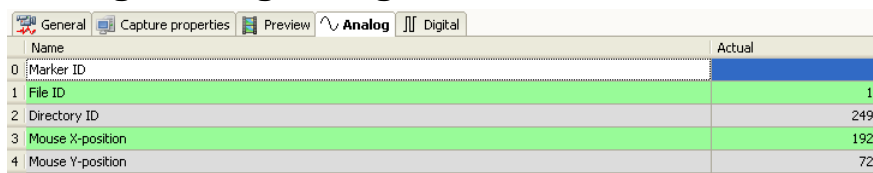
The "Preview" tab depicts a preview of the area that will be recorded. When you have selected to record only a region instead of the entire screen, the recording area is marked with a red frame.



Note

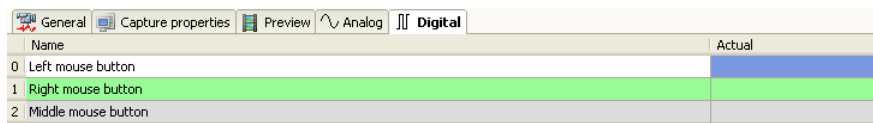
A connection to the *ibaCapture-HMI* instance needs to be made before the preview tab will depict anything except the text "Not connected".

6.4 Analog and digital signals



Name	Actual
0 Marker ID	6
1 File ID	13
2 Directory ID	2492
3 Mouse X-position	1923
4 Mouse Y-position	726

Figure 24: Analog tab



Name	Actual
0 Left mouse button	0
1 Right mouse button	0
2 Middle mouse button	0

Figure 25: Digital tab

A number of digital and analog signals are associated with every *ibaCapture-HMI* module. You can inspect the current value of these signals in the “Analog” and “Digital” tabs of the *ibaCapture-HMI* module configuration dialog. These signals are no different than signals under other *ibaPDA* modules, which means they will be written to the .dat file and can be viewed in the *ibaPDA* recorder window by dragging them from the signal tree, etc ...

The analog signals are:

- ☐ “Marker ID”. In the video files, markers are placed at certain time intervals enabling *ibaAnalyzer* to synchronize the videos with the measurement data. These markers have a specific numeric “ID”. This signal gives the ID of the last inserted marker. Along with the next two signals, this signal is needed for *ibaAnalyzer* to function properly. These signals are visible to the user for diagnostic purposes.
- ☐ “File ID”. Each video file (.fbr file) has a name consisting of a numeric value. This signal gives this numeric value, i.e. it is the name of the video file that is currently being written.
- ☐ “Directory ID”. The video files are stored in subdirectories of the specified location, one subdirectory for each day. The name of the subdirectory is a numeric value. This signal gives this numeric value, i.e. it is the name of the subdirectory the current video file is being written in.
- ☐ “Mouse X-position”. Gives the X-coordinate of the mouse cursor on the computer that is being captured.
- ☐ “Mouse Y-position”. Gives the Y-coordinate of the mouse cursor on the computer that is being captured.

The digital signals are:

- ☐ “Left mouse button”. TRUE if the left mouse button of the mouse on the computer that is being captured is depressed, FALSE otherwise.
- ☐ “Right mouse button”. TRUE if the right mouse button of the mouse on the computer that is being captured is depressed, FALSE otherwise.
- ☐ “Middle mouse button”. TRUE if the middle mouse button of the mouse on the computer that is being captured is depressed, FALSE otherwise.

7 Offline viewing with the ibaAnalyzer

7.1 Showing image sequences

Once the data has been recorded, it can be analyzed offline using *ibaAnalyzer*.



Figure 26: Offline analysis with ibaAnalyzer

ibaAnalyzer is a powerful tool for analyzing complex data recorded using *ibaPDA* and *ibaCapture-HMI*.



This manual only deals with the additional functions for *ibaCapture-HMI*. All the basic and advanced settings in *ibaAnalyzer* can be found in the *ibaAnalyzer* manual.

We will now assume that you have created an analysis procedure and have loaded the measuring signals you selected into one or more signal strip.

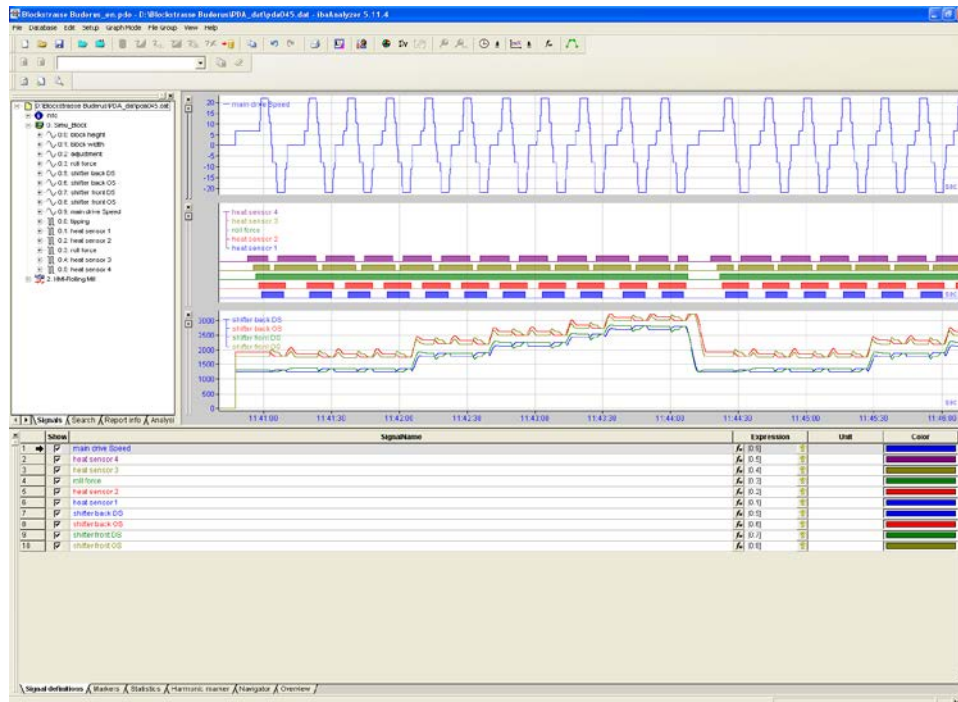


Figure 27: Measured signals in signal strips

The figure above shows the measured values in signal strips. The signal tree contains the measured values and the ibaCapture modules.

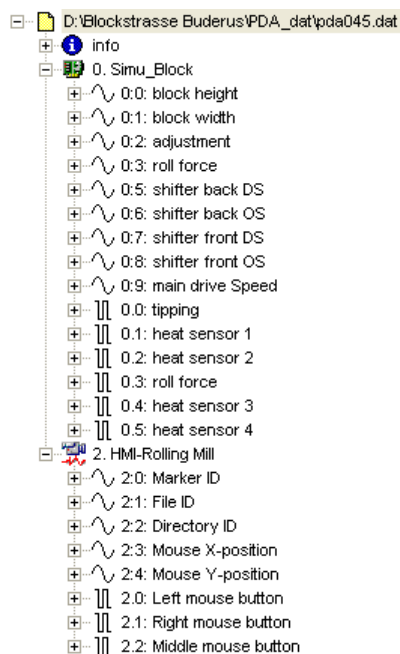


Figure 28: Signal tree of data file

The individual signals of the *ibaCapture-HMI* modules can be made into a signal strip in the usual manner.

The "Info" branch contains important module information such as module names and directory paths.

To display the image sequences, select the module and drag it to the signal strip area. Alternatively, double click the ibaCapture module to load the video file.

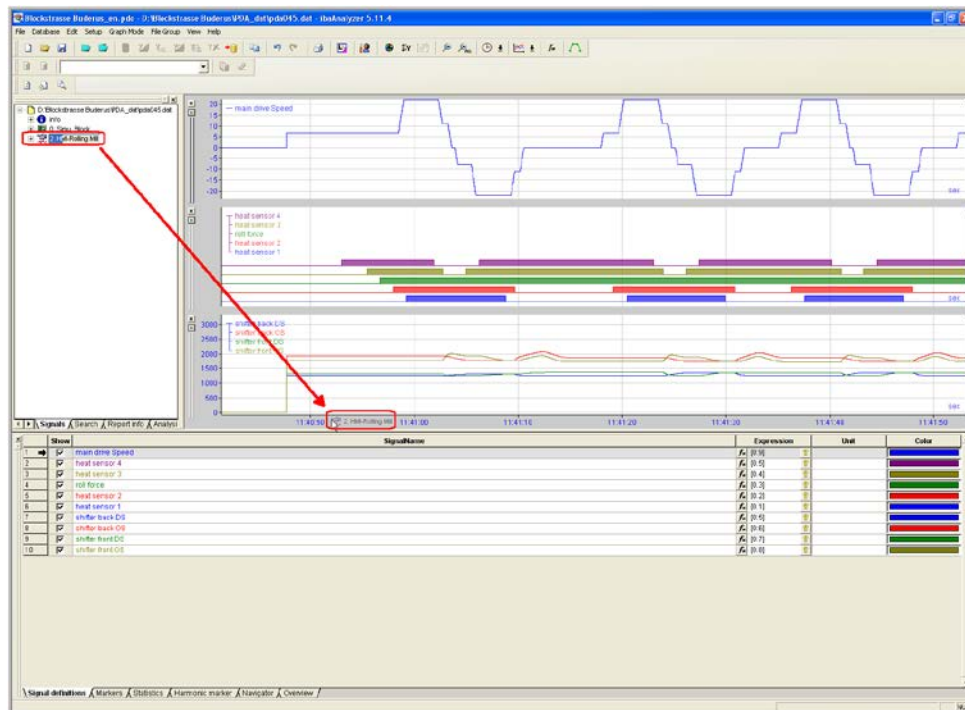


Figure 29: Opening the video window

A video window containing the image sequence should now open (see figure below).



Figure 30: Video window open, showing image sequence

You can now use the mouse to drag the video window and position it in the ibaAnalyzer. When releasing the window near the edge of ibaAnalyzer it will dock automatically. When dragging into an already docked window (like the signal tree, signal grid or another docked video) or “bar” of docked windows, the window will dock alongside the windows. To prevent this docking, you can press the “Ctrl”-key.

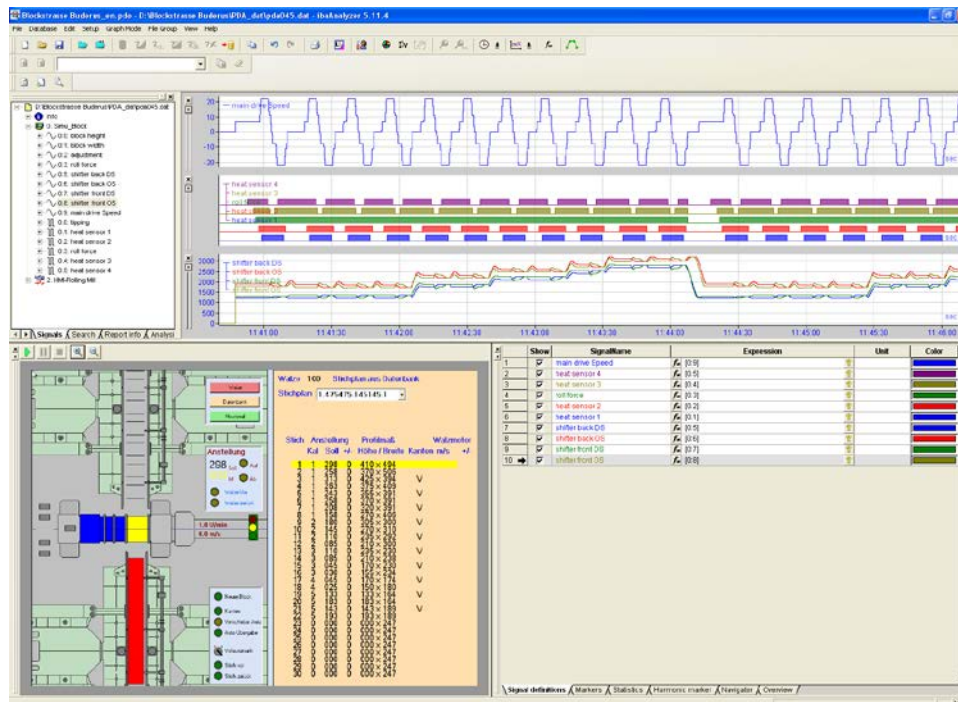


Figure 31: Positioning of the video window

The toolbar in the video window contains five controls for the sequence replay.

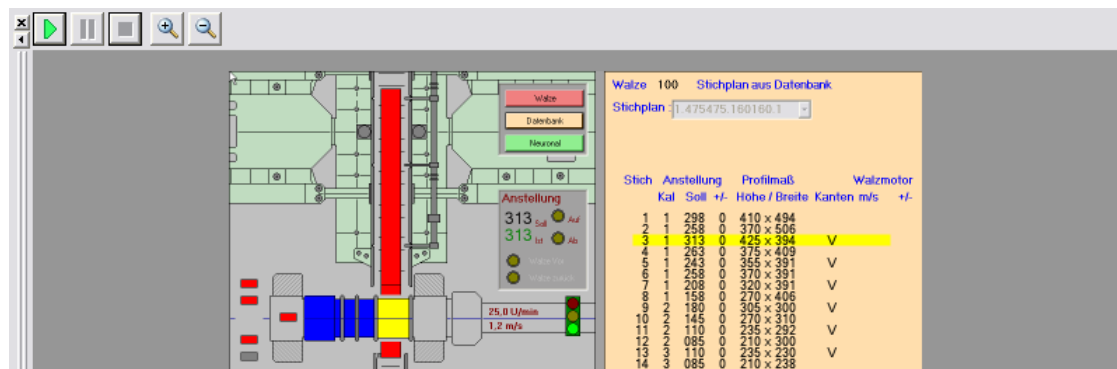







Figure 32: Operation of video window

-  Start: this button starts the sequence playback
-  Pause: interrupts and stops playback.
-  Stop: interrupts and stops playback, repositions the video back at the beginning.
-  Zoom in: enlarges the view of the image
-  Zoom out: reduces the view of the image

7.2 Evaluating measured signals using video recording

Once *ibaAnalyzer* has been configured with all the necessary measuring signals and image sequences, the measured data can be evaluated and the measured values viewed in relation to the image sequences.

To do this, activate the markers and position them anywhere on the signal strip. The markers show the current measured values recorded for the image sequences.

The image sequences are linked to the measured values by a shared time base.

If you move the marker X1, the image sequence follows the movements and the video window shows you the associated image.

The *ibaAnalyzer* manual describes how to activate the markers.

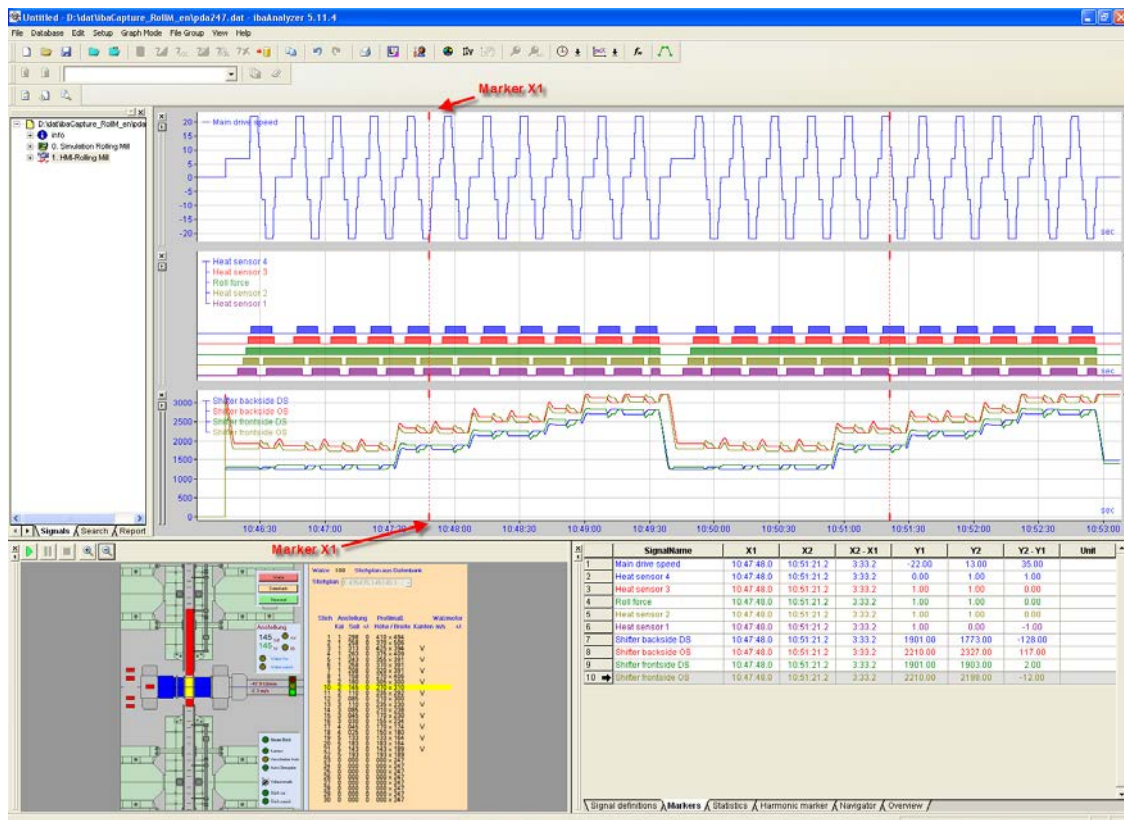
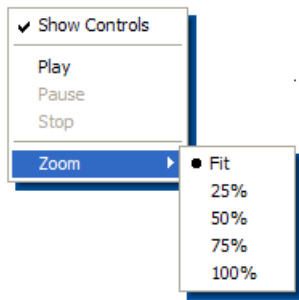


Figure 33: Markers




You can also run through the measured values "automatically", for example in order to observe specific measured values and the entries on an HMI computer simultaneously. Start the video sequence with "Play" (▶). Use the "Pause" (⏸) and "Stop" (■) buttons to interrupt and stop the video sequence and therefore the run-through of the measured values. The difference between "Pause" and "Stop" is that the latter will position the video back at the beginning (start time of the .dat file).

When playing image sequences, the marker X1 moves along the signal strip accordingly.

7.3 Context menu



When clicking with the right mouse button on the video, a context menu will appear giving you the following options:

- ☐ „Show Controls”: Here you can show or hide the toolbar containing the buttons to operate the video window. When hiding the toolbar, slightly more space is available for the window while the video can still be operated from the context menu.
- ☐ „Play”: Behaves identical as pressing the "Play" () button.
- ☐ „Pause”: Behaves identical as pressing the "Pause" () button.
- ☐ „Stop”: Behaves identical as pressing the "Stop" () button.
- ☐ „Zoom”: Here you can select the zoom level :
 - „Fit”, expands or shrinks the video until it fits in the video window.
 - „25%”, shows the video at one quarter of its original size.
 - „50%”, shows the video at half of its original size.
 - „75%”, shows the video at two thirds of its original size.
 - „100%”, shows the video at its original size

Note that for the last four zoom levels, scroll bars will be present if the video is larger than the video window, allowing you to reposition the video so the area you are interested in is visible.

7.4 Full screen

When double clicking with the left mouse button on the video, the video window will take the entire screen. Note that the video controls are hidden in this mode; you can however still operate the video with the context menu. To return to normal mode, double click again on the video.

7.5 ibaCapture-HMI preferences

In the ibaAnalyzer preferences dialog a tab page titled “ibaCapture” is present where some options are available to modify the *ibaCapture-HMI* default behavior.



Other documentation

If you are unfamiliar with ibaAnalyzer preferences and setup, refer to chapter 2.10 “Setup” in the “ibaAnalyzer, analyzer program” manual.

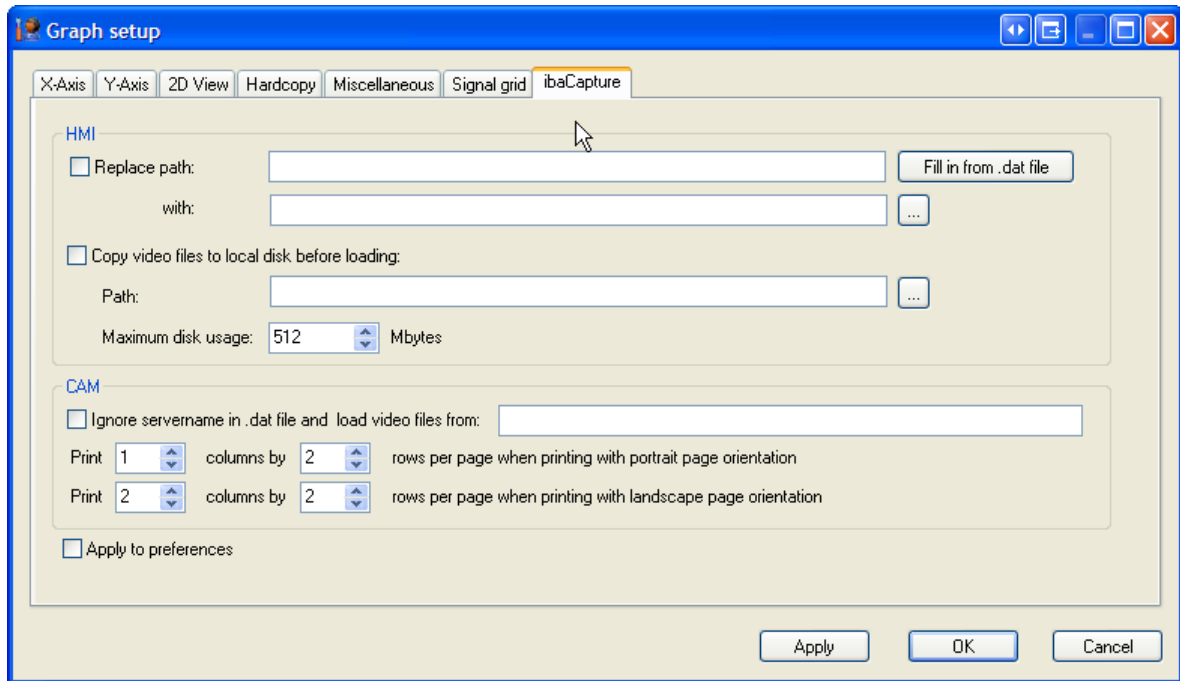



Figure 34: ibaCapture-HMI Voreinstellungen

The “ibaCapture” tab consists out of two sections, “HMI” and “CAM”, only “HMI” is relevant to *ibaCapture-HMI*. Two options are currently present:

- ☐ “Replace path”. This is used to specify an alternative path if you have moved or copied the movie files.
- ☐ “Copy video files to local disk before loading”: With this option smoother playback can be achieved by allowing ibaAnalyzer to copy the files to a local hard disk before loading them.

7.5.1 Replace path

It is not recommended to move the video files after they are recorded; however for demo purposes it might be necessary to copy the files to another computer. Since the location of the original files is stored in the .dat file and used by ibaAnalyzer, the videos are not viewable anymore unless you specify with this option to use an alternative path.

When using this option you need to specify the original path in the first text box and the replacement path in the second text box. Alternatively you can press the  button which will open a folder browser dialog allowing you to browse for the replacement path. Only the videos from the HMI-modules for which the original path matches with what you have typed in the first text box (Replace...) will be loaded from the alternative path.

You can also specify a partial original path and replacement path; in this case all videos in the HMI-modules for which the original path contains what you have typed in the first textbox will load from an alternative path. The alternative path will be the original path with what you have typed in the first textbox replaced by what you have typed in the second textbox.

For example, suppose you have in the .dat file two HMI modules where one takes its videos from the location “\\file-server\hmi-videos\screen1” and the other one from “\\file-server\hmi-videos\screen2” and you have moved the video files from the first module to “\\other-server\hmi-videos\screen1” and the files

from the second module to “\\other-server\hmi-videos\screen2”. It then suffices to type “\\file-server\hmi-videos\” in the first textbox and “\\other-server\hmi-videos\” in the second textbox to have both modules loading their videos from the new location.

If you click the <Fill in from .dat file> button, ibaAnalyzer looks at all video paths in all modules of the opened .dat files and sees what part of the path they have in common and gives that as suggestion for the "Replace path" first textbox.



Important note


When copying .fbr files, make sure you do not rename the .fbr files. Also copy the file in the new location to a subdirectory with the same name as the subdirectory of the original location the .fbr file was found. Otherwise the “Replace path” functionality will not work.



Important note

You can specify the “Replace path” parameters in the general preferences as well as in the analysis setup. The first is, however, not recommended as it also applies to all future HMI videos that are loaded. This is a common reason why inexperienced users are confused that their videos are not loading.

7.5.2 Copy video files to local disk before loading

Here you can specify a local path where the .fbr files are copied to before they are loaded (or press the  button to browse for a path). This improves playback performance if you are doing analyses that stretch over a time period that is several times the recording length of a single .fbr file and you need to go back and forth a lot between different time stamps, resulting in reloading of previous loaded .fbr files. Performance might also be improved because the .fbr files were already copied to the local disk by this option in a previous *ibaAnalyzer* session.

The amount of disk space that will be used can be specified as well. When this level is achieved, the least recently used .fbr files get deleted from the local hard drive.

8 Installation

This chapter is about the installation of the *ibaCapture-HMI* software that needs to be installed on the computers which screens you wish to record. No additional components need to be installed for *ibaAnalyzer* and *ibaPDA*.

8.1 System requirements

Software

- ☐ Windows XP Professional, Windows 2000 Professional (with SP4 + Update rollup 1), Windows Server2003, Windows Vista, Windows 7 32/64 bit, Windows Server 2008 32/64 bit, Windows 8, Windows 2012 Server, Windows 8.1 und Windows 2012 Server R2
- ☐ ibaPDA-V6.13 (including .NET Framework 2.0 or higher)
ibaPDA-V6.23.1 or more recent for multiple recordings
- ☐ .NET Framework 4.0 and 4.5 are supported
- ☐ ibaAnalyzer V5.8.2 (freeware) or higher

Hardware

- ☐ IBM-compatible PC, P3 800 MHz, 512 MB RAM, 20 GB HDD
- ☐ Memory space for video files, max. 5 MB/min at 800 x 600 pixels
- ☐ Monitor and graphics card, Super VGA (800x600) or higher

8.2 Installation

To start the installation, run the "ibaCapture-HMI Setup vX.Y.Z.exe" program (where X.Y.Z is the current version of the software) and follow the instructions in the setup wizard. At the end of the setup, you'll have the option to start the *ibaCapture-HMI* manager.

9 Support and contact

Support

Phone: +49 911 97282-14
Fax: +49 911 97282-33
Email: support@iba-ag.com



Note

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

Contact

Headquarters

iba AG
Koenigswarterstr. 44
90762 Fuerth
Germany

Phone: +49 911 97282-0
Fax: +49 911 97282-33
Email: iba@iba-ag.com
Contact: Mr Harald Opel

Regional and worldwide

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

www.iba-ag.com.

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