ibaPDA-Interface-FBGS

Data interface for FBGS

Manual

Issue 1.1

Measurement Systems for Industry and Energy

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The content of this publication has been checked for compliance with the described hardware and software. Nevertheless, discrepancies cannot be ruled out, and we do not provide guarantee for complete conformity. However, the information furnished in this publication is updated regularly. Required corrections are contained in the following regulations or can be downloaded on the Internet.

The current version is available for download on our web site www.iba-ag.com.

Version	Date	Revision	Author	Version SW
1.1	06-2025	Update licenses, additional information on calibration	nm	8.11.0

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Contents

1　About this documentation

This documentation describes the function and application of the software interface *ibaPDA-Interface-FBGS*.

Other documentation

This documentation is a supplement to the *ibaPDA* manual. Information about all the other characteristics and functions of *ibaPDA* can be found in the *ibaPDA* manual or in the online help.

1.1　Target group and previous knowledge

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

For the handling of *ibaPDA-Interface-FBGS* the following basic knowledge is required and/or useful:

■　Basic knowledge of *ibaPDA*

■　Knowledge of configuration and operation of the relevant measuring devices/measuring systems

1.2　Notations

In this manual, the following notations are used:

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

1.3   Used symbols

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

Danger!

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

■ Observe the specified measures.

Warning!

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

■ Observe the specified measures.

Caution!

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

■ Observe the specified measures

Note

A note specifies special requirements or actions to be observed.

Tip

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

Other documentation

Reference to additional documentation or further reading.

2   System requirements

The following system requirements are necessary for the use of the FBGS data interface:

Software

■ *ibaPDA* v8.10.0 or higher

■ License for *ibaPDA-Interface-FBGS*
(supports one interrogator device, regardless of the number of channels)

   If you have more than one device, you will need additional *one-step-up interface FBGS* licenses for each additional device. A total of up to 256 devices are possible.

For further requirements for the used computer hardware and the supported operating systems, refer to the *ibaPDA* documentation.

Hardware

■ FBGS interrogator with Ethernet interface, e.g. FBG-Scan 904-EP

License information

Order no.	Product name	Description
31.001017	ibaPDA-Interface-FBGS	*ibaPDA* data interface for connecting an FBGS interrogator (device), regardless of the number of channels
31.101017	one-step-up-Interface-FBGS	Extension license for an additional FBGS interrogator (device) Maximum of 255 step-up licenses possible

3   FBGS interface

The FBGS interface can be used to measure data from sensors, which are based on the FBG measuring principle and are connected to an optical measuring device, the so-called interrogator.

The abbreviation FBG means Fibre Bragg Gratings, a special opto-electronic measuring method with optical fibers by FBGS Technologies.

Other documentation

Further information can be found on the manufacturer's website:
https://fbgs.com/

Out of the different applications which are possible with this measuring method *ibaPDA* supports only temperature sensing. If the fiber is subjected to loads, e.g. due to temperature changes, characteristic wavelengths of the light fed in by the measuring device are reflected at the Bragg gratings.

Using a TCP/IP connection, the FBGS interrogator periodically sends the peak positions and corresponding intensities to *ibaPDA*. The FBGS module in *ibaPDA* interprets this data and automatically converts it into a temperature value.

There are measuring devices (interrogators) available for 4, 8 and 15 channels. One channel corresponds to one optical fiber.

ibaPDA only supports interrogators with an Ethernet interface, such as

- FBG-Scan 80x-EP

- FBG-Scan 80x-EP

(x = 4, 8, 15)

3.1   Configuration and engineering ibaPDA

The engineering for *ibaPDA* is described in the following. If all system requirements are fulfilled, *ibaPDA* displays the *FBGS* interface in the signal tree of the I/O Manager.

3.1.1   Interface settings

The interface has the following functions and configuration options:

Set all values to zero when the connection to an interrogator is lost
If this option is enabled, all measured values of an interrogator are set to zero as soon as the connection is lost. If this option is disabled, *ibaPDA* will keep the last valid measured value at the time the connection was lost in the memory.

Start acquisition even if an interrogator is not accessible
If this option is enabled, the acquisition will start even if *ibaPDA* was not able to establish a connection to an interrogator or if there is an error in the configuration. In case of a an error, a warning is indicated in the validation dialog. If the system has been started without a connection to the interrogator, *ibaPDA* will periodically try to connect to the interrogator.

<Open log file>
Messages relating to the interface are written to a separate log file. To open the current log file, click on <Open log file>.

<Reset statistics>
Click this button to reset the calculated times and error counters in the table to 0.

Connection table
For each connection, the table shows the connection status, the current values for the update time (actual value, average, min. and max.) as well as the data size. In addition, there is an error counter for the individual connections during the acquisition.

For more information on the connection table, see ↗ *Connection table*, page 22.

3.1.2 Available modules

The interface *FBGS* provides a hierarchic module structure.
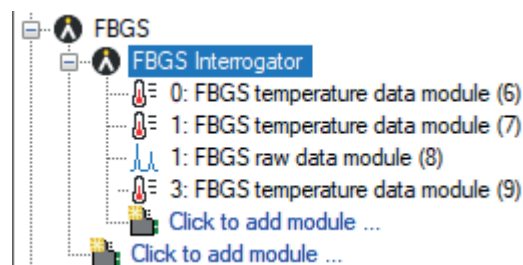
On the first level under the interface, create an *FBGS Interrogator* module for each interrogator. An FBGS interrogator module itself has no analog signals or digital signals. For the configuration of the measured data, there are two different types of submodules available under each main module:

■ FBGS temperature data module

■ FBGS raw data module

The modules and their configuration are described in the following.

3.1.3   Adding a module

Add an FBGS Interrogator module for each interrogator.

Procedure

1. Click on the blue link *Click to add module* located under each data interface in the *Inputs* or *Outputs* tab.

2. Select the desired module type in the dialog box and assign a name via the input field if required.

3. Confirm the selection with <OK>.
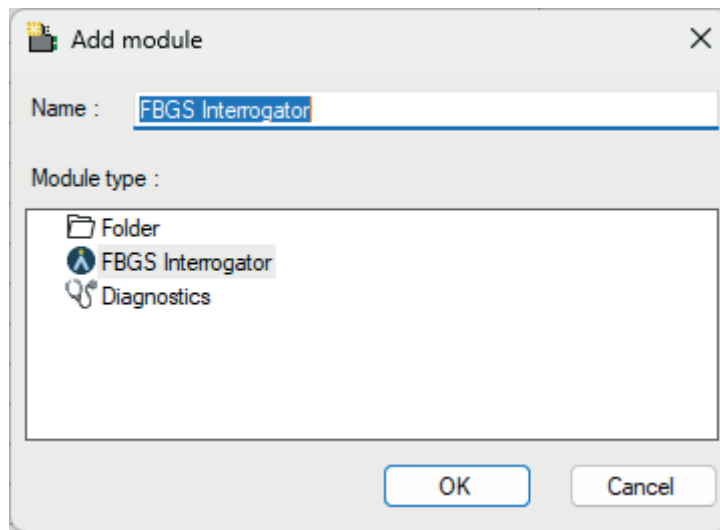
3.1.4   Configuring the FBGS module

Proceed as follows to configure the FBGS Interrogator module and generate the data modules associated with the channels.

1. Select the module for the desired interrogator and define the settings in the *General* tab, see ⌐ *General module settings*, page 10.

2. Configure and test the connection to the interrogator in the *Connection* tab, see ⌐ *Parameter*, page 11.

→ If the connection is successful, the Status tab displays information about the interrogator and the connected channels are displayed.

3. Optionally, adjust the values for the individual channels, see ⌐ *Channels*, page 13.

4. If necessary, adjust the calibration for individual channels, see ⌐ *Connection settings – Calibration*, page 14.

5. If a raw data module is to be created for the channels, activate the option in the *Include raw data* column.

6. To create the data modules, click on ∿.

→ *ibaPDA* generates a temperature data module for all configured channels of the interrogator and, if activated, a raw data module. The modules are displayed as submodules under the main module in the interface tree of the I/O manager.

7. Make the general settings for the submodules, see ↗ *Settings of the submodules*, page 16.

8. If necessary, adjust the configuration of the analog and digital signals, see ↗ *Signal configuration*, page 17.

3.1.5 General module settings

To configure a module, select it in the tree structure.

All modules have the following setting options.

Basic settings

Module Type (information only)
Indicates the type of the current module.

Locked
You can lock a module to avoid unintentional or unauthorized changing of the module settings.

Enabled
Enable the module to record signals.

Name
You can enter a name for the module here.

Comment
You can enter a comment or description of the module here. This will be displayed as a tooltip in the signal tree.

Module No.
This internal reference number of the module determines the order of the modules in the signal tree of *ibaPDA* client and *ibaAnalyzer*.

Timebase
All signals of the module are sampled on this timebase.

Use module name as prefix
This option puts the module name in front of the signal names.

FBGS

Read-only
If enabled, *ibaPDA* does not send any commands to the FBGS interrogator. In this case, configure the FBGS interrogator with another tool, e.g. the FBGS standard software, and make sure that the parameters in *ibaPDA* are up-to-date. This option is disabled by default.

Scan rate
Number of scans per second that the FBGS interrogator should execute for the spectrum of each channel

Enter a value between 1 Hz and 500 Hz.

3.1.6   Connection settings

In the *Connection* tab, you configure and test the connection to the respective interrogator and to the connected channels.

Note

> The calibration files for each channel must be loaded for connection setup and connection test. Therefore, first create the channels in the table and load the appropriate calibration file in the *Calibration status* column.
>
> You will receive the calibration file from the manufacturer for each fiber optic cable.

Parameter

IP address
Enter the IP address or the host name of the FBGS interrogator.

Command port
Port via which commands are sent from *ibaPDA* to the interrogator

Change the preset value if required. If the *Read-only* option is activated in the module settings, *ibaPDA* does not send any commands, see ⬈ *General module settings*, page 10.

Data port
Port via which data is received from all active channels of the interrogator

Change the preset value if required.

Timeout
Here you can specify a value for the timeout in seconds for establishing the connection and for read accesses. If the time set here is exceeded, *ibaPDA* declares the interrogator unavailable.
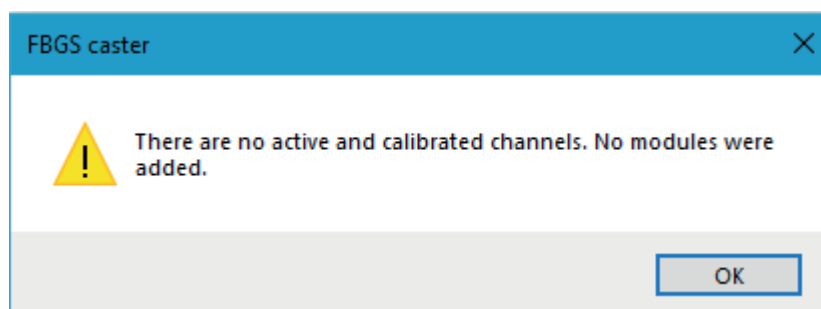
<Test connection>
If you click on this button, the connection to the specified IP address is tested. *ibaPDA* also attempts to open the specified ports. If the connection can be established successfully, the *Status* tab displays information about the interrogator and the following dialog appears:
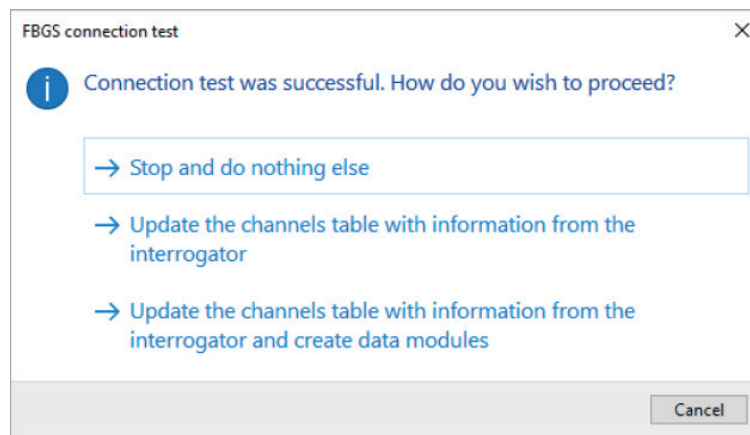
- ■ "Stop and do nothing else"

- ■ "Update the channels table with information from the interrogator"

    Updates the table.

- ■ "Update the channels table with information from the interrogator and create data modules"

    Updates the table and *ibaPDA* automatically generates data modules for the active channels.

If no connection can be established, an error message appears in the *Status* tab (in the lower part of the *Connection* tab). One possible reason for a failed connection test is missing calibration data. In this case, an error message appears.

Channels

Toolbar
The following buttons are available in the toolbar.

+	Add channel
✕	Remove channel
⋀⋀	Get spectrum of the channel The spectrum is visualized in the Spectrum tab, see ↗ *Connection settings – Spectrum*, page 15
↰	Reset the wavelength of the low temperature (calibration temperature) for the selected channel to the original value of the loaded calibration file.
◇	Clear calibration data for the selected channel The channel is then set to an uncalibrated state.
∿	Generate data modules (temperature data and raw data) for the configured channels

Id
Automatic index for referencing the channel in the data modules

Name
Name of the channel

Active
Specifies whether data should be measured for this channel. If this option is disabled, the FBGS interrogator does not send any data for this channel and the corresponding data modules in *ibaPDA* are deactivated when the I/O configuration is saved or when the data modules are generated manually.

Include raw data
If enabled, *ibaPDA* generates raw data modules when the I/O configuration is saved or when the data modules are generated manually.

Calibration status
Indicates whether data is currently available. Click on the <Load...> button to load a calibration file for the current channel.

Integration time
Integration time of the channel in µs

High sensitivity
Enable the option to set a high sensitivity for the channel.

Threshold
The noise threshold of the channel

The threshold value is used to detect peaks in the spectrum. Set the threshold value as low as possible, but above the noise and below the peak maxima.

Optimization

If you click on the <Optimization> button, the FBGS interrogator determines the optimum values for *Integration time* and *Threshold* value, regardless of whether the *High sensitivity* option is activated. The optimized values are displayed in the table.

Auto optimization

If enabled, the FBGS interrogator automatically determines the relevant parameters during data acquisition.

Low limit/High limit

Upper and lower limit for the optimization process of the FBGS interrogator

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Other documentation

Further information on the parameters can be found in the manufacturer's documentation for the FBGS interrogator.

3.1.6.1   Connection settings – Calibration

If you have loaded a calibration file, you can display the calibration information it contains in the *Calibration* tab.

Status	Calibration	Spectrum	

WindowHigh:	1,0	µm
WindowLow:	1,0	µm
Calibration temperature:	20,0	°C	Calibrate

DGT	Wavelength at 20 °C	Wavelength at 200 °C
0	1529,991 nm	1532,105 nm
1	1533,729 nm	1535,862 nm
2	1537,523 nm	1539,663 nm
3	1541,342 nm	1543,507 nm
4	1545,156 nm	1547,325 nm
5	1548,963 nm	1551,145 nm
6	1552,732 nm	1554,929 nm
7	1556,560 nm	1558,742 nm
8	1560,319 nm	1562,525 nm
9	1564,135 nm	1566,332 nm
10	1567,929 nm	1570,131 nm

WindowHigh/WindowLow

Wavelengths used for the peak window method

Overwrite the displayed values if necessary.

Calibration temperature

You can also recalibrate the fiber at its lower temperature point. The calibration data for the high temperature cannot be changed in *ibaPDA*. Enter a new calibration temperature if required.

<Calibrate>

When you click on the button, *ibaPDA* retrieves the current peak wavelengths and uses these new values when calculating the temperature values of the temperature data modules.

3.1.6.2   Connection settings – Spectrum

In the *Spectrum* tab, you can visualize the complete spectrum of the selected channel and thus check the proper functioning of the sensors.
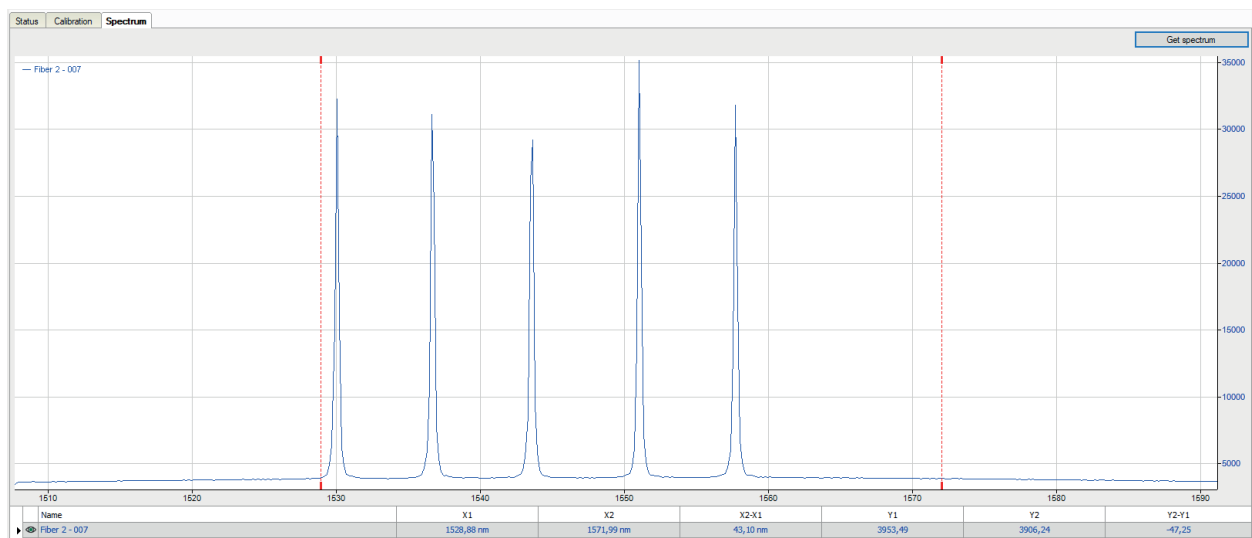
Similar to a trend graph in *ibaPDA*, you can zoom in and out of the spectrum and move the markers.

<Get spectrum>

Click on the button to update the spectrum of the channel.

3.1.7   Settings of the submodules

The following settings are available for temperature data modules and raw data modules.

Basic settings

Module Type (information only)
Indicates the type of the current module.

Locked
You can lock a module to avoid unintentional or unauthorized changing of the module settings.

Enabled
Enable the module to record signals.

Name
You can enter a name for the module here.

Comment
You can enter a comment or description of the module here. This will be displayed as a tooltip in the signal tree.

Module No.
This internal reference number of the module determines the order of the modules in the signal tree of *ibaPDA* client and *ibaAnalyzer*.

Timebase
All signals of the module are sampled on this timebase.

Use module name as prefix
This option puts the module name in front of the signal names.

Prefix channel index to module name
This option puts the channel name in front of the module name. The channel name corresponds to the value in the Channel index field.

Data (temperature data modules only)

Temperature unit
Set the desired unit. You can choose between °C and °F.

FBGS

Channel index
Index of the channel on the interrogator for which data is to be recorded.

3.1.8   Signal configuration

In the *Analog* and *Digital* tabs, you can configure the signals for the data modules. The *Digital* tab is only available for temperature data modules.

Other documentation

Detailed descriptions of the columns and how to fill in the signal tables can be found in the documentation for *ibaPDA*.

Analog tab

The *Analog* tab lists analog signals for the wavelengths and corresponding peak powers. The list of analog signals is created automatically based on the channel index that you have configured on the *General* tab of the data module.

	Name	Unit	Gain	Offset	Active
0	Raw wavelength 0	nm	1	0	☑
1	Raw wavelength 1	nm	1	0	☑
2	Raw wavelength 2	nm	1	0	☑
3	Raw wavelength 3	nm	1	0	☑
4	Raw wavelength 4	nm	1	0	☑
5	Raw wavelength 5	nm	1	0	☑
6	Raw wavelength 6	nm	1	0	☑
7	Raw wavelength 7	nm	1	0	☑
8	Raw wavelength 8	nm	1	0	☑
9	Raw wavelength 9	nm	1	0	☑
10	Raw peak power 0		1	0	☑
11	Raw peak power 1		1	0	☑
12	Raw peak power 2		1	0	☑
13	Raw peak power 3		1	0	☑
14	Raw peak power 4		1	0	☑
15	Raw peak power 5		1	0	☑
16	Raw peak power 6		1	0	☑
17	Raw peak power 7		1	0	☑
18	Raw peak power 8		1	0	☑
19	Raw peak power 9		1	0	☑

Name

Enter a meaningful plain text name for the signal.

Unit (analog signals only)

Assignment of a physical unit for the signal

You can enter a maximum of 11 characters, the field is only considered a comment field. The unit is always displayed in conjunction with a numerical display of the values.

Gain, Offset (analog signals only)

Specification of gain and offset for scaling the incoming values

The values describe a linear characteristic curve for scaling. If incoming values are specified in physical units, you can ignore this function, i.e. Gain = 1 and Offset = 0.

Active

Activation or deactivation of the respective signal

Digital tab

In the *Digital* tab, *ibaPDA* generates the following signals for all peaks in the calibration file:

- *Connected*:

  Indicates whether the connection to the FBGS interrogator is active.

- *Number of peaks conflict*:

  If 1, then the number of measured peaks does not match the number of peaks in the calibration file

- *Max peak intensity > 90%*:

  Indicates whether there is at least one peak with an intensity of 90% of the saturation intensity. If this is the case, lower the integration time or deactivate the *High sensitivity* mode, see ↗ *Channels*, page 13.

- *Min peak intensity < 4/3 noise threshold*:

  If 1, then there is at least one peak with an intensity less than 4/3 of the noise threshold. If cleaning the fibers does not solve the issue, try increasing the integration time or lowering the *Threshold* value (noise threshold), see ↗ *Channels*, page 13.

- *Peak separation*:

 Indicates whether the distance between two adjacent peaks is less than 0.8 nm. In this case, incorrect measurements may occur.

4   Diagnostics

4.1   License

If the interface is not displayed in the signal tree, you can either check in *ibaPDA* in the I/O Manager under *General – Settings* or in the *ibaPDA* service status application whether your license for the interface *ibaPDA-Interface-FBGS* has been properly recognized. The number of licensed connections is shown in brackets.

The figure below shows the license for the *Codesys Xplorer* interface as an example.
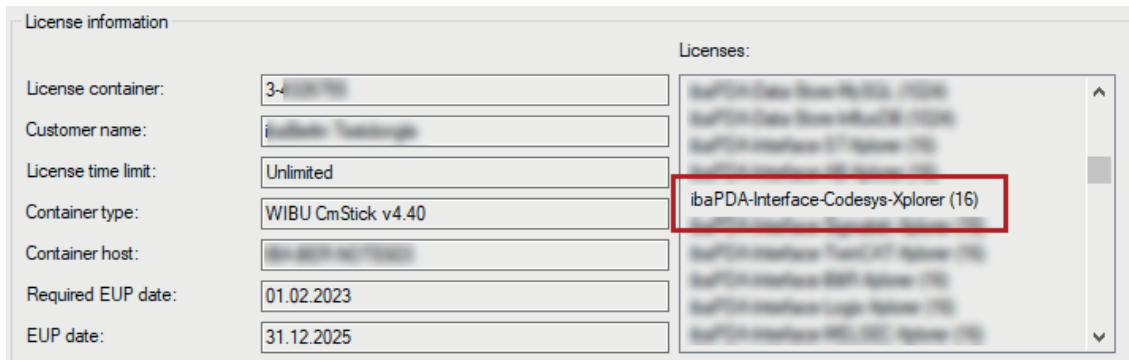
4.2   Visibility of the interface

If the interface is not visible despite a valid license, it may be hidden.

Check the settings in the *General* tab in the *Interfaces* node.

Visibility

The table *Visibility* lists all the interfaces that are available either through licenses or installed cards. These interfaces can also be viewed in the interface tree.

You can hide or display the interfaces not required in the interface tree by using the checkbox in the *Visible* column.

Interfaces with configured modules are highlighted in green and cannot be hidden.

Selected interfaces are visible, the others are hidden:
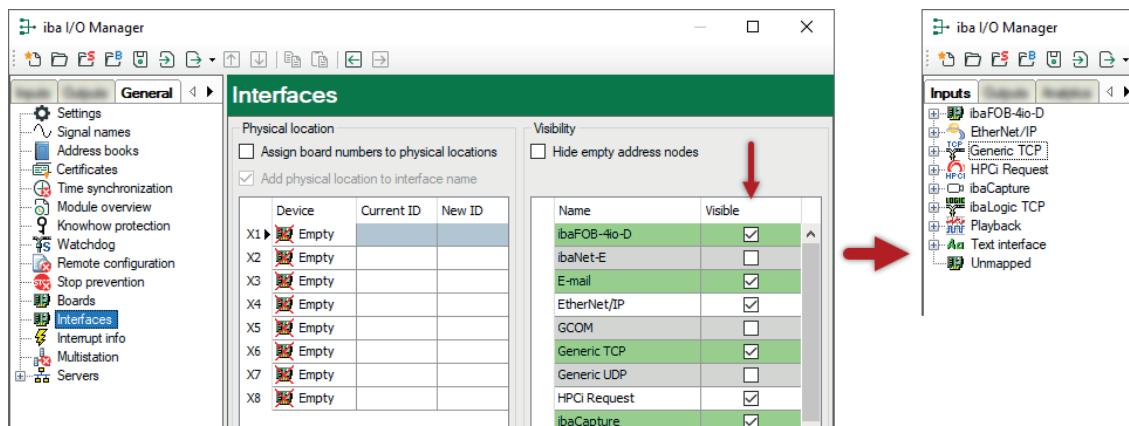
4.3   Log files

If connections to target platforms or clients have been established, all connection-specific actions are logged in a text file. You can open this (current) file and, e.g., scan it for indications of possible connection problems.

You can open the log file via the button <Open log file>. The button is available in the I/O Manager:

- for many interfaces in the respective interface overview
- for integrated servers (e.g. OPC UA server) in the *Diagnostics* tab.

In the file system on the hard drive, you can find the log files of the *ibaPDA* server (`…\ProgramData\iba\ibaPDA\Log`). The file names of the log files include the name or abbreviation of the interface type.

Files named `interface.txt` are always the current log files. Files named `Interface_yyyy_mm_dd_hh_mm_ss.txt` are archived log files.

Examples:

- `ethernetipLog.txt` (log of EtherNet/IP connections)
- `AbEthLog.txt` (log of Allen-Bradley Ethernet connections)
- `OpcUAServerLog.txt` (log of OPC UA server connections)

4.4   Connection diagnostics with PING

PING is a system command with which you can check if a certain communication partner can be reached in an IP network.

1. Open a Windows command prompt.
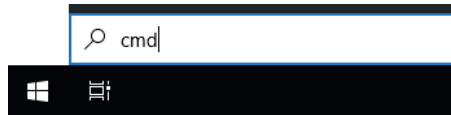
2. Enter the command "ping" followed by the IP address of the communication partner and press <ENTER>.

→   With an existing connection you receive several replies.

→   With no existing connection you receive error messages.

4.5   Connection table

The FBGS interface shows all configured connections to FBGS interrogators in a table. There is one row per connection to an interrogator.

The table columns and their meaning:

■   Name: Name of the module

■   Received spectra: Number of received datasets from the FBGS interrogator

   One dataset is a collection of peak wavelength and intensity pairs of all sensors of all configured channels (fibers)

■   Error counter: Number of communication errors that occurred

■   Response time actual, average, minimum, maximum:
   Specifies how quickly the data is received by *ibaPDA* via the TCP/IP data connection.

Additional information is provided by the background color of the table rows:

Color	Meaning
Green	The connection is OK and the data is read.
Orange	The connection is active, but the data is being read at a slower speed than configured.
Red	The connection is not active.
Gray	No connection configured.

4.6   Diagnostic modules

Diagnostic modules are available for most Ethernet based interfaces and Xplorer interfaces. Using a diagnostic module, information from the diagnostic displays (e.g. diagnostic tabs and connection tables of an interface) can be acquired as signals.

A diagnostic module is always assigned to a data acquisition module of the same interface and supplies its connection information. By using a diagnostic module, you can record and analyze the diagnostic information continuously in the *ibaPDA* system.

Diagnostic modules do not consume any license connections because they do not establish their own connection but refer to another module.

Example for the use of diagnostic modules:

- A notification can be generated, whenever the error counter of a communication connection exceeds a certain value or the connection gets lost.

- In case of a disturbance, the current response times in the telegram traffic may be documented in an incident report.

- The connection status can be visualized in *ibaQPanel*.

- You can forward diagnostic information via the SNMP server integrated in *ibaPDA* or via OPC DA/UA server to superordinate monitoring systems like network management tools.

In case the diagnostic module is available for an interface, a "Diagnostics" module type is shown in the *Add module* dialog (example: Generic TCP).
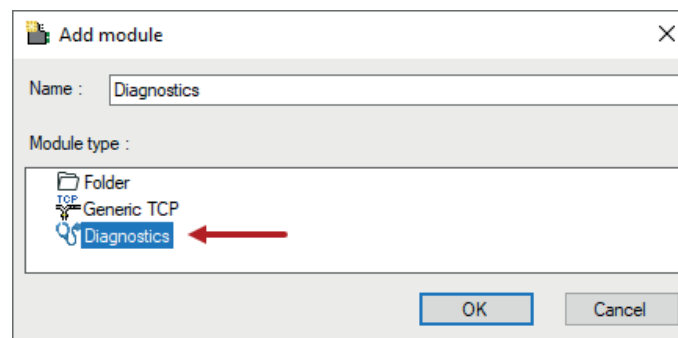
Module settings diagnostic module

For a diagnostic module, you can make the following settings (example: Generic TCP):
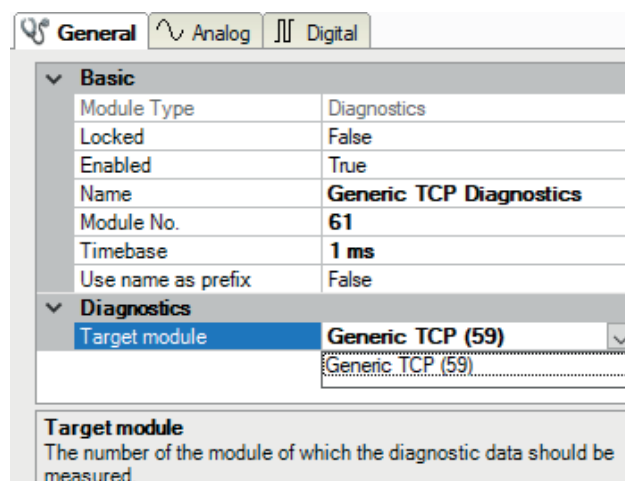
The basic settings of a diagnostic module equal those of other modules.

There is only one setting which is specific for the diagnostic module: the target module.

By selecting the target module, you assign the diagnostic module to the module on which you want to acquire information about the connection. You can select the supported modules of this interface in the drop-down list of the setting. You can assign exactly one data acquisition module to each diagnostic module. When having selected a module, the available diagnostic signals are immediately added to the *Analog* and *Digital* tabs. It depends on the type of interface, which signals exactly are added. The following example lists the analog values of a diagnostic module for a Generic TCP module.

	Name	Unit	Gain	Offset	Active	Actual
0	IP address (part 1)		1	0	☑	
1	IP address (part 2)		1	0	☑	
2	IP address (part 3)		1	0	☑	
3	IP address (part 4)		1	0	☑	
4	Port		1	0	☑	
5	Message counter		1	0	☑	
6	Incomplete errors		1	0	☑	
7	Packet size (actual)	bytes	1	0	☑	
8	Packet size (max)	bytes	1	0	☑	
9	Time between data (actual)	ms	1	0	☑	
10	Time between data (min)	ms	1	0	☑	

For example, the IP (v4) address of a Generic TCP module (see fig. above) will always be split into 4 parts derived from the dot-decimal notation, for better reading. Also other values are being determined, as there are port number, counters for telegrams and errors, data sizes and telegram cycle times. The following example lists the digital values of a diagnostic module for a Generic TCP module.

	Name	Active	Actual
0	Active connection mode	☑	
1	Invalid packet	☑	
2	Connecting	☑	
3	Connected	☑	

Diagnostic signals

Depending on the interface type, the following signals are available:

Signal name	Description
Active	Only relevant for redundant connections. Active means that the connection is used to measure data, i.e. for redundant standby connections the value is 0. For normal/non-redundant connections, the value is always 1.
Buffer file size (actual/avg/ max)	Size of the file for buffering statements
Buffer memory size (actual/ avg/max)	Size of the memory used by buffered statements
Buffered statements	Number of unprocessed statements in the buffer
Buffered statements lost	Number of buffered but unprocessed and lost statements
Connected	Connection is established
Connected (in)	A valid data connection for the reception (in) is available
Connected (out)	A valid data connection for sending (out) is available
Connecting	Connection being established
Connection attempts (in)	Number of attempts to establish the receive connection (in)
Connection attempts (out)	Number of attempts to establish the send connection (out)
Connection ID O->T	ID of the connection for output data (from the target system to *ibaPDA*). Corresponds to the assembly instance number
Connection ID T->O	ID of the connection for input data (from *ibaPDA* to target system). Corresponds to the assembly instance number
Connection phase (in)	Status of the ibaNet-E data connection for reception (in)
Connection phase (out)	Status of the ibaNet-E data connection for sending (out)
Connections established (in)	Number of currently valid data connections for reception (in)
Connections established (out)	Number of currently valid data connections for sending (out)
Data length	Length of the data message in bytes
Data length O->T	Size of the output message in byte
Data length T->O	Size of the input message in byte
Destination IP address (part 1-4) O->T	4 octets of the IP address of the target system Output data (from target system to *ibaPDA*)
Destination IP address (part 1-4) T->O	4 octets of the IP address of the target system Input data (from *ibaPDA* to target system)
Disconnects (in)	Number of currently interrupted data connections for reception (in)
Disconnects (out)	Number of currently interrupted data connections for sending (out)
Error counter	Communication error counter
Exchange ID	ID of the data exchange
Incomplete errors	Number of incomplete messages

Signal name	Description
Incorrect message type	Number of received messages with wrong message type
Input data length	Length of data messages with input signals in bytes (*ibaPDA* receives)
Invalid data points	Number of received data points with missing configuration
Invalid packet	Invalid data packet detected
IP address (part 1-4)	4 octets of the IP address of the target system
Keepalive counter	Number of Keepalive messages received by the OPC UA Server
Lost images	Number of lost images (in) that were not received even after a retransmission
Lost Profiles	Number of incomplete/incorrect profiles
Message counter	Number of messages received
Messages per cycle	Number of messages in the cycle of the update time
Messages received since configuration	Number of received data telegrams (in) since start of acquisition
Messages received since connection start	Number of received data telegrams (in) since the start of the last connection setup. Reset with each connection loss.
Messages sent since configuration	Number of sent data telegrams (out) since start of acquisition
Messages sent since connection start	Number of sent data telegrams (out) since the start of the last connection setup. Reset with each connection loss.
Multicast join error	Number of multicast login errors
Number of request commands	Counter for request messages from *ibaPDA* to the PLC/CPU
Output data length	Length of the data messages with output signals in bytes (*ibaPDA* sends)
Packet size (actual)	Size of the currently received message
Packet size (max)	Size of the largest received message
Ping time (actual)	Response time for a ping telegram
Port	Port number for communication
Producer ID (part 1-4)	Producer ID as 4-byte unsigned integer
Profile Count	Number of completely recorded profiles
Read counter	Number of read accesses/data requests
Receive counter	Number of messages received
Response time (actual/average/max/min)	Response time is the time between measured value request from *ibaPDA* and response from the PLC or reception of the data. Actual: current value Average/max/min: static values of the update time since the last start of the acquisition or reset of the counters.
Retransmission requests	Number of data messages requested again if lost or delayed

Signal name	Description
Rows (last)	Number of resulting rows by the last SQL query (within the configured range of result rows)
Rows (maximum)	Maximum number of resulting rows by any SQL query since the last start of acquisition (possible maximum equals the configured number of result rows)
Send counter	Number of send messages
Sequence errors	Number of sequence errors
Source IP address (part 1-4) O->T	4 octets of the IP address of the target system Output data (from target system to *ibaPDA*)
Source IP address (part 1-4) T->O	4 octets of the IP address of the target system Input data (from *ibaPDA* to target system)
Statements processed	Number of executed statements since last start of acquisition
Synchronization	Device is synchronized for isochronous acquisition
Time between data (actual/ max/min)	Time between two correctly received messages Actual: between the last two messages Max/min: statistical values since start of acquisition or reset of counters
Time offset (actual)	Measured time difference of synchronicity between *ibaPDA* and the ibaNet-E device
Topics Defined	Number of defined topics
Topics Updated	Number of updated topics
Unknown sensor	Number of unknown sensors
Update time (actual/average/ configured/max/min)	Specifies the update time in which the data is to be retrieved from the PLC, the CPU or from the server (configured). Default is equal to the parameter "Timebase". During the measurement the real actual update time (actual) can be higher than the set value, if the PLC needs more time to transfer the data. How fast the data is really updated, you can check in the connection table. The minimum achievable update time is influenced by the number of signals. The more signals are acquired, the greater the update time becomes. Average/max/min: static values of the update time since the last start of the acquisition or reset of the counters.
Write counter	Number of successful write accesses
Write lost counter	Number of failed write accesses

5   Support and contact

Support

Phone: +49 911 97282-14

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Note

![i]	If you need support for software products, please state the number of the licen-se container. For hardware products, please have the serial number of the device ready.

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