ibaPDA-Interface-Modbus-Serial

Serial Modbus interface for data acquisition

Manual

Issue 1.0

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1.0	01-2025	New for ibaPDA v8	nm	8.0.0

Contents

1 About this documentation

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

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.

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 using the Modbus Serial data interface:

- *ibaPDA* v8.0.0 or higher
- License for *ibaPDA-Interface-Modbus-Serial*

Licenses

Order no.	Product name	Description
31.001021	ibaPDA-Interface-Modbus-Serial	Extension license for an *ibaPDA* system adding the Modbus Serial interface

3 Modbus Serial interface

Use this interface to connect *ibaPDA* to a Modbus network via a serial interface (COM port).

ibaPDA supports the Modbus modes master and slave as well as RTU and ASCII.

Note

The Client and Server modes correspond to the Modbus modes "Master" (Client) and "Slave" (Server) in older versions of *ibaPDA*.

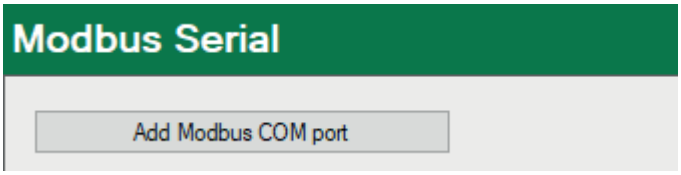
3.1 Configuration ibaPDA

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

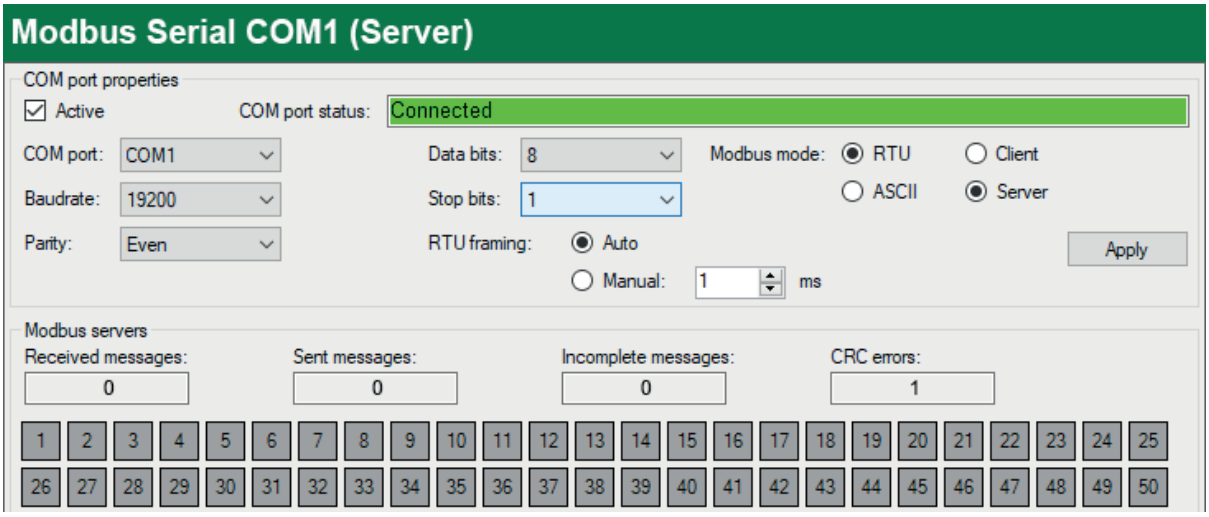
3.1.1 Connecting Modbus Serial

First you need to add a Modbus COM port (serial interface).

1. Select the *Modbus Serial* node in the interface tree.
2. Click on the <Add Modbus COM port> button.



→ The *Modbus Serial COMx:* (*Server)* appears in the interface tree.



3. Set the properties of the COM port:
   - *Active*: If the interface is to be used, the check mark must be set.
   - *COM port*: If required, set a different COM port here.
   - *Baudrate*, *Parity*, *Data bits*, *Stop bits*: Set these COM port parameters according to the Modbus network.
   - *Modbus mode*: Decide whether *ibaPDA* should work in RTU or ASCII mode, or as a client or server.

     If you select server mode, *ibaPDA* responds to requests from the Modbus client. If the COM port is in client mode, *ibaPDA* periodically sends requests to the configured Modbus servers.
   - *RTU framing*: Select here whether RTU framing should be done automatically (recommended) or manually. If you select *Manual*, specify an appropriate framing time.
4. Click on the <Apply> button in the *COM port properties* area.

→ *ibaPDA* starts working on the COM port.

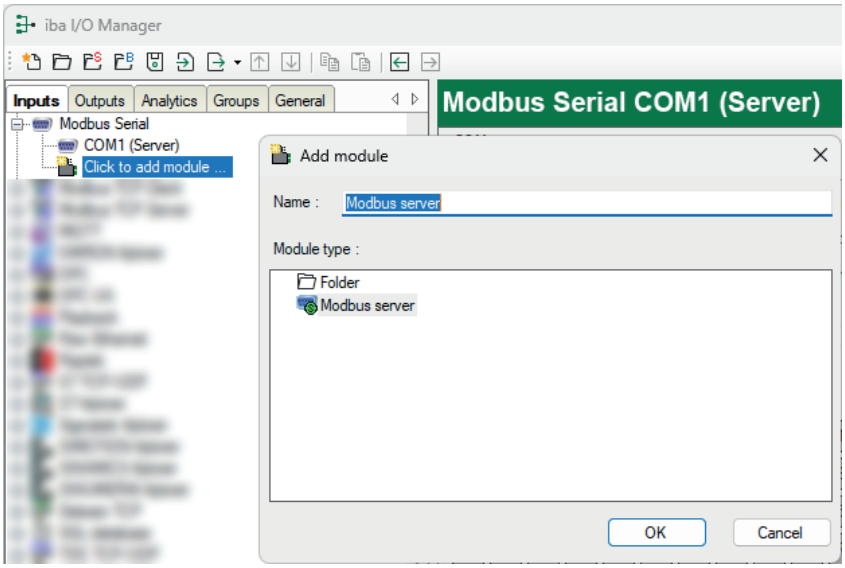
- When running in server mode, *ibaPDA* monitors the COM port for messages.
- When running in client mode, *ibaPDA* sends requests to the configured Modbus servers at regular intervals.

3.1.2 Adding a module

Proceed as follows to add a *Modbus server* module to the *Modbus Serial* interface.

Procedure

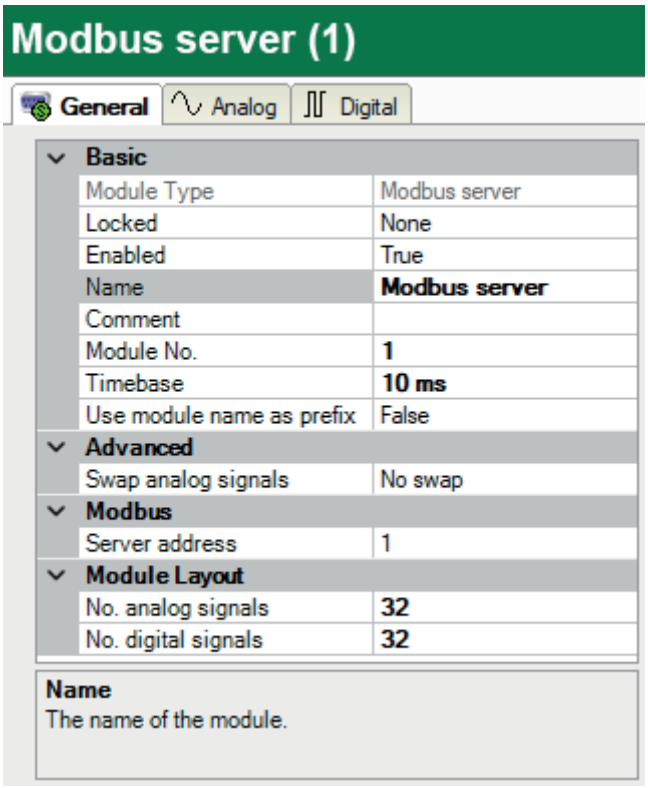
1. Click on the blue link *Click to add module* located under each data interface in the *Inputs* or *Outputs* tab.
2. Select the desired module type in the dialog box and assign a name via the input field if required.
3. Confirm the selection with <OK>.



3.1.3 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.

Advanced

Swap analog signals
Option to change the order of the byte evaluation

Modbus

Server address
Enter the address of the Modbus-Server here.

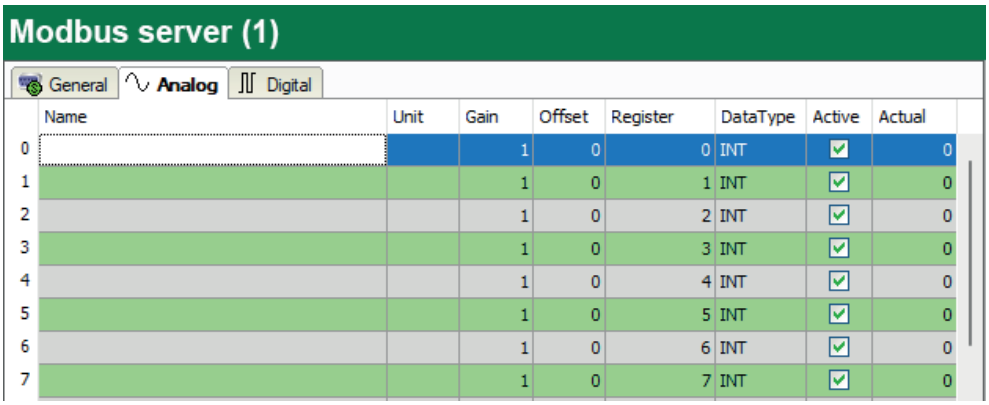
ibaPDA acts as an active Modbus server for this address. This means that *ibaPDA* processes the messages and sends responses to the Modbus client. You can create several Modbus server modules with the same server address.

Module Layout

Number of analog/digital output signals
Define the number of configurable analog and digital signals in the signal tables. The default value is 32 for each. The maximum value is 1000. The signal tables are adjusted accordingly.

3.1.4 Signal configuration

Configure the signals to be measured in the *Analog* or *Digital* tabs. Set the length of the signal tables, i.e. the number of signals per table, in the *General* tab under *Module structure*.



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.

Register (analog signals only)
Enter the register number here. The value can be between 0 and 65535.

If you click on the *Register* column heading, the register numbers are automatically incremented from the selected row to the last row in the table.

Bit no. (digital signals only)
Enter the bit number here. The value can be between 0 and 65535.

If you click on the *Bit no.* column heading, the bit numbers are automatically incremented from the selected row to the last row in the table.

Data type (analog signals only)
Selection of the data type of the signal

The data type determines the address of the next signal.

Active
Activation or deactivation of the respective signal

Actual
Display of the current actual value of the signal

Other documentation

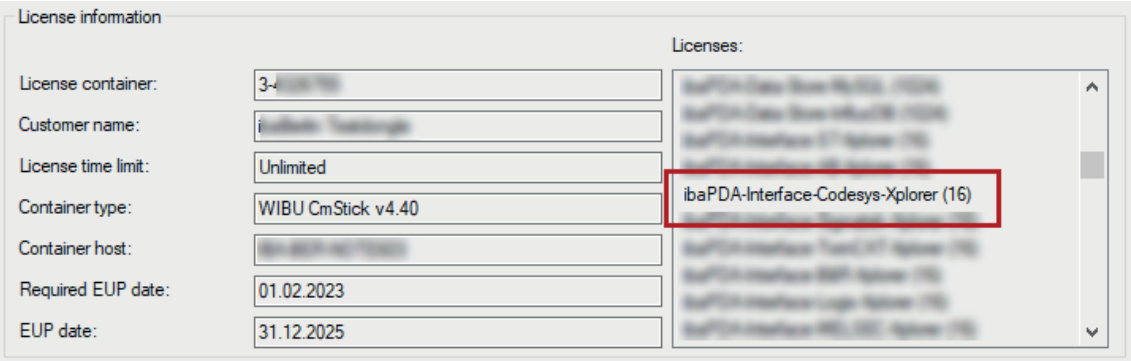
Detailed descriptions of the columns and how to fill in the signal tables can be found in the documentation for *ibaPDA*.

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-Modbus-Serial* 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.

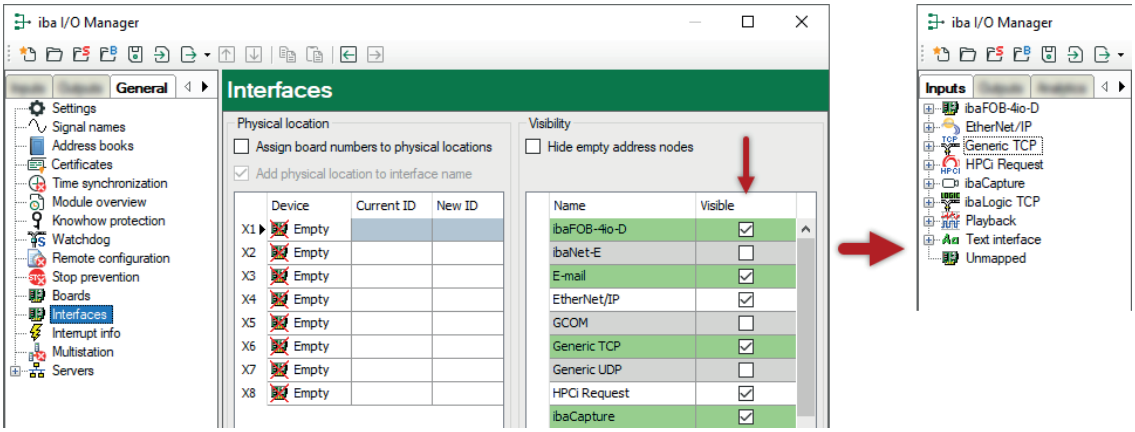
Visibility

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.

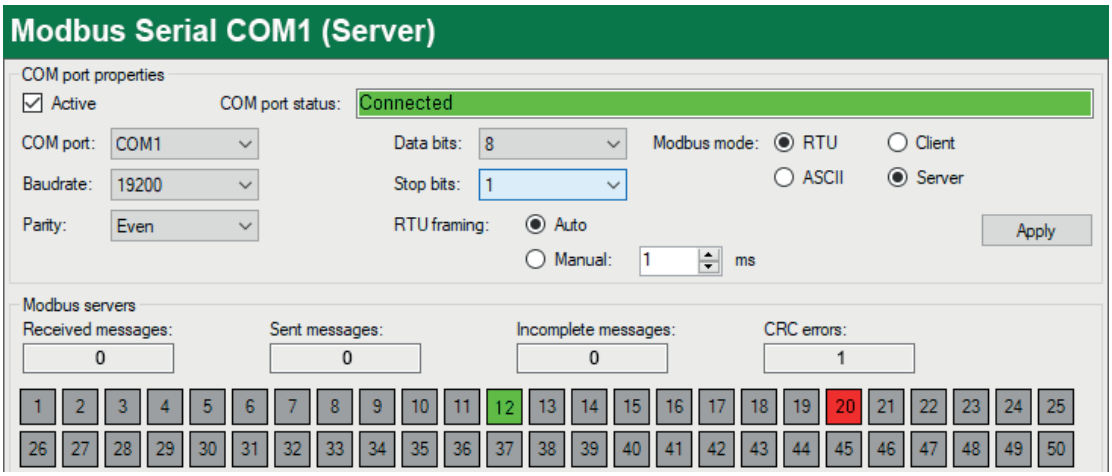
Interfaces with configured modules are highlighted in green and cannot be hidden.

Selected interfaces are visible, the others are hidden:



4.3 Checking individual connections

Different colors indicate the status of the connected Modbus devices.



Color	Status	Client mode	Server mode
Green	Connected	The server responds to the periodic requests from *ibaPDA*.	The client is sending periodic requests to *ibaPDA*.
Red	Disconnected	The server does not respond to periodic requests from *ibaPDA*.	The client does not send any requests to this server.
Gray	Disabled	This server is not configured.	This server is not configured.

5 Support and contact

Support

Phone: +49 911 97282-14

Email: support@iba-ag.com

Note

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

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