



# ibaMS16xAO-10V/-20mA

Output module for analog signals

Manual

Issue 2.0

Measurement Systems for Industry and Energy

[www.iba-ag.com](http://www.iba-ag.com)

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The current version is available for download on our web site [www.iba-ag.com](http://www.iba-ag.com).

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Further international customary standards and directives have been observed.



Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Issue	Date	Revision	Chapter	Author	Version HW / FW
2.0	08-2023	Scope of delivery, ibaPDA GUI			

## Table of contents

<b>1</b>	<b>About this manual .....</b>	<b>5</b>
1.1	Target group .....	6
1.2	Notations .....	6
1.3	Used symbols .....	7
<b>2</b>	<b>Introduction .....</b>	<b>8</b>
<b>3</b>	<b>Scope of delivery .....</b>	<b>9</b>
<b>4</b>	<b>Safety instructions .....</b>	<b>9</b>
4.1	Proper use .....	9
4.2	Special safety instructions .....	9
<b>5</b>	<b>System requirements .....</b>	<b>10</b>
5.1	Hardware .....	10
5.2	Software .....	10
<b>6</b>	<b>Mounting, Connecting, Dismounting .....</b>	<b>11</b>
6.1	Mounting .....	11
6.2	Connecting .....	11
6.3	Dismounting .....	12
<b>7</b>	<b>Device description .....</b>	<b>13</b>
7.1	Views .....	13
7.2	Indicator elements .....	14
7.2.1	Operating status L1 ... L4 .....	14
7.2.2	Status of analog outputs L26 ... L41 .....	14
7.3	Analog outputs .....	14
7.3.1	Filter .....	14
7.3.2	Overload protection .....	15
7.3.3	Connection diagram / pin assignment .....	15
<b>8</b>	<b>Start-up / Update .....</b>	<b>17</b>
8.1	Auto-Update .....	17
8.2	Overall Release Version .....	17
8.3	Update .....	18
8.3.1	Update via Web interface .....	18
8.3.2	Update via ibaPDA .....	19
8.4	Module Information / Diagnostics .....	19
8.4.1	Diagnostics .....	19
8.4.2	Webinterface .....	19
<b>9</b>	<b>iba Applications .....</b>	<b>21</b>
9.1	Configuration in ibaPDA .....	21
9.1.1	General settings .....	21
9.1.2	Output Configuration .....	23
9.1.3	Reset channel errors .....	24
9.2	Configuration in ibaLogic-V5 .....	25

**10    Technical Data..... 28**

    10.1    Main data ..... 28

    10.2    Analog outputs ..... 29

    10.3    Dimensions ..... 30

**11    Support and contact ..... 31**

# 1 About this manual

In this manual, you learn a lot about the design of the ibaMS16xAO-10V and ibaMS16xAO-20mA modules and how to use and operate them. You can find a general description of the iba-modular system and further information about the design of the central units and how to use and operate them in separate manuals.



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**Note**

The documentation for the iba-modular system is part of the data medium “iba Software & Manuals”. The documentation is also available at [www.iba-ag.com](http://www.iba-ag.com) in the download area.

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The documentation of the iba-modular system comprises the following manuals:

☐ **Central units**

The manuals of the ibaPADU-S-IT-2x16 central units and ibaPADU-S-CM contain the following information:

- Scope of delivery
- System requirements
- Description of the device
- Mounting/Demounting
- Start-up
- Configuration
- Technical data
- Accessories

☐ **Modules**

The manuals for the single modules contain specific information about the module. There are the following information classes:

- Short description
- Scope of delivery
- Product characteristics
- Configuration
- Description of the functions
- Technical data
- Connection diagram

## 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 to 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	Notations
Menu command	Menu <i>Logic diagram</i>
Call of menu command	<i>Step 1 – Step 2 – Step 3 – Step x</i> Example: Select menu <i>Logic diagram – Add – New logic diagram</i>
Keys	<Key name> Example: <Alt>; <F1>
Press keys simultaneously	<Key name> + <Key name> Example: <Alt> + <Ctrl>
Buttons	<Button name> Example: <OK>; <Cancel>
File names, Paths	„File name“, „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:

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

If you do not observe the safety instructions regarding the process and the system or machine to be controlled, there is a risk of death or severe injury!



### **⚠ 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.



### **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 Introduction

The modules ibaMS16xAO-10V and ibaMS16xAO-20mA are members of the iba-modular system. The modular concept is designed on the basis of a backplane. You can plug on this backplane not only the CPU, but also up to 4 input/output modules. The power supply of the I/O modules is provided by the backplane bus.

The modules provide 16 analog outputs.

### In brief

- ☐ I/O modules for the iba-modular system
- ☐ 4 galvanically isolated roots with 4 signals each
- ☐ Output level  $\pm 10$  V or  $\pm 20$  mA
- ☐ 16 bit resolution
- ☐ Output frequency up to 40 kHz, freely adjustable
- ☐ Analog smoothing filter 40 kHz
- ☐ Rugged design, easy mounting
- ☐ Certification according to CE

The device driver and the firmware are saved on the module. When switching on and booting the central unit, the module is identified automatically and the drivers are loaded.

### Fields of application

Output of analog signals ( $\pm 10$  V /  $\pm 20$  mA) for triggering:

- ☐ Converters
- ☐ Controllers
- ☐ Drives / linear drives
- ☐ Valves
- ☐ Test benches



### 3 Scope of delivery

After unpacking, check the delivery for completeness and possible damages.

The scope of delivery comprises:

- ☐ ibaMS16xAO-10V or ibaMS16xAO-20mA device
- ☐ 4 x 12-pin multi-pin connector
- ☐ Data medium „iba Software & Manuals“ (only for single delivery)

### 4 Safety instructions

#### 4.1 Intended use

The device is an electrical apparatus. It is only allowed to use the device for the following applications:

- ☐ Automation of industrial plants
- ☐ Applications with iba products

The device is only to be used as shown in the Technical Data chapter.

#### 4.2 Special safety instructions

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##### CAUTION

**Strictly observe the measuring range!**

Never use damaged measuring cables!

Measuring cables must NOT be attached or detached to/from the device under voltage!

---

##### WARNING

Modules must NOT be attached or detached to/from the rack under voltage!

Switch off the central unit or disconnect power supply before attaching or detaching the modules.

---

##### WARNING

This is a Class A device. This equipment may cause radio interference in residential areas. In this case, the operator will be required to take appropriate measures.

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##### **Important Note**

Do not open the device! Opening the device will void the warranty!

---



##### **Note**

Clean the device only on the outside with a dry or slightly damp and statically discharged cloth.

---

## 5 System requirements

### 5.1 Hardware

- ☐ Central unit: ibaPADU-S-IT-2x16 or ibaPADU-S-CM (version 02.10.001 or later)
- ☐ Backplane unit, e. g. ibaPADU-B4S

### 5.2 Software

- ☐ ibaPDA version 6.34.0 or later
- ☐ ibaLogic-V5 version 5.0.2 or later



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**Note**

The use of ibaLogic-V5 requires the central unit ibaPADU-S-IT-2x16. If the module is used with the predecessor ibaPADU-S-IT-16, only ibaLogic-V4 can be used.

---

## 6 Mounting, Connecting, Dismounting

### CAUTION

Works on the device must NOT be done when it is under voltage! Always disconnect the central unit from the power supply!



#### Note

Mount one or more modules on the right next to the central unit (slot X2 to X5 can be freely selected).

### 6.1 Mounting

1. Disconnect the central unit from the power supply.
2. Remove the cover from the backplane bus, to which the module should be attached.
3. Attach the device to the backplane bus and press it firmly against the backplane.
4. Secure the device with the fixing screws.
5. Connect the grounding screw with the protective ground / grounding shield.

### CAUTION

Connect the grounding screw on the bottom side of the housing with the protective ground / grounding shield.



#### Important Note

Always screw tight the device and the modules. Otherwise, plugging or unplugging the connectors for the inputs/outputs can cause damage.

### 6.2 Connecting



#### Note

The backplane unit and the device must be connected to a protective conductor.

1. Connect all cables.
2. If all required cables are connected, connect the central unit to the power supply.
3. Switch on the central unit.



#### Note

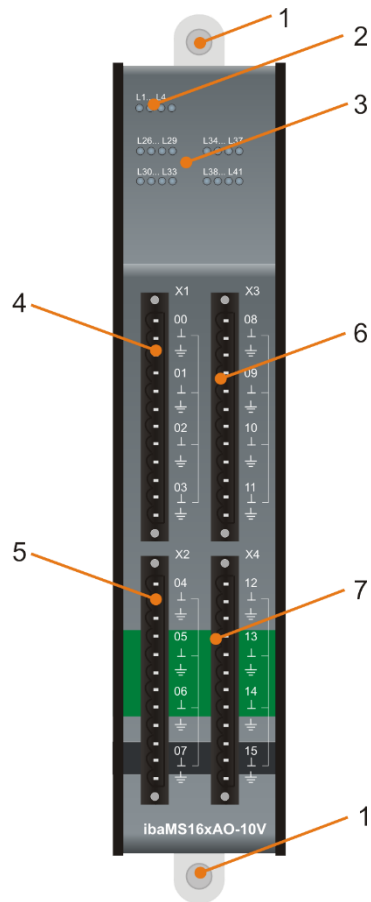
When switching on and off the power supply or the central unit, it may be possible that intermediate values are wrong at the analog outputs for approx. 5 seconds within the output signal range.

## 6.3 Dismounting

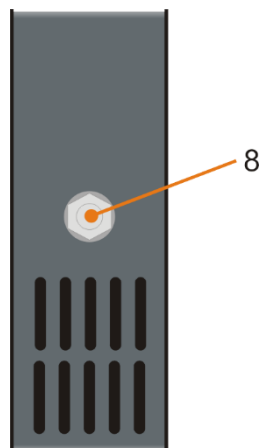
1. Disconnect the central unit from the power supply.
2. Remove all cables.
3. Remove the both fixing screws on the upper and the lower side of the device.
4. Pull the device straight from the backplane.
5. Put the cover on the backplane bus.

## 7 Device description

### 7.1 Views



- 1 Fixing screws
- 2 Operating status indicators L1... L4
- 3 Status LED L26 to L41 of the analog outputs 00 ...15
- 4 Connection X1 for analog outputs 00...03
- 5 Connection X2 for analog outputs 04 ... 07
- 6 Connection X3 for analog outputs 08 ... 11
- 7 Connection X4 for analog outputs 12 ... 15



- 8 Grounding screw

## 7.2 Indicating elements

The operating status of the device and the status of the analog outputs are shown by colored status LEDs.

### 7.2.1 Operating status L1 ... L4

LED	Status	Description
L1: green	Flashing / On Off	Device is working Device is not working (switched off)
L2: yellow	On	Access to the backplane bus
L3: white	-	-
L4: red	Off Flashing	Normal status, no error Device error



#### Important note

When the LED L4 indicates a failure, please contact the iba support.

### 7.2.2 Status of analog outputs L26 ... L41

LED per channel*	Status	Description ibaMS16xAO-10V	Description ibaMS16xAO-20mA
L26 ... L41	Off	= 0 V	= 0 mA
	Green	≠ 0 V	≠ 0 mA
	Red	Channel error	Channel error

\*If an output is deactivated with ibaPDA, the corresponding LED remains off.

## 7.3 Analog outputs

### 7.3.1 Filter

There are the following analog filters per channel:

Filter type	Order	Cut-off frequency	in addition / permanent
R/C low pass	1 <sup>st</sup>	40 kHz	permanent

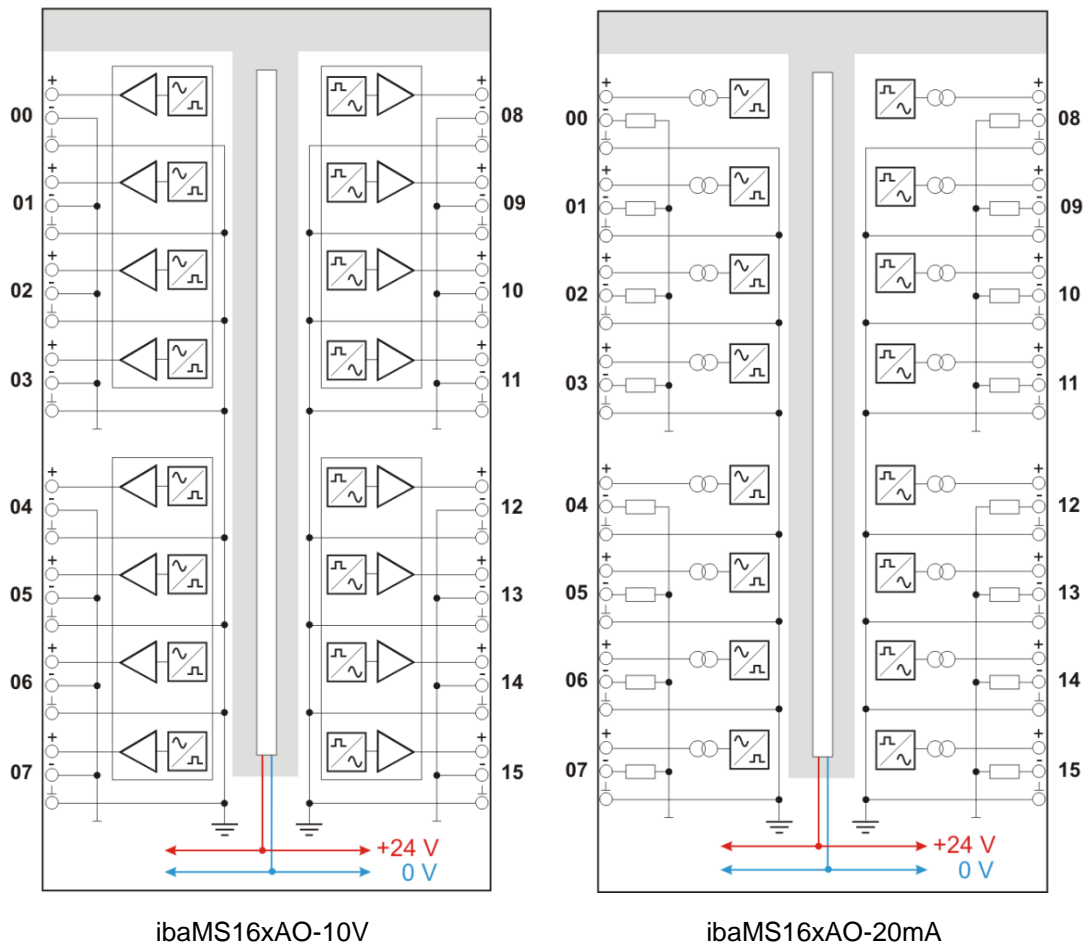
### 7.3.2 Overload protection

The outputs are protected against short circuits. Nevertheless a hardware error may occur, e. g. when the wiring is not correct.

When there is a hardware error, e. g. overtemperature, all channels of a signal root are set to “safe state” (0 V or 0 mA). The error must be reset by “ResetError\_Ch[00..15]” in ibaLogic or “Reset channel errors” in ibaPDA (see also chapter 9.1.2).

### 7.3.3 Connection diagram / pin assignment

Here you can connect 16 output signals (0...15), each bipolar plus ground. 4 separated galvanically isolated groups have 4 outputs each.



**Pin assignment**

Pin	Connection	LED	Pin	Connection	LED
1	Analog output 00 +	L26	1	Analog output 08 +	L34
2	Analog output 00 –		2	Analog output 08 –	
3	Analog output 00 $\frac{\perp}{\equiv}$		3	Analog output 08 $\frac{\perp}{\equiv}$	
4	Analog output 01 +	L27	4	Analog output 09 +	L35
5	Analog output 01 –		5	Analog output 09 –	
6	Analog output 01 $\frac{\perp}{\equiv}$		6	Analog output 09 $\frac{\perp}{\equiv}$	
7	Analog output 02 +	L28	7	Analog output 10 +	L36
8	Analog output 02 –		8	Analog output 10 –	
9	Analog output 02 $\frac{\perp}{\equiv}$		9	Analog output 10 $\frac{\perp}{\equiv}$	
10	Analog output 03+	L29	10	Analog output 11 +	L37
11	Analog output 03 –		11	Analog output 11 –	
12	Analog output 03 $\frac{\perp}{\equiv}$		12	Analog output 11 $\frac{\perp}{\equiv}$	
1	Analog output 04 +	L30	1	Analog output 12 +	L38
2	Analog output 04 –		2	Analog output 12 –	
3	Analog output 04 $\frac{\perp}{\equiv}$		3	Analog output 12 $\frac{\perp}{\equiv}$	
4	Analog output 05 +	L31	4	Analog output 13 +	L39
5	Analog output 05 –		5	Analog output 13 –	
6	Analog output 05 $\frac{\perp}{\equiv}$		6	Analog output 13 $\frac{\perp}{\equiv}$	
7	Analog output 06 +	L32	7	Analog output 14 +	L40
8	Analog output 06 –		8	Analog output 14 –	
9	Analog output 06 $\frac{\perp}{\equiv}$		9	Analog output 14 $\frac{\perp}{\equiv}$	
10	Analog output 07+	L33	10	Analog output 15 +	L41
11	Analog output 07 –		11	Analog output 15 –	
12	Analog output 07 $\frac{\perp}{\equiv}$		12	Analog output 15 $\frac{\perp}{\equiv}$	

**Important note**

The signals must be connected to their own channel. It is not allowed to connect signals to another channel.



## 8 Start-up / Update



### Important note

Installing an update can take some minutes. Please do not switch off the device when an update is running. This might damage the device.

### 8.1 Auto-Update

After having mounted the module and applied the voltage to the central unit, the central unit detects the modules and checks the firmware version.

The central unit has a so called “overall release version“. This version contains the current firmware version of the central unit as well as the firmware versions of the modules. You can find the “overall release version“ on the website of the central unit on the „firmware“ tab.

When the firmware version of a module does not match the “overall release version“ of the central unit, the central unit does an automatic up- or downgrade of the module. Thereafter, the module is ready to be used.



### Important note

The “overall release version“ contains all modules developed up to the date of release of this firmware and the corresponding firmware versions. If a module cannot be detected, yet (i.e. it is more recent than the firmware version of the CPU), this module is ignored and outlined in red on the web interface.

In this case, a new update file has to be installed for the “overall release version“. If you want to get the current update file, please contact the iba support.

### 8.2 Overall Release Version

The „overall release version“ provides information about the firmware version of the entire ibaPADU-S system. You can find it on the website of the central unit or in the I/O Manager of ibaPDA.



### Important note

If you require support, specify the „overall release version“.

## 8.3 Update

An update can be installed in two different ways:

- ☐ Web interface (only with ibaPADU-S-IT-2x16)
- ☐ ibaPDA

No matter which of the both ways you choose to install an update: the progress of the update is shown by the LEDs L5 ... L8. Beginning with L5, the LEDs are flashing one after another, at first in orange and then in green and at a slower rate. When the update is completed, the device reboots automatically.



### Important note

When updating the iba-modular system, a possible autostart of the ibaLogic PMAC is deactivated and the existing ibaLogic-V5 application deleted. Furthermore, an update of the ibaLogic-V5 software (ibaLogic Clients) might be necessary.

### 8.3.1 Update via web interface



### Important note

The web interface is available only with the central unit ibaPADU-S-IT-2x16.

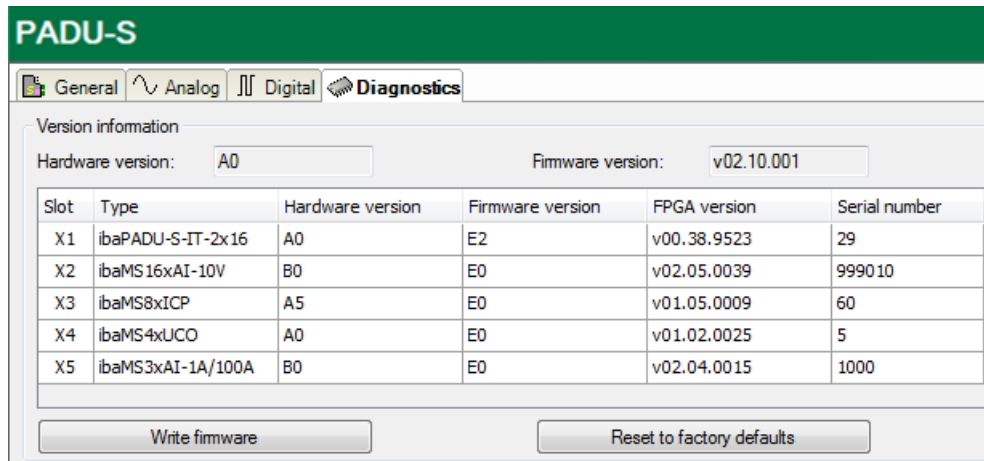
- ☐ Start the website of the iba-modular system in your browser and select the central unit.
- ☐ On the “update“ tab, click on the <Browse...> button and choose the <padusit2x16\_v[xx.yy.zzz].iba> update file.
- ☐ By clicking on <Start Update>, you start the update.

#### Module 0 : ibaPADU-S-IT-2x16

info	firmware	eventlog	passwords	network	time	backup	update
<p><b>Note:</b> any ibaLogic application will be aborted on updating firmware.  ibaLogic might not be compatible to the new firmware release after update  and therefore might not run properly.  An update of ibaLogic might be required.</p>							
Install software:		<input type="text"/>		<input type="button" value="Browse..."/>	<input type="button" value="Start Update"/>		
Restart device:		<input type="button" value="Reset"/>					

### 8.3.2 Update via ibaPDA

- ☐ Open the ibaPDA I/O Manager and choose your iba-modular system in the tree structure.
- ☐ On the “Diagnostics” tab, click on the <Write firmware> button and choose the „padusit2x16\_v[xx.yy.zzz].iba“ or „paduscm\_v[xx.yy.zzz].iba“ update file.
- ☐ You start the update by clicking on <OK>.



## 8.4 Module Information / Diagnostics

### 8.4.1 Diagnostics

Important information about the iba-modular system, like hardware version, firmware version, FPGA version and serial number is displayed in the “Diagnostics” tab. Open the ibaPDA I/O Manager and choose your iba-modular system in the tree structure (See also figure above)

### 8.4.2 Webinterface

On the module website, general information about the module is only displayed. You cannot change the values.



#### Important note

The web interface is available only with the central unit ibaPADU-S-IT-2x16.

### 8.4.2.1 „info“ tab

The „info“ tab displays general information and technical specifications of the I/O module.

info	notes	
Serial number	000037	
Hardware version	A2	
Firmware version	E1	
Process-I/O		
analog output channels	16	
design	isolated groups of 4 channels, with internal output power supply	
output voltage	+/-10	V DC
resolution	16	bits
accuracy	<0.1	%
load	≥1	kΩ
output frequency	0 ... 40	kHz
analog filters	RC filter, fixed	40 kHz
protective functions	safe state, current limitation	

### 8.4.2.2 „notes“ tab

On the “notes“ tab, you can enter notes, e.g. for notes on wiring or on recording of changes.

By clicking on <save notes>, the notes are permanently stored on the device.

info

notes

This buffer is for your personal notes.

You can use it for linkage data, for example:

"Connector xyz must be connected to jack X5"

Its contents are stored in permanent storage on the cpu unit.

save notes

## 9 iba Applications

### 9.1 Configuration in ibaPDA

You can configure the signals with the I/O Manager of ibaPDA. If the iba-modular system is already installed and you want to add a new module, click on „Read configuration from device“. The module will be detected automatically.

[Read configuration from device](#)



#### Note

The automatic detection requires a bidirectional FO connection from the ibaPDA computer to the central unit.

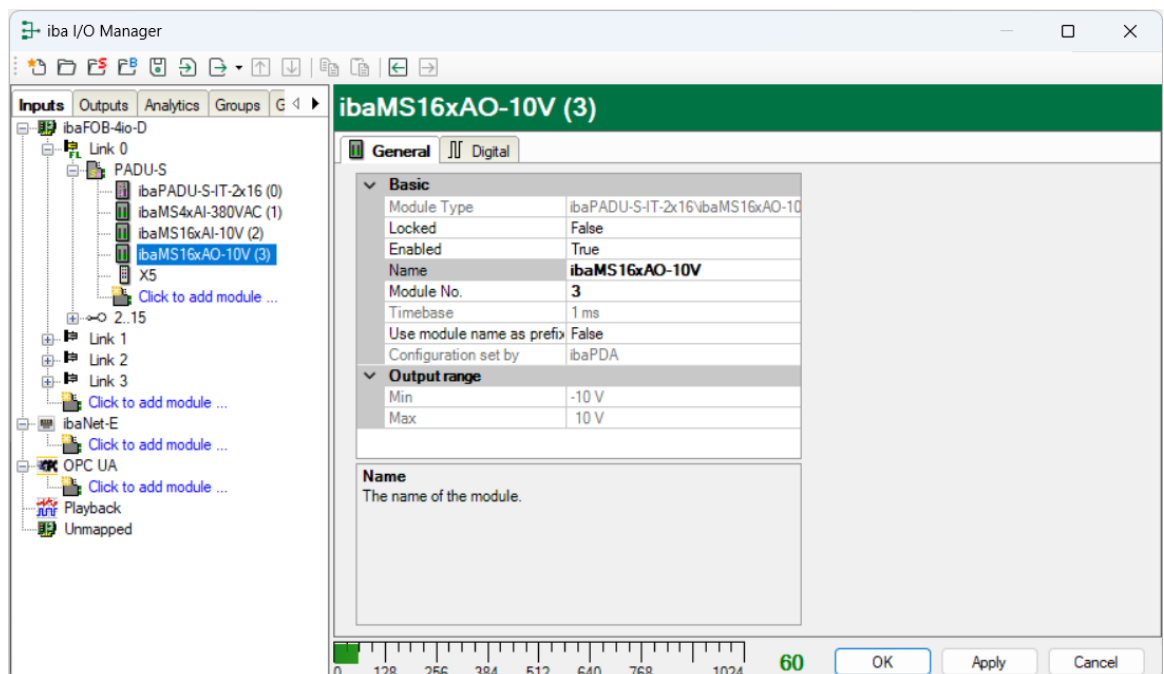


#### Other documentation

If you want to install the iba-modular system at first, refer to the manual of the central unit, chapter „Configuration with ibaPDA“.

#### 9.1.1 General settings

If the module is detected, click on the module in the signal tree and the „General“ tab appears.



#### Basic settings

##### ☐ Module Type

Display of module type (read only)

##### ☐ Locked

True: the module can only be changed by an authorized user.

False: the module can be changed by any user.

☐ Enabled

Data capturing for this module is enabled.

☐ Name

You can enter a name for the module.

☐ Module No.

Consecutive module number assigned by ibaPDA for clearly referencing the signals, e.g. in expressions and for ibaAnalyzer. The number can be changed by the user.

☐ Timebase

Timebase, specified in the PADU-S module.

☐ Use name as prefix

Prefix the signal names of this module with the module name.

☐ Configuration set by

This item is only visible when ibaPADU-S-IT-2x16 is used as central unit. When an embedded application has been started on ibaPADU-S-IT-2x16 (e. g. ibaLogic), then ibaPDA cannot modify the configuration of the modules and signals. In this case the configuration is set by the embedded application. The following entries can be displayed:

- ibaPDA

Configuration set by	ibaPDA
----------------------	--------

When ibaPDA is displayed, an embedded application has not been started and the configuration can be set by ibaPDA.

- Embedded application

Configuration set by	Embedded application
Import signal names	False

When embedded application is displayed, the configuration of the modules and signals is set by the embedded application on the device. In this case it is possible to import user-defined signal names, which are configured in the embedded application, provided that the embedded application supports this function (Import signal names: True).

The modules and signals configured by the embedded application cannot be configured in ibaPDA, they are displayed in gray in the respective fields.

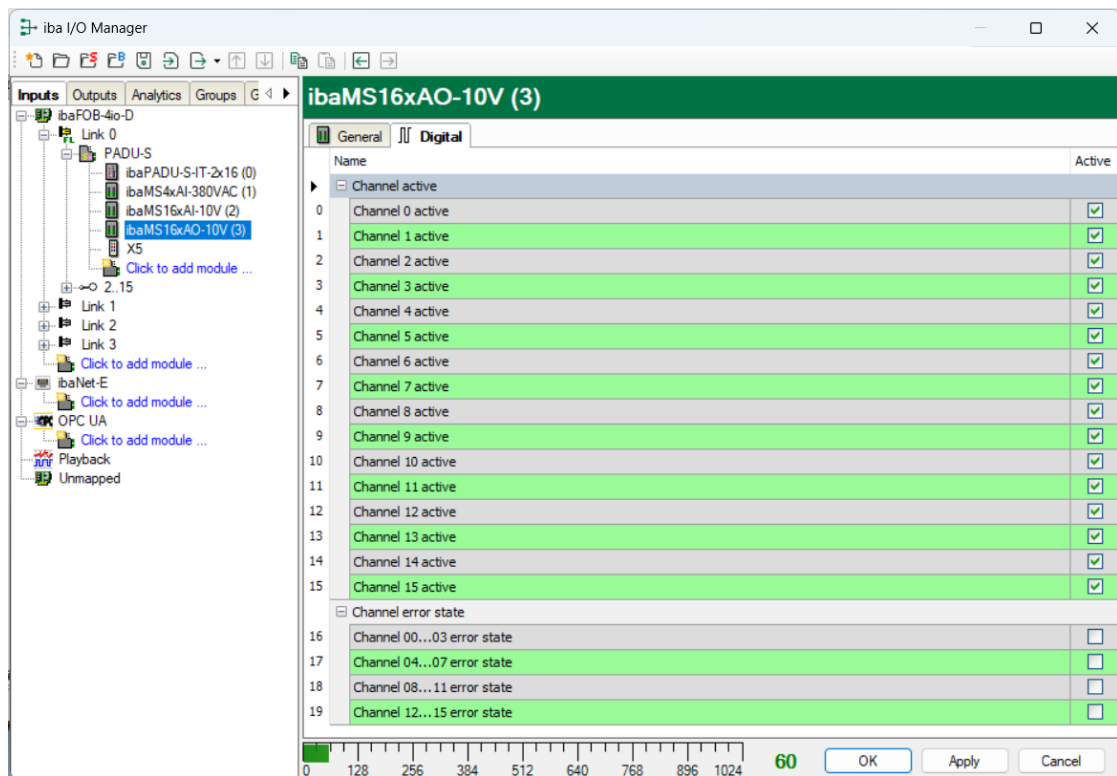
The configuration is read by ibaPDA and used for the acquisition. Modules and signals which are not displayed in gray can be used in ibaPDA.

## Output range

☐ Min/Max

Low end and high end of the input range.

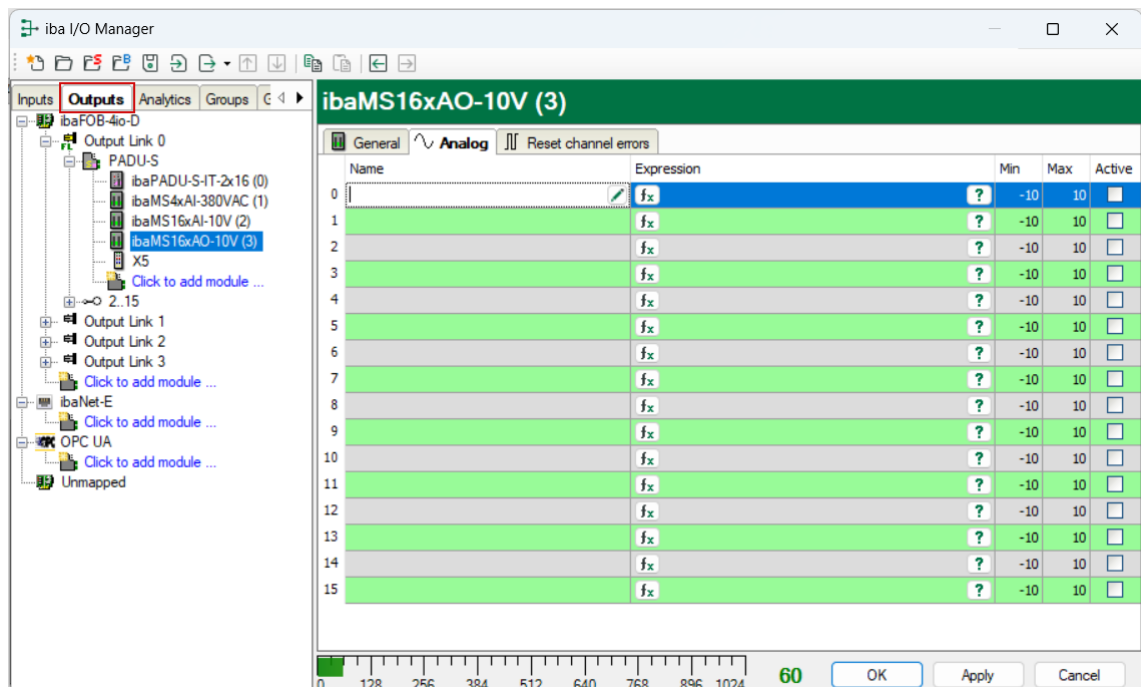
In the "Digital" tab, you can activate channel and error state for each channel.




- Channel [0...15] active  
Here you can activate a status signal that indicates whether the output is active.
- Channel [...] error state  
Status signal indicates whether the outputs of a root are in error state.

### 9.1.2 Output Configuration


Select the „Outputs“ tab in order to configure the settings for the output signals. The following settings apply to the “Analog” tab:



#### ☐ Name

You can enter a name for the signal and two additional comments (click on the  icon in the Name field).

☐ Expression

For each output you can specify a signal using the expression builder . Signals can be linked mathematically or logically.

☐ Min/Max

Low end and high end of the output range.

☐ Active

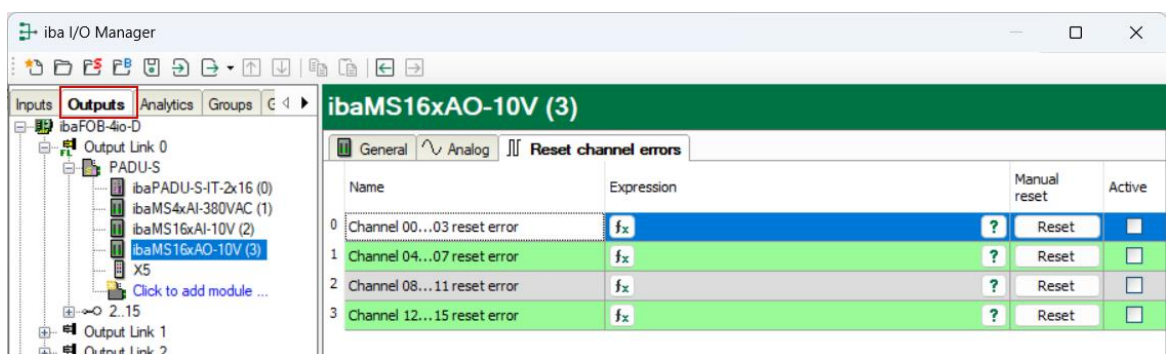
Enabling/disabling the signal.

### 9.1.3 Reset channel errors


In the “Outputs” menu, in the “Reset channel errors” tab, the hardware errors of the quad roots of the outputs can be reset in two ways:

- Manually using the <Reset> button
- Automatically by an output signal


The following settings apply to the “Reset channel errors” tab.



☐ Name

The quad roots have default names, you can enter two additional comments (click on the  icon in the Name field).

☐ Expression

Using the expression builder  you can specify an output signal in order to reset a hardware error.

☐ Active

Enabling/disabling the signal.



## 9.2 Configuration in ibaLogic-V5



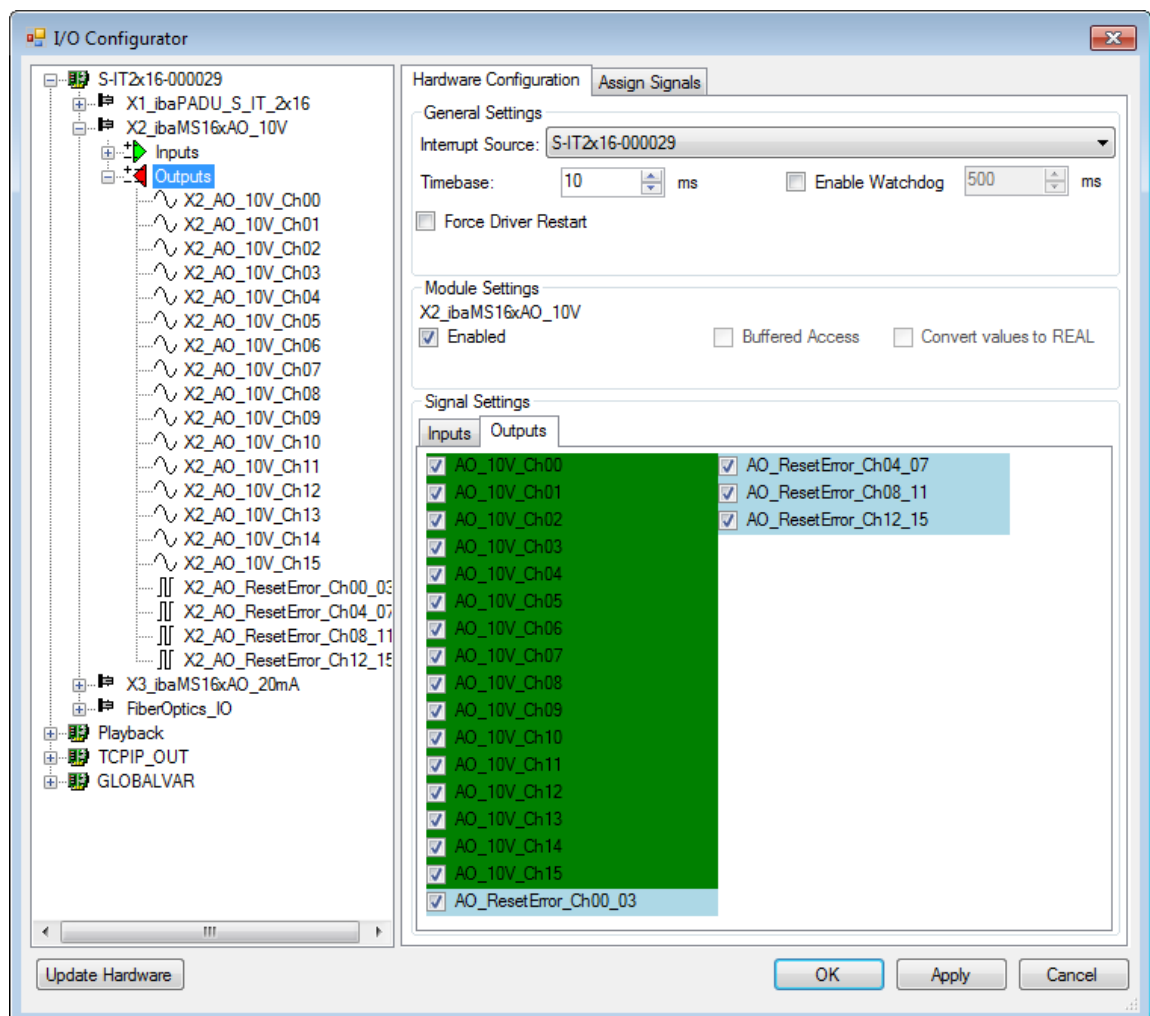
### Other documentation

Combined with ibaLogic-V5, an ibaPADU-S-IT-2x16 device can be used to realize individual signal pre-processing or stand-alone applications. You find the basic way of proceeding description in the separate ibaPADU-S-IT-2x16 manual. This manual describes only the signals belonging to this module.

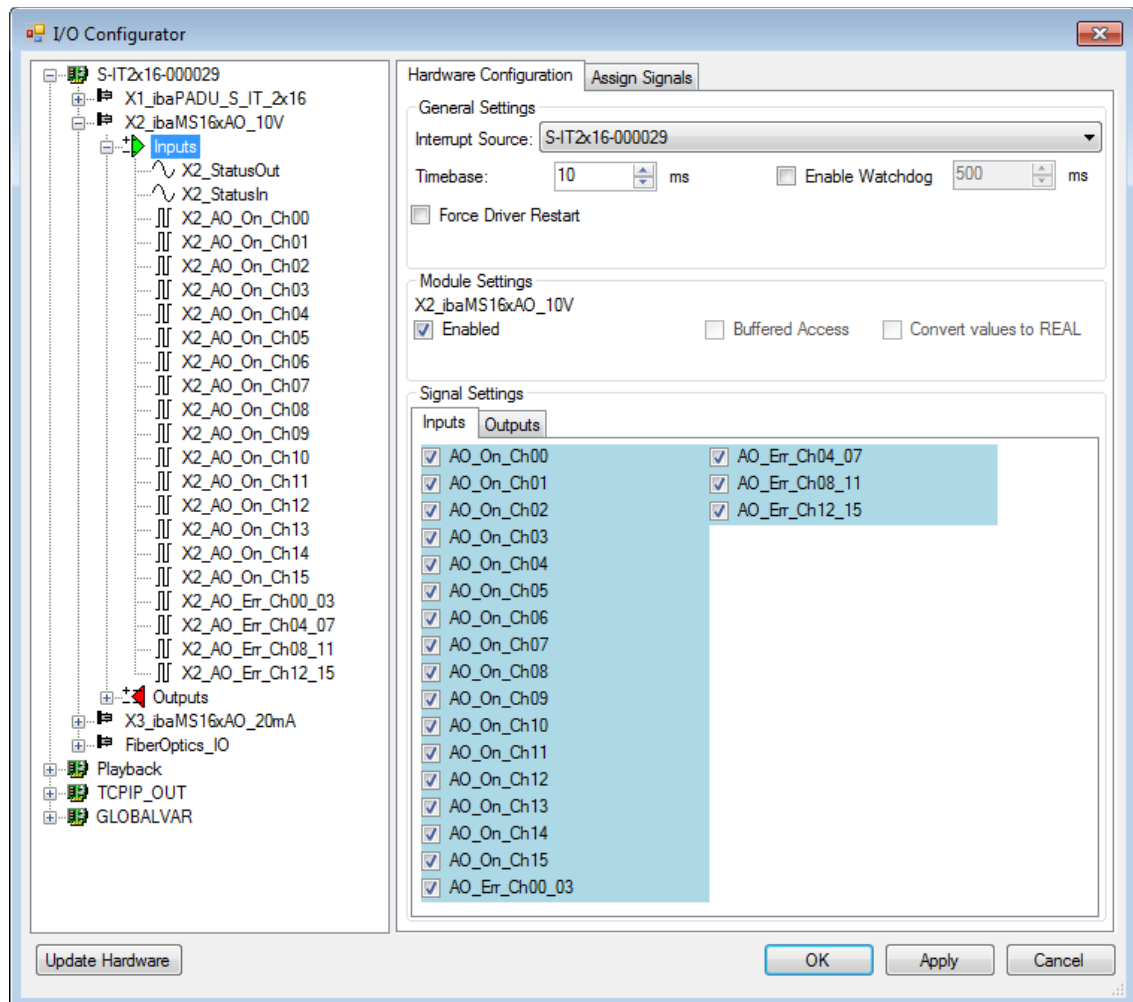
The signals can be configured in the I/O Configurator of ibaLogic-V5. Open the I/O Configurator in the “Configurator – I/O Configurator” menu. When you click on the <Update Hardware> button, then ibaLogic detects the module.

ibaMS16xAO-10V has the following signal groups:

1. Outputs
2. Inputs



All available status or failure information is listed under „Inputs“.



Signal	Description
<b>Inputs</b>	
AO_On_Ch[00..15]	Channel status: 0 = channel not ready for operation 1 = channel ready for operation
AO_Err_Ch[00_03...12_15]	Error state of a quad root, see chapter 7.3.2.
StatusIn	Status information about the plugged input module (for output module without function): 0 = module not initialized 1 = module is running >1 = mistake (e.g. module cannot be initialized)
StatusOut	Status information about the plugged output module (for input module without function): 0 = module not initialized 1 = module is running >1 = error (e.g. module cannot be initialized)
<b>Outputs</b>	
AO_10V_Ch[00..15] or AO_20mA_Ch[00..15]	Analog output channels (INT) -32768...+32767 (-10 V...+10 V or -20 mA...+20 mA)
AO_ResetError_Ch[00_03...12_15]	Resets the error of a root "ResetError_Ch[00_03...12_15]": 0 = not reset the error 1 = resets the error (The length of an ibaLogic task cycle is sufficient as reset signal)

## 10 Technical Data

### 10.1 Main data

Short description		
Name	ibaMS16xAO-10V	ibaMS16xAO-20mA
Oder number	10.124150	10.124160
Description	Output module with 16 analog voltage outputs	Output module with 16 analog current outputs
Power supply		
Power supply	24 V DC, internal via backplane bus	
Power consumption	Up to 14 W	
Operating and indicating elements		
Indicators	4 LEDs for device status 16 LEDs for status of the analog outputs	
Operating and environmental conditions		
Temperature ranges		
Operation	32 °F ... 122 °F (0 °C ... 50 °C)	
Storage/transport	-13 °F ... 158 °F (-25 °C ... 70 °C)	
Installation position	Vertical, plugged into backplane bus	
Cooling	Passive	
Humidity class	F, no condensation	
Protection class	IP20	
Certification/Standards	EMC: IEC 61326-1 FCC part 15 class A	
MTBF <sup>1</sup>	218,234 hours / 24 years	
Dimensions (width x height x depth)	1.69 in x 8.43 in x 5.83 in (43 mm x 214 mm x 148 mm)	
Weight (incl. packaging and documentation)	approx. 2.42 lb (1.1 kg)	

<sup>1</sup> MTBF (mean time between failure) determined according to Telcordia 3 SR232 (Reliability Prediction Procedure of Electronic Equipment; Issue 3 Jan. 2011) and NPRD (Non-electronic Parts Reliability Data 2011)

**Supplier's Declaration of Conformity  
47 CFR § 2.1077 Compliance Information**

**Unique Identifier:** 10.124150 ibaMS16xAO-10V  
10.124160 ibaMS16xAO-20mA

**Responsible Party - U.S. Contact Information**

iba America, LLC  
370 Winkler Drive, Suite C  
Alpharetta, Georgia  
30004

(770) 886-2318-102  
[www.iba-america.com](http://www.iba-america.com)

**FCC Compliance Statement**

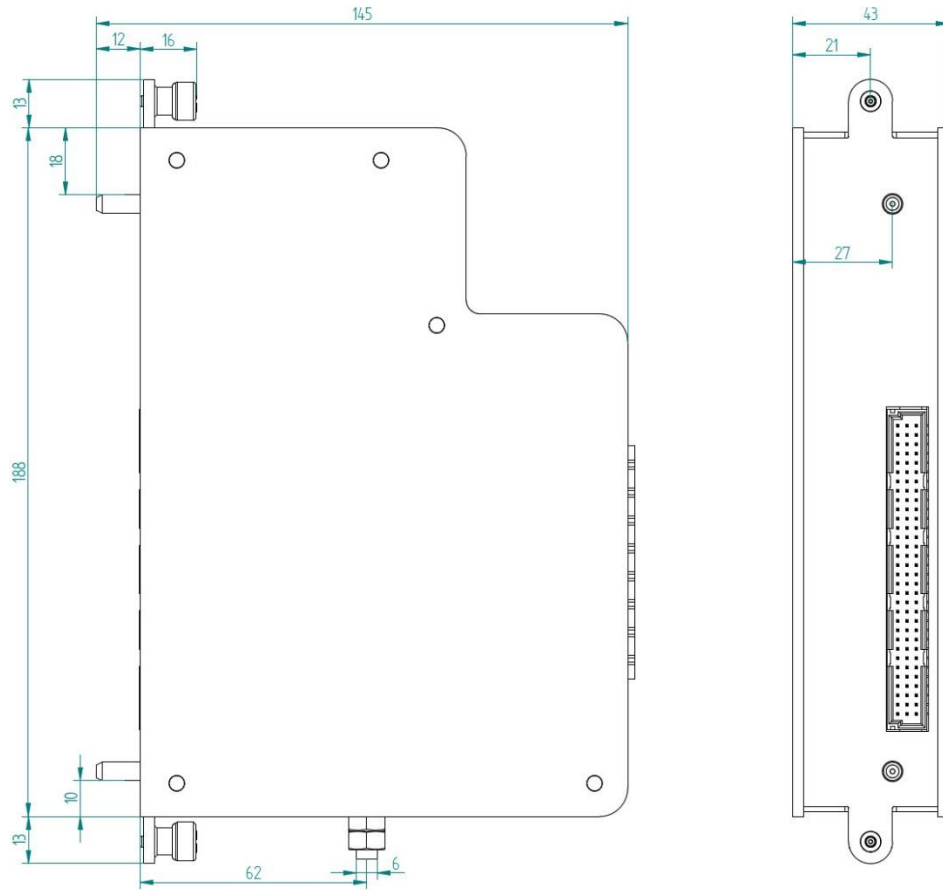
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:  
(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

## 10.2 Analog outputs

Analog outputs		
Number	16	
Design	4 separated galvanically isolated roots of 4 outputs each	
Resolution	16 Bit	
Filter	R/C low pass 40 kHz	
Output signal range	-10 V to +10 V	-20 mA to +20 mA
Load	≥ 1 kΩ	≤ 500 Ohm Ω
Output frequency	Up to 40 kHz <sup>2</sup> , freely adjustable	
Delay	8 μs + 12 μs (setting time until 90 % of the output value is reached)	
Accuracy	< 0.1 % of total measuring range	< 0.5 % of total measuring range
Electrical isolation		
	Root-root	AC 2.5 kV
	Root-housing/power supply	AC 2.5 kV
Connector type	4 x 12-pin multi-pin connector, screw-type terminal (0.14 mm <sup>2</sup> to 1.5 mm <sup>2</sup> ), included in delivery	
Protective functions		
Safe state	Channel root switched off	
Current limitation	Short circuit protection	
Hardware error (e. g. over temperature)	The root switches to „safe state“, when connection is incorrect (resettable via software)	

<sup>2</sup> deviating output frequency with ibaLogic (up to 1 kHz) and ibaPDA (up to 20 Hz)

## 10.3 Dimensions



(dimensions in mm)

## 11 Support and contact

### Support

Phone: +49 911 97282-14

Fax: +49 911 97282-33

E-Mail: [support@iba-ag.com](mailto:support@iba-ag.com)



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### Note

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

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### Contact

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

**[www.iba-ag.com](http://www.iba-ag.com)**