



# ibaBM-DIS-i-80

Data distributor

Manual

Issue 1.3

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 <http://www.iba-ag.com>.

## Protection note

Windows® is a label and registered trademark of the Microsoft Corporation. Other product and company names mentioned in this manual can be labels or registered trademarks of the corresponding owners.

## Certification

The device is certified according to the European standards and directives. This device corresponds to the general safety and health requirements. Further international customary standards and directives have been observed.



Issue	Date	Revision	Chapter / pages	Author	Version HW/FW
1.3	04-2023	New hardware version A3		Ms, st	

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# 1 About this manual

This manual describes the construction, the use and the operation of the device ibaBM-DIS-i-8o.

## 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 Designations

The following designations are used in this manual:

Action	Designations
Menu command	Menu „Logic diagram“
Call of menu command	„Step 1 – Step 2 – Step 3 – Step x“ Example: Select menu „Logic diagram – Add – New logic diagram “
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 Safety instructions

### 2.1 Designated use

The device is electrical equipment. It may be used only in the following applications:

- ☐ Automation of industrial systems
- ☐ Measurement data logging and analysis
- ☐ Applications of iba software products (ibaPDA, ibaLogic etc.) and iba hardware products

The device must not be operated in mains supply circuits!

### 2.2 Designated environment of use

The device should only be operated and stored under conditions as described in chapter "Technical data".

### 2.3 Special safety advice



Do not open the device!

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## 3 Scope of delivery

Check after unpacking the completeness and intactness of the delivery.

The scope of delivery includes:

- ☐ Device ibaBM-DIS-i-8o
- ☐ 2-pole connector (power supply)
- Additional accessories not included in delivery, please see [www.iba-ag.com](http://www.iba-ag.com)

## 4 Product properties

### 4.1 Description

The device ibaBM-DIS-i-8o is a member of iba's device family for distribution of signals via fiber optic cables. The device can be operated in several modes:

- ☐ Copy mode
- ☐ Distribution mode
- ☐ Copy and cut mode

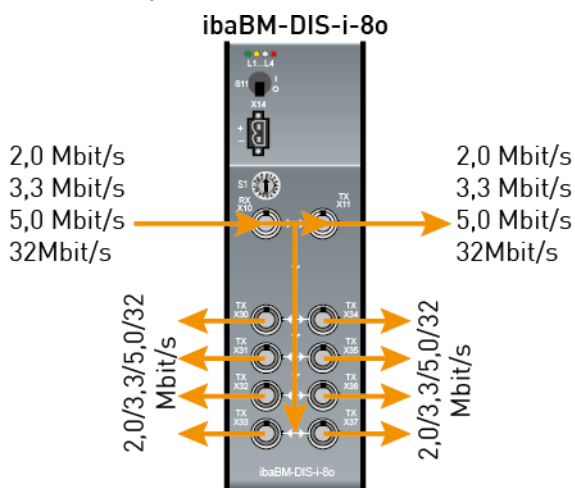
### 4.2 Modes of operation

#### 4.2.1 Copy mode

In copy mode 1 incoming fiber optic data stream is copied to 9 fiber optic output links. The output signal follows the input signal with minimum delay and without any modification. All via iBaNet fiber optics transmitted signals of any iBaNet protocol type can serve as an input signal. The device automatically detects the type of input signal and adjusts the output links accordingly.

##### Application

- ☐ Connecting one fiber optic cable to multiple input devices
- ☐ As a replacement for the device ibaBM-FOX-i-3o, with more outputs and support of 32 Mbit/s link protocol
- ☐ Distribution of synchronization signals, for synchronizing multiple measurement devices by one fiber optic source.



Principle of copy mode



##### Note

5 Mbit/s link protocol: Only uni-directional mode is supported.



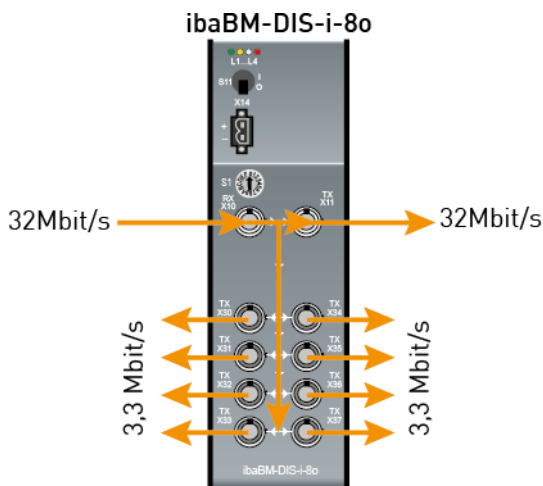
### 4.2.2 Distribution mode

In distribution mode 1 incoming fiber optic data stream, transmitted at 32 Mbit/s and containing 512 analog and 512 digital signals, is split into 8 fiber optic output streams, containing 64 analog and 64 digital signals each and transmitted at 3.3 Mbit/s.

An additional output provides for a mirrored input data stream. If necessary this output can be used to feed more devices interconnected in a daisy chain. In distribution mode the device works in the opposite way like an ibaBM-COL-8i-o.

#### Application

- ☐ Supply of up to 8 ibaNet750 nodes (or similar devices) by 1 fiber optic output.
- ☐ Reduction of fiber optic cabling over long distances
- ☐ Collection of 8 input lines by ibaBM-COL-8i-o, transmission over one fiber optic conductor and redistribution on 8 output links by ibaBM-DIS-i-8o.



Principle of distribution mode

### 4.2.3 Copy and cut mode

In copy and cut mode 1 incoming fiber optic data stream with 32 Mbit/s is copied to 8 outputs and reduced to 3.3 Mbit/s. Each fiber optic stream with 32 Mbit/s, respectively 32Mbit ibaNet protocol, can be used as incoming signal. Depending on the cycle time, the telegrams are cut and only the first bytes are transmitted.

In copy and cut mode, it is important, that data to be transmitted are written at the beginning of the 32Mbit telegram.

The data type at the output side corresponds to the data type of the 32Mbit input. The data type at the 3.3 Mbit/s output side can be either INT (e. g. for ibaPADU-8) or REAL (e. g. for ibaLink-SM-64-io).

When the cycle time is  $\geq 100 \mu s$ , the first 256 bytes of analog data and the first 8 bytes of digital data are copied to the outputs.

When the cycle time is  $< 100 \mu s$ , the first 128 bytes of analog data and the first 8 bytes of digital data are copied to the outputs.

## 4.3 Certificates

The device is certified according to:

- ☐ CE
- ☐ FCC (Class B)

## 4.4 Device views

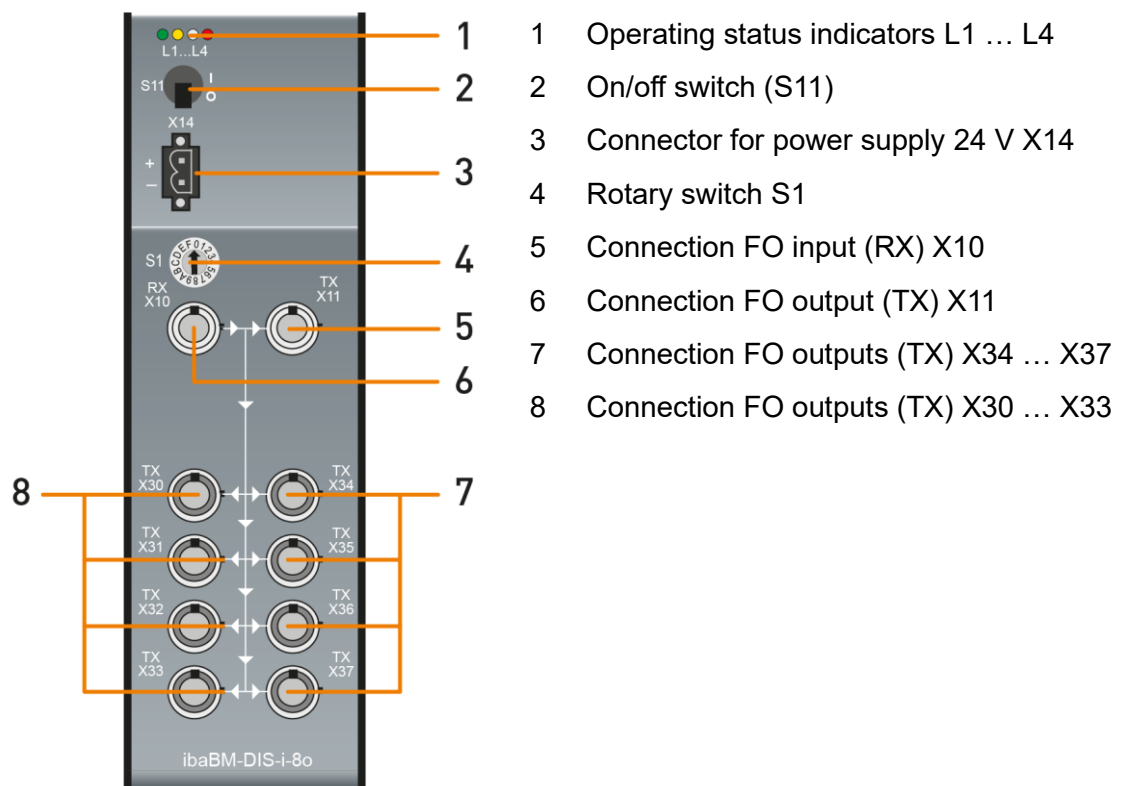
### 4.4.1 Front view



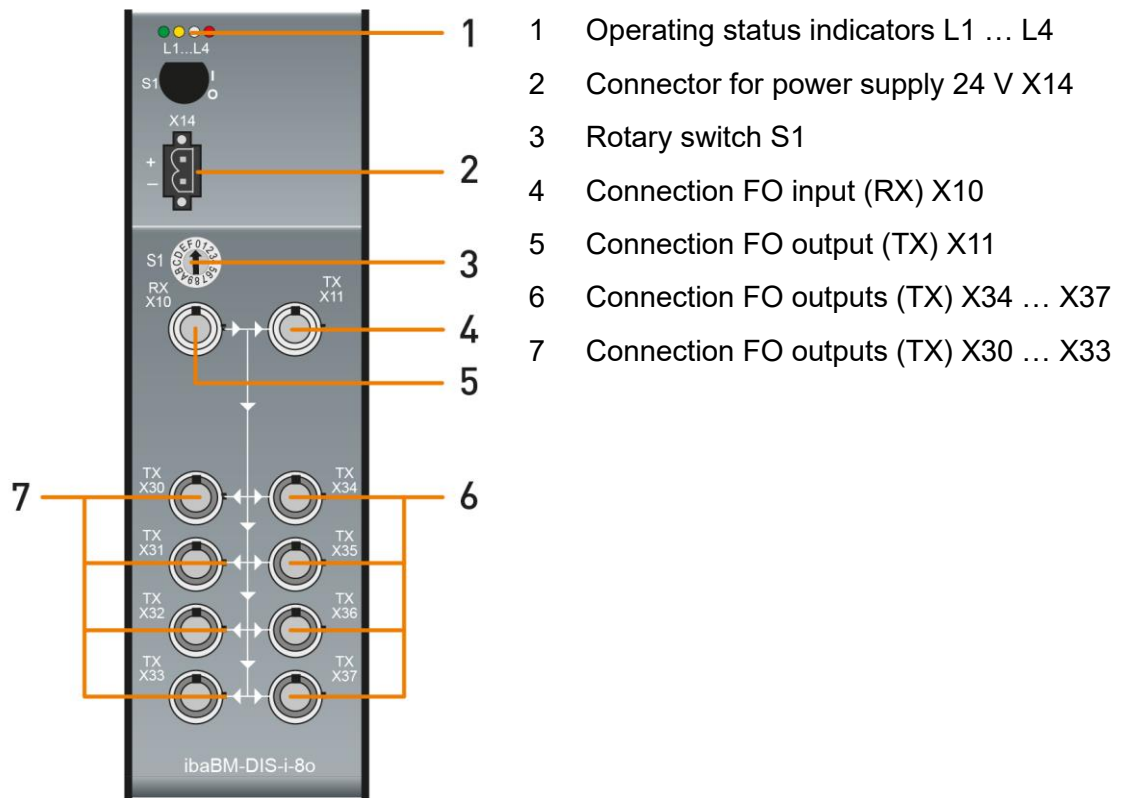
#### Note

Beginning with hardware version A3, the on/off switch (S11) is eliminated.

Beginning with hardware version A3, the devices can be switched on or off by connecting them to or disconnecting them from the power supply.

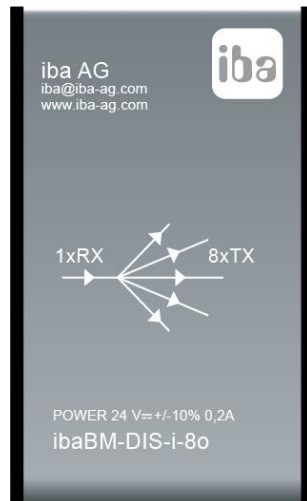


Front view HW version A1, A2



Front view HW version A3

#### 4.4.2 Top view



Manufacturer: iba AG

Support: iba@iba-ag.com

Internet: www.iba-ag.com

Certification: CE, FCC (Class B)

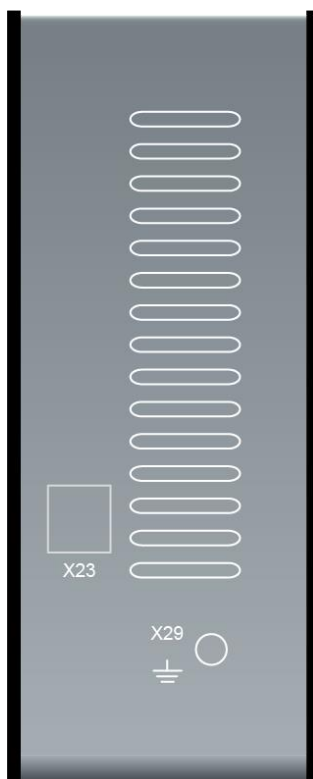
Power supply: DC 24 V,  $\pm 10\%$ ; 0.2 A

Product name: ibaBM-DIS-i-8o

Top view

#### 4.4.3 Bottom view

Connectors on the device bottom:



X23 Service interface (USB)

X29 Earth connection

Bottom view

## 4.5 Indicators

Different colored LEDs indicate the device status.

### Device status

LED	Color	Status	Description
L1	Green	Blinking	Ready for operation, power supply is on
		Off	Out of order, no power supply
L2	Yellow	On	A valid 2.0 Mbit/s, 3.3 Mbit/s or 5.0 Mbit/s signal has been detected
		Off	No signal detected or 32 Mbit/s
L3	White	On	A valid 32 Mbit/s signal has been detected
		Off	No 32 Mbit/s signal detected
L4	Red	Blinking	Error
		Off	OK

## 4.6 Operating elements

### Mode of operation switch



Position	Mode	Description
0	Copy mode	All output signals = input signal for all ibaNet protocols
1	Distribution mode	Input: 32 Mbit/s Outputs: 8 x 3.3 Mbit/s
2	Distribution mode "Integer"	Input: 32 Mbit/s Outputs: 8 x 3.3 Mbit/s Independent of the real data type, the telegram mode Integer (INT) is generated for all outputs.
3	Distribution mode "Real"	Input: 32 Mbit/s Outputs: 8 x 3.3 Mbit/s Independent of the real data type, the telegram mode REAL is generated for all outputs.

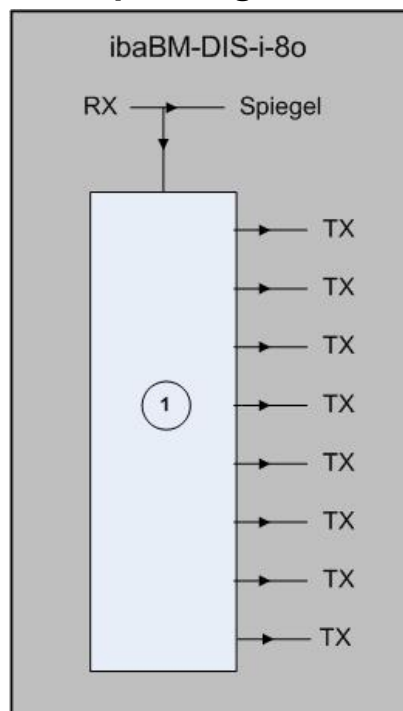
Position	Mode	Description
4	Copy and cut mode	Input: 32 Mbit/s Outputs: 8 x 3.3 Mbit/s (INT/REAL) Input cycle time $\geq 100 \mu\text{s}$ : the first 256 bytes of analog data (any data type) and the first 8 bytes of digital data are transmitted Input cycle time $< 100 \mu\text{s}$ : the first 128 bytes of analog data (any data type) and the first 8 bytes of digital data are transmitted
5 to F	-	Reserved for future extensions

#### On/Off switch



Position	Status
0	Switched off, device not ready for operation
1	Switched on, device ready for operation

## 4.7 Principle diagram



Legend:

1 Mirror/distributor

## 5 Operation

### 5.1 Requirements

In order to connect the device the following conditions apply:

- ☐ ibaNNet fiber optic (FO) connections and cabling
- ☐ In copy mode:
  - Input: Any iba device with ibaNNet FO output
  - Outputs: Any iba device with ibaNNet FO input (some restrictions apply)
- ☐ In distribution mode:
  - Input: iba devices with 32 Mbit/s FO output
  - Outputs: iba devices with 3.3 Mbit/s FO input

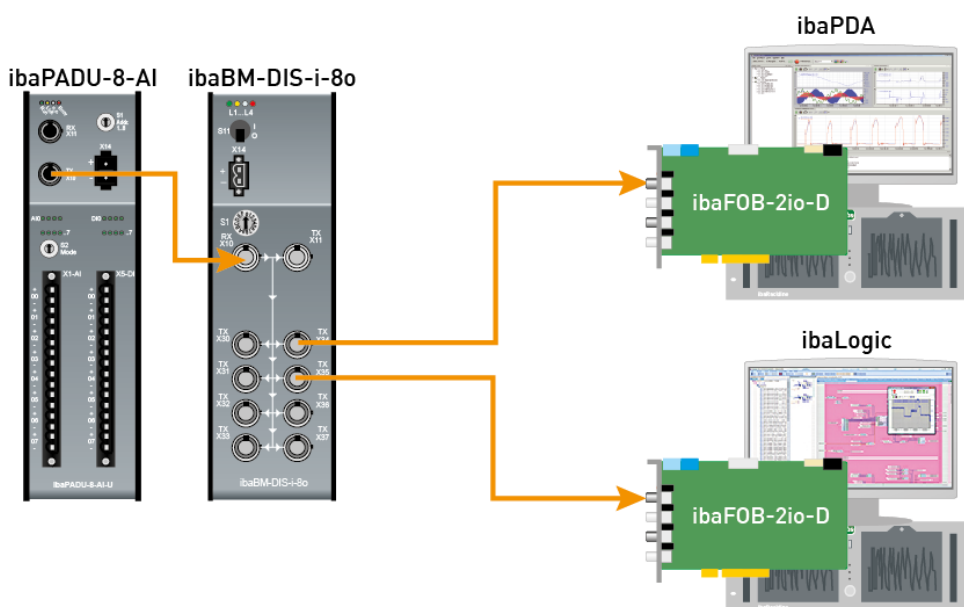
### 5.2 Application

#### 5.2.1 Copy mode

##### 5.2.1.1 Connecting a measurement device with 2 or more computers

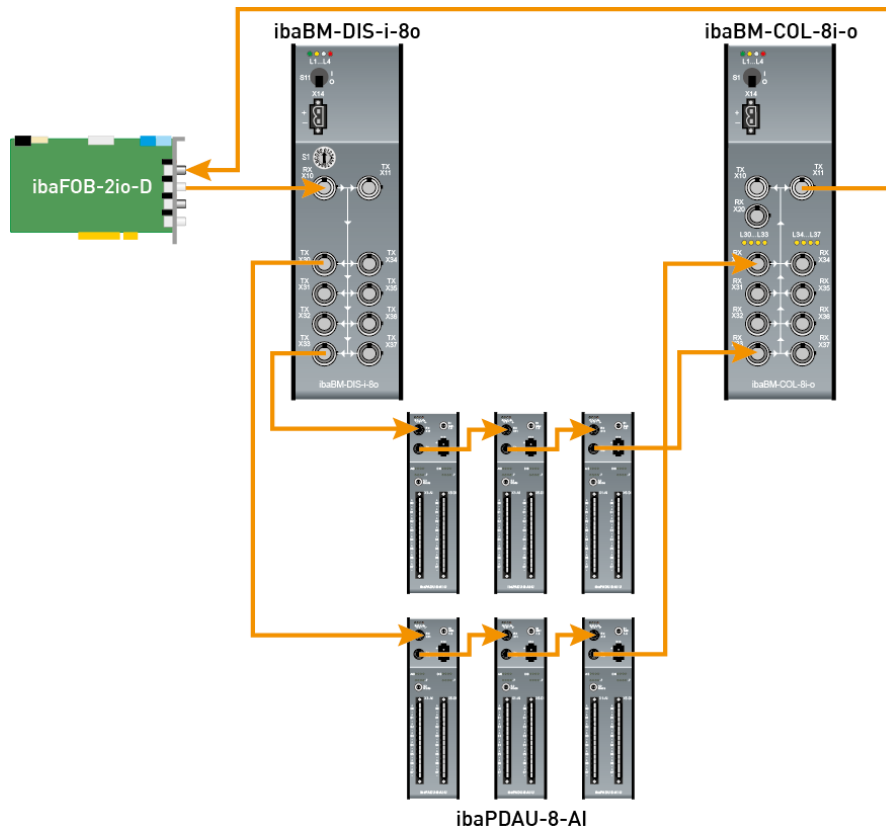
The measured signals from a bus module, e. g. ibaBM-DPM-S, or from an ibaPADU-S station can be made available to multiple systems by means of ibaBM-DIS-i-8o. The receiving systems may be:

- ☐ ibaPDA, e. g. for process monitoring and troubleshooting
- ☐ ibaQDR, e. g. for recording of product and quality data
- ☐ ibaLogic, e. g. for process control



### 5.2.1.2 Multiplication of synchronization signals

If synchronous sampling of many iba field devices (e. g. single or interconnected ibaPADU-8) in a large scale installation is required, the devices can be synchronized by means of an ibaBM-DIS-i-8o. One FO telegram is multiplied with the ibaBM-DIS-i-8o and serves as synchronous source for all FO links. It is possible to connect more devices in a row (daisy-chain).



In figure 7 an FO output link of an ibaFOB-2io-D card is used for synchronization of all connected ibaPADU devices. The measured signals are transferred to an ibaFOB-input card.

An ibaBM-COL-8i-o device was added in the example above in order to save input links on the ibaFOB input card.



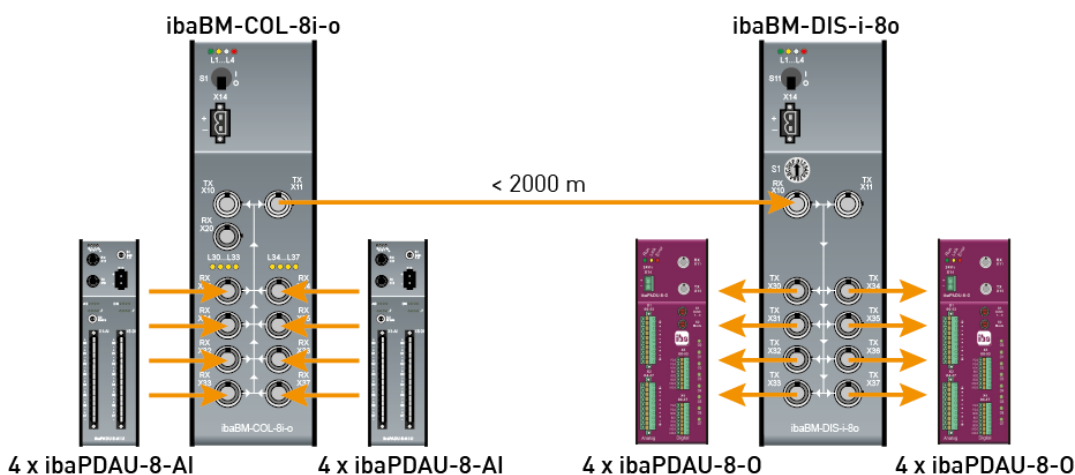
## 5.2.2 Distribution mode

### 5.2.2.1 Distribution of signals of a 32 Mbit/s data stream

If the output signals of an iba device with 32Mbit ibaNet protocol should be transmitted and distributed to ibaPADU-8-O or ibaNet750 devices then up to 8 FO links (3.3 Mbit/s) can be supplied with data. In an installation with ibaPADU-8-O devices, for instance, up to 64 devices can be connected.

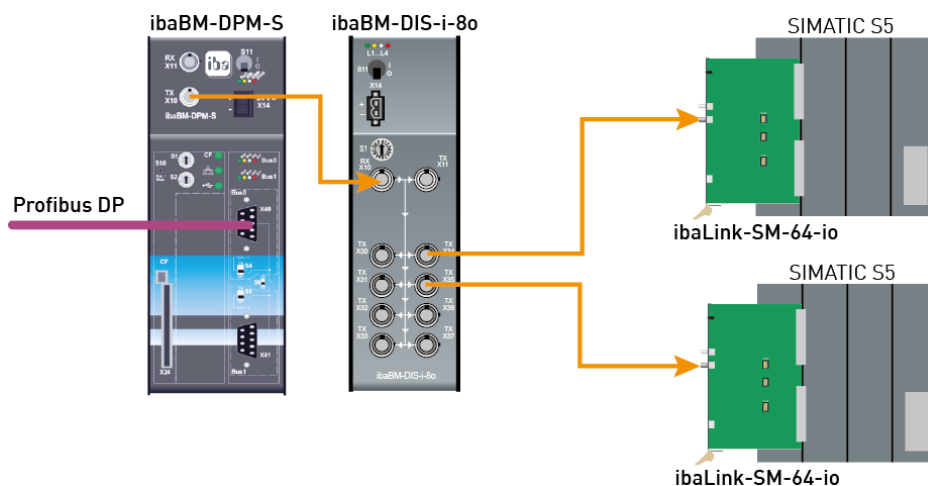
### 5.2.2.2 Reduction of fiber optic cabling

In order to reduce the number of fiber optic cables, particularly over long distances, the ibaBM-COL-8i-o can be used as a collector for up to 8 FO links (3.3.Mbit/s). Only 1 cable is required for the data transmission over long distance. Seven FO cables can be saved. On the target side an ibaBM-DIS-i-8o serves as a data distributor in order to supply 8 FO links again.



## 5.2.3 Copy and cut mode

The measuring signals from a PROFIBUS can be made available to several older S5 control systems. The bus monitor ibaBM-DPM-S receives the signals from the PROFIBUS and transmits them to ibaBM-DIS-i-8o. ibaBM-DIS-i-8o provides the signals to several S5 control systems, equipped with ibaLink-SM-64-io cards as receiver.



PROFIBUS connection to several SIMATIC S5 systems

## 6 Installation, Connection, Disassembly

### 6.1 Installation

1. Insert the clip of the mounting rail fastened on the device into the mounting rail.
2. Press the device down in such a way that the clip of the mounting rail engages with a click.

### 6.2 Connection

1. If it is stipulated for the system that the device must be grounded, connect it to earth.
2. Connect the power supply. Observe the correct polarity.
3. Connect the fiber optic cables to the inputs and outputs.
4. If you have connected all the required fiber optic cables, switch on the device.



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**Note**

The device will immediately switch into ready-for-operation mode. The LED L1 is blinking.

During current operation you are able to perform operations on the device. The device can remain switched on.

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### 6.3 Disassembly



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**Note**

If the power supply is interrupted, the device is no longer ready for operation. No LEDs are lit up or blinking.

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1. Switch off the device.
2. Disconnect the power supply.
3. Disconnect it from the earth.
4. Disconnect all FO cables.
5. Close the open inputs and outputs with a cover.
6. Hold the device to prevent it from falling down and press it slightly downwards.
7. After that pull the device and lift it up. The clip of the mounting rail will disengage with a click.
8. Remove the device.

When storing or transporting the device observe the values specified in the chapter "Technical data".

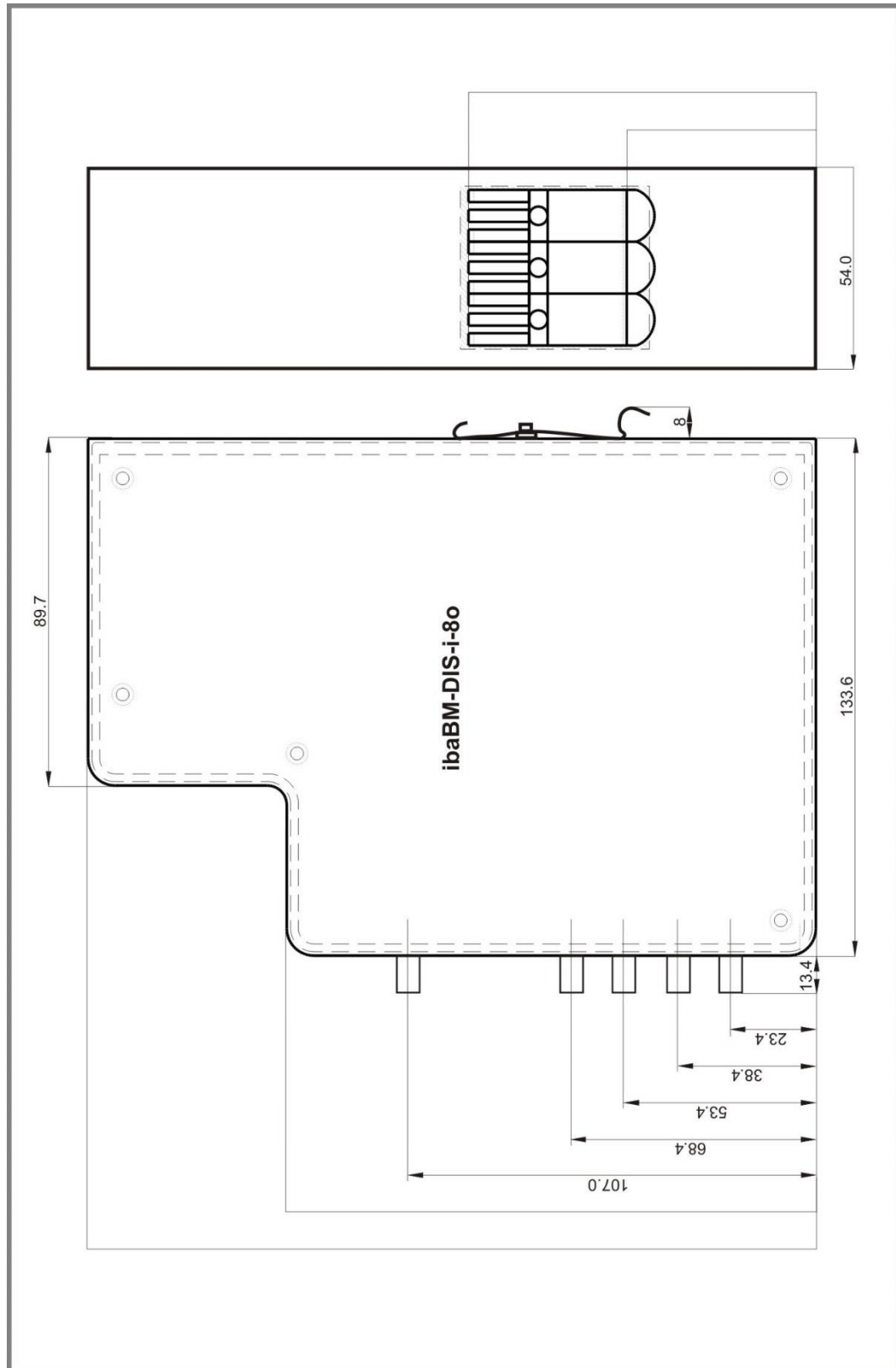
## 7 Technical data

### 7.1 Main data

Manufacturer	iba AG, Germany
Description	Device for distribution of ibaNet connections
Order number	13.114100
<b>Power supply and interfaces</b>	
Power supply	DC 24 V, $\pm 10\%$ , 0.2 A, not stabilized
Power consumption	< 5 W
Input	1 fiber optic link with - 32 Mbit/s in distribution mode - 2.0 Mbit/s, 3.3 Mbit/s, 5.0 Mbit/s (uni-directional) or 32 Mbit/s in copy mode
Outputs	1 fiber optic link (mirrored input), 8 fiber optic links for distribution/copy
Fiber optic cable	62.5 $\mu\text{m}$ /125 $\mu\text{m}$
Fiber optic coupling	ST-plug
FO cable length	Max. 2000 m, without repeater
Copy mode	1 input with 2.0 Mbit/s, 3.3 Mbit/s, 5.0 Mbit/s (uni-directional), 32 Mbit/s, mirrored to 8 + 1 outputs
Distribution mode	1 input (32 Mbit/s, 1 ms sampling time) with 512 digital and 512 analog signals split and distributed on 8 outputs (3.3 Mbit/s, 1 ms sampling time) with 64 digital and 64 ana- log signals each
Copy and cut mode	1 input (32 Mbit/s), 8 outputs (3.3 Mbit/s)  Cycle time $\geq 100\ \mu\text{s}$ : the first 256 bytes of analog data and the first 8 bytes of digital data are copied to the outputs.  Cycle time < 100 $\mu\text{s}$ : the first 128 bytes of analog data and the first 8 bytes of digital data are copied to the outputs.
Indicators	4 LEDs (operating status)
Operating elements	Rotary switch (operation mode)
<b>Compliant devices</b>	
In copy mode:	
Input	Any iba device with an FO output link
Output	Any iba device with FO input link (some restrictions apply)
In distribution and copy and cut mode:	
Input	iba devices with 32 Mbit/s FO output, e.g. ibaFOB-D cards, ibaBM-COL-8i-o, ibaBM-DPM-S
Output	iba devices with 3.3 Mbit/s FO input, e. g. ibaN750-BM

Operating and environmental conditions	
Installation	Mounting rail according to DIN EN 60715
Cooling	Passive
Operating temperature	32 °F to 122 °F (0 °C to +50 °C)
Storage temperature	-13 °F to 149 °F (-25 °C to +65 °C )
Transport temperature	-13 °F to 149 °F (-25 °C to +65 °C )
Orientation	Vertical (typ.)
Humidity class	F, no condensation
Protection class	IP20
Certificates	CE, EMV (EN 61326-1:2006, Class A), FCC (Class B)
Mechanical stability	DIN IEC 68-2-6 (if correctly mounted)
Dimensions (width x height x depth)	2.13 inch x 7.40 inch x 6.10 inch (including mounting rail clip) 54 mm x 188 mm x 155 mm
Weight (incl. box and documentation)	2.2 lb (1.050 kg)

## 7.2 Dimension sheet



(Dimensions given in mm)

## 8 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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