ibaBM-FOX-i-3o-D

Optical Signal Multiplier

Manual

Issue 1.1

Manufacturer

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

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.

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Issue	Date	Revision	Chapter/pages	Author	Version HW / FW
1.1	07-2023	HW version A3 without on/off switch		Ms, st	

Table of contents

1 About this manual

This manual describes the construction, the use and the operation of the device ibaBM-FOX-i-3o-D.

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   Scope of delivery

After unpacking you check the completeness and intactness of the delivery.

The scope of delivery includes:

❑ ibaBM-FOX-i-3o-D

❑ 2-pole Phoenix connector (for power supply)

3   Product properties

3.1   Description

The device ibaBM-FOX-i-3o-D (Fiber Optic Multiplier x3) is used for the distribution, multiplication and recovery of optical signals used within the iba family of measurement devices.

iba devices for data acquisition and signal conversion are typically connected via fiber optics (ibaNet). This allows an easy handling of the connections (no termination resistor networks) and provides a high signal-to-noise-ratio for data transmission. Moreover, distributed data acquisition topologies may be built, as large as covering several square miles.

A specific feature of the highly specialized ibaNet measurement network is the ability that the star network topologies can work in uni-directional mode. Hence, the optical signals may be multiplied by simply doubling the input data stream into several output streams with identical information.

Concerning this fact redundant measurement systems using the same I/O infrastructure at different locations can easily be realized. This results in dramatic cost savings that range from purchasing fewer devices to reduced planning and engineering costs.

The ibaBM-FOX-i-3o-D device features one fiber optic input and 3 fiber optic outputs. The input data stream is simply copied to the outputs.

The input link of the device supports all ibaNet link protocols.

The device can also be used as a repeater if a cable length over 2 km (1.24 mls) is required.

3.2   Functionality

The device provides the following functions:

❏ DC 24 V power supply

❏ 4 status LEDs

❏ 1 fiber optic input

❏ 3 fiber optic outputs

❏ Supports ibaNet link protocols 2.0 Mbit/s, 3.3 Mbit/s, 5.0 Mbit/s (only uni-directional) and 32 Mbit/s

❏ Signal refreshing of the incoming data stream (bit refresh)

❏ Delay between input and output < 1 μs

❏ Rugged design with DIN-rail snap mount

3.3   Combination with other iba devices

The following devices and boards of the iba product range may be used in combination with ibaBM-FOX-i-3o-D:

❏ ibaPADU-8/ -16/ -32

❏ ibaPADU-8-O

❏ ibaBM-SLM (SIMOLINK Monitor)

❏ ibaBM-DDCS (ABB DDCS Bus)

❏ ibaBM-DPM-S/-S-64 (Profibus)

❏ ibaBM-CAN

❏ ibaPADU-S-IT

❏ ibaNet750-BM

❏ ibaFOB-io-D (all models and former types)

❏ ibaLink-SM-64-io (SIMATIC S5 (all types), MMC216)

❏ ibaLink-SM-128V-i-2o (VME bus systems)
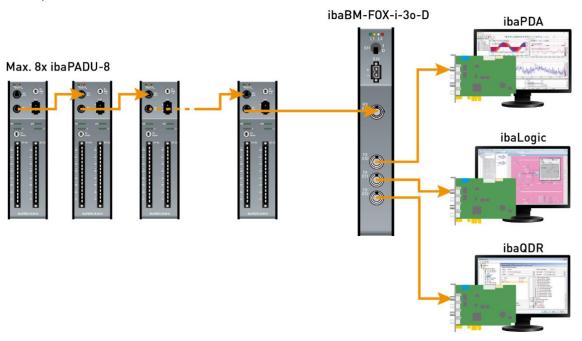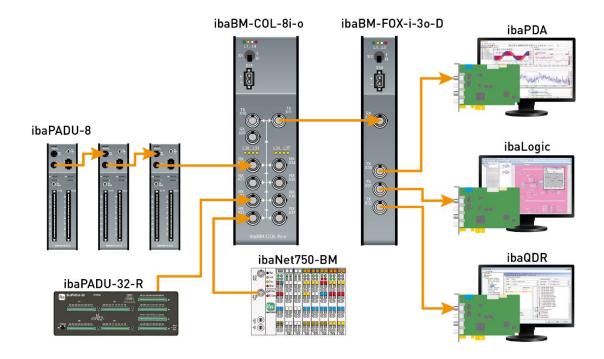
❏ ibaBM-COL-8i-o

❏ ibaBM-DIS-i-8o

3.4   System Topologies

The ibaBM-FOX-i-3o-D provides the ability to multiply fiber optical links. This is possible at each interconnection between iba devices, also between ibaPADU-8 and ibaPADU-8-O devices.

Examples:

3.5   Programming

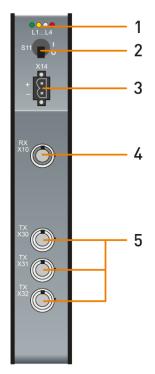No programming or setting is necessary to operate the device.
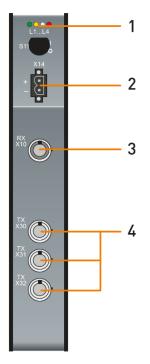
3.6   Device views

> **i** **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.

1   Operating status indicators L1 … L4

2   On/off switch S11

3   Connector for power supply 24 V X14

4   FO input (RX) X10

5   FO output (TX) X30 … X32

Front view hardware version A1, A2

1   Operating status indicators L1 … L4

2   Connector for power supply 24 V X14

3   FO input (RX) X10

4   FO output (TX) X30 … X32

Front view hardware version A3

3.7   Status LEDs (L1 to L4)

The 4 LEDs indicate the device status.

LED	Color	Status	Description
L1	green	Blinking	Device is working, power supply ok
		Off	Out of operation, no power supply
L2	yellow	On	Data transfer rate 2.0 Mbit/s, 3.3 Mbit/s or 5.0 Mbit/s detected on input link
L3	white	On	Data transfer rate 32 Mbit/s detected on input link
L4	red	Blinking	Error

4   Mounting and Dismounting

4.1   Mounting

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.

3. Observe the correct polarity of supply voltage. Connect the fiber optic cable to the inputs and outputs.

4.2   Dismounting

1. Switch off the device and disconnect the power supply.

2. Disconnect all fiber optic cables.

3. Close the open inputs and outputs with a cover.

4. Hold the device to prevent it from falling down and press it slightly downwards.

5. After that pull the device and lift it up. The clip of the mounting rail will disengage with a click.

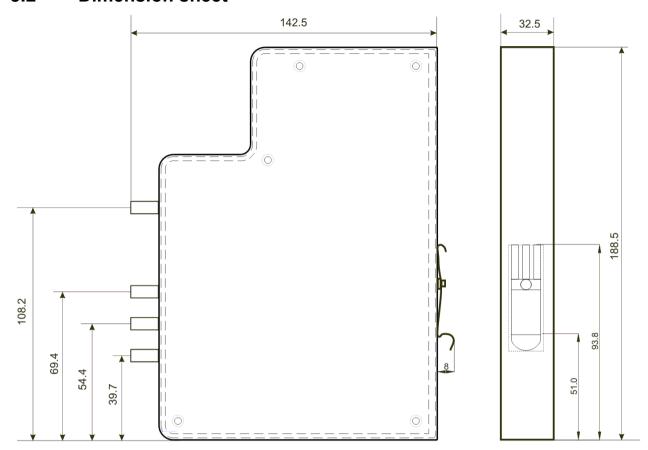6. When storing or transporting the device observe the values specified in the chapter "Technical data".

5 Technical data

5.1 Main data

Short description	
Name	ibaBM-FOX-i-3o-D
Description	Optical multiplier
Order number	13.113501
Connections	
ibaNet	1 Fiber optic input 3 Fiber optic outputs
FO cable FO connectors	62.5/125 µm ST Lean Plug-in connector
Length FO line	Max. 6562 ft (2000 m)
Baudrate	2.0 Mbit/s, 3.3 Mbit/s, 5.0 Mbit/s (only uni-directional), 32 Mbit/s
Signal delay time	From input to output: <1 µs
Supply, interfaces, operating and indicating elements	
Power supply	DC 24 V ±10%, unstabilized
Current consumption	Max. 200 mA
Indicators	4 LED for device status
Operating and environmental conditions	
Cooling	Passive
Operating temperature	32 °F to 122 °F (0 °C to 50 °C)
Storage and transport temperature	-13 °F to 158 °F (-25 °C to 70 °C)
Mounted orientation	Vertical
Installation altitude	Up to 6,562 ft (2000 m)
Assembly	Snapped on to a DIN rail
Humidity class DIN 40040	F, no condensation
Protection class	IP20
CE conformity	EMI: EN 61326-1
Dimensions and weight	
Dimensions (width x height x depth)	1.30 in x 7.44 in x 5.94 in (33 mm x 189 mm x 151 mm) with DIN-rail clip
Weight (incl. box and documentation)	1.65 lb (0,75 kg)

5.2   Dimension sheet

(Dimensions given in mm)

6   Support and contact

Support

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E-Mail: support@iba-ag.com

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

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www.iba-ag.com.