

Operating instructions  
Bluetooth mesh IO-Link adapter  
**EIO344**

**GB**

11456112 / 00 04 / 2023



## Contents

|         |  |    |
|---------|--|----|
| 1       | Preliminary note . . . . .   | 3  |
| 1.1     | Symbols used . . . . .   | 3  |
| 1.2     | Warnings used . . . . .  | 3  |
| 1.3     | Safety symbol on the device . . . . .  | 3  |
| 2       | Safety instructions . . . . .  | 4  |
| 2.1     | Cyber security . . . . .   | 4  |
| 2.1.1   | Bluetooth password . . . . .   | 4  |
| 3       | Intended use . . . . .   | 5  |
| 3.1     | Restriction of the application area . . . . .  | 6  |
| 4       | Function . . . . .   | 7  |
| 4.1     | Connection possibilities . . . . .   | 7  |
| 4.1.1   | IO-Link connection and outputs . . . . .   | 7  |
| 4.1.1.1 | IO-Link . . . . .  | 7  |
| 4.1.2   | Bluetooth . . . . .  | 7  |
| 4.1.3   | Bluetooth mesh . . . . .   | 7  |
| 5       | Electrical connection . . . . .  | 9  |
| 5.1     | Mounting the connector . . . . .   | 10 |
| 5.2     | Removing the connector . . . . .   | 10 |
| 5.3     | UL application area . . . . .  | 10 |
| 6       | Indicators, output response and troubleshooting . . . . .                                    | 11 |
| 6.1     | LED indicators . . . . .   | 11 |
| 6.2     | LED status indication, output response and troubleshooting . . . . .                         | 11 |
| 7       | Parameter setting . . . . .  | 12 |
| 7.1     | Parameter setting with a PC via IO-Link . . . . .  | 12 |
| 7.2     | Parameter setting with a mobile device via Bluetooth . . . . .                               | 12 |
| 7.3     | Connecting the base station and Bluetooth mesh IO-Link adapter . . . . .                     | 13 |
| 7.3.1   | Integrating a Bluetooth mesh IO-Link adapter outside the range of the base station . . . . . | 14 |
| 7.4     | Data storage for the IO-Link device with moneo blue . . . . .                                | 15 |
| 7.4.1   | Device validation and data storage . . . . .   | 16 |
| 8       | Parameters and commands . . . . .  | 17 |
| 8.1     | Deviceinfo . . . . .   | 17 |
| 8.2     | Adapter . . . . .  | 18 |
| 8.3     | Bluetooth LE . . . . .   | 19 |
| 8.4     | Bluetooth mesh . . . . .   | 20 |
| 8.5     | Switching output . . . . .   | 21 |
| 8.6     | IO-Link master . . . . .   | 22 |
| 8.7     | IO-Link device . . . . .   | 24 |
| 9       | Set-up of the moneo blue application . . . . .   | 26 |
| 9.1     | Installation of moneo blue . . . . .   | 26 |
| 9.2     | Connect a mobile device . . . . .  | 26 |
| 10      | Copyright and trademarks . . . . .   | 27 |
| 11      | Approvals and certificates . . . . .   | 28 |
| 12      | Maintenance, repair and disposal . . . . .   | 29 |

# 1 Preliminary note

You will find instructions, technical data, approvals and further information using the QR code on the unit / packaging or at [documentation.ifm.com](https://documentation.ifm.com).

## 1.1 Symbols used

- ✓ Requirement
- ▶ Instructions
- ▷ Reaction, result
- [...] Designation of keys, buttons or indications
- Cross-reference
-  Important note  
Non-compliance may result in malfunction or interference.
-  Information  
Supplementary note


## 1.2 Warnings used

---

|                  |   |
|------------------|---|
| <b>ATTENTION</b> | <b>ATTENTION</b><br>Warning of damage to property |
|------------------|---|


---

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|   |  |
|---|--|
|  | <b>CAUTION</b><br>Warning of personal injury<br>▷ Slight reversible injuries may result. |
|---|--|

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## 1.3 Safety symbol on the device

-  Safety symbol on the device:
  - ▶ Adhere to the operating instructions for the safe operation of the device.

## 2 Safety instructions

- The unit described is a subcomponent for integration into a system.
  - The system architect is responsible for the safety of the system.
  - The system architect undertakes to perform a risk assessment and to create documentation in accordance with legal and normative requirements to be provided to the operator and user of the system. This documentation must contain all necessary information and safety instructions for the operator, the user and, if applicable, for any service personnel authorised by the architect of the system.
- Read this document before setting up the product and keep it during the entire service life.
- The product must be suitable for the corresponding applications and environmental conditions without any restrictions.
- Only use the product for its intended purpose (→ Intended use).
- If the operating instructions or the technical data are not adhered to, personal injury and/or damage to property may occur.
- The manufacturer assumes no liability or warranty for any consequences caused by tampering with the product or incorrect use by the operator.
- Installation, electrical connection, set-up, programming, configuration, operation and maintenance of the product must be carried out by personnel qualified and authorised for the respective activity.
- Protect units and cables against damage.
- Replace damaged units, otherwise the technical data and safety will be impaired.

### 2.1 Cyber security

#### ATTENTION

Device operation in an unprotected network environment:

- ▷ Unauthorised read or write access to data is possible.
- ▷ Unauthorised manipulation of the device function is possible.
  - ▶ Restrict access to authorised users (e.g. password-protected access).
  - ▶ Set a new password for Bluetooth access.

#### 2.1.1 Bluetooth password

- The access password is 0000.
- The password has no influence on the IO-Link access to the adapter.
- The password can be set and changed via a configuration tool (e.g. moneo|blue).
- The password can be reset via IO-Link.
- An application reset does not reset the password.
- A back-to-box resets the password.
- The corresponding IoT user name is “Administrator” and cannot be changed.

### 3 Intended use

With the Bluetooth mesh IO-Link adapter EIO344, a connected IO-Link device is wirelessly connected to the base station via Bluetooth mesh.

The EIO344 communicates with the device via IO-Link and connects it via Bluetooth mesh directly or via further EIO344s with the base station.



Additional information: → Base station EIO404 [www.ifm.com](http://www.ifm.com)

Using Bluetooth and the APP moneo|blue, the connected device can also be read and configured with a smartphone.

All available functions can be accessed via moneo|blue APP. The APP is available for Android and iOS in the corresponding app store.

The EIO344 has the function of IO-Link data storage. This enables a defective IO-Link device to be replaced quickly.

Pin 2 of the IO-Link device is connected through in the adapter, while pin 4 is reproduced in the adapter (only applies to the switching outputs). Both signals can be used as control signals, e.g. for the PLC.

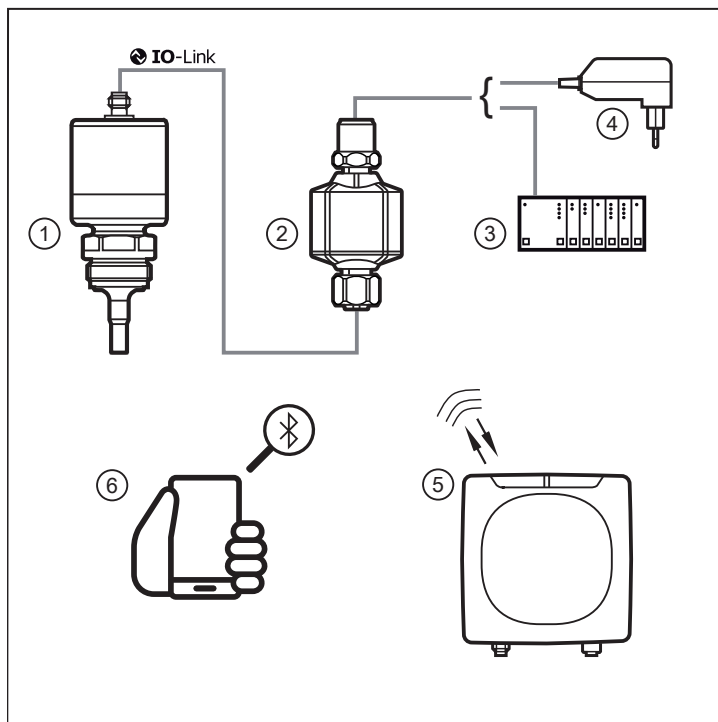


Fig. 1: Application example

- |  |                              |
|--|------------------------------|
| 1: IO-Link device                          | 2: EIO344                    |
| 3: PLC with voltage supply                 | 4: Power supply              |
| 5: Base station EIO404 with Bluetooth mesh | 6: Smartphone with Bluetooth |



In addition to the use as a Bluetooth mesh IO-Link adapter described above, the EIO344 can also be operated as a simple repeater (without a connected device). In this case, the M12 socket on the device side must be closed with a protective cap (→ Accessories).



Attach the supplied label near the device.

### 3.1 Restriction of the application area



The device is not suited for environments with particular requirements on mechanical stability (e.g. shock/vibration).

The unit is intended for indoor use only.

Observe the operating conditions. → Technical data [documentation.ifm.com](https://documentation.ifm.com)

The received and transmitted process data via Bluetooth Mesh are used for plant monitoring and only to a limited extent for plant control because they are not transmitted in real time.

## 4 Function

### 4.1 Connection possibilities

The EIO344 has several connection possibilities, which also include various functions.

#### 4.1.1 IO-Link connection and outputs

This device has two IO-Link communication interfaces:

##### M12 connector:

- Power supply
- Output pin 2 (connected through from the device) and digital output pin 4
- Pin 4 for parameter setting with an IO-Link software for the device side (reset, events, history)

##### M12 socket:

- Communication interface for one IO-Link device.

##### 4.1.1.1 IO-Link

IO-Link is a communication system for connecting intelligent sensors and actuators to automation systems. IO-Link is standardised in the IEC 61131-9 standard.



General information on IO-Link at [io-link.ifm](https://io-link.ifm.com)



Input Output Device Description (IODD) with all parameters, process data and detailed descriptions of the device at [documentation.ifm.com](https://documentation.ifm.com)

IO-Link offers the following advantages:

- Interference-free transmission of all data and process values
- Parameter setting in the running process or presetting outside the application
- Parameters for identifying the connected devices in the system
- Additional parameters and diagnostic functions
- Automatic backup and restore of parameter sets in case of device replacement (data storage)
- Logging of parameter sets, process values and events
- Device description file (IODD - Input Output Device Description) for easy project planning
- Standardised electrical connection
- Remote maintenance

#### 4.1.2 Bluetooth

If a mobile device (e.g. smartphone) with Bluetooth is used, the following functions are supported:

- Configuration of the IO-Link interface (of the adapter) to the IO-Link device
- Parameter setting of the adapter
- Parameter setting of the IO-Link device

#### 4.1.3 Bluetooth mesh



When using moneo, at least version 1.11 is required for the full range of functions.

Once Bluetooth mesh is set up, the EIO344 automatically establishes the connection to a base station (EIO404). The connection can be made directly to the base station or via several Bluetooth mesh IO-Link adapters EIO344.

Cyclical process data is sent to the base station at a time interval of 1 s...24 h. With the moneo configure application (on a PC or notebook), this process data can be read at the base station and the system can be monitored.

In addition, the IO-Link devices connected in the Bluetooth mesh network can be accessed and configured.



Installation examples can be found in the operating instructions for the Bluetooth mesh IoT base station EIO404.

► Operating instructions EIO404 [documentation.ifm.com](https://documentation.ifm.com)

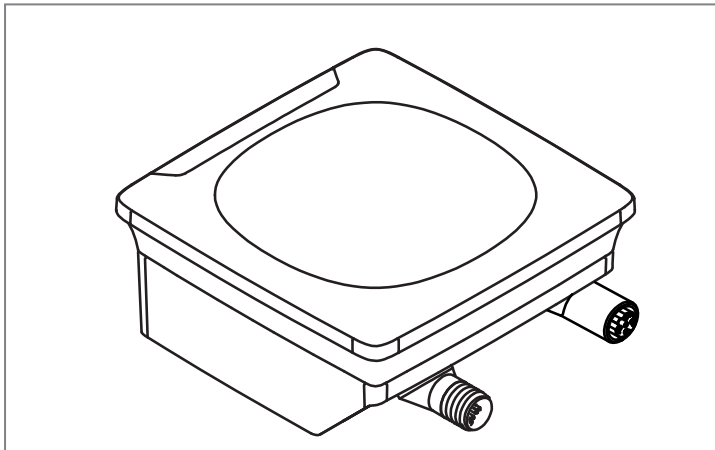


Fig. 2: EIO404 Bluetooth mesh IoT base station



## 5 Electrical connection



The unit must be connected by a qualified electrician.

Observe the national and international regulations for the installation of electrical equipment.

Voltage supply according to SELV, PELV.



### CAUTION

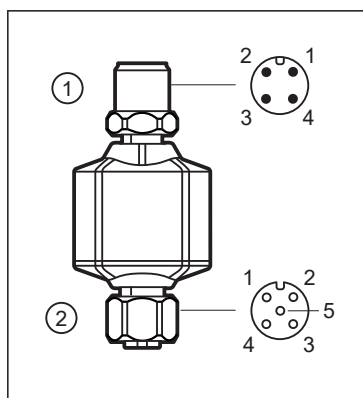
Input current is not limited.

▷ No fire protection.

▶ Protect circuits.

▶ Disconnect power.

▶ Connect the unit as follows:



- 1: 4-pole M12 connector
  - Output for digital and analogue signals
  - Input for IO-Link parameter setting
- 2: 5-pole M12 socket
  - Input for the IO-Link interface of the device

Fig. 3: Electrical connection

| Pin | Output for digital and analogue signals              | Input for IO-Link parameter setting |
|-----|--|-------------------------------------|
| 1:  | L+ (supply voltage EIO344 + device)                  | L+                                  |
| 2:  | OUT2 (connected through pin 2 of the IO-Link device) | Not used                            |
| 4:  | OUT1 digital   | IO-Link (parameter setting)         |
| 3:  | L- (supply voltage EIO344 + device)                  | L-                                  |

Tab. 1: M12 connector pin assignment

| Pin | Input for the IO-Link interface of the device |
|-----|---|
| 1:  | L+ (supply voltage of the device)             |
| 2:  | OUT2 (Pin 2 of the IO-Link device)            |
| 4:  | IO-Link                                       |
| 3:  | L- (supply voltage of the device)             |
| 5:  | Not used                                      |

Tab. 2: M12 socket pin assignment



The device must not be externally supplied via the 5-pole M12 input socket (2). Pin 1, pin 2 and pin 3 are each connected through.



Connect the device to the Bluetooth mesh IO-Link adapter using the connection cables provided (→ accessories at [www.ifm.com](http://www.ifm.com)).



A 4-pole socket can also be used for the interface on the device side because pin 5 is not used.

## 5.1 Mounting the connector

To achieve the protection rating indicated in the data sheet:

- ▶ Use IO-Link cable with IP class.
- ▶ Connect the connector with the device.
- ▶ Tighten the coupling nut.
  - Minimum tightening torque: 0.6 Nm (tightening by hand)
  - Maximum tightening torque: 1.5 Nm (using a torque wrench).

## 5.2 Removing the connector

- ▶ Loosen the coupling nut and simultaneously press the connector against the device.

## 5.3 UL application area

For use in the USA and Canada:

- ▶ For connecting the device and the IO-Link device, use UL-certified cables of category CYJV 2/7/8 having suitable ratings.

## 6 Indicators, output response and troubleshooting

The indicator shows the current status of the unit via an LED.

### 6.1 LED indicators

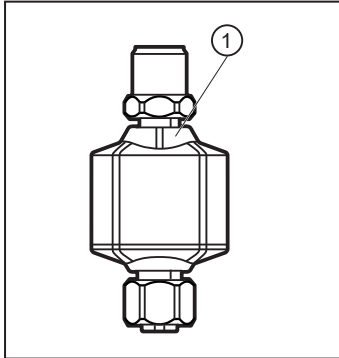


Fig. 4: 1: LED indicators

| Colour | Designation          |
|--------|----------------------|
| Red    | Interference display |
| Green  | Operation indication |
| Blue   | Bluetooth            |

### 6.2 LED status indication, output response and troubleshooting

| LED status                                 | Type <sup>*)</sup> | Description   | Output response     | Troubleshooting                         |
|--|--------------------|---|---------------------|---|
| Green, on                                  | 0                  | The device functions reliably                         | ---                 | ---                                     |
| Green, flashing<br>(200 ms on, 800 ms off) | 3                  | Device update   | ---                 | Wait until the update is completed      |
| Green, double flash                        | 1                  | Optical identification                                | ---                 | ---                                     |
| Red, on                                    | 4                  | Hardware failure                                      | FOU                 | Devices faulty, please replace          |
| Red, 1 Hz                                  | 2                  | Electronics temperature outside the permissible range | ---                 | Check ambient temperature               |
| Red, 1 Hz                                  | 2                  | Faulty IO-Link device process data                    | FOU                 | ---                                     |
| Red, 1 Hz                                  | 3                  | Switching output short-circuited                      | Short-circuit cycle | Check wiring                            |
| Red, 1 Hz                                  | 3                  | Faulty data storage                                   | ---                 | Check device ID                         |
| Red, 1 Hz                                  | 3                  | Output configuration invalid                          | FOU                 | Check configuration                     |
| Red, 1 Hz                                  | 1                  | No BT mesh connection                                 | ---                 | Check the distance to the next receiver |
| Blue, on                                   | 3                  | Bluetooth active                                      | ---                 | ---                                     |
| Blue, double flash                         | 3                  | Provision of Bluetooth mesh successful                | ---                 | ---                                     |
| Off  | 2                  | Voltage too low                                       | Off                 | Check voltage supply                    |

<sup>\*)</sup>0 Normal operation (no error), 1 Warning, 2 Error, 3 Note, 4 Device replacement

## 7 Parameter setting

The parameters of this device can be set via 2 interfaces. It is possible to read information and make changes via IO-Link or Bluetooth. Assigned information and changes are possible for each interface.

For IO-Link, connect the M12 connector to a hardware for parameter setting. The connection is established via Bluetooth with an app. [Installation of moneo|blue \(→ □ 26\)](#)

The parameter setting can be carried out with or without a device connected.



Information about suitable parameter setting software at [io-link.ifm](http://io-link.ifm)

### 7.1 Parameter setting with a PC via IO-Link

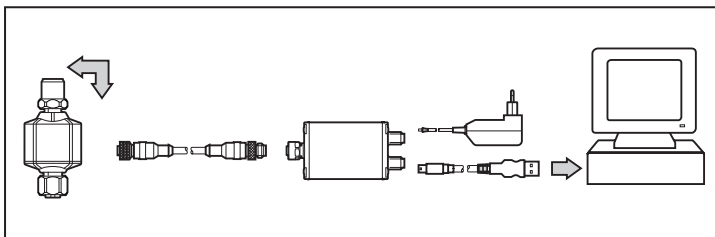


Fig. 5: Parameter setting with a PC

- ▶ Connect the Bluetooth mesh IO-Link adapter to a PC via an M12 connector using an IO-Link master (e.g. USB interface).

[Installation of moneo|blue \(→ □ 26\)](#)

- ▶ Start the parameter setting software and read the device.
- ▶ If the device is not detected, update the device catalogue for the parameter setting software via the internet.
- ▶ Change the parameter settings in the software.
- ▶ Transfer the parameter settings to the device.

### 7.2 Parameter setting with a mobile device via Bluetooth

- ▶ Supply the Bluetooth mesh IO-Link adapter with voltage.

[Installation of moneo|blue \(→ □ 26\)](#)

- ▶ Search for the Bluetooth mesh IO-Link adapter in the app and connect it.

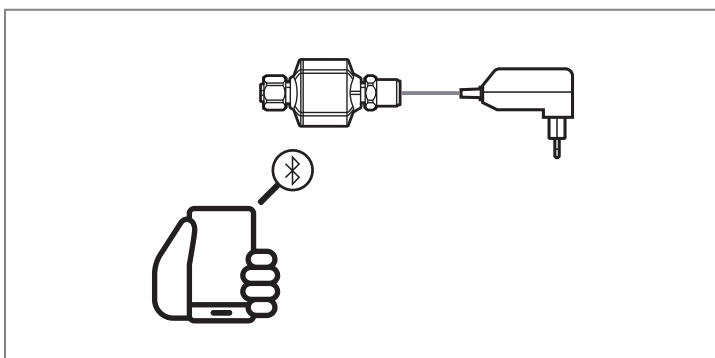


Fig. 6: Parameter setting with a mobile device

- ▶ Change the parameter settings in the software.
- ▶ Transfer the parameter settings to the device.
- ▶ If a device is connected, it can be reached via Bluetooth.

## 7.3 Connecting the base station and Bluetooth mesh IO-Link adapter

### Step 1:

- ▶ Use a PC with the required configuration software and an Ethernet interface.

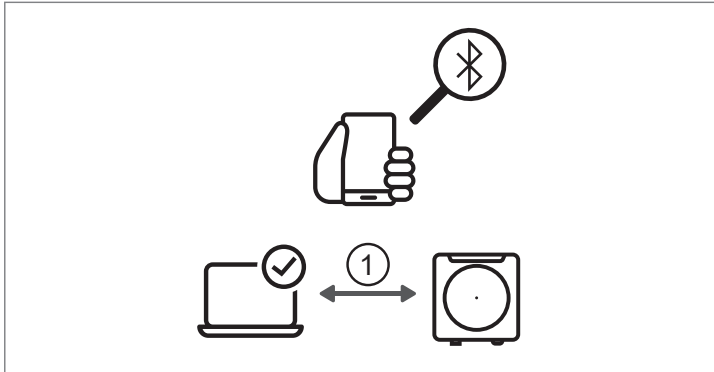


The IP is set up e.g. via the Bluetooth mesh IoT base station EIO404.

- ▶ Operating instructions EIO404 [documentation.ifm.com](https://documentation.ifm.com)

### Alternatively:

- ▶ Use a Bluetooth-enabled mobile device and the moneo|blue app.



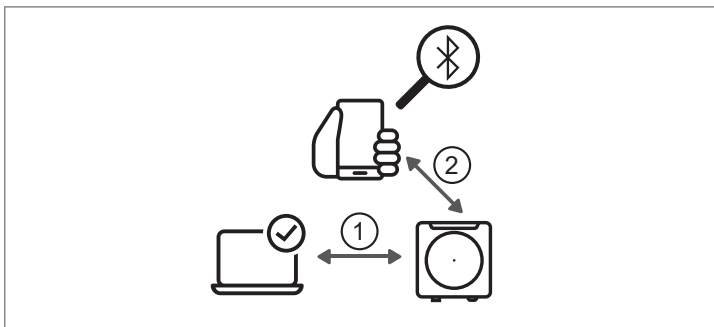
1: Ethernet local intranet

### Step 2:

- ▶ Connect the PC to the base station via the Ethernet interface.

### Alternatively:

- ▶ Connect the mobile device to the base station.

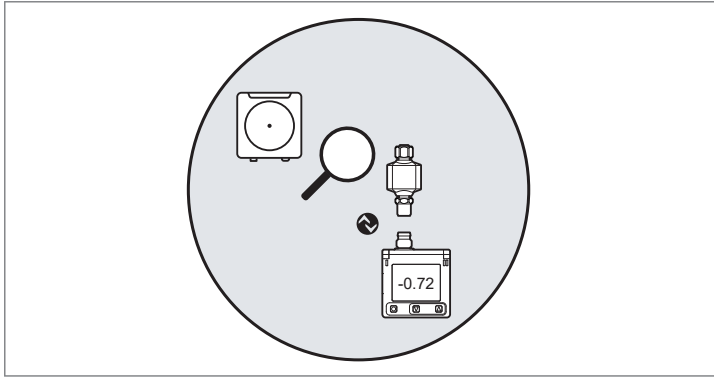


1: Ethernet local intranet

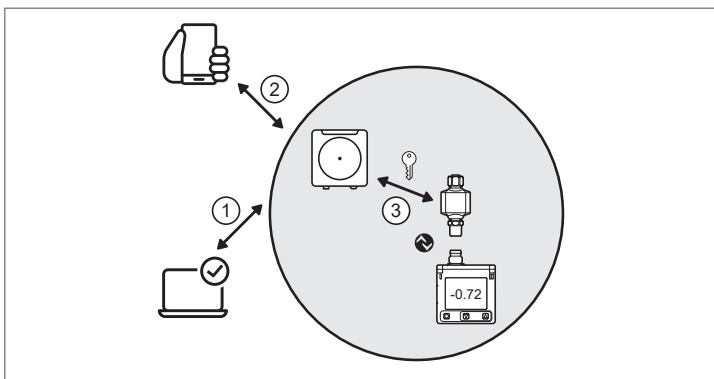
2: Bluetooth

### Step 3:

- ▶ Have the base station search for new Bluetooth mesh IO-Link adapters.

**Step 4:**

- ▶ Select the new Bluetooth mesh IO-Link adapter found.
- ▷ The Bluetooth mesh IO-Link adapter is registered with the base station



- 1: Ethernet local intranet
- 2: Bluetooth
- 3: Bluetooth mesh

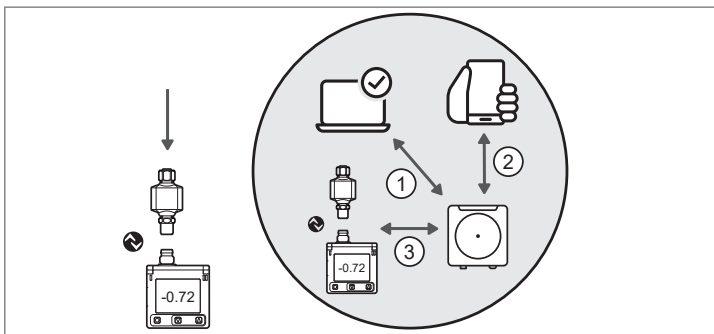
### 7.3.1 Integrating a Bluetooth mesh IO-Link adapter outside the range of the base station



If a Bluetooth mesh IO-Link adapter is outside the range of the base station, it can be reached via other Bluetooth mesh IO-Link adapters, as these can be used as repeaters.

**Step 1:**

- ▶ Connect the new Bluetooth mesh IO-Link adapter to be connected to a device and operating voltage.



- 1: Ethernet local intranet
- 2: Bluetooth
- 3: Bluetooth mesh

**Step 2:**

- ▶ Get a key from the base station.

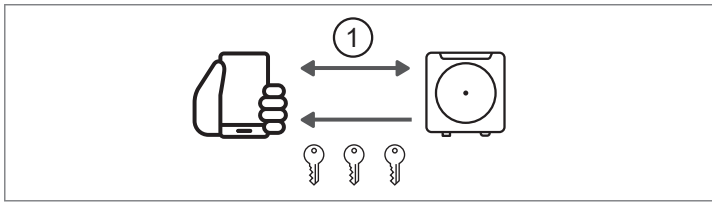


Fig. 7: Ex. mobile device with moneo|blue

1: Bluetooth

**Step 3:**

- ▶ Transfer the key retrieved from the base station to an active Bluetooth mesh IO-Link adapter in the network.

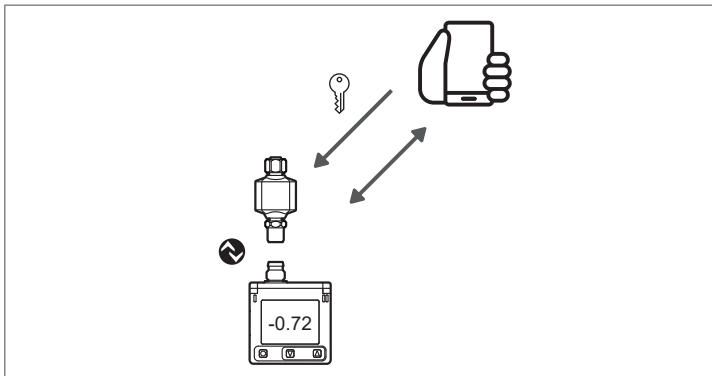

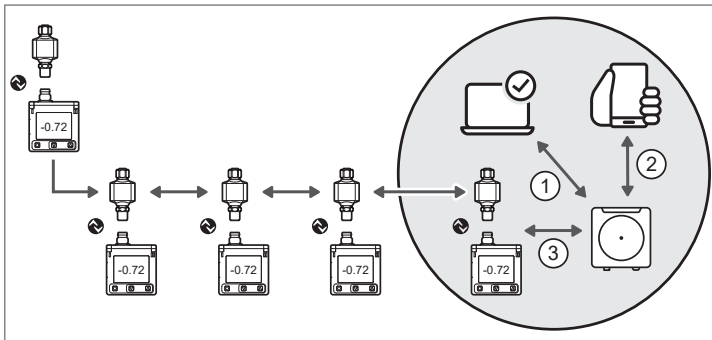


Fig. 8: Ex. mobile device with moneo|blue

 The new Bluetooth mesh IO-Link adapter is registered automatically.

- ▷ The existing Bluetooth mesh IO-Link adapter is now a participant in the BT mesh network.



1: Ethernet local intranet  
 2: Bluetooth  
 3: Bluetooth mesh

## 7.4 Data storage for the IO-Link device with moneo|blue

The IO-Link port provides the following optional functions:

- Storage of the IO-Link device configuration for automatic recovery (data storage)
- Device validation for connected IO-Link device (validation ID)
- Vendor and device identification for active device validation (Vendor ID / Device ID)

- ▶ Set the following parameters as required:

| Parameter                 | Description   | Possible values   |
|---------------------------|---|---|
| Validation / Data Storage | Supported IO-Link standard and behaviour of the IO-Link master when a new IO-Link device is connected to the port<br>► Note the remarks: <a href="#">Device validation and data storage</a> (→ <a href="#">16</a> ) | <ul style="list-style-type: none"> <li>• No check and clear</li> <li>• Type compatible V1.0 device</li> <li>• Type compatible V1.1 device</li> <li>• Type compatible V1.1 device with Backup + Restore</li> <li>• Type compatible V1.1 device with Restore</li> </ul> |
| Vendor ID                 | ID of the manufacturer that is to be validated  | <ul style="list-style-type: none"> <li>• 0 (default)</li> <li>• ...</li> <li>• 65535</li> </ul>   |
| Device ID                 | ID of the IO-Link device that is to be validated  | <ul style="list-style-type: none"> <li>• 0 (default)</li> <li>• ...</li> <li>• 16777215</li> </ul>  |



If the parameter values [Vendor ID] or [Device ID] are changed in the online mode, the data memory will be deleted and a new backup of the parameter values of the connected IO-Link devices will be created in the mesh adapter.

- Save changed values on the device.

### 7.4.1 Device validation and data storage

The user can choose how the IO-Link ports are to behave with regard to the device validation and the storage / recovery of parameter data of the connected IO-Link device.

The following options are available:

| Option  | Validation of the IO-Link device  | Storage of the parameter values   | Recovery of the parameter values   |
|---|---|---|--|
| No check and clear                                | No  | No  | No   |
| Type compatible V1.0 device                       | Yes, check for compatibility with IO-Link standard V1.0.  | No  | No   |
| Type compatible V1.1 device                       | Yes, check for compatibility with IO-Link standard V1.1.  | No  | No   |
| Type compatible V1.1 device with Backup + Restore | Yes, check for compatibility with IO-Link standard V1.1 and identity of design (vendor ID and device ID). | Yes, automatic storage of the parameter values; Changes of the current parameter values will be stored. | Yes, recovery of the parameter values when connecting an identical IO-Link device with factory settings. |
| Type compatible V1.1 device with Restore          | Yes, check for compatibility with IO-Link standard V1.1 and identity of design (vendor ID and device ID). | No, there is no automatic backup; changes of the current parameter values will not be stored.           | Yes, recovery of the parameter values when connecting an identical IO-Link device with factory settings. |



## 8 Parameters and commands

The following parameters / commands can be read / written with a suitable configuration tool (e.g. moneo|blue).

### 8.1 Deviceinfo

Available data points:

| Name                    | Description                                | Value range                    | Access          |
|-------------------------|--|--------------------------------|-----------------|
| ../serialnumber         | Serial number                              | e.g. 000194610104              | ro <sup>1</sup> |
| ../swrevision           | Firmware version                           | e.g. v1.36                     | ro <sup>1</sup> |
| ../bootloaderrevision   | Bootloader version                         | e.g. v0.06                     | ro <sup>1</sup> |
| ../btbootloaderrevision | Bluetooth bootloader version               | e.g. v0.01                     | ro <sup>1</sup> |
| ../productinstanceuri   | Name of the root node in the IoT Core tree | e.g. B4-E3-F9-C7-54-43         | ro <sup>1</sup> |
| ../eepromversion        | EEPROM version                             | e.g. v0.02                     | ro <sup>1</sup> |
| ../btmacaddress         | Bluetooth MAC address                      | e.g. B4-E3-F9-C7-54-43         | ro <sup>1</sup> |
| ../btswrevision         | Bluetooth firmware version                 | e.g. v0.22                     | ro <sup>1</sup> |
| ../hwrevision           | Hardware version                           | e.g. AA                        | ro <sup>1</sup> |
| ../producttext          | Product designation                        | Bluetooth Mesh IO-Link Adapter | ro <sup>1</sup> |
| ../vendor               | Manufacturer                               | ifm electronic gmbh            | ro <sup>1</sup> |
| ../productname          | Product name                               | EIO344                         | ro <sup>1</sup> |
| ../productcode          | Product code                               | EIO344                         | ro <sup>1</sup> |
| ../devicename           | User-specific device name                  | e.g. mesh_adapter01            | rw <sup>2</sup> |

<sup>1</sup> Read only

<sup>2</sup> Read and write

## 8.2 Adapter

The following parameters / commands can be read / written with a suitable configuration tool (e.g. moneo|blue) or via the IoT core



Access to the IoT core of the adapter is only possible via the EIO404 Bluetooth mesh IoT base station. The adapter must be registered with the base station (provisioned).

Available data points:

| Name               | Description  | Value range  | Access          |
|--------------------|--|--|-----------------|
| ../operatinghours  | Operating hours counter since delivery             |  | ro <sup>1</sup> |
| ../operatingstate  | Display of the current device and diagnostic state | <ul style="list-style-type: none"> <li>• 0: Device OK</li> <li>• 1: Bluetooth LE connected</li> <li>• 2: No valid IO-Link process data available</li> <li>• 3: No IO-Link process data available</li> <li>• 4: Master port no device connected</li> <li>• 5: Mesh not provisioned</li> <li>• 6: Mesh connection lost</li> <li>• 7: Switching output wrong setup</li> <li>• 8: Master wrong data storage setup</li> <li>• 9: Mesh bad signal</li> <li>• 10: Mesh sending problems</li> <li>• 11: Mesh too much traffic</li> <li>• 12: Master port short circuit</li> <li>• 13: Switching output short circuit</li> <li>• 14: Under temperature</li> <li>• 15: Over temperature</li> <li>• 16: Undervoltage</li> <li>• 17: Hardware Error</li> </ul> | ro <sup>1</sup> |
| ../temperature/cpu | CPU temperature of the device (in °C)              |  | ro <sup>1</sup> |

<sup>1</sup> Read only

Applicable services:

| Name                              | Description  |
|-----------------------------------|--|
| ../application_reset/factoryreset | Resets settings (except: application specific identifier, system identifier, location identifier, Bluetooth password, Bluetooth mesh network). |
| ../back_to_box/factoryreset       | All settings are set to the factory settings and communication is blocked until the next time the device is switched off and on.               |
| ../signal                         | Trigger flashing of the LED on the device  |
| ../reboot                         | Rebooting device   |

## 8.3 Bluetooth LE

Available data points:

| Name              | Description  | Value range   | Access          |
|-------------------|--|---|-----------------|
| ../bluetooth_name | Station name of the unit (string with max. 22 characters)  | e.g. eio344_adapter01   | rw <sup>1</sup> |
| ../securitymode   | Status of the security mode<br><b>NOTE! The security mode does not show whether a password has been set or not.</b>  | <ul style="list-style-type: none"> <li>• 0: disabled</li> <li>• 1: enabled</li> </ul> | ro <sup>2</sup> |
| ../password       | Set password for Bluetooth LE authentication (Base64-encoded string) <ul style="list-style-type: none"> <li>• Min. length: 4</li> <li>• Max. length: 32</li> </ul> <b>NOTE! The password has no influence on the mesh functionality.</b> | e.g. YmxlX3Bhc3N3b3Jk   | wo <sup>3</sup> |

<sup>1</sup> Read and write

<sup>2</sup> Read only

<sup>3</sup> write only

Applicable services:

| Name             | Description                              |
|------------------|--|
| ../resetpassword | Reset password and disable security mode |

## 8.4 Bluetooth mesh

Available data points:

| Name                      | Description  | Value range  | Access          |
|---------------------------|--|--|-----------------|
| ../base_station_name      | Name of the Bluetooth mesh IoT base station EIO404 to which the device is connected. <sup>1</sup>            | e.g. mesh_base   | ro <sup>2</sup> |
| ../last_seen              | Past duration that the adapter last reported (value in ms) <sup>1</sup>                                      | <ul style="list-style-type: none"> <li>0: 0 ms</li> <li>...</li> <li>86400000: 86400000 ms</li> </ul>  | ro <sup>2</sup> |
| ../link_quality           | Connection quality of the adapter in the mesh network (value in %)   | <ul style="list-style-type: none"> <li>0: 0%</li> <li>...</li> <li>100: 100%</li> </ul>  | ro <sup>2</sup> |
| ../signal_strength        | Signal strength to the next mesh adapter of the Bluetooth network (value in %) <sup>1</sup>                  | <ul style="list-style-type: none"> <li>0: 0%</li> <li>...</li> <li>100: 100%</li> </ul>  | ro <sup>2</sup> |
| ../provisioning_status    | Status of the adapter  | <ul style="list-style-type: none"> <li>0: Bluetooth mesh not provisioned</li> <li>1: Bluetooth mesh provisioned</li> <li>2: Bluetooth mesh provisioning invalid credits</li> <li>3: Bluetooth mesh provisioning no space left</li> <li>4: Bluetooth mesh provisioning duplicate address</li> <li>5: Bluetooth mesh provisioning generic error</li> </ul> | ro <sup>2</sup> |
| ../unique_id              | Unique UUID of the Bluetooth mesh IO-Link adapter. Required for logging in and logging out.                  | e.g. 3A-45-E4-7B-8A-FE-DD-40-90-13-5A-2C-5E-69-81-04   | ro <sup>2</sup> |
| ../online_status          | Connection status of the adapter <sup>1</sup>  | <ul style="list-style-type: none"> <li>0: disconnected</li> <li>1: connected</li> </ul>  | ro <sup>2</sup> |
| ../send_interval/interval | Interval at which process data is sent from the adapter to the Bluetooth mesh IoT base station (value in ms) | <ul style="list-style-type: none"> <li>1000: 1000 ms</li> <li>...</li> <li>86400000: 86400000 ms</li> </ul>  | rw <sup>3</sup> |
| ../send_interval/status   | Transmission status  | <ul style="list-style-type: none"> <li>running</li> <li>stopped</li> </ul>   | ro <sup>2</sup> |

<sup>1</sup> Parameter can only be accessed via the Bluetooth mesh IoT base station EIO404.

<sup>2</sup> Read only

<sup>3</sup> Read and write

Applicable services:

| Name            | Description                        |
|-----------------|------------------------------------|
| ../status/start | Start transmission of process data |
| ../status/stop  | Stop transmission of process data  |

## 8.5 Switching output

Available data points:

| Name            | Description   | Value range   | Access          |
|-----------------|---|---|-----------------|
| ../config       | Configuration of the parameters of the switching output             | <ul style="list-style-type: none"> <li>0: Auto - The values for fou1 and bit_position are set automatically; if automatic configuration fails, the adapter flashes red</li> <li>1: Manual - the user sets the values for fou1 and bit_position manually</li> <li>2: Off - device deactivated</li> </ul> | rw <sup>1</sup> |
| ../fou1         | Behaviour of the switching output [OUT 1] in case of a fault        | <ul style="list-style-type: none"> <li>2: ON</li> <li>4: OFF</li> </ul>   | rw <sup>1</sup> |
| ../bit_position | Position of the value of the switching output in the IO-Link stream | 0...255   | rw <sup>1</sup> |

<sup>1</sup> Read and write

## 8.6 IO-Link master

Available data points:

| Name                           | Description  | Value range   | Access          |
|--------------------------------|--|---|-----------------|
| ../mode                        | Operating mode of pin 4 (US) of the port   | <ul style="list-style-type: none"> <li>0: Disabled - port deactivated</li> <li>1: DI - digital input</li> <li>2: DO - digital output</li> <li>3: IO-Link - IO-Link data</li> </ul>  | rw <sup>1</sup> |
| ../mastercycletime_actual      | Current cycle time of the data transfer between port and IO-Link device (value in µs)  | <ul style="list-style-type: none"> <li>0: best possible cycle time</li> <li>1: 1 µs</li> <li>...</li> <li>132800: 132800 µs</li> </ul>  | ro <sup>2</sup> |
| ../comspeed                    | Current transfer rate between port and IO-Link device  | <ul style="list-style-type: none"> <li>0: COM1 - 4.8 kBaud</li> <li>1: COM2 - 38.4 kBaud</li> <li>2: COM3 - 230.4 kBaud</li> </ul>  | ro <sup>2</sup> |
| ../mastercycletime_preset      | Cycle time of the data transfer between port and IO-Link device (value in µs); only in IO-Link operating mode  | <ul style="list-style-type: none"> <li>0: Automatically set the best possible cycle time</li> <li>1: 1 µs</li> <li>...</li> <li>132800: 132800 µs</li> </ul>  | rw <sup>1</sup> |
| ../validation_datastorage_mode | Behaviour of the port when connecting a new IO-Link device   | <ul style="list-style-type: none"> <li>0: No check and clear</li> <li>1: Type compatible V1.0 device</li> <li>2: Type compatible V1.1 device</li> <li>3: Type compatible V1.1 device with Backup + Restore</li> <li>4: Type compatible V1.1 device with Restore</li> </ul>  | rw <sup>1</sup> |
| ../validation_vendorid         | IO-Link ID of the manufacturer that is to be validated   | 0...655535  | rw <sup>1</sup> |
| ../validation_deviceid         | IO-Link ID of the device to be validated   | 0...16777215  | rw <sup>1</sup> |
| ../portevent                   | <p>Port event</p> <p>Structure: 0xYYZZ00</p> <ul style="list-style-type: none"> <li>0xYY: Device Status - Status of the IO-Link devices</li> <li>0xZZ: Connection Status - Status of the connection</li> </ul> | <p>Device status:</p> <ul style="list-style-type: none"> <li>0x00: No IO-Link device connected</li> <li>0x40: Wrong IO-Link device connected</li> <li>0x80: IO-Link device connected and in PREOPERATE state</li> <li>0xFF: IO-Link device connected and in OPERATE state</li> </ul> <p>Connection Status:</p> <ul style="list-style-type: none"> <li>0x00: Port deactivated</li> <li>0x01: Port activated, but no device connected</li> <li>0x02: Port activated and in "IO-Link" operating mode</li> <li>0x03: Port activated and in "DI" operating mode</li> <li>0x04: Port activated and in "DO" operating mode</li> <li>0x1B: Repetitions detected</li> <li>0x1E: Short circuit detected at pin 4</li> <li>0x42: Wrong revision of the IO-Link device</li> <li>0x43: Wrong vendor ID (V1.1 Revision)</li> <li>0x44: Wrong device ID (V1.1 Revision)</li> <li>0x45: Wrong vendor ID (V1.0 Revision)</li> <li>0x46: Wrong device ID (V1.0 Revision)</li> <li>0x48: Wrong cycle time</li> </ul> | ro <sup>2</sup> |

<sup>1</sup> Read and write

<sup>2</sup> Read only

Applicable services:

| Name                             | Description                 |
|----------------------------------|-----------------------------|
| ../validation_useconnecteddevice | Validate the IO-Link device |

## 8.7 IO-Link device

Available data points:

| Name                      | Description   | Value range  | Access            |
|---------------------------|---|--|-------------------|
| ../status                 | Status of the connected IO-Link device                | <ul style="list-style-type: none"> <li>0: State not connected - State not connected</li> <li>1: State preoperate - State PREOPERATE</li> <li>2: State operate - State OPERATE</li> <li>3: State communication error - State communication error</li> </ul> | ro <sup>1</sup>   |
| ../vendorid               | IO-Link ID of the manufacturer                        | e.g. 310: ifm electronic   | ro <sup>1</sup>   |
| ../deviceid               | IO-Link ID of the IO-Link device                      | e.g. 712: ifm pressure sensor, PV7003  | ro <sup>1</sup>   |
| ../productname            | Product name of the IO-Link device                    | e.g. PV7003  | ro <sup>1</sup>   |
| ../serial                 | Serial number of the IO-Link device                   | e.g. 000008500706  | ro <sup>1</sup>   |
| ../applicationspecifictag | Application specific identification (application tag) | e.g. sensor1_machine3  | rw <sup>2</sup>   |
| ../pdin                   | Input data (pin 4)                                    | "DI" operating mode: <ul style="list-style-type: none"> <li>0x00: OFF</li> <li>0x01: ON</li> </ul> "IO-Link" operating mode: <ul style="list-style-type: none"> <li>Process value in hexadecimal representation</li> </ul>                                 | ro <sup>1</sup>   |
| ../pdout                  | Output data (pin 4)                                   | "DO" operating mode: <ul style="list-style-type: none"> <li>0x00: OFF</li> <li>0x01: ON</li> </ul> "IO-Link" operating mode: <ul style="list-style-type: none"> <li>Process value in hexadecimal representation</li> </ul>                                 | rw <sup>2</sup>   |
| ../iolinkevent            | IO-Link event   | See note   | ro <sup>1 3</sup> |

<sup>1</sup> Read only

<sup>2</sup> Read and write

<sup>3</sup> Parameter only available if operating mode pin 4 (US) = IO-Link and IO-Link device is connected to the port

Applicable services:

| Name               | Description                                      |
|--------------------|--|
| ../iolreadacyclic  | Read a parameter of an IO-Link device (acyclic)  |
| ../iolwriteacyclic | Write a parameter of an IO-Link device (acyclic) |

Note IO-Link events:

The device supports IO-Link events. IO-Link events are event and error messages. IO-Link events can be generated in the IO-Link master and in the connected IO-Link devices. IO-Link events generated in the IO-Link devices are forwarded to the IO-Link master and stored there.

An IO-Link event message has the following structure:

| Byte 0...1 | Byte 2 | Byte 3   | Byte 4 | Byte 5 | Byte 6   |
|------------|--------|----------|--------|--------|----------|
| Event Code | Source | Validity | Type   | Mode   | Instance |

Legend

- Instance
- IO-Link Event Qualifier: Trigger
- 1 byte
  - 0x00: unknown
  - 0x01: PL (Physical Layer)
  - 0x02: DL (Data Layer)
  - 0x03: AL (Application Layer)
  - 0x04: APPL (Application)



---

|              |   |         |  |
|--------------|---|---------|--|
| • Mode       | IO-Link Event Qualifier: Event trigger  | 1 byte  | <ul style="list-style-type: none"><li>• 0x40: One-time event or warning (single shot)</li><li>• 0xC0: Error disappeared</li><li>• 0x80: Error appeared</li></ul> |
| • Type       | IO-Link Event Qualifier: Event category | 1 byte  | <ul style="list-style-type: none"><li>• 0x10: Notification</li><li>• 0x20: Warning</li><li>• 0x30: Error</li></ul>   |
| • Validity   | Validity of the process data            | 1 byte  | <ul style="list-style-type: none"><li>• 0x00: Valid</li><li>• 0x40: Invalid</li></ul>  |
| • Source     | IO-Link Event Qualifier: Event source   | 1 byte  | <ul style="list-style-type: none"><li>• 0x00: IO-Link device</li><li>• 0xFF: IO-Link master</li></ul>  |
| • Event Code | IO-Link event code (bytes are swapped!) | 2 bytes | → IO-Link specification  |

## 9 Set-up of the moneo|blue application

### 9.1 Installation of moneo|blue

- ▶ Open the Apple APP Store or the Google Play Store.
- ▶ Search for moneo|blue.
- ▶ Follow the installation instructions.



Update the IODD catalogue when using the moneo|blue App for the first time.



### 9.2 Connect a mobile device.

- ▶ Activate Bluetooth data transmission on the mobile device.
- ▶ Position the mobile device within the range of EIO344.
- ▶ Select the requested EIO344.
- ▶ Enter the access password 0000.



You can find information about moneo|blue in the App description.

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## 11 Approvals and certificates

The EU declaration of conformity, approvals and country-specific certificates are available at: [documentation.ifm.com](https://documentation.ifm.com)

Approval-related notes: → Packing slip

## 12 Maintenance, repair and disposal

The unit is maintenance-free.

- ▶ Contact ifm in case of malfunction.
- ▶ Do not open the housing as the unit does not contain any components which can be maintained by the user. The unit must only be repaired by the manufacturer.
- ▶ Clean the device using a dry cloth.
- ▶ Dispose of the unit in accordance with the national environmental regulations.