Operating instructions
Bluetooth Mesh adapter

EN

EIO344

80298783 / 00 08 / 2021

Contents

1 Preliminary note

You will find instructions, technical data, approvals and further information using the QR code on the unit / packaging or at www.ifm.com.

1.1 Symbols used

✓ Requirement

▶ Instruction

▷ 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

NOTE

Warning of damage to property

CAUTION

Warning of personal injury

▷ Slight reversible injuries may result.

WARNING

Warning of serious personal injury

▷ Death or serious irreversible injuries may result.

1.3 Safety symbols on the unit

Observe instructions in chapter ➔ Electrical connection!

1.4 Change history

Version	Subject	Date
00	New creation of the document	11/2021

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, operation and maintenance of the product must be carried out by qualified personnel authorised by the machine operator.
- Protect units and cables against damage.
- Replace damaged units, otherwise the technical data and safety will be impaired.

2.1 Cyber security

NOTE

If the unit is operated 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).

► Assign a new password for the Bluetooth access.

3 Intended use

The EIO344 communicates via IO-Link with a sensor. Using Bluetooth and an APP, the connected sensor can be read and written.

All available functions can be accessed via moneo|blue. The APP is available for Android and IOS in the App Store.

The EIO344 also features a data storage function. This allows a defective sensor to be replaced quickly.

In addition, the adapter loops through the switching or analogue output on pin 2 of the sensor; the output can still be used as a control signal.

The switching output at pin 4 of the sensor is replicated automatically or manually by the EIO344.

Several adapters can be connected to each other via the EIO404 base station.
See chapter 4.3.

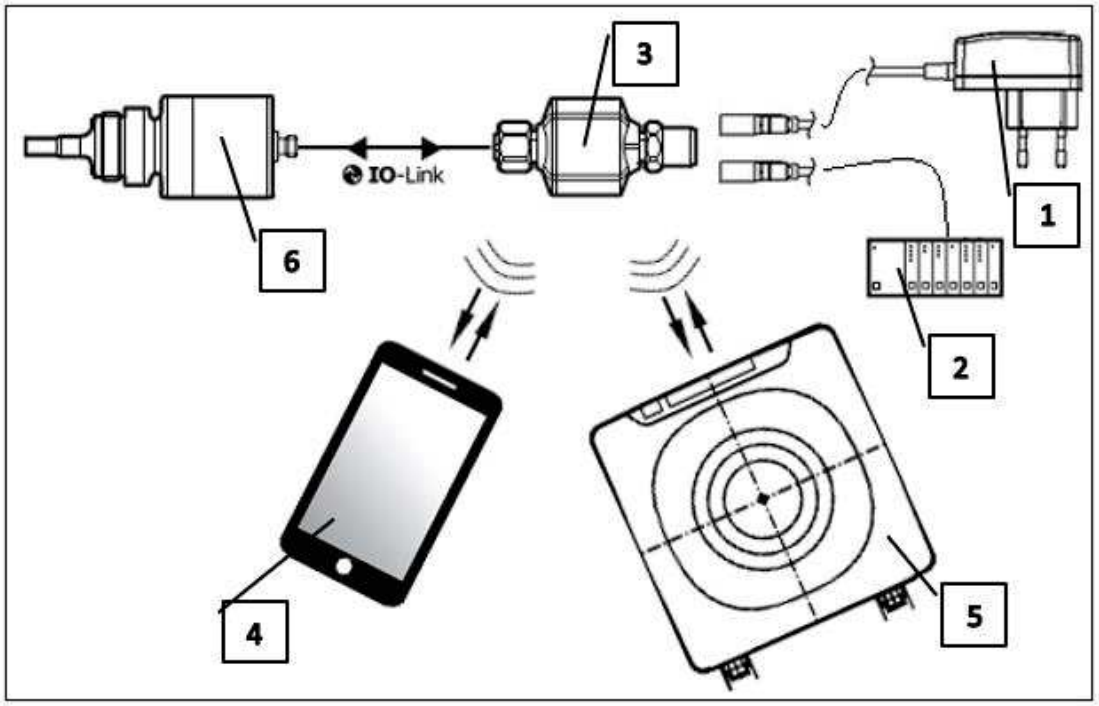

Fig. 1: Application example

1: Power supply
2: PLC with voltage supply
3: EIO344 adapter
4: Mobile device with Bluetooth LE
5: Base station EIO404 with Bluetooth Mesh
6: Example sensor

The unit 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 at www.ifm.com).

The process data received via Bluetooth are used for plant monitoring

4 Connection possibilities

The EIO344 offers several connection options which include, among others, various functions.

4.1 IO-Link connection and outputs

This unit has two IO-Link communication interfaces.

M12 connector:

- Power supply
- Output pin 2 (looped through from sensor) and digital output pin 4
- Pin 4 for parameter setting with an IO-Link software for the device side (reset, Ou1, events, history)

M12 socket

- Input for interaction with an IO-Link device.

IO-Link is an internationally standardised IO technology (IEC 61131-9) for communicating with sensors and actuators.

General information about IO-Link can be found at io-link.ifm.

IO Device Description (IODD) with all parameters and process data of the unit can be found at documentation.ifm.com.

4.2 Bluetooth

Using a mobile device the following functions are supported:

- Parameter setting of the M12 socket to the IO-Link device
- Parameter setting of the IO-Link device
- Input for parameter setting with an IO-Link software for the device side

M12 socket:

- Input for interaction with an IO-Link device

4.3 Bluetooth Mesh

After setting up the Bluetooth Mesh, the EIO344 independently establishes the connection to a base station (EIO404). The connection can be made directly to the base station or via several EIO344 Bluetooth Mesh adapters.

Cyclical process data is transmitted to the base station at a time interval of 2-4s. With moneo on a PC or notebook, this process data can be read at the base station and the plant can be monitored.

See operating instructions EIO404 www.ifm.com.

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 EN 50178, SELV, PELV.

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CAUTION

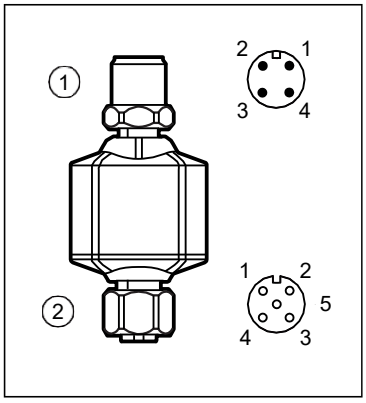
Input current is not limited.

▷ No fire protection.

► Protect circuits.

► Disconnect power.

► Connect the unit as follows:



1: 4-pole M12 connector
- Power supply
- OUT2 (white, looped through)
- OUT1 (black, replicated)
- Input for IO-Link parameter setting

2: 5-pole M12 socket
- Input for IO-Link signals of the sensor

Fig. 3: Electrical connection

Pin	Output in operation	Input for IO-Link parameter setting
1:	L+ -(supply voltage EIO344 + sensor)	L+
2:	OUT2 setting of sensor	Not used
4:	OUT1 digital	IO-Link (parameter setting)
3:	L- (supply voltage EIO344 + sensor)	L-

Tab. 1: M12 connector pin assignment

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

Tab. 2: M12 socket pin assignment

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

Connect the sensors to the Bluetooth Mesh adapter using the connection cables provided (➔ Accessories at www.ifm.com).

5.1 Mounting the connector

To achieve the protection rating indicated in the data sheet, the following has to be observed:

► Use IO-Link cable with IP class.

► Connect the connector with the unit. The arrow indicates the position of the coding.

► 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 unit.

5.3 UL application area

For use in the USA and Canada:

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

5.4 Cable length

- Maximum cable length on the input and output side (IO-Link): 20 m.
- Maximum cable length on the output side (analogue signal): no recommendation, depending on the receiver.

► Provide all input and output side cables with a strain relief approx. 200 mm behind the connectors.

6 Display elements, output response and troubleshooting

The indicator shows the current status of the unit with an RGB LED.

6.1 RGB indicators

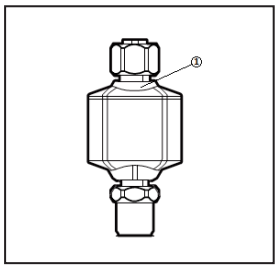


Fig. 4: RGB indicator

Colour	Designation
Red	Interference indication
Green	Operation indication
Blue	Bluetooth

6.2 RGB status indicator, output response and troubleshooting

The unit features self-diagnostic options.

Faults are indicated by the red LED.

Type	Description	RGB status	Output response	Troubleshooting
0	The unit works correctly	Green, on	---	---
1	IO-Link optical identification	Green, double flash	---	---
2	Voltage too low	Off	Off	Check AS-i voltage supply
2	Electronics too cold	Red, 1 Hz	---	
2	Electronics too hot	Red, 1 Hz	---	
2	Faulty IO-Link device process data	Green, on	FOU	
3	Switching output short-circuited	Red, 1 Hz	Short-circuit clocking	Check wiring
3	No IO-Link device connected	Green, on	Off	Check IO-Link wiring and IO-Link sensor
3	Output configuration invalid	Red, 1 Hz	FOU	Check configuration
4	Hardware failure	Red, on	FOU	Units defective, please replace
---	No connection BT Mesh	Red, 1 Hz	---	Check the distance to the next receiver
---	Bluetooth is active	Blue, on	---	---
---	Bluetooth Mesh is active	Green, on	---	---
---	Device update	Green, flashing (200ms on, 800ms off)	---	Wait until the update is complete

Tab. 4: Troubleshooting; 1: Warning, 2: Fault, 3: Note

7 Parameter setting

The parameters of this unit can be set via 2 interfaces. You can use IO-Link or Bluetooth to read information and make changes. 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.

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

Information on suitable parameter setting software at www.ifm.com.

7.1 Parameter setting via IO-Link using a PC:

► Connect the Bluetooth Mesh adapter to the PC via the USB interface using the M12 connector:

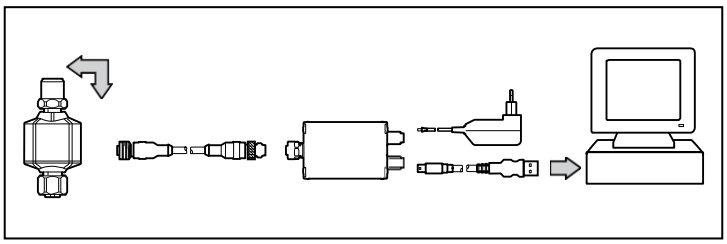


Fig. 5: Parameter setting with a PC

► 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 by means of a mobile device via Bluetooth

► Power the Bluetooth Mesh adapter

► The Bluetooth Mesh adapter is searched for and connected via an app

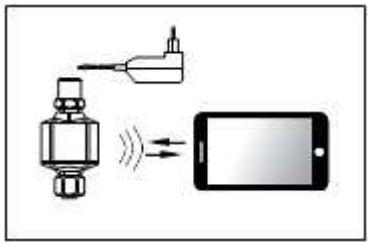


Fig. 6: Parameter setting with a mobile device

► 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.

► If a sensor is connected, it can also be reached via Bluetooth.

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7.3 Data storage on sensor side via M12 socket with moneo|blue

The IO-Link port offers the following optional functions:

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

Set the following parameters as requested:

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	No check and clear	**Note: Device validation and data storage** (Chapter 7.3.1)
		Type compatible V1.0 device	
		Type compatible V1.1 device	
		Type compatible V1.1 device with Backup + Restore	
		Type compatible V1.1 device with Restore	
[Vendor ID]	ID of the manufacturer that is to be validated	0...65535	Factory setting: 0
[Device ID]	ID of the IO-Link device that is to be validated	0...16777215	Factory setting: 0

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 device will be created in the IO-Link master.

► Save changed values on the device.

7.3.1 Note: 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 the compatibility with IO-Link standard V1.0	no	no
[Type compatible V1.1 device]	yes, check the compatibility with IO-Link standard V1.1	no	no
[Type compatible V1.1 device with Backup + Restore]	yes, check the compatibility with IO-Link standard V1.1 and uniformity of construction (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 the compatibility with IO-Link standard V1.1 and uniformity of construction (vendor ID and device ID)	no, there is no automatic storage; 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

8.1 Parameters and commands via IO-Link

Parameter	Function
Application-specific identifier	Possibility to identify a device with user or application-specific information
Plant identification identifier	Possibility to identify a device with function-specific information
Location identifier	Possibility to identify a device with location-specific information
Event counter	The event counter increments when the assigned event has occurred
Event history	Displays a list of the last occurred events
Operating hours	Operating hours counter since delivery
Internal temperature	Current internal temperature
Active events	Current upcoming events
Parameter configuration faults	Shows the parameter incorrectly set at the time of the download
FOU	Behaviour of output 2 in case of an internal fault
Output configuration	Setting the output behaviour
Switching bit	Bit in the IO-Link process data stream that is to be output as switch point 1

Tab. 3: IO-Link parameters

Commands	Function
Reset application	Resets settings (except: application-specific identifier, plant identifier, location identifier, Bluetooth password, Bluetooth Mesh network)
Back to box	All settings are set to the factory setting and communication is blocked until the next switch-off and switch-on
Reset event history	Resets the event history
Reset event counter	Resets the event counter
Reset Bluetooth password	Resets the Bluetooth password
Flash on	Activating the command makes the responding unit flash
Flash off	Deactivates the flashing of the LED of the previously addressed unit
System test command 240	Test event 1 8DFE is activated
System test command 241	Test event 1 8DFE is deactivated
System test command 242	Test event 2 8DFF is activated
System test command 243	Test event 2 8DFF is deactivated

Tab. 4: IO-Link commands

8.2 Bluetooth parameters and commands

Parameter	Function
Name of the manufacturer	Manufacturer name assigned a manufacturer ID
Manufacturer text	Additional information about the manufacturer
Product name	Full product name
Product ID	Manufacturer-specific product or type identification (e.g. article or order number)
Product text	Additional product information about the device
Serial number	Unique, manufacturer-specific identification of the individual unit
Hardware version	Unique, manufacturer-specific identification of the hardware version of the individual device
Firmware version	Unique, manufacturer-specific identification of the firmware version of the individual device
Bootloader version	Unique, manufacturer-specific identification of the bootloader version of the individual device
EEPROM version	Manufacturer-specific EEPROM version
Bluetooth MAC address	MAC address of the Bluetooth interface
Bluetooth software version	Unique, manufacturer-specific identification of the Bluetooth software version of the individual device
Bluetooth bootloader version	Unique, manufacturer-specific identification of the Bluetooth bootloader version of the individual device
Operating hours	Operating hours counter since delivery
Internal temperature	Current internal temperature
Active events	Current upcoming events
Device status	Display of the current device and diagnostic status
Application number	Unique ID of the adapter in the mesh network
FOU	Behaviour of output 2 in case of an internal fault
Output configuration	Setting the output behaviour
Switching bit	Bit in the IO-Link process data stream that is to be output as switch point 1
P-n	Transistor function, switching logic of the outputs (pnp/npn)
Security mode	Activate or deactivate Bluetooth security
Bluetooth password	Code for write protection
Device name	Designation of the adapter
Base station name	Name of the connected base station
Transmission interval	Transmission interval of process data via mesh
Signal strength	Signal strength of the mesh network
BT mesh transmission	BT password function
BT Mesh ID	Assigned Bluetooth Mesh ID
BT Mesh address	Bluetooth Mesh address
BT Mesh node	Bluetooth Mesh support
BT firmware version	Version of the installed Bluetooth firmware
BT firmware type	Type of Bluetooth software
BT firmware data block	Bluetooth packet size of the update data block
BT firmware maximum size	Bluetooth maximum packet size
Master cycle time	Current cycle time to the connected IO-Link device
Set master cycle time	Pre-configuration of the IO-Link master cycle time
Event of the master port	Event of the IO-Link master port
Settings of the master port	Settings of the IO-Link master
Com speed of the master port	IO-Link Com rate of the connected IO-Link sensor
Validation and data storage mode of the master port	Configuration of the data storage mode
Manufacturer ID of the master port	Manufacturer ID of the pre-configured data storage device
Device ID of the master port	Device ID of the pre-configured data storage device
Manufacturer ID of the IO-Link device	Manufacturer ID of the connected IO-Link device
Device ID of the IO-Link device	Device ID of the connected IO-Link device

Application-specific identifier of the IO-Link device	Possibility to identify a device with user or application specific information
PDin IO-Link device	Process data input of the connected device
Product name IO-Link device	Product name of the connected device
Serial number IO-Link device	Serial number of the connected device
PDout IO-Link device	Process data output of the connected device
IO-Link device status	Device status of the connected device
Event IO-Link device	Event of the connected device

Tab. 5: Bluetooth parameters

Commands	Function
Reset application	Resets settings (except: application-specific identifier, plant identifier, location identifier, Bluetooth password, Bluetooth Mesh network)
Back to box	All settings are set to the factory setting and communication is blocked until the next switch-off and switch-on
Reboot	Reboots the device
Signal	Flashing on and off, makes an LED flash on the device
Stream set	Reading the Bluetooth firmware
Start stream set	Start reading the Bluetooth firmware
Getcrc	Bluetooth firmware update
Install	Installs the downloaded file
Preinstall	Prepares the device for the update
Data storage	Triggers the data storage of the connected IO-Link device
Read request	Read request of the acyclic data
Write request	Write request of the acyclic data

Tab. 6: Bluetooth commands

9 Set-up of the moneo configure application

9.1 Function moneo configure

With moneo configure, the adapter can be accessed via the IO-Link interface.
This interface allows few functions.

DE

9.2 System requirements

moneo configure is installed on a Windows operating system.

- Windows 7/10/11
- USB interface

A ready-made system for this purpose is also offered by ifm.

9.3 Installation of moneo configure

► Open the installation file
► Follow the installation instructions

Update the IODD catalogue when using the moneo configure for the first time.

9.4 Connection with a PC

► Connect PC/laptop with a USB interface
► Connect the EIO344 to the USB interface
► Start the moneo software
► Search for participant and connect

Information on moneo configure can be found in the software or in the manual.

10 Set-up of the moneo|blue application

10.1 moneo|blue's functions

With moneo|blue, the EIO344 transmits live data, which is displayed and allows the parameters to be set. Saved data can be read via a data file.

Acyclic parameters and cyclic process data can be read and written.

10.2 System requirements

To install moneo|blue on a mobile device such as smartphone or tablet an internet connection is recommended. moneo|blue can be downloaded from the "Apple APP Store" or "Google Play Store".
The mobile device must meet the following system requirements:

- Bluetooth 4.0
- iOS operating system version 8.0 or higher
- Android operating system version 4.3 or higher

10.3 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.

10.4 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.

11 Copyright and trademarks

All trademarks and company names used are subject to the copyright of the respective companies

Apple® is a registered trademark of Apple Inc.

Google® is a registered trademark of Google LLC.

Bluetooth® is a registered trademark of Bluetooth SIG Inc.

iOS® operating system is a registered trademark of Apple Inc. Android® operating system is a registered trademark of Google LLC.

12 Approvals and certificates

The EU declaration of conformity, approvals and country-specific certificates are available at:
www.ifm.com

Approval-related notes: → Packing slip

13 Maintenance, repair and disposal

The unit is maintenance-free.

► After use dispose of the device in an environmentally friendly way in accordance with the applicable national regulations. Cleaning the device:

► Disconnect the device from the voltage supply.
► Clean the device from dirt using a soft, chemically untreated and dry micro-fibre cloth.

Bluetooth Zulassung

EIO344
EIO404

11428208 / 00 10 / 2022

80308302 / 00

Europäische Union

Deutsch

Vor Inbetriebnahme die Bedienungsanleitung lesen und während der Einsatzdauer aufbewahren.

- Hiermit erklärt die ifm electronic GmbH, dass die Geräte EIO344 und EIO404 der Richtlinie 2014/53/EU entsprechen.
- Der vollständige Text der EU-Konformitätserklärung, Technische Daten, Anleitungen, Zulassungen, Kontakte und weitere Informationen unter documentation.ifm.com.

WARNUNG! Der Betrieb dieses Gerätes kann Funkstörungen in Wohngebieten verursachen.

- Das Gerät hat folgende Arbeitsfrequenzen und Sendeleistungen:

Funktechnologie	Frequenzband	max. Sendeleistung
Bluetooth	2,4 GHz	10 dBm

- Aufgrund der Human-Exposure-Vorschrift einen Mindestabstand zwischen Gerät und Personen von 20 cm einhalten.
- Das Gerät sendet Funkwellen aus, die möglicherweise den Betrieb von elektronischen Geräten in der Nähe beeinträchtigen, darunter Herzschrittmacher, Hörelemente und Defibrillatoren. Wenn Sie einen Herzschrittmacher oder ein anderes implantiertes Medizinprodukt haben, verwenden Sie das Gerät nicht ohne vorherige Rücksprache mit Ihrem Arzt oder dem Hersteller Ihres Medizinprodukts. Halten Sie einen Sicherheitsabstand zwischen dem Gerät und Ihren Medizinprodukten ein und sehen Sie von der weiteren Verwendung des Gerätes ab, wenn Sie eine dauerhafte Beeinträchtigung Ihres Medizinprodukts beobachten.

Great Britain

English

Read the operating instructions before set-up and keep them for the duration of use.

- ifm electronic gmbh hereby declares that the devices EIO344 and EIO404 are in compliance with the relevant statutory requirements.
- The full text of the Declaration of Conformity, technical data,instructions, approvals, contacts and further information is available at: documentation.ifm.com.

WARNING! The operation of this device can cause radio interference in residential areas.

- The device has the following operating frequencies and transmitter powers:

Radio technology	Frequency bands	Max. transmitter power
Bluetooth	2.4 GHz	10 dBm

- Due to radio frequency exposure limits this device should be installed and operated with a minimum distance of 20 cm between the device and the body of the user or nearby persons.
- The device emits radio waves that may interfere with the operation of electronic devices in the vicinity, including pacemakers, hearing aids and defibrillators. If you have a pacemaker or other implanted medical device, do not use the sensor without first consulting your doctor or the manufacturer of your medical device. Keep a safe distance between the device and your medical products and refrain from further use of the device if you observe permanent impairment of your medical devices.

USA

English

Only valid for: EIO344, EIO404

FCC information:

Supplier‘s Declaration of Conformity

Models: EIO344, EIO404

U.S. Responsible Party

ifm efector inc.

1100 Atwater Drive / Malvern, PA 19355, Phone: +1 800 441 8246

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device must not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications to this device that have not been expressly approved by ifm could void the user‘s authority to operate the equipment.

Note:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

RF Exposure Info

Due to radio frequency exposure limits this device should be installed and operated with a minimum distance of 20 cm between the device and the body of the user or nearby persons.

The measurement results comply with the FCC limit per 47 CFR §2.1091 for the uncontrolled RF Exposure of mobile devices.

Canada / Canada

English

Only valid for: EIO344, EIO404

ISED note:

This device contains licence-exempt transmitters/receivers that comply with Innovation, Science and Economic Development Canada’s licence-exempt RSSs.

Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

This device complies with ISED RSS-102 radiation exposure limits set forth for an uncontrolled environment when the device is installed and operated with a minimum separation distance of 20 cm between the device and any human body.

Français

Valable uniquement pour : EIO344, EIO404

Avis ISDE:

L’émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d’Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence.

L’exploitation est autorisée aux deux conditions suivantes :

1. L’appareil ne doit pas produire de brouillage;
2. L’appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d’en compromettre le fonctionnement.

Cet appareil respecte les limites d'exposition aux rayonnements ISDE RSS-102 définies pour un environnement non contrôlé lorsque l'appareil est installé et utilisé avec une distance de séparation minimale de 20 cm entre l'appareil et tout corps humain.