Products · Solutions · Services

Operating Instructions
Commubox FXA291

Intrinsically safe interface for connecting intrinsically safe and non-intrinsically safe transmitters to a USB port
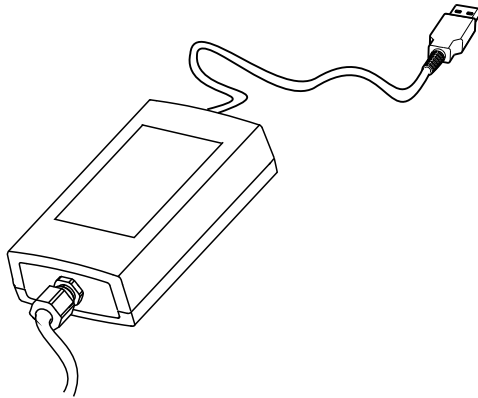

Endress+Hauser [EH]

People for Process Automation

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1 About this document

1.1 Warnings

Structure of information	Meaning
⚠ DANGER **Causes (/consequences)** If necessary, Consequences of non-compliance (if applicable) ▶ Corrective action	This symbol alerts you to a dangerous situation. Failure to avoid the dangerous situation **will** result in a fatal or serious injury.
⚠ WARNING **Causes (/consequences)** If necessary, Consequences of non-compliance (if applicable) ▶ Corrective action	This symbol alerts you to a dangerous situation. Failure to avoid the dangerous situation **can** result in a fatal or serious injury.
⚠ CAUTION **Causes (/consequences)** If necessary, Consequences of non-compliance (if applicable) ▶ Corrective action	This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in minor or more serious injuries.
NOTICE **Cause/situation** If necessary, Consequences of non-compliance (if applicable) ▶ Action/note	This symbol alerts you to situations which may result in damage to property.

1.2 Symbols

Symbol	Meaning
🛈	Additional information, tips
☑	Permitted or recommended
☒	Not permitted or not recommended
📖	Reference to device documentation
📄	Reference to page
🖼	Reference to graphic
↳	Result of a step

2   Basic safety instructions

2.1   Requirements for personnel

- Installation, commissioning, operation and maintenance of the measuring system may be carried out only by specially trained technical personnel.
- The technical personnel must be authorized by the plant operator to carry out the specified activities.
- The electrical connection may be performed only by an electrical technician.
- The technical personnel must have read and understood these Operating Instructions and must follow the instructions contained therein.
- Faults at the measuring point may only be rectified by authorized and specially trained personnel.

Repairs not described in the Operating Instructions provided must be carried out only directly at the manufacturer's site or by the service organization.

2.2   Designated use

- The Commubox FXA291 connects Endress+Hauser field devices with a CDI interface (CDI = Endress+Hauser Common Data Interface) and the USB port of a computer or laptop. This enables the remote operation and execution of service functions of the field devices using an Endress+Hauser operating program, e.g. FieldCare for plant-specific asset management for example.
- The Commubox is a USB low-power device that is powered via the USB port of the computer.

Use of the device for any purpose other than that described, poses a threat to the safety of people and of the entire measuring system and is therefore not permitted.

The manufacturer is not liable for damage caused by improper or non-designated use.

2.3   Workplace safety

As the user, you are responsible for complying with the following safety conditions:
- Installation guidelines
- Local standards and regulations
- Regulations for explosion protection

Electromagnetic compatibility
- The product has been tested for electromagnetic compatibility in accordance with the applicable international standards for industrial applications.
- The electromagnetic compatibility indicated applies only to a product that has been connected in accordance with these Operating Instructions.

2.4   Operational safety

Before commissioning the entire measuring point:

1.   Verify that all connections are correct.

2.   Ensure that electrical cables and hose connections are undamaged.

3.   Do not operate damaged products, and protect them against unintentional operation.

4.   Label damaged products as defective.

During operation:

▸ If faults cannot be rectified:
   products must be taken out of service and protected against unintentional operation.

2.5   Product safety

The product is designed to meet state-of-the-art safety requirements, has been tested, and left the factory in a condition in which it is safe to operate. The relevant regulations and international standards have been observed.

3   Incoming acceptance and product identification

3.1   Incoming acceptance

1.   Verify that the packaging is undamaged.
     ↳   Notify the supplier of any damage to the packaging.
         Keep the damaged packaging until the issue has been resolved.

2.   Verify that the contents are undamaged.
     ↳   Notify the supplier of any damage to the delivery contents.
         Keep the damaged goods until the issue has been resolved.

3.   Check that the delivery is complete and nothing is missing.
     ↳   Compare the shipping documents with your order.

4.   Pack the product for storage and transportation in such a way that it is protected against impact and moisture.
     ↳   The original packaging offers the best protection.
         Make sure to comply with the permitted ambient conditions.

If you have any questions, please contact your supplier or your local Sales Center.

3.2 Product identification

3.2.1 Nameplate

The nameplate provides you with the following information on your device:
• Manufacturer identification
• Order code
• Extended order code
• Serial number
• Safety information and warnings

▶ Compare the information on the nameplate with the order.

3.2.2 Product identification

Product page

www.endress.com/fxa291

Interpreting the order code

The order code and serial number of your product can be found in the following locations:
• On the nameplate
• In the delivery papers

Obtaining information on the product

1. Go to www.endress.com.
2. Call up the site search (magnifying glass).
3. Enter a valid serial number.
4. Search.
   ↳ The product structure is displayed in a popup window.
5. Click on the product image in the popup window.
   ↳ A new window (**Device Viewer**) opens. All of the information relating to your device is displayed in this window as well as the product documentation.

Manufacturer's address

Endress+Hauser Conducta GmbH+Co. KG
Dieselstraße 24
D-70839 Gerlingen

3.3   Scope of delivery

The scope of delivery comprises:
- Commubox FXA291
- USB cable, ready-wired on box side
- Connecting cable, ready-wired on box side
- Cable for standard adapter FXA291
- Installation CD
  USB Commubox FXA291 Serial Port Driver:
  Is automatically installed via the hardware detection function. See the documentation on the installation setup for this purpose. Follow the installation instructions.

3.4   Certificates and approvals

3.4.1   C€ mark

The product meets the requirements of the harmonized European standards. As such, it complies with the legal specifications of the EU directives. The manufacturer confirms successful testing of the product by affixing to it the C€ mark.

3.4.2   Ex approvals

ATEX
- II (1) G [Ex ia Ga] IIC
- II (1) D [Ex ia Da] IIIC
- BVS05 ATEX E095

IECEx
- [Ex ia Ga] IIC
- [Ex ia Da] IIIC
- IECEx BVS05 14.0096

EAC Ex

The product has been certified in accordance with Directive TR CU 012/2011 valid within the Eurasian Economic Area (EAEU). The EAC conformity mark has been affixed to the product.

- [Ex ia Ga] IIC
- [Ex ia Da] IIIC
- Certificate number ЕАЭС RU C-DE.AA87.B00227/19

3.4.3   Certification body (only version for EAC)

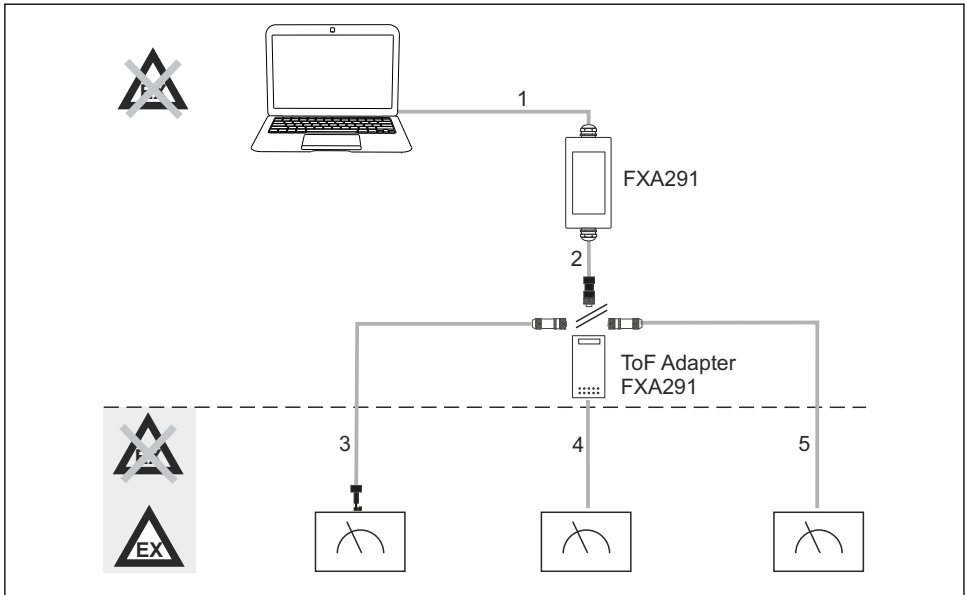**ООО "НАНИО ЦСВЭ"**
Russian Federation

4   Power supply

4.1   Connection conditions

NOTICE

Non-designated use in hazardous areas can damage the device
▶ Only use the Commubox FXA291 in non-explosive atmospheres.
▶ Comply with the warning, installation and operating instructions in the Ex documentation
  for field devices with a CDI interface.

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 1   Possible applications of Commubox FXA291

1   Cable between FXA291 and USB of the computer
2   Cable between FXA291 and M8 connector
3   Cable of standard adapter FXA291 (for measuring devices in all work areas)
4   Cable for ToF field devices (for pressure and level)
5   Cable for additional level measuring devices

For reasons of safety, only the ToF adapter FXA291 may be used to connect to devices
FMR2xx, FMR53x, FMR540, FMP4x, FMU4x, PMC71, PMP7x, PMD7x, FMD7x, FMB70,
FMG60.

For information on the field devices, see www.endress.com/FXA291.

4.2   Connection

- For computers: USB 1.1 and 2.0 compatibility, 4-pin USB connector, type A
- For transmitters: CDI connectors, short-circuit proof with reverse polarity protection

The USB and adapter cable are ready-wired on the box side upon delivery and secured with a cable gland.

4.3   Supply voltage

- Voltage range: from the USB port on the PC, typically 5VDC
- Field devices powered up to 100 mW via VCC, reverse polarity protection

4.4   Intrinsically safe signal circuit

For connecting an intrinsically safe circuit with type of protection [Ex ia] IIC with:
- Connection voltage: < 7 VDC
- U_m: 260V

With Commubox FXA291, the intrinsically safe connection and non-intrinsically safe connection are protected. Therefore, it is possible to connect non-Ex devices to the intrinsically safe side of a Commubox FXA291 without this affecting approval to connect an Ex-device subsequently.

5   Commissioning

5.1   Connecting the Commubox

5.1.1   System requirements

- USB port (USB 1.1 or 2.0)
- DVD/CD-ROM drive
- Windows 8 / Windows 7 / Windows XP

5.1.2   Connecting the computer and the measuring device

NOTICE

Incorrect adapter cable

Can render the approved explosion protection properties invalid

▶ Only use the TOF adapter FXA291 - which is available as a accessory - to connect the Commubox to the CDI interface of the following devices: FMR2xx, FMR53x, FMR540, FMP4x, FMU4x, PMC71, PMP7x, PMD7x, FMD7x, FMB70, FMG60.

1. Connect the CDI connector of the adapter cable to the CDI interface of your measuring device.

2. Switch on the computer.
   ↳ Wait until your operating system is completely ready.

3. Connect the USB cable of the Commubox to a USB port of your computer.
    ↳   Wait until the connection is detected automatically. Where applicable, confirm the installation of necessary, automatically detected drivers.

4. Start communication with the measuring device, e.g. via FieldCare for example.

5.2   Signals displayed
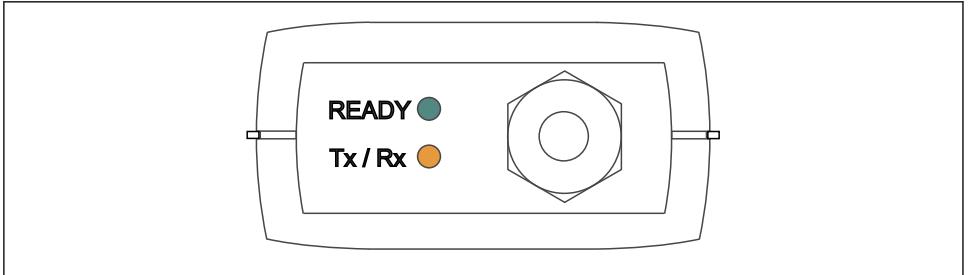
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⊡ 2   *Indicator lights (USB connection/PC side)*

Signal	Light	Meaning
READY	Green	Commubox FXA291 is operational
Tx / Rx	Red	Communication from computer to field device
Tx / Rx	Yellow	Communication from field device to computer
Tx / Rx	Orange	Duplex communication

6   Maintenance and repair

6.1   Cleaning

Remove any dirt on the Commubox with a damp cloth only. Depending on the type of dirt, you can also dip the cloth in cleaning agent to clean the Commubox.

1.   Oily and greasy films:
     Use a grease remover, e.g. ethanol or isopropyl alcohol.

2.   Lime and metal hydroxide buildup:
     Dissolve buildup with diluted hydrochloric acid (3 %). Then rinse the cloth several times with clear water and wipe again.

3.   Buildup containing proteins (e.g. food industry):
     Use a mixture of hydrochloric acid (0.5 %) and pepsin (commercially available). Then rinse the cloth several times with clear water and wipe again.

6.2   Accessories

The following are the most important accessories available at the time this documentation was issued.

▶   For accessories not listed here, please contact your Service or Sales Center.

ToF adapter FXA291
- Including cable to ToF devices
- Power limitation for connection between FXA291 and input of intrinsically safe ToF M devices
- Prevents breaching of Ex-approved limit values of ToF devices
- Does not affect the baud rate for digital communication and the installation of software upgrades for field devices
- Order No. 71007843

6.3   Return

The product must be returned if repairs or a factory calibration are required, or if the wrong product was ordered or delivered. As an ISO-certified company and also due to legal regulations, Endress+Hauser is obliged to follow certain procedures when handling any returned products that have been in contact with medium.

To ensure the swift, safe and professional return of the device:

▶   Refer to the website www.endress.com/support/return-material for information on the procedure and conditions for returning devices.

6.4   Disposal

The device contains electronic components. The product must be disposed of as electronic waste.

▶ Observe the local regulations.

7   Technical data

7.1   Communication and data processing

Communication between the computer and FXA291
- Baud rate: 2400 to 115.2k
- Data bits: 8
- Stop bits: 1
- Parity: none
- Start bits: 1
- Duplex communication

7.2   Environment

7.2.1   Ambient temperature

−20 to 60 °C (−4 to 140 °F)

7.2.2   Storage temperature

-40 to +85 °C (-40 to 185 °F)

7.2.3   Degree of protection
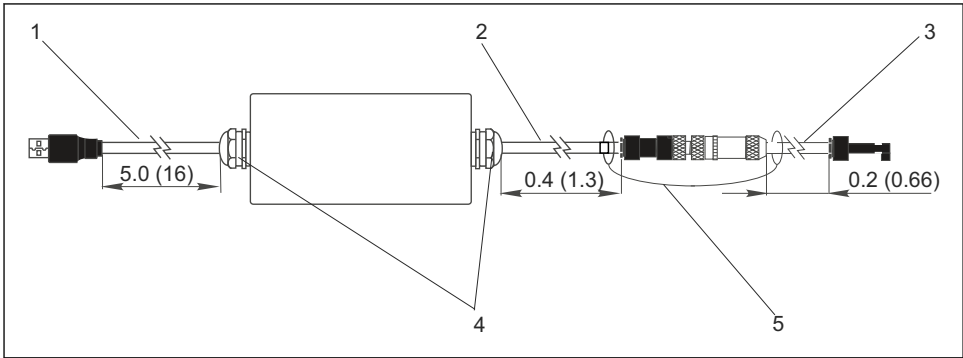
IP51, NEMA/type 3

7.2.4   Relative humidity

0 to 95 %, non-condensating

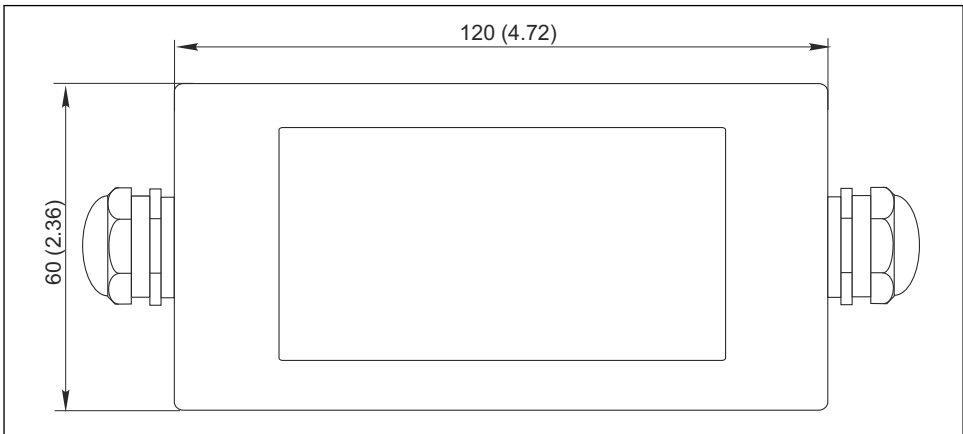# 7.3   Mechanical construction

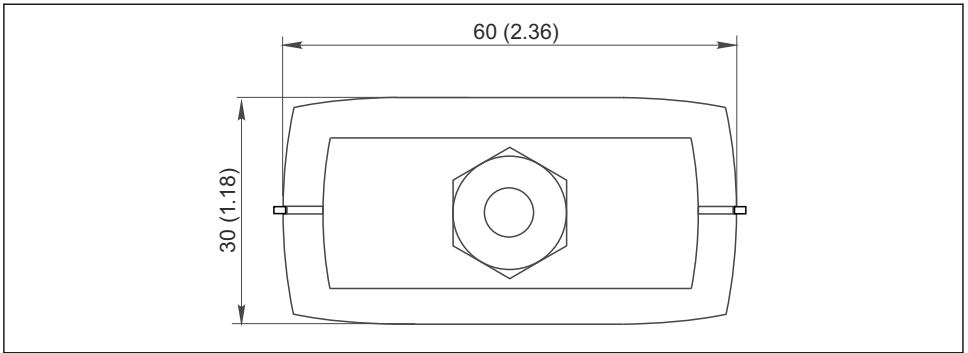## 7.3.1   Design, dimensions

⊡ 3   *Commubox FXA291 and components, dimensions in m (ft)*

1   Cable between Commubox FXA291 and the USB port of the PC
2   Cable with CDI connection socket and M8 connection plug for ToF adapter
3   Cable for standard adapter with CDI connector
4   Cable glands
5   Safety cord

⊡ 4   *Top view, dimensions in mm (inch)*

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🖾 5   *Side view (CDI connection/device side), dimensions in mm (inch)*

7.3.2   Weight

Approx. 0.2 kg (0.44 lbs)

7.3.3   Materials

Housing: ABS
Front foil: Polyester

7.3.4   USB port

Personal computer and Commubox FXA291 = USB signal as per USB specification

7.3.5   CDI interface

Measuring device(s) and Commubox FXA291 = Endress+Hauser Service protocol

www.addresses.endress.com

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