

ifm electronic



Installation Instructions
RF identification system
Read/write head

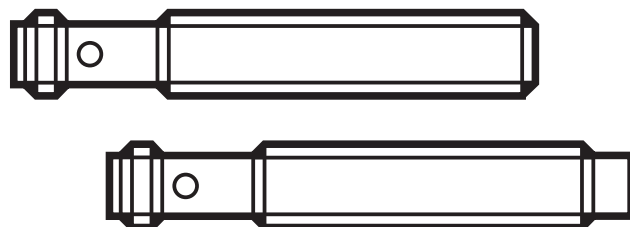
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efector190[®]

ANT410

ANT411

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1 Preliminary note

This document is part of the device and contains information about the correct handling of the product.

This document is intended for specialists. These specialists are people who are qualified by their training and their experience to see risks and to avoid possible hazards that may be caused during operation or maintenance of the device.

Read this document before use to familiarise yourself with operating conditions, installation and operation. Keep this document during the entire duration of use of the device.

1.1 Symbols used

► Instructions

→ Cross-reference



Important note

Non-compliance can result in malfunction or interference.



Information

Supplementary note

2 Safety instructions

2.1 General

Observe the operating instructions. Non-observance of the instructions, operation which is not in accordance with use as prescribed below, wrong installation or incorrect handling can affect the safety of operators and machinery.

The installation and connection must comply with the applicable national and international standards. Responsibility lies with the person installing the device.

The device must only be installed, connected and put into operation by a qualified electrician as the safe function of the device and machinery is only guaranteed when installation is correctly carried out.

Disconnect the unit externally before handling it.

In case of malfunction of the device or uncertainties please contact the manufacturer. Tampering with the device can seriously affect the safety of operators and machinery. This is not permitted and leads to an exclusion of liability and warranty.

2.2 Radio equipment

In general, radio equipment must not be used in the vicinity of petrol stations, fuel depots, chemical plants or blasting operations.

- ▶ Do not transport and store any flammable gases, liquids or explosive substances near the unit.

2.3 Interference of electronic and medical devices

Operation can affect the function of electronic devices that are not correctly shielded.

- ▶ Disconnect the device in the vicinity of medical equipment.
- ▶ Contact the manufacturer of the corresponding device in case of any interference.

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3 Functions and features

In connection with the evaluation unit DTE10x the read/write head ANT410/ANT411 enables non-contact reading and/or writing of the RFID transponders (ID tags) conforming to the system.

The data is converted into digitally coded values and provided to the evaluation unit.

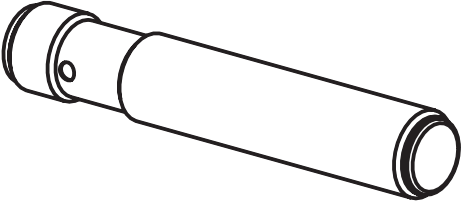
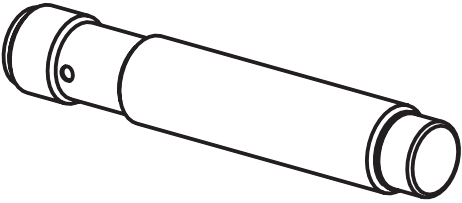
4 Functions

4.1 Operating principle

The ID tags are operated passively, i.e. without battery. The energy required for operation is supplied by the read/write head.




The physical principle of the energy transfer is based on inductive coupling. The integrated antenna coil in the read/write head generates a magnetic field which partly penetrates the antenna coil of the ID tag. A voltage is generated by induction that supplies the data carrier with energy.

4.2 Overview

	<p>Art. no.: ANT410 Function: Read/write head Type designation: DTRHF FBRWIDUS03 Operating frequency: 13.56 MHz Type: M12, flush mountable</p>
	<p>Art. no.: ANT411 Function: Read/write head Type designation: DTRHF FNRWIDUS03 Operating frequency: 13.56 MHz Type: M12, non-flush mountable</p>

5 Installation




5.1 General installation instructions

-  When mounting several read/write heads adhere to the minimum distances between the systems.
-  Flush mounting of a read/write head in metal reduces the read/write distance.
-  The immediate vicinity of powerful HF emission sources such as welding transformers or converters can affect operation of the read/write heads.

Information on the available mounting accessories is available on our website at:

www.ifm.com → Data sheet search → e.g. ANT410 → Accessories

5.2 Notes on ID tag mounting

-  If the ID tags are mounted in/on metal, the read/write distance is reduced.
-  For positioning the ID tags the read/write heads are marked with an antenna symbol on the active face. It designates the middle of the integrated antenna coil and has to correspond with the middle of the ID tag.
-  The orientation of the read/write head antenna axis must correspond with the axis of the ID tag coil.



The best way to position the available ID tags and on mounting in metal is available on our website:

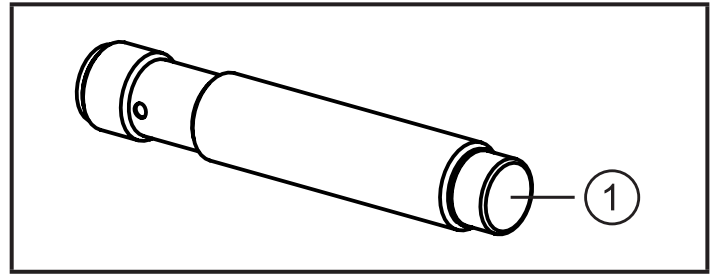
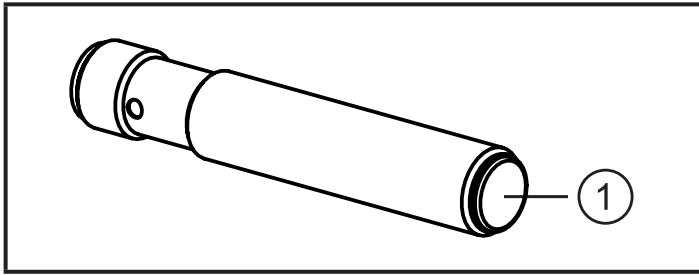
www.ifm.com → Data sheet search → e.g. ANT410 → More information
(General information about mounting and operation)

5.3 Avoiding interference

The device generates a modulated electrical field with a frequency of 13.56 MHz. To avoid interference of the data communication no other devices generating interference emission in this frequency band must be operated in the vicinity. Such devices are for example frequency converters and switched-mode power supplies.

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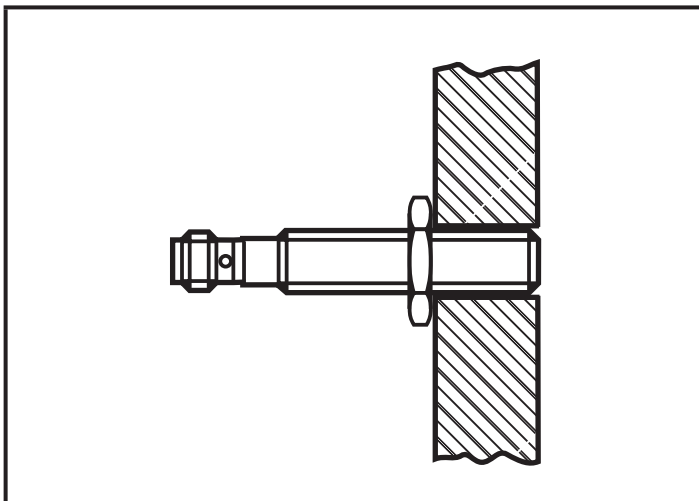
5.4 Mechanical design



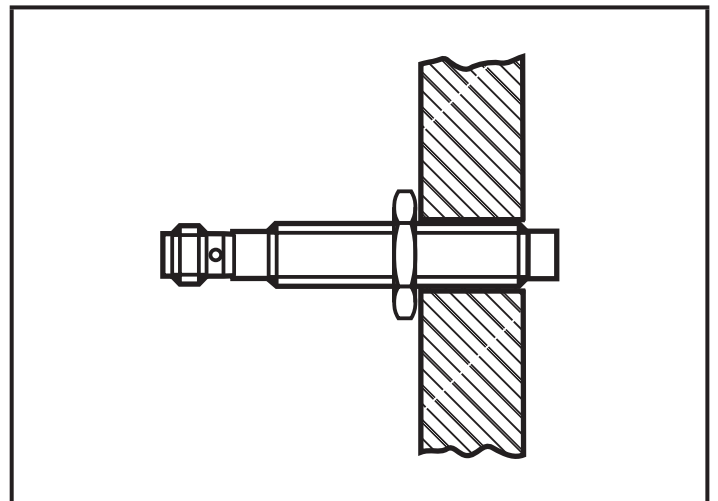
1: Sensing face

5.5 Fixing

► Fix the device using the supplied nuts (M12).



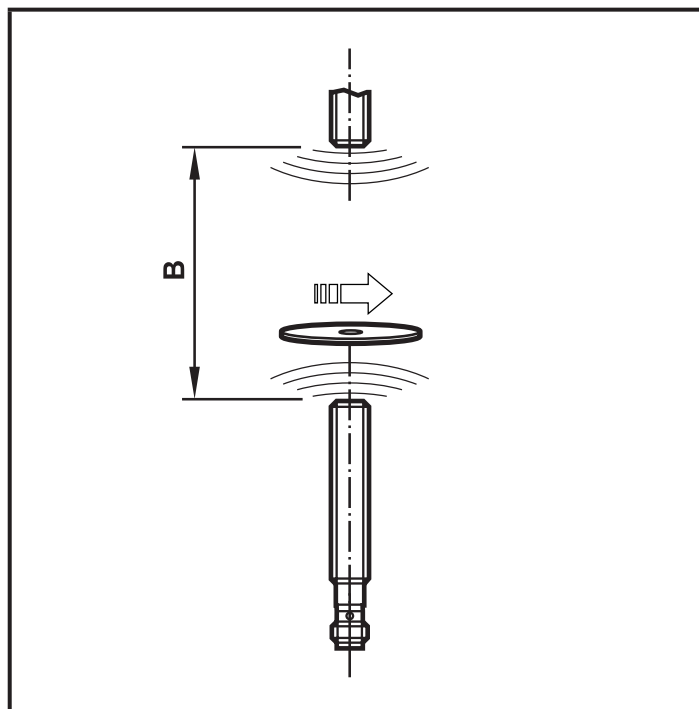
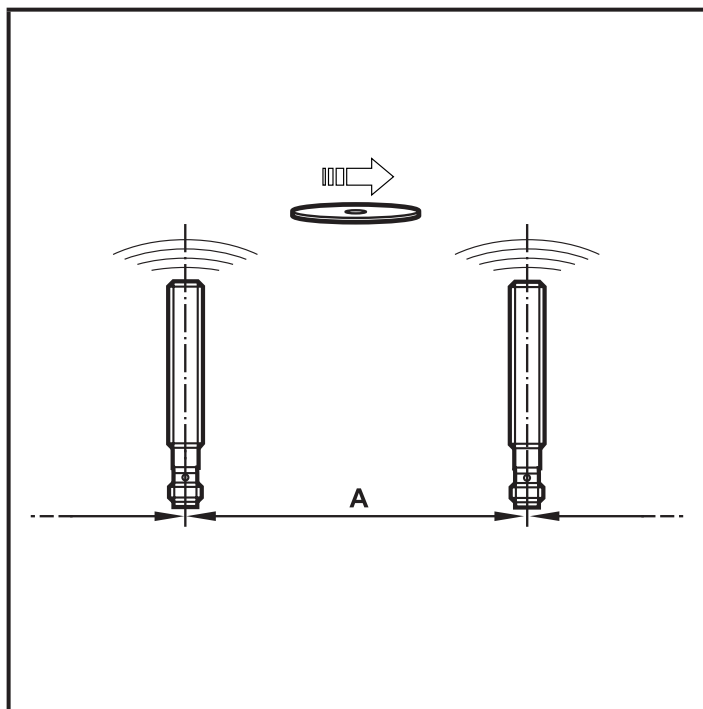
flush (ANT410)



non-flush (ANT411)

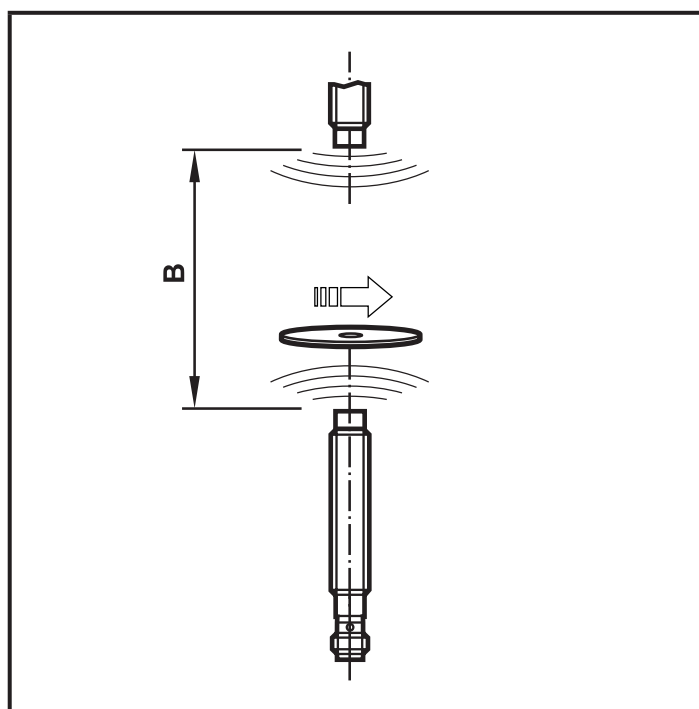
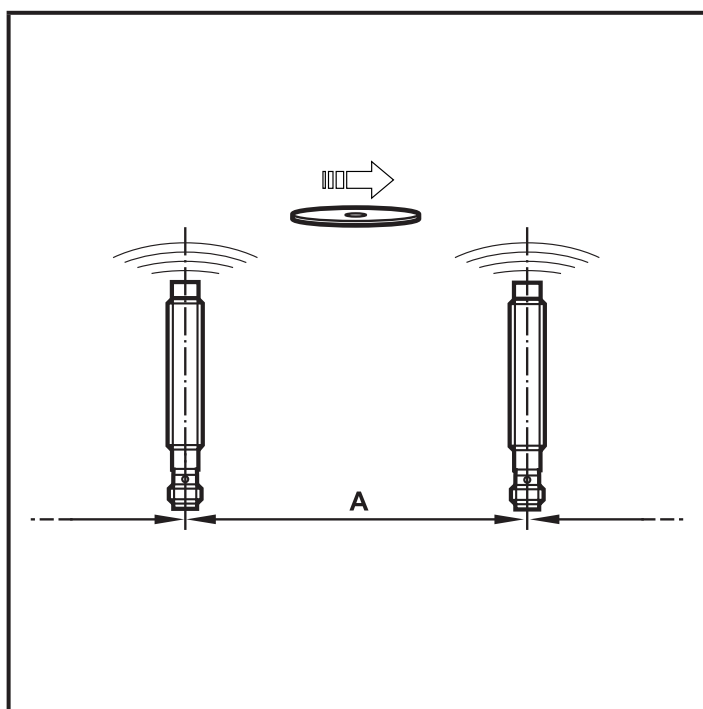
5.6 Mounting distances

5.6.1 ANT410



Operating mode	Distance side (A)	Distance front (B)
For reading and writing	≥ 20 mm	≥ 40 mm

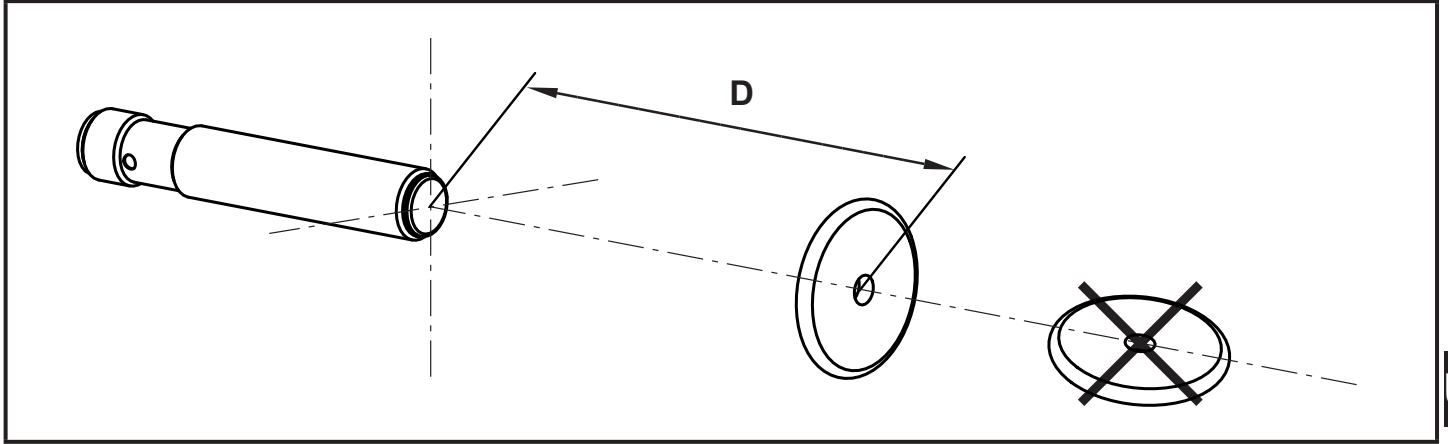
5.6.2 ANT411





Operating mode	Distance side (A)	Distance front (B)
For reading and writing	≥ 25 mm	≥ 90 mm

5.7 Positioning of the ID tags

5.7.1 ANT410

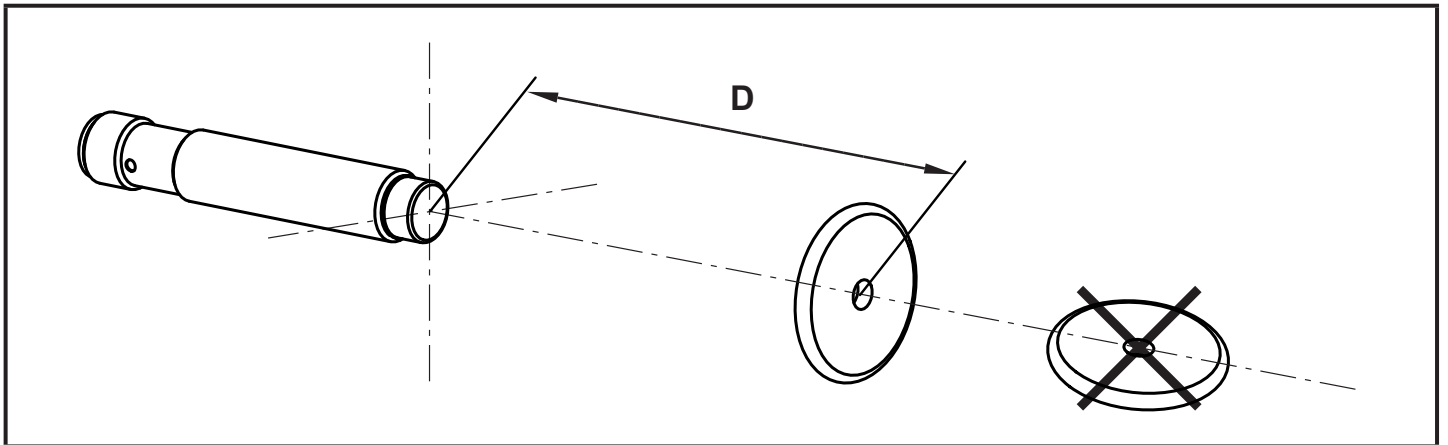


► Align the ID tag on the antenna central axis.



ID tag	Type	Distance read/write head (D)	
		metal	plastics
E80370		-	0...10 mm
E80371		5...10 mm	0...16 mm

All indications apply to static read/write operations.

5.7.2 ANT411



► Align the ID tag on the antenna central axis.

ID tag	Type	Distance read/write head (D)	
		metal	plastics
E80370		0...14 mm	0...16 mm
E80371		0...20 mm	0...24 mm

All indications apply to static read/write operations.

6 Electrical connection

6.1 Wiring

- ▶ Connect the device to the evaluation unit DTE10x using the M12 connection. Voltage is supplied via the evaluation unit.



A selection of sockets is available on our website at:

www.ifm.com → Data sheet search → e.g. ANT410 → Accessories

Cables with the following characteristics are suitable for the connection:



Length	Ohmic resistance (feed + return line)	Effective cable capacity
< 20 m	max. 3Ω	max. 3 nF

6.2 UL approval

For units with cULus approval and the scope of validity cULus:

- ▶ Supply the device from an isolating transformer having a secondary UL- listed fuse rated
 - 5 A at voltages of 0...20 V_{rms} (0...28.3 V_p)
 - 100/V_p at voltages of 20...30 V_{rms} (28.3...42.4 V_p)

7 Display elements

ANT410	ANT411
 <p>LED 2 x 180°</p>	 <p>LED 2 x 180°</p>

LED green: operating voltage
LED yellow: ID tag

LED	Status	Description
Green	ON	Operating voltage OK
	OFF	Operating voltage missing
	FLASHING SLOWLY	Deactivated
Yellow	ON (permanently)	ID tag detected
	ON (pulse)	ID tag read/written successfully
	FLASHING QUICKLY	Error when reading/writing on ID tag
	OFF	No ID tag in the field or faulty ID tag in the field or invalid ID tag in the field
Green + yellow	FLASHING ALTERNATELY	error in communication or device fault

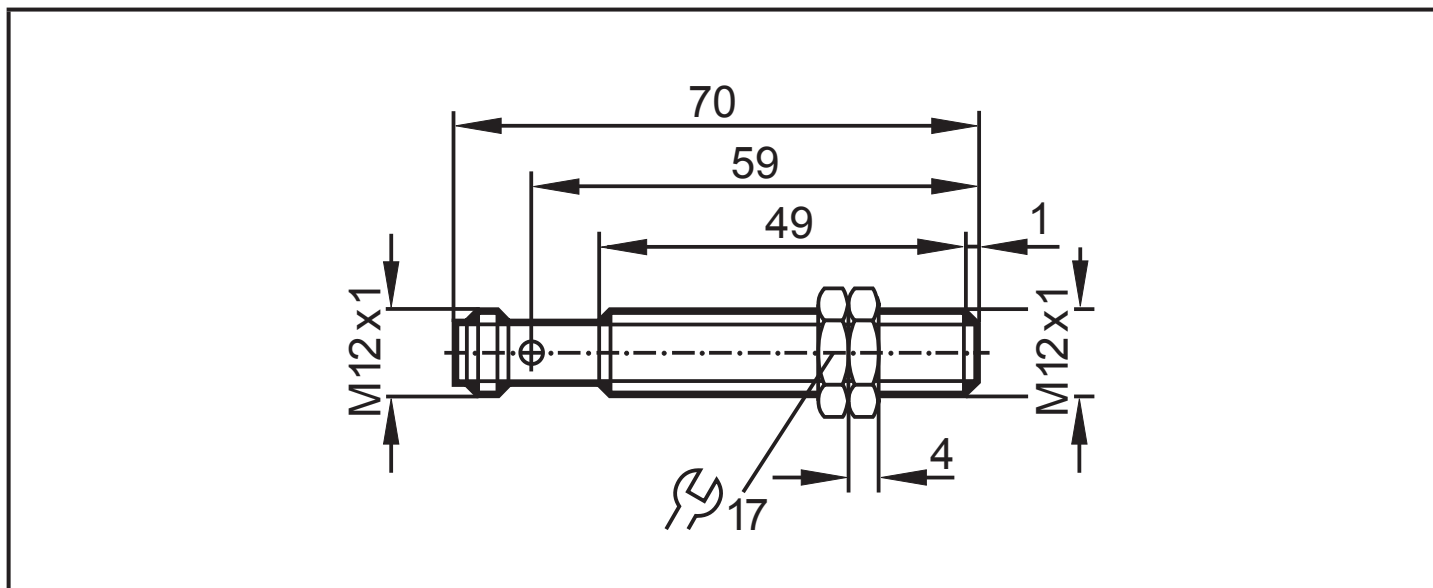
8 Operation

The read/write head is configured via the connected evaluation unit DTE10x. You can find more information about the operation in the manual:

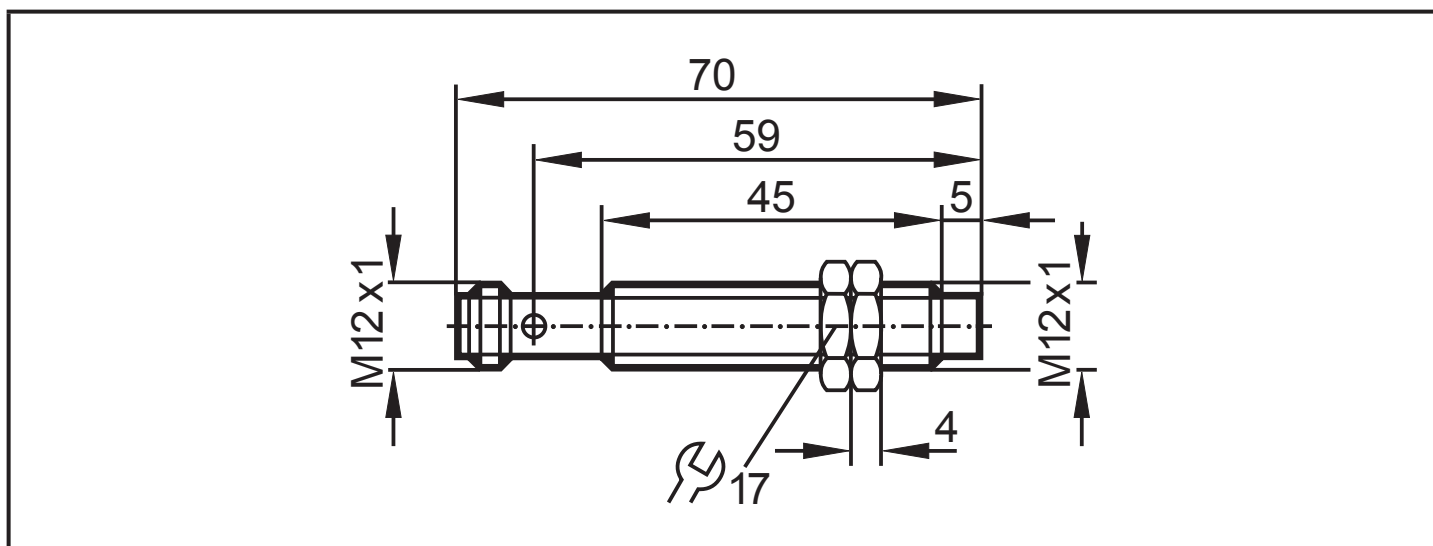
www.ifm.com → Data sheet search → e.g. DTE100 → Operating instructions

9 Dimensions

9.1 ANT410



9.2 ANT411



10 Technical data

The data sheets are available on our website at:

www.ifm.com → Data sheet search → e.g. ANT410

11 Maintenance, repair and disposal

- ▶ Do not open the housing as the device does not contain any components which must be maintained by the user. The device must only be repaired by the manufacturer.
- ▶ Dispose of the device in accordance with the national environmental regulations.

12 Approvals/standards

12.1 Radio approvals

12.1.1 Overview

The overview of the approval status of a unit is available on our website at:

www.ifm.com → Data sheet search → e.g. ANT410 → More information

12.1.2 Europe

Intended use: Use in all EU countries

12.1.3 Notices FCC

NOTICE:

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

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

NOTICE:

Changes or modifications made to this equipment not expressly approved by (manufacturer name) may void the FCC authorization to operate this equipment.

12.1.4 Notices IC

This device complies with Industry Canada license-exempt RSS standards.

Operation is subject to the following two conditions:

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

12.1.5 Administrative Regulations on Low Power Radio Waves Radiated Devices warning

Article 12

Without permission granted by the NCC, any company, enterprise, or user is not allowed to change frequency, enhance transmitting power or alter original characteristic as well as performance to a approved low power radio-frequency devices.

Article 14

The low power radio-frequency devices shall not influence aircraft security and interfere legal communications; If found, the user shall cease operating immediately until no interference is achieved.

The said legal communications means radio communications is operated in compliance with the Telecommunications Act.

The low power radio-frequency devices must be susceptible with the interference from legal communications or ISM radio wave radiated devices.

12.2 EC declaration of conformity

You can find the EC declaration of conformity on our website at:

www.ifm.com → Data sheet search → e.g. ANT410 → More information

