

ifm electronic



Installation Instructions
RF identification system
Read/write head

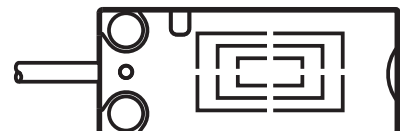
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ANT515

ANT516

UK

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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 ANT51x 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.

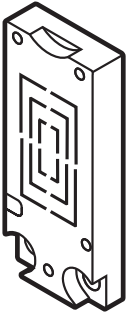
4 Functions

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

	<table><tr><td>Art. no.:</td><td>ANT515 / ANT516</td></tr><tr><td>Function:</td><td>Read/write head</td></tr><tr><td>Type designation:</td><td>DTRHF KQRWIDUS03</td></tr><tr><td>Operating frequency:</td><td>13,56 MHz</td></tr><tr><td>Type:</td><td>Rectangular</td></tr></table>	Art. no.:	ANT515 / ANT516	Function:	Read/write head	Type designation:	DTRHF KQRWIDUS03	Operating frequency:	13,56 MHz	Type:	Rectangular
Art. no.:	ANT515 / ANT516										
Function:	Read/write head										
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Type:	Rectangular										

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. ANT515 → Accessories

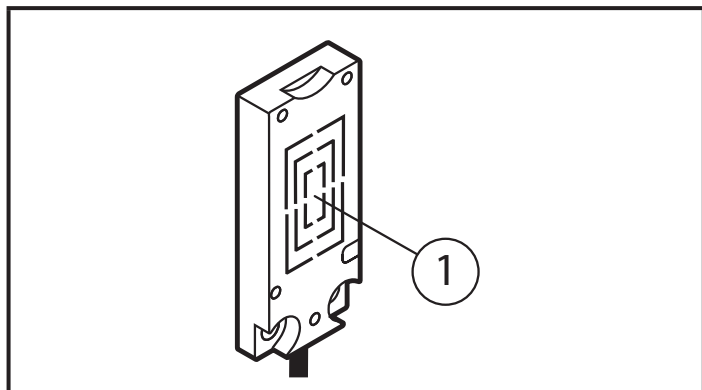
5.2 Notes on ID tag mounting

-  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.

5.3 Avoiding interference

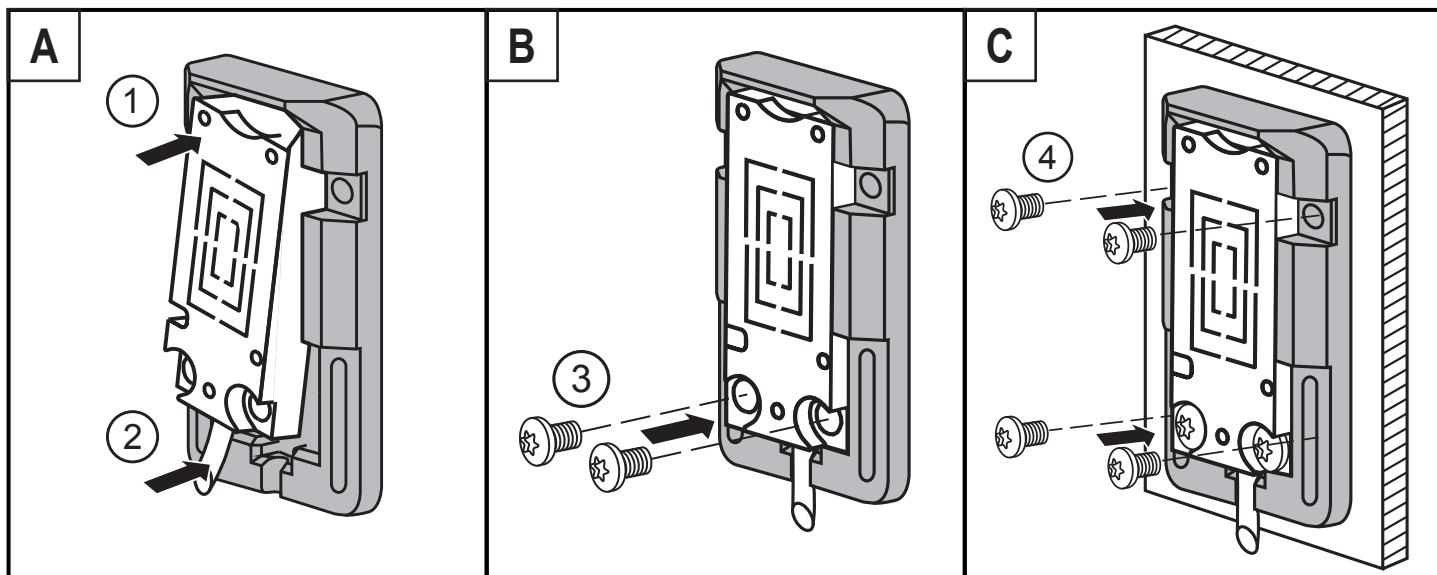
The device generates a modulated electrical field with a frequency of 13.56 MHz. To avoid interference of the data communication no other devices generating interference emission in this frequency band must be operated in the vicinity. Such devices are for example frequency converters and switched-mode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

5.4 Mechanical design



1: Sensing face

5.5 Installation on tanks with mounting adapter



The mounting adapter is available as accessory (order no. E12153).

Figure A

- Insert the device with the upper side (1) into the mounting adapter.
- Press the lower side of the device (2) against the adapter.

Figure B

- Fasten the device to the adapter using the supplied screws (3).

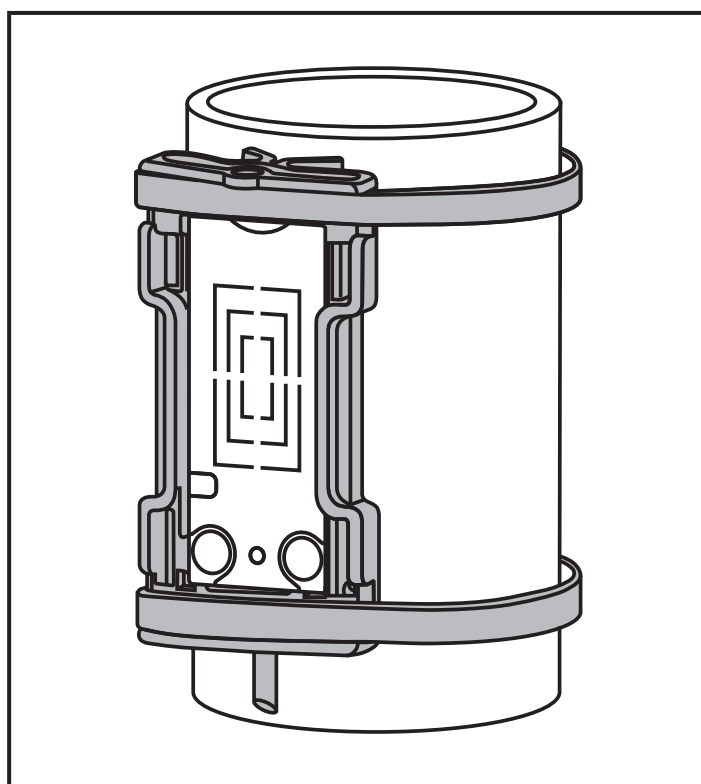
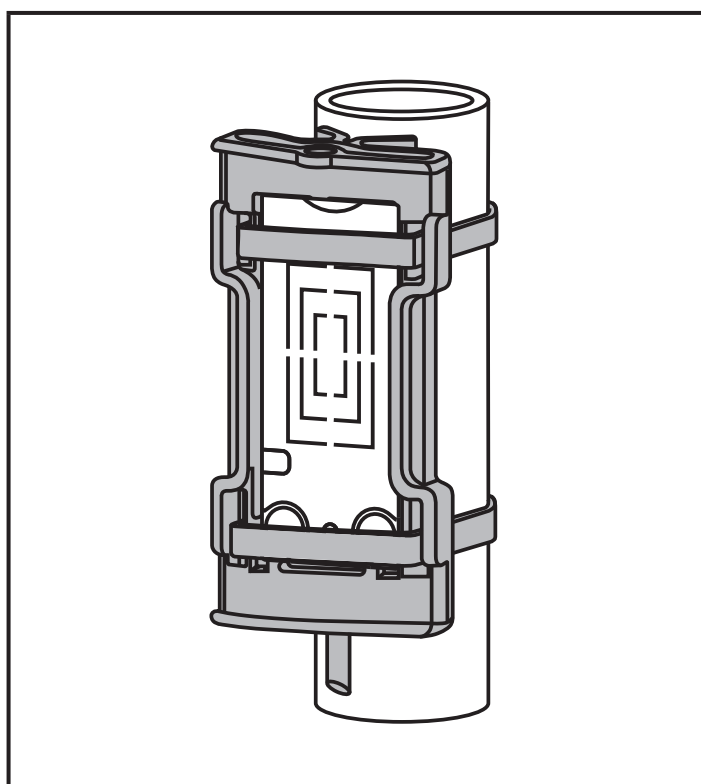
Figure C

- Fasten the mounting adapter including the inserted device to the tank at the desired height using suitable screws (4).



The device can be inserted into the mounting adapter E12153 in both directions.

5.6 Installation on bypass pipes with mounting adapter



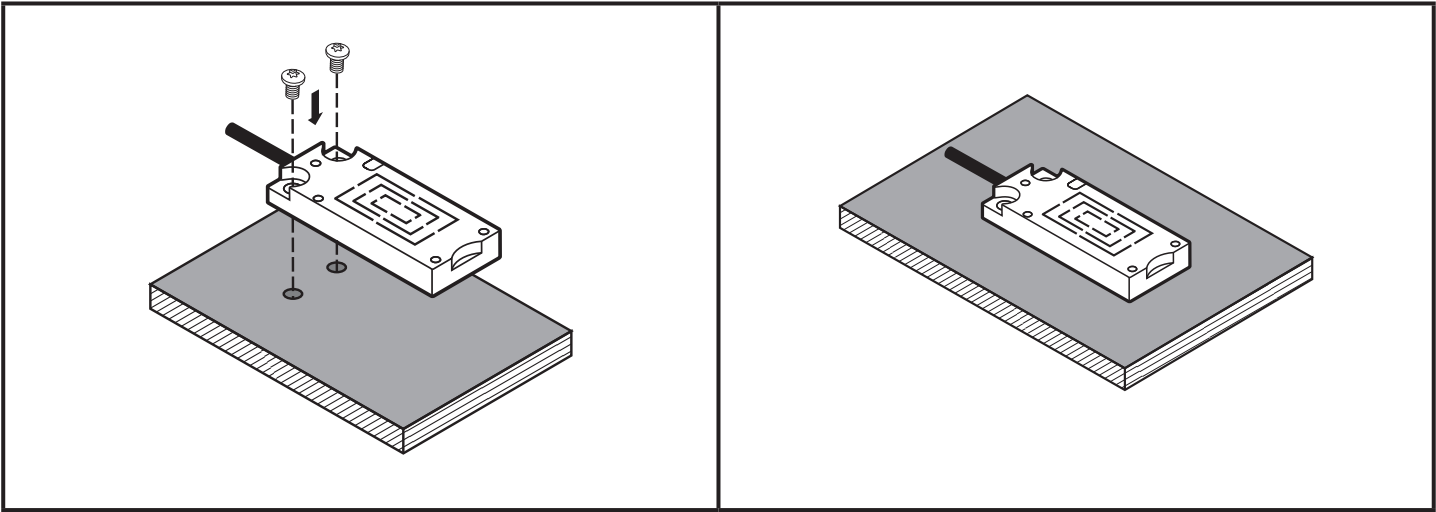
The mounting adapter is available as accessory (order no. E12163).

- Fasten the device to the bypass at the desired height using common plastic cable ties. Insert the cable ties through the openings of the mounting adapter and tighten firmly.



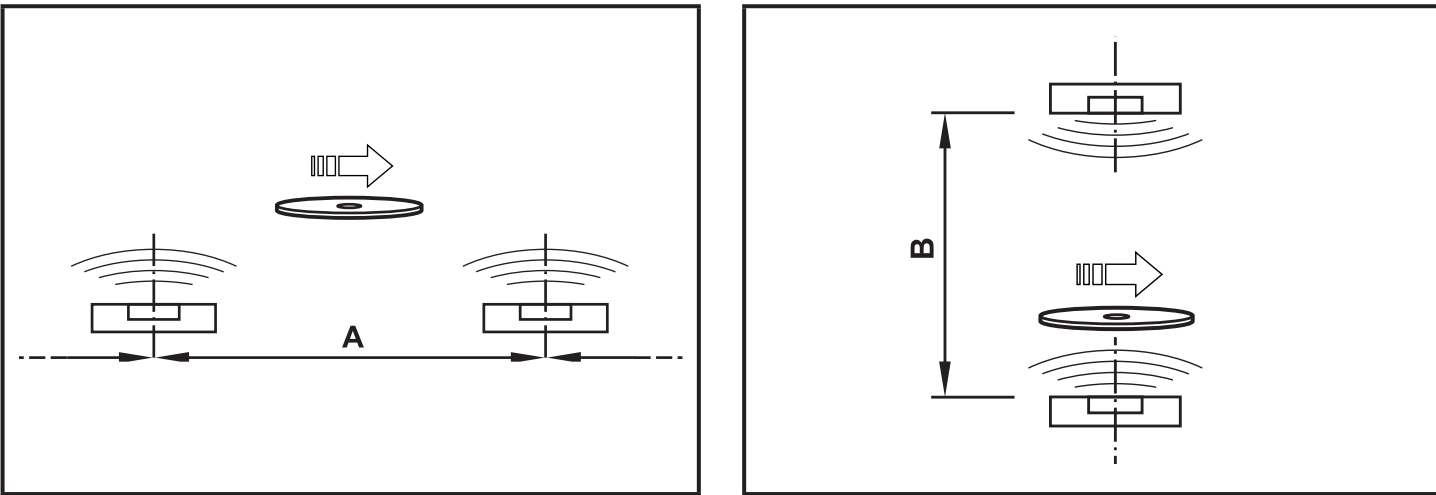
Metal cable ties may influence the degree of efficiency of the device.
Use plastic cable ties.

5.7 Installation without mounting adapter



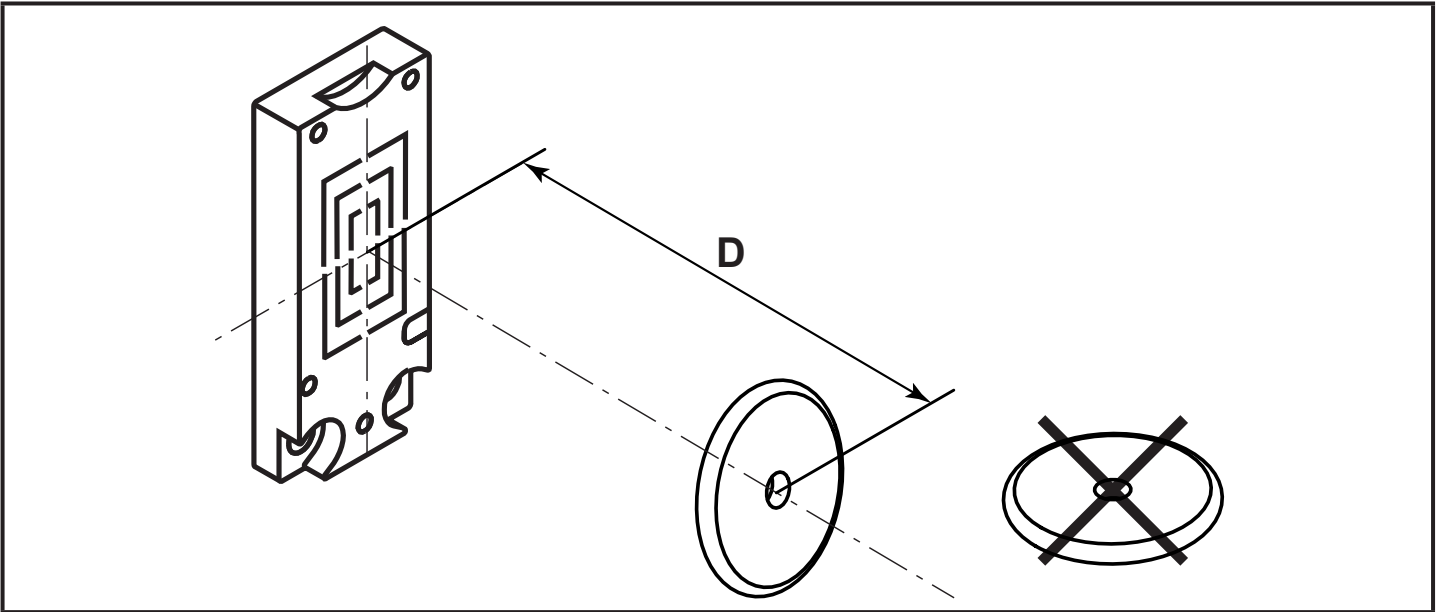
- Fasten the device at the intended installation location using suitable screws or suitable glue.
- Align the cut-outs as shown.

5.8 Mounting distances



Operating mode	Distance side (A)	Distance front (B)
For reading and writing	$\geq 100 \text{ mm}$	$\geq 120 \text{ mm}$

5.9 Positioning of the ID tags



► Align the ID tag on the antenna central axis

		Distance read/write head (D)	
ID tag	Type	metal	plastics
E80371		32 mm	34 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. ANT515 → Accessories
Cables with the following characteristics are suitable for the connection:

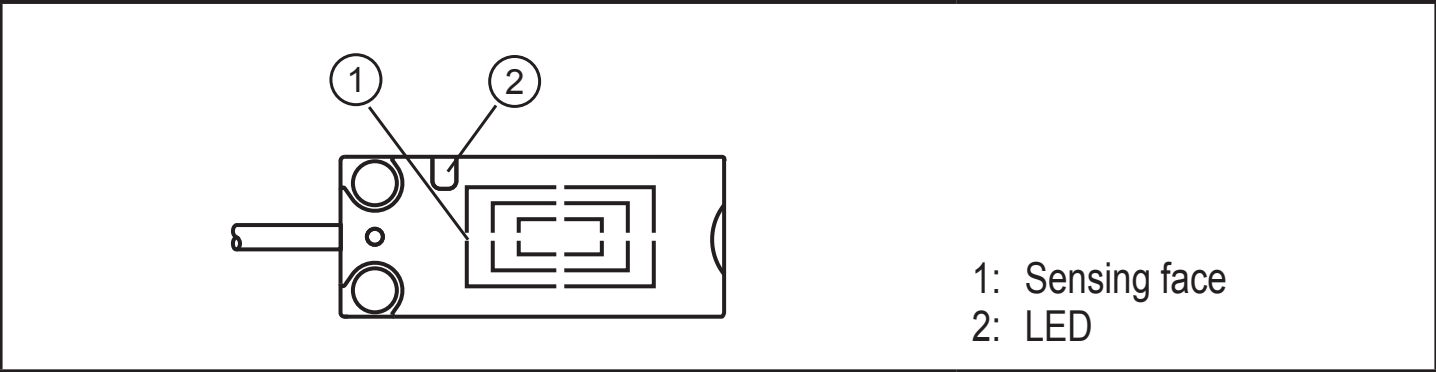
Length	Ohmic resistance (feed + return line)	Effective cable capacity
< 20 m	max. 3Ω	max. 3 nF

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
 - a) 5 A at voltages of 0...20 V_{rms} (0...28.3 V_p)
 - b) 100/V_p at voltages of 20...30 V_{rms} (28.3...42.4 V_p)

7 Display elements



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

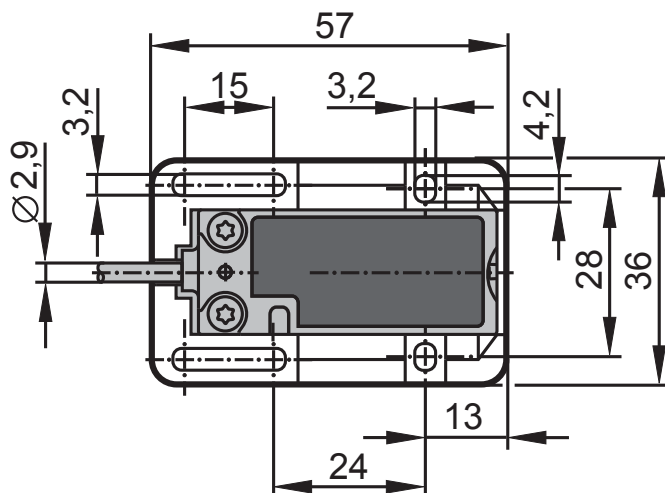
8 Operation

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

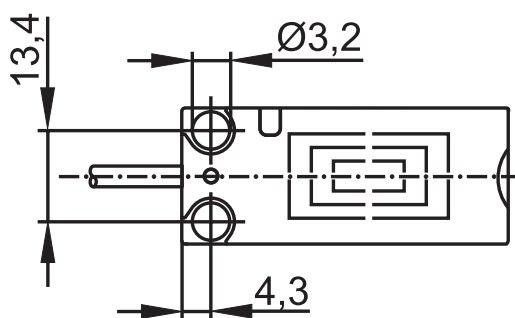
www.ifm.com → Data sheet search → e.g. DTE100 → Operating instructions

9 Dimensions

9.1 Bore hole dimensions of the mounting adapter



9.2 Bore hole dimensions of the device



10 Technical data

The data sheets are available on our website at:

www.ifm.com → Data sheet search → e.g. ANT515

11 Maintenance, repair, disposal

The operation of the unit is maintenance-free. For perfect functioning: Keep the sensing face and a clear space, if any, free from deposits and foreign bodies.

When replacing the device ensure that installation is done in the same way and that the same type of unit is used. It is not possible to repair the unit. After use dispose of the unit in an environmentally friendly way in accordance with the applicable national regulations.

12 Approvals/standards

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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. ANT515 → More information

12.1.2 Europe

Use in all EU countries

12.1.3 USA

Notices FCC:

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.

Changes or modifications made to this equipment not expressly approved by ifm electronic may void the FCC authorization to operate this equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

12.1.4 Canada

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 Taiwan

Administrative Regulations on Low Power Radio Wave Devices warning

Article 12

Unless granted permission by NCC, no company, firm, or user shall alter the frequency, increase the transmitting power, or alter the original design characteristics or operating functions of an approved low-power radio-frequency device.

Article 14

Low-power radio-frequency devices shall not affect aircraft security nor interfere with legal communications. If such interference occurs, the user shall immediately cease operating the device until improvement is made and the interference no longer exists.

Legal communications refers to the wireless telecommunication operations that comply with the Telecommunications Act. Low-power radio-frequency devices must accept any interference received from legal communications and ISM radio wave devices.

12.1.6 Australia

Use in Australia: 

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. ANT515 → More information

