

ifm electronic



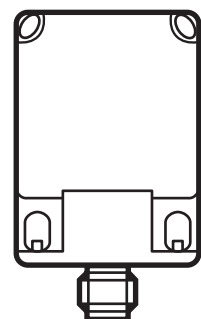
Installation Instructions  
RF-identification system  
Read/write head

UK

**efector190<sup>®</sup>**

**ANT513**

706098/07 09 / 2011



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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

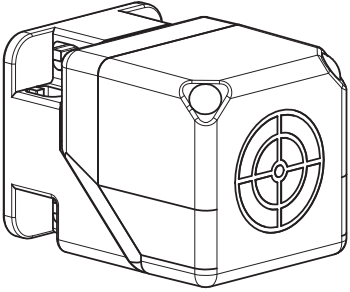
In connection with the evaluation unit DTE10x the read/write head ANT513 enables non-contact reading and/or writing of the RFID transponders (ID-TAGs) conforming to the system. The data is converted into digitally coded values and provided to the evaluation unit.

## 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>ANT513</td></tr><tr><td>Function:</td><td>read/write head</td></tr><tr><td>Type designation:</td><td>DTRHF MCRWIDUS03</td></tr><tr><td>operating frequency:</td><td>13.56MHz</td></tr><tr><td>H X W X D [mm]:</td><td>40 x 40 x 54</td></tr></table> | Art. no.: | ANT513 | Function: | read/write head | Type designation: | DTRHF MCRWIDUS03 | operating frequency: | 13.56MHz | H X W X D [mm]: | 40 x 40 x 54 |
| Art. no.:   | ANT513  |           |        |           |                 |                   |                  |                      |          |                 |              |
| Function:   | read/write head   |           |        |           |                 |                   |                  |                      |          |                 |              |
| Type designation:   | DTRHF MCRWIDUS03  |           |        |           |                 |                   |                  |                      |          |                 |              |
| operating frequency:  | 13.56MHz  |           |        |           |                 |                   |                  |                      |          |                 |              |
| H X W X D [mm]:   | 40 x 40 x 54  |           |        |           |                 |                   |                  |                      |          |                 |              |





## 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](http://www.ifm.com) → data sheet search → ANT513 → 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:

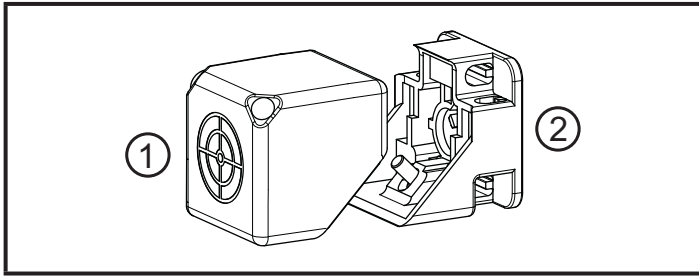
[www.ifm.com](http://www.ifm.com) → data sheet search → ANT513 → Additional data  
(General information about mounting and operation)

### 5.3 Avoiding interference

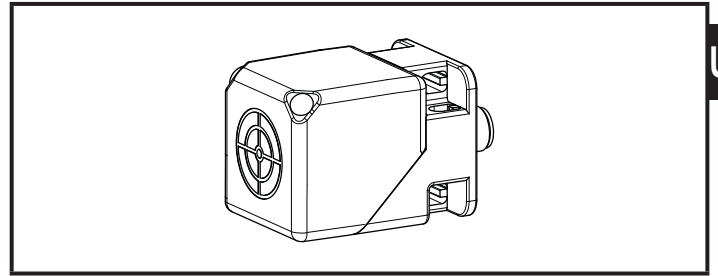
The device generated a modulated electrical field with a frequency of 13.56 kHz. To avoid interference of the data communication no other devices generating interference emission in this frequency band must be operated in the vicinity. Such devices are for example frequency converters and switched-mode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

### 5.4 Mechanical design

On delivery the sensing face is facing the front.



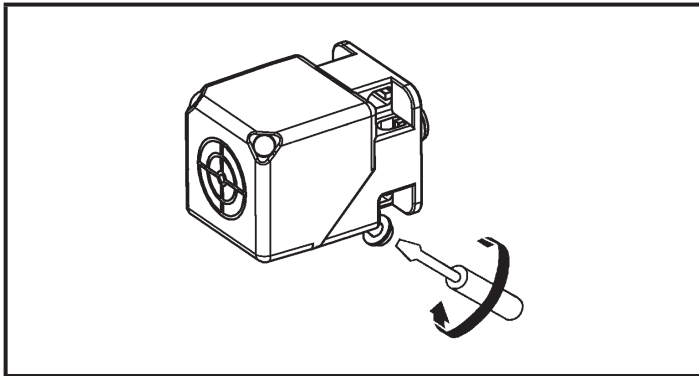
- 1: Antenna head (can be aligned)
- 2: Fixing element



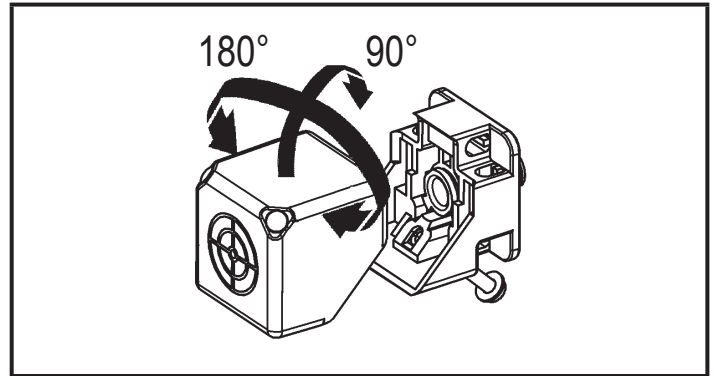
Factory setting

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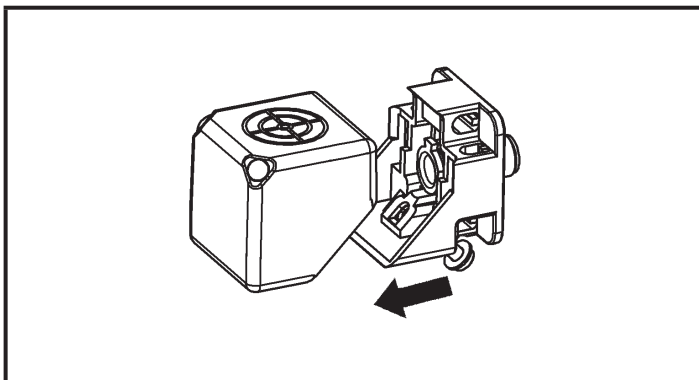
### 5.5 Alignment of the sensing face



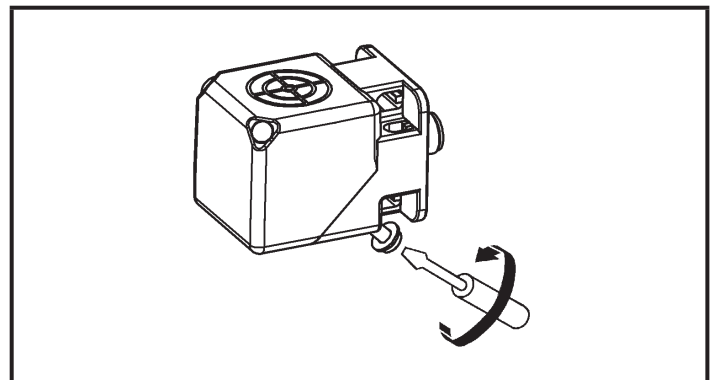
- 1. Loosen the screw.



- 2. Remove the antenna head from the fixing element and turn it.



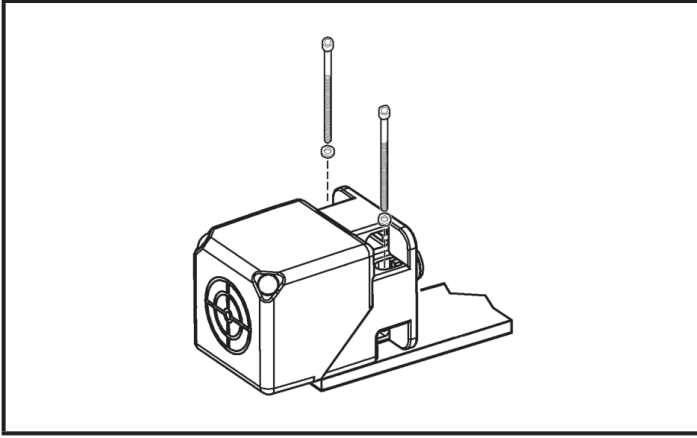
- 3. Attach the fixing element to the antenna head.



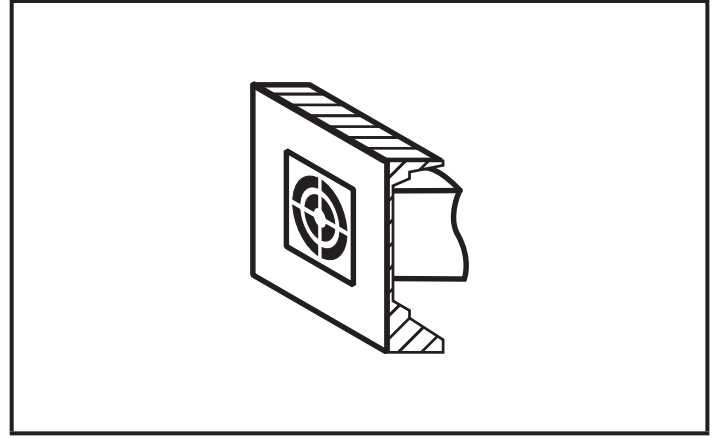
- 4. Tighten the screw.

## 5.6 Fixing

► The device is fixed with 2 M5 screws and nuts. Order non flush or flush.

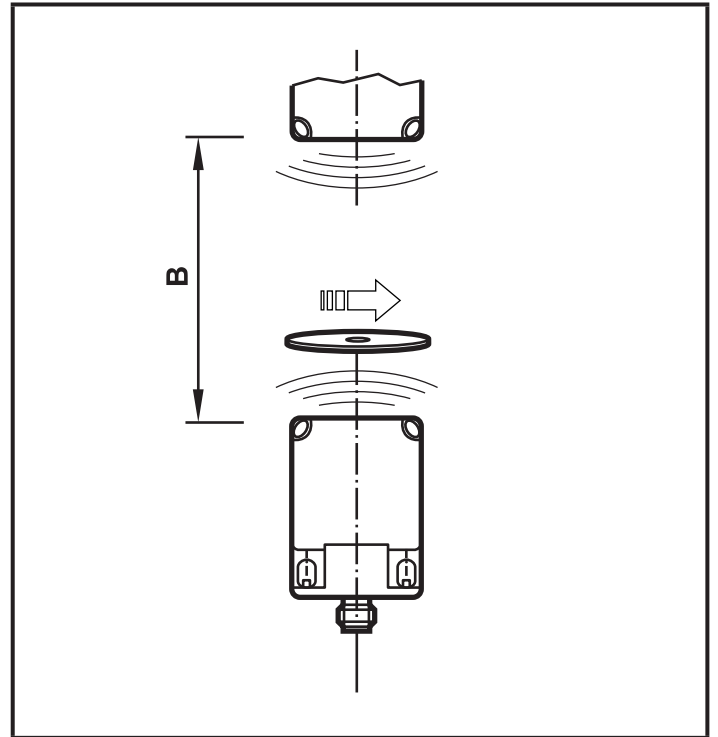
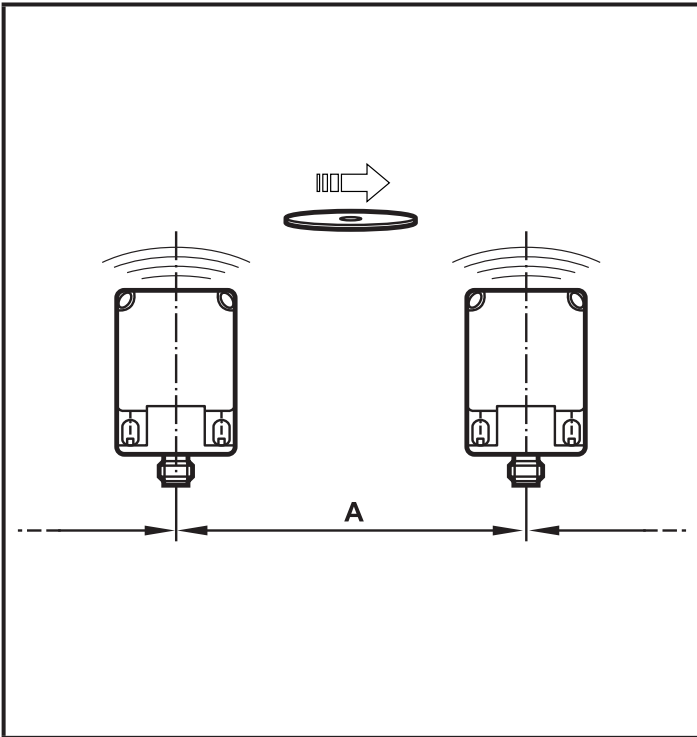


non flush



flush

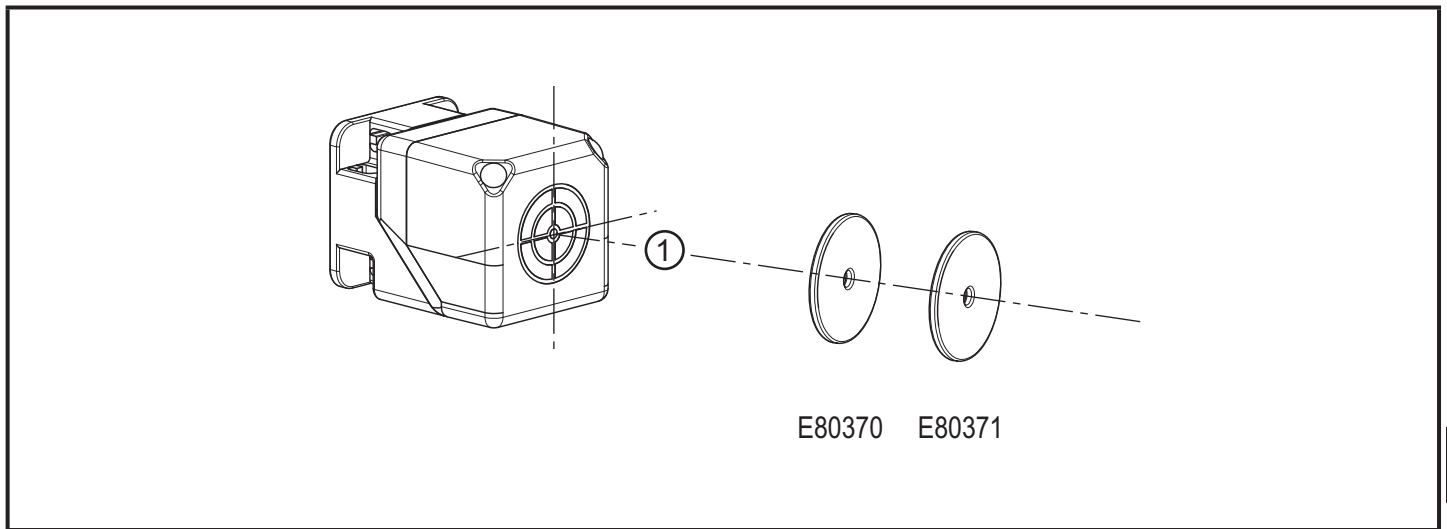
## 5.7 Mounting distances



| Operating mode          | Distance side (A) | Distance front (B) |
|-------------------------|-------------------|--------------------|
| For reading and writing | $\geq 300$ mm     | $\geq 250$ mm      |

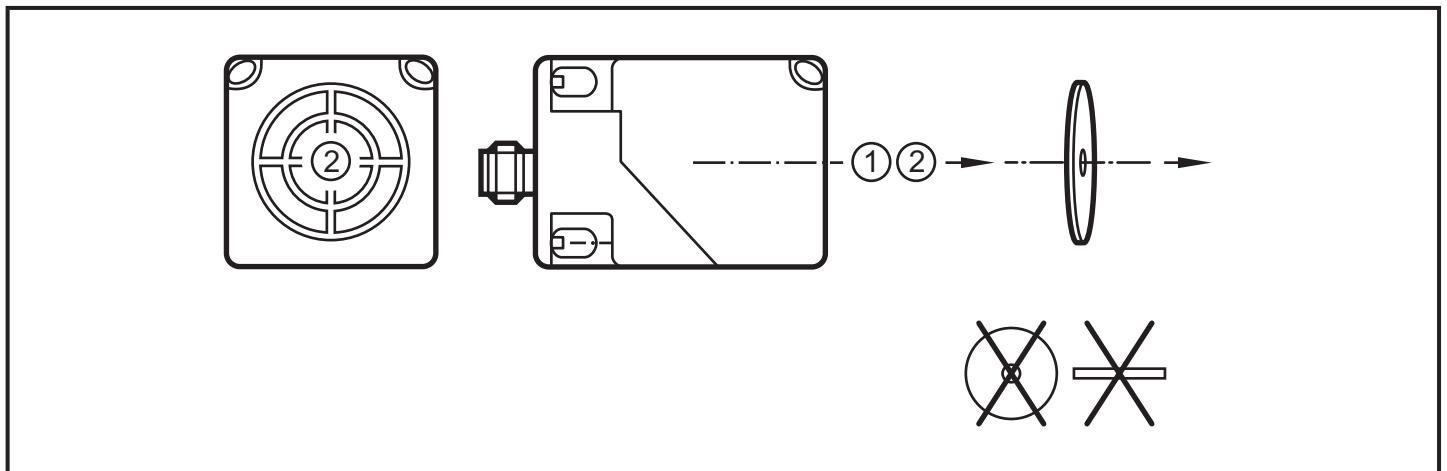


## 5.8 Positioning of the ID tags



1: front side



## 5.9 Orientation of the ID tags



1: antenna axis ANT513 = ID tag axis

2: middle of the antenna ATN513x = middle of the ID tag

## 5.10 Read/write distances

|        |   | Installation read/write head |
|--------|---|------------------------------|
| ID tag | Type  | Non flush                    |
| E80370 |  | 55                           |
| E80371 |  | 60                           |

All indications apply to static read/write operations. If not otherwise stated they refer to ID tag installation in a non-metallic environment. All indications in mm.

# 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](http://www.ifm.com) → data sheet search → ANT513 → Accessories

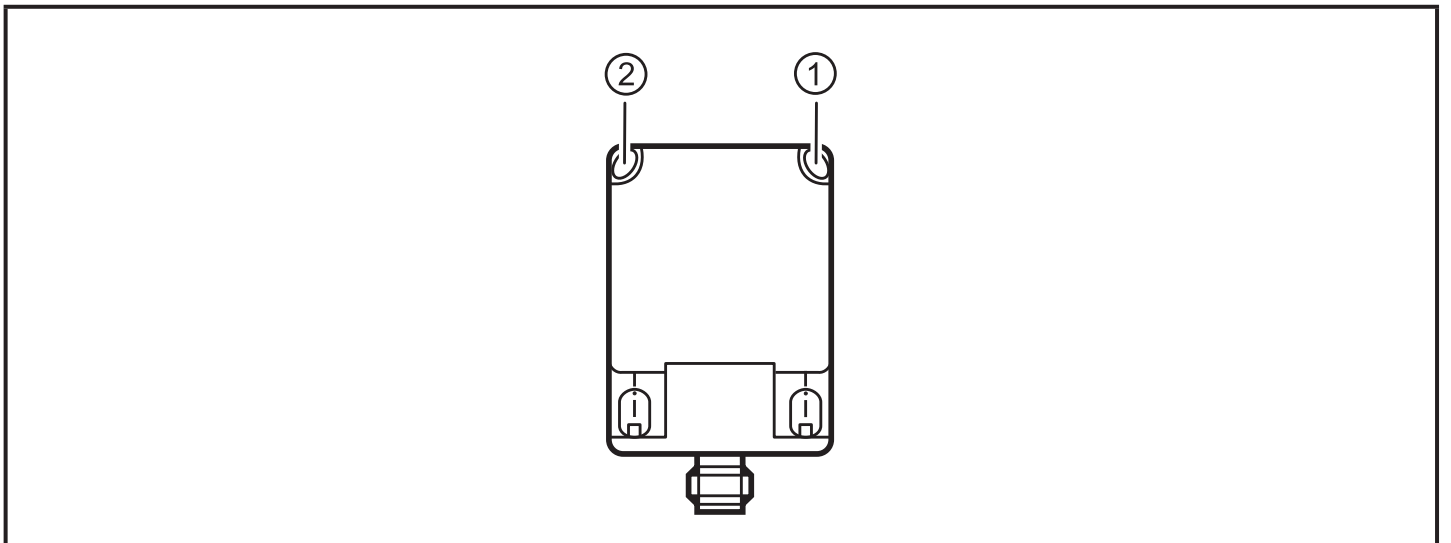
Cables with the following characteristics are suitable for the connection:

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

## 6.2 UL approval

- ▶ Supply the device from an isolating transformer having a secondary UL- listed fuse rated
  - 5 A at voltages of 0...20 V<sub>rms</sub> (0...28.3 V<sub>p</sub>)
  - 100/V<sub>p</sub> at voltages of 20...30 V<sub>rms</sub> (28.3...42.4 V<sub>p</sub>)

# 7 Display elements



- 1: green (operating voltage)
- 2: 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<br>or invalid ID tag in the field |
| green + yellow | FLASHING ALTERNATELY | error in communication or device fault  |

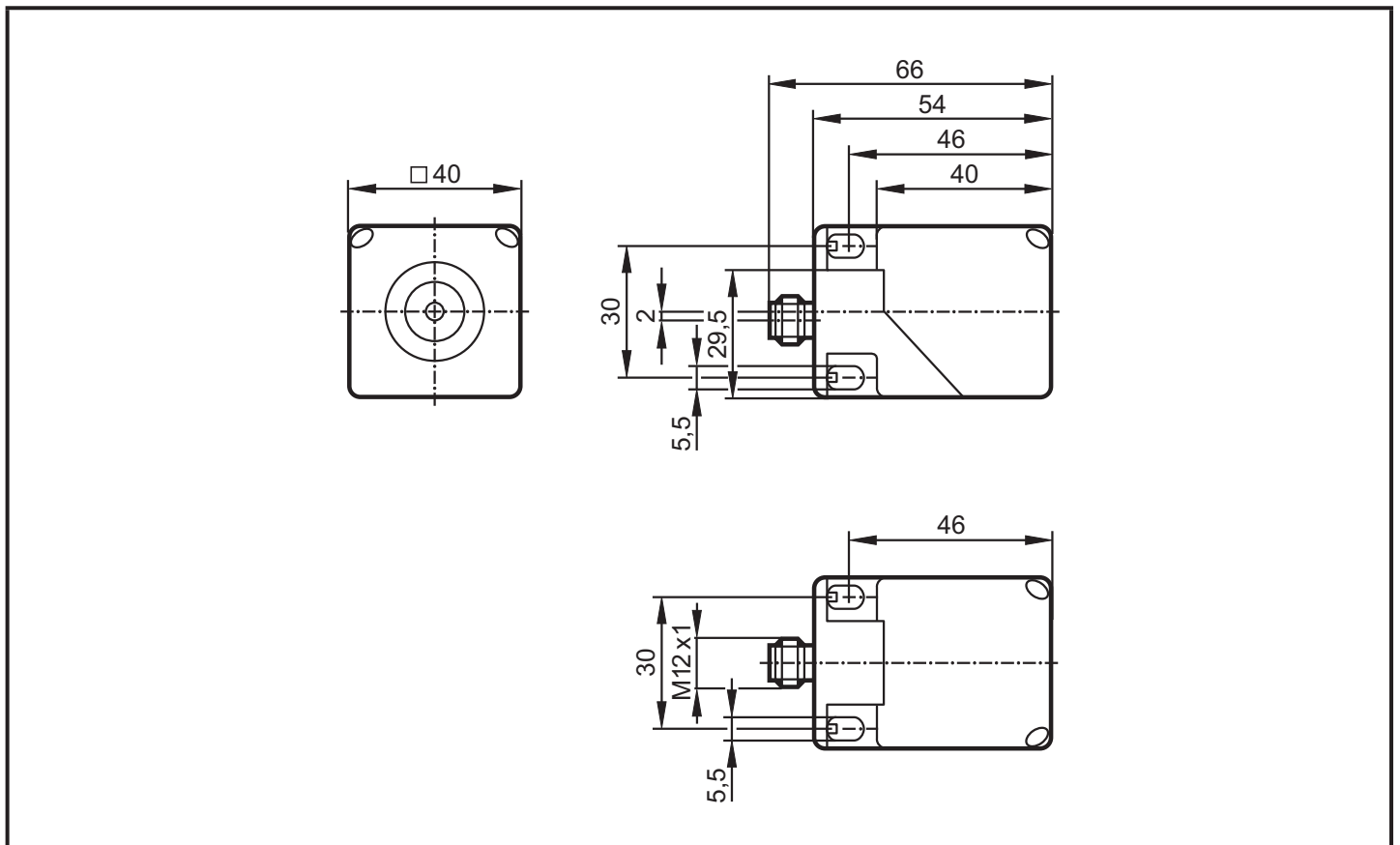
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## 8 Operation

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](http://www.ifm.com) → data sheet search → DTE10x → Operating instructions

## 9 Dimensions



## 10 Technical data

The data sheets are available on our website at: [www.ifm.com](http://www.ifm.com) → data sheet search → ANT513

## 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](http://www.ifm.com) → data sheet search → ANT513 → Approvals

#### 12.1.2 Europe

Intended use: Use in all EU countries

#### 12.1.3 Notices FCC

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.

### 12.2 EC declaration of conformity

You can find the EC declaration of conformity on our website at: [www.ifm.com](http://www.ifm.com) → data sheet search → e.g. ANT513 → Approvals