Operating instructions

RF-identification system

ANT600

Read/write head

GB

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
▶	Instructions
▷	Reaction, result
[...]	Designation of keys, buttons or indications
→	Cross-reference
[!]	Important note Non-compliance may result in malfunction or interference.
[i]	Information Supplementary note

1.2   Warnings used

> **ATTENTION**
>
> Warning of damage to property

1.3   Legal and copyright information

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2 Safety instructions

General

- 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.

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.

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.

3   Intended use

The read/write head reads and writes ID tags without contact. For use, the read/write head must be connected to the DTE10x evaluation unit.

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

4   Items supplied

- Read/write head

> The device is supplied without installation and connection accessories.
> Available accessories: www.ifm.com.
> The optimum function is not ensured when using components from other manufacturers.

5   Function

5.1   ID tags

The ID tags are passively operated without a battery. The energy required for operation is provided by the read/write head.

The energy is provided via an 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.

The device supports ID tags according to ISO 15693.
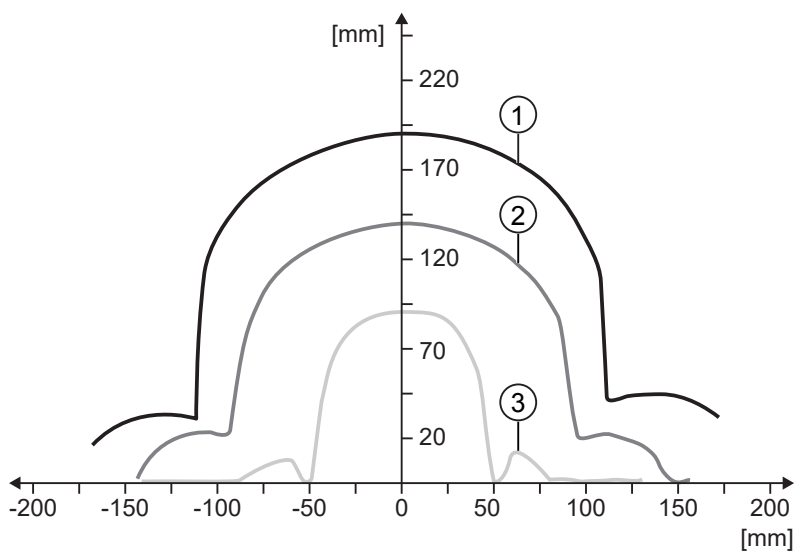
5.2   Detection range with E80384

Fig. 1: Propagation field

   1 Detection range at 100 % HF power   2 Detection range at 75 % HF power
   3 Detection range at 50 % HF power

> [!] Some ID tags require 100 % transmission power for correct reading and writing.
>
> ▶ In case of reduced transmission power, check the ID tag's reading and writing range.
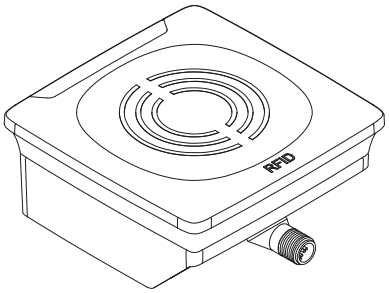
> [i] The indications refer to static write operations and to the installation of the device and the ID tag in a non-metal environment.

> [i] The transmission power can be set to 50 %, 75 % or 100 %.

5.3 Device overview

ANT600

	Article number:	ANT600
	Function:	Read/write head
	Type designation:	DTRHF HLRWIDUS03
	Type:	Rectangular

6 Installation

6.1 Notes on the unit installation

| ⚠ | When mounting several RFID units adhere to the minimum distances between the systems. |

| ⚠ | Flush mounting of a read/write head in metal reduces the read/write distance. |

| ⚠ | Device performance can be affected if positioned in the immediate vicinity of powerful HF emission sources such as welding transformers or converters. |

6.2 Avoiding interference

The device generates a modulated electrical field with a frequency of 13.56 MHz.

Avoid interference with data communication:

▶ Do not operate any devices in the vicinity that use the same frequency band.

▷ Such devices are for example frequency converters and switched-mode power supplies.

If there are other devices in the same frequency band in the vicinity:

▶ The mounting distances between the devices should be as large as possible.

▶ Use the devices in alternating operation.

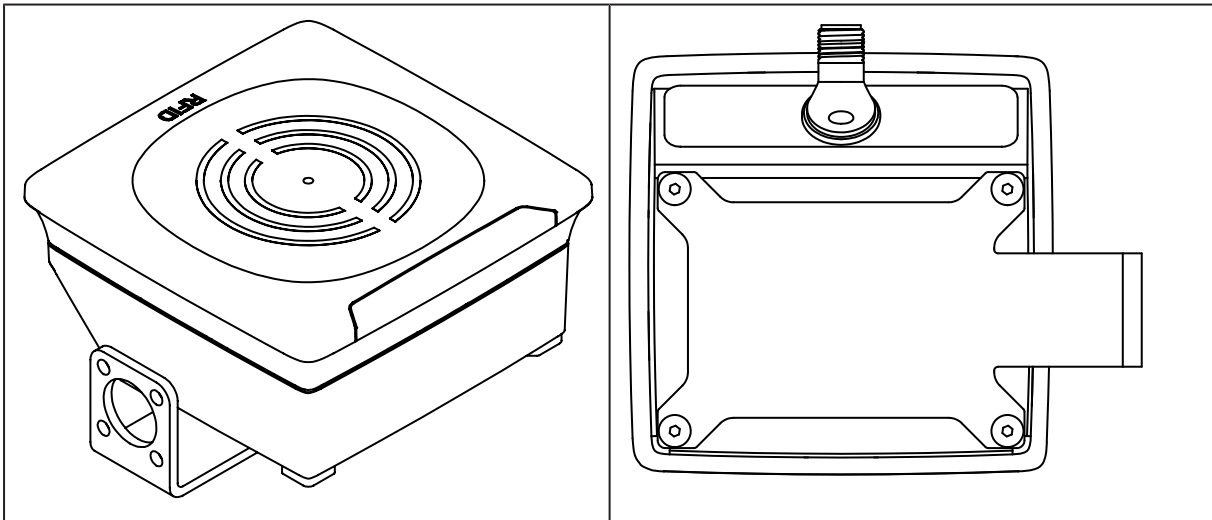▶ Switch the HF field of the device on/off.

6.3 Mechanical design
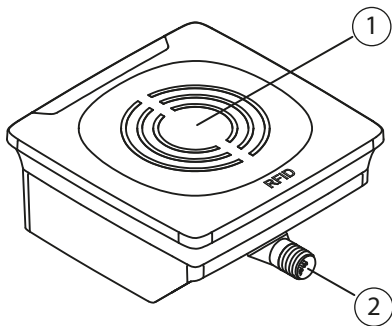
1 Sensing face
2 Connection (can be rotated by 270°)

6.4 Mounting options

| ℹ | The device can be mounted without the accessories. |

▶ For installation, please use the threaded sleeves on the back of the device.

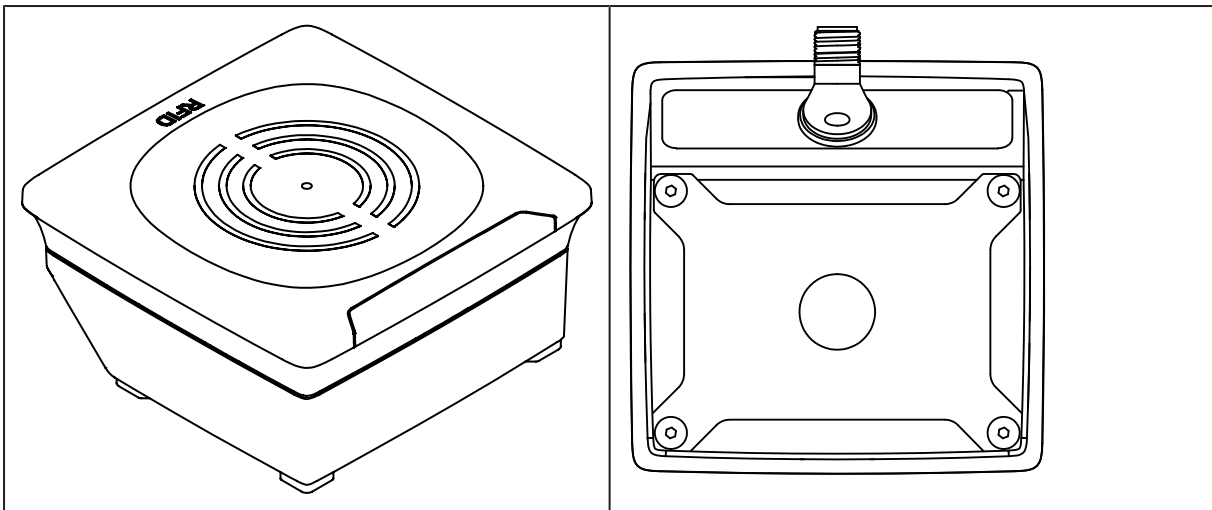▷ The required screws are not supplied with the device.

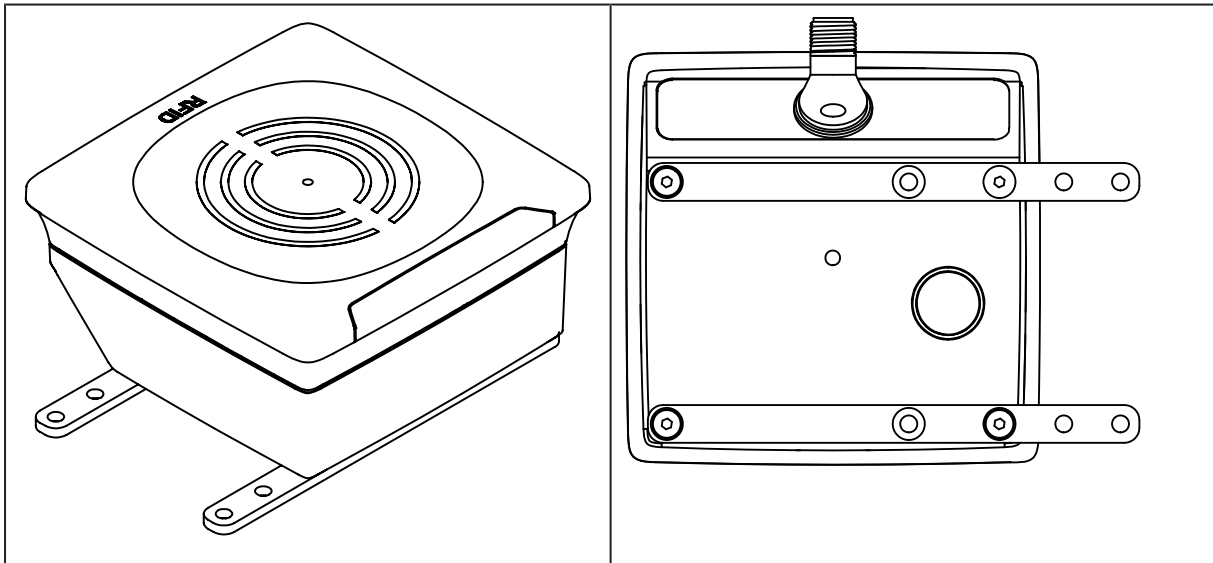### 6.4.1 Installation with angle bracket E80335

6.4.2 Installation with mounting device E80336

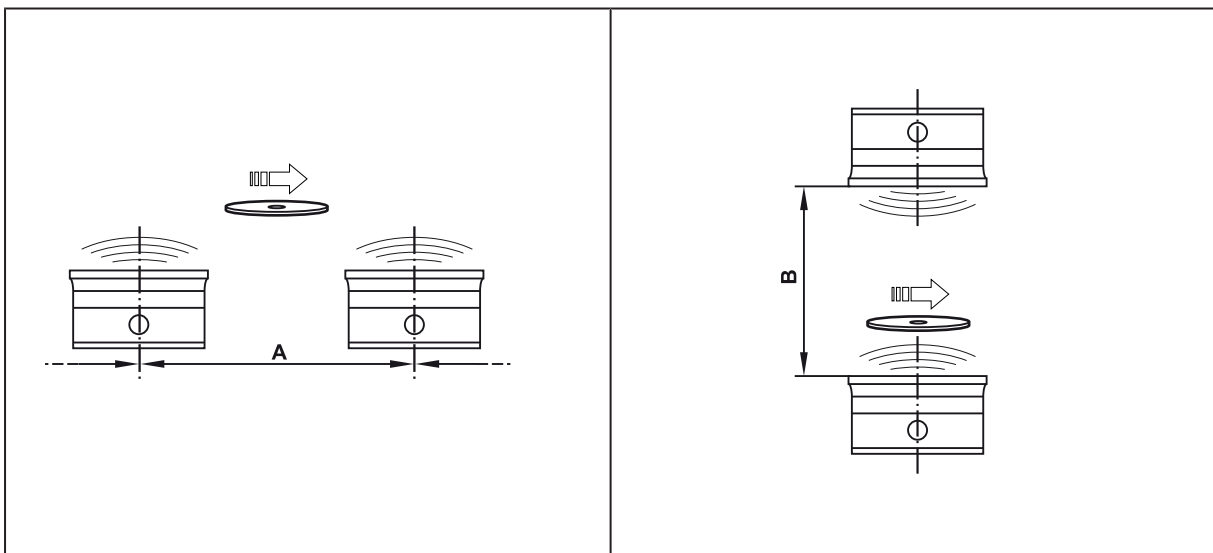The mounting device is used to mount the unit on a clamp. Compatible clamps:

• E21110 with a rod diameter of 12 mm

• E20795 with a rod diameter of 14 mm

• E21109 with a rod diameter of 14 mm

6.4.3   Installation with fixing bars E80337

6.5   Mounting distances

Operating mode	Distance side (A)	Distance front (B)
For reading and writing	>0.6 m	>0.4 m

Interference in data communication is avoided if there are no other RFID UHF devices in the vicinity. If there are other RFID UHF devices in the vicinity:

▶ The mounting distances between the devices should be as large as possible.

▶ Use the RSSI filter.

▶ Use the devices in alternating operation.

▶ Switch the HF field of the device on/off.

6.6   Positioning of the ID tags
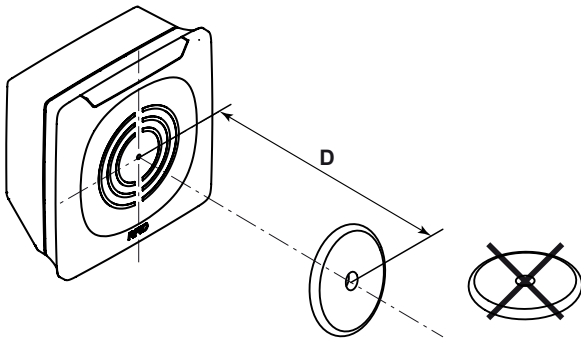

Fig. 2: Position the ID tag

▶ Align the ID tag on the antenna central axis.

▷ The distance "D" is indicated in the data sheet.

> ID tags are also detected on the back of the device. To avoid this:
>
> ▶ Use the RSSI filter.

7   Electrical connection

!   The device must be connected by a qualified electrician.

Device of protection class III (PC III).

The electrical supply must only be made via PELV/SELV circuits.

▶ Disconnect power before connecting the device.

7.1   Wiring

▶ Connect the unit to a DTE10x evaluation unit via the M12 connector.

▷ Voltage is supplied via the evaluation unit.

Pin assignment	Wiring
1 3 4	1 — L+ 4 — DATA 3 — L−

ℹ   Information on available sockets see: www.ifm.com.

Cables with the following characteristics are suitable for the connection:

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

8   Operating and display elements
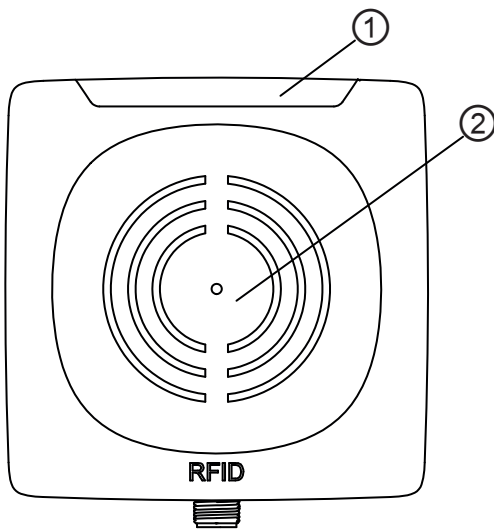
Fig. 3: Operating and display elements

1 LEDs   2 Sensing face

LED	Status	Description
green	on	ready for operation
	flashing slowly	not ready for operation
yellow (signal bar)	flashing twice	ID tag read/written successfully
	flashing quickly	error when reading/writing on ID tag

The maximum receive signal strength depends on the type of the ID tag.

If the ID tag has a high receive signal strength, all LEDs of the signal bar are on.

▷ The behaviour of the signal bar is adjustable.

9   Maintenance, repair and disposal

The unit is maintenance-free.

▶ Contact ifm in case of malfunction.

▶ Do not open the housing as the unit does not contain any components which can be maintained by the user. The unit must only be repaired by the manufacturer.

▶ Clean the device using a dry cloth.

▶ Dispose of the unit in accordance with the national environmental regulations.

10 Approvals/standards

For approvals and standards, the following information is available:

- Test standards and regulations: documentation.ifm.com
- EU declaration of conformity and approvals: documentation.ifm.com
- Notes relevant for approval: Package insert of the device and documentation.ifm.com

Glossary

ID tag

An ID tag is used to identify objects. A read/write device is used to read the ID tag via a high-frequency radio signal. An ID tag consists of an antenna, an analogue circuit for receiving and transmitting (transceiver), a digital circuit and a non-volatile memory.