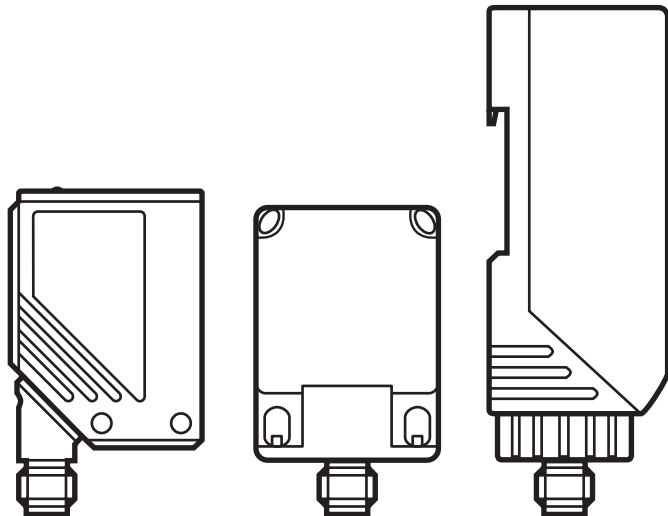


Installation instructions
RF-identification system
with integrated AS-i slave

UK

DTSLF

80262952 / 00 04 / 2017



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1 Preliminary note

This document applies to all DTSLF type units.

It 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

▶ Instruction

→ Cross-reference



Important note

Non-compliance can result in malfunctions 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 handling can affect the safety of people and machinery.

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

The unit must only be installed, connected and put into operation by a qualified electrician as the safe function of the unit 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 unit 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.

UK

3 Functions and features

The DTSLF RF identification system enables non-contact reading and/or writing of RFID transponders (ID tags) conforming to the system.

The data is converted into digitally coded values and provided to the AS-i control level (AS-i master, controller or host).

Application examples:

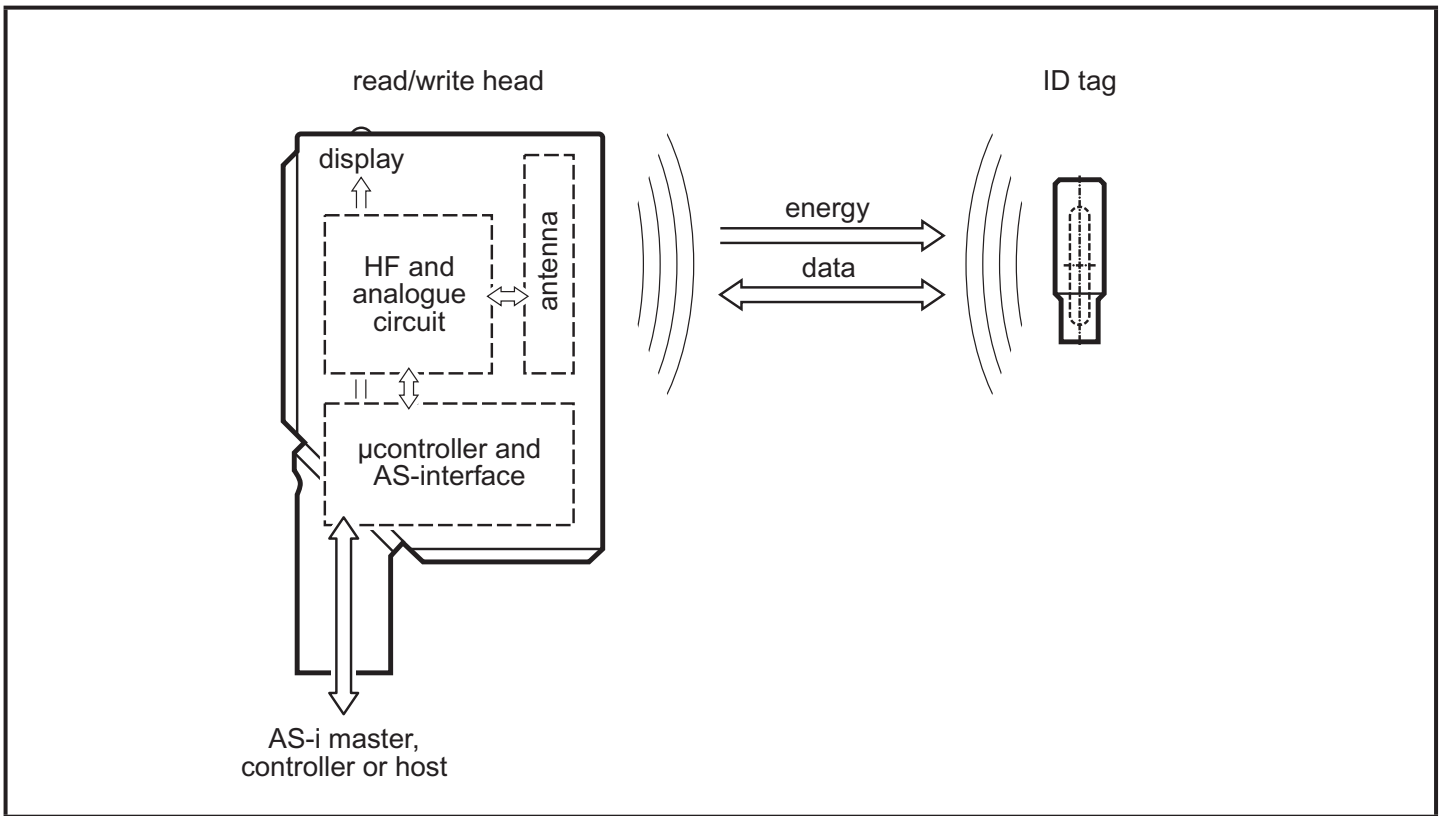
- Material flow control in production lines
- Warehouse management by the automatic detection of stored products
- Tank management, order picking or product tracking

4 Function

4.1 Operating principle

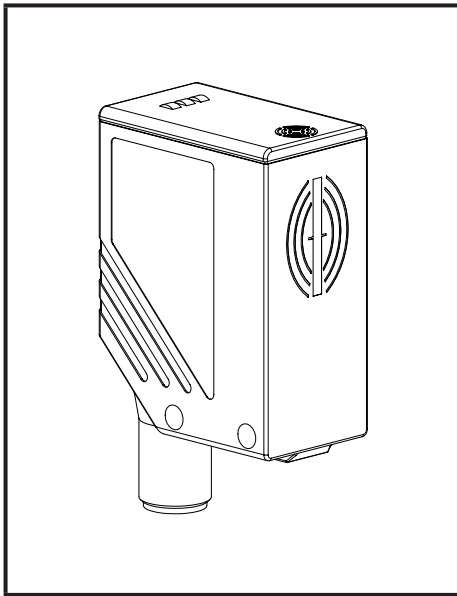
The ID tags are operated passively, i.e. without battery. The energy required for operation is supplied by the read/write head.

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.

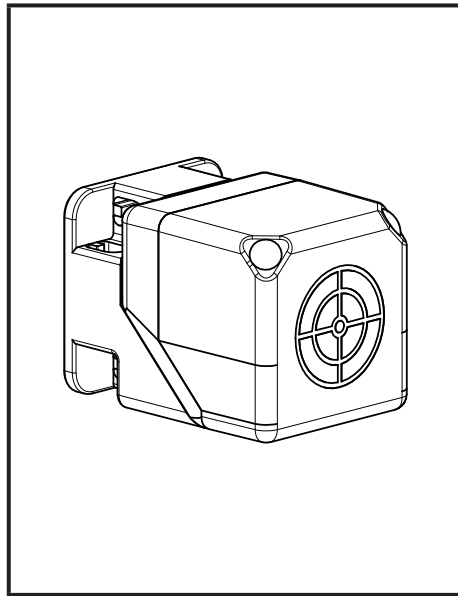


function (example read/write head DTA100 and ID tag E80301)

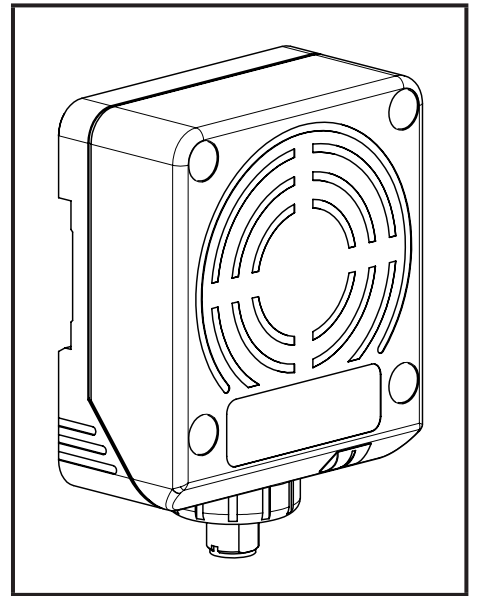
4.2 Type overview



DTA10x



DTA20x



DTA30x




Art. no.	Function	Type designation	H x V x D [mm]	Max. transmission power:
DTA100	Read/write head	DTSLF AARWASUS01	55 x 24 x 41	200 mW
DTA101	Read head	DTSLF AAROASUS01		

Art. no.	Function	Type designation	H x V x D [mm]	Max. transmission power:
DTA200	Read/write head	DTSLF MCRWASUS01	40 x 40 x 54	200 mW
DTA201	Read head	DTSLF MCROASUS01		
DTA300	Read/write head	DTSLF DCRWASUS01	92 X 80 X 40	200 mW
DTA301	Read head	DTSLF DCROASUS01		

5 Installation

UK





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

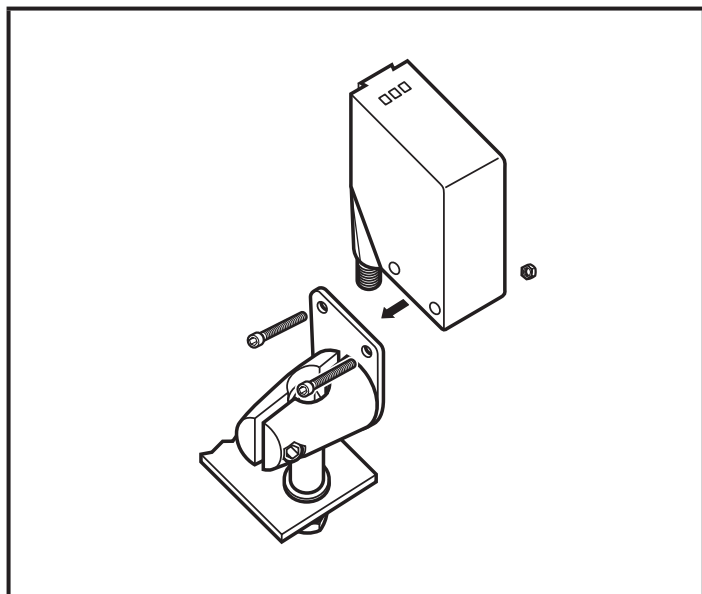
5.2 Notes on ID tag mounting

-  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.
-  You can find out about the best way to position the available ID tags and on mounting in metal on our website at: www.ifm.com

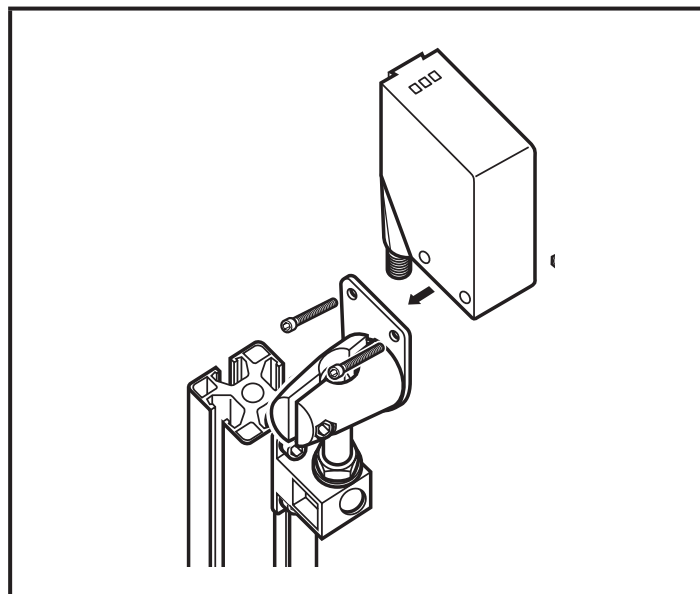
5.3 DTA10x

5.3.1 Fixing

► The device is fixed via either 2 M4 screws and nuts or via an angle bracket.

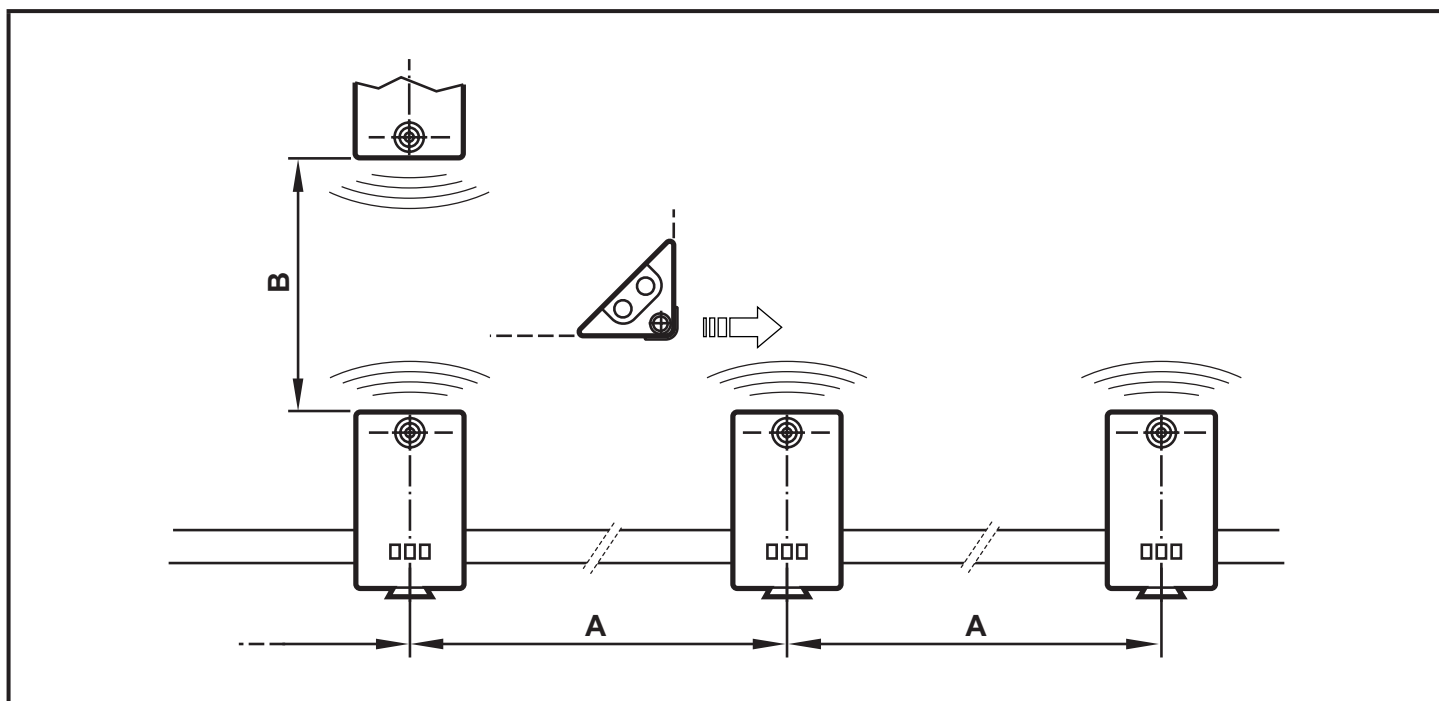


mounting example E20898



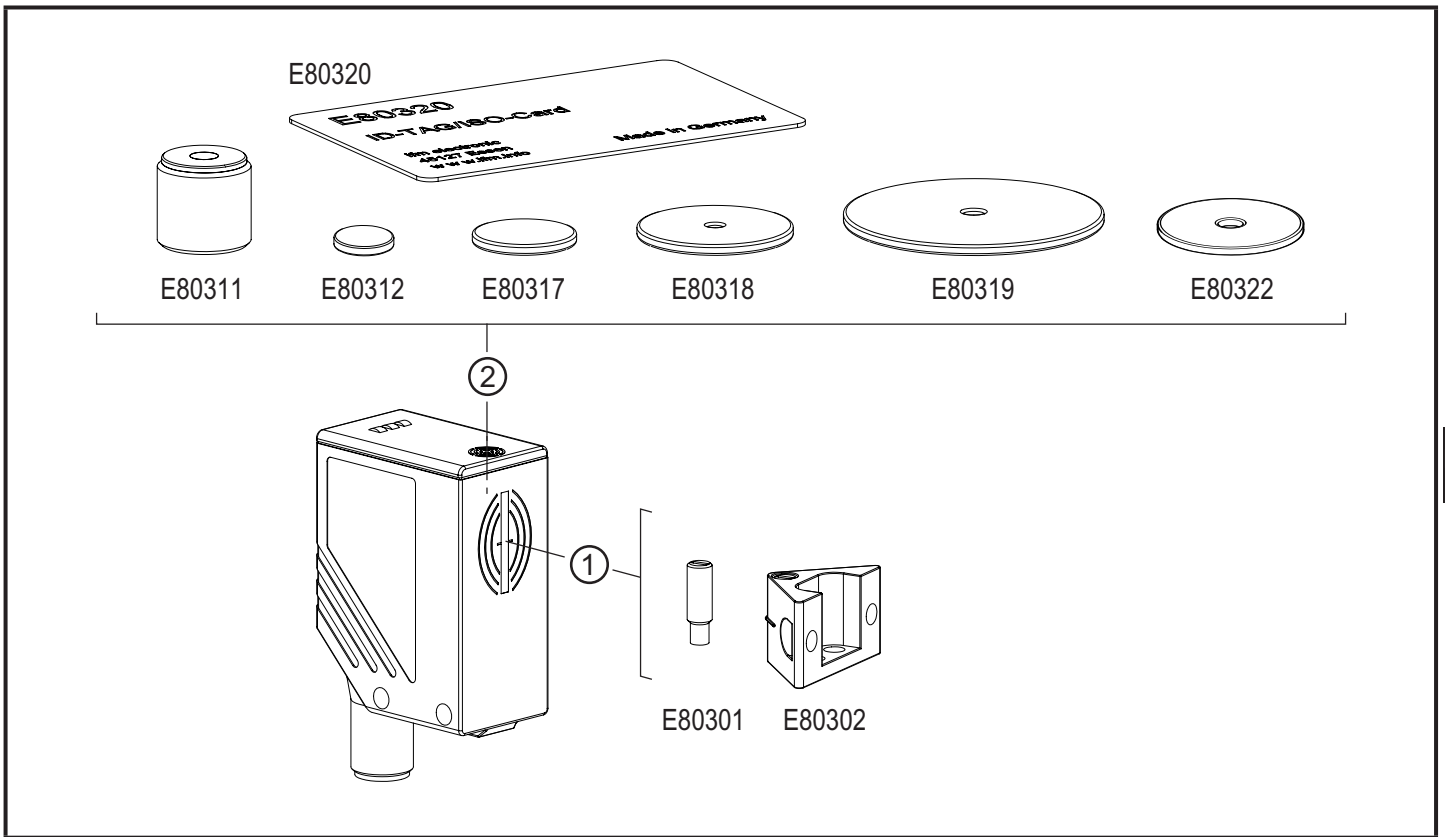
mounting example E20901

5.3.2 Mounting distances



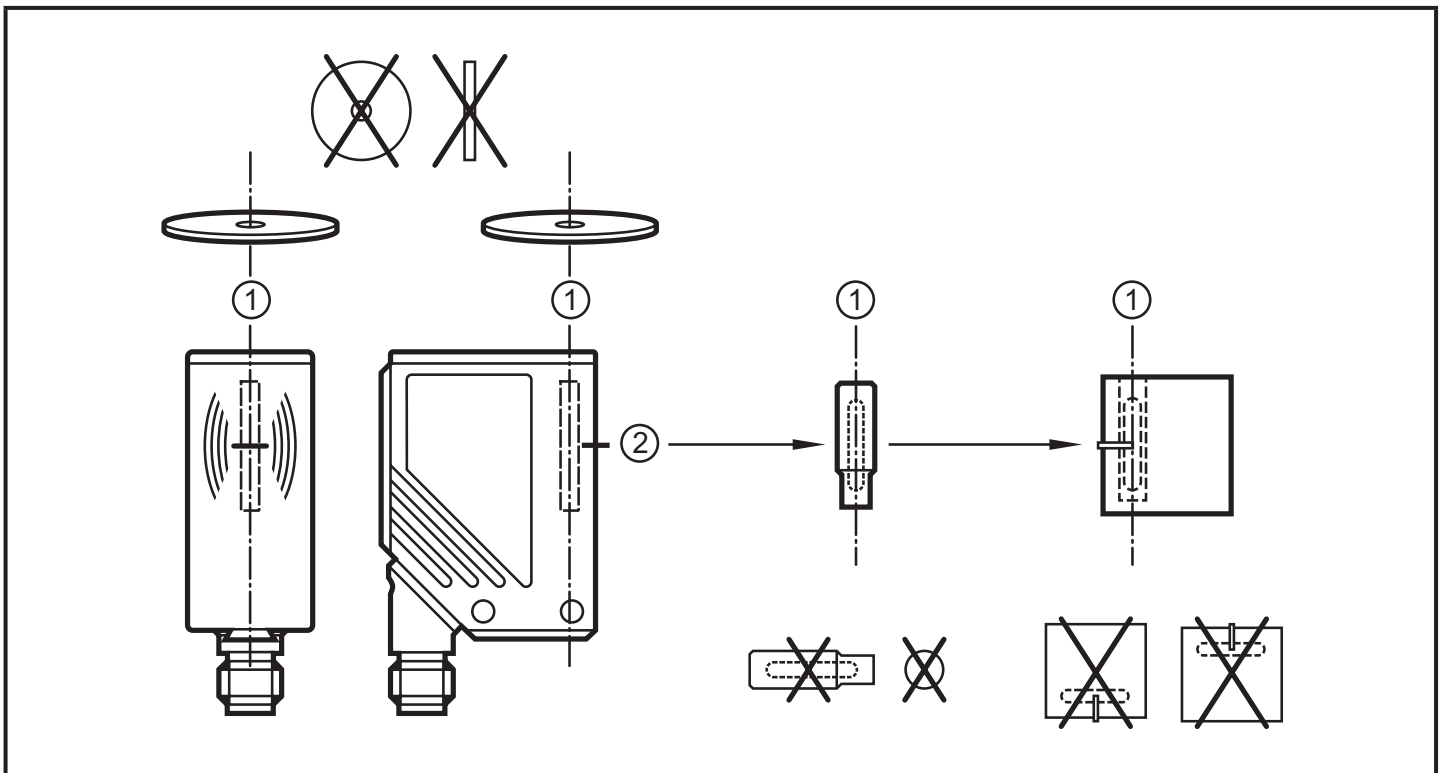
Operating mode	Distance side (A)	Distance front (B)
Reading only	≥ 200 mm	≥ 200 mm
For reading and writing	≥ 400 mm	≥ 400 mm

5.3.3 Positioning of the ID tags




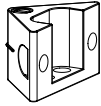




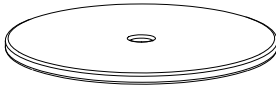


- 1: front side
- 2: overhead

5.3.4 Orientation of the ID tags



- 1: DTA10x antenna axis = ID tag axis
- 2: DTA10x middle of the antenna = middle of the ID tag

5.3.5 Read/write distances

ID tag	Type	Positioning	Read	Write
E80301		front side	20	10
E80302			20	10
E80311		overhead	5...20	
			8*	
E80312			5...20	
E80317			10...28	
E80318			15...40	
E80319			20...60	20...50
E80320			18...60	
E80322			15...40	

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

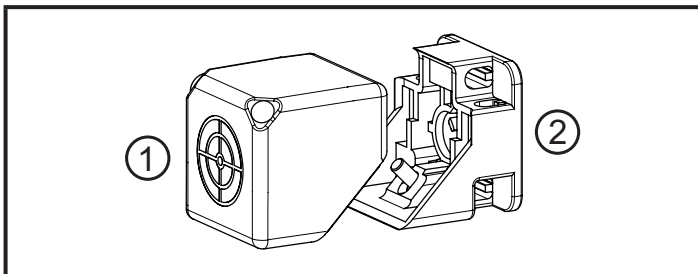
All indications in mm.

*) ID tag flush mounting in metal

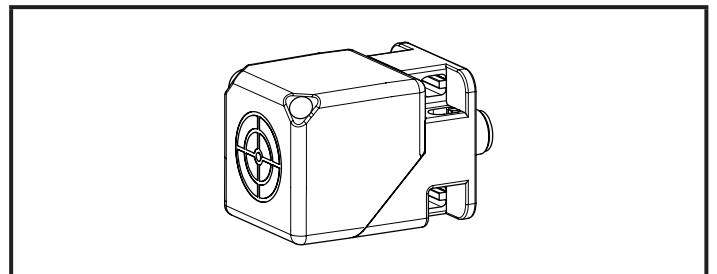
5.4 DTA20x

5.4.1 Mechanical design

On delivery the sensing face is facing the front.

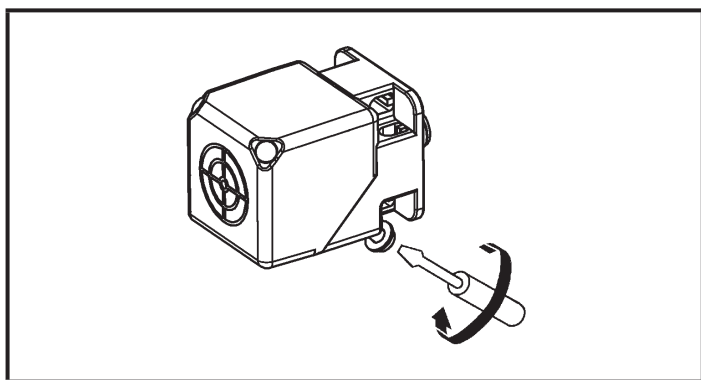


- 1: antenna head (can be aligned)
2: fixing element

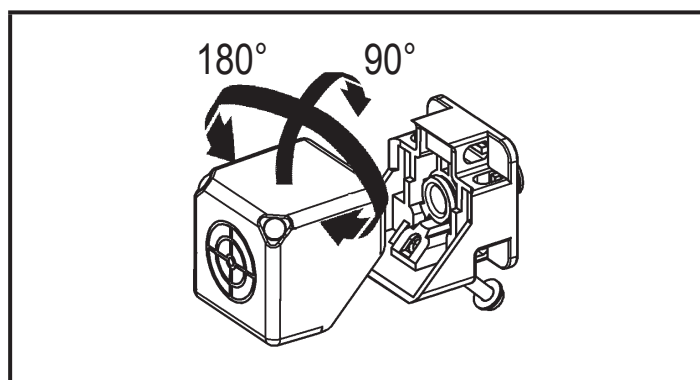


on delivery

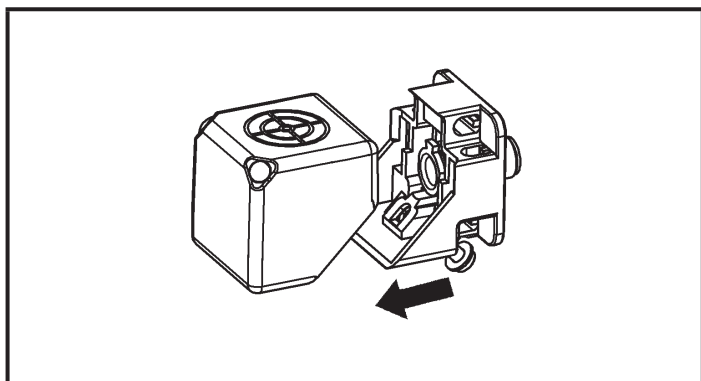
5.4.2 Alignment of the sensing face



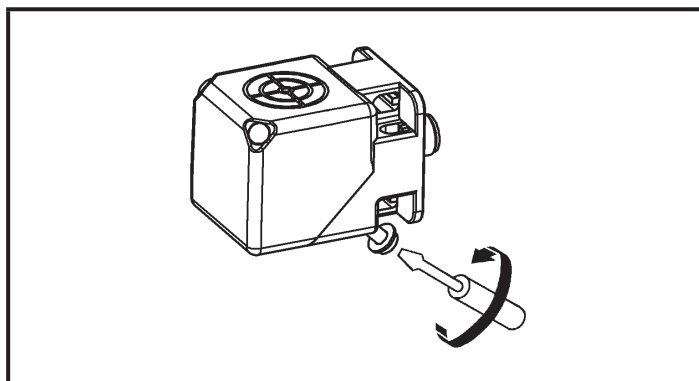
1. Loosen the screw.



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



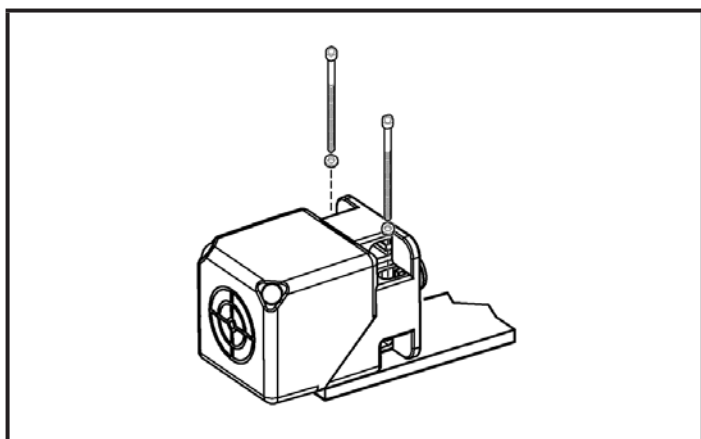
3. Attach the fixing element to the antenna head.



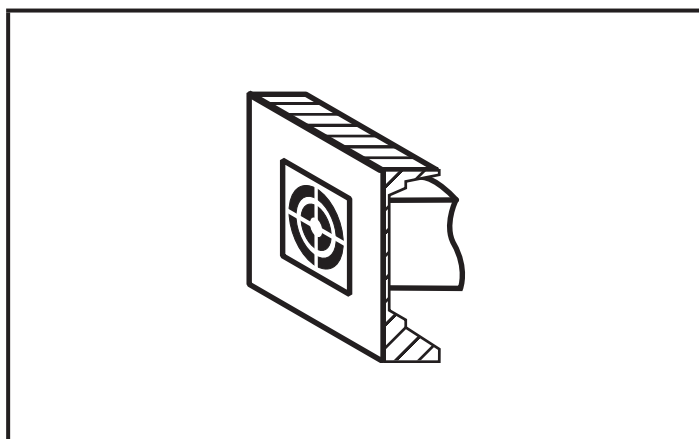
4. Tighten the screw.

5.4.3 Fixing

- The device is fixed with 2 M4 screws and nuts. Order non flush or flush.



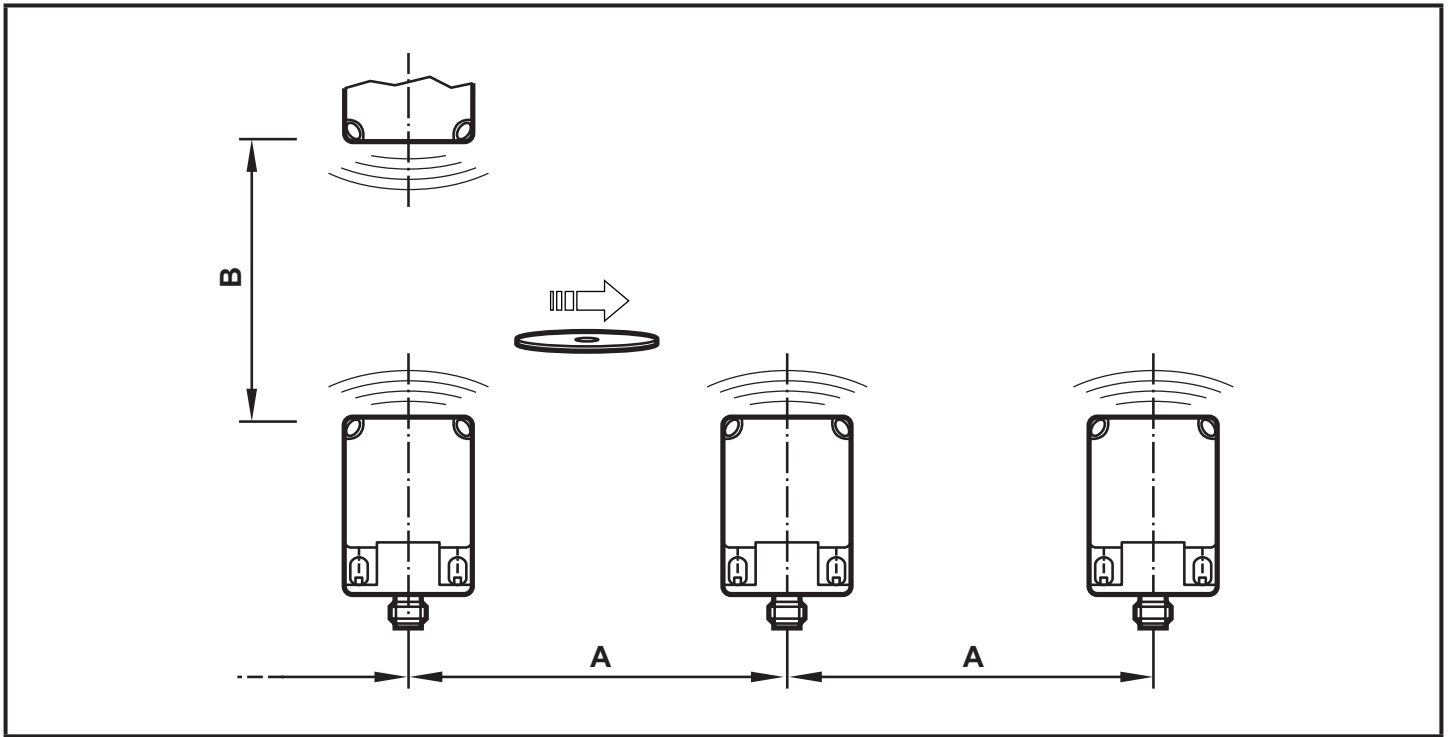
non flush



flush

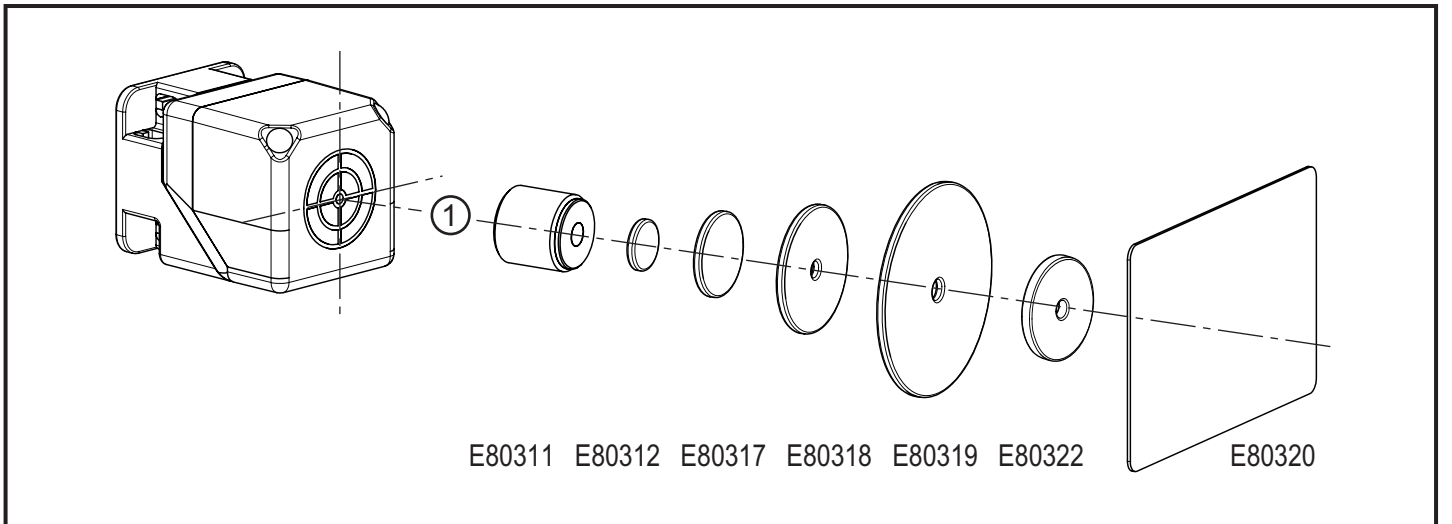
UK

5.4.4 Mounting distances



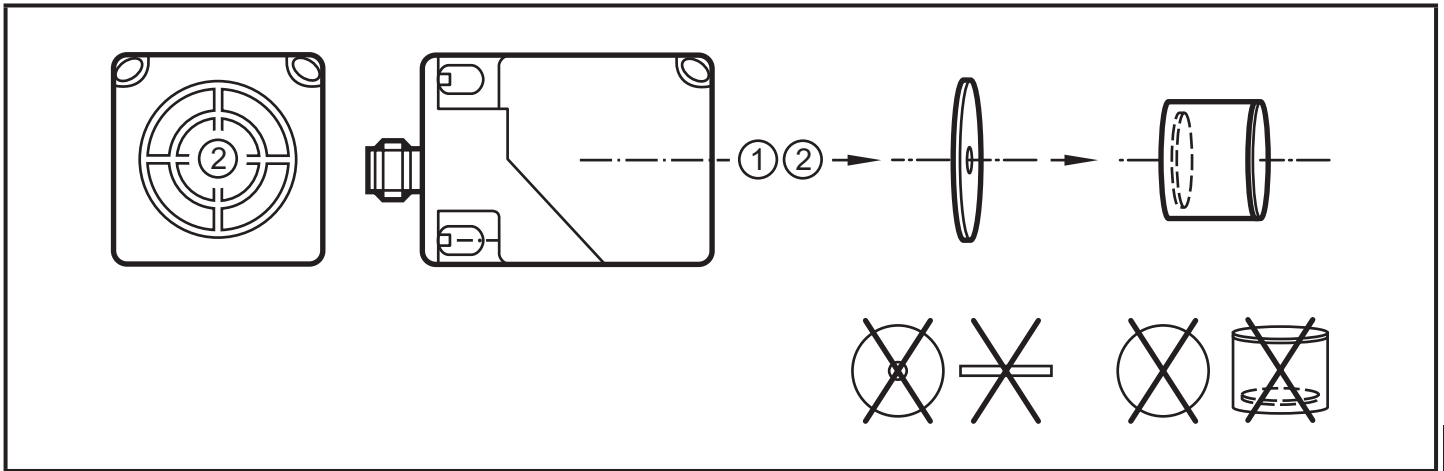
Operating mode	Distance side (A)	Distance front (B)
Reading only	≥ 150 mm	≥ 150 mm
For reading and writing	≥ 300 mm	≥ 300 mm

5.4.5 Positioning of the ID tags



1: front side








5.4.6 Orientation of the ID tags



1: antenna axis DTA20x = ID tag axis

2: middle of the antenna DTA20x = middle of the ID tag

5.4.7 Read/write distances

ID tag	Type	Installation read/write head	
		Non flush	Flush in metal
E80311		25	22
E80312		25	22
E80317		35	28
E80318		55	36
E80319		65	45
E80320		60	40
E80322		55	36

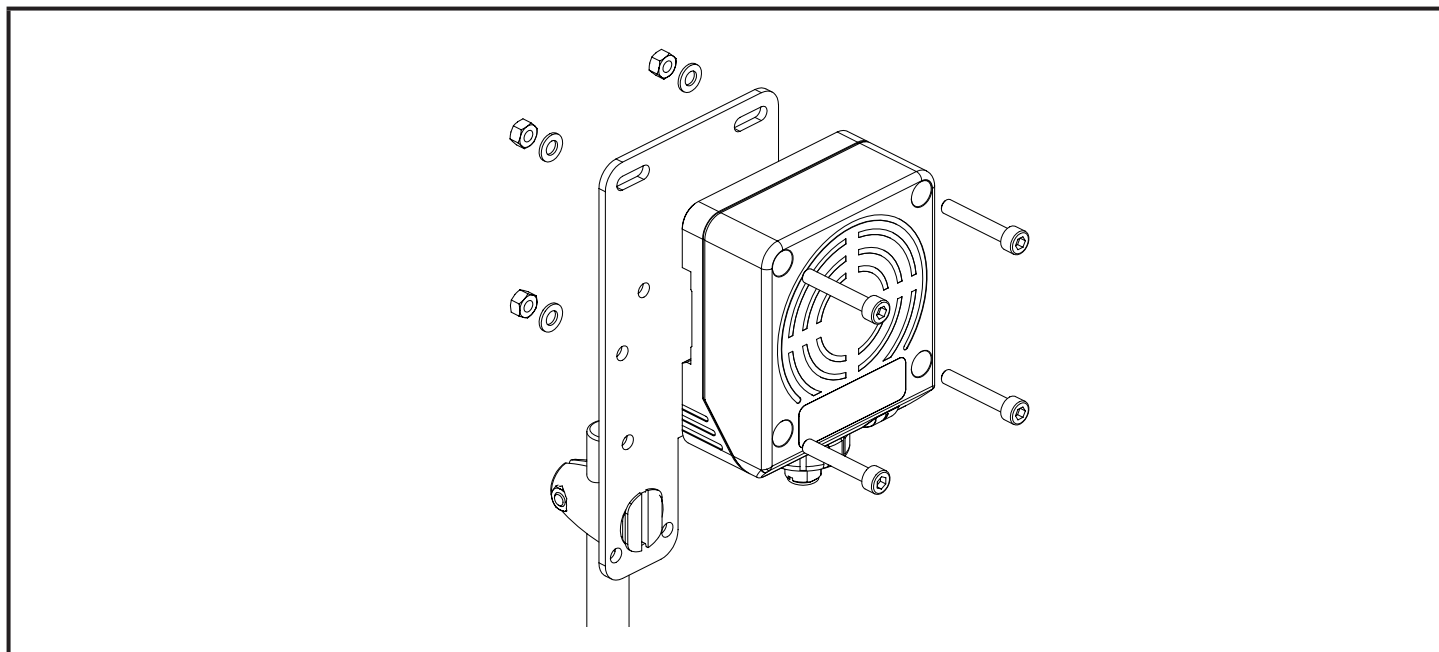
All indications apply to static read/write operations. If not otherwise stated they refer to ID tag installation in a non-metallic environment.

All indications in mm.

5.5 DTA30x

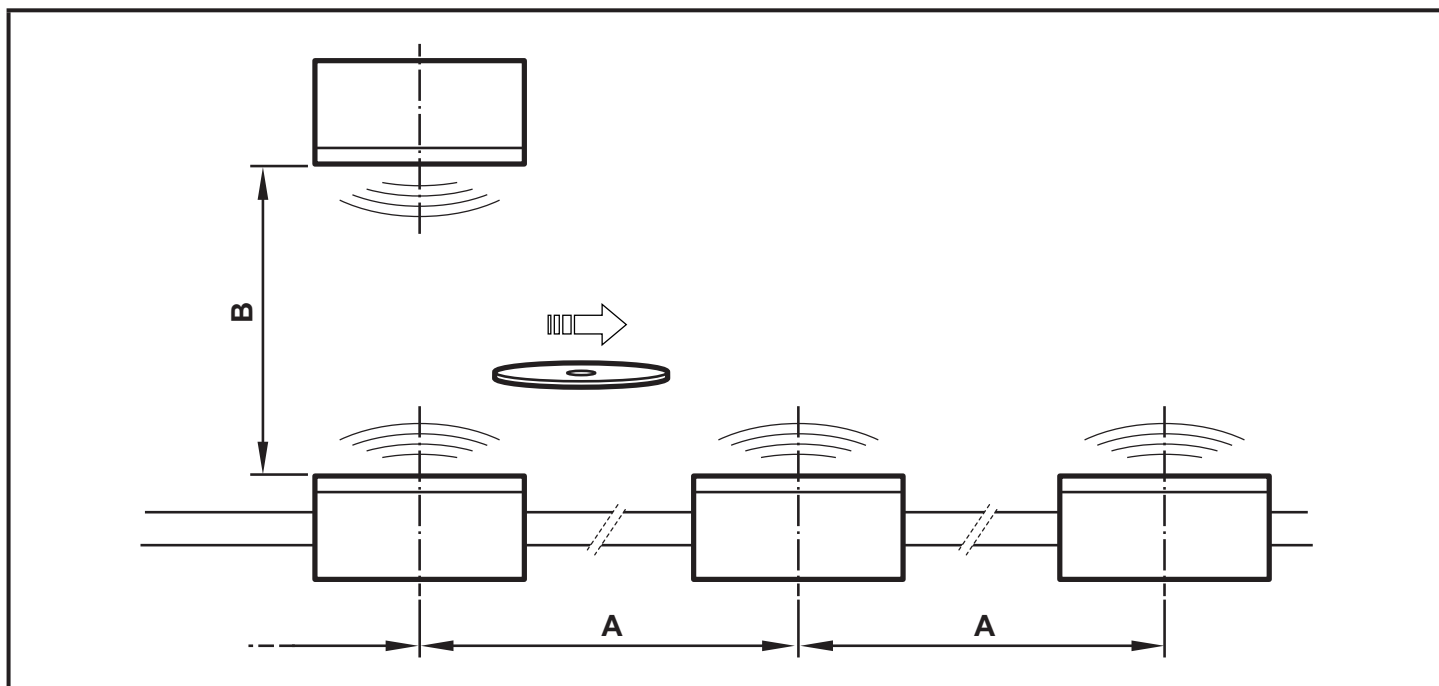
5.5.1 Fixing

► The device is fixed via either a 35 mm DIN rail or via 4 M5 screws and nuts.



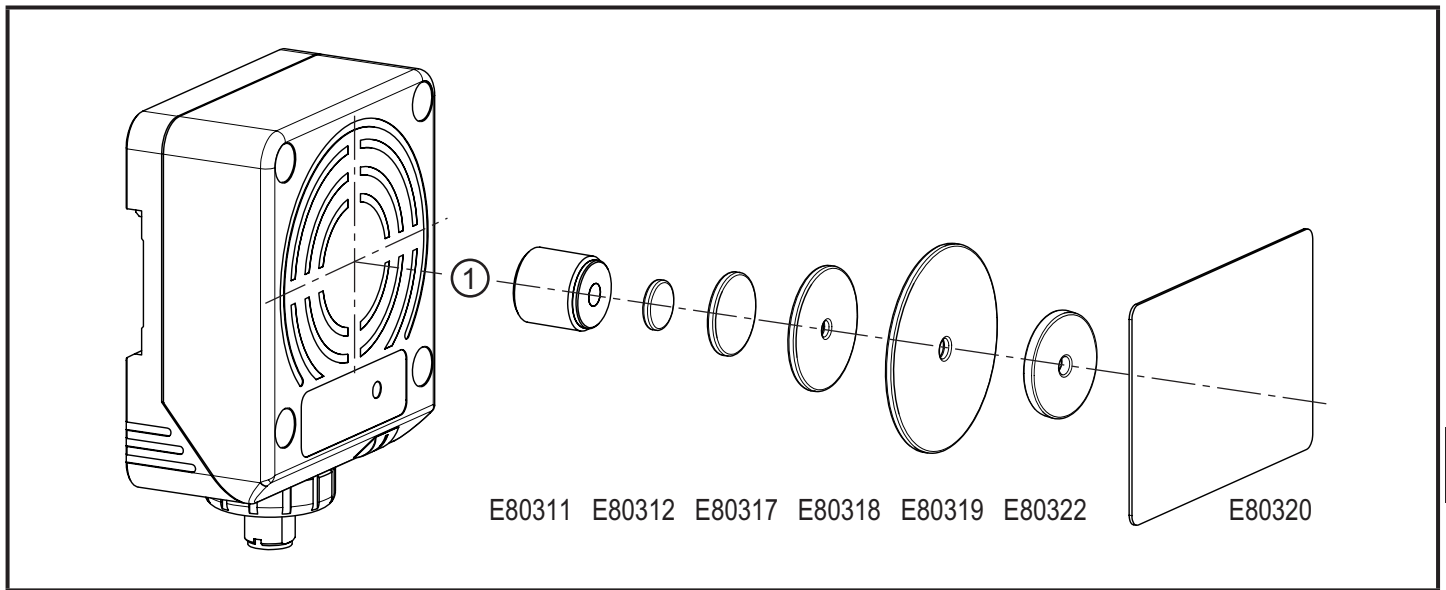
example mounting E11122

5.5.2 Mounting distances



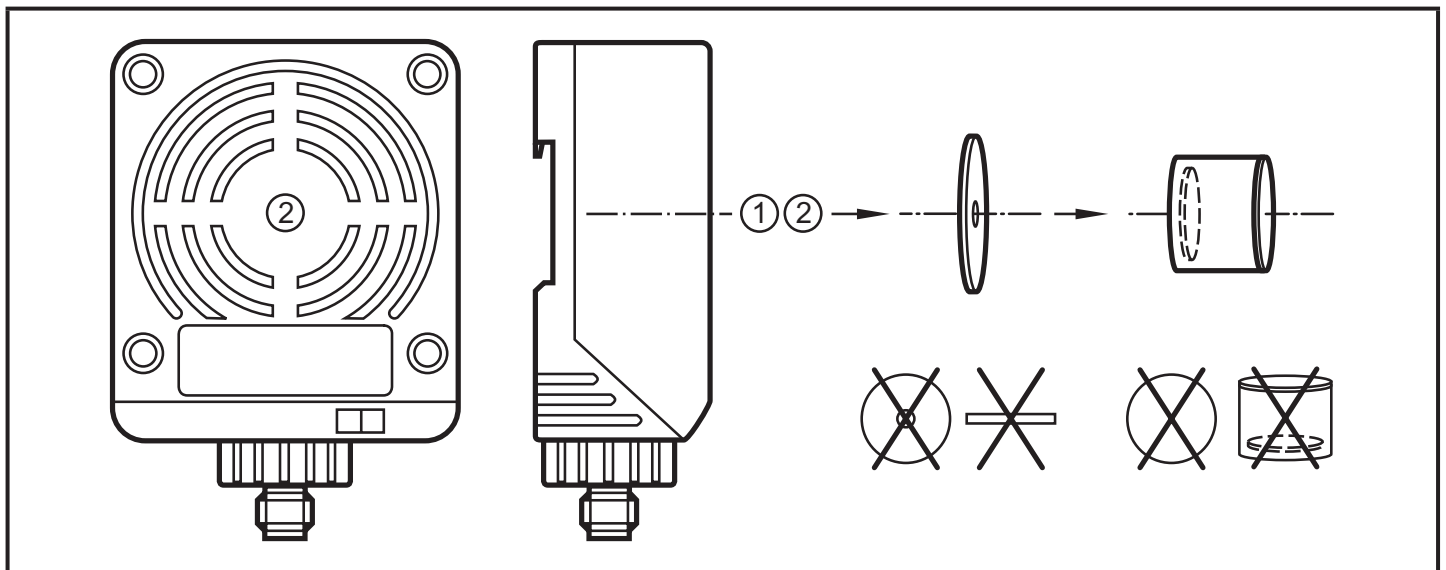
Operating mode	Distance side (A)	Distance front (B)
Reading only	≥ 280 mm	≥ 400 mm
For reading and writing	≥ 500 mm	≥ 500 mm

5.5.3 Positioning of the ID tags



1: front side

5.5.4 Orientation of the ID tags



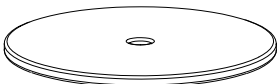

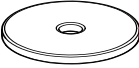
1: DTA30x antenna axis = ID tag axis

2: DTA30x middle of the antenna = middle of the ID tag

5.5.5 Read/write distances

ID tag	Type	Read	Write
E80311		35	
E80312		40	
E80317		50	
E80318		80	

UK

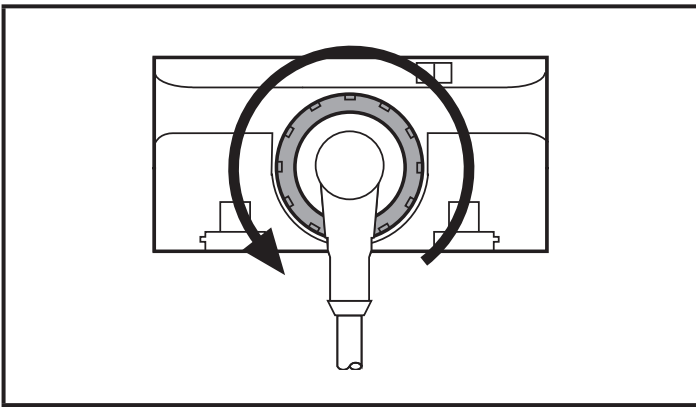
ID tag	Type	Read	Write
E80319			110
E80320			90
E80322			80

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

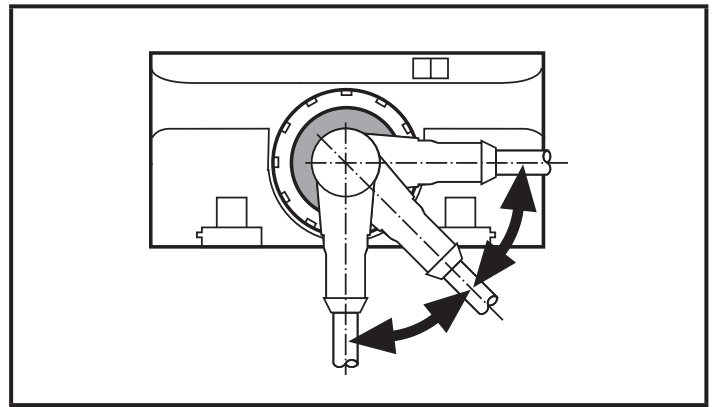
All indications in mm.

5.5.6 Rotating plug insert

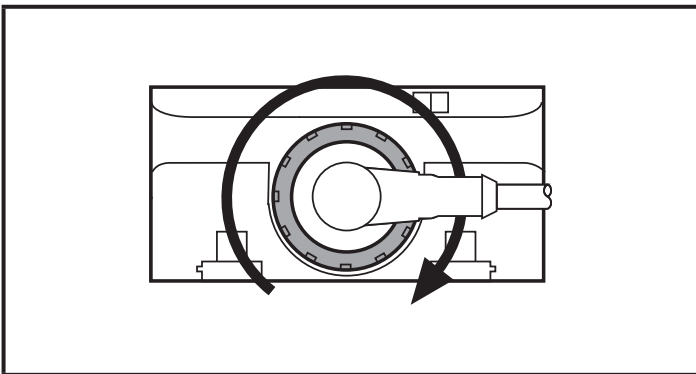
The plug insert can be rotated in steps of 45°.



1. Loosen nut.



2. Remove plug insert and rotate.



3. Tighten nut.

6 Electrical connection

ATTENTION

The unit must be connected by a qualified electrician.

Device of protection class III (PC III)

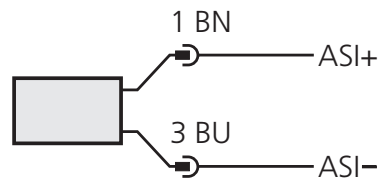
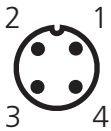
The electric supply must only be made via PELV/SELV circuits.

► Disconnect power before connecting the unit.

6.1 Wiring

► Connect the unit to the AS-i network using the M12 connector. Voltage is supplied via the AS-i network.

UK



Wiring and core colours of ifm sockets

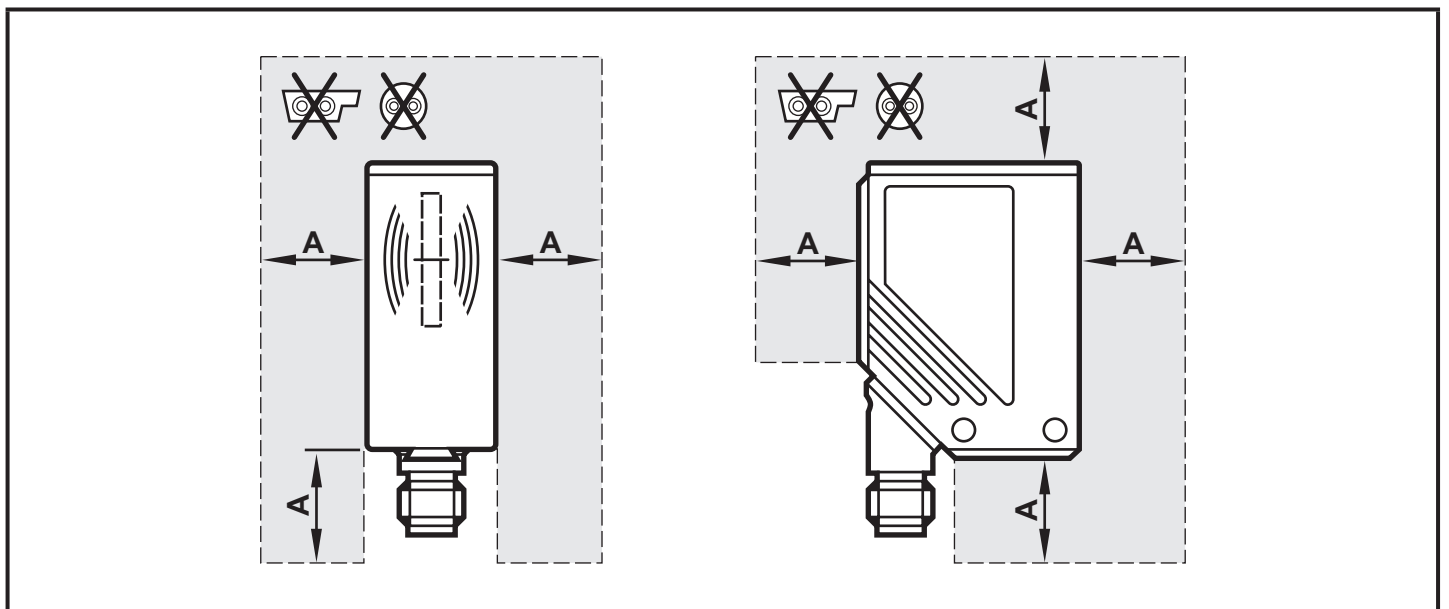
1 = BN (brown)

2 = BU (blue)

A selection of sockets is available on our website at: www.ifm.com

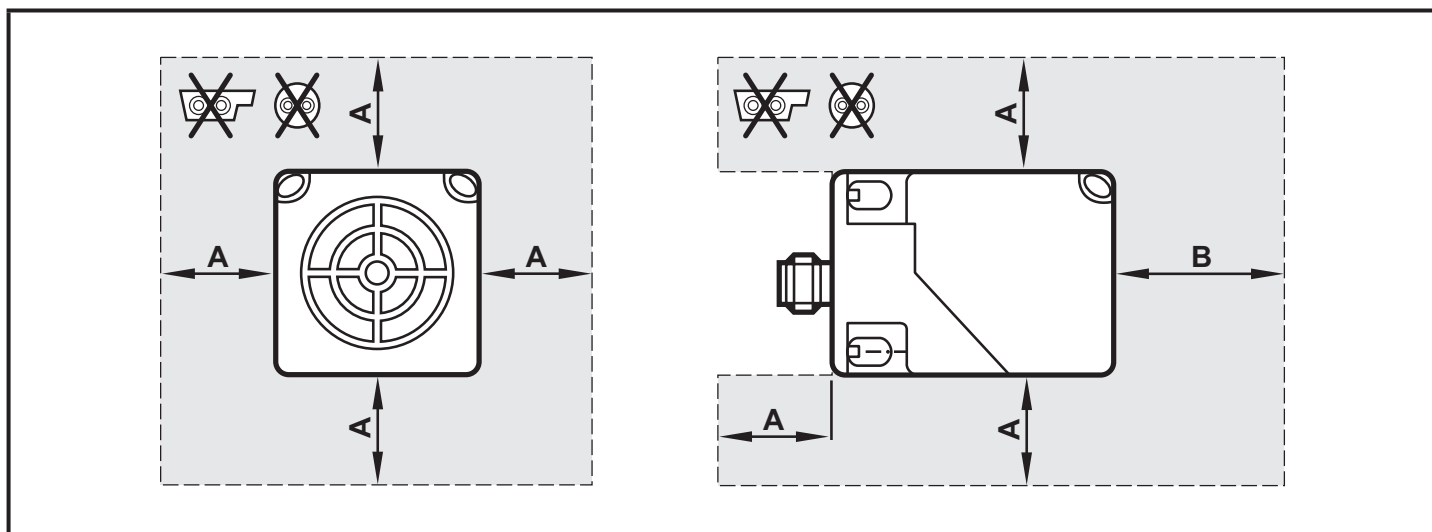
6.2 Minimum distance between AS-i cable and housing

6.2.1 DTA10x



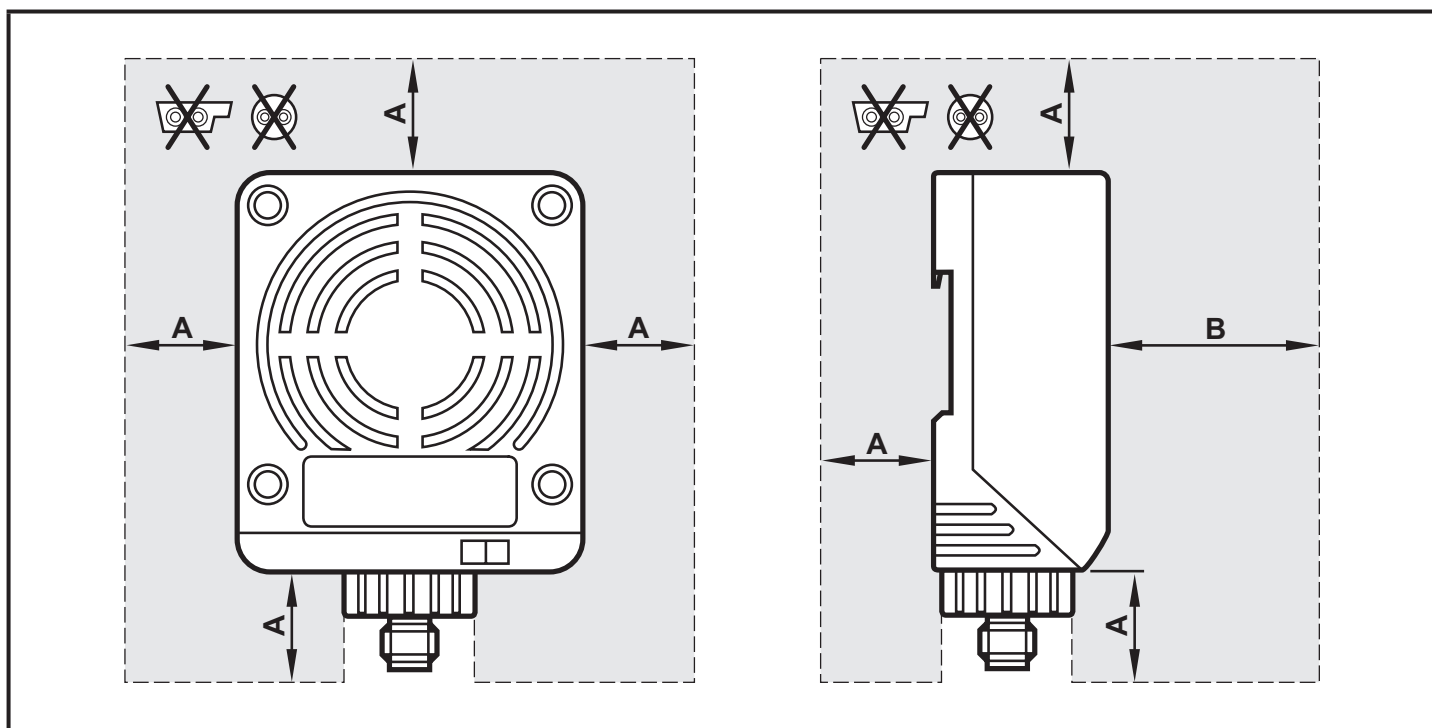
A) 100 mm

6.2.2 DTA20x



- A) 50 mm
- B) 100 mm

6.2.3 DTA30x



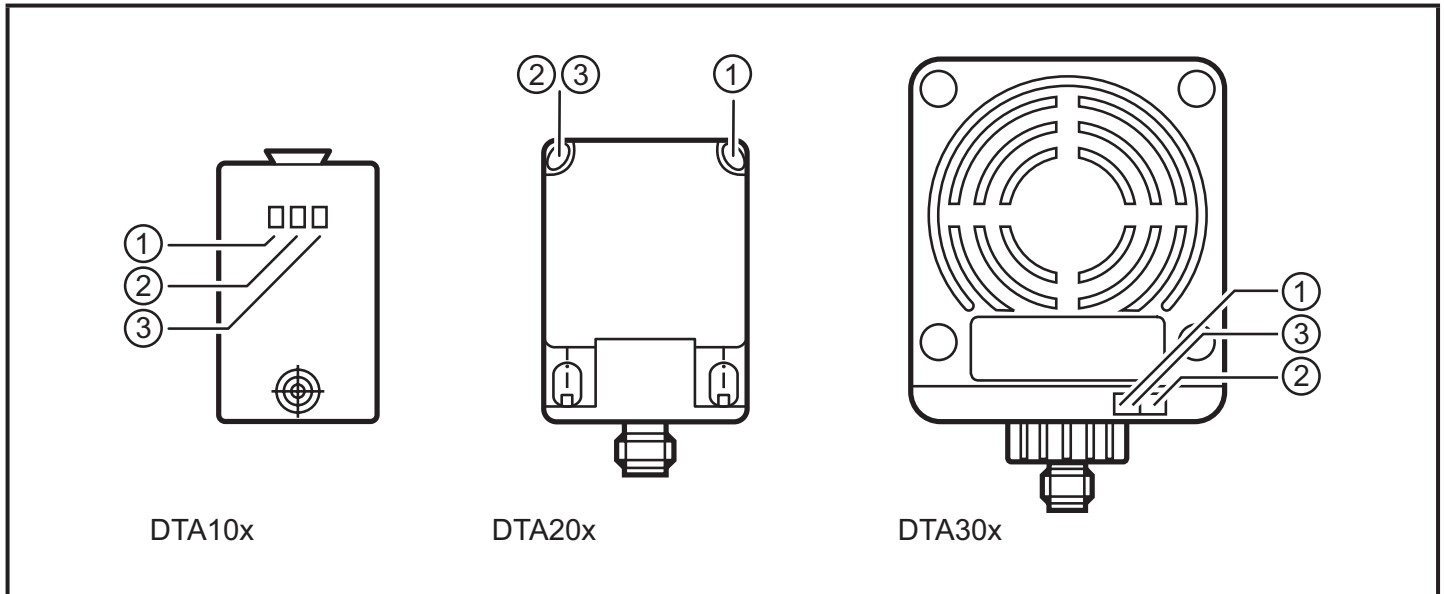
- A) 250 mm
- B) 500 mm

6.3 cULus

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 Indicators



- 1: green (operating voltage)
- 2: yellow (ID tag)
- 3: red (AS-i data communication)

7.1 Read operation (basic setting)

LED	Status	Description
green	ON	operating voltage OK
	OFF	operating voltage missing
yellow	ON (pulse)	ID tag read successfully
	ON (permanently)	ID tag read successfully and still in the field
	OFF	no ID tag in the field or faulty ID tag in the field or invalid ID tag in the field
red	ON	error AS-i data communication
	OFF	AS-i data communication OK

7.2 Write operation (only DTA100, DTA200, DTA300)

LED	Status	Description
green/red	ON/OFF	like read operation
yellow	ON (pulse)	ID tag written successfully
	OFF	no ID tag in the field or faulty ID tag in the field or invalid ID tag (wrong identification)
yellow	500 ms flashing	writing of the ID tag not possible <ul style="list-style-type: none">– ID tag not formatted– ID tag not in the detection zone– ID tag protected by lock bit– value outside the value range– invalid command

8 Operation

8.1 Basic settings in the AS-i network

Parameter	Read/write head	Read head
	DTA100, DTA200, DTA300	DTA101, DTA201, DTA301
AS-i profile	7.4	7.3
I/O code	7	7
ID code	4	3
Extended ID2 code	C	C
ID1 code for code value	F	F
Slave address (factory setting)	0	0

UK

Code values in hex format

8.2 Addressing

The read/write head is addressed using an addressing unit (e.g. AC1144), the master or the AS-i software of the host (the components must support the AS-i version 2.1).

- Assign an address between 1 and 31.

8.3 Analogue value representation

For the AS-interface the read/write head is a slave having an analogue input with the transmission protocol to the profile 7.4 or 7.3 (see above). If the master operates to the master profile M3 or M4, it automatically detects the read/write head and supports the profile 7.4.

For the analogue value transmission the profiles 7.3 and 7.4 are identical.

8.4 Assignment of the data bits

In one transmission cycle the following data is transferred in data triples:

E1	E2	E3	D16	D15	D14	D13	D12	D11	D10	D9	D8	D7	D6	D5	D4	D3	D2	D1	O	V
extension bits (static 0)			user data bits																	

Additional information bits:

O = overflow bit (is set with the values 7FFF and 8000 hex., otherwise 0)

V = valid bit (is set with a valid value)

8.5 Code value representation using the data bits D16...D1

The ID value is represented as a signed 16-bit number.

Range	Decimal		Hex	
	from	to	from	to
Value range	0	32767	0	7FFF
Message range	-1	-32768	FFFF	8000

Value 0 = no ID tag in the reading range or ID tag not detected

8.6 Additional functions to the AS-i profile 7.4

(Applies only to read/write heads)

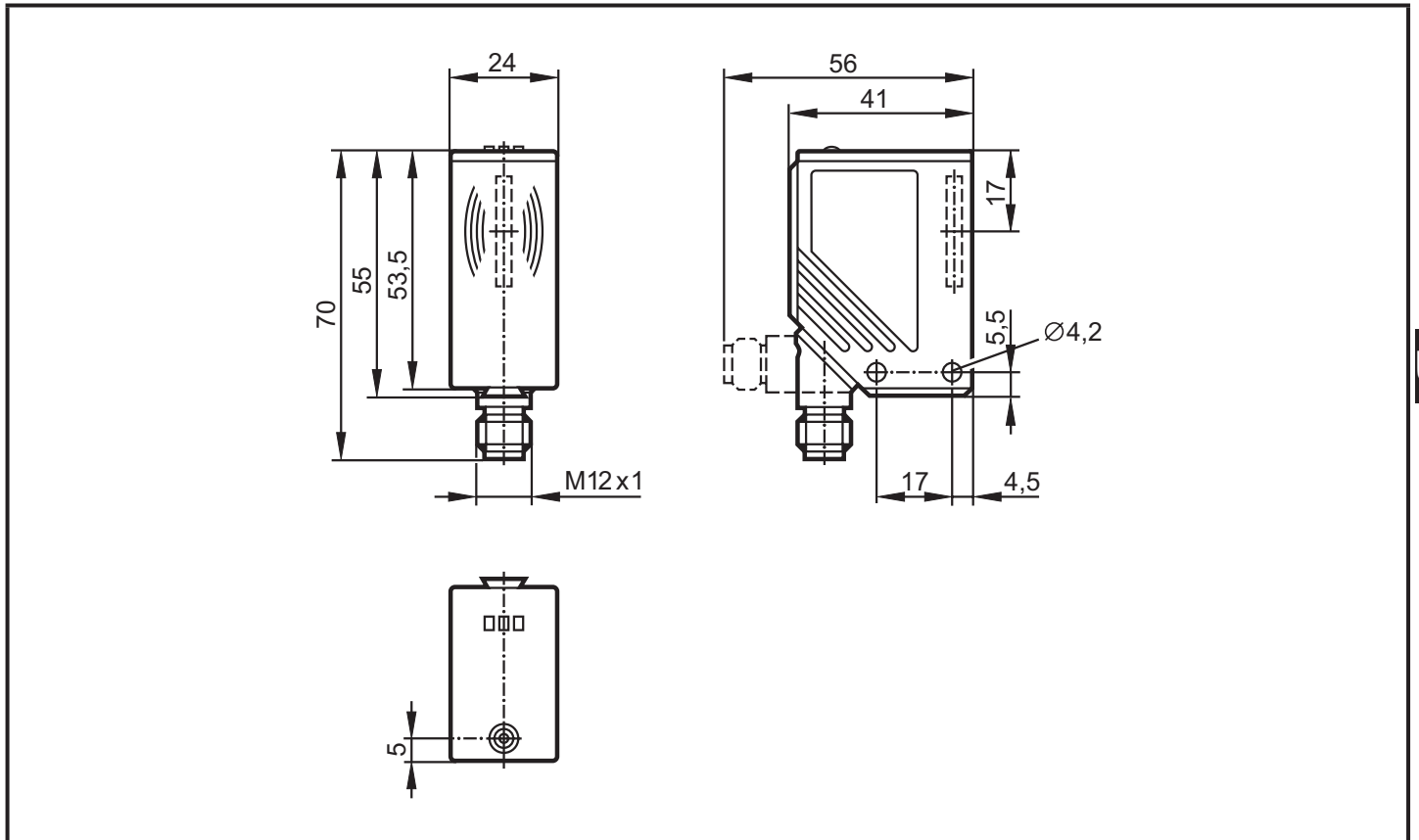
Function, description	DTA100	DTA200	DTA300
Read ID string reading AS-i slave information	●	●	●
Read diagnosis string reading statistics via read/write processes	●	●	●
Read parameter string reading back data from the ID tag	–	●	●
Write parameter string writing data on the ID tag	●	●	●
requesting data from the ID tag	–	●	●

● = function implemented

Description, examples and software for various controllers at: www.ifm.com

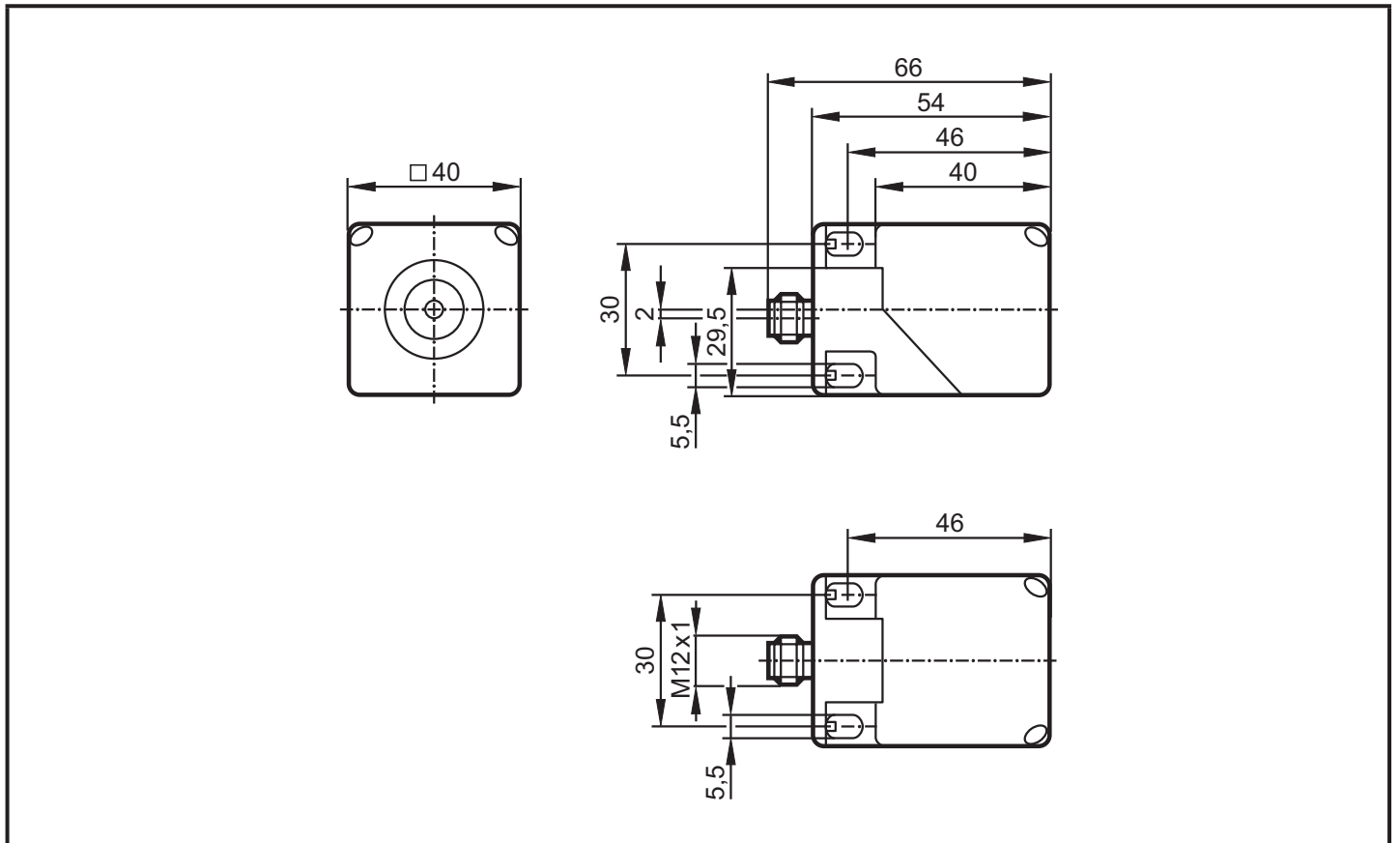
9 Dimensions

9.1 DTA10x

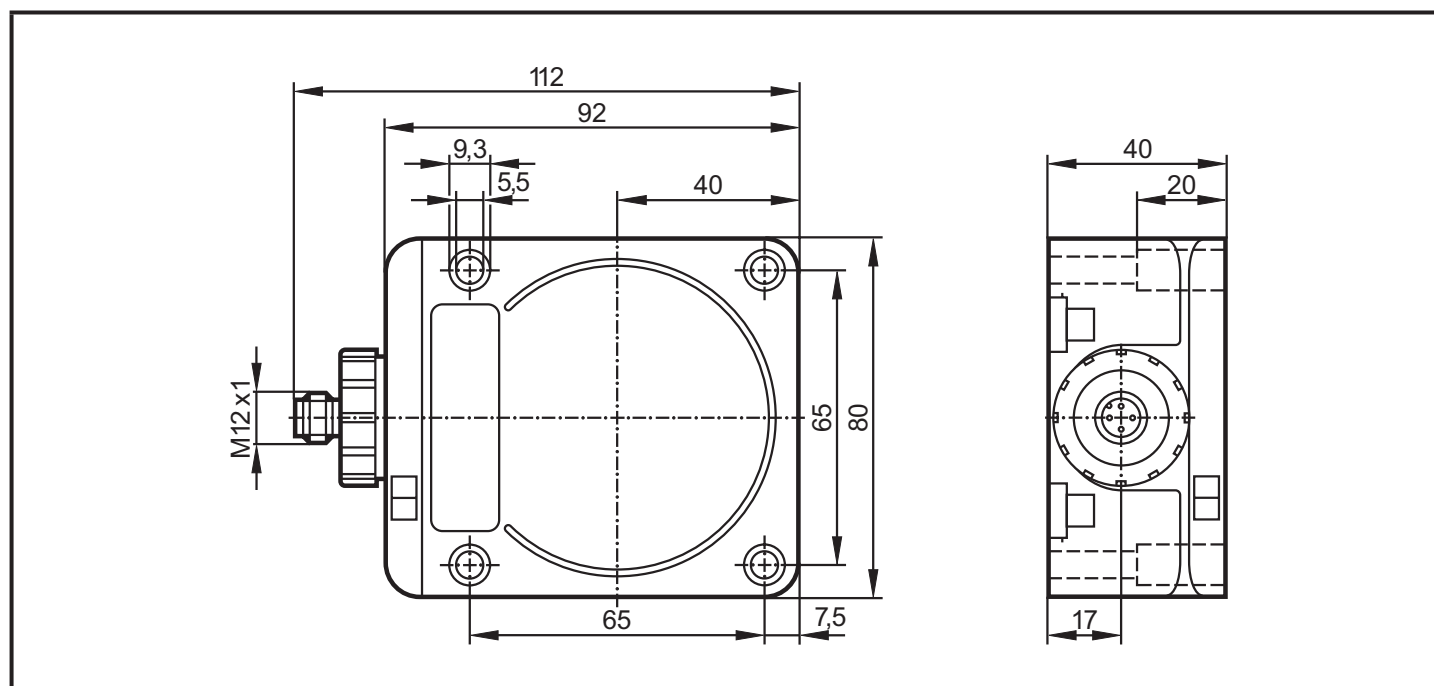


UK

9.2 DTA20x



9.3 DTA30x



All indications in mm

10 Technical data

The data sheets are available on our website at: www.ifm.com

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.

12.1.2 Europe

Use in all EU countries

12.1.3 USA

FCC note:

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

1. This device must 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 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 instructions, 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

IC note:

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:



12.1.7 Singapore

Complies with
IDA Standards
DB 103032

The “Equipment Registration” is available on our website at: www.ifm.com

12.1.8 EC declaration of conformity

ifm electronic gmbh hereby declares that the DTA10x / DTA20x / DTA30x radio system corresponds to the directive 2014/53/EU.

You can find the EC declaration of conformity on our website at: www.ifm.com.

