**ifm electronic**

Operating instructions
RFID evaluation unit
**DTE105**     UK

# Content

UK

Licences and trademarks

Microsoft® und Internet Explorer® are registered trademarks of Microsoft Corporation. All trademarks and company names are subject to the copyright of the respective companies.

3

# 1 Preliminary note

Technical data, approvals, accessories and further information: www.ifm.com

## 1.1 Symbols used

▶       Instructions

\>       Reaction, result

[…]     Designation of keys, buttons or indications

→      Cross-reference

⚠    Important note
      Non-compliance may result in malfunction or interference.

ⓘ    Information
      Supplementary note

## 1.2 Warnings used

> **NOTE!**
>
> Kind and source of the hazard
>
> \> Damage to property may result.
>
> ▶ Actions to refrain from.
>
> ▶ Measures to take.

## 1.3 Copyright and trademarks

© All rights reserved by ifm electronic gmbh. No part of these instructions may be reproduced and used without the consent of ifm electronic gmbh.

All product names, pictures, companies or other brands used on our pages are the property of the respective rights owners.

# 2 Safety instructions

- The device described is a subcomponent for integration into a system.

  - The manufacturer is responsible for the safety of the system.

  - The system manufacturer undertakes to perform a risk assessment and to create a 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 manufacturer 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 (→ Functions and features).

• 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 the device and the cables against damage.

• Use the device outside petrol stations, fuel depots, chemical plants or blasting operations.

• Do not transport and store any flammable gases, liquids or explosive substances near the device.

• Operation of the device 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.

• Because of the requirements for electromagnetic interference emissions, the device is intended for use in industrial environments. The device is not suitable for use in domestic areas.

• Device safety: Use the device indoors only.

# 3 Functions and features

The RFID evaluation unit DTE105 integrates an Ethernet TCP/IP interface and 4 channels for the connection of field devices. Each channel can be used either for the connection of an RFID antenna or as input/output to IEC 61131.

The device

- controls the data exchange to the RFID antennas or the sensor/actuator level.
- communicates with the higher-level control level via the ifm IoT Core protocol.
- allows device configuration via a web server.

Application examples:

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

## 3.1 Configuration via Ethernet interface

- 10 Mbps and 100 Mbps
- TCP/IP - Transport Control Protocol / Internet Protocol
- ifm IoT Core protocol in JSON format
- IT functionality:  HTTP server
- M12, twisted pair

## 3.2 RFID antennas

The device supports up to four RFID read/write heads of type ANT41x / ANT51x / ANT60x from ifm electronic gmbh.

Accessories and further information: www.ifm.com

# 4 Items supplied

- RFID evaluation unit DTE105
- Installation instructions

ⓘ The device is supplied without installation and connection accessories.

ⓘ In the event of incomplete or damaged items supplied, please contact ifm electronic.

# 5 Function

You can find detailed information about the function of the system in the device manual at: www.ifm.com

# 6 Installation

## 6.1 Installation distance

Due to the internal heating of the device a minimum distance to other objects of 10 mm is to be taken into account during installation.



A = 10 mm
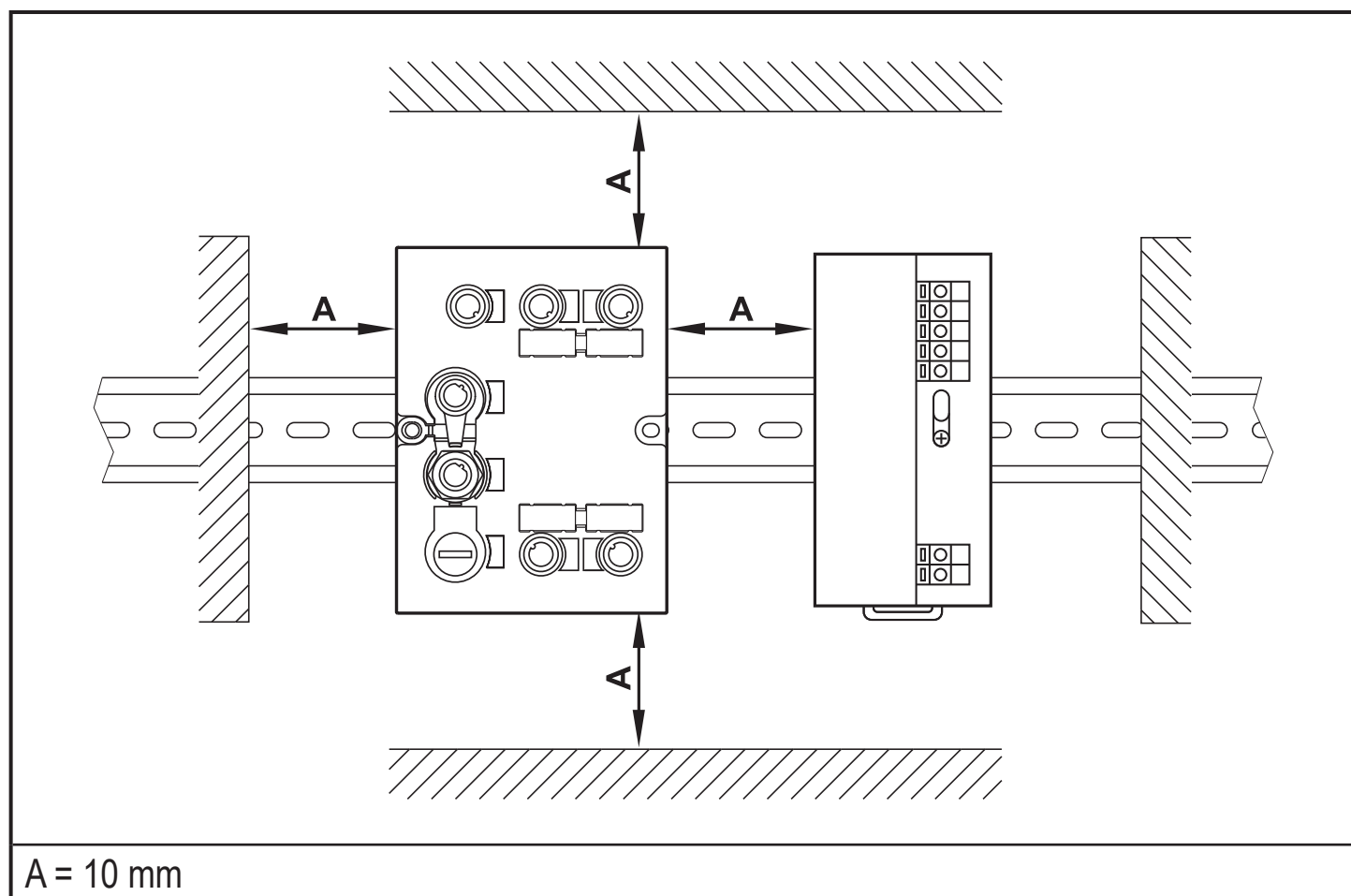
## 6.2 Installation position

The installation position can be freely selected.
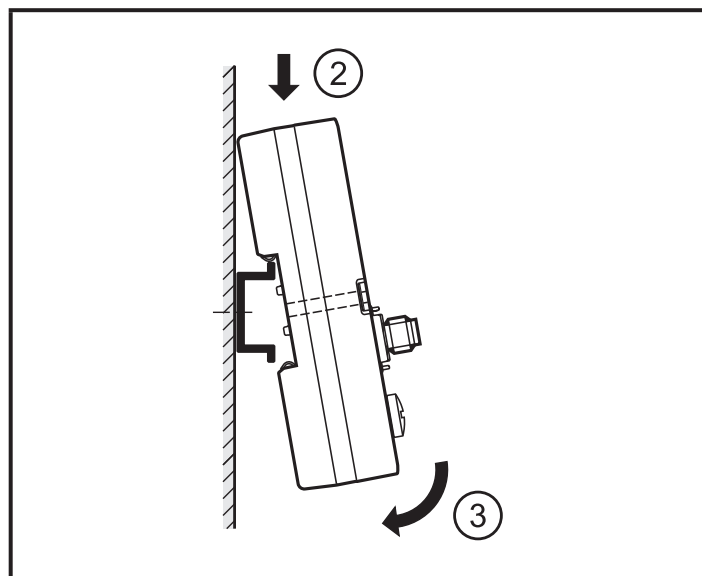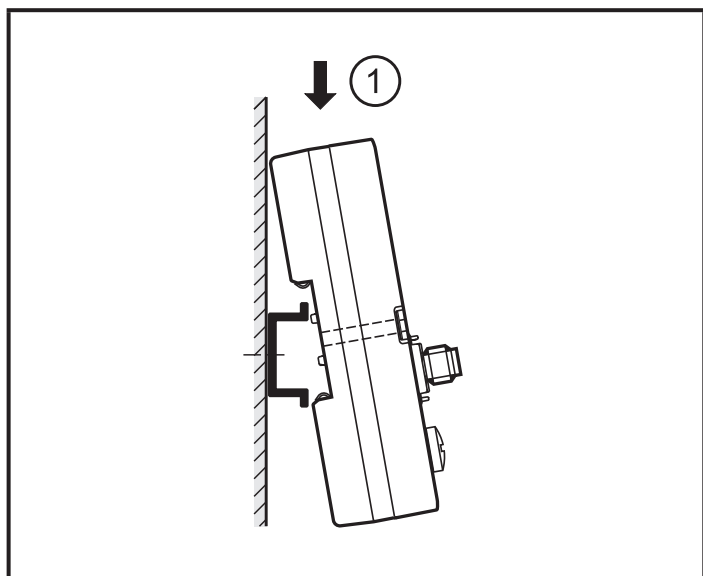
> [!] In a wet environment upside-down mounting is not permitted.

## 6.3 Mounting options

### 6.3.1 Mounting on DIN rail

The device can be installed on a DIN rail of type NS35/15 or NS35/7.5.



1. Angle the device and place the fixing clamp onto the upper edge of the DIN rail.

2. Press the device down.

3. Simultaneously rotate the device in the direction of the DIN rail.

## 6.3.2 Removal
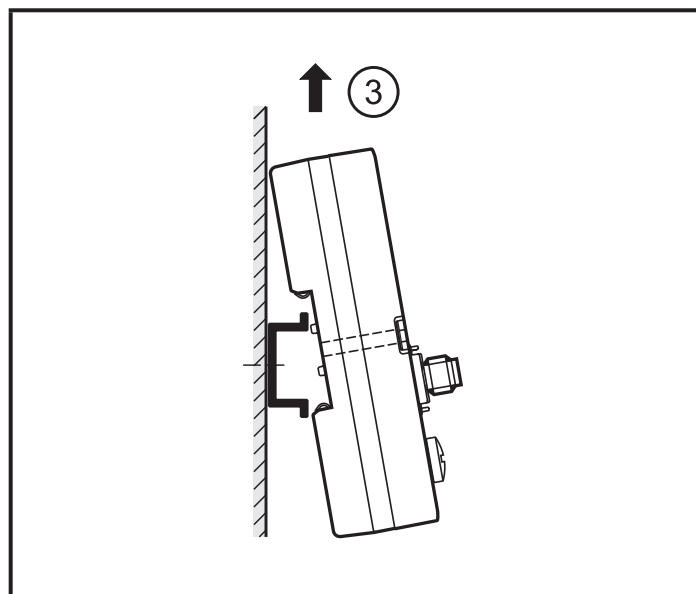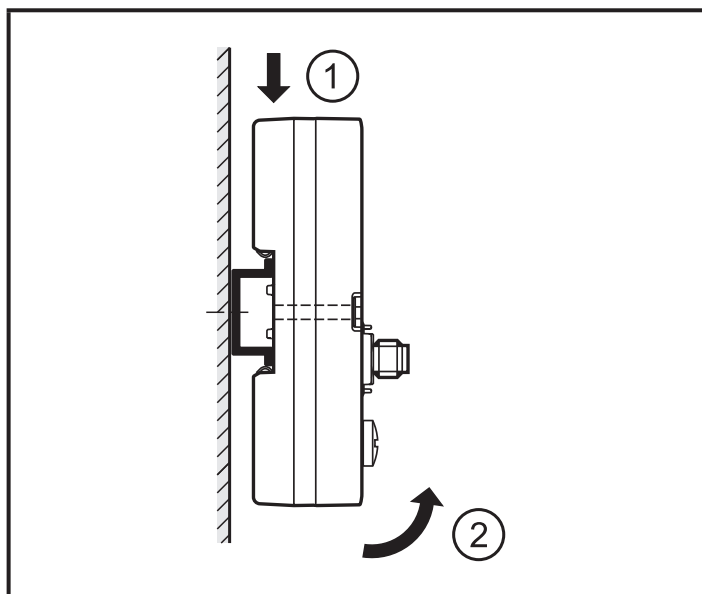
1. Press the device down.

2. Simultaneously rotate the device away from the DIN rail.

3. Remove the device from the top.

## 6.3.3 Mounting plate

The device can be fixed to the mounting plate using 2 screws (M4 x 35 or longer).



> This installation mode is recommended for vibration and shock requirements.

9

# 7 Electrical connection

The unit must be connected by a qualified electrician.

▶ Disconnect power before connecting the device.

▶ Observe the national and international regulations for the installation of electrical equipment.

▶ Ensure voltage supply to EN 50178, SELV, PELV.
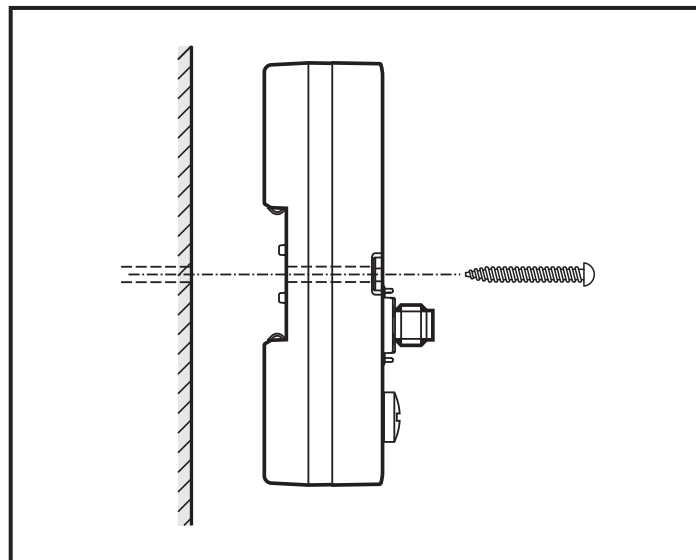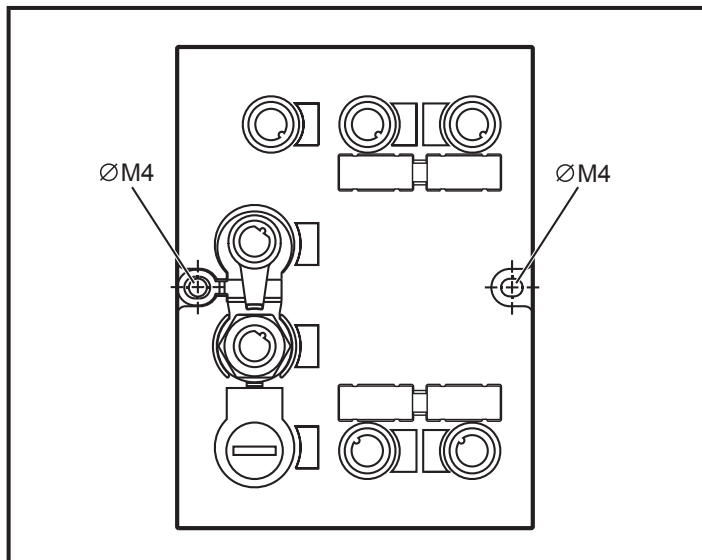
▶ Connect the device according to the indicated pin connection.

▶ A total current consumption of the device of 3 A must not be exceeded.

## NOTE!

The IP rating indicated in the data sheet is only guaranteed if the M12 connectors are firmly screwed.

The unit can be damaged by insufficiently tightened M12 connectors.

▶ Firmly screw the M12 connectors to the device.

Accessories and further information: www.ifm.com

| Accessories | ifm article number |
|---|---|
| Protective cap | E73004 |
| Torque wrench | E70390 |
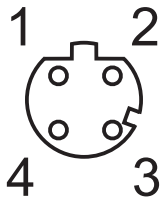
## 7.1 AUX voltage supply

▶ Connect the device to the voltage supply using an M12 connection cable.

| Pin | Connection |
|---|---|
| 1 | 24 V DC |
| 2 | not used |
| 3 | 0 V |
| 4 | not used |
| 5 | not used |

## 7.2 Network connection Ethernet port 1 / port 2

▶ Connect the device to an Ethernet 10BASE-T or 100BASE-TX capable device using a suitable M12 Ethernet connection cable.

| | Pin | Connection |
|---|---|---|
| 1 ⊙⊙ 2<br>4 ⊙⊙ 3<br><br>Note: Screened connection cable required | 1 | TD+ |
| | 2 | RD+ |
| | 3 | TD- |
| | 4 | RD- |
| | | |

### 7.2.1 Factory setting of the Ethernet parameters
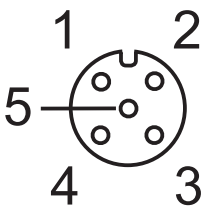
The following values are preset on delivery of the device:

| Parameter | Factory setting |
|---|---|
| IP address | 192.168.0.79 |
| Gateway address | 192.168.0.100 |
| Subnet mask | 255.255.255.0 |
| Auto-negotiation | On |
| DHCP | Off |

The settings can be changed via the webserver of the device.

## 7.3 Process connections IO-1 ... IO-4

Each process connection can be used as input/output to IEC 61131 or for connection of an RFID read/write head. The setting of the connections is made via the command interface of the Ethernet TCP/IP connection of the Ethernet host.

| Pin | Connection |
|---|---|
| 1 | L+ |
| 2 | switching input (I/Q) |
| 3 | L- |
| 4 | switching output (C/Qo) or input (C/Qi) |
| 5 | not used |

The evaluation unit has to be disconnected before field units are connected.

Please note that the total current consumption of the device must not exceed the value of 3 A.

You can find detailed information about the available operating modes in the device manual at: www.ifm.com

## 7.4 Functional earth connection

⚠ To ensure trouble-free operation the device must be connected to an earth potential free from external voltage.

### 7.4.1 Mounting on DIN rail

The connection is made automatically via the DIN rail. Note that the DIN rail must be connected with the earth potential.
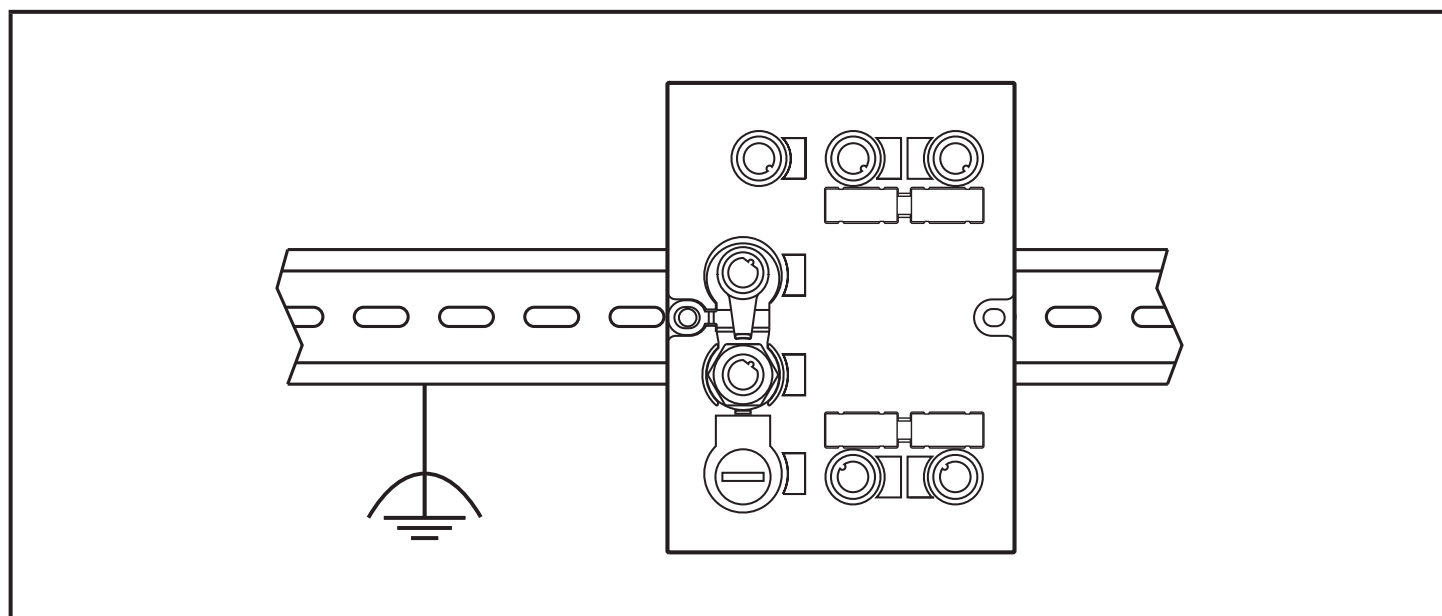
### 7.4.2 Mounting plate

When the device is fixed on a mounting plate, connection is made via the left fixing screw. Note that the plate must be connected with the earth potential.

# 8 Operating and display elements

## 8.1 Reset to factory settings

The Ethernet parameters can be reset to factory setting. Take the following steps:

▶ Remove all cable connections from the device.

▶ Insert an electrically conductive bridge between pin 1 and pin 3 on the process connection IO-3.

▶ Connect the device with the voltage supply and wait until the yellow LED indication on AUX and IO-3 flashes at approx. 8 Hz.

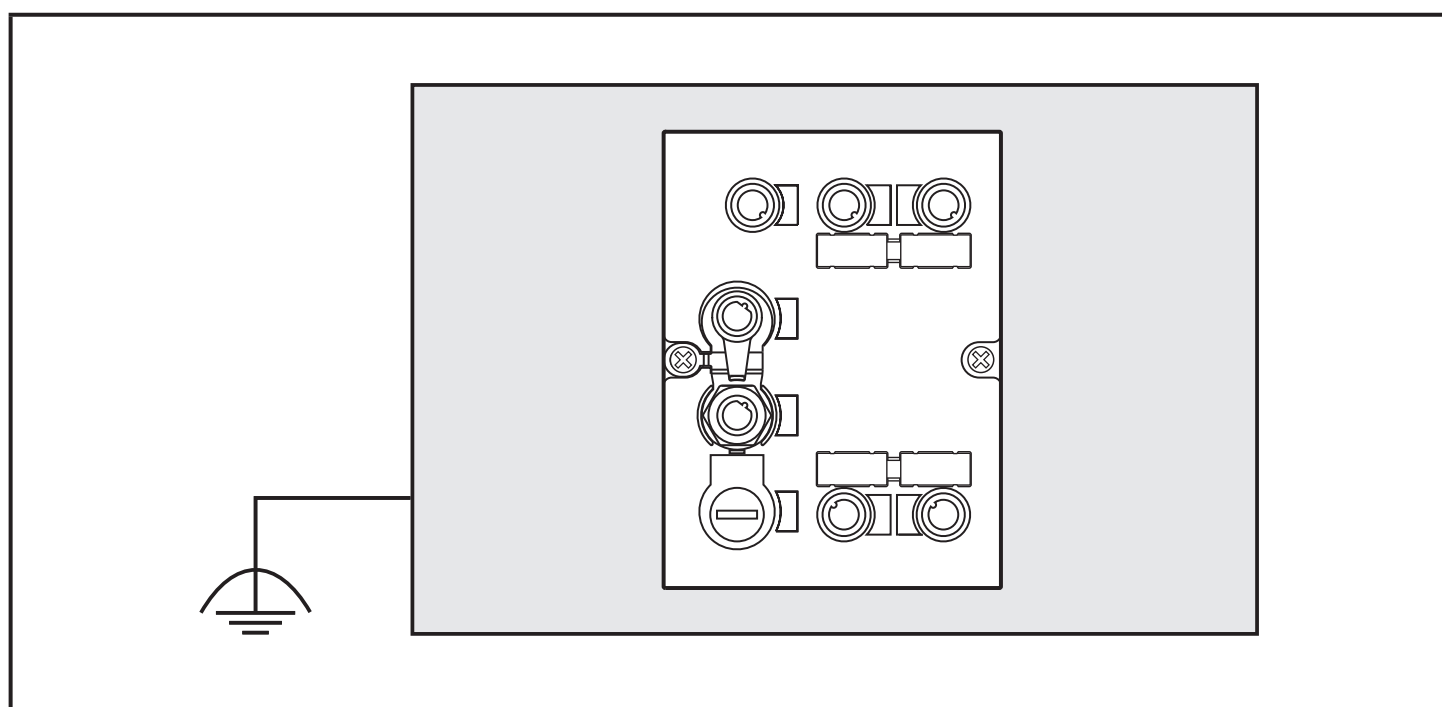▶ Disconnect the device from the voltage supply and connect it again.

> The settings are reset.

## 8.2 LED indicators

The device indicates the current status of the interface via the status LEDs.

### 8.2.1 LED AUX

| LED green | LED yellow | Status | Note |
|---|---|---|---|
| Off | Off | No voltage supply | $U_{AUX} < 5\ V$ |
| On | Flashing at 2 Hz | Voltage supply too low | $5\ V \leq U_{AUX} \leq 18\ V$ |
| On | Off | Voltage supply OK | $18\ V \leq U_{AUX} \leq 36\ V$ |
| On | Flashing at 8 Hz | Firmware update running | Do not switch off the device during the firmware update |

## 8.2.2 LED Ethernet port 1 / port 2

| LED green | LED yellow | Status | Note |
|---|---|---|---|
| Off | Off | No connection to another Ethernet counterpart | Link status "no link"" |
| On | Off | Connection to Ethernet counterpart exists, no data exchange | Link status "link", "no traffic" |
| On | Flashes sporadically | Connection to Ethernet counterpart exists, data exchange running | Link status "link", "traffic" |

## 8.2.3 LED SF

| LED red | LED green | Status | Note |
|---|---|---|---|
| Off | Off | No voltage supply | Check the voltage supply |
| Off | On | Normal operation | - |
| Flashing | Off | Error on channel level | - Overload<br>- Temperature<br>- Internal fault |
| On | Off | Error on device level | - Undervoltage<br>- Temperature |
| Flashing | Flashing | Self-test | Starting phase of the device |

## 8.2.4 LED BF

| LED red | LED green | Status | Note |
|---|---|---|---|
| Off | Off | No voltage supply | Check the voltage supply |
| Off | Flashing | Connection to the host controller is established, there is no data exchange | - |
| Off | On | Connection to the host controller is established, there is data exchange | - |

15

| LED red | LED green | Status | Note |
| --- | --- | --- | --- |
| Flashing | Off | Connection to the host controller is established, no valid configuration | Check configuration |
| On | Off | No connection to the host controller | Check connection |
| Flashing | Flashing | Self-test | Starting phase of the device |

### 8.2.5 LEDs IO1 ... IO4

The LED indications of the process connections differ with each connection configuration.

**Use as input to IEC 61131**

| LED green | LED yellow | Status | Note |
| --- | --- | --- | --- |
| Off | Off | Interface deactivated | Interface was not configured via the host controller |
| On | Off | Interface activated, input on low level (0 V) | - |
| On | On | Interface activated, input on high level (24 V) | - |
| Flashing at 8 Hz | Flashing at 8 Hz | Overload or short circuit | - |

## Use as output to IEC 61131

| LED green | LED yellow | Status | Note |
|---|---|---|---|
| Off | Off | Interface deactivated | Interface was not configured via the host controller |
| On | Off | Interface activated, output low-active (0 V) | - |
| On | On | Interface activated, output high-active (24 V) | - |
| Flashing at 8 Hz | Flashing at 8 Hz | Overload or short circuit | - |

## Use with RFID read/write heads

| LED green | LED yellow | Status | Note |
|---|---|---|---|
| Off | Off | Interface deactivated | Interface was not configured via the host controller |
| Flashing at 2 Hz | Off | Interface activated, antenna off | - |
| On | Off | Interface activated, tag not in the field | - |
| On | On | Interface activated, tag in the field | - |
| Flashing at 8 Hz | Flashing at 8 Hz | Overload, short-circuit or communication error | - |

### 8.2.6 Special device LED indications

| LED | Status | Note |
|---|---|---|
| Green AUX LED on<br><br>Yellow AUX LED flashing at 8 Hz<br><br>IO1...IO4 yellow LEDs flashing at 8 HZ | Device is in the service mode "emergency system started". | A firmware update is necessary and can be executed via the web server. |
| Green AUX LED on<br><br>Yellow AUX LED flashing at 8 Hz<br><br>IO1...IO4 green LEDs flashing at 8 HZ<br><br>IO1...IO4 yellow LEDs flashing at 8 HZ | Major error, device has to be returned. | Hardware fault or permanent data in the device are corrupt. |
| Green AUX LED on<br><br>Yellow AUX LED flashing at 8 Hz<br><br>IO3 yellow LED flashing at 8 Hz | Reset to factory settings | - |

# 9 Technical data

## 9.1 Data sheets

Data sheets can be found at: www.ifm.com

## 9.2 Device manual

The device manual can be found at: www.ifm.com

# 10 Scale drawing
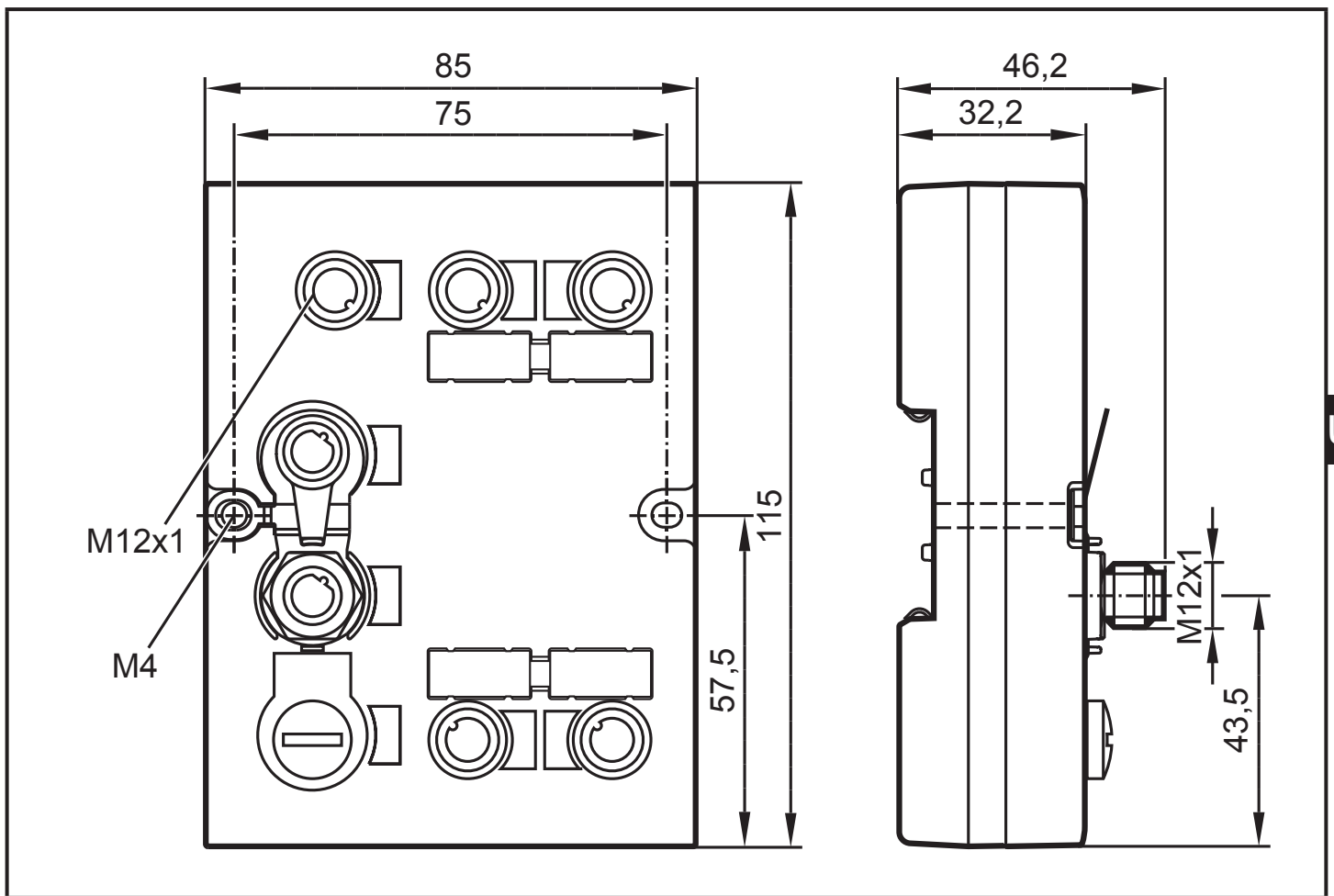


# 11 Maintenance, repair and disposal

If used correctly, no maintenance and repair measures are necessary.

▶ The device must only be repaired by the manufacturer.

▶ After use dispose of the device in an environmentally friendly way in accordance with the applicable national regulations.

▶ Keep the device free from soiling.

▶ Use glass cleaner as cleaning agent.

▶ Do not open the device.

# 12 Approvals/standards

⚠ If approval is granted the approval text of the respective countries applies (→ 12 Approvals/standards).

Information about the approvals granted: www.ifm.com

## 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 / EC declaration of conformity

ifm electronic gmbh hereby declares that the DTE105 radio system corresponds to the directive 2014/53/EU.

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