Operating instructions

RFID UHF evaluation unit

DTE405
DTE505
DTE515
DTP405
DTP505
DTP515

Contents

1 Preliminary note

You will find instructions, technical data, approvals and further information using the QR code on the unit / packaging or at documentation.ifm.com.

1.1 Symbols used

✓	Requirement
▶	Instruction
▷	Reaction, result
bold	Designation of keys, buttons or indications
	Cross-reference without link
	Cross-reference with link
	Important note Non-compliance may result in malfunction or interference
	Information Supplementary note

1.2 Warnings

Warnings indicate the possibility of personal injury and damage to property. This enables safe product handling. Warnings are graded as follows:

WARNING

Warning of serious personal injury

▷ If the warning is not observed, fatal and serious injuries are possible.

CAUTION

Warning of minor to moderate personal injury

▷ If the warning is not observed, minor to moderate injuries are possible.

ATTENTION

Warning of damage to property

▷ If the warning is not observed, damage to property is possible.

1.3 Legal and copyright information

1.4 Open source information

For more open source information see: documentation.ifm.com.

1.5 Applicable documents

- Data sheet
- Programming manual
- Software manual
- Package insert “Product information and safety instructions”
- Package insert “Radio approval”

1.6 Change history

Version	Subject	Date
00	Document newly created	04/2026

2 Safety instructions

General

- The device 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 the device and the cables against damage.

WARNING

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.

WARNING

Interference of electronic and medical devices

▷ The device emits high-frequency electromagnetic waves that may interfere with the operation of electronic devices in the vicinity, including pacemakers, hearing aids and defibrillators.

▶ People with an implanted pacemaker or other medical devices should only use the device after consulting their doctor or the manufacturer of the medical device.

▶ If the medical device is affected by the device, do not use the device and maintain a safe distance between the device and the medical device.

▶ Contact the manufacturer of the device in case of any interference.

2.1 Safety symbol on the device

Safety symbol on the device:

- Adhere to the operating instructions for the safe operation of the device.
- Device of protection class III.

2.2 Cybersecurity

The device has the following security functions:

Design

- Hardened Yocto-Linux distribution

Integrity

- Convenient update of the complete system (recovery system)
- Backup & restore of the system configuration

Authentication

- Authentication of the device settings and of firmware updates

Confidentiality

- Browser-based access to the web interface

Restricted data flow

- Factory separation of IT and OT networks using separate network connections
- Communication of the software components via standard protocols (messaging/REST)

ATTENTION

Device operation in an unprotected network environment

- ▷ Unauthorised read or write access to data is possible.
- ▷ Unauthorised manipulation of the device function is possible.
- ▶ Restrict access to authorised users (e.g. password-protected access).

3 Transport, handling and storage

- Store the device in its original packaging.
- When the device is to be stored again, use the original packaging.
- Otherwise, provide unused connections with either a mating connector or a protective cap and pack the device in suitable packaging.
- Observe the permissible ambient conditions for the device during storage (→ Technical data).

4 Intended use

The multiprotocol-capable RFID UHF evaluation unit DTE405/505/515 or DTP405/505/515 reads active and passive ID tags in different frequency ranges.

The device can read and write ID tags in compliance with the EPC Gen2 standard once the appropriate accessories are connected and the initial configuration has been carried out via the web interface.

The device communicates with the ID tags via transmit and receive antennas. The antennas are connected to the device's 4 available antenna ports.

4.1 Application area

Permitted application area:

- Gate applications
- Material flow control in production lines
- Warehouse management by the automatic detection of stored products
- Tank management, order picking or product tracking
- Indoor use. Some of the connected cables can be used outdoors (see fig.).
- In industrial environments

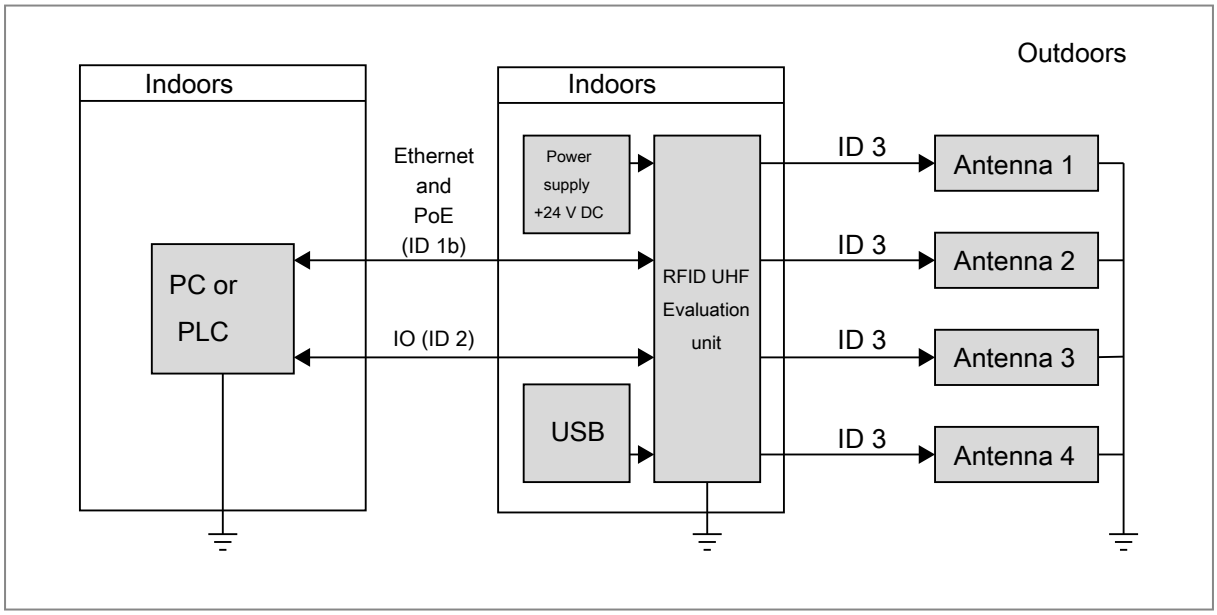


Fig. 1: Indoors and partly outdoors use

The device safety is rated for use under the following operating conditions according to EN IEC 62368-1:

- Relative air humidity: maximum 80 %, non-condensing
- Operating altitude: maximum 5000 Nm
- The antenna connections meet ID3 requirements and are suitable for outdoor use.

Incorrect configuration may lead to violation of country-specific limits.

- ▶ Use the device only with compatible antennas and accessories from ifm.
- ▶ Observe country-specific requirements for devices, antennas and accessories.

The device may only be operated in countries listed in the technical data sheet. In other countries, protected frequency ranges may be subject to interference.

- ▶ Observe the radio approval document.
  - ▷ The device's radio approval information is available online at: documentation.ifm.com

The unit is not approved for safety-related tasks in the field of operator protection.

When installing antennas outdoors:

- ▶ Observe a maximum cable length of 16 metres between the device and the antenna.
- ▶ Observe country-specific requirements for protecting the devices against lightning strikes.
  - ▷ Applicable for Europe: EN 62305.

5 Items supplied

- Device
- Terminal strip for voltage supply
- Terminal strip for IO port 14
- Package insert “Product information and safety instructions”
- Package insert “Radio approval”

The device is supplied without installation and connection accessories.
Available accessories: Accessories 23
Optimum function is not guaranteed when using accessories from other manufacturers.

6 Function

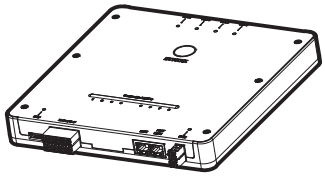
The interfaces between the device and the ID tag are defined according to the GS1 EPCGlobal and ISO 18000-63 standards.

The first steps for reading an ID tag are described in the device's software manual: documentation.ifm.com

The integration of the device into moneo is described in the moneo documentation **T&T – Track & Trace**. The **?** symbol in moneo provides direct access to the moneo documentation.

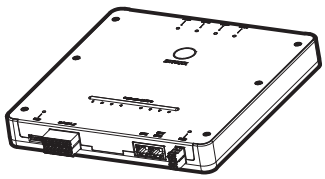
6.1 Device overview

DTE405



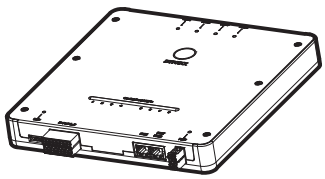
Article number:	DTE405
Function:	RFID UHF evaluation unit
Country:	Europe
Frequency range:	865 – 868 MHz
Interfaces:	ASCII protocol, IoT Core
Type designation:	DTEUHFE ABRWFMRJTB04

DTE505



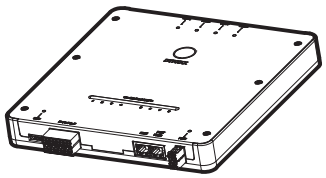
Article number:	DTE505
Function:	RFID UHF evaluation unit
Country:	USA, Canada
Frequency range:	902 – 928 MHz
Interfaces:	ASCII protocol, IoT Core
Type designation:	DTEUHFA ABRWFMRJTB04

DTE515

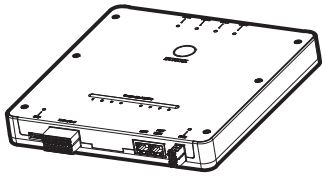


Article number:	DTE515
Function:	RFID UHF evaluation unit
Country:	China
Frequency range:	920.5 – 924.5 MHz
Interfaces:	ASCII protocol, IoT Core
Type designation:	DTEUHFA ABRWFMRJTB04

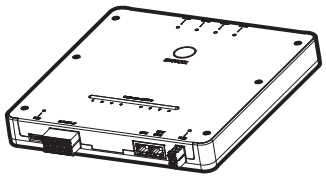
DTP405

	Article number:	DTP405
	Function:	RFID UHF evaluation unit with PoE++
	Country:	Europe
	Frequency range:	865 – 868 MHz
	Interfaces:	ASCII protocol, IoT Core
	Type designation:	DTEUHFE ABRWPOFMRJTB04

DTP505

	Article number:	DTP505
	Function:	RFID UHF evaluation unit with PoE++
	Country:	USA, Canada
	Frequency range:	902 – 928 MHz
	Interfaces:	ASCII protocol, IoT Core
	Type designation:	DTEUHFA ABRWPOFMRJTB04

DTP515

	Article number:	DTP515
	Function:	RFID UHF evaluation unit with PoE++
	Country:	China
	Frequency range:	920.5 – 924.5 MHz
	Interfaces:	ASCII protocol, IoT Core
	Type designation:	DTEUHFA ABRWPOFMRJTB04

6.2 System description

The following sections provide a detailed description of the individual components of the device.

6.2.1 Overview

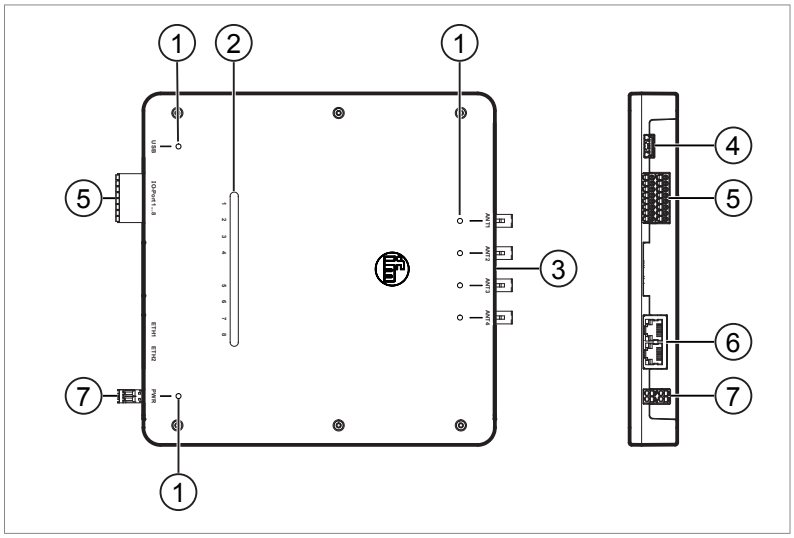


Fig. 2: Connections and display elements

1: Status LEDs Status LEDs 13
2: LED bar LED bar 13
3: Antenna connectors 1 to 4 Antenna connectors 13
4: USB port USB port 14
5: IO port 1 to 8 IO port 14
6: Ethernet ports ETH1 and ETH2 Ethernet port 14
7: PWR voltage supply Voltage supply 14

6.2.2 Status LEDs

The device includes multiple status LEDs.

The LEDs indicate the current system status and signal error conditions.

6.2.3 LED bar

The device includes an integrated LED bar. The LED bar consists of 8 RGB LEDs.

The LED bar can be configured via the web interface.

Details about the web interface are provided in the separate software manual:
documentation.ifm.com

In the default configuration, the LEDs illuminate upon detection of ID tags. 25

6.2.4 Antenna connectors

The device includes 4 antenna connectors for passive UHF antennas. The connectors are implemented as FAKRA connectors with Z-coding.

Each antenna connector is assigned a status LED.

Individual antennas can be grouped.

6.2.5 USB port

The device includes a USB Type-A port.

The USB port provides the following functions:

- Logging diagnostic data
- Updating the firmware
- Logging data from ID tags
- Importing and exporting configurations using a USB flash drive

6.2.6 IO port

The device includes 8 IO ports for communication with other devices. Via the web interface, the IO ports can be configured as either inputs or outputs.

The IO ports are designed as a removable terminal block according to IEC 61131-2. The IO ports are not electrically isolated.

6.2.7 Ethernet port

The device includes 2 RJ45 Ethernet ports. Each Ethernet port is assigned 2 status LEDs. The Ethernet ports ETH1 and ETH2 connect the device to the IT network infrastructure.

Both Ethernet ports operate in switch mode.

Factory settings

Property	ETH1	ETH2
Address assignment	Static	
IP address	192.168.0.79	
Subnet mask	255.255.255.0	
Network gateway	0.0.0.0	

Power over Ethernet

Devices DTP405, DTP505 and DTP515 can be supplied with power via ETH2 using PoE++.

6.2.8 Voltage supply

The device is supplied with voltage via the PWR terminal block.

Power over Ethernet

Devices DTP405, DTP505 and DTP515 can be supplied with power via ETH2 using PoE++.

If the device is supplied simultaneously via the PWR terminal block and via PoE++, PoE++ is used as the preferred voltage supply.

6.3 Web interface

The web interface can be accessed in a web browser via the device's IP address.

The web interface is used to monitor and configure the device, including:

- Applications running on the device
- EPC, TID and user memory area of ID tags in the detection zone

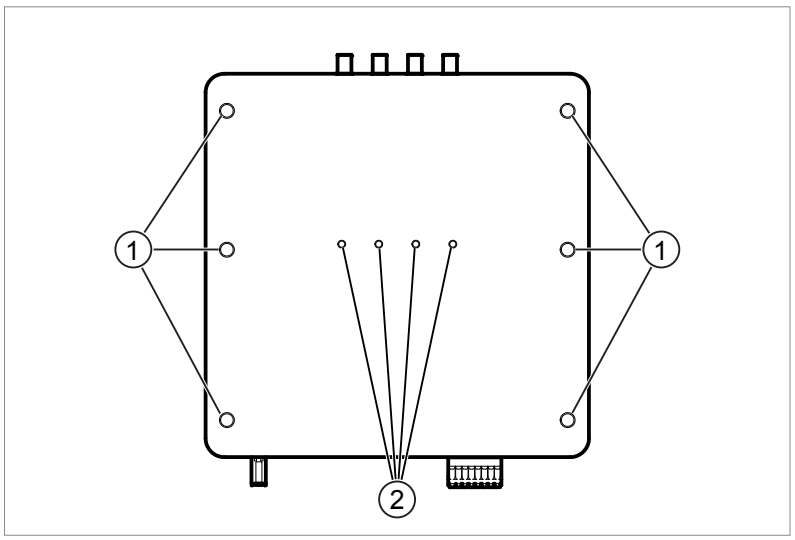
- Detection zone
- Data flow
- Output string
- Digital inputs and outputs
- LEDs
- Service report and log files
- Device settings (network, password, etc.)
- Firmware

The individual functions of the web interface are described in detail in the software manual: documentation.ifm.com

7 Installation

7.1 Install the device

The device is mounted using either the mounting holes or a DIN rail adapter.



1: M8 mounting holes
2: M4 holes for DIN rail adapter

Fig. 3: Back of the device with mounting holes and DIN rail adapter

Mounting holes

Observe the following instructions when using the mounting holes for installation:

- Observe the environmental conditions specified in the data sheet.
- Mount the device using the M8 mounting holes with at least 4 M8 screws.
- Tighten the M8 screws with a tightening torque of 8 Nm and engage them at least 8 mm into the M8 holes.
- Use strain relief for cable connections attached to the device.

DIN rail adapter

For DIN rail mounting, the DIN rail adapter E70432 (available as an accessory) is required.

Observe the following instructions when using the DIN rail adapter for installation:

- Disconnect power before installation.
- Tighten the M4 screws with a tightening torque of 0.8…1 Nm and engage them at least 6 mm into the M4 holes.
- Mount the device on a 35 mm DIN rail inside a control cabinet. The control cabinet has to be installed in accordance with local and national regulations.
- Connect the functional earth (FE) to the DIN rail or to the M8 mounting holes on the device.

The DIN rail adapter is not approved for installation in accordance with NEC and cULus.

Mounting note

- ▷ Optionally, air circulation in the control cabinet and device heating can be optimised:
- Mount the device at a minimum distance of 50 mm from the top and bottom of the control cabinet and from adjacent devices.

7.2 Eliminate radio interference

The device operates without any radio interference if the following conditions are met:

- The device is used as intended. 8
- The device is properly installed. 16

Application-specific interference

If radio interference occurs in an application:

- Reorient the antenna.
- Change the position of the antenna.
- Adjust filter and functions via the web interface.
  - The web interface is described in detail in the separate software manual.
- Contact the support of the manufacturer.

8 Electrical connection

The device must be connected by a qualified electrician.

▶ Disconnect power before connecting the device.

The device was developed in accordance with the safety standard IEC 62368-1.

The device must be powered only via ES1/PS2 circuits.

8.1 Wiring

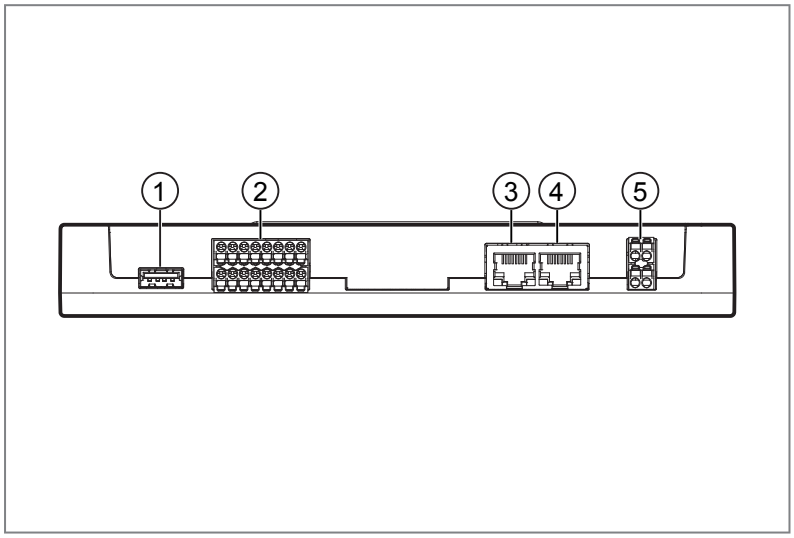


Fig. 4: Bottom-side connectors

1: USB port → 19
2: IO ports 1 to 8 → 19
3: Ethernet port ETH1 → 20
4: Ethernet port ETH2 → 20
5: PWR voltage supply → 21

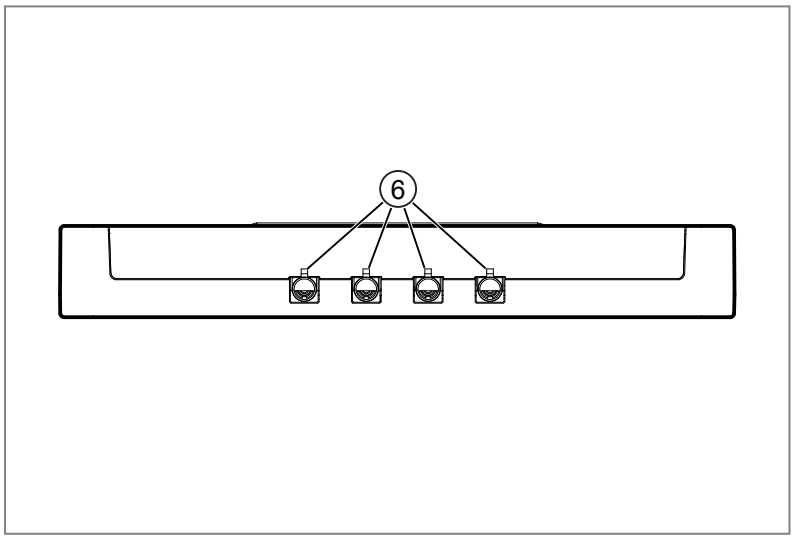
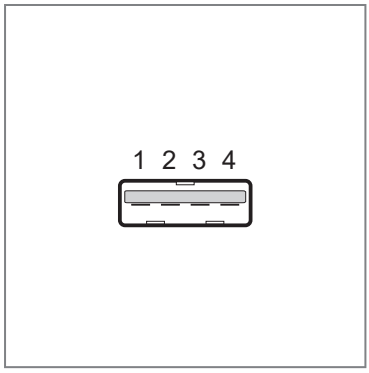


Fig. 5: Top-side connectors

6: Antenna connectors 1 to 4 → 22

8.1.1 USB port

The device includes a USB Type-A port.



Contact designation	Function	Function type	Supply voltage
1	L+		+5 V DC
2	DATA	D-	
3	DATA	D+	
4	L-		

Fig. 6: USB port pin assignment

- Use a USB cable with a maximum length of 5 metres.

8.1.2 IO port

The IO ports are designed as a removable terminal block according to IEC 61131-2. The IO ports are not electrically isolated.

The IO ports are configured via the web interface. Each IO port can be set as either an input or an output.

The web interface is described in the software manual: documentation.ifm.com

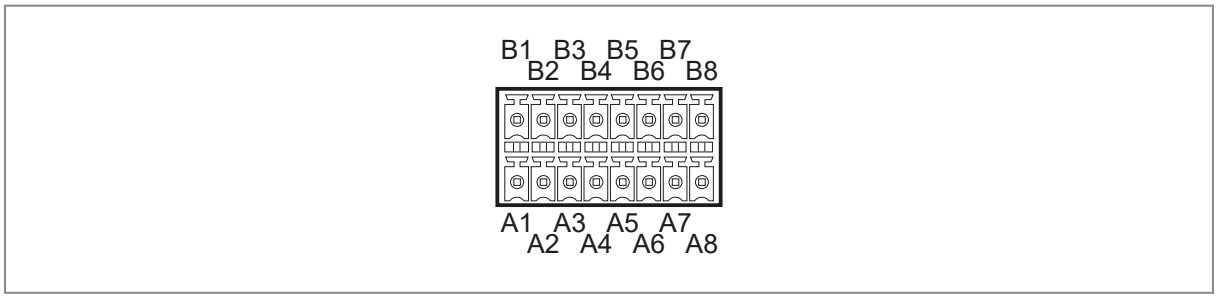


Fig. 7: Wiring

Contact designation	Function	Function type	Supply voltage
B1	L+		Sensor supply
B2	MP1	DI1/DO1	
B3	MP2	DI2/DO2	
B4	L-		
B5	L+		Sensor supply
B6	MP3	DI3/DO3	
B7	MP4	DI4/DO4	
B8	L-		
A1	L+		Sensor supply
A2	MP5	DI5/DO5	
A3	MP6	DI6/DO6	
A4	L-		

Contact designation	Function	Function type	Supply voltage
A5	L+		Sensor supply
A6	MP7	DI7/DO7	
A7	MP8	DI8/DO8	
A8	L-		

Wiring of the IO ports

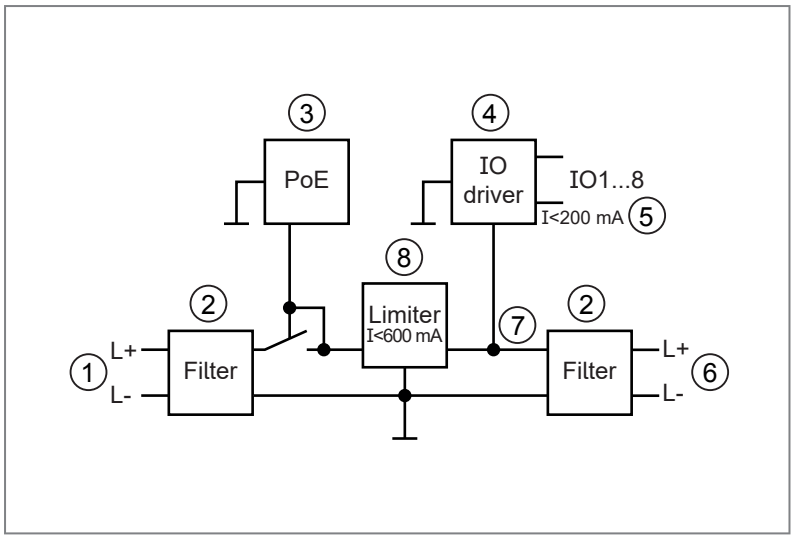


Fig. 8: Inputs and outputs

1: PWR voltage supply
2: Filter
3: PoE++
4: IO port driver
5: Current limitation of the IO ports
6: Sensor supply
7: Current limitation of the current limiter
8: Current limiter

The inputs and outputs are designed for max. 30 V DC. For further information please refer to the technical data sheets.

- Limit the load on the digital inputs and outputs to max 0.2 A.
- The total load of the used digital inputs and outputs and the supply voltage L+ must not exceed 0.6 A.

For cable lengths in indoor and outdoor areas, observe the following requirements:

- Cable lengths may exceed 30 m.
- Take the voltage drop into account when using long cable lengths.

If the device is supplied simultaneously via the PWR terminal block and via PoE++, PoE++ is used as the preferred voltage supply.

8.1.3 Ethernet port

The Ethernet port is designed as an RJ45 socket.

- Only use screened connectors for the Ethernet port.

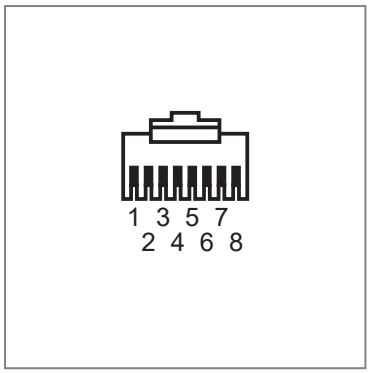


Fig. 9: Ethernet port pin assignment

ETH1

Contact designation	Function	Function type
1	DATA	TX+
2	DATA	TX-
3	DATA	RX+
4	n.c.	
5	n.c.	
6	DATA	RX-
7	n.c.	
8	n.c.	

ETH2 with **PoE++**

The ETH2 Ethernet port is available on the DTE405, DTE505 and DTE515 devices.

The device's PoE functionality complies with the IEEE802.3 Type 3 powered device (PD) standard.

Using PoE++ requires an Ethernet switch or injector.

The power consumption via ETH2 when using PoE depends on the IO port configuration. The typical power consumption is specified in the data sheet of the device.

Contact designation	Function	Function type
1	DATA/PoE++	TX+
2	DATA/PoE++	TX-
3	DATA/PoE++	RX+
4	DATA/PoE++	
5	DATA/PoE++	
6	DATA/PoE++	RX-
7	DATA/PoE++	
8	DATA/PoE++	

For cable lengths in indoor and outdoor areas, observe the following requirements:

- Use a cable with a maximum length of 100 metres.

If the device is supplied simultaneously via the PWR terminal block and via PoE++, PoE++ is used as the preferred voltage supply.

8.1.4 Voltage supply

The voltage supply is designed as a removable terminal block.

The voltage supply can be looped through the device. Depending on the application, the power supply may limit the maximum number of devices.

The power supply rating must be below 100 W on the secondary side.

- Use only LPS (Limited Power Source) or NEC (National Electric Code) Class 2 power supplies for operation.

When connecting the voltage supply, observe the following:

- Connect the voltage supply indoors.
- Use a cable no longer than 30 metres for the connection.
- Connect the cable to the contacts shown in the **Voltage supply pin assignment** figure.

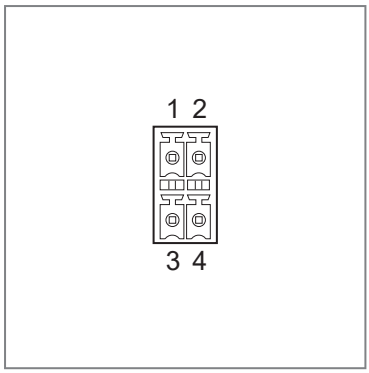


Fig. 10: Voltage supply pin assignment

Contact designation	Function
1	L+
2	L-
3	L+
4	L-

If the device is supplied simultaneously via the PWR terminal block and via PoE++, PoE++ is used as the preferred voltage supply.

8.1.5 Antenna connectors

The antenna connector is supplied with a voltage of approx. 3.3 V.

- ▶ Switch off the device before connecting the antenna.

The device is designed for the following antennas:
- Accessories → 23
- External antenna with circular polarisation (8.5 dBic, impedance 50 Ohm)

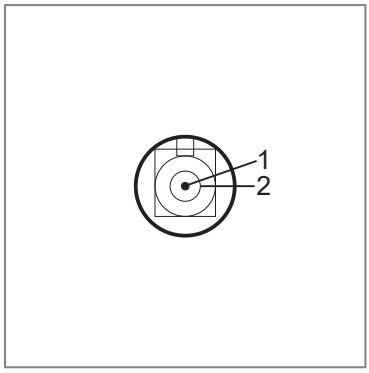


Fig. 11: FAKRA antenna connector pin assignment

Contact designation	Function	Function type	Additional information
1	DATA	COM	RF signal
2	SCREEN	FE	

- ▶ Use the device only with compatible antennas and accessories from ifm.
- ▶ Observe country-specific requirements for devices, antennas and accessories.

- ▶ Accessories must be selected by a qualified professional.

- ▶ When installing antennas indoors: Observe a maximum cable length of 30 metres between the device and the antenna.
- ▶ When installing antennas outdoors: Observe a maximum cable length of 16 metres between the device and the antenna.

8.2 Connect functional earth

To ensure interference-free operation, the device must be connected to an earth potential that is free from external voltage.

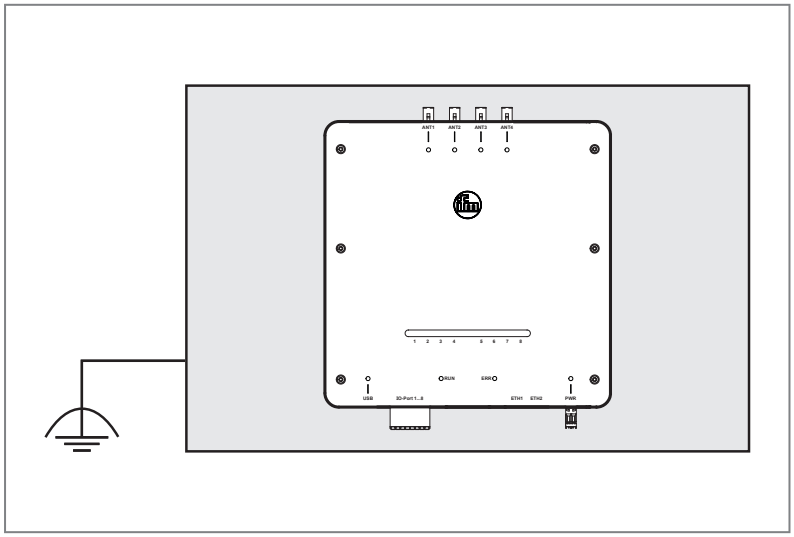


Fig. 12: Mounting plate with mounted device

Connect the mounting plate to the functional earth:

- Connect one of the M8 mounting holes on the back of the device to the mounting plate.
- Tighten the M8 screw with a tightening torque of 8 Nm and engage it at least 8 mm into the M8 hole.
- Connect the mounting plate to an earth potential free from external voltage.

Alternatively, the connection to an earth potential free from external voltage can be made via the DIN rail adapter E70432. → 16

8.3 Accessories

Using accessories not listed (cable, power supply and antennas) may result in exceeding legal limits.

- Accessories must be selected and installed by a qualified professional.

Incorrect configuration may lead to violation of country-specific limits.

- Use the device only with compatible antennas and accessories from ifm.
- Observe country-specific requirements for devices, antennas and accessories.

RFID UHF antennas

The antennas are optimised for RFID applications. The antenna gain values from the technical data sheet are stored in the device firmware.

Article	Country approval	Frequency range [MHz]	Gain [dBic]	Antenna detection	Connection	Impedance
ANT805 [1]	EU / USA / Canada / China	865…928	-30	No	TNC	50 Ω
ANT810 [1]	EU	865…868	-15	No	TNC	50 Ω
ANT815	EU / USA / Canada / China	865…868 902…928	EU: -10 USA / Canada / China: -12	No	TNC	50 Ω
ANT820	EU	865…868	2.5	No	TNC	50 Ω

Article	Country approval	Frequency range [MHz]	Gain [dBic]	Antenna detection	Connection	Impedance
ANT850	EU	865…868	8.5	Yes	TNC	50 Ω
ANT855	EU	865…868	8.5	Yes	FAKRA	50 Ω
ANT860	EU	865…868	8.5	No	TNC	50 Ω
ANT870	EU	865…868	2.5	Yes	TNC	50 Ω
ANT875	EU	865…868	2.5	Yes	FAKRA	50 Ω
ANT920	USA / Canada / China	902…928	2.5	No	TNC	50 Ω
ANT950	USA / Canada / China	902…928	8.5	Yes	TNC	50 Ω
ANT955	USA / Canada / China	902…928	8.5	Yes	FAKRA	50 Ω
ANT960	USA / Canada / China	902…928	8.5	No	TNC	50 Ω
ANT970	USA / Canada / China	902…928	2.5	Yes	TNC	50 Ω
ANT975	USA / Canada / China	902…928	2.5	Yes	FAKRA	50 Ω

[1] ANT805 and ANT810, in combination with the evaluation unit, meet the requirements of the EN 301489-3 standard. Both antennas do not meet the interference immunity requirements of the IEC 61000-6-4 standard.

Antenna detection

The device can detect antennas with antenna detection (see previous table). If an antenna with antenna detection is configured, the device automatically checks whether the correct antenna is connected. If a different antenna is used, an error message is displayed.

While antenna detection helps ensure compliance with legal regulations, the selection of appropriate accessories must still be carried out and installed by a qualified professional.

Cable

The listed cables can be used in all countries.

Article	Type	Country approval	Connection
E80520	Coaxial cable	All countries	FAKRA / FAKRA
E80521	Coaxial cable	All countries	FAKRA / FAKRA
E80522	Coaxial cable	All countries	FAKRA / FAKRA
E80523	Coaxial cable	All countries	FAKRA / FAKRA
E80524	Coaxial cable	All countries	FAKRA / TNC
E80525	Coaxial cable	All countries	FAKRA / TNC
E80526	Coaxial cable	All countries	FAKRA / TNC
E80527	Coaxial cable	All countries	FAKRA / TNC

The attenuation values of the cables can be found in their technical data sheets and in the device firmware.

9 Operating and display elements

The device includes multiple status LEDs.

The LEDs indicate the current system status and signal error conditions.

The device features an additional programmable LED bar.

9.1 Antenna connector ANT LEDs

An ANT LED is assigned to each antenna connector.

LED	Description
Off	The antenna is not configured and not active.
Lights green at 1 Hz	The antenna is configured and the RF field is switched off.
Lights green	The antenna and the RF field are configured. The device is prepared for detecting ID tags in the field.
Lights yellow	The antenna and RF field are configured and at least one ID tag is detected.
Lights red at 1 Hz	The configuration in the device does not match the connected antenna. The antenna is not connected or the connection is interrupted. The antenna's article number does not match the configuration.

9.2 LED bar

The LED bar can be configured via the web interface.

Details about the web interface are provided in the separate software manual: documentation.ifm.com

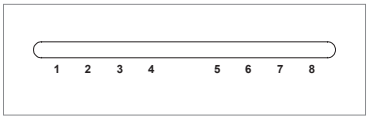


Fig. 13: LED bar

In the default configuration, the LEDs behave as follows:

LED	Description
LED 1 lights	1 ID tag detected at antenna connector 1
LEDs 1 and 2 light	2 ID tags detected at antenna connector 1
..	..
LEDs 1, 2, 3, 4, 5, 6, 7 and 8 light	8 ID tags detected at antenna connector 1

Firmware update

The firmware update is indicated via the LED bar.

9.3 USB LED

The USB port is assigned a USB LED.

LED	Description
Lights green	The USB interface is used for saving logging data or configuration changes.
Lights red at 1 Hz	USB connection error. Check the USB stick used and observe any error messages displayed by the device.
Lights red	The device has detected a critical error on the USB port. Contact the device manufacturer.

Firmware update

The firmware update is indicated by the USB LED when the update is performed via USB.

LED	Description
Lights green at 1 Hz	The firmware is being updated.
Off	The firmware has been successfully updated.
Lights red at 1 Hz	Firmware update failed due to an error.

9.4 Ethernet port LEDs

The status of an Ethernet port is indicated via 2 LEDs.

LED	Description
LED LNK lights green	Ethernet connection established
LED LNK does not light green	Ethernet connection not established
LED ACT lights yellow	Data is being transmitted
LED ACT does not light yellow	No data is being transmitted

9.5 PWR LED

Voltage supply

The PWR LED indicates the status of the voltage supply.

LED	Description
Off	The device is not operational. No voltage supply connected or supply voltage below 13 V.
Lights green	The device is ready for operation and the supply voltage is within the valid range.

PoE

The PWR LED indicates the status of PoE++ when PoE++ is used as the voltage supply.

LED	Description
Off	No voltage supply via PoE++.
Lights green	The voltage supply via PoE++ is connected and OK.

Firmware update

The firmware update is indicated via the PWR LED.

LED	Description
Lights green at 1 Hz	The firmware is being updated.
Lights green	The firmware has been successfully updated.
Lights red at 1 Hz	Firmware update failed due to an error.

Device status

In the event of critical errors, the status of the device is indicated by the PWR LED.

LED	Description
Lights red	Critical internal device error. ▶ Contact the manufacturer, ifm electronic gmbh.

10 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.

10.1 Updating the firmware

The following display elements signal an ongoing firmware update:

LED bar

The firmware update is indicated via the LED bar.

USB LED

The firmware update is indicated by the USB LED when the update is performed via USB.

LED	Description
Flashes green at 1 Hz	The firmware is being updated.
Off	The firmware has been successfully updated.
Flashes red at 1 Hz	Firmware update failed due to an error.

PWR LED

The firmware update is indicated via the PWR LED.

LED	Description
Flashes green at 1 Hz	The firmware is being updated.
Lights green	The firmware has been successfully updated.
Flashes red at 1 Hz	Firmware update failed due to an error.

List of figures

Glossary

EPC

The EPC (Electronic Product Code) is a unique identification number based on an internationally used key and code system. The EPC is used to uniquely mark and identify products, logical units, equipment, documents, etc.

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.

IT

Information Technology (IT) comprises technical resources used to create, manage and transmit digital information. Due to increasing digitalisation and IoT, OT and IT are merging.

OT

Operational Technology (OT) comprises hardware and software used to control and monitor physical machines, systems and processes. Due to increasing digitalisation and IoT, OT and IT are merging.

PoE++

Power over Ethernet (PoE) can supply devices with operating voltage via the Ethernet port. This eliminates the need to connect the device to a separate power supply. The power cable can thus be omitted. Devices with POE++ can receive up to 51 W. The maximum output power of the PSE (Power Sourcing Equipment) is 60 W.

REST

Representational State Transfer (REST) is based on the HTTP protocol and is a popular architectural style for request and response communication.

RF field

The RF field refers to electromagnetic waves and their transmission at 13.56 MHz. The operating frequency of the RF field may deviate from 13.56 MHz.

RFID

RFID is a technology for automatic and contactless identification and localisation of objects. An RFID system consists of an ID tag and a read/write device. The ID tag contains an identifying code and is attached to an object. The read/write device can write and read the code of the ID tag.

RGB

RGB refers to a colour space that is created by the additive mixing of the primary colours red, green and blue.

TID

The transponder ID is a globally unique identification number of the ID tag. It is assigned by the chip manufacturer of the ID tag during production and cannot be changed afterwards. The TID is stored in the TID storage area of the ID tag.

UHF band

The UHF (Ultra High Frequency) band refers to electromagnetic waves with a wavelength of 1 to 10 dm. This corresponds to a frequency band of approx. 300 MHz to 3 GHz.

USER memory area

The USER memory area is a memory area on the ID tag for application-specific data.

Funkzulassung
Radio approval
Agrément radio
Radyo onayı
无线电批准

DTE405
DTE505
DTE515
DTP405
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DTP515

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ifm electronic gmbh • Friedrichstraße 1 • 45128 Essen • Germany
11642402 / 00 04 / 2026

Europäische Union / European Union / L‘Union Europe

Deutsch

DTE405 / DTP405

Vor Inbetriebnahme die Bedienungsanleitung lesen und während der Einsatzdauer aufbewahren.

- Hiermit erklärt die ifm electronic GmbH, dass die Funkanlagentypen DTE405 und DTP405 der Richtlinie 2014/53/EU entsprechen.
- Der vollständige Text der EU-Konformitätserklärung, Technische Daten, Anleitungen, Zulassungen, Kontakte und weitere Informationen unter documentation.ifm.com.

WARNUNG! Der Betrieb dieses Gerätes kann Funkstörungen in Wohngebieten verursachen.

Das Gerät hat eine Arbeitsfrequenz von 865 bis 868 MHz und eine maximale Sendeleistung von 32,9 dBm ERP.

Die zulässigen Antennen und Kabel sind in der Betriebsanleitung beschrieben. Für benutzerdefinierte Antennen sind folgende Konfigurationen erlaubt:

- Patchantennen mit zirkularer Polarisation und einem maximalen Gewinn von 8,5 dBic.
- Quadrifilare Spiralantennen mit zirkularer Polarisation und einem maximalen Gewinn von 2,5 dBic.
- Die eingesetzten Antennen müssen die gleiche zirkulare Polarisationsrichtung verwenden.

Andere Konfigurationen sind strengstens verboten.

Aufgrund der Human-Exposure-Vorschrift einen Mindestabstand von 30 cm zwischen den Antennen und Personen einhalten.

Das System bestehend aus der RFID UHF Auswerteeinheit, Verbindungskabel und Antennen sendet Funkwellen aus, die möglicherweise den Betrieb von elektronischen Geräten in der Nähe beeinträchtigen, darunter Herzschrittmacher, Hörelemente und Defibrillatoren. Wenn Sie einen Herzschrittmacher oder ein anderes implantiertes Medizinprodukt haben, verwenden Sie das System nicht ohne vorherige Rücksprache mit Ihrem Arzt oder dem Hersteller Ihres Medizinprodukts. Halten Sie einen Sicherheitsabstand zwischen den

Antennen und Ihren Medizinprodukten ein und sehen Sie von der weiteren Verwendung ab, wenn Sie eine dauerhafte Beeinträchtigung Ihres Medizinprodukts beobachten.

English

DTE405 / DTP405

Read the operating instructions before set-up and keep them for the duration of use.

- ifm electronic gmbh hereby declares that the radio equipment types DTE405 and DTP405 are in compliance with Directive 2014/53/EU.
- The full text of the EU Declaration of Conformity, technical data, instructions, approvals, contacts and further information at documentation.ifm.com.

WARNING! The operation of this device can cause radio interference in residential areas.

The device has an operating frequency of 865 to 868 MHz and a maximum transmitter power of 32,9 dBm ERP.

The permitted antennas and cables are described in the operating instructions. The following configurations are permitted for user-defined antennas:

- Patch antennas with circular polarisation and a maximum gain of 8.5 dBic.
- Quadrifilar spiral antennas with circular polarisation and a maximum gain of 2.5 dBic.
- The antennas used must have the same circular polarisation direction.

Any other configurations are strictly prohibited.

In accordance with human exposure regulations, a minimum distance of 30 cm must be maintained between the antennas and people.

The system, comprising the UHF RFID evaluation unit, jumper cables and antennas, emits radio waves that may interfere with the operation of nearby electronic devices, including pacemakers, hearing aids and defibrillators. If you have a pacemaker or other implanted medical device, do not use the system without first consulting your doctor or the manufacturer of the medical device. Maintain a safe distance between the antennas and your medical device and refrain from further use if you observe permanent impairment of your medical device.

Français

DTE405 / DTP405

Lire la notice d‘utilisation avant l‘utilisation et conserver-la pendant toute la durée d‘utilisation.

- ifm electronic gmbh déclare par la présente que les équipements radio DTE405 et DTP405 correspondent à la directive 2014/53/EU.
- Vous trouverez le texte intégral de la déclaration de conformité de l‘UE, les données techniques, les instructions, les homologations, les contacts et d‘autres informations sur le site documentation.ifm.com.

AVERTISSEMENT ! Le fonctionnement de cet appareil peut causer des interférences radio dans les zones résidentielles.

L'appareil a une fréquence de fonctionnement de 865 à 868 MHz et une puissance d'émission maximale de 32,9 dBm ERP.

Les antennes et câbles autorisés sont décrits dans la notice d’utilisation. Pour les antennes personnalisées, les configurations suivantes sont autorisées :

- Antennes patch à polarisation circulaire avec un gain maximal de 8,5 dBic.
- Antennes spirales quadrifilaires à polarisation circulaire et avec un gain maximal de 2,5 dBic.
- Les antennes utilisées doivent avoir la même direction de polarisation circulaire.

Toute autre configuration est strictement interdite.

Conformément à la réglementation relative à l’exposition humaine, une distance minimale de 30 cm doit être respectée entre les antennes et les personnes.

Le système, composé d’un boîtier de contrôle RFID UHF, de câbles de raccordement et d’antennes, émet des ondes radio qui peuvent interférer avec le fonctionnement des appareils électroniques situés à proximité, notamment les stimulateurs cardiaques, les appareils auditifs et les défibrillateurs. Si vous avez un stimulateur cardiaque ou un autre dispositif médical implanté, n’utilisez pas le système sans avoir consulté au préalable votre médecin ou le fabricant de votre dispositif médical. Maintenez une distance de sécurité entre les antennes et votre dispositif médical, et cessez toute utilisation si vous constatez une altération permanente du dispositif médical.

Türkiye

Türkçe

Kurulumdan önce kullanma talimatlarını okuyunuz ve bunları ürünün tüm kullanım süresince saklayınız.

- ifm electronic gmbh, DTE405 ve DTP405 tip telsiz cihazlarının 2014/53/EU sayılı Direktif ile uyumlu olduğunu beyan eder.
- EU Uygunluk Beyanı'nın tam metni, teknik veriler, talimatlar, onaylar, iletişim bilgileri ve daha fazla bilgi burada bulunabilir: documentation.ifm.com.

UYARI! Bu cihazın çalışması, yerleşim alanlarında radyo parazitine neden olabilir.

Cihaz 865 ila 868 MHz çalışma frekansına ve 32,9 dBm ERP maksimum transmitter gücüne sahiptir.

İzin verilen antenler ve kablolar kullanım kılavuzunda açıklanmıştır. Kullanıcı tanımlı antenler için aşağıdaki konfigürasyonlara izin verilir:

- Dairesel polarizasyonlu ve maksimum kazancı 8,5 dBic olan yama antenler.
- Dairesel polarizasyonlu ve maksimum kazancı 2,5 dBic olan dörtlü spiral antenler.
- Kullanılan antenler aynı dairesel polarizasyon yönüne sahip olmalıdır.

Başka herhangi bir konfigürasyon kesinlikle yasaktır.

İnsanların maruz kalmasına ilişkin yönetmelikler uyarınca, antenler ile insanlar arasında en az 30 cm mesafe bırakılmalıdır.

UHF RFID değerlendirme ünitesi, bağlantı kabloları ve antenlerden oluşan sistem, kalp pilleri, işitme cihazları ve defibrilatörler dahil olmak üzere yakındaki elektronik cihazların çalışmasını engelleyebilecek radyo dalgaları yayar. Kalp piliniz veya implant yapılmış başka bir tıbbi cihazınız varsa, önce doktorunuza veya tıbbi cihazın üreticisine danışmadan sistemi kullanmayın. Antenler ile tıbbi cihazınız arasında güvenli bir mesafe bırakın ve tıbbi cihazınızda kalıcı bir bozulma gözlemlerseniz daha fazla kullanmaktan kaçının.

Great Britain

English

DTE405 / DTP405

Read the operating instructions before set-up and keep them for the duration of use.

- ifm electronic gmbh hereby declares that the radio equipment types DTE405 and DTP405 are in compliance with the relevant statutory requirements.
- The full text of the Declaration of Conformity, technical data, instructions, approvals, contacts and further information is available at documentation.ifm.com.

WARNING! The operation of this device can cause radio interference in residential areas.

The device has an operating frequency of 865 to 868 MHz and a maximum transmitter power of 32,9 dBm ERP.

The permitted antennas and cables are described in the operating instructions. The following configurations are permitted for user-defined antennas:

- Patch antennas with circular polarisation and a maximum gain of 8.5 dBic.
- Quadrifilar spiral antennas with circular polarisation and a maximum gain of 2.5 dBic.
- The antennas used must have the same circular polarisation direction.

Any other configurations are strictly prohibited.

In accordance with human exposure regulations, a minimum distance of 30 cm must be maintained between the antennas and people.

The system, comprising the UHF RFID evaluation unit, jumper cables and antennas, emits radio waves that may interfere with the operation of nearby electronic devices, including pacemakers, hearing aids and defibrillators. If you have a pacemaker or other implanted medical device, do not use the system without first consulting your doctor or the manufacturer of the medical device. Maintain a safe distance between the antennas and your medical device and refrain from further use if you observe permanent impairment of your medical device.

USA

English

DTE505 / DTP505

FCC information

Supplier's Declaration of Conformity 47 CFR § 2.1077 Compliance Information

Manufacturer	ifm electronic gmbh
	Friedrichstrasse 1
	45128 Essen
	Germany
U.S. Responsible Party	ifm efector, inc.
	1100 Atwater Dr.
	Malvern, PA 19355
	USA
	Phone: 800-441-8246
	Email: cs.us@ifm.com

This device complies with Part 15 of the FCC Rules. Operation is subject to the following 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 to this device that have not been expressly approved by ifm could void the user's authority to operate the 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.

This radio transmitter FCC ID: UN6-DTP505 has been approved by FCC to operate with the antenna types listed in the manual, with the maximum permissible gain indicated.

The following configurations are permitted for user-defined antennas:

- Patch antennas with circular polarization and a maximum gain of 8.5 dBic.
- Quadrifilar spiral antennas with circular polarization and a maximum gain of 2.5 dBic.
- The antennas used must have the same circular polarization direction.

Any other configurations are strictly prohibited.

RF Exposure Info

Due to radio frequency exposure limits this device should be installed and operated with a minimum distance of 23 cm between the antennas and the body of the user or nearby persons.

The measurement results comply with the FCC limit per 47 CFR §2.1091 for the uncontrolled RF Exposure of mobile devices.

This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.

ID tags

The distance between the read/write head and an ID tag must be > 20 cm.

Canada / Canada

English

DTE505 / DTP505

ISED note

This device contains licence-exempt transmitters/receivers that comply with Innovation, Science and Economic Development Canada's licence-exempt RSSs. Operation is subject to the following conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

This equipment complies with ISED RSS-102 radiation exposure limits set forth for an uncontrolled environment when the device is installed and operated with a minimum separation distance of 34 cm between the antennas and any human body.

This radio transmitter IC ID: 6799A-DTP505 has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed in the manual, with the maximum permissible gain indicated.

The following configurations are permitted for user-defined antennas:

- Patch antennas with circular polarization and a maximum gain of 8.5 dBic.
- Quadrifilar spiral antennas with circular polarization and a maximum gain of 2.5 dBic.
- The antennas used must have the same circular polarization direction.

Any other configurations are strictly prohibited.

ID tags

The distance between the read/write head and an ID tag must be > 20 cm.

Français

DTE505 / DTP505

Avis ISDE

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence.

L'exploitation est autorisée aux conditions suivantes:

1. L'appareil ne doit pas produire de brouillage;
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Cet appareil est conforme aux limites d'exposition aux radiations ISDE RSS-102 établies pour un environnement non contrôlé lorsque l'appareil est installé et utilisé avec une distance de séparation minimale de 34 cm entre l'antennes et tout corps humain.

This radio transmitter IC ID: 6799A-DTP505 has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed in the manual, with the maximum permissible gain indicated.

Pour les antennes personnalisées, les configurations suivantes sont autorisées :

- Antennes patch à polarisation circulaire avec un gain maximal de 8,5 dBic.
- Antennes spirales quadrifilaires à polarisation circulaire et avec un gain maximal de 2,5 dBic.
- Les antennes utilisées doivent avoir la même direction de polarisation circulaire.

Toute autre configuration est strictement interdite.

TAG

La distance entre la tête de lecture/écriture et une radio-étiquette doit être > 20 cm.

China

中文

DTE515 / DTP515

允许使用的天线和电缆详见操作说明书。