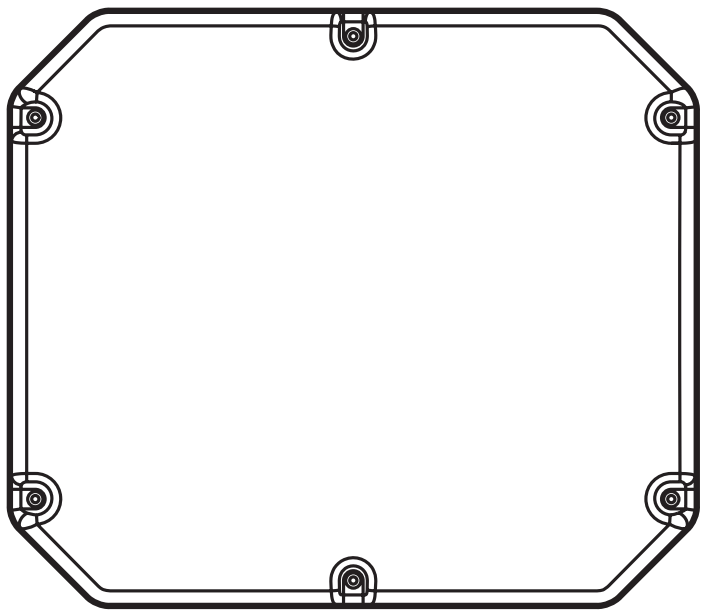
Operating instructions

RFID UHF reader

UK

DTE800
DTE810
DTE900
DTE910
DTE920



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Content

1 Preliminary note

This document is intended for specialists. These specialists are people who are qualified by their appropriate training and their experience to see risks and to avoid possible hazards that may be caused during operation or maintenance of the device. The document contains information about the correct handling of the device.

Read this document before use to familiarise yourself with operating conditions, installation and operation. Keep this document during the entire duration of use of the device.

1.1 Symbols used

►	Instructions
>	Reaction, result
[…]	Designation of keys, buttons or indications
→	Cross-reference

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

Information
Supplementary note

2 Safety instructions

2.1 General

These instructions are an integral part of the device. It contains texts and figures concerning the correct handling of the device and must be read before installation or use.

Observe the operating instructions. Non-observance of the instructions, operation which is not in accordance with use as prescribed below, wrong installation or incorrect handling can seriously affect the safety of operators and machinery.

2.2 Target group

These instructions are intended for authorised persons according to the EMC and low-voltage directives. The device must only be installed, connected and put into operation by a qualified electrician.

2.3 Electrical connection

Disconnect the device externally before handling it.

The device can be damaged when the operating voltage is switched on and no LAN cable is connected. Connect a LAN cable to the device before you switch on the operating voltage.

The connection pins may only be supplied with the signals indicated in the technical data and/or on the device label and only the approved accessories of ifm may be connected.

2.4 Tampering with the device

In case of malfunctions or uncertainties please contact the manufacturer. Any tampering with the device can seriously affect the safety of operators and machinery. This is not permitted and leads to the exclusion of any liability and warranty claims.

2.5 Ventilation

During operation the device must be sufficiently ventilated. Install the device only in places where ventilation is ensured.

With insufficient ventilation there is a risk of fire.

2.6 Environmental conditions

Do not place the device in the vicinity of heating installations, do not expose it to direct sunlight and do not operate it in wet environments. No objects with open flames must be placed onto the device. Protect the device against moisture, falling water drops and splashing water. Observe the environmental conditions indicated in the technical data sheet.

There is a risk of fire in unsuitable environmental conditions.

2.7 Radiated electromagnetic field strengths

2.7.1 CE marking

The device complies with the applicable requirements to CE.

Brand name: ifm electronic DTE800 and DTE810 RFID UHF reader for Europe

This reader is designed for operation in accordance with EN 302208. When operating the unit with connected antennas, the human exposure regulations to EN 50364 are to be observed. Ensure a minimum distance of 23 cm between antenna and human bodies. During operation (of reader and antenna), cardiac pacemakers of people in the vicinity of the antenna may be impaired. In case of doubt, persons concerned should consult the manufacturer of the pacemaker or their doctor.

The reader's output power is to be reduced depending on the antenna cable length and the antenna gain.

2.7.2 FCC labelling

The unit complies with the applicable requirements to FCC Part 15.

Brand name: ifm electronic DTE900 and DTE910 RFID UHF reader for the US (FCC)

This reader is designed for operation in accordance with FCC Part 15.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and, (2) This device must accept any interference received including interference that may cause undesired operation.

This unit complies with the FCC limit values for radiation exposure in a non-controlled environment: When mounting and operating the unit, keep a minimum distance of 23 cm between the source of radiation and your own body.

In order to comply with the regulations of FCC Part 15 in the United States, the system must be professionally installed in order to guarantee compliance with the regulations for the certification according to Part 15. The operator and the certified specialist carrying out the installation have the responsibility to ensure that only certified systems are applied in the United States. Using the system in any other combination (for example, several antennas at the same place transmitting the same information) is explicitly prohibited.

Modifications or conversions that are made to this unit without ifm electronic's explicit approval may make the FCC approval for the operation of this unit invalid.

Corresponding tests showed that this unit complies with the limit values for Class B digital devices, pursuant to part 15 of the FCC Rules. These limit values are designed to provide appropriate protection against harmful radio interference with installations for private use. This unit generates and uses energy in the radio frequency range and can also radiate it; if it is not installed and used in accordance with the regulations, the unit may cause harmful interference with radio communication. There is, however, no guarantee that no interference will occur in a specific installation. If this unit causes harmful interference to radio or television reception, which can be determined by turning the unit off and on, the user is encouraged to try to correct the interference by talking one or more of the following measures:

- Readjust the receiving antenna or change its position.
- Increase the distance between the unit and the receiver.
- Connect the unit to a mains socket belonging to a different circuit than the one to which the receiver is connected.
- Ask the dealer or an experienced radio and TV technician for advice.

2.7.3 C-Tick requirements

The device complies with the applicable requirements to C-Tick.

Brand name:ifm electronic DTE920 RFID UHF reader for Australia

2.7.4 Singapore

Complies with
IDA Standards
DB 103032

The Singapore approval only applies to the RFID readers DTE800 and DTE900.

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

3 Functions and features

The multiprotocol-capable RFID reader DTE800 / DTE810 / DTE900 / DTE910 / DTE920 can be used to read active and passive RFID tags in different frequency ranges:

- 865 - 868 MHz for Europe
- 902 - 928 MHz for America
- 916 - 927 MHz for Australia

On delivery the device can read and write tags according to the EPC Gen2 standard. Further protocols can be imported via software updates.

The unit possesses a maximum of 4 external antenna connections to connect the transmitting / receiving antennas for communication with the RFID tags.

The unit has several interfaces for integration into different infrastructures. Power is supplied via a 4-pole M12 adapter plug with A coding.

4 Items supplied

The reader is supplied with the following contents:

- DTE800 / DTE810 / DTE900 / DTE910 / DTE920
- CD with demo software, programming examples, DLL and operating instructions
- Grounding material

5 Accessories

The following accessories are available for the reader. If you have any further questions, please do not hesitate to contact our sales department.

5.1 Antennas

We recommend ifm electronic antennas, for example, ANT805, ANT810, ANT815, ANT820, ANT830, ANT910, ANT920 and ANT930.

5.2 Antenna cable

Description	Article no.	50-Ω cable type	Connector 1	Connector 2	Length (cm)
Connection cable RG 58, 3 m	E80330	RG058-PE	TNC(f)-rev	TNC(m)	300
Connection cable RG 58, 6 m	E80331	RG058-PE	TNC(f)-rev	TNC(m)	600
Connection cable RG 58, 10 m	E80332	RG058-PE	TNC(f)-rev	TNC(m)	1000
Connection cable RG 58, 15 m	E80333	RG058-PE	TNC(f)-rev	TNC(m)	1500

5.3 Mast and wall fixture

Wall / mast fixture article number E80340 for mounting of RFID antennas and readers (up to a total weight of 6.0 kg).

6 Installation

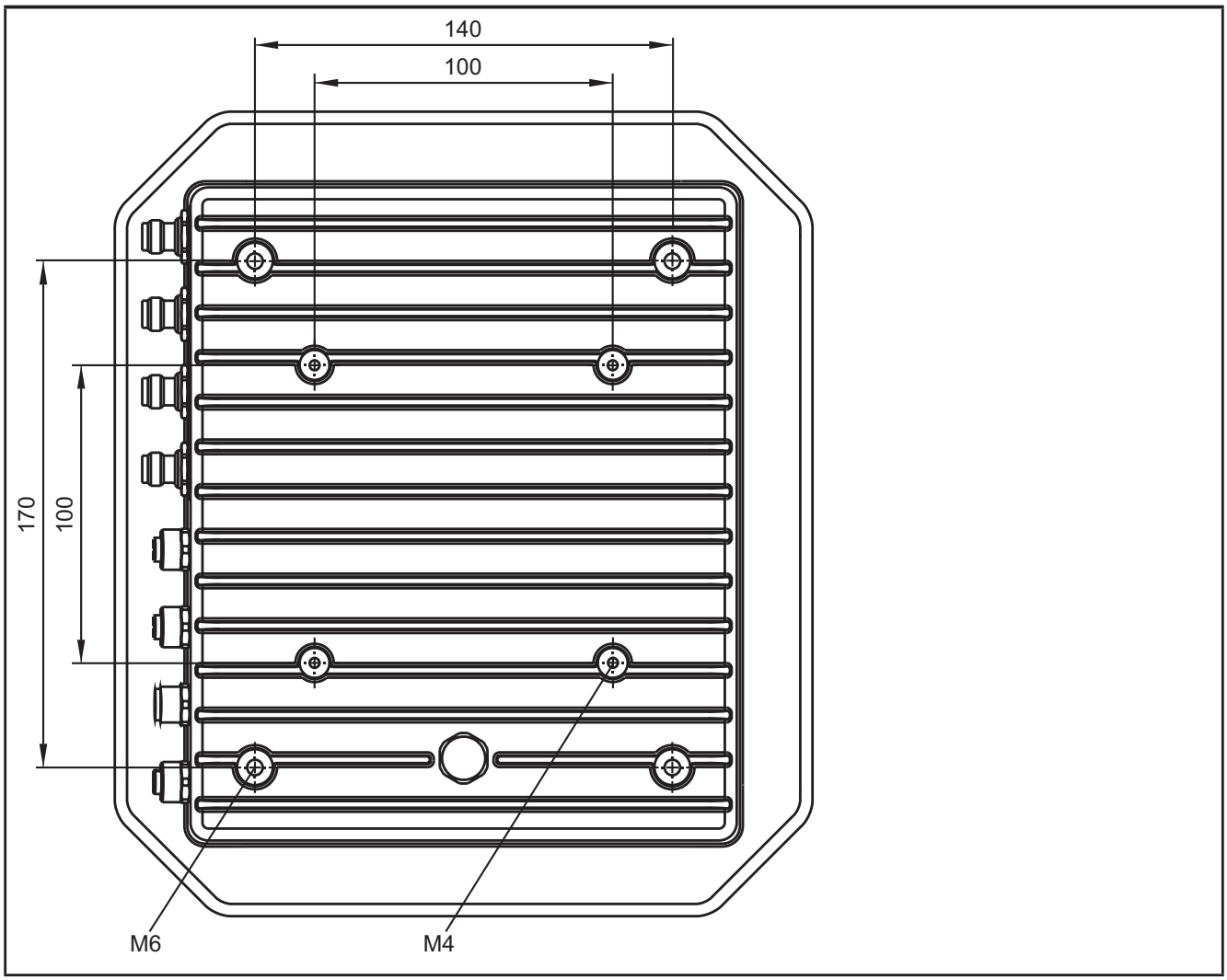
6.1 Installation location

Provided that connections which are not used are covered, the unit complies with the protection rating IP65. When choosing the location of installation, provide for sufficient clear space to make sure that the heat generated inside the unit can properly dissipate. Avoid mounting the unit in the immediate vicinity of heating installations. The maximum operating temperature indicated in the data sheet must not be exceeded. The substrate must be sufficiently solid and guarantee the required load bearing capacity.

6.2 Installation of the reader

There are threaded mounting holes on the back of the reader. The spacing between the threaded holes is shown in the following drawing.

For certain mounting situations, a fixture for mast and wall mounting is available as accessory (→ 5.3).



7 Connections and displays

The following figure shows a reader with all connections. The connections as well as the pin connection of the plugs and sockets will be described in the following.

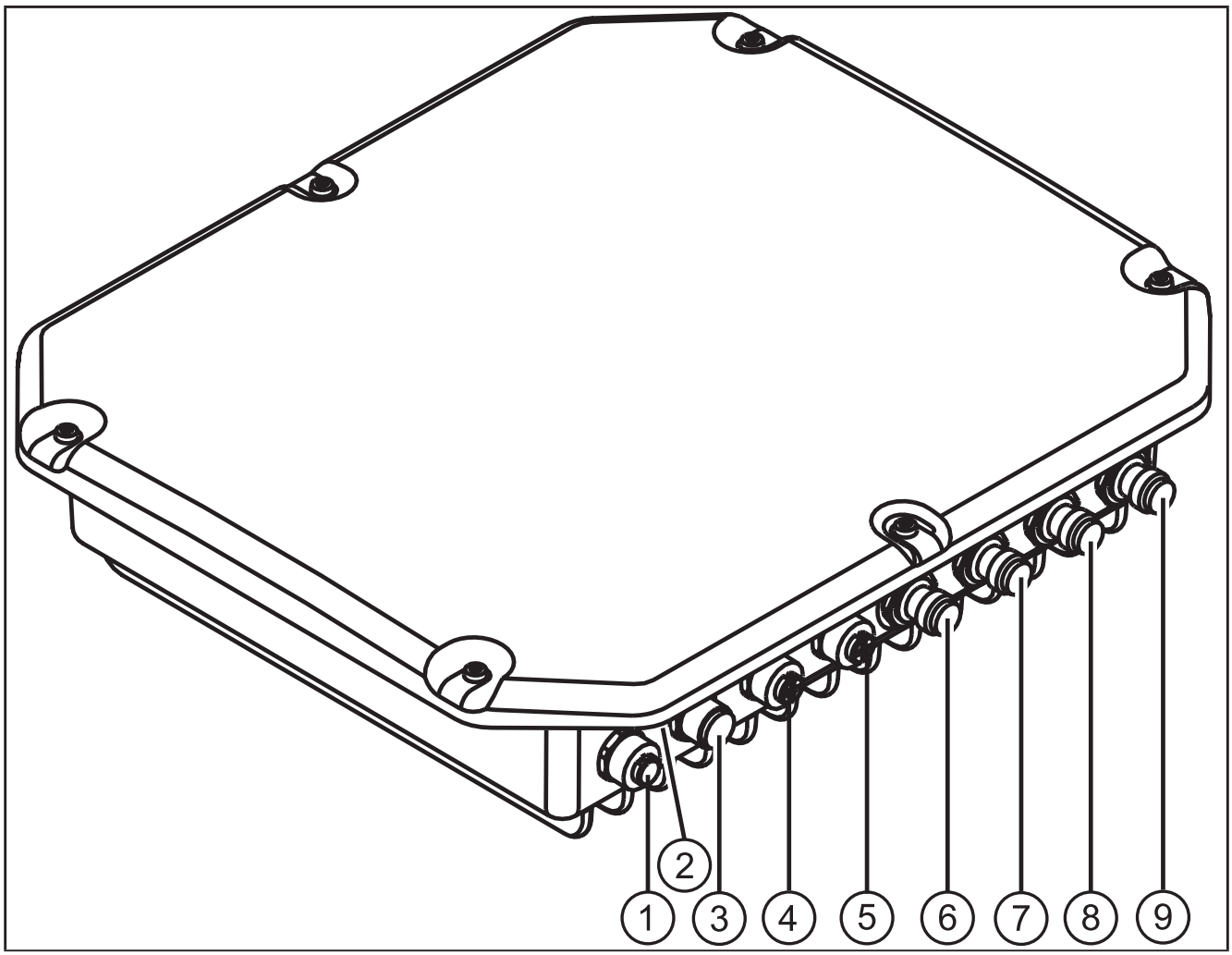


Image: Overall view DTE800 / DTE810 / DTE900 / DTE910 / DTE920

① M12 communication port
② status indication, 2-colour LEDs (red, green)
③ M12 male power supply connection, 4-pole, A-coded
④ GPIO connection 1, M12 female, 5-pole (DTE800) / 8-pole (DTE810), A-coded
⑤ GPIO connection 2, M12 female, 5-pole (DTE800) / 8-pole (DTE810), A-coded
⑥ antenna terminal 1 R-TNC 50 Ohm
⑦ antenna terminal 2 R-TNC 50 Ohm
⑧ antenna terminal 3 R-TNC 50 Ohm
⑨ antenna terminal 4 R-TNC 50 Ohm

7.1 Voltage supply

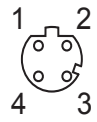
The power supply is designed as a 4-pole M12 round connector with A-coding.

Pin	Connection
1	+ 24 V DC
2	
3	GND
4	

Only use power supplies with limited power for operation! The power supply must not exceed 100 W on the secondary side.

7.2 Ethernet connection

The Ethernet connection is provided as a 4-pole M12 socket with D coding.

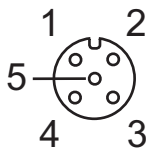


Pin	Connection
1	TD +
2	RD +
3	TD -
4	RD -

Only use screened cables for Ethernet connection!

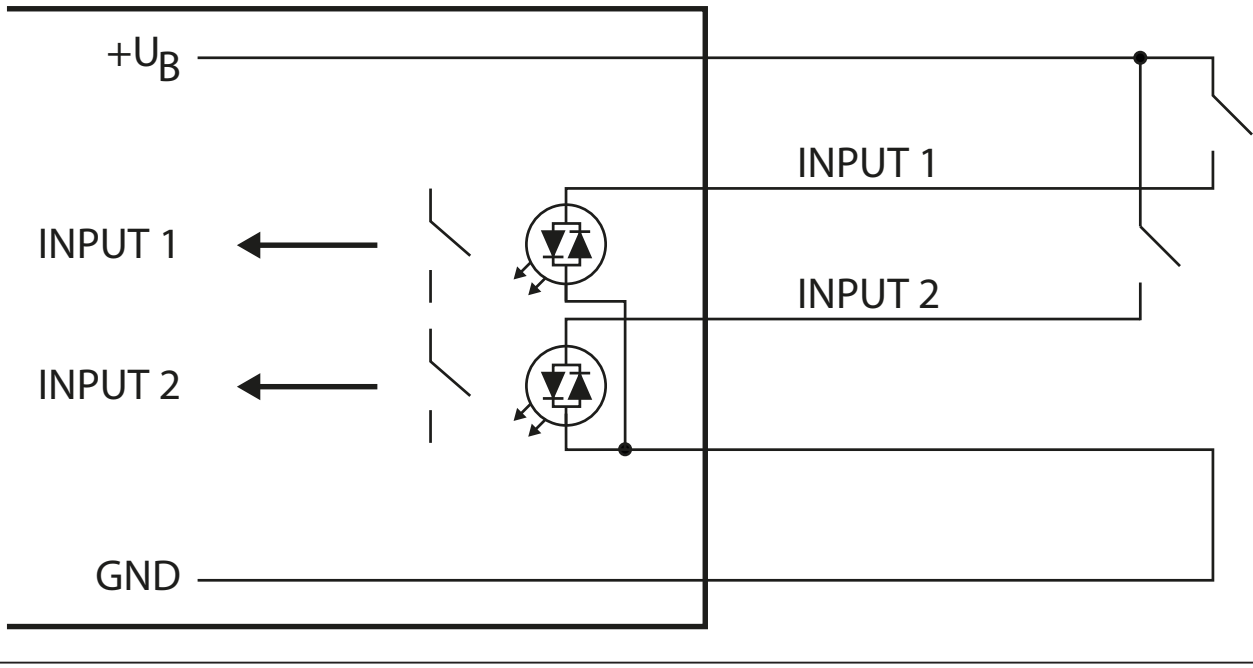
7.3 Inputs and outputs that are not electrically isolated

The digital inputs and outputs of the DTE800/DTE900 are designed as two 5-pole sockets with A coding with M12 connection thread.



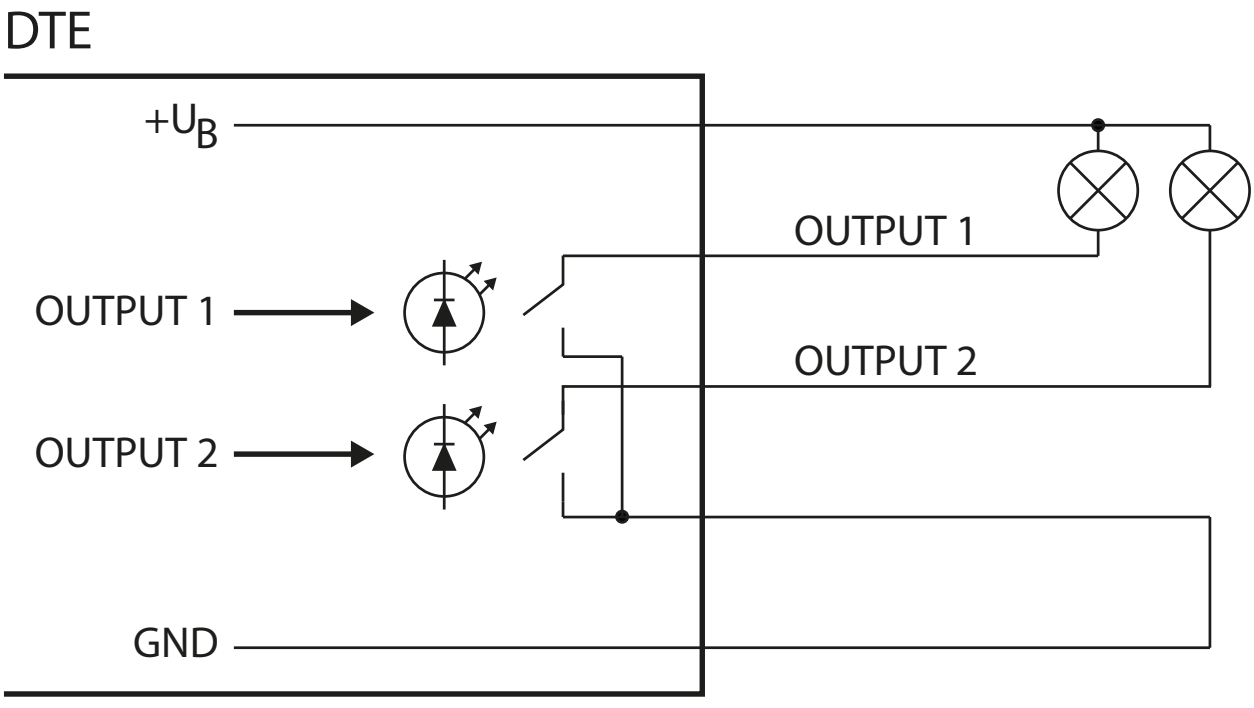
Pin	Connection
1	VCC (output for the supply of the digital outputs. Not electrically isolated.)
2	OUTPUT (switching output)
3	GND (output for the supply of the digital outputs. Not electrically isolated.)
4	INPUT (switching input)
5	Not used

The digital inputs INPUT 1 and INPUT 2 are not electrically isolated from the operating voltage!



Circuitry of the inputs not electrically isolated

The digital outputs OUTPUT 1 and OUTPUT 2 are not electrically isolated from the operating voltage.



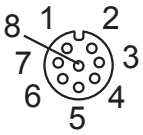
Circuitry of the outputs not electrically isolated

Load each digital input or output with max. 0.5 A.

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

7.4 Digital inputs and outputs

The digital inputs and outputs of the DTE810/DTE910/DTE920 are designed as two 8-pole sockets with A coding with M8 connection thread.

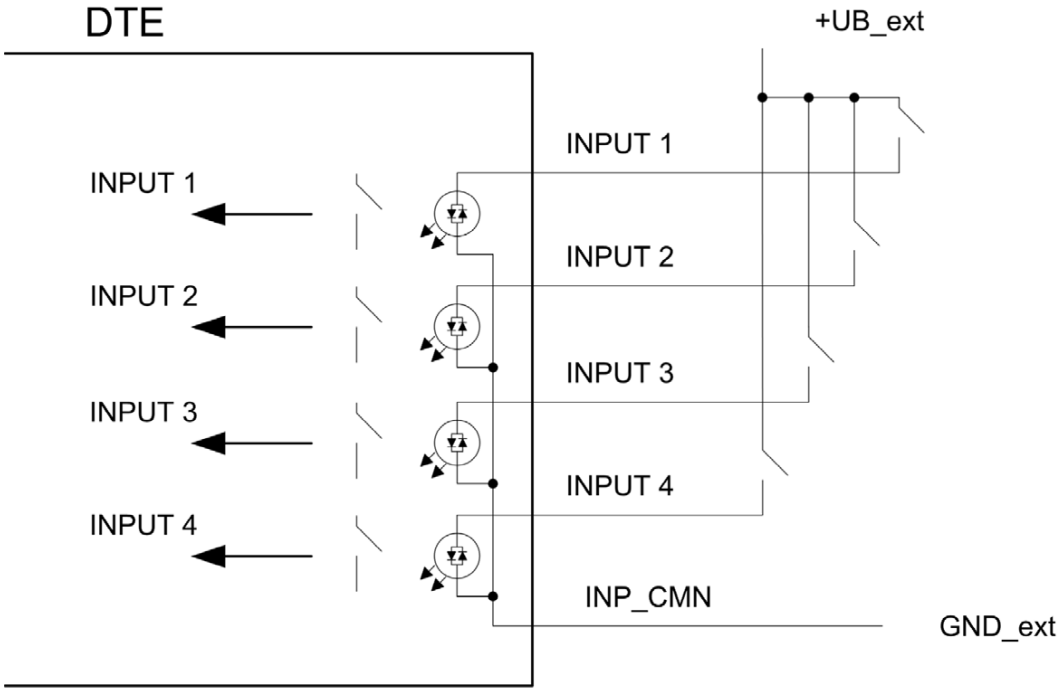


Pin	Assignment GPIO 1	Assignment GPIO 2
1	OUT_CMN (common switching output)	OUT_CMN (common switching output)
2	INPUT 4 (switching input 4)	INPUT 1 (switching input 1)
3	INP_CMN (common switching input)	INP_CMN (common switching input)
4	GND_ext (external mass)	GND_ext (external mass)
5	+UB_ext (external operating voltage)	+UB_ext (external operating voltage)
6	OUTPUT 4 (switching output 4)	OUTPUT 2 (switching output 2)
7	OUTPUT 3 (switching output 3)	OUTPUT 1 (switching output 1)
8	INPUT 3 (switching input 3)	INPUT 2 (switching input 2)

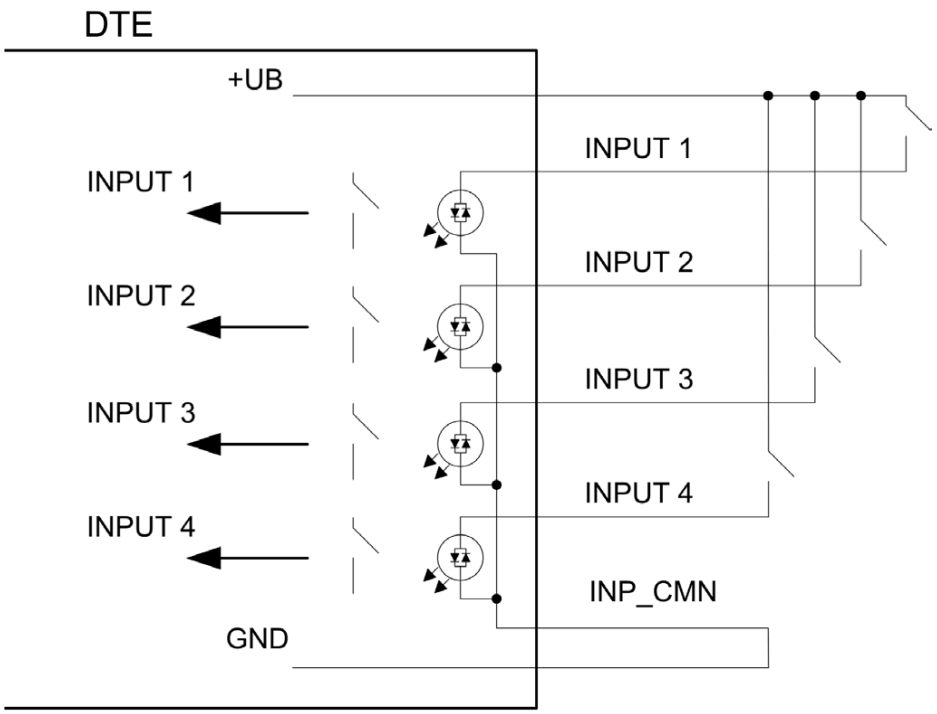
7.4.1 Digital inputs

The inputs are electrically isolated from the operating voltage of the reader and can be operated independently of the polarity of the input signal. For this purpose, there is a common pole for the inputs (switching input CMN).

Depending on the application, the inputs can be operated electrically isolated with an external voltage or not electrically isolated with the operating voltage of the reader.



Circuitry of the inputs electrically isolated

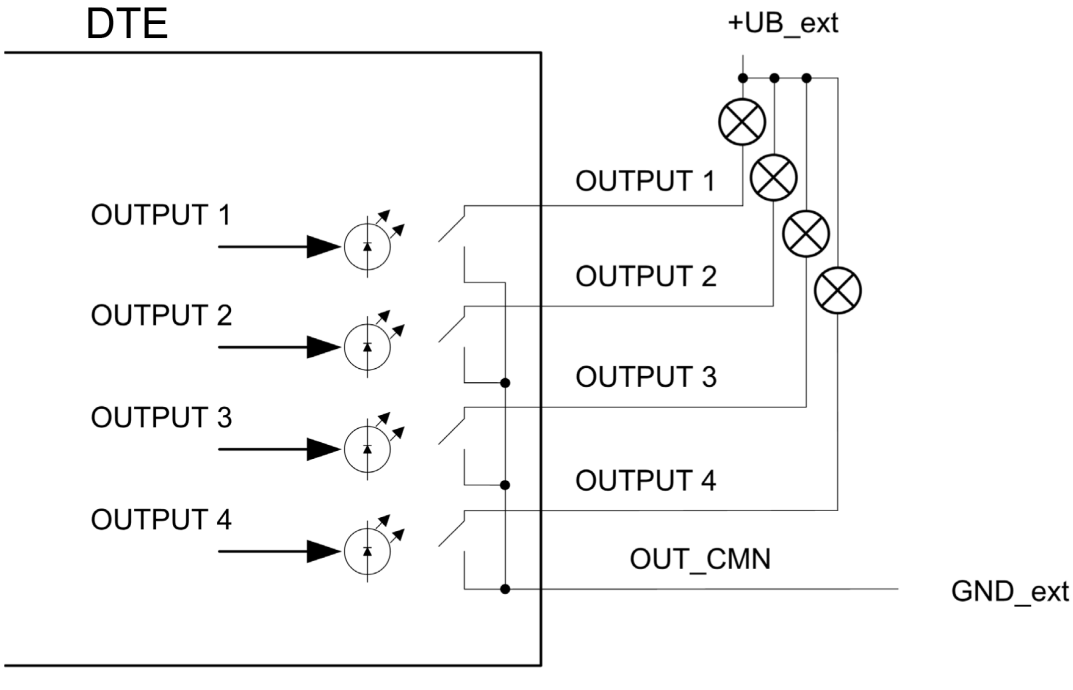


Circuitry of the inputs not electrically isolated

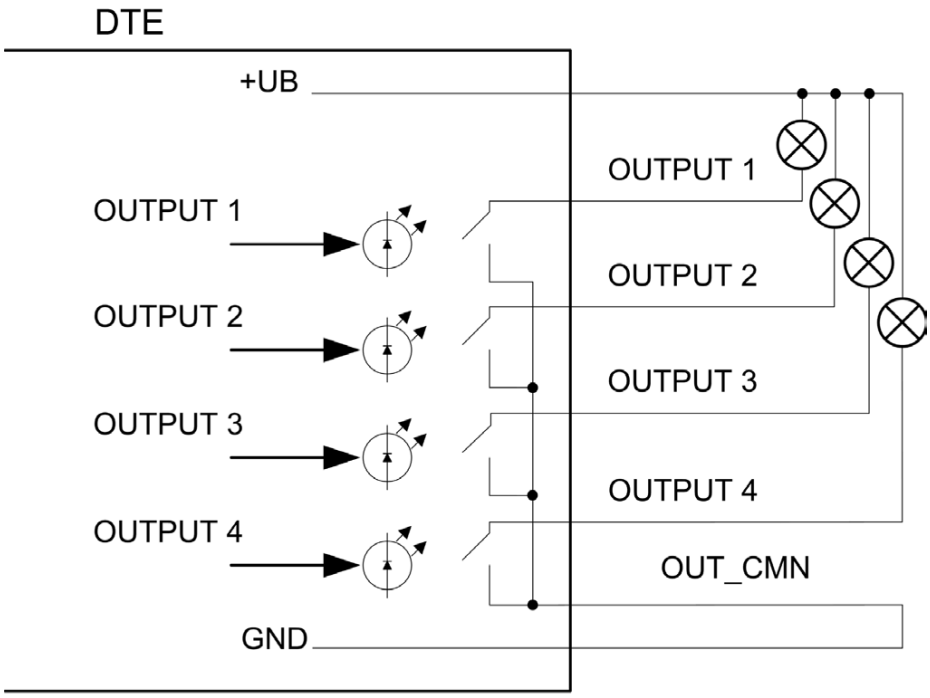
7.4.2 Digital outputs

The outputs are also electrically isolated from the operating voltage of the reader and have a common pole (switching output CMN).

If the electrical isolation is not needed, the operating voltage can also be obtained directly from the reader.



Circuitry of the outputs electrically isolated



Circuitry of the outputs not electrically isolated

Load each digital input or output with max. 0.5 A.

Load all digital inputs and outputs used with max. 1.5 A in total.

If the auxiliary voltage of the GPIO connection of the reader is used, load all used digital inputs and outputs with all in all max. 1.1 A.

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

For operation of the outputs with an external voltage source, only use LPS (Limited Power Source) or NEC class 2 power supplies.

The control and evaluation can take place via the ReaderStart v2 software, via the supplied DLL or by accessing the reader protocol.

7.5 Antenna connection

For connection with the RFID antennas, the reader has 4 antenna connections which are designed as Reverse TNC.

For connection of antennas, only use the cables mentioned in the accessories chapter (50 Ω) (→ 5)!

Unsuitable cables can significantly decrease the reader's power due to maladjustments. Maladjustments that are too significant lead to error messages from the reader.

7.6 LED

The reader has a 2-colour LED to indicate operating states.

The following table shows the different colours with the corresponding operating states.

red	green	Operating status
X	Flashes approx. every 8 seconds	Error during initialisation
X	X	Device booting
Flashes approx. every 8 seconds	X	Normal operation

7.7 Audio signalling device

The reader has an audio signalling device for audible signalling of operating states. The LED flashes in addition to the sound (→ 7.6).

Sound	Operating status
1x short sound	Reader has booted successfully
2x long sound	Reader signals an error

8 Configuration

Correct configuration of the reader and adaptation to the application requires knowledge about the EPCGlobal Standard of GS1. In this standard, the function of the interface between tag and reader is described. For more information, please visit: www.epcglobalinc.org

The configuration manual describes which parameters are available for the configuration of the reader.

The reader is controlled via the ifm electronic proprietary reader protocol.

The versions of the documents must correspond with the software version of the reader. The accompanying CD contains the up-to-date documents for the supplied reader firmware.

9 Maintenance, repair and disposal

The device does not contain any components requiring maintenance.

► Do not open the device

► The device must only be repaired by the manufacturer.

► Dispose of the device in accordance with the national environmental regulations.