TURCK TN-UHF-Q300 UHF Read/Write Device User Guide

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TURCK TN-UHF-Q300 UHF Read/Write Heads Device User Guide

Doc-No. 100003061 2011

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Additional
information see
turck.com

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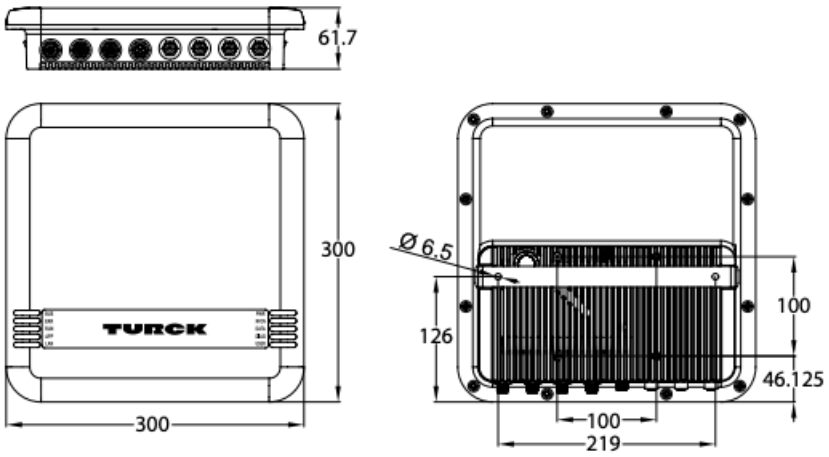

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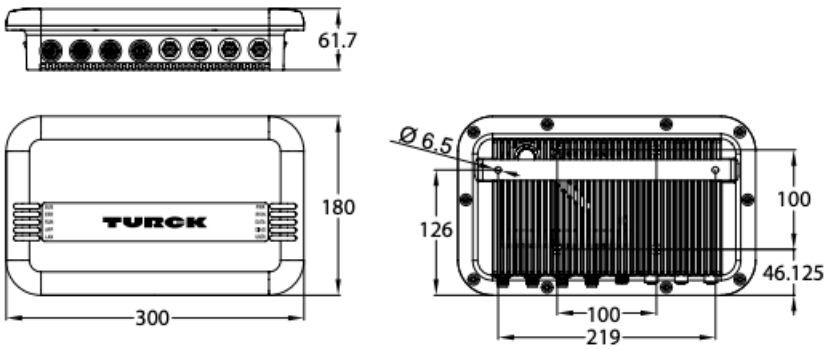
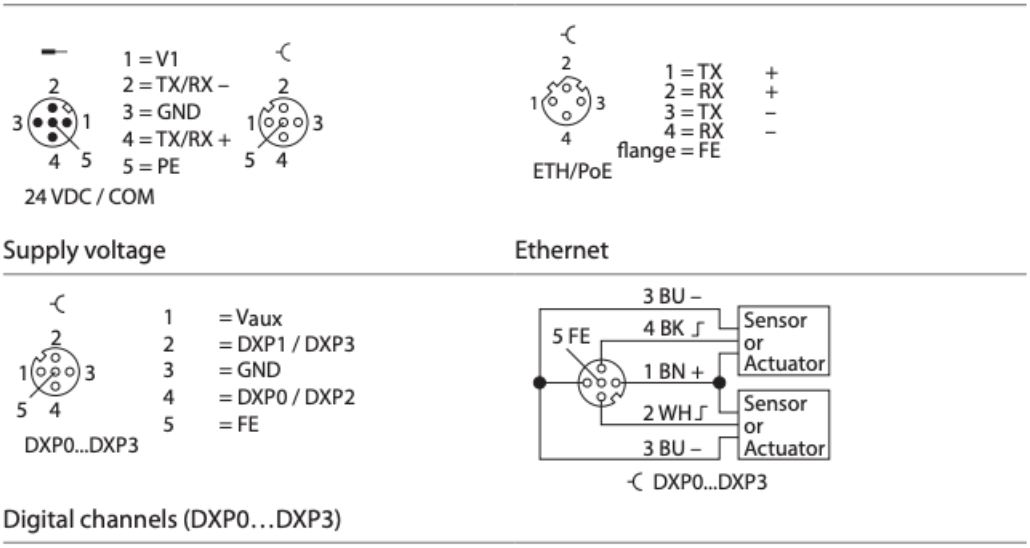


Wiring Diagrams



Other documents

Besides this document the following material can be found on the Internet at www.turck.com:

- Data sheet
- Operating instructions
- RFID configuration manual
- Commissioning manuals
- Approvals

For your safety

Intended use

The devices are designed only for use in industrial areas.

The read/write heads with integrated RFID interface are used as a means of contactless data exchange with BL ident tags within the Turck-UHF-RFID system. The operating frequency of the devices is 902–928 MHz. The devices may be operated only in countries in which a frequency range of 902–928 MHz is approved for the use of UHF-RFID. The read/write heads use the integrated RFID interface to communicate directly with the control unit or other higher-level systems.

The device must only be used as described in these instructions. Any other use is not in accordance with the intended use. Turck accepts no liability for any resulting damage.

General safety notes

- The device must only be mounted, installed, operated and maintained by trained and qualified personnel.
- The devices fulfill exclusively the EMC requirements for industrial applications and are not suitable for use in residential areas.
- Any extended stay within the area of radiation of the UHF read/write heads may be harmful to health. Maintain a minimum distance from the actively radiating surface of the read/write head.

Region	Max. Permissible Radiation Output Power	Safety Distance
USA, Canada, Mexico	4 W EIRP	> 0.35 m

Product description

Device overview

See Fig. 2 (TN-UHF-Q300…) and Fig. 3 (TN-UHF-Q180L300…)

Functions and operating modes

The devices work with integrated or external antenna (TN-UHF-Q300…) or only with external antenna (TN-UHF-Q180L300…) in a frequency range of 902–928 MHz. The devices can be used to read and write passive UHF tags in single or multitag operation. To do this, the devices form a transmission zone. The size and expansion of this zone may vary on account of several conditions, for example the tags used and the application conditions. The maximum distance permitted between the read/write heads is outlined in the data sheets. The integrated RFID interfaces include the following functions:

Type designation	Functions
TN-UHF-Q…-CDS	■ Multi-protocol interface for the PROFINET RT, Modbus TCP and EtherNet/IP fieldbus systems ■ Programmable in CODESYS 3 in accordance with IEC 61131-3
TN-UHF-Q…-OPC-UA	■ Integrated OPC-UA server for communicating with third-party systems such as ERP systems
TN-UHF-Q…-LNX	■ Can be programmed with C, C++, NodeJS or Python via the Linux operating system ■ Middleware functions can be integrated on the device

Sensors and actuators can be connected to the configurable digital channels. In total, up to four 3-wire PNP sensors or two PNP DC actuators with a maximum output current of 0.5 A per output can be connected. The combined output current of all devices connected to the DXP channels must not exceed 1 A.

Installing

The device is designed for mounting on a bracket based on the VESA 100 × 100 standard. For mounting purposes, the device has four M4 threaded holes at a distance of 100 mm (horizontally and vertically). The max. length of the screws is 8 mm plus the size of the VESA bracket. The devices can be mounted in any position.

- Secure the device using the four M4 bolts to a bracket based on the VESA 100 x 100 standard.

Connection

When operating via PoE (Power over Ethernet), the digital channels cannot be used as outputs.

- Connect the device to the fieldbus in accordance with the wiring diagrams (max. tightening torque: 0.8 Nm).
- Connect the device to the power supply in accordance with the wiring diagrams (max. tightening torque 0.8 Nm).
- Connect the digital sensors and actuators to the device in accordance with the wiring diagrams (max.

tightening torque: 0.8 Nm).

- Connect the external antennas to the device using an RP-TNC antenna cable (max. tightening torque: 0.8 Nm).

Commissioning

For information on commissioning the device, refer to the operating instructions.

Operation

LEDs

The LED displays depend on the integrated RFID interface. For information on the LED display functions, refer to the operating instructions.

Setting and parameterization

The devices can be parameterized from a PC using the software tools and the controller software. Further information is provided in the operating instructions.

Repair

The device is not intended for repair by the user. Take defective devices out of operation. Observe our return acceptance conditions when returning the device to Turck.

Disposal

The devices must be disposed of correctly and must not be included in general household garbage.

FCC/IC Digital Device Limitations

FCC ID: YQ7-TN-UHF-Q300
IC ID: 8821A-TNUHFQ300

This device complies with Part 15 of the FCC Rules and Industry Canada license-exempt RSS standard(s). 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.

Changes or modifications not expressly approved by the party responsible for compliance 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 equipment complies with FCC/IC exposure limits set forth for an uncontrolled environment.

This equipment should be installed and operated with minimum distance 35 cm between the radiator & your body.

CAN ICES-3 (A)/NMB-3(A)

Use only with listed LPS or class 2 power supply!

Technical Data

Technical features	TN-UHF-Q300…	TN-UHF-Q180…
Operating voltage	18…30 VDC	18…30 VDC
Data transfer	Alternating electromagnetic field	Alternating electromagnetic field
Operating frequency	902…928 MHz	902…928 MHz
Radio communication and protocol standards	ISO 18000-63 EN 302208 EPCglobal Gen 2	ISO 18000-63 EN 302208 EPCglobal Gen 2
Channel spacing	500 kHz	500 kHz
Output power	≤ 3.3 W (EIRP), adjustable	≤ 3.3 W (EIRP), adjustable
Radiated output power	≤ 1.64 W, adjustable	≤ 1.64 W, adjustable
Conducted power	30 dBm	30 dBm
Antenna polarization	Circular/linear, adjustable	–
Antenna HPBW	65°	–
Mounting conditions	Non-flush	Non-flush
Ambient temperature	-25…+50 °C	-25…+50 °C
Dimensions	300 × 300 × 61.7 mm	300 × 180 × 61.7 mm
Housing material	Aluminium, AL, silver	Aluminium, AL, silver
Material active area	Glass fibre reinforced polyamide, PA6-GF30, black	Glass fibre reinforced polyamide, PA6-GF30, black
IP rating	IP67	IP67

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Documents / Resources

	TURCK TN-UHF-Q300 UHF Read/Write Device [pdf] User Guide TN-UHF-Q300, TNUHFQ300, YQ7-TN-UHF-Q300, YQ7TNUHFQ300, UHF Read Write Device, TN-UHF-Q300 UHF Read Write Device

References

- Turck.com
- Turck.com