Your Global Automation Partner

TURCK

Q300
RFID-UHF-Reader with Ethernet

Applications

Position-accurate detection of components in the near field

Most components in the automotive industry are equipped with tags, both from Tier X suppliers and later from OEMs. UHF RFID is used due to its long range and resulting flexibility. However, classic UHF read/write heads are less suitable for detecting components in the near field. If several components are lying on one product carrier, all are recognized, but the localization of the components is difficult and has to be done via complex algorithms in the middleware. This is costly and can delay the implementation of the system. In the worst case, filtering via software is even error-prone..

Up to four different external antennas can be connected to the Q300 UHF read/write head for detecting tags in the near field.

These can also be used for the exclusive acquisition of tags in the vicinity of the antenna. Since the read/write head recognizes which antenna has read a certain tag, the position of components on product carriers can also be easily determined.

Tag detection at gates

In logistics, incoming and outgoing goods must be detected shortly before loading or unloading the trucks. With UHF-RFID this detection is reliable and also possible over long distances. So-called gates are set up for this purpose, which detect the goods on forklifts or other industrial trucks directly as they pass through.It is helpful to work with several antennas so that all tags can be reliably captured. Using multiple active read/write heads can be costly. The fast, alternating on and off switching of the various read/write heads is also too demanding for many interfaces and prone to error at high driving speeds of the forklifts.

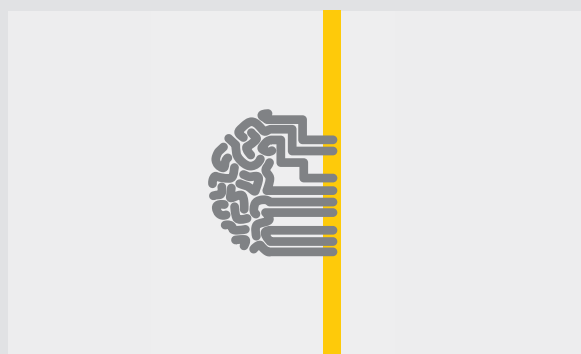Turck's UHF read/write head Q300 allows the connection of external passive antennas. The pre-programmable multiplex
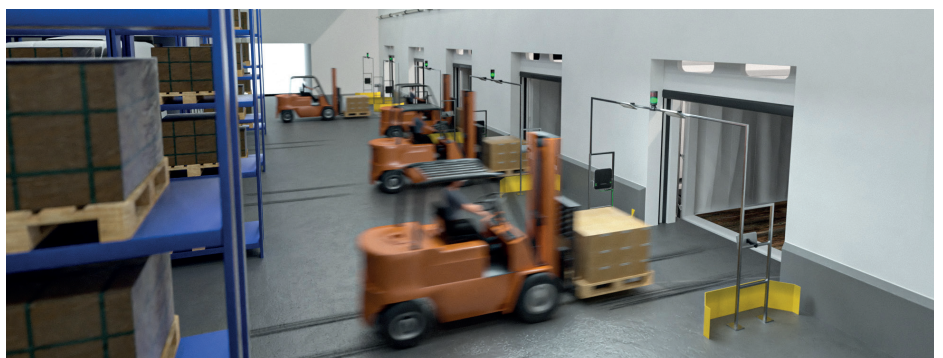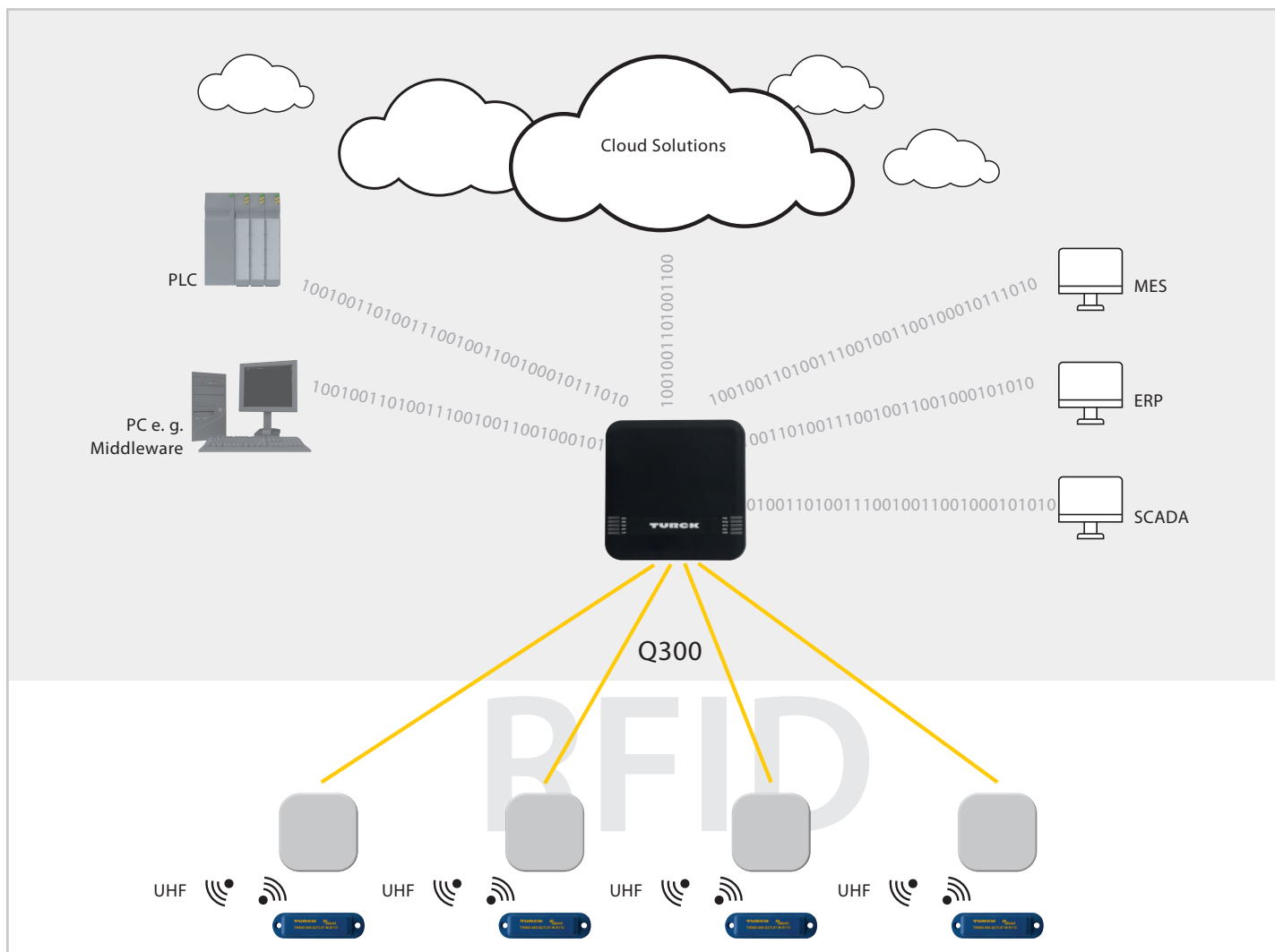
operation of the read/write head responds alternately to the antennas and thus ensures fast recognition of all tags on the pallets. They are reliably detected even when the forklift passes quickly and regardless of the position and distance of the tags to the read/write head.

Q300 – RFID UHF Reader with Ethernet

Communication in classical automation technology today is characterized by a hierarchical structure with many

levels of communication. Ethernet-based RFID readers enable direct provision of information to higher-level systems - such

as MES, ERP, cloud or PLC.

Cloud Solutions

PLC

PC e. g. Middleware

100100110100111001001100100010111010

100100110100111001001100100010111010

1001001101001110010011001000101

1001001101001100

1001001101001110010011001000101110

100100110100111001001100100010101

0011010011100100110010000101010

01001101001110010011001000010101

MES

ERP

SCADA

Q300

RFID

UHF   UHF   UHF   UHF

Simple integration through middleware functionality
The high platform variability of the read/write heads is suitable for flexible use as middleware for connection to higher-level ERP systems. This enables a simple and seamless integration. The Q300 with middleware functionalities can filter or preprocess RFID data as required and, depending on the platform used, use integrated security protocols and authentification for transmission.

Variety of Interfaces

- Integrated software platforms: Linux, Windows CE embedded, OPC-UA or CODESYS
- 2 W (ERP) maximum output power
- Switchable antenna polarization
- 4 digital, switchable inputs and outputs
- Connection of up to 4 passive RFID UHF antennas
- PoE (Power over Ethernet)
- IP67: robust, industrial design

2 x DXP   PoE   24 VDC   external antennas

- 2 × M12, 5-pin, D-coded
- 4 digital channels, configurable as
- PNP input or 2 A output*
  * requires a separate voltage supply

- PoE for communication and power supply: 1 × M12, 4-pin, D-coded
- 24 VDC input for the power supply of the DXP channels
- Integrated COM interface for Q300...-LNX/-WIN connection for the UHF DTM

- 4 RP-TNC connectors for passive UHF antennas
- Input impedance of the connections: 50 Ω

near-field
mid-range
long-range

Maximum application possibilities due to passive antennas
The most diverse requirements from countless application areas in industry and logistics can now be realized with a single device. The Q300 can be extended with passive antennas for the respective application. For example, RFID UHF near-field antennas with a detection range of only a few centimeters (similar to HF technology) provide defined reading ranges. UHF-typical application problems such as „ overrange „ and „ cross-reads „ are reliably avoided in this way. With a suitable antenna, the same device can also be used to identify vehicles or reusable containers.

Software Platforms

CODESYS

Integration into PLC systems can be carried out without special function blocks. The process data transfer takes place cyclically. The integrated UHF interface can provide the required RFID functionality, and RFID data can also be selected depending on the application.

Linux

The Q300 read/write heads with Linux are specially offered for implementation by system integrators.

Windows

The Q300 read/write heads with Windows Embedded Compact 2013 are offered especially for implementation by system integrators..

OPC-UA

OPC-UA stands for „Open Platform Communication Unified Architecture" and is a global, flexible and secure communication standard. This standard enables use on any platform, regardless of its operating system or programming language.

Safe and reliable detection through polarization switching
Switching the polarization (for example from right-handed circular to left-handed circular) changes the physical characteristics of the electromagnetic field. In this way, transponders that were previously in a communication gap can also be supplied with energy so that they can be reliably read. This increases the security of the data acquisition and increases the reading and data collection rate.

Types and Features

UHF-RFID read/write heads	Ident-No.	Type designation
	100000895	TN-UHF-Q300-EU-CDS (CODESYS Version)
Passive UHF antennas	**Ident-No.**	**Type designation**
	100003861	TN-UHF-ANT-Q191-EU, passive UHF RFID antenna, 191 × 191 mm, with robust housing for forklift applications
	100003862	TN-UHF-ANT-Q260-EU, passive UH RFID antenna, 260 × 260 mm, for gate applications
	100003863	TN-UHF-ANT-Q190-EU, passive UHF RFID antenna, 190 × 190 mm
	100003864	TN-UHF-ANT-Q140-EU-NA, passive UHF RFID antenna, 140 × 140 mm
Connector for passive UHF antennas	**Ident-No.**	**Type designation**
	100004368	T-UHF-CBL-RG213-RPTNC-2-N-M
	100004369	T-UHF-CBL-RG213-RPTNC-4-N-M
	100004370	T-UHF-CBL-RG213-RPTNC-6-N-M
	100004367	T-UHF-CBL-RG213-RPTNC-12-N-M
	100004371	T-UHF-CBL-RG58-RPTNC-2-N-M
	100004372	T-UHF-CBL-RG58-RPTNC-4-N-M
	100004373	T-UHF-CBL-RG58-RPTNC-6-N-M
	100004374	T-UHF-CBL-RG58-RPTNC-5-RPTNC
Ethernet connector	**Ident-No.**	**Type designation**
	6933004	PSGS4M-RJ45S-4414-1M
I/O connector	**Ident-No.**	**Type designation**
	8009560	FSM4-2WAK3-1/1/P00, Y-splitter for DXP
	6625608	RKC4.4T-2-RSC4.4T/TXL
Connector – voltage M12 to 7/8"	**Ident-No.**	**Type designation**
	UX18415	RKC 4.4T-0.5-RSM 40/S3520
	UX18416	RKC 4.4T-2-RSM 40/S3520
	UX14184	RKC 4.4T-3-RSM 40/S3520
	UX14185	RKC 4.4T-5-RSM 40/S3520
Tag	**Ident-No.**	**Type designation**
	7030464	TW860-960-Q27L97-M-B112
	100002997	TW860-960-L53-53-F-B44-5KPCS
Lights	**Ident-No.**	**Type designation**
	3091210	TL50BLGYR6QPMA-91210 (tower light for direct connection to a DXP)
	3020092	K50BLGXXPQ (monochrome, for Y-splitter)

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