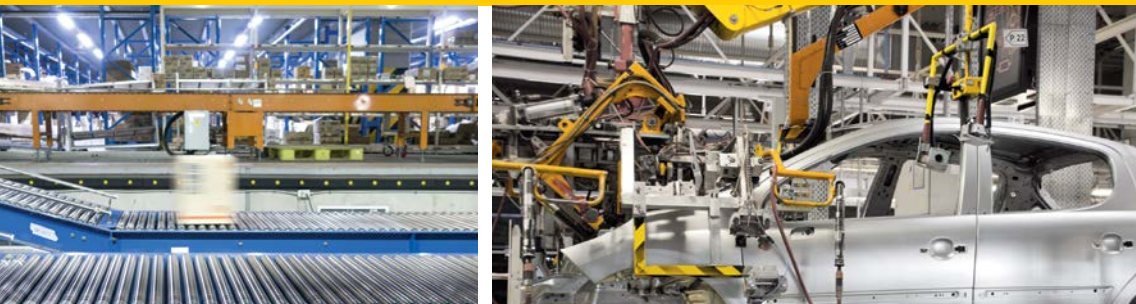


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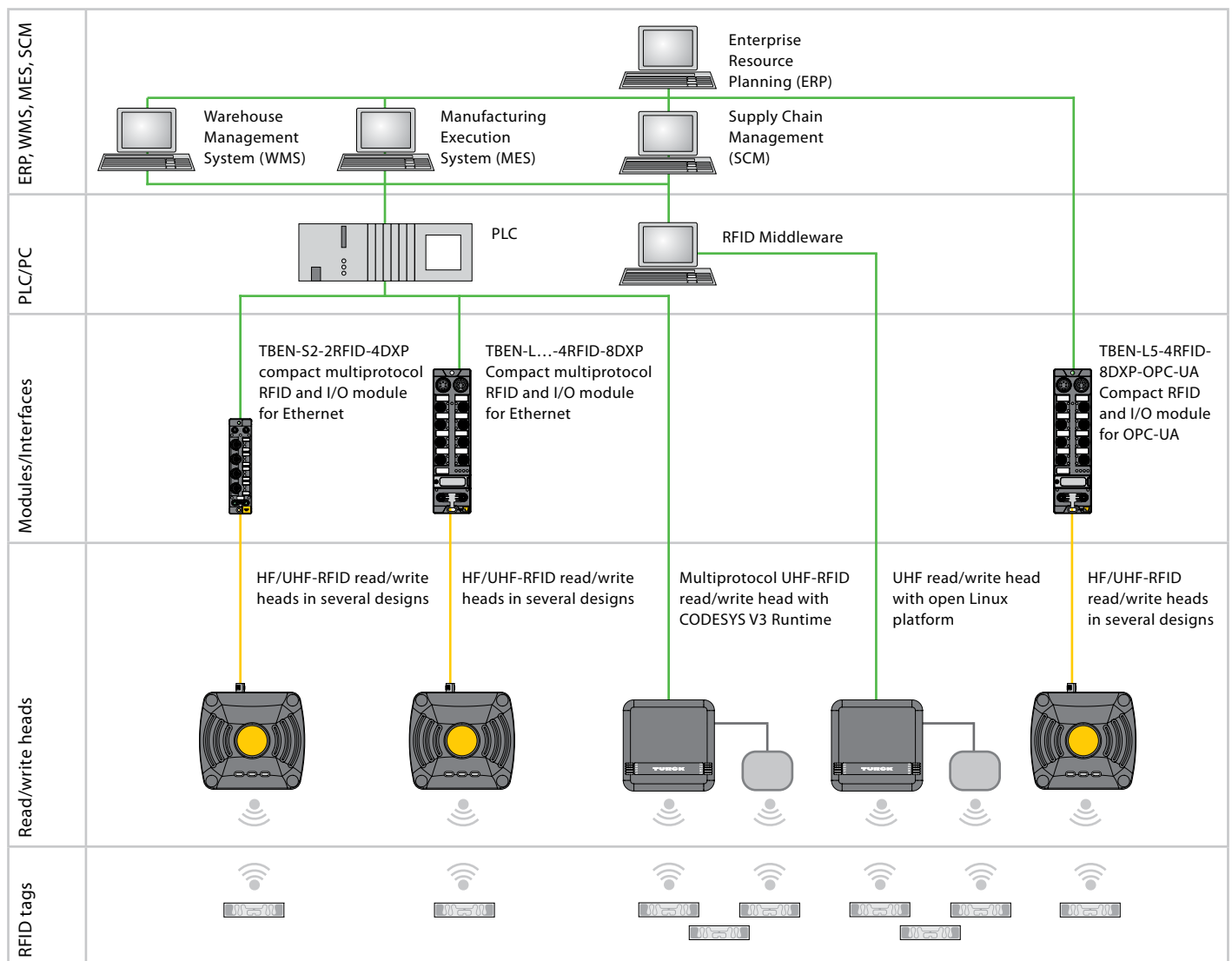
## Overview RFID UHF Readers

# RFID System Overview

UHF readers are an important part of an RFID system: They are responsible for the safe and correct reading of information stored on the tags. This is irrespective of whether these tags are present individually or in large groups (bulk reading).

Turck UHF readers are generally classified in two series:

- Readers with external communication module
- Readers with an integrated communication module



# Readers with External Communication Module

Example: Q175 reader on TBEN-L communication module with RFID functionality

The Q175 reader can be connected with the communication module via a serial interface (RS485). Our RFID interface accesses the readers and calls the data of an RFID tag.

This type of reader can be used for installations with widely and separated single read points where one or a few tags have to be read at the same position.

Large cable lengths (up to 50 m) can be implemented by combining antenna integrated readers and external communication modules. All data is transferred to the module via the serial interface. The choice of communication module determines the upper system to which the readers can be connected and how they communicate with this system. If for example the reader shall be integrated in PLC systems,

interface modules with industrial field-buses (Profinet, ModbusTCP, EthernetIP or EtherCAT) are preferred. Alternatively the readers can also be connected via OPC-UA interface modules to databases and upper systems.



# Readers with Integrated Communication Module

Example: Q300 reader with integrated communication module

Communication in conventional automation technology is nowadays characterized by a hierarchical structure with many communication levels (PLC/fieldbus/I/O level). Ethernet-based RFID readers enable the direct information transfer to higher-level systems – such as MES, ERP, cloud or PLC. Depending on requirements, this is implemented with integrated middleware, which runs directly on the reader with

CODESYS, Linux and thus handles the communication with the higher-level system. Applications with direct communication are usually implemented in the logistics sector.

Another feature of this type of device is the possibility to connect passive UHF-RFID antennas. This is the most cost-efficient variant, particularly for applications

in the logistics sector, where many tags have to be read in a bulk read operation or an object has to be scanned from several spatial directions. Several antennas have to be used at one read point so that all tags can be detected reliably. If several antennas are used at one read point, this is called a multi-read point.



# Types and Features

Readers with integrated communication module



Type	TN-UHF-Q180L300-...	TN-UHF-Q300-...
Electrical data		
Power supply voltage	18...30 VDC	
Communication interface	Ethernet	
RFID		
Integrated antenna	No	Yes
Polarization	–	RHCP, LHCP, horizontal, vertical (adjustable)
Max. output power	2W cond. (1W with operation with PoE)	2W ERP/2W cond. (1W ERP/1W with PoE)
3dB opening angle	–	65°
Number of external antenna ports	4 (RP-TNC)	
Antenna or port sensitivity	Typically -80 dBm	Typically -80 dBm
Wireless and protocol standard	EPC Global Class 1 Gen 2 v1	
Connections/GPIO		
DXP channels	4 (selectable, with PoE operation: only digital inputs)	
DXP connections	M12, 5-pin, A-coded	
Power supply	M12, 5-pin	
PoE	Yes (as per PoE+)	
Ethernet	M12, 4-pin, D-coded	
Mechanical data		
Dimensions [mm]	180 x 300 x 61	300 x 300 x 61
Bracket	Vesa 100	
Operating temperature	-20 °C...+50 °C	
Housing material	Aluminum, AL	
Material of active face	Fiber glass reinforced polyamide, PA6-GF30	
Protection class	IP67	
Hardware		
Processor	ARM Cortex A8, 32-bit, 800 MHz	
RAM	256 MB DDR3 (CODESYS), 512 MB DDR3 (Linux)	
ROM	512 MB	
Device-specific for readers with CODESYS V3 Runtime: TN-UHF-Q...-CDS		
Programming	CODESYS V3 - 3.5.12	
Programming languages	IEC 61131-3 (IL, LD, FBD, SFC, ST)	
Industrial fieldbuses	Profinet, Modbus TCP, Ethernet/IP, TCP/IP	
Configuration software	UHF DTM for Pactware 5, web-based configuration	
Approvals	Europe, India, Turkey, North America (USA, Canada, Mexico) China, Korea, Singapore, others on request	
Device-specific for readers with Linux: TN-UHF-Q...-LNX		
Software components	SH, SFTP, HTTP, IBTP, MTXP, DHCP, SNTP, Node.js 6.9.5 (LTS), Python 3.x, programming software C, C++, NodeJS, Python	
Approvals	Europe, India, Turkey, North America (USA, Canada, Mexico) China, Korea, Singapore, others on request	



Product pictures are linked to further information.

## Readers with external communication module



Type	TN...Q120L130-H1147	TN...Q175L200-H1147
Electrical data		
Power supply voltage	12...24 VDC (power supply via external RFID communication module)	
Communication interface	RS485, connection to an RFID interface required	
RFID		
Integrated antenna	Yes	
Max. output power	< 500 mW ERP	< 1W ERP
Polarization	RHCP (clockwise)	
3dB opening angle	110°	90°
Antenna sensitivity	Typically -65 dBm	Typically -75 dBm
Wireless and protocol standard	EPC Global Class 1 Gen 2 v1	
Configuration software	UHF DTM for Pactware 5.0, web-based configuration (depending on RFID interface, Web 2.0 required)	
Approvals	Europe, India, Turkey, North America (USA, Canada, Mexico) China, Korea, Russia, Brazil, Australia, New Zealand, Singapore, others on request	
Mechanical data		
Dimensions [mm]	130 x 120 x 60	200 x 175 x 60
Operating temperature	-20 °C...+50 °C	
Electrical connection	Connector, M2, 4-pin	
Housing material	Aluminum, AL	
Material of active face	Plastic, ABS	
Protection class	IP67	
Mounting	M6 x 8 (2x)	

## External RFID communication modules

<b>Communication protocols</b>		
Profinet	TBEN-S2-2RFID... or TBEN-Lx-4RFID... block modules with integrated RFID interface	
Modbus TCP		
Ethernet/IP		
EtherCat	TBEC-LL block module with integrated RFID interface	
OPC-UA	TBEN-L...-OPC-UA block module	



Product pictures are linked to further information.

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