

A detailed view of an industrial automation setup. In the foreground, a red plastic bin is partially visible, containing various components. Below it, a conveyor belt with rollers is shown. A black Turck sensor with a green light is mounted on the conveyor. In the background, a grey control cabinet is visible, featuring a terminal block with labels: BL67, GW, VCC, VO, VI, LINKACT, and MS. A blue Ethernet cable is plugged into the terminal block. The overall scene is brightly lit, highlighting the industrial components.

**TURCK**  
*works*

Industrial  
Automation

**THE FULL RANGE  
FOR RFID**

[www.turck.us](http://www.turck.us)

# TURCK

TURCK is a global leader in industrial automation technology. Over 2,500 employees in 25 countries strive to deliver the best sensor, connectivity, network and interface products on the market. To do this more efficiently, TURCK production facilities are strategically located across the globe, including sites in the United States, Germany, Switzerland, Mexico and China. This also helps TURCK adapt to specific market conditions, as well as bringing product to the market faster.

TURCK strives to provide our customers with not only the best products on the market, but also the best service and support. Our highly trained engineering staff is available to walk you through your system requirements and help find solutions to difficult application problems. Unlike other companies, when you call TURCK, you will always be able to speak directly with an engineer in a matter of minutes! Combine this with a network of 2,000 experts across the United States, and you literally have the finest assembly of industrial automation professionals at your doorstep.



## RADIO FREQUENCY IDENTIFICATION

Radio frequency identification (RFID) has been providing manufacturers with high-quality monitoring systems to deliver unparalleled control and visibility over automated operations for increased efficiency gains and improved production. Manufacturers should examine and recognize that there is a difference between the various RFID technologies such as Low Frequency (LF - 125 kHz), High Frequency (HF - 13.56 MHz) or Ultra-High Frequency (UHF 866-956 MHz), in order to ensure the correct solution is implemented. With each industrial application presenting a unique set of challenges and demands, it is important to know the speed, range, read/write operations, environment and number of tags the application requires to achieve the necessary level of control.

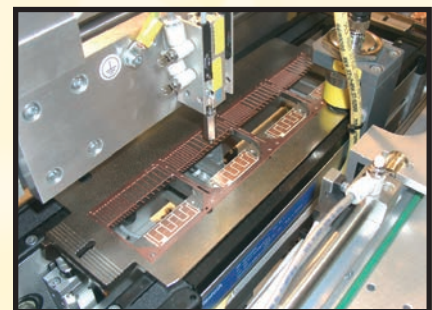
RFID systems contain three parts: the tag, transceiver and the interface. Tags can be active (require a battery) or passive. These tags contain internal circuitry that responds to a specific radio frequency that is provided by the transceiver. The transceiver, which is often called a reader or antenna is responsible for communicating with the tag. The interface is the means of communicating the data to a higher level data collection device such as a computer or a programmable controller. RFID in the industrial environment enables customers to improve accuracy, provide faster production speeds and minimize errors, as well as achieve substantial cost savings from both a material and labor standpoint.



Identification for Production and Logistics



Mold or Tool Identification



Production Process Identification/Recordkeeping



# BL ident® - MODULE RFID SYSTEM

## Differences between HF and UHF

When choosing between two industrial RFID technologies, High Frequency (HF) and Ultra-High Frequency (UHF), it is important to understand their individual performance capabilities, strengths, weaknesses and application suitability. For example, water, carbon and other materials absorb UHF energy. This means that products containing a high water or carbon content can impact the ability to read or write to a tag. Therefore, when implementing RFID in and around liquid-bearing or carbon-composed products, HF is a better technology due to the absence of impact of this environmental factor. Further, when selecting an RFID technology, understanding metal susceptibility is also important. HF tags have a shorter range and are more reliable on an object made of metal. Alternatively, UHF frequencies typically offer better range and can transfer data faster than low- and high-frequencies, but use more power and are less likely to pass through materials.

Another consideration when selecting the appropriate frequency for a corresponding application is the amount of electromagnetic interference (EMI). EMI is noise that can make it more difficult to obtain a clear signal and can be caused by a wide range of machines. Motors emit EMI and may need to be shielded to prevent interference with RFID systems. Conveyors with nylon belts and robots on assembly lines also cause interference in manufacturing processes.

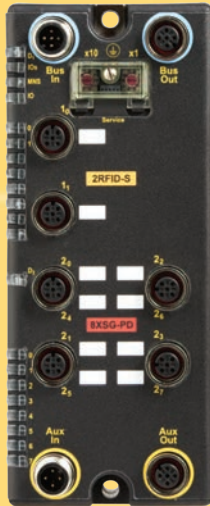
Also important, RFID must adhere to individual restrictions imposed by each country. For HF, the same technology is accepted worldwide, but UHF frequencies differ depending on region. Please see the table below for a quick look at the specifications and capabilities of both technologies:

	HF – 13.56 MHz	UHF – 902-928 MHz
Communication range	Ranges in inches	Ranges in feet
Communication technology between read/write head and tag	Inductive coupling	Propagating radio wave
Field for tag identification	Homogeneous magnetic field	Inhomogeneous electromagnetic (EM) field
Interference	Not greatly influenced by surrounding environment	Highly influenced by surrounding environment
Materials with main influences	Metal	Metal and liquids
Multi-tag reading	Yes, several	Yes, up to over a hundred
Tag memory sizes	64 byte to 8 KB	24 to 138 bytes
Standards	ISO 15693	EPC Global Gen 2 – ISO 18000-6C

# THE FULL

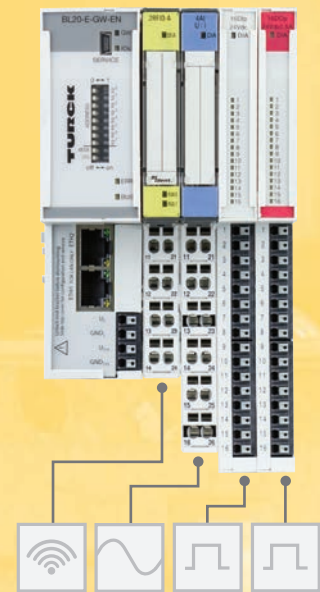
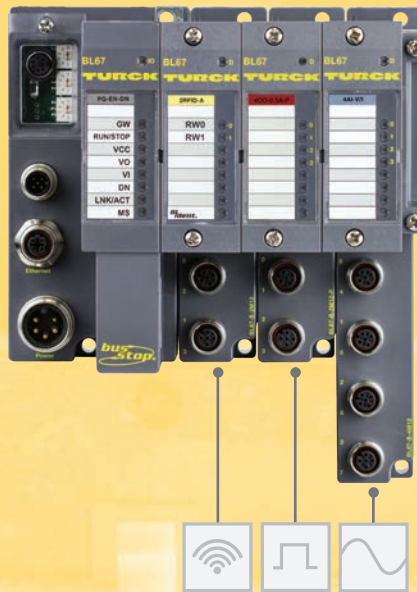
## FIELDBUS

CONTROL



### BL ident® – Interfaces

- Modular concept (BL20 and BL67) with up to 20 channels of RFID per gateway, standard I/O options can also be included
- Read/write heads can be installed up to 50m from the RFID I/O card
- Versatile and simple fieldbus connection (PROFIBUS®-DP, DeviceNet™, CANopen, PROFINET®, Modbus® TCP, EtherCAT®, EtherNet/IP™)
- Programmable gateways using IEC61131-3 based programming software for distributed or independent control
- Single gateway and RFID I/O slice for UHF and HF applications



ACCESSORIES

### SOFTWARE

#### I/O-Assistant/PACTWARE

- FDT/DTM based technology
- For engineering, configuring, commissioning and diagnosing
- Download for free at [www.turck.us](http://www.turck.us)



#### CoDeSys

- IEC 61131-3 based programming software
- Allows programming in Ladder, Structured Text, Flow Chart, Sequential Function and Instruction List
- Download for free at [www.turck.us](http://www.turck.us)





# L RANGE FOR RADIO

## READ/WRITE



### BLident® – Read/Write Heads

- Robust industrial design based on field-proven housings
- Fully encapsulated design for IP67, IP68 and IP69K environments
- Several HF options available for flexible read/write ranges, mounting configurations, and environments
- Shielded serial communication to the fieldbus level allows for remote mounting up to 50m
- Compact UHF read/write heads for long-range applications
- Hazardous location options available

## SWITCHES & POWER SUPPLY

### Ethernet Switches

- IP20 featuring 5 and 8 ports
- IP67 featuring 5 and 9 ports
- Managed and unmanaged versions available



### Power Supplies

- On-machine: IP67 protection rating, 24 VDC 2, 4, 8, and 16 outputs, single and three phase input voltage
- In-cabinet: IP20 Protection rating for DIN rail mounting, up to 20 Amp outputs, universal (AC/DC) voltage input
- Cables: Multiple connector and cable options, auxiliary power for networks



# FREQUENCY IDENTIFICATION

## DATA CARRIER



### **BL ident® – Data Carriers**

- Housing sizes as small as 7.5 mm
- Economical EEPROM data carriers for unlimited read applications
- FRAM data carrier for high-speed transmission and nearly unlimited write applications
- High temperature, -40 °...+300 °C
- Data carriers for autoclaves, water-vapor tight up to +121 °C
- Direct mounting on metal
- Customer specific solutions based on open and international standards (ISO 15693 and ISO 18000-6C)



## HANDHELDS

### **HF and UHF**

- Microsoft Windows CE 5
- Demo software for reading and writing data
- Customized software solutions on request
- Barcode scanner, WLAN, and bluetooth options



## TURCK's *BL ident*® – Flexible Industrial RFID

TURCK's flexible RFID solution, *BL ident*, was created to offer a solution for industrial RFID applications while retaining the flexibility of standard I/O solutions. *BL ident* allows you to order RFID in the same package as you are used to, as slices for distributed I/O. The TURCK *BL ident* solution allows for easy integration into existing control systems and supports all of the major networking protocols providing an all-in-one industrial RFID solution for whatever your application demands.

Building an RFID solution for your application has never been easier. Simply follow these steps:

- 1** Choose your gateway. *BL ident* works with most any form of distributed I/O offered by TURCK and with any industrial networking protocol. From in-cabinet or on-machine to modular and block I/O.
- 2** Choose your RFID. TURCK offers both HF and UHF RFID in A modules (fully configurable) or S modules (simple configuration) and can be combined to offer flexibility for applications that may require both HF and UHF.
- 3** Choose your transceivers based on your RFID type (HF or UHF), production environment, and distance.
- 4** Choose your tags based on your RFID type (HF or UHF), production environment, number of read/write operations and memory requirements.

In four simple steps you've created your own custom RFID solution tailored to your specific application needs.

### CABINET, CONDUIT, WALL PLATE ADAPTERS, & RECEPTACLES

#### BCA Conduit Adapter

- 3/4" mark 9 or form 8
- 1" form 7

#### BIC Cabinet Adapter

- Cabinet transition from RJ45 to M12

#### BPA Wall Plate Adapter

- Mounts to single gang to transition from punchdown to M12

#### Ethernet Receptacles

- RJ45 to M12 adapter



### FIELD BUS CABLES

#### Cables and Connectors for All Major Protocols

- Ethernet - RJ45, 4 and 8-pin M12
- PROFINET®
- DeviceNet™
- FOUNDATION™ fieldbus
- PROFIBUS®-PA
- PROFIBUS®-DP
- AS-interface®







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