

# Industrial Automation

## **THE TURCK *BL IDENT-* **SYSTEM****

# RFID



**BL**  
*ident*

S1583 overview



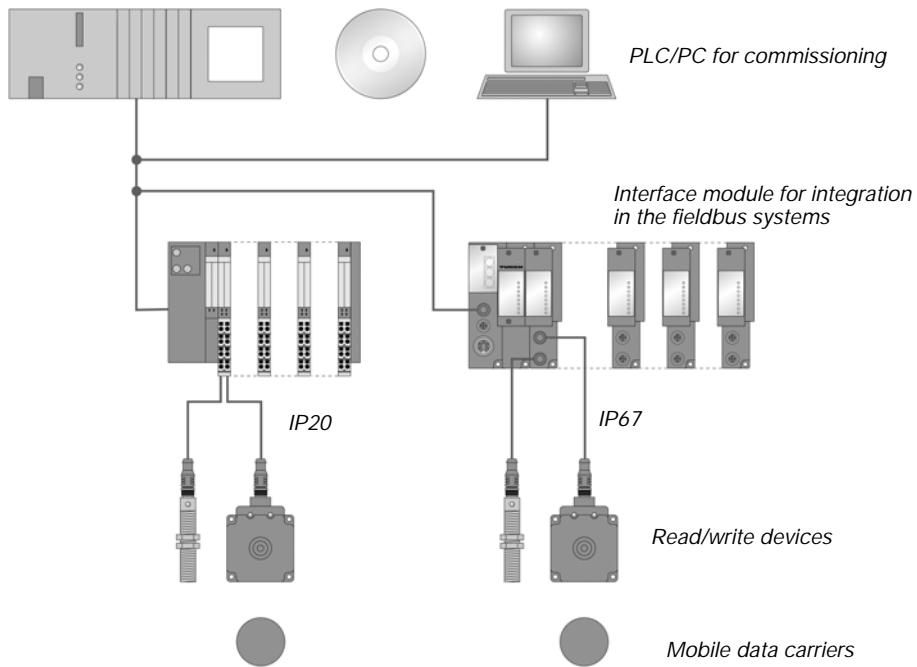
## The TURCK *BL ident* system

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### Schematic representation of the identification system *BL ident*

The TURCK *BL ident* system consists of several levels. Every level offers variation options. An application adapted to the overall system is possible.

Figure: 1  
System overview



### Support for *BL ident* projects

Further support can be found in the following software for engineering, installation and commissioning:

- For simulation and optimisation of an application a “*BL ident* configurator” is available free of charge on the internet at [www.turck.com](http://www.turck.com) (see page 1 - 8).

### Networking with *BL ident* systems

As it is possible to integrate *BL ident* systems in (existing) bus systems, networking of several *BL ident* systems is possible.

The guidelines which relate to the maximum extension of the respective bus systems apply.

A PROFIBUS system can only extend, for example, up to a maximum of 31 stations with 1 master when a repeater is not used.

## Identification systems with radio frequency technology (RFID)

RFID is the abbreviation for Radio Frequency Identification.

An RFID system consists of a data carrier, a device for reading the data from the data carrier (read-write head) as well as other devices which perform the transfer and processing of data (interfaces).

The transfer of data from the data carrier to the read-write heads is undertaken using electromagnetic waves. This type of data transfer is non-contact, without a visual contact and is insensitive to dirt and temperature fluctuations.

The data carriers can be attached directly to a product. Further terms used for the data carriers are TAGs or transponders. The data content can consist of production and manufacturing data.

Important is that this data identifies the product. This is the origination of the term "Identification System".

A whole range of possibilities exist as the data content can be changed by writing on the data carrier. Accordingly, the production and manufacturing processes can be traced and monitored.

Logistics/distribution can be optimized.

The "Identifications Systems" can be integrated into (existing) fieldbus systems (e.g. PROFIBUS). The integration of the respective fieldbus system is undertaken with suitable interfaces.

Standardized software modules (e.g. the Proxy Ident Function Block for PROFIBUS) enable simple system integration and commissioning with different controls.

## Characteristics and fields of application of the *BL ident* system

In order to comply with the demands presented by different fields of application, TURCK offers the *BL ident* system with a whole range of combination possibilities of data carriers and read-write heads as well as interfaces for integration into fieldbus systems (e.g. PROFIBUS-DP). Software modules enable simple integration and commissioning.

The characteristics of the TURCK *BL ident* system are listed in the following:

### Degree of protection

All data carriers as well as the suitable write-read heads feature a high mechanical degree of protection (e.g. **IP67**) and can thus be subject to the most harsh industrial conditions.

The integration into a fieldbus system is implemented with suitable TURCK interface modules. The interface modules are available in degrees of protection IP20 and IP67. TURCK connection cables featuring an adequate degree of protection round off the identification system.

### Service life

The service life results from the possible number of read-write operations on the data memory.

FRAM memory features an **unlimited** number of read operations and  $10^{10}$  write operations.

EEPROM memory features an **unlimited** number of read operations and  $10^5$  write operations.

The data carrier does not require batteries.

### Transmission frequency

The TURCK *BL ident* system operates with **13.56 MHz** transmission frequency between the data memories and the read/write devices. Systems which operate with these transmission frequencies are practically immune to electromagnetic interference. The 13.56 MHz transmission frequency has developed into a standard in many RFID fields of application.

### Size

TURCK supplies the data carriers with diameters of 16, 20, 30 and 50 mm and so called Smart-Labels of different sizes .

The read-write units are available in different housing styles ranging from cylindrical M18 and M30, to rectangular CK40 and Q80 and ring-shaped S32XL.

### Memory capacity

The memory capacity on the data storage device is **64 Bytes** or **128 Bytes** with an EEPROM memory and **2 KBytes** with an FRAM memory. New data carriers are in the design stage.

FRAM: (Ferroelectric Random Access Memory), non-volatile, high service life based on the higher number of write-read operations ( $10^{10}$  up to  $10^{11}$ )

EEPROM: (Electrically Erasable Programmable Read Only Memory), non-volatile

### Write time/read time (air interface only)

The write and read times depend for all data carriers on the number of bytes which are to be transferred. On FRAM data carriers the read and write time are almost identical and are between 0.7 and 3.4 ms/byte. On EEPROM data carriers the read time is between 0.7 and 6 ms/byte and the write time is between 3.3 and 7.9 ms/byte.

The write-read distances depend on the corresponding combination of data carrier and read-write head, and can be between 0 and 200 mm. With the *BL ident* configurator the application variables speed, range and data quantity can be varied and the optimum combination can be selected for the respective application. The configurator is available online at <http://www.turck.com/> (also see page 1 - 8).

## Compatibility

All technical data relates to the *BL ident* system, i.e. to the combinations of *BL ident* data carriers, read-write heads and interface modules. Completely different values may apply for data carriers from other manufacturers. Therefore they may only be used after prior approval by TURCK.

## Areas of application (examples):

The characteristics as stated beforehand allow the application of a TURCK *BL ident* system in the following fields:

- Automotive
- Transport and handling
- Machine (mechanical) engineering
- Food and beverages
- Chemicals
- Pharmaceuticals and petrochemicals.

Possible areas of application are:

- Assembly lines
- Conveyors
- Industrial manufacturing
- Warehousing
- Logistics
- Distribution
- Component picking
- Transport logistics

### The *BL ident* configurator

The use of sensors and actuators – and even fieldbusses – is state-of-the-art in many industrial fields. When RFID systems are used on the other hand, there are always questions relating to the air-interface, e.g. "How fast and at which distance can I move the data carrier past the write-read heads?". That is to say that there is a certain amount of general uncertainty concerning the range of applications of an RFID system.

General details such as "recommended write-read distance" or "transmission speed = 0.5 ms/ byte" are usually not sufficient for evaluation of the usage of the devices in a determined application, as the application variables such as data quantity, speed and distance are the result of a complex interaction between the read-write heads and data carriers.

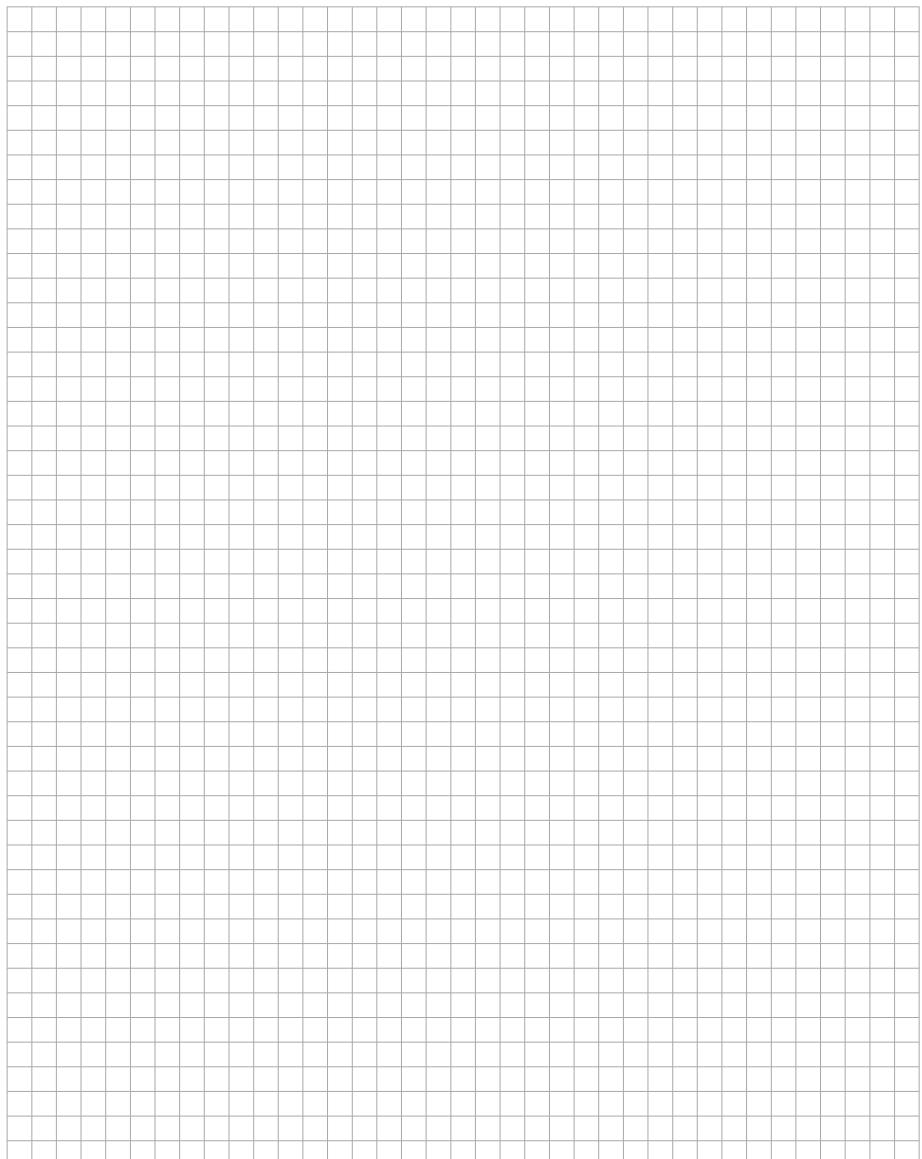
With the "*BL ident* configurator" the respective application can be simulated and the correct preliminary selection can be made.

The setting of applications parameters by "playing" with the values allows the user to easily test the options and limits associated with the respective combinations.

Figure: 2  
*BL ident*  
configurator



The online variants of the configurator (available free on the Internet at [www.turck.com](http://www.turck.com)) accesses the data in the TURCK product database and always provides the most up-to-date information.. In addition to simulating the application, the configurator also generates the corresponding data sheets and documentation.





**TURCK WORLD-WIDE HEADQUARTERS****GERMANY**

Hans Turck GmbH & Co. KG  
Witzlebenstraße 7  
45472 Mülheim an der Ruhr  
P. O. Box 45466 Mülheim an der Ruhr  
Phone +49 208 4952-0  
Fax +49 208 4952-2 64  
E-Mail more@turck.com

**[www.turck.com](http://www.turck.com)**

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