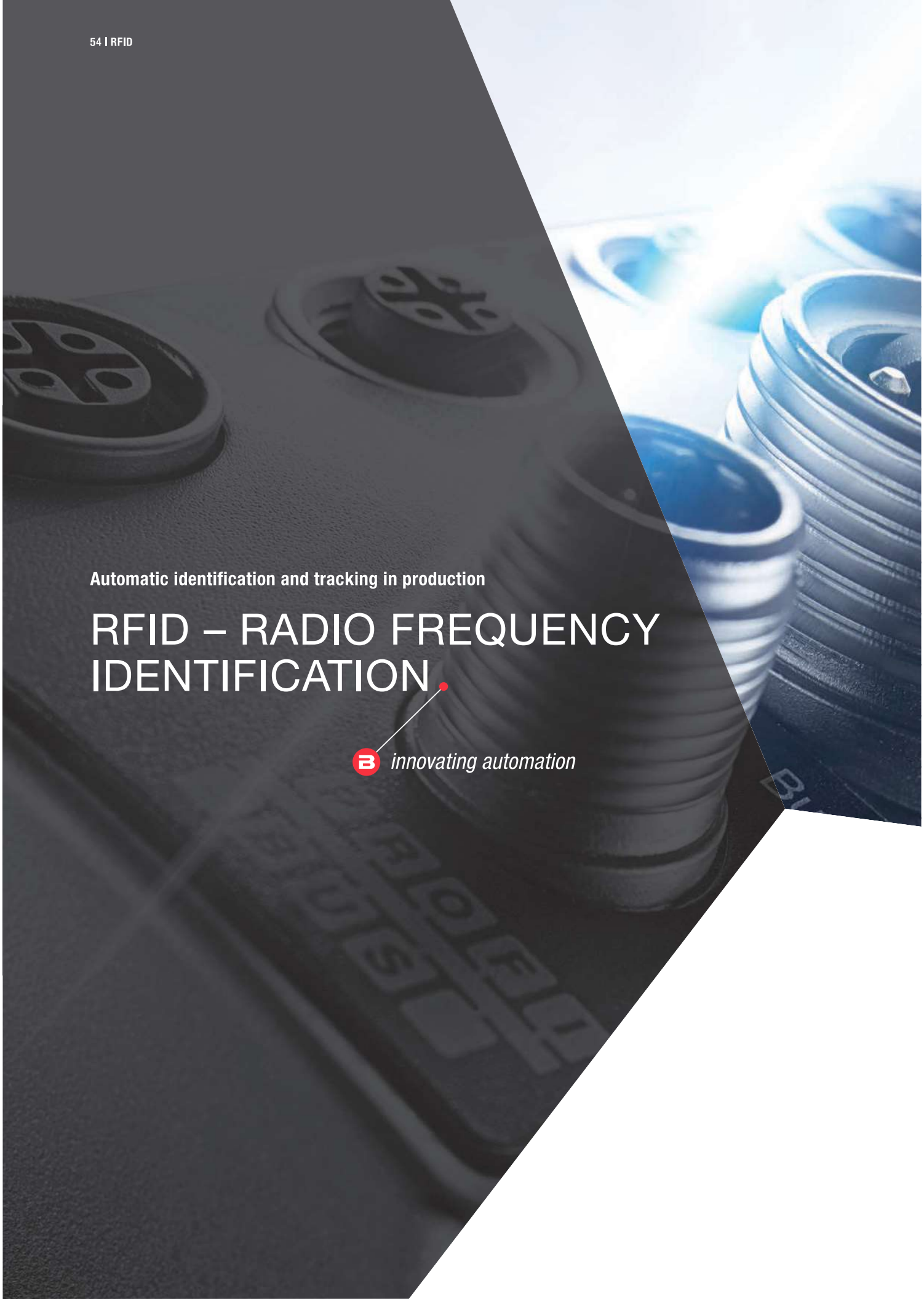

Automatic identification and tracking in production

RFID – RADIO FREQUENCY IDENTIFICATION

innovating automation

Our BIS industrial RFID systems help to give you the overview in a modern production facility. Objects can be automatically identified and traced using RFID. To do this, a data carrier that functions as a memory is attached to the object to be identified. The data are transferred between data carrier and read/write head and via the processor unit to the controller.

Balluff offers a broad selection of innovative products for the low frequency (LF), high frequency (HF) and ultra-high frequency (UHF) range. With the BIS V frequency-independent processor unit, all systems can be flexibly combined with each other.

Your Balluff solutions

- RFID system HF (13.56 MHz) BIS M
- RFID system LF (70/455 kHz) BIS C
- RFID system LF (125 kHz) BIS L
- RFID system UHF (860/960 MHz) BIS U


BALLUFF
BIS0045
BIS M-111-02/L
BALLUFF
BIS VM
BALLUFF
BIS M
122-01/A
Power
MS
NS
L1
A1
L2
A2
CP
BALLUFF
BIS M
Identification Systems
EtherNet/IP
Power
Port 1
Port 2

High transmission speed for large volumes of data

RFID SYSTEM HF (13.56 MHZ) BIS M

The RFID system BIS M supports global ISO standards and scores with a high transmission speed for large volumes of data. Through various combination options of data carriers and read/write heads, the system can be used for a variety of applications. The system is ideal, for example, in close-range parts tracking or for applications in production control such as palletizing or recording data on the workpiece.

Features

- 4-pin standard wiring and IO-Link components
- In combination with passive data carriers of average ranges up to a max. of 400 mm
- Seamless integration in applications through global RFID standards ISO 15693 and ISO 14443A
- All bus systems commonly used on a global basis available
- Easy, fast commissioning
- Balluff high-speed components (up to eight times faster than ISO 15693)
- Customer-specific developments
- A variety of accessories for an easy integration available at all places of use

PRODUCT OVERVIEW

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Product family		
BIS V processor unit 	**Reliable data exchange with the controller** With our BIS V RFID processor unit, you can simultaneously use up to four read/write heads. This unit processes multiple frequencies at the same time to enable mixed operation. Different processor units are no longer necessary, thereby simplifying inventory management. For an industry-independent use, the processor unit is available with all globally standard bus systems.	**Features** ■ Perfect EMC due to the robust zinc die-cast housing ■ All connections are easily accessible from the front ■ Variable mounting concept for installation on DIN rails or extrusions ■ Integrated IO-Link master port for the connection of IO-Link-capable sensors and actuators ■ Web server for status monitoring ■ Function modules for many different controller manufacturers ■ Integrated 2-port Ethernet switch for line and ring topology ■ USB interface for rapid commissioning without bus link ■ Read/write head configurable independent of interface with PC-based software tool BIS Cockpit ■ Power supply via rugged 7/8" plug for harsh industrial environments
BIS M read/write heads and antennas 	**Data carrier communication partners** Application-specific read/write heads from Balluff in industrial-grade design enable easy integration in your system. They support the global standard ISO 15693 and in part ISO 14443A. Thanks to a rugged housing with protection class IP67, they are also suitable for use in harsh environments. Their range depends on the combination of read/write head and data carrier that is used. RFID heads with IO-Link interface are also available. These address applications in which – with little data – production progress, batch number or quality data must be economically logged.	**Features** ■ Easy startup, minimal down-times: status indicators directly on the read/write head ■ Up to four read/write heads can be connected to the BIS V processor units ■ Connection via M12 plug connectors, cable length 50 m ■ Read/write heads for flush installation in metal ■ M12 designs with integrated antenna ■ Special read/write heads, for example, for transfer systems for simple assembly without additional mounting brackets ■ HF loop antennas for long ranges up to 400 mm ■ Customized designs possible ■ Tool ID components available in the same design as the BIS C read/write heads

Product family		
BIS M data carriers 	**Information directly available on the object** Data carriers accompany the workpieces through the entire production process. In this context, they are in part exposed to extreme conditions from high temperatures, metal enclosure and environmental influences. Our data carriers withstand such environments with no questions asked. The wide product range from Balluff offers you the right product for virtually any requirement.	**Features** ■ Passive data carriers: The data and the required energy are inductively coupled by the read/write head ■ All data carriers have a unique identification number (Unique ID) ■ Can be used all over the world thanks to ISO 15693 conformity ■ EEPROM data carrier, up to 992 byte memory ■ FRAM data carrier with up to 128 kB for almost unlimited feed cycles ■ Attachment by adhesion or screws ■ High level of protection up to IP68/69K ■ A wide variety of properties, such as installation on metal, high temperature, etc. ■ For time-critical applications: High-speed components, up to eight times faster than ISO 15693 ■ Special key data carriers for transfer systems that are read/write on two sides ■ Databolts are easy to attach to the object and can then be quickly detached
BIS M handheld device 	**Comfortably record data using a handheld** Our handheld devices are designed for BIS M data carriers. They are outstandingly suited for use in the manual quality testing or for the documentation of the maintenance procedure. They reliably detect all data even in poor lighting conditions as well as in harsh environments. The data is transmitted via WLAN, Bluetooth or cable-connected USB port. The handheld devices are modularly expandable with 1D or 2D barcode readers.	**Features** ■ Windows CE® V6.0 operating system ■ Various antenna designs available ■ Range depends on antenna variant ■ Includes charging adapter and stylus ■ Base device is the powerful Zebra Workabout Pro 4 Mobile Computer ■ Pre-installed Balluff software ■ Touchscreen with large color display ■ Optional: Docking station and pistol grip ■ Customer-specific software on request
BIS M read/write heads with integrated processor unit 	**Everything in one housing** Read/write heads with integrated processor unit are the mediators between data carrier and PC or the controller. Benefit to you: because antenna, electronics and interface are located in one housing, an additional processor unit is eliminated. In addition, easy integration saves on installation expense. Variants with separate electronics are also suitable for tight installation conditions and provide leeway during the installation.	**Features** ■ Available interfaces: Serial RS232, RS485/Subnet 16, RS422, USB ■ New also with bus interface: Connect All-in-One RFID Reader BIS M-4008 direct to Profinet ■ Reliable use in harsh environments: rugged IP67 housing ■ Status displays directly on the housing of the reader facilitate the commissioning and minimize down times

Product finder and more technical details:
www.balluff.com/go/**HF-BIS-M**


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Tool identification even at short ranges

RFID SYSTEM LF (70/455 KHZ) BIS C

Especially high-performing and flexible are the BIS C low-frequency RFID systems with reliable tool identification in coolant- and lubricant-heavy machining centers. Exact positioning is not always necessary: Many data carriers can be dynamically read and described in passing.

The LF RFID system (70/455 kHz) is also the first choice for tool identification over short ranges. Other areas of use are tool transport with conveyor systems, FTS and pallet transport systems as well as assembly technology and resource organization.

Features

- Great variety of data carriers and read/write heads for very diverse applications and difficult operating conditions
- Wear-free, maintenance-free and insensitive to dirt
- High noise immunity and assured data transfer with special checking software in the processor units
- All bus systems commonly used on a global basis available
- Memory capacity up to 8 kB

PRODUCT OVERVIEW

innovating automation

Product family		
BIS V processor unit 	**Compact processor unit for all frequencies** With our BIS V RFID processor unit, you can simultaneously use up to four read/write heads. This unit processes multiple frequencies at the same time to enable mixed operation. Different processor units are no longer necessary, thereby simplifying inventory management. For an industry-independent use, the processor unit is available with all globally standard bus systems.	**Features** ■ Perfect EMC due to the robust zinc die-cast housing ■ All connections are easily accessible from the front ■ Variable mounting concept for installation on DIN rails or extrusions ■ Integrated IO-Link master port for the connection of IO-Link-capable sensors and actuators ■ Web server for status monitoring ■ Function modules for many different controller manufacturers ■ Integrated 2-port Ethernet switch for line and ring topology ■ USB interface for rapid commissioning without bus link ■ Read/write heads configurable independent of interface with PC-based software tool BIS Cockpit ■ Power supply via rugged 7/8" plug for harsh industrial environments
BIS C read/write heads and antennas 	**Read/write heads for multiple applications** Our application-specific read/write heads in industrial-grade design enable easy integration in the system. Depending on the need, various versions with cable or plug connection are available. The read/write range depends on the combination of read/write head and data carrier that is used. This is additionally influenced by the operating mode (static versus dynamic), the assembly material and the open zone for metal.	**Features** ■ Special tool ID read/write heads in Ø 14.5 mm or M16 for flush installation in metal ■ Robust housing in IP67 ■ Cable available in 1 m, 5 m and 10 m (cannot be trimmed) ■ BCC0FCK connection cable required for connection to the BIS V processor unit ■ Individual customer designs possible

Product family		
BIS C data carriers 	**Information directly on the object – even in harsh environments** Data carriers accompany the workpieces through the entire production process. Here they may be exposed to extreme conditions such as high temperatures, metal enclosure or environmental influences. Balluff data carriers handle this easily: They are insensitive to interference in metallic surroundings, high-performing in a refrigerant- and lubricant-heavy environments and suitable for use in de-ionized water in an autoclave and in a vacuum.	**Features** ■ EEPROM data carriers with 511, 1023, 2047 byte memory capacity ■ FRAM data carriers with 8 kB for practically unlimited read/write cycles ■ Installation: Glue-on or screws ■ 10 mm Tool-ID data carrier: Millions in use, the global standard ■ Corner data carrier with double coils avoids pallet rotations in the pallet identification ■ Data carriers can be programmed to your specifications
BIS C handheld device 	**Reliable even in poor lighting and under harsh conditions** Our read/write devices are ideally suited for mobile reading and writing of BIS C data carriers. They are used with manual quality control or in the documentation of maintenance procedures. The data is transmitted via WLAN, Bluetooth or cable-connected USB port. The handheld devices are expandable with 1D or 2D barcode readers.	**Features** ■ Windows CE® V6.0 operating system ■ Various antenna designs available ■ Range depends on antenna variant ■ Includes charging adapter and stylus ■ Base device is the powerful Zebra Workabout Pro 4 Mobile Computer ■ Pre-installed Balluff software ■ Touchscreen with large color display ■ Optional: Docking station and pistol grip ■ Customer-specific software on request
BIS C data couplers 	**Contactless bridging of air interfaces** Data couplers from Balluff ensure a maximum degree of flexibility. They securely transmit the data via two air interfaces. In so doing, they handle the contactless bridging of the two transitions instead of a fixed data transmission. Our data couplers are used wherever a double mechanical interface is indispensable, for example, with rotary tables, replaceable workpiece holders or gripper arms.	**Features** ■ Data couplers work like an extension cable ■ Maintenance-free transmission without mechanical wear ■ Fast and secure signal transmission ■ Cable lengths 1 m, 2 m and 5 m ■ Easy wiring of rotary tables, exchangeable punch heads, ■ Increase in function queries, even in previously inaccessible places
BIS C Read heads with integrated processor unit 	**Everything in one housing** Our read heads with an integrated processor unit combine antenna, electronics and interface in one housing. For quick and easy data carrier programming, you can use the free PC software BIS Cockpit. It is also possible to program the data carrier via a processor unit with a serial connection and Balluff 007 protocol.	**Features** ■ The simplest read-only system for uncomplicated applications ■ Makes available the 8-bit information in parallel without additional components ■ 3 bytes per value are always used starting with address 0 ■ The remaining bytes on the data carriers are also usable for other purposes (with the corresponding processor units)

Product finder and more technical details:
www.balluff.com/go/**LF-BIS-C**

Cost-effective solution for simple identification tasks

RFID-SYSTEM LF (125 KHZ) BIS L

Our low-frequency RFID systems BIS L are suitable for applications that involve just the identification and require less data processing. For example, often only a (read-only) code is required for tracing. The 125-kHz systems function reliably up to ranges of 100 mm and are relatively neutral with respect to materials such as water, textiles, wood and aluminum.

Features

- Data carrier memory limited to 192 bytes
- For sending smaller quantities of data
- Wide range of data carriers
- Unique ID with 5 bytes, read-only
- Read-only data carriers available (protection against manipulation)

PRODUCT OVERVIEW

innovating automation

Product family		
BIS V processor unit 	**One processor unit for up to four read/write heads** With our BIS V RFID processor unit, you can simultaneously use up to four read/write heads. This unit processes multiple frequencies at the same time to enable mixed operation. Different processor units are no longer necessary, thereby simplifying inventory management. For an industry-independent use, the processor unit is available with all globally standard bus systems.	**Features** ■ Perfect EMC due to the robust zinc die-cast housing ■ All connections are easily accessible from the front ■ Variable mounting concept for installation on DIN rails or extrusions ■ Integrated IO-Link master port for the connection of IO-Link-capable sensors and actuators ■ Web server for status monitoring ■ Function modules for many different controller manufacturers ■ Integrated 2-port Ethernet switch for line and ring topology ■ USB interface for rapid commissioning without bus link ■ Read/write heads configurable independent of interface with PC-based software tool BIS Cockpit ■ Power supply via rugged 7/8" plug for harsh industrial environments
BIS L read/write heads and antennas 	**Data carrier communication partners** Our application-specific read/write heads in industrial-grade design enable easy integration in the system. Up to four read/write heads can be connected to BIS V processor units. Especially small read heads in the M12 or M18 size with separated evaluation electronics are available for constricted spaces. Moreover, Balluff offers read heads with IO-Link interface. They are often used if only detection (read-only) is required for the backtracing.	**Features** ■ Robust housing in protection type IP67 ensures reliable use in a raw environment ■ Range depends on the combination of read/write head and data carrier that is used (see data sheet for the respective read/write head) ■ Connection via M12 plug connectors, cable length 50 m ■ Flat design available

Product family		
BIS L data carriers 	**Availability of the information directly on the object** Data carriers accompany the workpieces through the entire production process. If you need a large number of tags for the realization of your application, LF data carriers from Balluff are an economical and reliable choice. Data carriers with read-only functionality prevent manipulation and ensure high data security.	**Features** ■ Round data carriers in various sizes: Ø 12.4 mm, Ø 20 mm, Ø 30 mm, Ø 50 mm ■ Chemically resistant glass data carriers ■ Data carriers for read only (3 or 5 bytes) or read/write with 192 bytes ■ Installation: Glue-on or screws ■ Two versions of read-only data carriers available: with a 5-byte fixed Unique ID or custom programmed with 3 bytes of data to your specification
BIS L data couplers 	**Secure data transmission via air interfaces** Data couplers from Balluff ensure a maximum degree of flexibility. They securely transmit the data via two air interfaces. In so doing, they handle the contactless bridging of the two transitions instead of a fixed data transmission. Our data couplers are used wherever a double mechanical interface is indispensable, for example, with rotary tables, interchangeable workpiece holders or gripper arms.	**Features** ■ Maintenance-free transmission without mechanical wear ■ Fast and secure signal transmission ■ Various cable lengths: 1 m, 2 m and 5 m
BIS L handheld device 	**Mobile data recording – simple and comfortable** Our handhelds are outstandingly suited for mobile reading and writing of BIS L data carriers. They are used with manual quality control or in the documentation of the maintenance procedure. And they are absolutely precise and reliable even under poor lighting conditions and harsh environments. The data is transmitted via WLAN, Bluetooth or cable-connected USB port. All handhelds from Balluff can be modularly expanded with 1D or 2D barcode readers.	**Features** ■ Windows CE® V6.0 operating system ■ Various antenna designs available ■ Range depends on antenna variant ■ Includes charging adapter and stylus ■ Base device is the powerful Zebra Workabout Pro 4 Mobile Computer ■ Pre-installed Balluff software ■ Touchscreen with large color display ■ Optional: Docking station and pistol grip ■ Customer-specific software on request
BIS L read heads with integrated processor unit 	**Reading and evaluation with a device** Our read heads with an integrated processor unit combine antenna, electronics and interface in one housing. Easy installation saves time and money. Versions for tight mounting conditions. Read heads with separate electronics create leeway for the installation. The rugged housing in IP67 ensures reliable use in a harsh environment.	**Features** ■ Available interfaces: Parallel and serial (RS232, RS422) ■ Additional processor unit eliminated ■ Status displays directly on the housing facilitate commissioning and minimize down times

Product finder and more technical details:
www.balluff.com/go/**LF-BIS-L**

Continuous transmission security and data transparency

RFID SYSTEM UHF (860/960 MHZ) BIS U

The BIS U UHF systems from Balluff ensure data transparency and traceability of your automation processes. UHF is a standard technology for identification solutions covering all processes. They help to achieve fast detection of tag information and continuous transmission security. By querying decentrally stored product- and process-data, UHF is a central component of traceability applications. Our UHF BIS U systems thereby provide permanent data transparency in your entire delivery chain.

Features

- Problem-free integration in applications via globally used standard interfaces
- Corresponds to the global standard ISO 18000-6C and EPC Gen2 Class1
- Flexible use due to a wide range of different combinations of data carriers and antennas
- Ranges up to 6 m and more
- Bulk capture for simultaneous scanning of many data carriers (tags)
- Suitable for attachment to traditional control systems via bus interfaces and higher level IT systems
- Complete tailored system solutions realizable
- Many accessories for integration into a variety of applications

PRODUCT OVERVIEW

innovating automation

Product family		
BIS V processor unit 	**Easily and reliably collect, process, and forward data** With our BIS V RFID processor unit, you can simultaneously use up to four read/write heads. This unit processes multiple frequencies at the same time to enable mixed operation. Different processor units are no longer necessary, thereby simplifying inventory management. For an industry-independent use, the processor unit is available with all globally standard bus systems.	**Features** ■ Ranges up to 6 m and more ■ Perfect EMC due to the robust zinc die-cast housing ■ All connections are easily accessible from the front ■ LCD display and pushbuttons for simple startup ■ Different versions certified for country-specific use ■ With integrated IO-Link master port ■ Web server for convenient remote condition monitoring ■ Function modules available for many common controller manufacturers ■ USB interface for rapid commissioning without bus link
BIS U read/write heads and antennas 	**Communication via the air interface** Our read/write heads are scalable and allow flexible configuration and realization of your identification task, for example, with conveyor lines or gates. Different versions are available for different ranges and applications. The range here depends on the combination of read/write head or antenna and data carrier that is used and on the configuration of the processor unit.	**Features** ■ Variants for frequency ranges EU (865...868 MHz) and US (902...928 MHz) ■ Rugged housings up to IP67 ensure reliable use in harsh environments ■ Status LEDs directly on the read/write head ■ Startup and configuration in seconds with Auto-Setup function ■ Connection via coax cables or M12 connectors ■ Data carriers can be detected in practically orientation ■ Read ranges up to 6 m and more possible ■ Read/write head and antennas mountable directly on metal

Product family		
BIS U data carrier 	**Reliably readable tags for harsh environments** Data carriers or tags, mark the object to be identified and furnish it with additional information. This means they store the product, process and quality data to provide reliable information about the product life cycle. Our modern data carriers withstand high temperatures, humidity, chemical substances and are still reliably detectable even in metallic surroundings. In contrast to barcodes, RFID tags are also readable without optical line of sight and are resistant to soiling.	**Features** ■ All data carriers have a unique, unalterable identification number (TID) and an individually programmable EPC (Electronic Product Code) ■ Global standards ISO 18000-6C or EPC Gen2 Class1 ■ Freely describable user memory range up to 112 bytes ■ Installation: Glue-on, potted-in, or screws ■ Variants for direct mounting on metal ■ Very cost-beneficial self-adhesive Smart Labels available for one-time applications (for remaining on the product) ■ Mass applications via low-cost tags also realizable ■ Special silicone-free data carriers for the automobile industry ■ Special tags, temperature-resistant up to 220°C ■ Custom-tailored versions possible
BIS U handheld device 	**Quickly and comfortable record data using a handheld device** Our handhelds are conceived for the mobile reading and writing of BIS U data carriers. They are used with manual quality control or in the documentation of the maintenance procedure. The data is transmitted via WLAN, Bluetooth or cable-connected USB port. All handheld devices from Balluff are modular for adding 1D or 2D barcode readers and are absolutely reliable even in poor lighting conditions and harsh environments.	**Features** ■ Windows CE® V5.0 operating system ■ Includes charging adapter and stylus ■ Pre-installed demo software ■ Ideal under poor lighting conditions and in harsh environments ■ Touchscreen with large color display ■ Docking station and pistol grip for ergonomic working ■ Customer-specific software on request

Product finder and more technical details:
www.balluff.com/go/**UHF-BIS-U**