PRODUCT INFORMATION

RFID

INTELLIGENT IDENTIFICATION

RFH6xx, RFU62x, RFU63x, RFU65x

SICK
Sensor Intelligence.

Image-based code readers

Image-based code readers are characterized by their flexibility in the selection of the code type. In addition to reading 1D bar codes, they employ a range of image processing algorithms to identify 2D codes, such as the frequently used Data Matrix, QR, or MaxiCodes, as well as plain text. They make light work of switching from bar codes to 2D codes.

Laser-based bar code scanners

Bar code scanners have an outstanding depth of field and are thus easily able to identify bar codes on objects of varying heights. Due to the large aperture angles of up to 60°, just one device covers most conveyor belt widths.

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→ www.sick.com/more-than-a-vision

MORE THAN A VISION

**Intelligent questions have more than one answer.
The best technology depends on the task at hand.**

In reality, providing an effective solution for identification tasks requires more than just one type of technology. SICK gives you that choice. Three technologies, one philosophy: Your customer requirements come first.

For every identification task, the same question is asked: Which technology is best? And as it so often is in life, there is never just one answer for every question. The best possible solution is always tailored to the individual technical and economic conditions of the application.

Three identification technologies have dominated the market for many years: RFID, laser-based bar code scanners, and image-based code readers. As the market leader in automated identification, SICK has not only mastered all the main technologies, but also poses the right questions to ensure the right products are selected from its technology portfolio.

RFID

RFID is particularly well suited to harsh ambient conditions, such as extreme temperatures or identification objects under high levels of physical stress. By comparison, optical technologies require visual contact at all times in order to detect the code and are therefore more susceptible to wear or contamination.

- No visual contact with the RFID tag required
- Omnidirectional reading
- Reliable use under harsh ambient conditions
- Large distances between reader and object possible
- Short reading cycles and possibility of bulk detection
- Rewritable RFID tags and large storage capacity

SIMPLE AND CLEVER IDENTIFICATION WITH RFID

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The strengthening of global markets means ever-increasing competitive pressure. More stringent standards, shorter and shorter product lifecycles, and individual customer requests place high demands on data transparency within a company. RFID from SICK meet these demands.

Industry 4.0 is increasingly calling for a move from closed system concepts to open ones. The goal here is to achieve maximum efficiency throughout the entire production and distribution process by means of gap-free data transparency. This enables the relevant data to be made available to third parties when new tasks are being carried out, for example, which in turn creates significant optimizations right along the value chain. All this is made possible through RFID (Radio Frequency Identification) technology, which is defining the trends in contemporary factory and logistics automation. It works using objects that are equipped with RFID tags ➜ see page 8.

Using RFID technology brings numerous benefits. It accelerates processes and automates acquisition procedures. The result is a clear reduction in manual workflow steps. Data capture is carried out without errors and also enables additional data to be recorded ➜ see page 10.

RFID data standards form the basis for centralized data storage that crosses national and local boundaries, and is available throughout an entire company. It ensures the necessary level of data transparency throughout the supply chain ➜ see page 10

Features of RFID

Read without visual contact

Radio-based identification is not adversely affected, not even in contaminated and damp environments.

(Re-)writable data cards

Process-related data is modified directly on the object and is also stored on the data card.

Bulk reading

Simultaneous automated detection of multiple objects.

Maintenance-free

Contamination or wear poses no problem for identification.

Long service life

Identification technology without mechanical and optical devices ensures a long service life.

Good reasons to choose RFID from SICK

Secure investment

- Proven global standards adopted
- Sophisticated product range with UHF radio approvals for around 50 countries ➜ see page 6

Compact devices

Devices with integrated antenna, integrated controller (signal and data processing), and integrated connectivity.

Excellent functionality

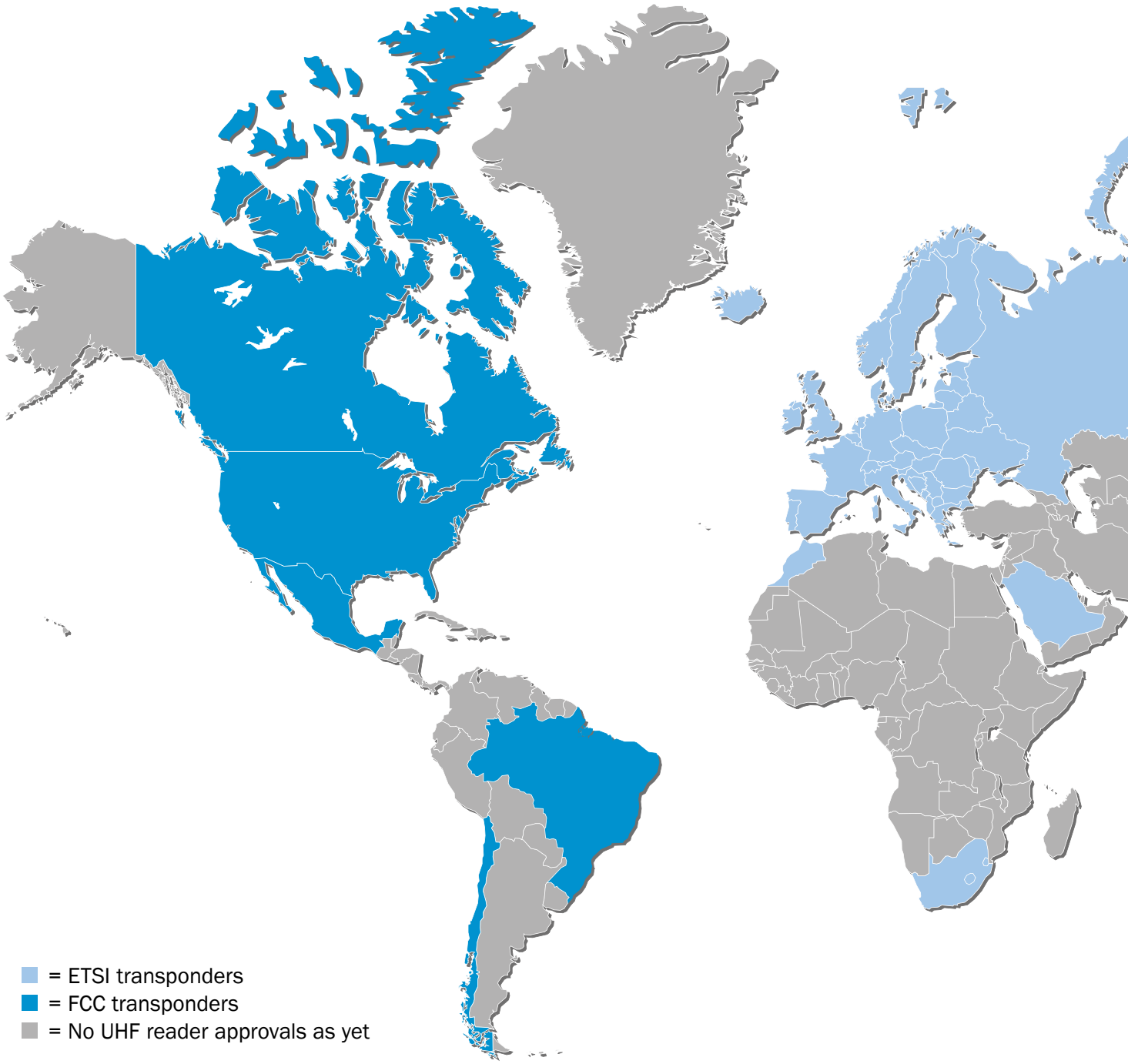
- Standardized functionality allows devices to be commissioned by means of configuration in commonly used control processes along the factory and logistics chain. In addition, a range of trigger options and output format control methods enable flexible adaptation to a range of requirements.
- Concept for parameter cloning
- Same SOPAS ET configuration software in all cases.
- Devices can be controlled with open command sequences. Based on this, tools such as SICK AppSpace are available for integration into the PC or PLC environment ➜ see page 11.

HIGHLY SECURE INVESTMENT THANKS TO OPERATIONAL READINESS WORLDWIDE

SICK already has UHF radio approvals for RFU6xx products in more than 50 countries – and that number is growing.

Unlike HF transponders, which can be used throughout the world, UHF transponders are optimized for the region in question by means of frequency tuning. The two global frequency ranges that matter in this case are:

- ETSI (European Telecommunications Standards Institute) – (865–868 MHz)
- FCC (Federal Communications Commission) – (902–928 MHz)



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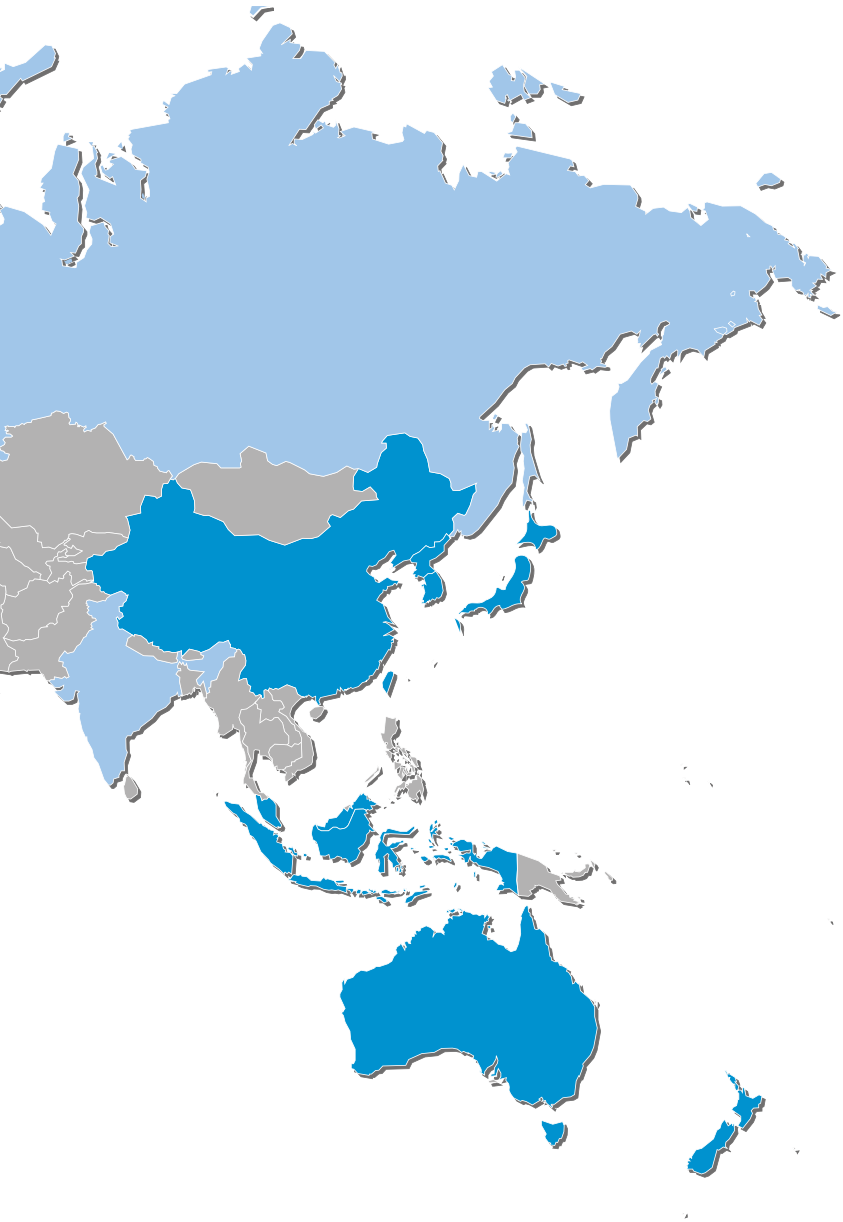
There is also a global transponder version that combines the benefits of ETSI and FCC, and can be used worldwide. It is important to remember that global transponders of this kind offer shorter reading and writing ranges than the variants that have been specifically designed for ETSI or FCC.

- Global
  – (865–928 MHz)



UHF reader radio approvals

Country	RFU62x	RFU63x	RFU65x
Europe	■	■	■
India	■	■	
Morocco		■	
Russia		■	
Saudi Arabia		■	
South Africa	■	■	□
Belarus		■	

Country	RFU62x	RFU63x	RFU65x
Australia		■	□
Brazil	■	■	
Chile		□	
China	■	■	■
Hong Kong		□	
Indonesia		■	
Japan	■	■	■
Canada	■	■	■
Korea	■	■	
Malaysia	■		
Mexico	■	■	■
New Zealand	□	■	
Singapore		■	
Taiwan		■	
USA	■	■	■

■ = approval granted
□ = application for approval submitted

THE RIGHT TRANSPONDER MAKES ALL THE DIFFERENCE

Transponders offer a range of different characteristics to suit the type of technology being used. It is not only essential to consider the reading distance and memory requirements – external factors also play a major role in the process of choosing the right transponder.

Products	Technology	Metal
 RFH6xx	HF (High Frequency) • Standards – ISO 15693, ISO 18000-3 • Maximum reading distance – ≤ 0.3 m	On-metal Off-metal
 RFU6xx	UHF (Ultra High Frequency) • Standards – ISO 18000-63 • Maximum reading distance – ≤ 10.0 m	On-metal Off-metal

Metal

Metal absorbs HF waves and reflects UHF waves. In on-metal applications, it is necessary to use special on-metal transponders or create distance using an appropriate spacer during installation.
You can find more information about on-metal transponders here ➜ see page 55

Temperature

High temperatures affect performance as well as data retention and data integrity. It is important to consider the frequency with which the transponder is exposed to these temperatures, for how long it is exposed to them, and how high the temperatures are.

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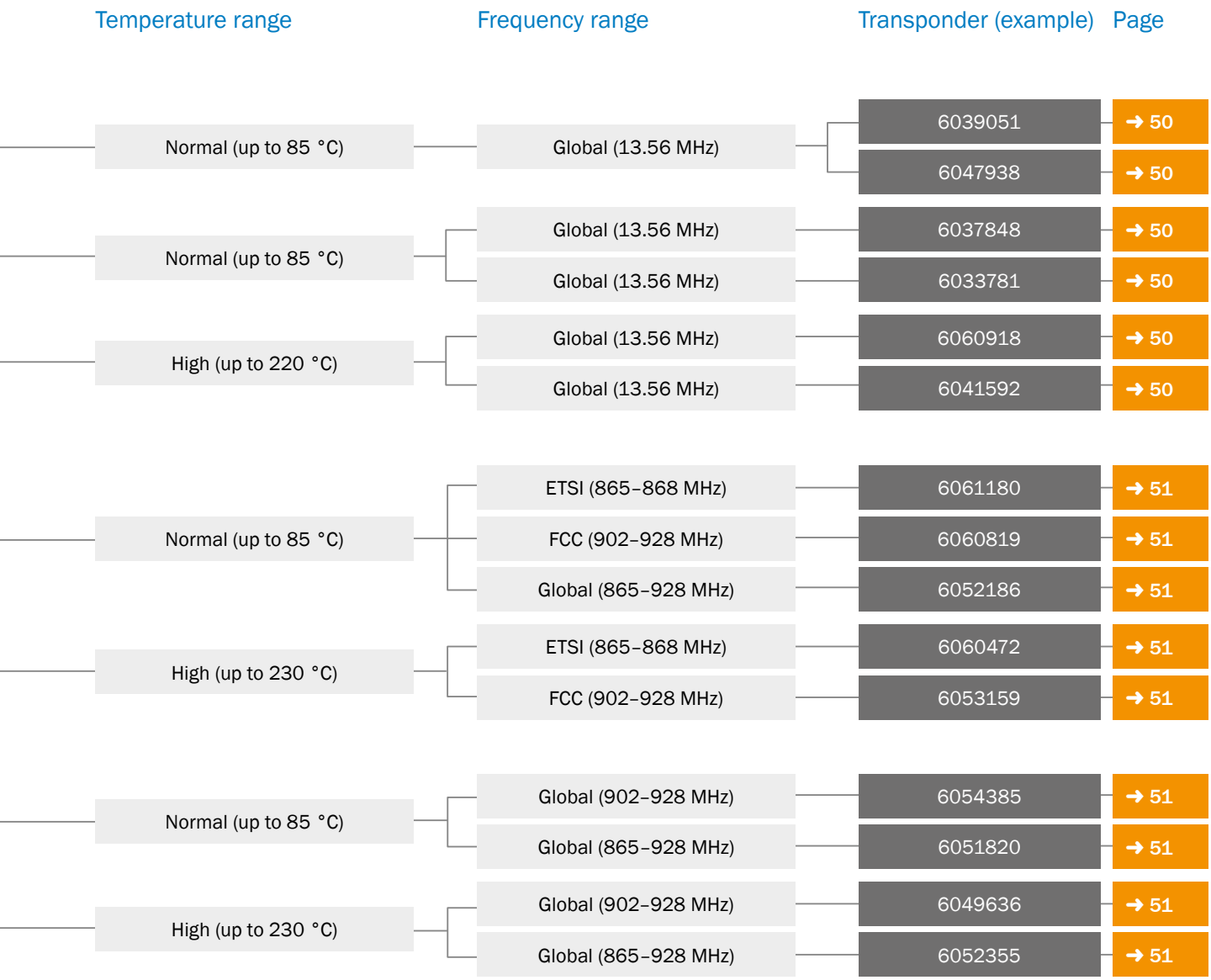


Liquids

In HF applications, water does not have a significant impact on reading performance. In the case of UHF transponders, however, it results in significant attenuation and reductions in range.

Transponder IC and memory

There are various integrated circuits (IC) used in the transponders available on the market. The sensing ranges that can be achieved in the application in which they are being used differ according to the version and how sensitive they are. The size of the memory in the transponder also depends on the IC that is installed. You can find more information about transponder IC and memory organization here → see page 52

FOUR LETTERS THAT MATTER TO INDUSTRY 4.0: RFID

INDUSTRIE 4.0 READY

Industry 4.0 establishes links in industrial production using state-of-the-art communication and information technology. Its aim is to combine information technology (particularly technology that relates to the Internet) and production technology in order to enhance data transparency. SICK's open, flexible systems are playing a significant role in achieving this.

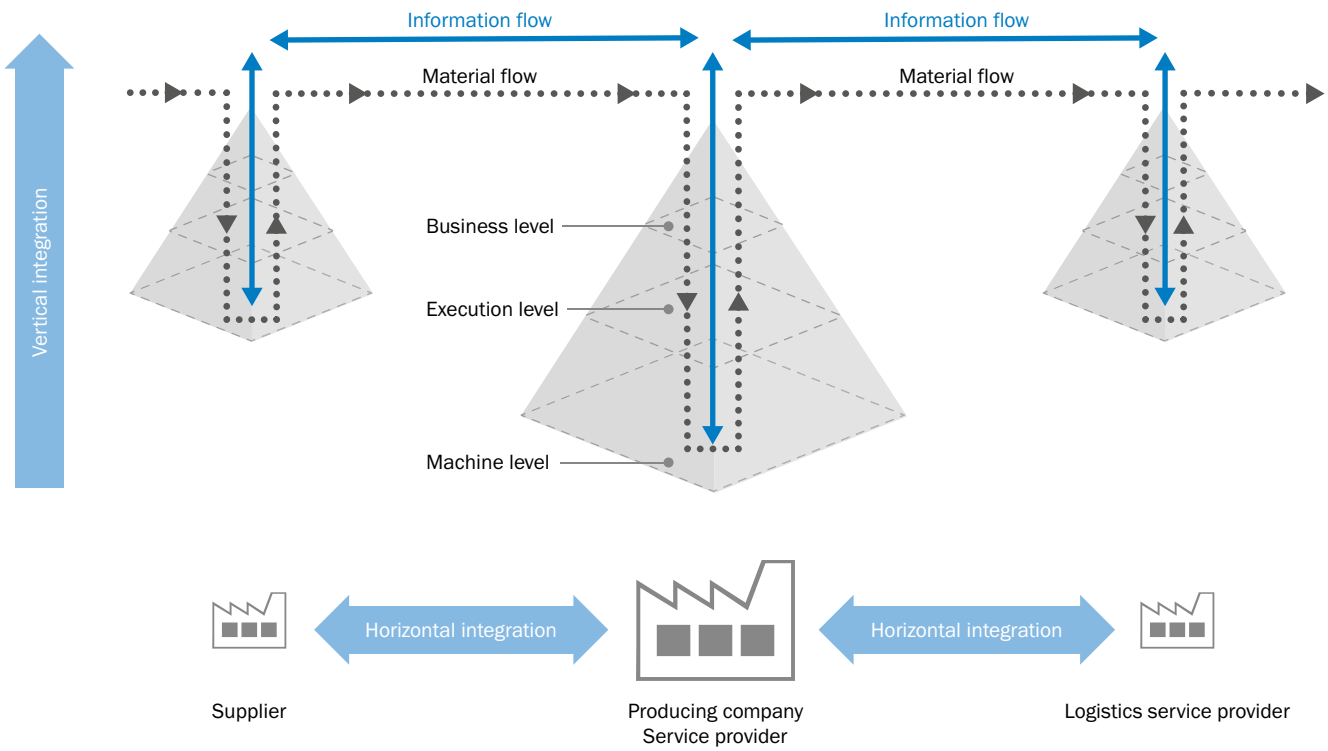
In an Industry 4.0 context, automation engineering is designed to increase transparency in the flow of information and material – helping people to manage complex tasks. The key to achieving this goal lies in improving communication between people and machines, and between one machine and another. The focus is on enhancing data transparency not only across the various system levels within a single company, but also along the entire value chain in a way that transcends company boundaries (from suppliers to producers and all the way through to logistics service providers, for example).

RFID is playing a key role in:

- Ensuring high-resolution data acquisition and pre-filtering using intelligent sensor technology
- Localizing production equipment using RFID UHF and laser scanners

SICK has already delivered proof of the added value that RFID offers in the ProSense research project conducted by the German Federal Ministry of Education and Research.

Ensuring data transparency through vertical and horizontal integration of automation engineering



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SICK AppSpace for RFU6xx devices

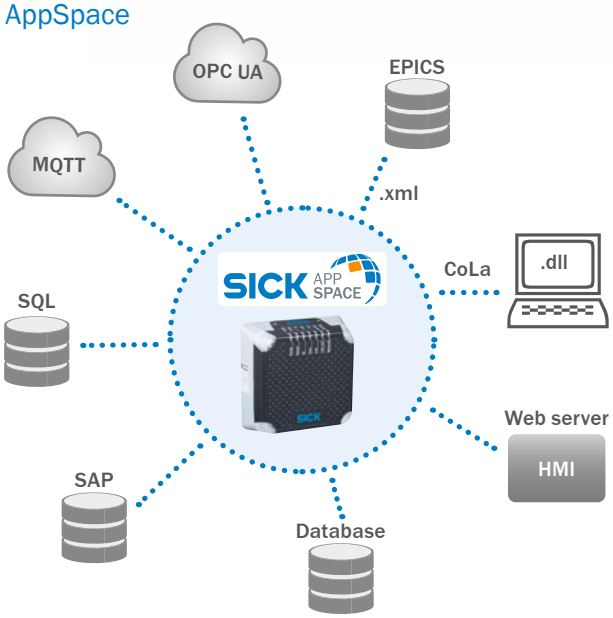
Break through the boundaries of conventional programming – with SICK AppSpace, SICK's open platform for programmable sensors. UHF read/write devices come ready-equipped with sensor apps that enable integration into existing communication networks. The sensor apps can be activated easily by purchasing a special microSD memory card. This makes integration into the Industry 4.0 environment even easier.

Flexibility and a highly secure investment thanks to SICK AppSpace

Acting as a programming environment in the sensor, SICK AppSpace assists in the process of integrating automation engineering. There is the option of implementing extra functions, making it possible to achieve results such as integrating a variety of additional protocols into the existing communication network. This enables SICK devices to be integrated flexibly into existing systems, independently of any interfaces that are already present – creating a highly secure investment.

SICK AppSpace enables integration of the following:

- Web applications (SOAP, web server)
- Web services/file exchange (xml, JSON)
- Databases (SQL, EPCIS)
- Higher-level systems (MES, ERP, eg., SAP)
- Development environments (dynamic-link libraries (.dll), Microsoft.NET)
- Other protocols (MQTT, OPC UA)

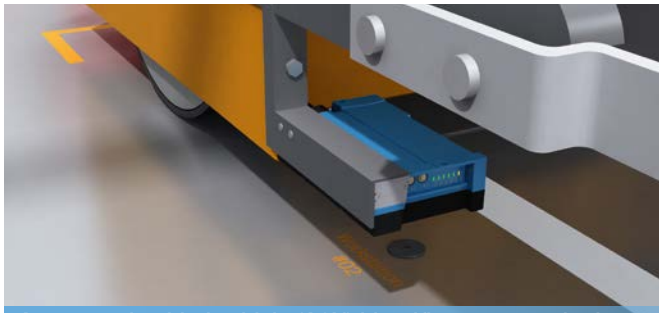


The RFU62x, RFU63x, and RFU65x product families are fully supported by SICK AppSpace.

More information about SICK AppSpace
➜ www.sick.com/SICK_AppSpace

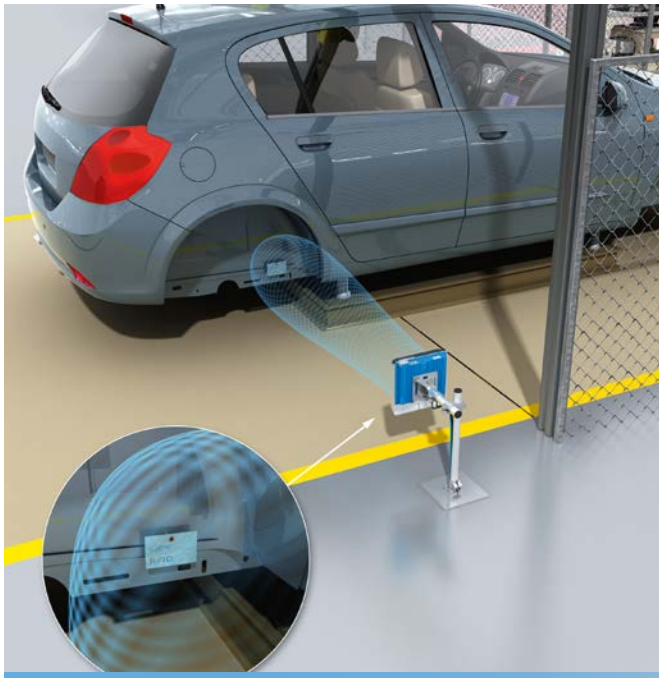
The RFID read/write devices from SICK provide the perfect identification solution for various applications, including production control, component detection or logistics, and the control of material flow. There is always with a focus on high flexibility, verifiability, and efficient system management.

FACTORY AUTOMATION



Automated guided vehicle (AGV) identifies transponder in floor, enabling position detection ➜ RFH6xx

Identification of work piece carrier ➜ RFH620



Car body identification in the body shop ➜ RFU63x

Motor block identification for production control ➜ RFU62x

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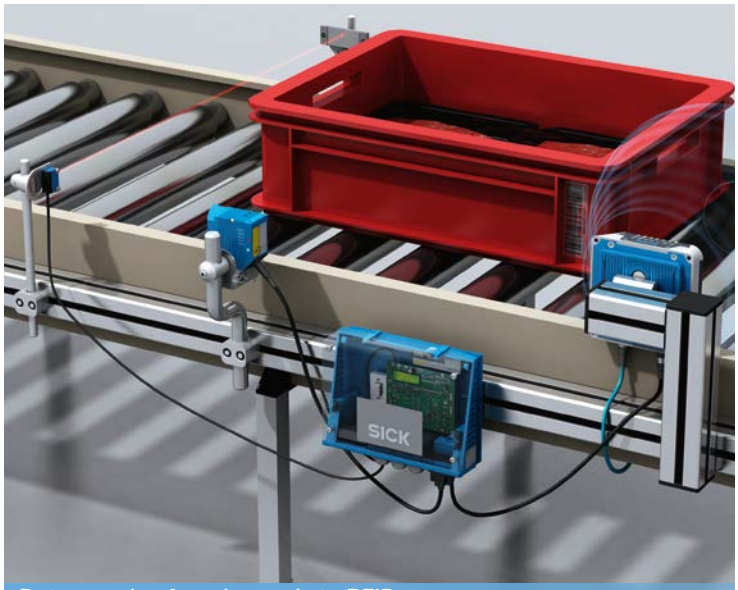
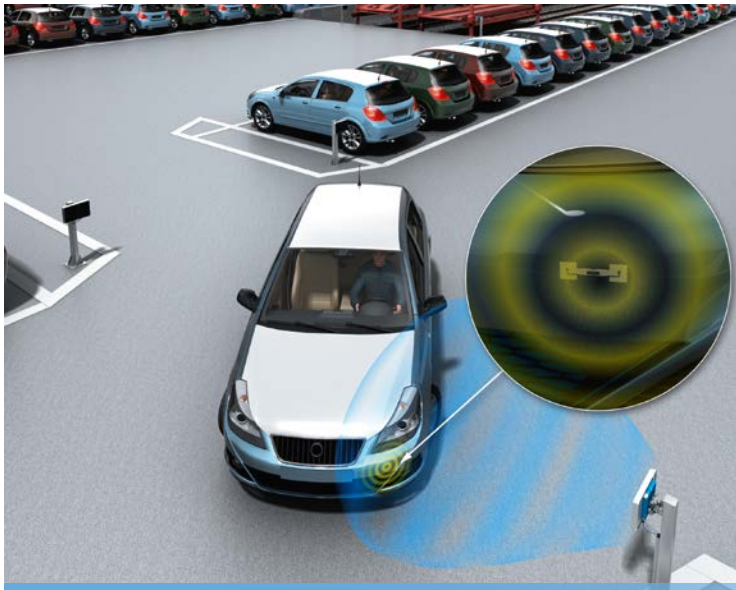
LOGISTICS AUTOMATION



Data merging from bar code to RFID
➜ CLV6xx and RFU62x

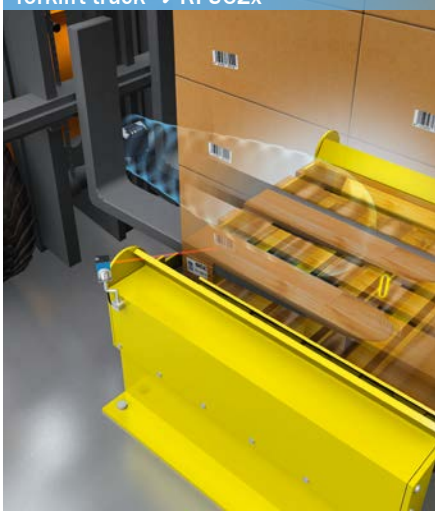


Vehicle distribution ➜ RFU65x

Identification of storage locations
➜ RFU62x

Driver assistance in narrow aisle
➜ RFH630

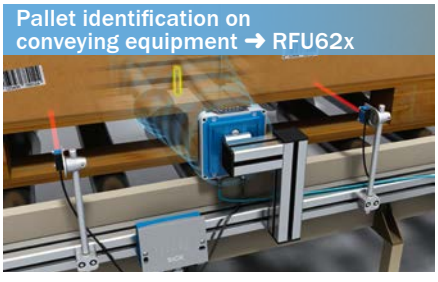
Pallet identification at the manned forklift truck ➜ RFU62x



Identification on suspended conveyor systems ➜ RFH620

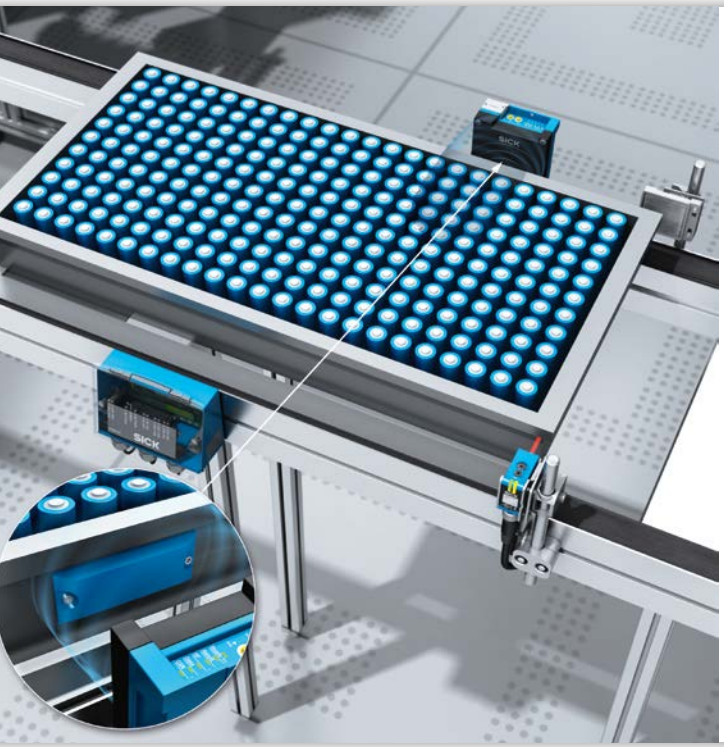
Container identification on conveying equipment ➜ RFU62x

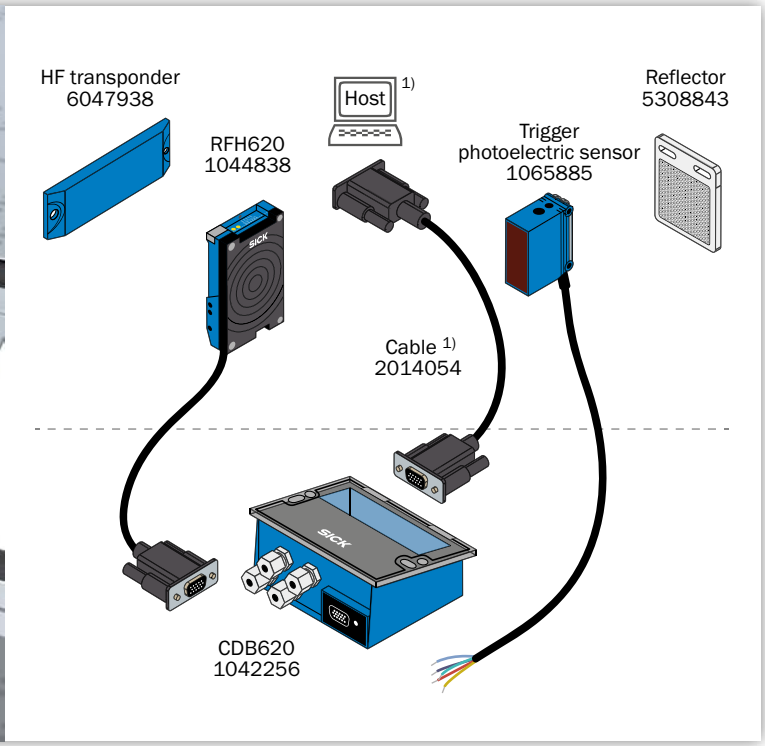
Pallet identification on conveying equipment ➜ RFU62x



RFH6xx

Container identification during battery production

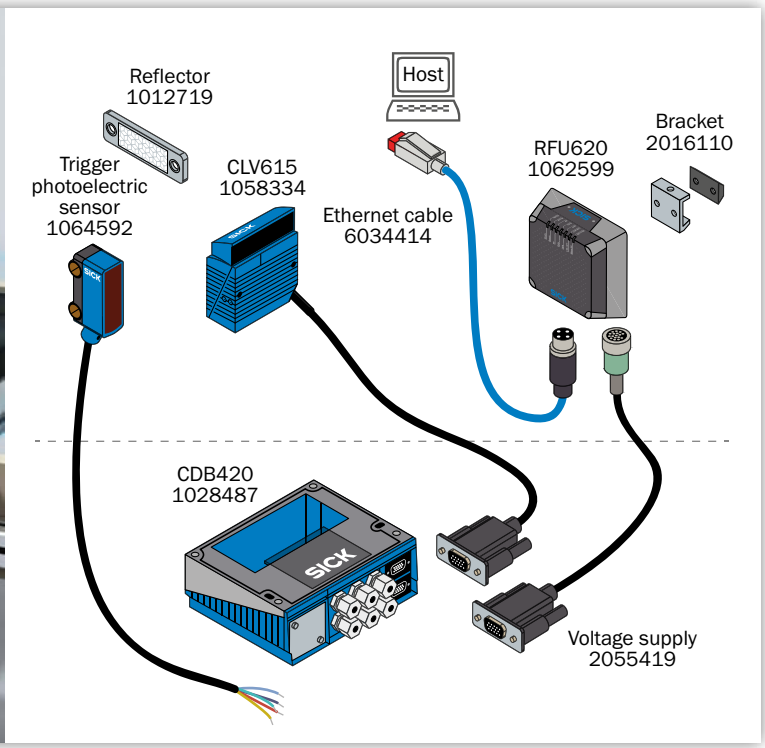




1) Optional 9-pin D-Sub internal male connector: connection of AUX interface (serial RS-232) to PC for configuring and diagnosing the ID sensor.

RFU62x

Data merging from bar code to RFID



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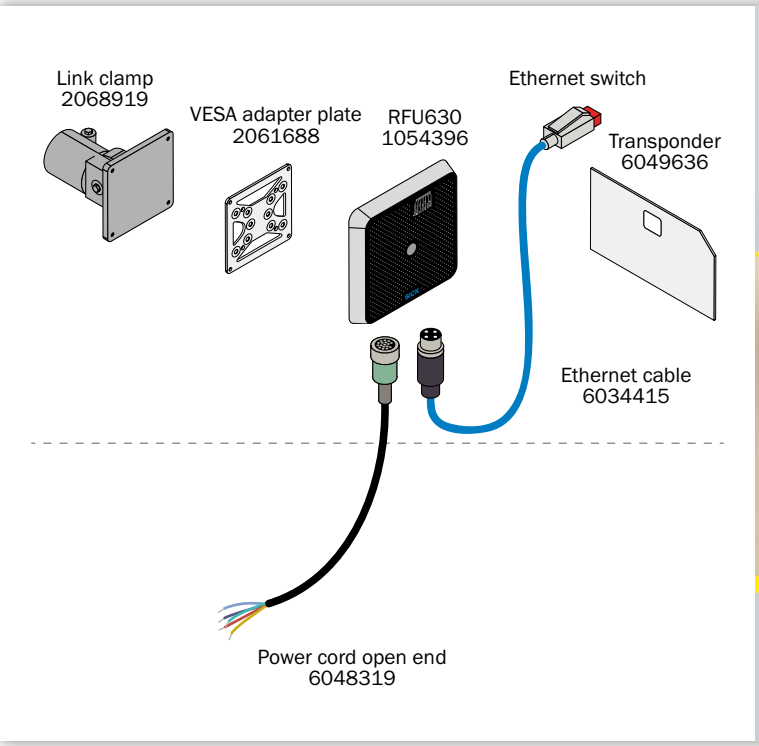
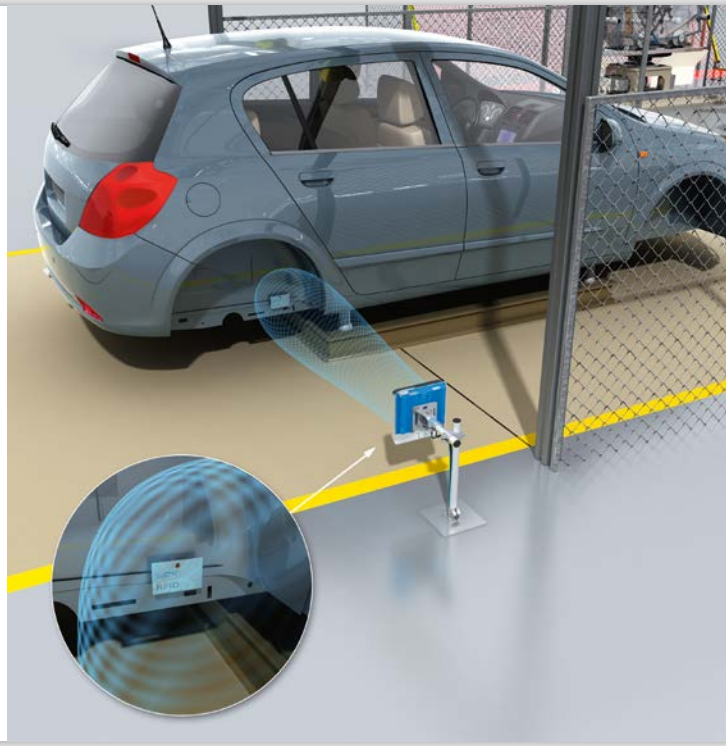
RFU63x

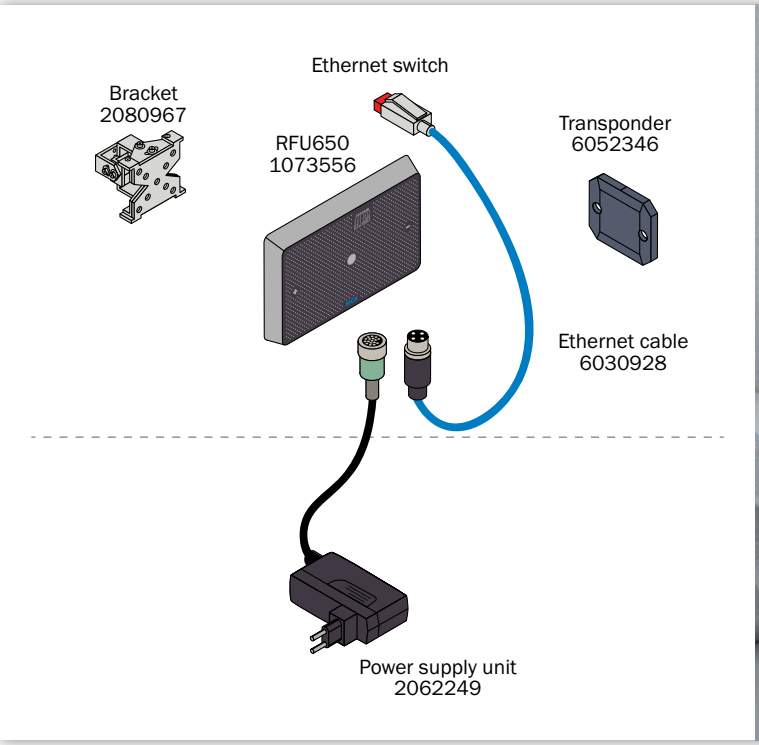
Car body identification in the body shop

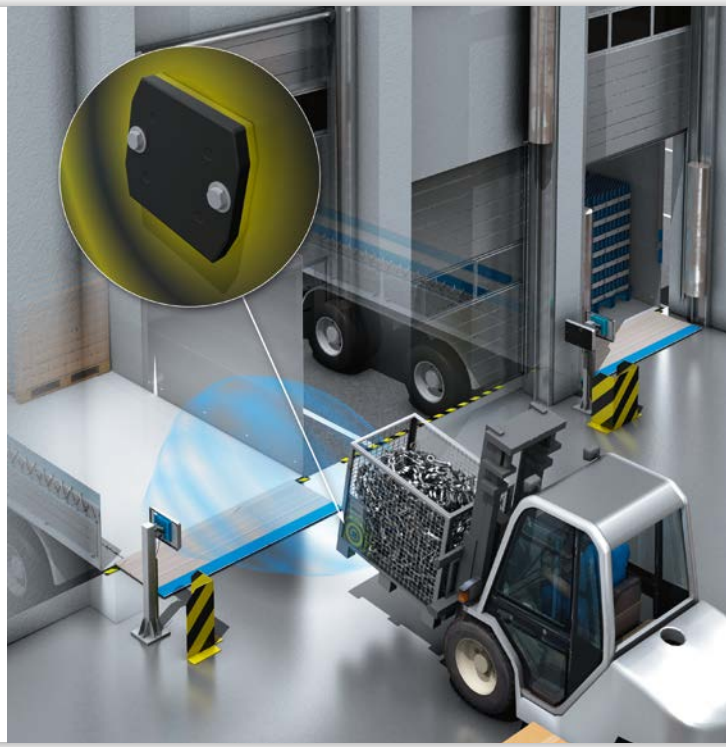


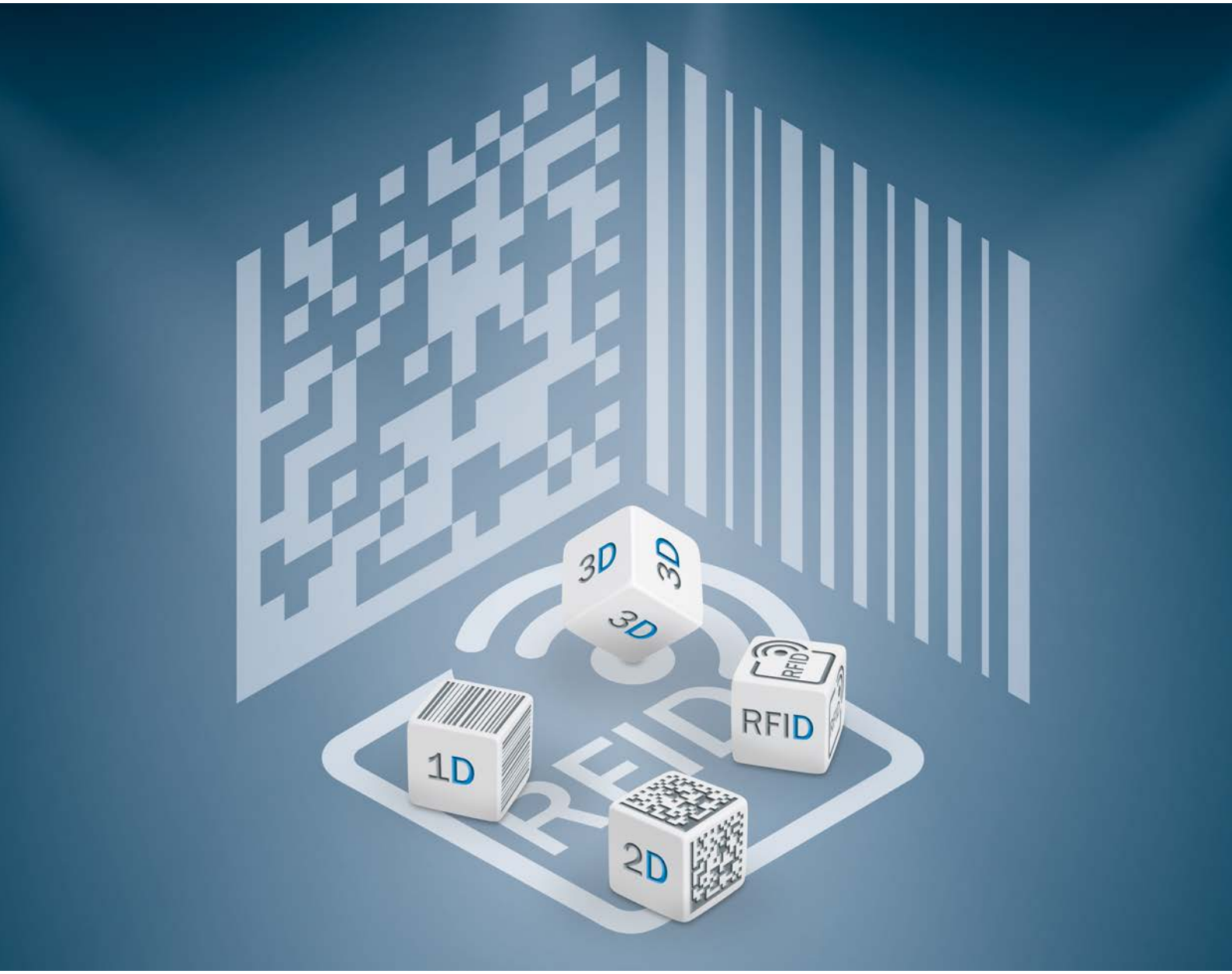


RFU65x

Identification of special load carriers in loading gate







How you benefit from using 4D*pro* sensors

- **Security of investment** thanks to the option of switching between technologies
- **Simple commissioning**, even with cross-technology applications
- **Fast and flexible exchange** thanks to standardized connectivity and cloning function
- **Quick and easy integration** into programmable logic controllers (PLCs) as SICK provides the function blocks **free of charge**
- **Little time or money spent** on **storage** thanks to reduced component variety and accessory parts

You can find more information online at ➜ www.sick-4Dpro.com

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Secure your future by investing in the right solution

4D*pro* – THE FLEXIBILITY YOU NEED

The sensor manufacturer SICK offers a broad portfolio of identification and vision solutions which are developed and produced in-house. Whichever solution you choose today, you can be sure of a flexible future with the 4D*pro* concept. All 4D*pro* sensors are compatible and interchangeable. Standardized connectivity, a standardized user interface, and a standardized accessory concept – we call this unique combination 4D*pro*.

Standardized connectivity

All 4D*pro* sensors feature the same modular connectivity. This provides the basis for a flexible fieldbus link combined with high process reliability. What's more, you benefit twice over – the purchase order process is less complicated and integration is quicker and easier.

Standardized user interface

All 4D*pro* sensors use SICK's universal device configuration software. This means that you can quickly familiarize yourself with every type of technology. Data is sent to the control in the required format and the inputs and outputs of the 4D*pro* sensors can be analyzed quickly by an event monitor.

Standardized accessory concept

All 4D*pro* sensors are supported by the same accessory pool. This reduces both component variety and the amount of effort put into storage, smoothing the way for low storage costs.

4D*pro* sensors are identified by the 4D*pro* mark

Bar code scanners

Image-based code readers

Vision sensors

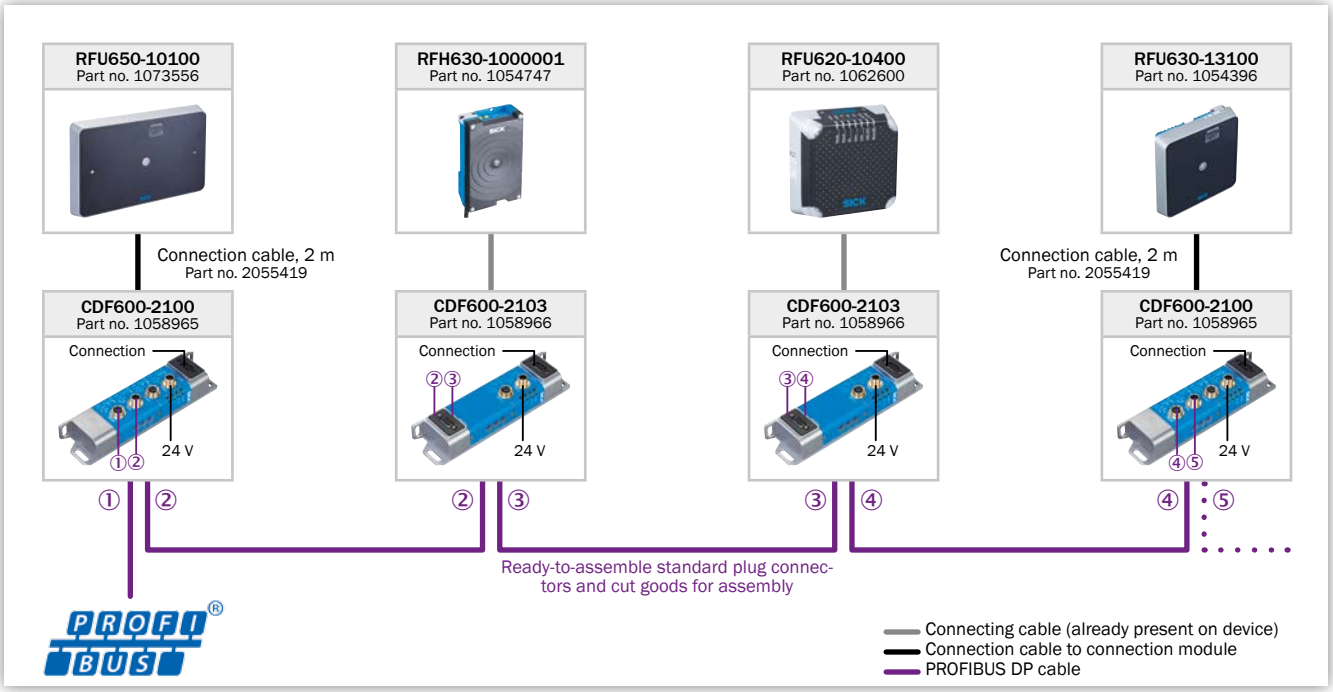
RFID read/write devices

MODULAR CONNECTORS ALL FROM A SINGLE SOURCE

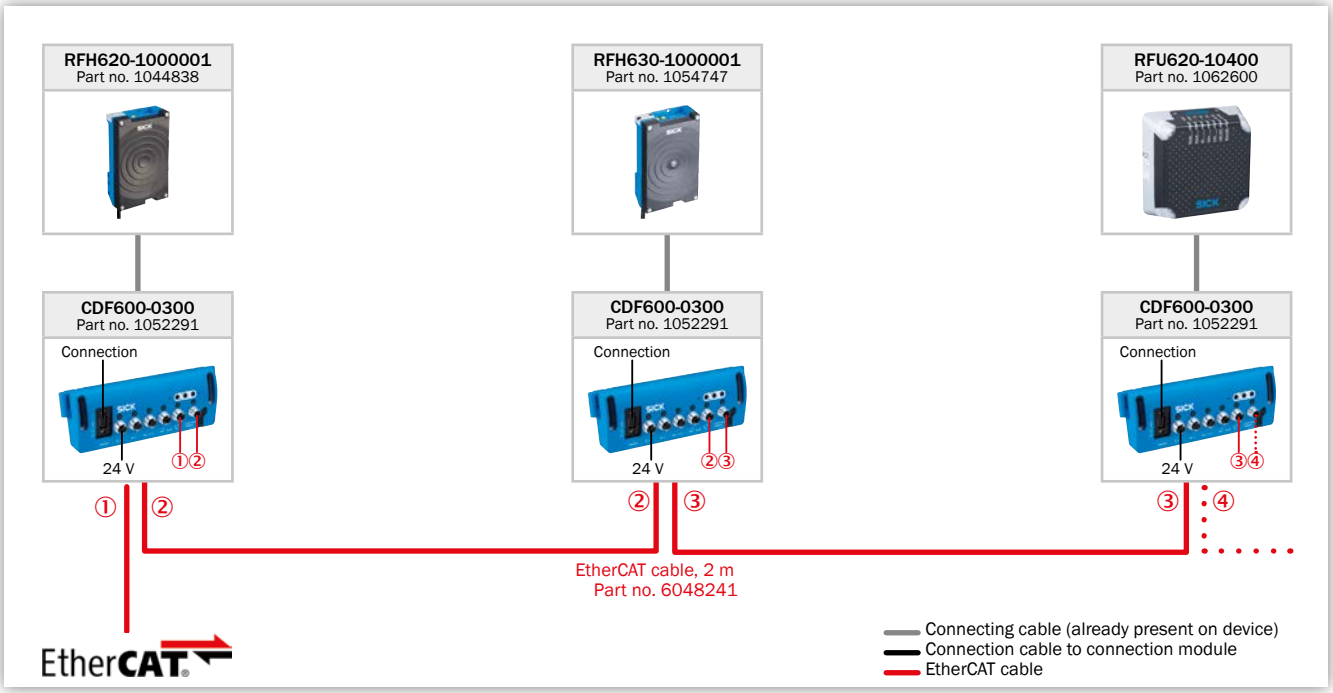
The ability to network sensors is becoming particularly important in the light of demands for cost-effective solutions. SICK has the tools to meet this challenge: Through the 4D*pro* platform, it offers a product portfolio that is perfect for fieldbus systems.

It gives you the freedom to select the identification and vision technology you require, and enables flexible integration into numerous fieldbus technologies with very little cabling work. The function blocks, available free of charge, keep the amount of work required for integration and programming in the PLC to a minimum. The graphics below show how the 4D*pro* sensors can be integrated.

PROFIBUS DP



EtherCAT®



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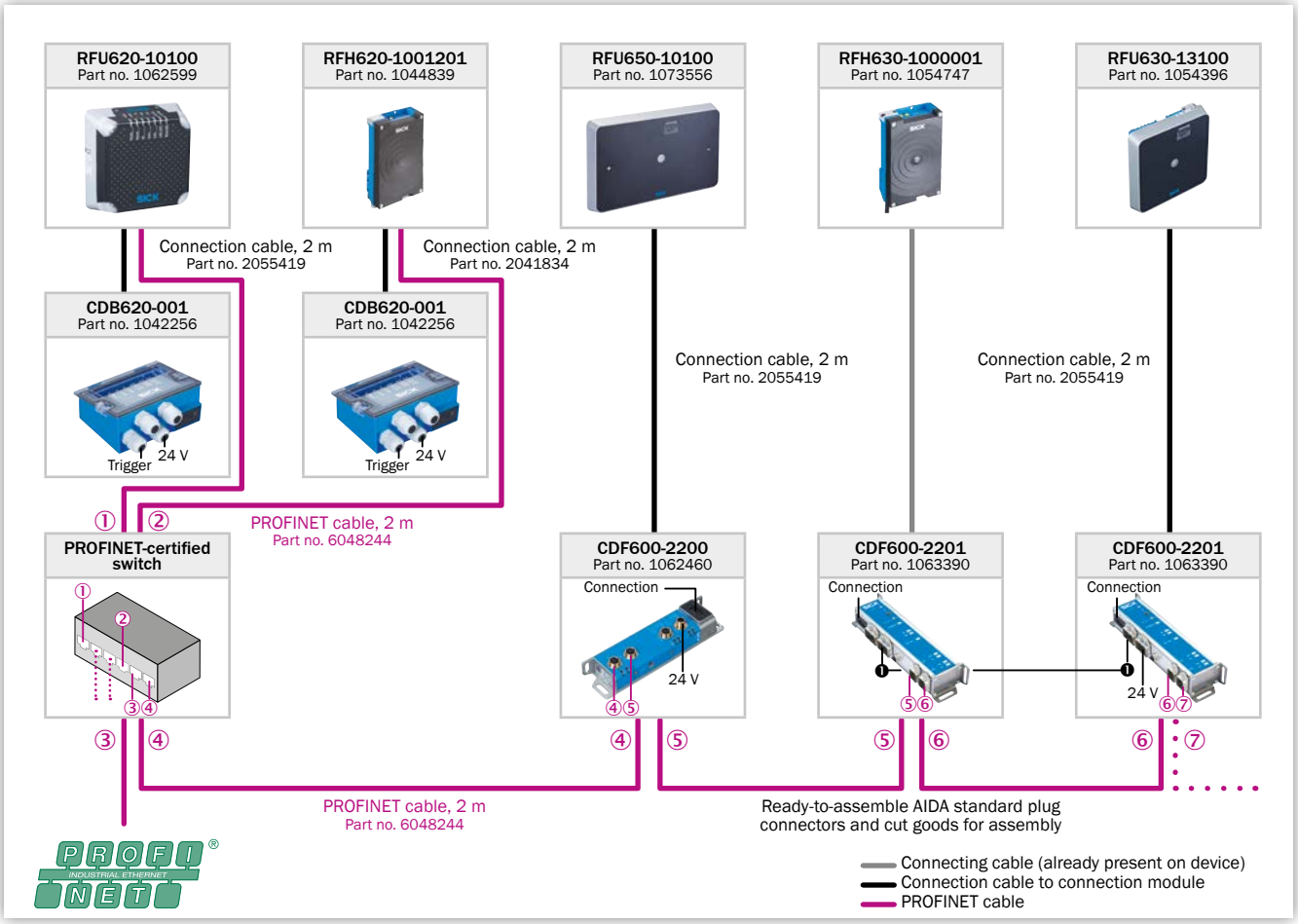
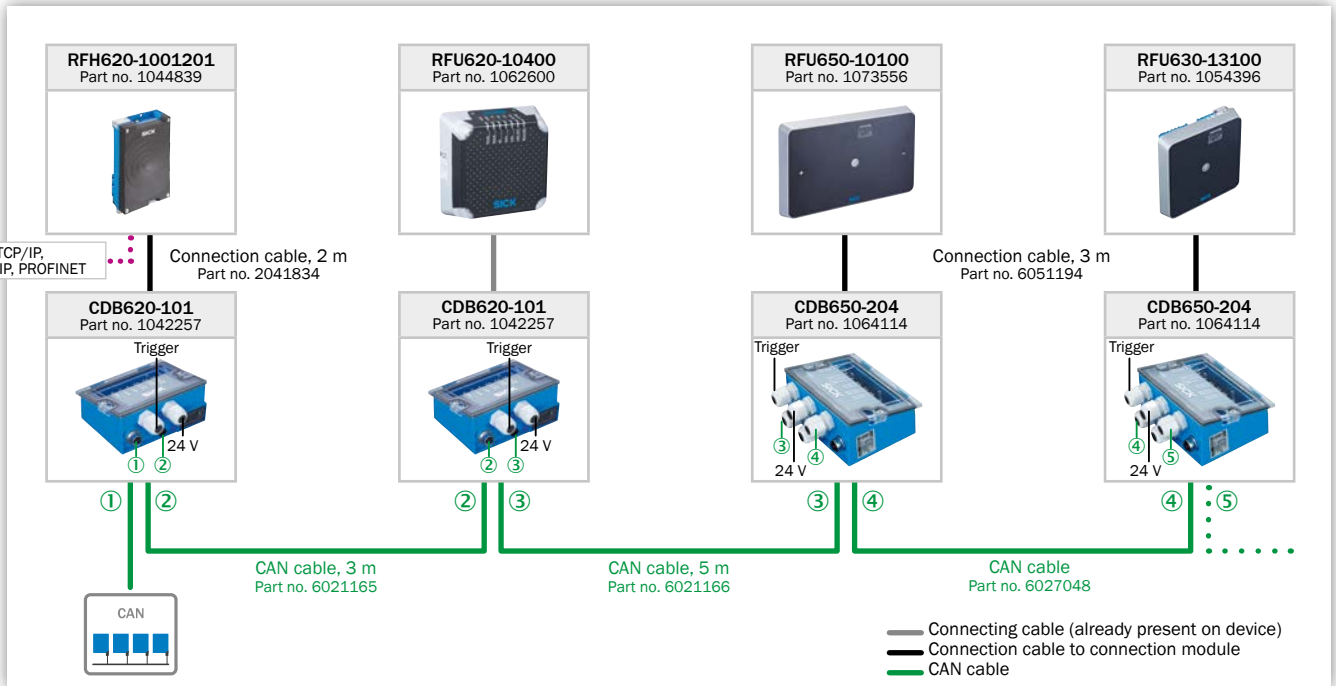


SICK CAN sensor network



PRODUCT FAMILY OVERVIEW

			
	RFH6xx	**RFU62x**	
	Intelligent RFID communication	Short-range ultra high frequency scanner	
Technical data overview			
Product category	Write/read device with integrated antenna	Write/read device with integrated antenna	
Frequency band	HF (13.56 MHz)	UHF (860 MHz ... 960 MHz)	
Version	Short Range / Mid Range	Mid Range	
Scanning range	Max. 150 mm Max. 240 mm	Max. 1 m	
Serial (RS-232, RS-422/-485)	✔	✔ / –	
USB	–	✔, USB 2.0	
Ethernet	– / ✔	– / ✔	
CAN bus	✔	✔ / –	
PROFIBUS DP	✔, Optional over external fieldbus module (CDF600-2)	✔, Optional over external fieldbus module (CDF)	
DeviceNet™	✔, optional available externally	✔, optional available externally	
Weight	450 g ... 760 g	780 g	
At a glance			
	• 13.56 MHz RFID write/read device for ranges up to 240 mm • Transponder communication according to ISO/IEC 15693 standard • Compact, industrial design with integrated antenna • Embedded protocols allow interfacing with standard industrial fieldbus technologies • Powerful micro-processor executes internally configurable logic • Flexible trigger control • Supports parameter cloning via microSD memory card • Built-in diagnostics	• Compact UHF RFID read/write device with integrated antenna for sensing ranges of up to 1 m • Standard-compatible transponder interface (ISO/IEC 18000-6C / EPC C1G2) • Supports industry-standard data interfaces and fieldbuses, as well as PoE • MicroSD memory card for parameter cloning • Extensive diagnostic and service functions	
Detailed information	➜ 22	➜ 28	

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	RFU63x	RFU65x
		
	Simple integration – intelligence included	The measuring RFID device with integrated passage and direction detection
	Write/read device with integrated antenna / write/read device without integrated antenna	Write/read device with integrated antenna
	UHF (860 MHz ... 960 MHz)	UHF (860 MHz ... 960 MHz)
	Long Range	Long Range
	Typ. 5 m Typ. 3 m Typ. 2 m	Typ. 5 m
	✔	✔
	✔ , USB 2.0	✔ , USB 2.0
	✔	✔
	✔	✔
	✔ , Optional over external fieldbus module (CDF)	✔ , Optional over external fieldbus module (CDF)
	✔ , optional available externally	✔ , optional available externally
	3.5 kg	5.2 kg
	• UHF RFID read/write unit for industrial applications • With or without integrated antenna, depending on the type (up to four external antennas can be connected) • Standard-compliant transponder interface (ISO/IEC 18000-6C/EPC G2C1) • Supports common industrial data interfaces and fieldbuses • MicroSD memory card for device parameter cloning • Several diagnostic and service options available	• Compact UHF RFID read/write device in accordance with ISO/IEC 18000-63 • Positioning and angle detection by RFID transponders • Integrated algorithms deduce the direction of entry and movement based on numerous measured values • Supports data and fieldbus interfaces that are typically used in the industry
	➜ 32	➜ 38

INTELLIGENT RFID COMMUNICATION

Product description

The RFH6xx is a compact, high frequency (HF) read/write device for ranges up to 240 mm. It is compatible with ISO/IEC 15693. Thanks to its compact design and integrated antenna, it is a cost-effective and flexible solution for logistics. Integrated signal and data processing ensure extremely high identification process speeds. Trigger signals and output control enable use as a locally controlled unit. Compatible with all 4D*pro* accessories, such as CMC600, and uses SOPAS operating software.

At a glance

- 13.56 MHz RFID write/read device for ranges up to 240 mm
- Transponder communication according to ISO/IEC 15693 standard
- Compact, industrial design with integrated antenna
- Embedded protocols allow interfacing with standard industrial fieldbus technologies
- Powerful micro-processor executes internally configurable logic
- Flexible trigger control
- Supports parameter cloning via microSD memory card
- Built-in diagnostics

Your benefits

- Reliable identification ensures maximum throughput
- Adapts to changing needs, ensures investment over the long term
- Simple integration saves installation time
- A wide range of functionality ensures flexible solutions
- Maintenance-free
- Uses same connectivity and configuration software as SICK's bar code scanners and image-based code readers – compatible through standardized 4D*pro* platform

Additional information

➜ www.sick.com/RFH6xx

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

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Detailed technical data

Features

	RFH620 Short Range	RFH630 Mid Range
Carrier frequency	13.56 MHz	
Output power	200 mW	1,000 mW
Antenna	Integrated	Integrated / integrated, additional connection for external antenna (depending on type)
Further functions	Freely programmable data output format, Heartbeat, diagnosis, cloning function (microSD memory card or system), updatable firmware, triggering	
Typical access times	UID read (64 bits/8 bytes): 18 ms Read 1 block (32 bit/4 Byte): 13 ms Write 1 block (32 bit/4 Byte): 16 ms Read 28 blocks (896 bit/112 Byte): 64 ms Write 28 blocks (896 bit/112 Byte): 442 ms	
Data transmission rate	26 kbit/s (default)	

Interfaces

	RFH620 Short Range	RFH630 Mid Range
Serial (RS-232, RS-422)	✔	
Data transmission rate	0.3 kBaud ... 115 kBaud	
Ethernet	– / ✔ (depending on type)	
Data transmission rate	10/100 MBit/s	
Protocol	TCP/IP, EtherNet/IP™, PROFINET, PROFINET Dual Port (optional over external fieldbus module CDF600-2), EtherCAT® (optional over external fieldbus module CDF600)	
CAN bus	✔	
Data transmission rate	20 kbit/s ... 1,000 kbit/s	
Protocol	CANopen, CSN (SICK CAN Sensor Network)	
PROFIBUS DP	✔, Optional over external fieldbus module (CDF600-2)	
DeviceNet™	✔, optional available externally	
Switching inputs		
Cable	4 (“Sensor 1”, “Sensor 2”, 2 inputs via optional parameter storage CMC600 in CDB620/CDM420)	
Ethernet	3 (“Sensor 1”, 2 inputs via optional parameter storage CMC600 in CDB620/CDM420)	4 (“Sensor 1”, “Sensor 2”, 2 inputs via optional parameter storage CMC600 in CDB620/CDM420)
Switching outputs		
Cable	4 (“Result 1”, “Result 2”, 2 outputs via optional parameter storage CMC600 in CDB620/CDM420)	
Ethernet	2 (via CMC600 in CDB620/CDM420)	4 (“Result 1”, “Result 2”, 2 outputs via optional parameter storage CMC600 in CDB620/CDM420)
Optical indicators	6 LEDs (Ready, Result, RF, Data, CAN, LNK TX)	7 LEDs (feedback LED, status displays, Ready, Result, RF, Data, CAN, LNK TX)
Acoustic indicators	1 beeper (to confirm reading, adjustable)	
Configuration software	SOPAS ET	

Mechanics/electronics

	RFH620 Short Range	RFH630 Mid Range
Electrical connection		
Cable	1 x Cable with 15-pin D-sub HD male connector	
Ethernet	1 x Swivel connector with 4-pin M12 female connector and 12-pin M12 male connector	1 x Swivel connector with 4-pin M12 female connector and 17-pin M12 male connector
Operating voltage	10 V DC ... 30 V DC	
Power consumption	Typ. 5 W	Typ. 8 W
Housing color	Blue, black	
Enclosure rating	IP67	
Protection class	III	
Weight	450 g ... 520 g (depending on type)	710 g ... 760 g (depending on type)
Dimensions (L x W x H)	147 mm x 88 mm x 39 mm [1]	

[1] Swivel connector is 15 mm longer.

Ambient data

	RFH620 Short Range	RFH630 Mid Range
Electromagnetic compatibility (EMC)	EN 301489-3 V1.6.1 Receiver Class 2	
Vibration resistance	EN 60068-2-6	
Shock resistance	EN 60068-2-27	
Ambient operating temperature	–20 °C ... +60 °C	–20 °C ... +50 °C
Storage temperature	–25 °C ... +70 °C	
Permissible relative humidity	95 %, Non-condensing	

Ordering information

- **Product category:** write/read device with integrated antenna
- **Frequency band:** HF (13.56 MHz)
- **RFID standard:** ISO/IEC 15693, ISO/IEC 18000-3 “Mode 1”
- **Radio approval:** global

Version	Scanning range	Connection type	Type	Part no.
RFH620 Short Range	Max. 150 mm [1]	Cable	RFH620-1000001	1044838
		Ethernet	RFH620-1001201	1044839
RFH630 Mid Range	Max. 240 mm [1]	Cable	RFH630-1000001	1054747
		Ethernet	RFH630-1102101	1054746

[1] With RFID ISO card transponder in plane parallel alignment to read/write device antenna; depending on dimensions and quality of transponder.

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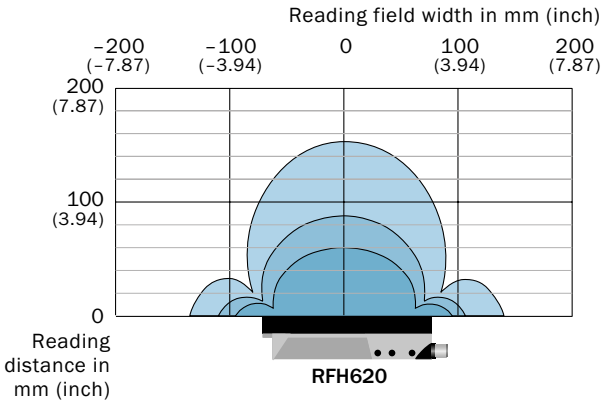
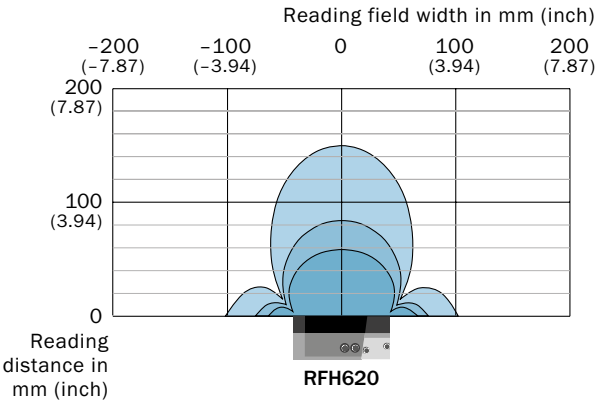
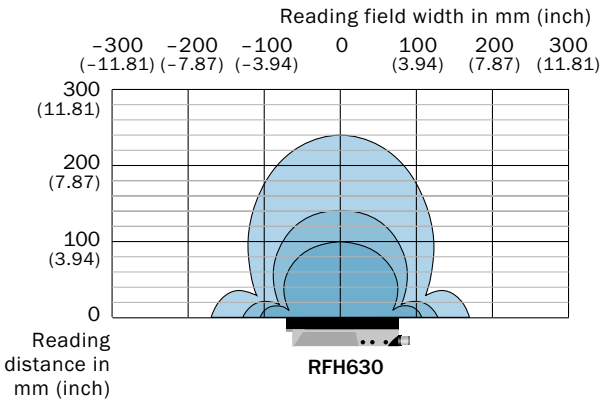
Reading field diagrams

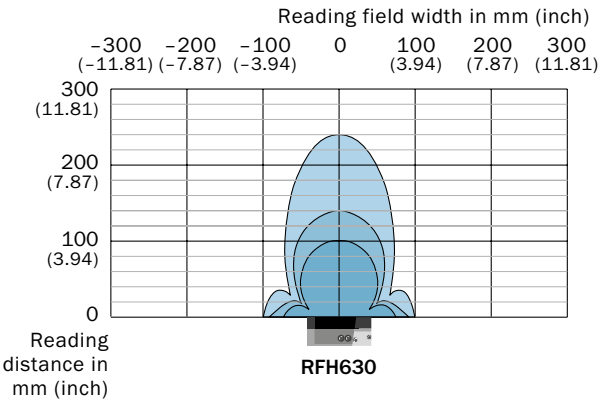
RFH620

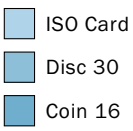




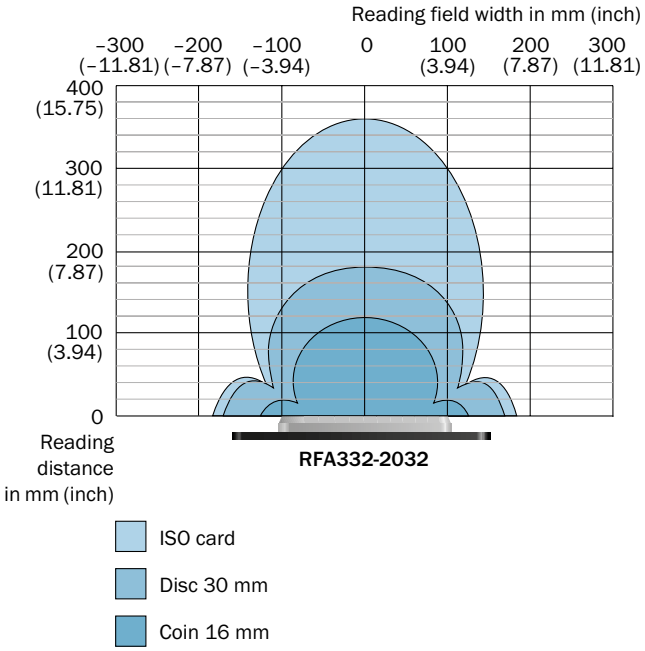
RFH630



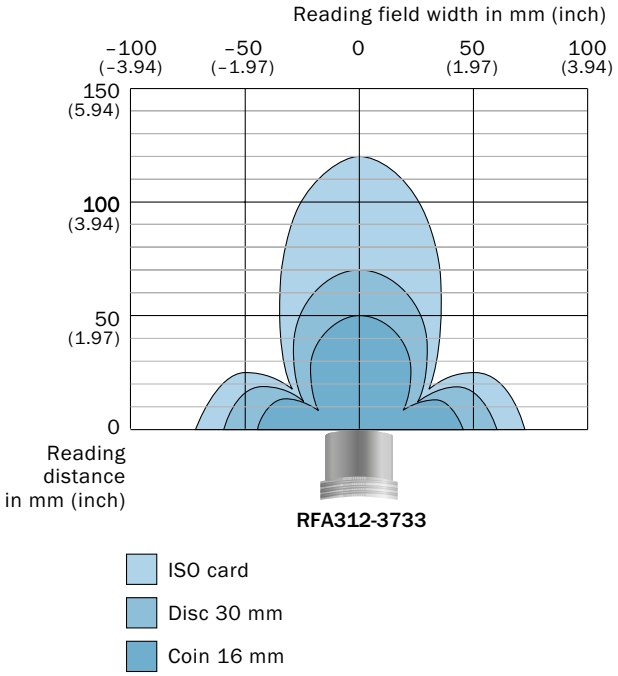




RFH630 Ethernet with external antenna



RFH630 Ethernet with external antenna



8016267/2017-04-21

SHORT-RANGE ULTRA HIGH FREQUENCY SCANNER

Product description

The RFU62x is a UHF RFID read/write device suitable for sensing ranges of up to 1 m. The transponder communication is compliant with the ISO/IEC18000-6C (EPC Class 1 Gen 2) standard. The device can be configured to operate from the SOPAS user interface or by sending ASCII commands directly. Its well-defined, restricted read/write range is particularly well-suited for automated identification over small object distances, e.g., in conveyor technology.

At a glance

- Compact UHF RFID read/write device with integrated antenna for sensing ranges of up to 1 m
- Standard-compatible transponder interface (ISO/IEC 18000-6C / EPC C1G2)
- Supports industry-standard data interfaces and fieldbuses, as well as PoE
- MicroSD memory card for parameter cloning
- Extensive diagnostic and service functions

Your benefits

- Correct assignment and no overshoot thanks to the well-defined read/write range and intelligent filter functions
- Integrated process logic for remote solutions saves additional control and programming effort
- Can be easily integrated into industrial networks thanks to 4Dpro compatibility
- Firmware upgrades and industry-standard compliance ensure long-term reliability
- Minimum changeover times in case of failure thanks to cloning
- RFU62x can be mounted to metal directly – no loss of range
- Easy operation and installation with SOPAS ET user interface

Additional information

→ www.sick.com/RFU62x

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

8016267/2017-04-21
Subject to change without notice

Detailed technical data

Features

Version	Mid Range
Carrier frequency	
Europe, South Africa	865.7 MHz ... 867.5 MHz
USA, Canada, México	902.75 MHz ... 927.25 MHz
Brazilian	902.75 MHz ... 907.25 MHz, 915.25 MHz ... 927.25 MHz
China	920.625 MHz ... 924.375 MHz
Japan	916.8 MHz ... 920.4 MHz
India	865.7 MHz ... 866.9 MHz
Korea	917.3 MHz ... 920.3 MHz
Malaysia	919.25 MHz ... 922.75 MHz
Output power	
Europe, South Africa, India	0.25 W (ERP, 24 dBm)
USA, Canada, México, Brazilian, Japan, Korea	0.32 W (EIRP, 25 dBm)
China, Malaysia	0.2 W (ERP, 23 dBm)
Modulation	PR-ASK
MTBF	23 years
Heating	
Cable	No
Ethernet	Yes
PoE	No
Antenna	
Europe, South Africa, India	Integrated (circular polarized, axial ration typ. 2 dB, 100° field opening, front to back ratio > 7 dB)
USA, Canada, México, Brazilian, China, Japan, Korea, Malaysia	Integrated (circular polarized, axial ration typ. 3 dB, 100° field opening, front to back ratio > 7 dB)
Service functions	Parameter cloning with integrated microSD memory card slot or externally via CMC module in CDB620
Further functions	Cloning function (microSD memory card or system), diagnosis, updatable firmware, freely programmable data output format, Heartbeat, triggering, SICK AppSpace functionalities can be enabled with the SD card accessory SDK6U-P00100

Interfaces

Serial (RS-232, RS-422/-485)	✔ / – (depending on type)
Function	Host, AUX (only RS-232)
Data transmission rate	300 Baud ... 115.2 kBaud, AUX: 57.6 kBaud (RS-232)
USB	✔, USB 2.0
Function	AUX
Ethernet	– / ✔ (depending on type)
Function	Host, AUX, PoE (depending on type)
Data transmission rate	10/100 MBit/s
Protocol	TCP/IP, EtherNet/IP™, PROFINET, PROFINET Dual Port (optional over external fieldbus module CDF600-2), EtherCAT® (optional over external fieldbus module CDF600)
CAN bus	✔ / – (depending on type)
Function	Host
Protocol	CSN (SICK CAN Sensor Network)
PROFIBUS DP	✔, Optional over external fieldbus module (CDF) / – (depending on type)
DeviceNet™	✔, optional available externally / – (depending on type)

Switching inputs	
Cable	4 (“Sensor 1”, “Sensor 2”, 2 inputs via optional parameter storage CMC600 in CDB620/ CDM420)
Ethernet	4 (“Sensor 1”, “Sensor 2”, 2 inputs via optional parameter storage CMC600 in CDB620/ CDM420)
PoE	0
Switching outputs	
Cable	4 (“Result 1”, “Result 2”, 2 outputs via optional parameter storage CMC600 in CDB620/ CDM420)
Ethernet	4 (“Result 1”, “Result 2”, 2 outputs via optional parameter storage CMC600 in CDB620/ CDM420)
PoE	0
Optical indicators	11 LEDs (function configurable via SOPAS ET, alternatively controlling with sw commands, status displays)
Configuration software	SOPAS ET

Mechanics/electronics

Electrical connection	
Cable	1 x 15-pin D-sub HD plug
Ethernet	1 x M12, 17-pin male connector 1 x M12, 4-pin Ethernet female connector
PoE	1 x M12, 18-pin female connector
Operating voltage	10 V DC ... 30 V DC [1] (depending on type)
Power consumption	8 W, with activated heating for temperatures below –20 °C + 8 W, standby 3 W (depending on type)
Housing	Aluminum die cast Plastic (PPS)
Enclosure rating	IP67
Protection class	III
Weight	780 g
Dimensions (L x W x H)	137 mm x 131 mm x 56 mm

[1] With heating (Ethernet) 20 V DC ... 30 V DC.

Ambient data

Electromagnetic compatibility (EMC)	EN 61000-6-3 (2007) + A1 (2011) / EN 61000-6-2 (2005)
Vibration resistance	EN 60068-2-6 (2008-02)
Shock resistance	EN 60068-2-27 (2009-05)
Ambient operating temperature	
Cable	–25 °C ... +50 °C
Ethernet	–40 °C ... +50 °C
PoE	–25 °C ... +50 °C
Storage temperature	–40 °C ... +70 °C
Permissible relative humidity	90 %, Non-condensing

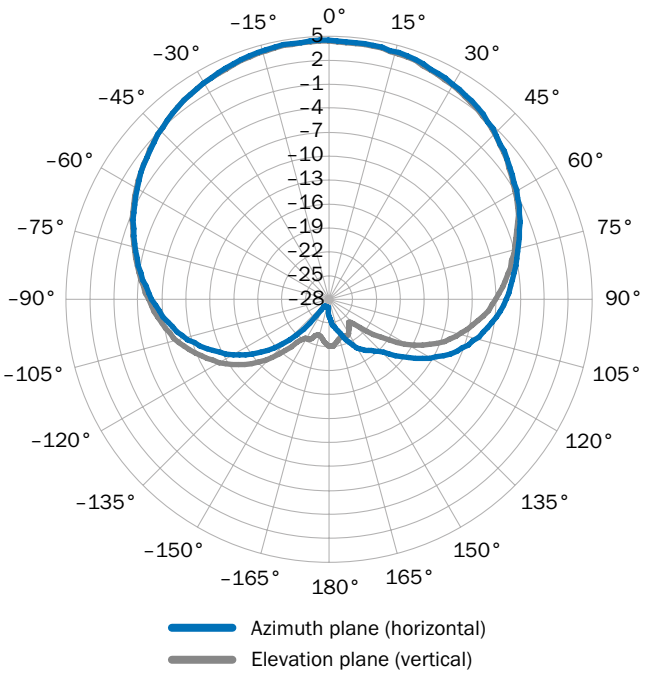
Ordering information

- **Version:** Mid Range
- **Product category:** write/read device with integrated antenna
- **Frequency band:** UHF (860 MHz ... 960 MHz)
- **RFID standard:** EPCglobal UHF Class 1 Generation 2, ISO/IEC 18000-6 C
- **Scanning range:** max. 1 m (Depending on transponder used and ambient conditions.)

Connection type	Radio approval	Type	Part no.
Cable	Europe, South Africa	RFU620-10400	1062600
	USA, Canada, México	RFU620-10401	1062603
Ethernet	Europe, South Africa	RFU620-10100	1062599
	USA, Canada, México	RFU620-10101	1062602
	Brazilian	RFU620-10104	1069677
	China	RFU620-10105	1068728
	Japan	RFU620-10107	1068727
PoE	Europe, South Africa	RFU620-10500	1062601
	USA, Canada, México	RFU620-10501	1062604
	India	RFU620-10503	1069453
	Brazilian	RFU620-10504	1070407
	China	RFU620-10505	1077860
	Japan	RFU620-10507	1083976
	Korea	RFU620-10510	1083557
	Malaysia	RFU620-10514	1077863

Radiation pattern

Measured antenna gain in dBic at 868.5 MHz,
RHCP (right-hand circular polarized)



SIMPLE INTEGRATION – INTELLIGENCE INCLUDED

Product description

The RFU63x is an ultra-high frequency (UHF) RFID solution for industrial environments. Via integrated application management software, the RFU63x is able to solve common industrial applications without any external “middleware” and can, therefore, be used as a stand-alone solution. This is possible due to an integrated filter and data management system. With 4D*pro* compatibility, the RFU63x is easy and cost-efficient to integrate in common industrial environments. Different options for parameter cloning between systems (e.g., integrated microSD memory card feature) reduce maintenance time. The integrated feedback LED can be used to read diagnostic or process feedback.

At a glance

- UHF RFID read/write unit for industrial applications
- With or without integrated antenna, depending on the type (up to four external antennas can be connected)
- Standard-compliant transponder interface (ISO/IEC 18000-6C/EPC G2C1)
- Supports common industrial data interfaces and fieldbuses
- MicroSD memory card for device parameter cloning
- Several diagnostic and service options available

Your benefits

- Intelligent technology allows stand-alone usage
- Highest reading/writing performance
- Flexible integration in common industrial fieldbuses via 4D*pro* compatibility
- Less maintenance time due to an integrated cloning back-up system using microSD memory card
- Easily adapts to application requirements via SOPAS parameter setting tool
- Free usable feedback LED quickly provides read results and diagnostic information directly to the user

Additional information

→ www.sick.com/RFU63x

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

8016267/2017-04-21
Subject to change without notice

Detailed technical data

Features

	Long Range write/read device with integrated antenna	Long Range write/read device without integrated antenna
Carrier frequency		
Europe, South Africa, Saudi Arabia	865.7 MHz ... 867.5 MHz	
USA, Canada, México	902.75 MHz ... 927.25 MHz	
Australia	920.25 MHz ... 925.75 MHz	
India	865.7 MHz ... 866.9 MHz	–
Brazilian	902.75 MHz ... 907.25 MHz 915.25 MHz ... 927.25 MHz	–
China	920.625 MHz ... 924.375 MHz	
Japan	916.8 MHz ... 920.4 MHz	
Russia, Belarus	866.3 MHz ... 867.5 MHz	–
Korea	917.3 MHz ... 920.3 MHz	–
New Zealand	922.25 MHz ... 927.25 MHz	–
Indonesia	923.25 MHz ... 924.75 MHz	–
Taiwan	922.25 MHz ... 927.75 MHz	–
Morocco	867.7 MHz ... 867.9 MHz	–
Russia	–	866.3 MHz ... 867.5 MHz
Singapore	–	920.25 MHz ... 924.75 MHz
Output power		
Europe, China, Russia, South Africa, Saudi Arabia	2 W (ERP, with integrated antenna, alternatively 30 dBm at the external antenna port, output power adjustable)	30 dBm at external antenna ports, output power adjustable
USA, Canada, México, Australia	4 W (EIRP, with integrated antenna, alternatively 30 dBm at the external antenna port, output power adjustable)	30 dBm at external antenna ports, output power adjustable
India, Indonesia, Belarus	2 W (ERP, with integrated antenna, alternatively 30 dBm at the external antenna port, output power adjustable)	–
Brazilian, Korea, New Zealand	4 W (EIRP, with integrated antenna, alternatively 30 dBm at the external antenna port, output power adjustable)	–
Japan	4 W (EIRP, with integrated antenna, alternatively 30 dBm at the external antenna port, output power adjustable) 0.5 W (EIRP, for integrated antenna, alternatively 24 dBm at external antenna ports, output power adjustable) (depending on type)	30 dBm at external antenna ports, output power adjustable
Taiwan	Max. 2 W (EIRP indoor, with integrated antenna, alternatively 30 dBm at the external antenna port, output power adjustable) Max. 1 W (EIRP outdoor, with integrated antenna, alternatively 27 dBm at the external antenna port, output power adjustable)	–
Morocco	0.5 W (ERP, with integrated antenna, alternatively 27 dBm at the external antenna port, output power adjustable)	–
Singapore	–	30 dBm at external antenna ports, output power adjustable
Modulation	PR-ASK, DSB-ASK	
MTBF	14 years	

	Long Range write/read device with integrated antenna	Long Range write/read device without integrated antenna
Antenna	Integrated (circular polarized, axial ration typ. 2 dB, 72° field opening, front to back ratio > 17 dB), additionally 3 external antenna ports	4 external antenna ports
Service functions	Parameter cloning with integrated microSD memory card slot or externally via CMC module in CDB620	
Further functions	Cloning function (microSD memory card or system), diagnosis, updatable firmware, freely programmable data output format, Heartbeat, triggering, SICK AppSpace functionalities can be enabled with the SD card accessory SDK6U-P00100	

Interfaces

Serial (RS-232, RS-422/-485)	✔
Function	Host, AUX
Data transmission rate	300 Baud ... 115.2 kBaud, AUX: 57.6 kBaud (RS-232)
USB	✔, USB 2.0
Function	AUX
Ethernet	✔
Function	Host, AUX
Data transmission rate	10/100 MBit/s
Protocol	TCP/IP, EtherNet/IP™, PROFINET, PROFINET Dual Port (optional via external connection module CDF600-2), EtherCAT® (optional over external fieldbus module CDF600)
CAN bus	✔
Function	Host
Protocol	CSN (SICK CAN Sensor Network)
PROFIBUS DP	✔, Optional over external fieldbus module (CDF)
DeviceNet™	✔, optional available externally
Switching inputs	4 (“Sensor 1”, “Sensor 2”, 2 inputs via optional parameter storage CMC600 in CDB620/CDM420)
Switching outputs	4 (“Result 1”, “Result 2”, 2 outputs via optional parameter storage CMC600 in CDB620/CDM420)
Optical indicators	8 LEDs, one of them multi-colored (function configurable via SOPAS ET, alternatively controlling with sw commands, status displays)
Acoustic indicators	1 beeper/buzzer (can be switched off, can be allocated as a result indication function)
Operating elements	2 buttons (choose and start/stop functions)
Configuration software	SOPAS ET

Mechanics/electronics

	Long Range write/read device with integrated antenna	Long Range write/read device without integrated antenna
Electrical connection	1 x M12, 17-pin male connector 1 x M12, 4-pin Ethernet female connector	
Operating voltage	18 V DC ... 30 V DC	
Power consumption	< 20 W, with switching outputs not connected and full transmit power	
Housing	Aluminum die cast	
Housing color	Blue, black, silver	
Enclosure rating	IP67	
Protection class	III	
Weight	3.5 kg	
Dimensions (L x W x H)	239 mm x 239 mm x 64 mm	239 mm x 197 mm x 40 mm

Ambient data

Electromagnetic compatibility (EMC)	EN 61000-6-4 (2007-09) / EN 61000-6-2 (2009-05)
Vibration resistance	EN 60068-2-6 (2008-02)
Shock resistance	EN 60068-2-27 (2009-05)
Ambient operating temperature	–25 °C ... +60 °C
Storage temperature	–30 °C ... +70 °C
Permissible relative humidity	± 90 %, Non-condensing

Ordering information

- **Version:** Long Range
- **Frequency band:** UHF (860 MHz ... 960 MHz)
- **RFID standard:** EPCglobal UHF Class 1 Generation 2, ISO/IEC 18000-6 C

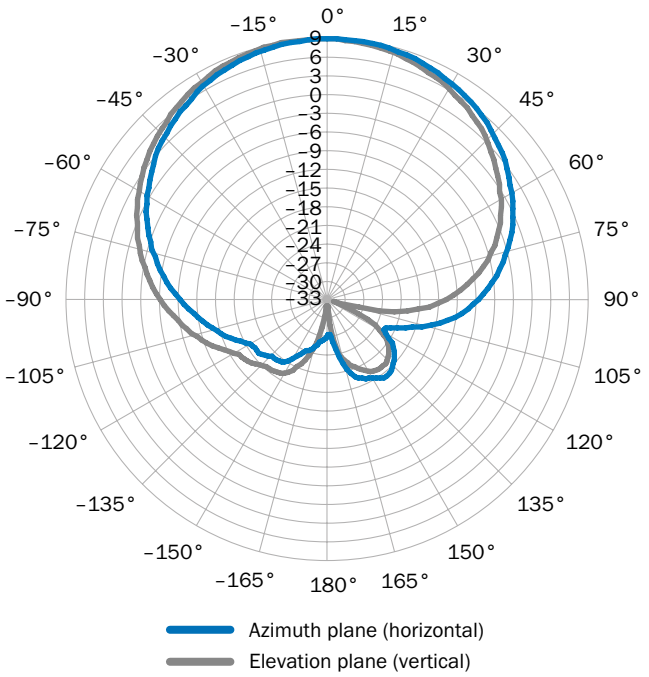
Product category	Scanning range	Radio approval	Type	Part no.
Write/read device with integrated antenna	Typ. 5 m [1]	Europe, South Africa, Saudi Arabia	RFU630-13100	1054396
		USA, Canada, México	RFU630-13101	1054397
		Australia	RFU630-13102	1058775
		India	RFU630-13103	1067473
		Brazilian	RFU630-13104	1068726
		China	RFU630-13105	1057943
		Japan	RFU630-13106	1067133
	Typ. 2 m [1]	Japan	RFU630-13107	1061498
	Typ. 5 m [1]	Russia, Belarus	RFU630-13108	1070903
		Korea	RFU630-13110	1073442
		New Zealand	RFU630-13111	1077862
		Indonesia	RFU630-13112	1074302
	Typ. 3 m [1]	Taiwan	RFU630-13113	1077861
	Typ. 2 m [1]	Morocco	RFU630-13115	1083558
Write/read device without integrated antenna	Typ. 5 m [1]	Europe, South Africa, Saudi Arabia	RFU630-04100	1058117
		USA, Canada, México	RFU630-04101	1059999
		Australia	RFU630-04102	1073376
		China	RFU630-04105	1073196
		Japan	RFU630-04106	1068569
		Russia	RFU630-04108	1070904
		Singapore	RFU630-04109	1073377

[1] Depending on transponder used and ambient conditions.

Radiation pattern

RFU63x Long Range

Measured antenna gain in dBic at 868.5 MHz,
RHCP (right-hand circular polarized)



THE MEASURING RFID DEVICE WITH INTEGRATED PASSAGE AND DIRECTION DETECTION

Product description

The RFU65x RFID read/write device saves space, time, and costs when it comes to identifying vehicles and vehicle parts. This compact device is able to determine the angle from which the transponder responds. The RFU65x also features an integrated logic unit that processes data on the basis of algorithms. This makes it possible to deduce entry detection information plus a vehicle's direction of movement when it drives through a receiving goods door, for example. Unlike other devices, the RFU65x does not require any additional external antennae. Not only does this cut down on costs, it also simplifies and accelerates application processes in logistics and the automotive industry.

At a glance

- Compact UHF RFID read/write device in accordance with ISO/IEC 18000-63
- Positioning and angle detection by RFID transponders
- Integrated algorithms deduce the direction of entry and movement based on numerous measured values
- Supports data and fieldbus interfaces that are typically used in the industry

Your benefits

- UHF RFID transponders demonstrate outstanding reading reliability thanks to correct transponder assignment, including integrated entry detection plus direction output.
- Space-saving, compact device that does not require any additional antennae
- Easy to integrate into industrial fieldbuses with 4Dpro connectivity
- Fulfills the requirements of the IP67 enclosure rating ("outdoor") and is rugged and durable
- Compatible with other SICK RFID read/write devices, making it highly flexible
- Additional software functions for the device can be programmed in the SICK software environment and integrated into the device

Additional information

→ www.sick.com/RFU65x

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

8016267/2017-04-21
Subject to change without notice

Detailed technical data

Features

Version	Long Range
Carrier frequency	
Europe	865.7 MHz ... 867.5 MHz
USA, Canada	902 MHz ... 928 MHz
China	920.625 MHz ... 924.375 MHz
Japan	916.8 MHz ... 920.4 MHz
Output power	
Europe	2 W (ERP, with integrated antenna,)
USA, Canada	3.2 W (EIRP, 34 dBm)
China	1.6 W (ERP, with integrated antenna,)
Japan	2.5 W (EIRP, 34 dBm)
Modulation	PR-ASK, DSB-ASK
MTBF	25 years
Antenna	Integrated (circular polarized, 80° vertical/55° horizontal aperture angle, front-to-back ratio > 15 dB)
Service functions	Parameter cloning with integrated microSD memory card slot or externally via CMC module in CDB620
Further functions	Transponder entry detection with direction information at horizontal antenna level, Horizontal transponder angle output, diagnosis, updatable firmware, freely programmable data output format, Heartbeat, triggering, SICK AppSpace functionalities can be enabled with the SD card accessory SDK6U-P00100

Interfaces

Serial (RS-232, RS-422/-485)	✔
Function	Host, AUX
Data transmission rate	300 Baud ... 115.2 kBaud, AUX: 57.6 kBaud (RS-232)
USB	✔, USB 2.0
Function	AUX
Ethernet	✔
Function	Host, AUX
Data transmission rate	10/100 MBit/s
Protocol	TCP/IP, EtherNet/IP™, PROFINET, PROFINET Dual Port (optional via external connection module CDF600-2), EtherCAT® (optional over external fieldbus module CDF600)
CAN bus	✔
Function	Host
Protocol	CSN (SICK CAN Sensor Network)
PROFIBUS DP	✔, Optional over external fieldbus module (CDF)
DeviceNet™	✔, optional available externally
Switching inputs	4 (“Sensor 1”, “Sensor 2”, 2 inputs via optional parameter storage CMC600 in CDB620/ CDM420)
Switching outputs	4 (“Result 1”, “Result 2”, 2 outputs via optional parameter storage CMC600 in CDB620/ CDM420)
Optical indicators	8 LEDs, one of them multi-colored (function configurable via SOPAS ET, alternatively controlling with sw commands, status displays)
Acoustic indicators	1 beeper/buzzer (can be switched off, can be allocated as a result indication function)
Operating elements	2 buttons (choose and start/stop functions)
Configuration software	SOPAS ET

Mechanics/electronics

Electrical connection	1 x M12, 17-pin male connector 1 x M12, 4-pin Ethernet female connector
Operating voltage	12 V DC ... 30 V DC
Power consumption	< 26 W
Housing	Aluminum
Housing color	Blue, black, silver
Enclosure rating	IP67
Protection class	III
Weight	5.2 kg
Dimensions (L x W x H)	400 mm x 252 mm x 70 mm

Ambient data

Electromagnetic compatibility (EMC)	EN 301489-3 V1.6.1
Vibration resistance	EN 60068-2-6 (2008-02)
Shock resistance	EN 60068-2-27 (2009-05)
Ambient operating temperature	–25 °C ... +60 °C
Storage temperature	–30 °C ... +70 °C
Permissible relative humidity	90 %, Non-condensing

Ordering information

- **Version:** Long Range
- **Product category:** write/read device with integrated antenna
- **Frequency band:** UHF (860 MHz ... 960 MHz)
- **RFID standard:** EPCglobal UHF Class 1 Generation 2, ISO/IEC 18000-6 C
- **Scanning range:** typ. 5 m (Depending on transponder used and ambient conditions.)

Radio approval	Type	Part no.
Europe	RFU650-10100	1073556
USA, Canada	RFU650-10101	1076522
China	RFU650-10105	1083559
Japan	RFU650-10106	1083560

8016267/2017-04-21
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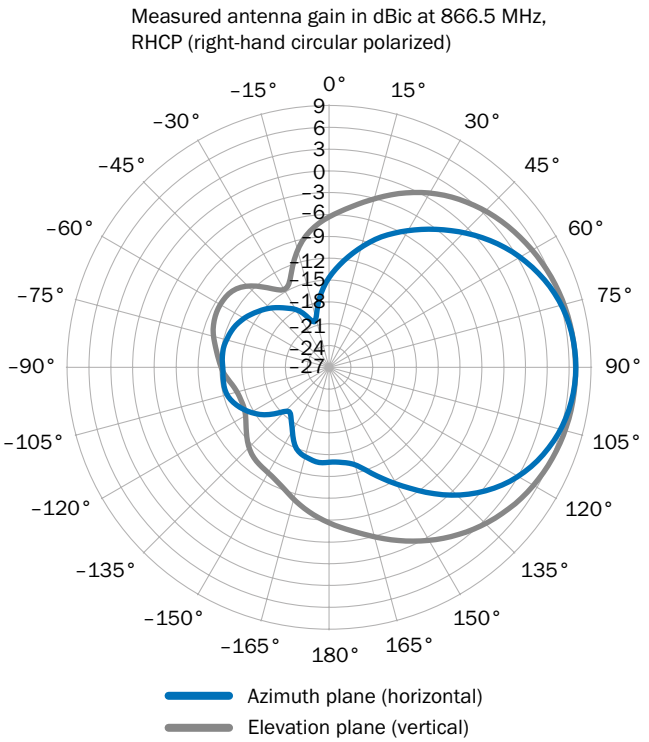
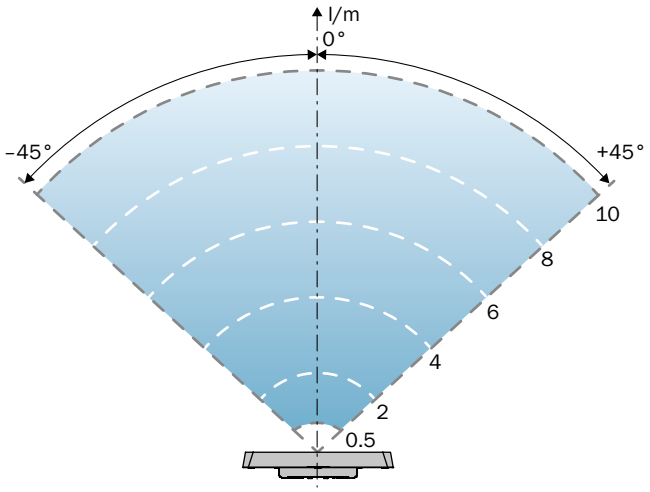
Radiation pattern



Operating range diagram



RFID

Mounting systems

Mounting brackets and plates

	Brief description	Part no.	RFH620 cable	RFH620 Ethernet	RFH630 cable	RFH630 Ethernet	RFU62x cable	RFU62x Ethernet	RFU62x PoE	RFU63x	RFU65x
	Mounting bracket	2048551	●	●	●	●	–	–	–	–	–
	Simple mounting bracket	2071067	–	–	–	–	●	●	●	–	–
	Frame bracket	2071773	–	–	–	–	●	●	●	–	–
	VESA adapter plate, incl. assembly material	2071862	–	–	–	–	●	●	●	–	–
		2061688	–	–	–	–	–	–	–	●	●
	Pivot mounting bracket, incl. assembly material	2080967	–	–	–	–	–	–	–	●	●
	Mounting bracket for wall mounting, incl. assembly material	2060912	–	–	–	–	–	–	–	●	●
	Pivot mounting bracket, incl. assembly material	2061737	–	–	–	–	–	–	–	●	●

Terminal and alignment brackets

	Brief description	Part no.	RFH620 cable	RFH620 Ethernet	RFH630 cable	RFH630 Ethernet	RFU62x cable	RFU62x Ethernet	RFU62x PoE	RFU63x	RFU65x
	Quick-action lock system	2016110	–	–	–	–	●	●	●	–	–
	Base clamp	5327611	–	–	–	–	●	●	●	●	●
	Cross clamp	5327612	–	–	–	–	●	●	●	●	●
	Link clamp with screws	2068919	–	–	–	–	●	●	●	●	●
	Pipe, diameter 30 mm, length 1 m	5327610	–	–	–	–	●	●	●	●	●
	Sealing plug, diameter 30 mm	5327613	–	–	–	–	●	●	●	●	●

8016267/2017-04-21
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Device protection (mechanical)

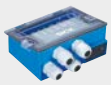
	Brief description	Part no.	RFH620 cable	RFH620 Ethernet	RFH630 cable	RFH630 Ethernet	RFU62x cable	RFU62x Ethernet	RFU62x PoE	RFU63x	RFU65x
	IP-65 sealing rubber for extension cables with 15-pin D-Sub plug connection	4038847	●	●	●	●	●	●	–	●	●
		2081800	–	–	–	–	–	–	–	●	–
 Illustration may differ	Recommended for outdoor usage.	2080601	–	–	–	–	–	–	–	–	●

Other mounting accessories

	Brief description	Part no.	RFH620 cable	RFH620 Ethernet	RFH630 cable	RFH630 Ethernet	RFU62x cable	RFU62x Ethernet	RFU62x PoE	RFU63x	RFU65x
	Spacer for on-metal application with disc transponder; length 20 mm, diameter 18 mm, hole 8.2 mm, up to 120 °C	5324113	●	●	●	●	–	–	–	–	–
	Mounting bracket for card transponder on euro-pallet	2084718	●	●	●	●	●	●	●	●	●
	2-part Teflon support for HF transponders, 2 x 6.2 mm holes, including (Allen) screws and spacers	2084810	●	●	●	●	–	–	–	–	–
	Teflon holder for high memory transponder; 2 x hole 6.2 mm	2075469	–	–	–	–	●	●	●	●	●

Connection systems

Modules

	Brief description	Type	Part no.	RFH620 cable	RFH620 Ethernet	RFH630 cable	RFH630 Ethernet	RFU62x cable	RFU62x Ethernet	RFU62x PoE	RFU63x	RFU65x
	Small connection module for one sensor, 4 cable glands, base for CMC600	CDB620-001	1042256	●	●	●	●	●	●	–	–	–
	Small connection module for one sensor, 2 cable glands, 2 x M12 connector/socket for CAN, base for CMC600	CDB620-101	1042257	●	●	●	●	●	●	–	–	–
	Small connection module for a sensor, 5 cable glands, socket for CMC cloning module	CDB620-201	1042258	●	●	●	●	●	●	–	–	–

	Brief description	Type	Part no.	RFH620 cable	RFH620 Ethernet	RFH630 cable	RFH630 Ethernet	RFU62x cable	RFU62x Ethernet	RFU62x PoE	RFU63x	RFU65x
	Connection device basic for connecting one sensor with 2 A fuse, 5 cable glands and RS-232 interface to sensor via M12, 17-pin female connector, all outputs available on screw/spring-loaded terminals.	CDB650-204	1064114	–	–	–	●	–	●	–	●	●
	Fieldbus proxy/gateway for connecting identification sensors to PROFIBUS-DP networks (PROFIBUS interface: 2 x M12, male connector/female connector, 5-pin)	CDF600-2100	1058965	●	●	●	●	●	●	–	●	●
	Fieldbus proxy/gateway for connecting identification sensors to PROFIBUS-DP networks (PROFIBUS interface: 1 x D-Sub, female connector, 9-pin)	CDF600-2103	1058966	●	●	●	●	●	●	–	●	●
	Fieldbus proxy/gateway for connecting one identification sensor to PROFINET-IO networks (interface 2 x M12, female connector/female connector, 4-pin)	CDF600-2200	1062460	●	●	●	●	●	●	–	●	●
	Fieldbus proxy/gateway for connecting an identification sensor to PROFINET IO networks (interface 2 x RJ45 AIDA, female/female connector, 4-pin)	CDF600-2201	1063390	●	●	●	●	●	●	–	●	●
	Fieldbus proxy/gateway for connecting a sensor to EtherCAT networks	CDF600-0300	1052291	●	●	●	●	●	●	–	–	–
	Modular connection module for one sensor	CDM420-0001	1025362	●	●	●	●	●	●	–	–	–
	Modular connection module for two sensors	CDM420-0004	1028487	●	●	●	●	●	●	–	–	–
	Modular connection module for one sensor, 2 A fuse	CDM420-0006	1058634	●	●	●	●	●	●	–	●	●
	Modular connection module for two sensors, 2 A fuse	CDM420-0007	1060324	●	●	●	●	●	●	–	●	●
	Kit: modular connection module for one sensor, 2 A fuse,Host and AUX interface available on face plate, power supply CMP490, US power cord	CDM420-0108	1064248	●	●	●	●	●	●	–	●	●
	External parameter memory for integration in CDB620/CDB650/CDM42x	CMC600-101	1042259	●	●	●	●	●	●	–	●	●

Power supply units and power cord connectors

	Brief description	Part no.	RFH620 cable	RFH620 Ethernet	RFH630 cable	RFH630 Ethernet	RFU62x cable	RFU62x Ethernet	RFU62x PoE	RFU63x	RFU65x
	Power supply unit with pre-assembled M12 female connector, 12-pin	2049552	–	●	–	–	–	–	–	–	–
	Power supply unit with pre-assembled M12 female connector, 17-pin, dimensions (L x W x H): 102 mm x 36 mm x 53 mm	2062249	–	–	–	●	–	●	–	●	●

8016267/2017-04-21
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Plug connectors and cables

- **Signal type/application:** Power, serial, CAN, digital I/Os

	Connection type head A	Connection type head B	Cable	Cable length	Part no.	RFH620 cable	RFH620 Ethernet	RFH630 cable	RFH630 Ethernet	RFU62x cable	RFU62x Ethernet	RFU62x PoE	RFU63x	RFU65x
	Female connector, M12, 12-pin, straight	Cable	12-wire, UL	5 m	6034605	–	●	–	–	–	–	–	–	–
	Female connector, M12, 12-pin, straight, A-coded	Cable	Drag chain use, suitable for 2 A, suitable for refrigeration	5 m	2075219	–	●	–	–	–	–	–	–	–
	Female connector, M12, 17-pin, straight, A-coded	Cable	17-wire, suitable for 2 A, Changed color coding of the flying leads, drag chain use, stripped	3 m	2070425	–	–	–	●	–	●	–	●	●
				5 m	2070426	–	–	–	●	–	●	–	●	●
				10 m	2070427	–	–	–	●	–	●	–	●	●
			Drag chain use, suitable for 2 A, suitable for refrigeration	5 m	2075220	–	–	–	●	–	●	–	●	●
	Female connector, M12, 12-pin, straight	Male connector, D-Sub-HD, 15-pin, straight	To connection module CDx (except CDB650)	0.35 m	2047698	–	●	–	–	–	–	–	–	–
				0.9 m	2042916	–	●	–	–	–	–	–	–	–
				2 m	2041834	–	●	–	–	–	–	–	–	–
				3 m	2042914	–	●	–	–	–	–	–	–	–
				5 m	2042915	–	●	–	–	–	–	–	–	–
			To CDx connection module (not CDB650), drag chain use	3 m	2061604	–	●	–	–	–	–	–	–	–
	Female connector, M12, 17-pin, straight	Male connector, D-Sub-HD, 15-pin, straight	To connection module CDx (except CDB650)	0.35 m	2056184	–	–	–	●	–	●	–	●	●
				0.9 m	2049764	–	–	–	●	–	●	–	●	●
				2 m	2055419	–	–	–	●	–	●	–	●	●
				3 m	2055420	–	–	–	●	–	●	–	●	●
				5 m	2055859	–	–	–	●	–	●	–	●	●
			To connection module CDx (except CDB650), drag chain use	3 m	2061605	–	–	–	●	–	●	–	●	●
	Female connector, M12, 17-pin, straight, A-coded	Male connector, M12, 17-pin, straight, A-coded	To connection module CDB650, 17-wire, suitable for 2 A, drag chain use	0.9 m	6052945	–	–	–	●	–	●	–	●	●
				2 m	6052286	–	–	–	●	–	●	–	●	●
				3 m	6051194	–	–	–	●	–	●	–	●	●
				5 m	6051195	–	–	–	●	–	●	–	●	●
			Drag chain use, suitable for 2 A, suitable for refrigeration	2 m	6053230	–	–	–	●	–	●	–	●	●
				3 m	6053231	–	–	–	●	–	●	–	●	●
				5 m	6053232	–	–	–	●	–	●	–	●	●

	Connection type head A	Connection type head B	Cable	Cable length	Part no.	RFH620 cable	RFH620 Ethernet	RFH630 cable	RFH630 Ethernet	RFU62x cable	RFU62x Ethernet	RFU62x PoE	RFU63x	RFU65x
	Female connector, D-Sub-HD, 15-pin, straight	Cable	Extension cable, 15-wire, AWG26	2 m	2043413	●	–	●	–	●	–	–	–	–
 Illustration may differ		Male connector, D-Sub-HD, 15-pin, straight		2 m	6054331	●	●	●	●	●	●	–	●	●
				3 m	6054332	●	●	●	●	●	●	–	●	●

- **Signal type/application:** Power

	Connection type head A	Connection type head B	Cable	Cable length	Part no.	RFH620 cable	RFH620 Ethernet	RFH630 cable	RFH630 Ethernet	RFU62x cable	RFU62x Ethernet	RFU62x PoE	RFU63x	RFU65x
	Female connector, M12, 17-pin	Cable	To connection module CDx (except CDB650), 2-wire	10 m	6048319	–	–	–	●	–	●	–	●	●
	Cable	Cable	Black AS-i flat cable for looping in the power supply to 4Dpro Ethernet sensors, 2-wire	–	6022463	–	●	–	●	–	●	–	–	–
	Connection clip, M12	–	AS-i clip for connection on black AS-i flat cable	–	6022472	–	●	–	●	–	●	–	–	–
	Female connector, M12, 12-pin, straight	Male connector, M12, 4-pin, straight	For connection to black AS-i flat ribbon cable for supplying power to 4Dpro-Ethernet sensors, drag chain use	1 m	6044572	–	●	–	–	–	–	–	–	–
				2.5 m	6044573	–	●	–	–	–	–	–	–	–
	Female connector, M12, 17-pin, straight	Male connector, M12, 4-pin, straight	For connection to black AS-i flat ribbon cable for supplying power to 4Dpro-Ethernet sensors, drag chain use	1 m	6044574	–	–	–	●	–	●	–	–	–
				2.5 m	6044575	–	–	–	●	–	●	–	–	–

- **Signal type/application:** Ethernet/Ethernet CAT5

	Connection type head A	Connection type head B	Cable	Cable length	Part no.	RFH620 cable	RFH620 Ethernet	RFH630 cable	RFH630 Ethernet	RFU62x cable	RFU62x Ethernet	RFU62x PoE	RFU63x	RFU65x
	Male connector, M12, 4-pin, D-coded	Male connector, M12, 4-pin, D-coded	4-wire	2 m	6034420	–	●	–	●	–	●	–	●	●
				3 m	6034421	–	●	–	●	–	●	–	●	●
				5 m	6034422	–	●	–	●	–	●	–	●	●
	Male connector, M12, 4-pin, straight, D-coded	Male connector, RJ45, 8-pin, straight	4-wire, drag chain use, AWG26	2 m	6034414	–	●	–	●	–	●	–	●	●
				3 m	6044400	–	●	–	●	–	●	–	●	●
				5 m	6034415	–	●	–	●	–	●	–	●	●
				10 m	6030928	–	●	–	●	–	●	–	●	●
				20 m	6036158	–	●	–	●	–	●	–	●	●
 Illustration may differ			4-wire, suitable for refrigeration, Ecolab, AWG26	2 m	6050198	–	●	–	●	–	●	–	●	●
				3 m	6050199	–	●	–	●	–	●	–	●	●
				5 m	6050200	–	●	–	●	–	●	–	●	●
				10 m	6050201	–	●	–	●	–	●	–	●	●
				20 m	6050596	–	●	–	●	–	●	–	●	●
	Male connector, M12, 4-pin, straight, D-coded	Male connector, RJ45, 8-pin, straight	4-wire, outdoor	5 m	6054493	–	●	–	●	–	●	–	●	●
				10 m	6054492	–	●	–	●	–	●	–	●	●
				20 m	6050685	–	●	–	●	–	●	–	●	●

- **Signal type/application:** Gigabit Ethernet

	Connection type head A	Connection type head B	Cable	Cable length	Part no.	RFH620 cable	RFH620 Ethernet	RFH630 cable	RFH630 Ethernet	RFU62x cable	RFU62x Ethernet	RFU62x PoE	RFU63x	RFU65x
	Male connector, M12, 8-pin, straight, X-coded	Male connector, RJ45, 8-pin, straight	AWG26	2 m	6049728	–	–	–	–	–	–	●	–	–
				5 m	6049729	–	–	–	–	–	–	●	–	–
				10 m	6049730	–	–	–	–	–	–	●	–	–

- **Signal type/application:** serial

	Connection type head A	Connection type head B	Cable	Cable length	Part no.	RFH620 cable	RFH620 Ethernet	RFH630 cable	RFH630 Ethernet	RFU62x cable	RFU62x Ethernet	RFU62x PoE	RFU63x	RFU65x
	Female connector, D-Sub, 9-pin, straight	Female connector, D-Sub, 9-pin, straight	For PC connection	3 m	2014054	●	●	●	●	●	●	–	●	●

- **Signal type/application:** PROFINET

	Connection type head A	Connection type head B	Cable	Cable length	Part no.	RFH620 cable	RFH620 Ethernet	RFH630 cable	RFH630 Ethernet	RFU62x cable	RFU62x Ethernet	RFU62x PoE	RFU63x	RFU65x
 Illustration may differ	Male connector, M12, 4-pin, straight, D-coded	Male connector, RJ45, 8-pin, straight	35,000 torsion flex cycles, Robot, CAT5, CAT5e	5 m	6053217	–	●	–	●	–	●	–	●	●

- **Signal type/application:** RS-232, USB

	Connection type head A	Connection type head B	Cable	Part no.	RFH620 cable	RFH620 Ethernet	RFH630 cable	RFH630 Ethernet	RFU62x cable	RFU62x Ethernet	RFU62x PoE	RFU63x	RFU65x
	Male connector, D-Sub, 9-pin, straight	Male connector, USB-A, straight	Converter RS-232 to USB (if no RS-232 interface is available with the PC)	6042499	●	●	●	●	●	●	–	●	●

- **Signal type/application:** USB 2.0

	Connection type head A	Connection type head B	Cable length	Part no.	RFH620 cable	RFH620 Ethernet	RFH630 cable	RFH630 Ethernet	RFU62x cable	RFU62x Ethernet	RFU62x PoE	RFU63x	RFU65x
	Male connector, USB-A	Male connector, Micro-B	2 m	6036106	–	–	–	–	●	●	●	●	●

- **Signal type/application:** HF analog

	Connection type head A	Connection type head B	Cable	Cable length	Part no.	RFH620 cable	RFH620 Ethernet	RFH630 cable	RFH630 Ethernet	RFU62x cable	RFU62x Ethernet	RFU62x PoE	RFU63x	RFU65x
	Male connector, N, straight	Male connector, TNC, straight	Antenna connecting cable, power loss 1.5 dB	2 m	6034081	–	–	–	–	–	–	–	●	●
			Antenna connecting cable, power loss 2.5 dB	5 m	6034082	–	–	–	–	–	–	–	●	●
			Antenna connecting cable, power loss 3.5 dB	10 m	6034083	–	–	–	–	–	–	–	●	●

8016267/2017-04-21
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	Connection type head A	Connection type head B	Cable	Cable length	Part no.	RFH620 cable	RFH620 Ethernet	RFH630 cable	RFH630 Ethernet	RFU62x cable	RFU62x Ethernet	RFU62x PoE	RFU63x	RFU65x
	Female connector, TNC	Female connector, TNC	Antenna connecting cable, power loss 1.5 dB	2 m	6049780	–	–	–	–	–	–	–	●	●
			Antenna connecting cable, power loss 2.5 dB	5 m	6049781	–	–	–	–	–	–	–	●	●
			Antenna connecting cable, power loss 3.5 dB	10 m	6049782	–	–	–	–	–	–	–	●	●

Further accessories

RFID antennas

	Brief description	Type	Part no.	RFH620 cable	RFH620 Ethernet	RFH630 cable	RFH630 Ethernet	RFU62x cable	RFU62x Ethernet	RFU62x PoE	RFU63x	RFU65x
	Industrial RFID HF antenna, cable length 3.62 m, diameter 30 mm, length 48 mm	RFA312-3733	1065473	–	–	–	●	–	–	–	–	–
	Industrial RFID HF antenna, cable length 3.62 m, dimensions 300 mm x 210 mm x 33 mm	RFA332-2032	1054399	–	–	–	●	–	–	–	–	–
	Industrial RFID UHF antenna, carrier frequency 865 ... 868 MHz (Europe, India, Russia, South Africa, Saudi Arabia), TNC reverse	RFA621-000	1073138	–	–	–	–	–	–	–	●	–
	Industrial RFID UHF antenna, carrier frequency 902 ... 928 MHz (USA, Canada, México, Australia, Brazil, China, Japan), TNC reverse	RFA621-001	1073139	–	–	–	–	–	–	–	●	–
	Industrial RFID UHF antenna, carrier frequency 865 ... 868 MHz (Europe, India, Russia, South Africa, Saudi Arabia), TNC reverse	RFA630-000	1058383	–	–	–	–	–	–	–	●	–
	Industrial RFID UHF antenna, carrier frequency 902 ... 928 MHz (USA, Canada, México, Australia, Brazil, China, Japan), TNC reverse	RFA630-001	1058384	–	–	–	–	–	–	–	●	–
	Industrial RFID UHF antenna, carrier frequency 865 ... 868 MHz (Europe, India, Russia, South Africa, Saudi Arabia), TNC male connector, with integrated feedback LED (RGB)	RFA630-100	1059946	–	–	–	–	–	–	–	●	–
	Industrial RFID UHF antenna, carrier frequency 902 ... 928 MHz (USA, Canada, México, Australia, Brazil, China, Japan), TNC male connector, with integrated feedback LED (RGB)	RFA630-101	1059947	–	–	–	–	–	–	–	●	–
	Industrial RFID UHF antenna, carrier frequency 860 ... 960 MHz (Europe and North America), N male connector	RFA641-3440	6034316	–	–	–	–	–	–	–	●	–
	Industrial RFID UHF antenna, carrier frequency 865 ... 870 MHz (Europe, South Africa, Saudi Arabia), TNC reverse	RFA651-5731	6036102	–	–	–	–	–	–	–	●	–

RFID transponder

	Brief description	Type	Part no.	RFH620 cable	RFH620 Ethernet	RFH630 cable	RFH630 Ethernet	RFU62x cable	RFU62x Ethernet	RFU62x PoE	RFU63x	RFU65x
	HF transponder, PA 6, diameter 30 mm, NXP ICODE SLIX	Disk (30 mm)	6034740	●	●	●	●	–	–	–	–	–
	HF transponder, PA 6, diameter 30 mm, Fujitsu MB89R118	Disk (30 mm)	6043514	●	●	●	●	–	–	–	–	–
	HF transponder, PA 6, diameter 50 mm, NXP ICODE SLIX	Disk (50 mm)	6033781	●	●	●	●	–	–	–	–	–
	HF transponder, PA 6, diameter 50 mm, Fujitsu MB89R118	Disk (50 mm)	6042212	●	●	●	●	–	–	–	–	–
	HF transponder, ABS, diameter 30 mm, NXP ICODE SLIX	Disk low cost (30 mm)	6051701	●	●	●	●	–	–	–	–	–
	HF transponder, PA9T, diameter 22 mm, NXP ICODE SLIX	Disk on-metal (22 mm)	6052179	●	●	●	●	–	–	–	–	–
	HF transponder, glass, length 21.7 mm, diameter 4 mm, NXP ICODE SLIX	Glass transponder	6039237	●	●	●	●	–	–	–	–	–
	HF transponder, PVC, 85.6 mm x 54 mm x 0.76 mm, NXP ICODE SLIX	ISO card	6037848	●	●	●	●	–	–	–	–	–
	HF transponder, modified thermoplastic, diameter 16 mm, NXP ICODE SLIX	Coin transponder (16 mm)	6041592	●	●	●	●	–	–	–	–	–
	HF transponder, PPS, diameter 22 mm, Texas Instruments Tag-it HF-I plus	Coin transponder (22 mm)	6033173	●	●	●	●	–	–	–	–	–
	HF transponder, ABS, 90 mm x 34 mm x 7 mm, NXP ICODE SLIX	On-metal transponder flat	6047938	●	●	●	●	–	–	–	–	–
	HF transponder, polyamid, silicone, 25 mm x 12,5 mm x 5 mm, NXP ICODE SLI	On-metal transponder small	6039051	●	●	●	●	–	–	–	–	–
	HF transponder, paper, 81 mm x 49 mm, NXP ICODE SLIX	Paper label	6037763	●	●	●	●	–	–	–	–	–
 Illustration may differ	HF transponder, paper, 36 mm x 18 mm, NXP ICODE SLIX	Paper label	6052794	●	●	●	●	–	–	–	–	–
	HF transponder, nylon, length 30 mm, diameter 5 mm, NXP ICODE SLIX	Cylinder transponder	6044368	●	●	●	●	–	–	–	–	–
	HF transponder up to at least 85 °C, PPS, no hole, 51 mm x 51 mm x 6.5 mm, NXP ICODE SLIX	High-temperature transponder	6060918	●	●	●	●	–	–	–	–	–
	UHF transponder, global, high memory, 41 mm x 11 mm x 5.15 mm, NXP UCODE i^2C	High memory transponder (41 mm x 11 mm x 5.15 mm)	6054025	–	–	–	–	●	●	●	●	●
	UHF Transponder, global, ABS, 65 mm x 45 mm x 8 mm, Quanray Qstar-2a	High-memory transponder	6061389	–	–	–	–	●	●	●	●	●

8016267/2017-04-21
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	Brief description	Type	Part no.	RFH620 cable	RFH620 Ethernet	RFH630 cable	RFH630 Ethernet	RFU62x cable	RFU62x Ethernet	RFU62x PoE	RFU63x	RFU65x
	UHF transponder, PVC, 85.6 mm x 54 mm x 0.76 mm, Alien Higgs	ISO card	6051820	–	–	–	–	●	●	●	●	●
	UHF transponder, global, 110 mm x 70 mm x 0.42 mm, NXP UCODE G2iM	High-temp. label	6052355	–	–	–	–	●	●	●	●	●
	UHF transponder, global, 110 mm x 70 mm x 0.42 mm, NXP UCODE G2XM	High-temp. label	6049636	–	–	–	–	●	●	●	●	●
	UHF transponder, ETSI, plastic, 155 mm x 26 mm x 14.5 mm, NXP G2im+	On-metal transponder (155 mm x 26 mm x 14.5 mm)	6061180	–	–	–	–	●	●	●	●	●
		On-metal transponder (155 mm x 26 mm x 14.5 mm)	6060819	–	–	–	–	●	●	●	●	●
	UHF transponder, plastic, global, 27 mm x 27 mm x 6 mm, Impinj Monza 4QT	On-metal transponder (27 mm x 27 mm x 6 mm)	6052186	–	–	–	–	●	●	●	●	●
	UHF transponder, global, thermoplastic, 51.5 mm x 47.5 mm x 10 mm, Impinj Monza 4 QT	On-metal transponder (52 mm x 48 mm x 10 mm)	6052346	–	–	–	–	●	●	●	●	●
	UHF transponder, global, 85 mm x 21 mm x 10 mm, NXP UCODE 7xm	On-metal transponder (85 mm x 21 mm x 10 mm)	6063989	–	–	–	–	●	●	●	●	●
	UHF Transponder, ETSI, Nylon, 51 mm x 36.3 mm x 7.5 mm, Alien Higgs 3	On-metal transponder, high-temp ETSI	6060472	–	–	–	–	●	●	●	●	●
	UHF Transponder, FCC, Nylon, 51 mm x 36.3 mm x 7.5 mm, Alien Higgs 3	On-metal transponder high-temp. FCC	6053159	–	–	–	–	●	●	●	●	●
	UHF transponder, special label for wooden pallets, 73 mm x 14 mm x 0.3 mm, Impinj Monza 4QT	Special label	6054385	–	–	–	–	●	●	●	●	●

Storage media

	Brief description	Type	Part no.	RFH620 cable	RFH620 Ethernet	RFH630 cable	RFH630 Ethernet	RFU62x cable	RFU62x Ethernet	RFU62x PoE	RFU63x	RFU65x
 Illustration may differ	microSD memory card with 1 GB for industrial use	microSD memory card	4051366	●	●	●	●	●	●	●	●	●
	Code for activating the SICK AppSpace functions. MicroSD memory card with 1 GB for industrial use.	SDK6U-P00100 SICK AppSpace	1076012	–	–	–	–	●	●	●	●	●

HF transponder

Properties

	Type	Part no.	Dimensions	IC	Max. reading distance (mm)	Temperature range				
						Temperature (constant)		Temperature (cyclical)		
						min. (°C)	max. (°C)	up to (°C)	Duration	Cycles
	Disc low cost Ø 30 mm	6051701	Ø 30 mm x 3 mm	NXP ICODE SLIX	70 RFH620 +120 RFH630	–25	+85	–	–	–
	Disc Ø 30 mm	6034740		NXP ICODE SLIX	+85 RFH620 +140 RFH630	–40	+85	+140	100 h	1
	Disc Ø 30 mm FRAM	6043514		Fujitsu MB89R118	80 RFH620 130 RFH630	–25	+85	+140	100 h	1
	Disc Ø 50 mm	6033781	Ø 50 mm x 3 mm	NXP ICODE SLIX	+120 RFH620 200 RFH630	–40	+85	+140	100 h	1
	Disc Ø 50 mm FRAM	6042212		Fujitsu MB89R118	110 RFH620 190 RFH630	–25	+85	+140	100 h	1
	ISO card	6037848	86 x 54 x 1 mm³	NXP ICODE SLIX	150 RFH620 240 RFH630	–35	+50	–	–	–
	Coin transponder Ø 16 mm	6041592	Ø 16 mm x 3 mm	NXP ICODE SLIX	60 RFH620 100 RFH630	–25	+85	+120 +220	100 h 30 sec	1 1
	Coin transponder Ø 22 mm	6033173	Ø 22 mm x 3 mm	TI Tag-it HF-I plus	65 RFH620 115 RFH630	–25	+90	–	–	–
	Disc on-metal Ø 22 mm	6052179	Ø 22 mm x 3 mm	NXP ICODE SLIX	5 RFH620 +50 RFH630	–40	+90	–	–	–
	On-metal transponder flat	6047938	90 x 34 x 7 mm³	NXP ICODE SLIX	65 RFH620 +120 RFH630	–25	+85	–	–	–
	On-metal transponder small	6039051	25 x 13 x 5 mm³	NXP ICODE SLIX	55 RFH620 110 RFH630	–25	+85	–	–	–
	Glass transponder	6039237	Ø 4 mm 22 mm	NXP ICODE SLIX	30 RFH620 +90 RFH630	–25	+85	+120 +140	100 h 10 h	1 1
	Cylinder transponder	6044368	Ø 5 mm 30 mm	NXP ICODE SLIX	25 RFH620 45 RFH630	–40	+85	–	–	–
	Paper label low-cost	6037763	81 mm x 49 mm	NXP ICODE SLIX	+140 RFH620 230 RFH630	+5	+50	–	–	–
 Illustration may differ		6052794	36 mm x 18 mm	NXP ICODE SLIX	55 RFH620 +120 RFH630	+5	+50	–	–	–

8016267/2017-04-21
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	Type	Part no.	Dimensions	IC	Max. reading distance (mm)	Temperature range				
						Temperature (constant)		Temperature (cyclical)		
						min. (°C)	max. (°C)	up to (°C)	Duration	Cycles
	High-temperature transponder	6060918	51 x 51 x 6.5 mm³	NXP ICODE SLIX	100 RFH620 165 RFH630	–25	+85	+220	40 min	1,000

Note on memory organization

The size of the memory in the transponder depends on the IC that is installed. However, the memory is always organized in the same way, as follows:

- UID (User Identification)
  - Unique number from IC manufacturer (cannot be changed)
- User memory (optional)
  - The user memory can be used to store information on the transponder (can be customized).

Overview of ISO 15693 transponder ICs – 13.56 MHz – HF

Manufacturer	Type	UID [1]	AFI [2]	DSFID [3]	User memory	Number of blocks	Block size
NXP	ICODE SLIX	●	●	●	896 bits	28	4 bytes
	ICODE SLIX 2	●	●	●	2,528 bits	79	4 bytes
	ICODE SLIX-S	●	●	●	1,280 bits	40	4 bytes
	ICODE SLIX-L	●	●	●	256 bits	8	4 bytes
Texas Instruments	Tag-it HF-I pro	●	●	●	256 bits	8	4 bytes
	Tag-it HF-I plus	●	●	●	2,048 bits	64	4 bytes
Infineon	SRF55V01P	●	●	–	416 bits	13	4 bytes
	SRF55V02P	●	●	–	1,792 bits	56	4 bytes
	SRF55V10P	●	●	–	7,936 bits	248	4 bytes
Fujitsu	MB89R119B	●	●	●	1,856 bits	58	4 bytes
	MB89R118	●	●	●	16,000 bits	250	8 bytes
	MB89R112	●	●	●	64,000 bits	250	32 bytes

[1] UID = Unique Identifier: a unique, individual, non-rewritable 64-bit value, e.g., E0 04 01 00 1A B2 3C 45.

[2] AFI = Application Family Identifier: filter byte in the transponder for distinguishing between different transponder populations on the air interface.

[3] DSFID = Data Storage Format Identifier: filter byte in the transponder for distinguishing between different transponder populations after the read process.

Typical duration of read and write access with RFH6xx and ISO 15693 transponder (HF setting: 26 kbit/s)

Reading UID [1]

Number of transponders	1	2	3	4
Time (ms)	19 [2]	54	60	67

[1] UID = Unique Identifier; a unique, individual, non-rewritable 64-bit value, e.g., E0 04 01 00 1A B2 3C 45.

[2] Single-slot mode (no anti-collision required).

Reading multiple blocks

Number of blocks	1	2	3	4	5	6	7	8	9	...
Time (ms)	13	15	17	19	21	23	25	27	29	...

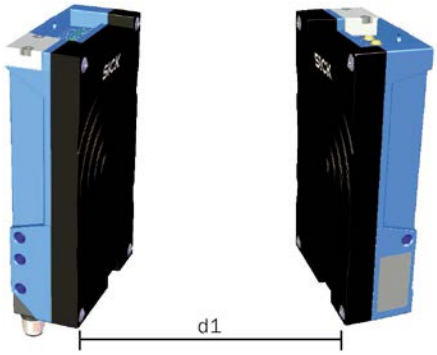
Writing multiple blocks

Number of blocks	1	2	3	4	5	6	7	8	9	...
Time (ms)	16	32	48	64	80	96	112	128	144	...

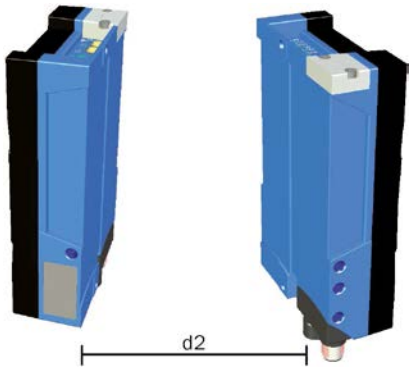
Installation distance for RFH6xx

There are three different ways in which two RFH6xx devices can be arranged; the following installation distances must be maintained in all cases.

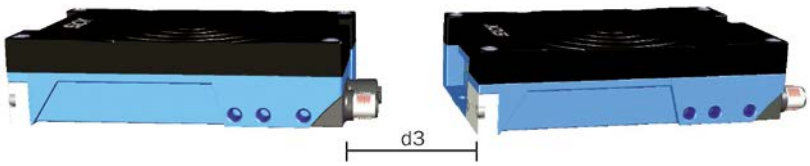
Facing one another



Facing away from one another



Side by side



Version	d1	d2	d3
RFH620 Short Range	340 mm	140 mm	150 mm
RFH630 Mid Range	1,700 mm	1,200 mm	1,300 mm

8016267/2017-04-21
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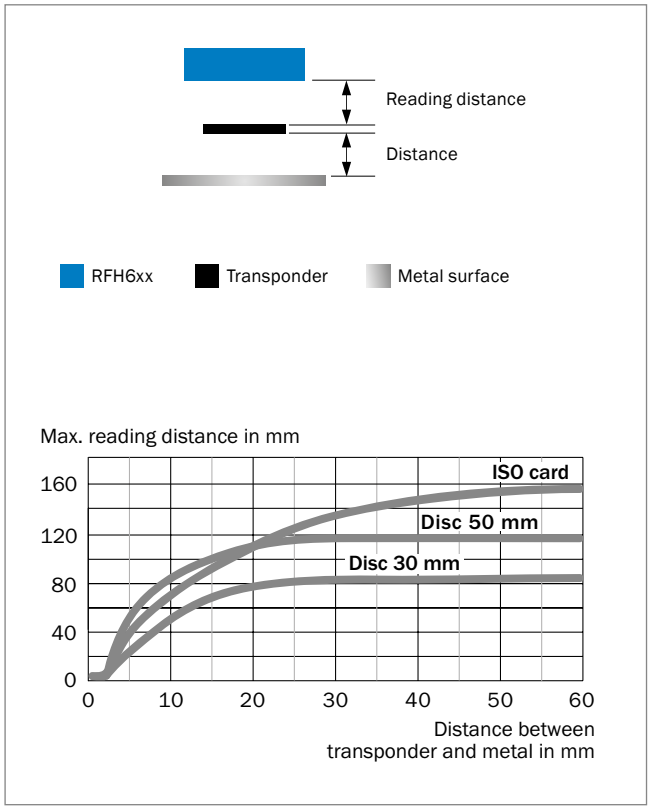
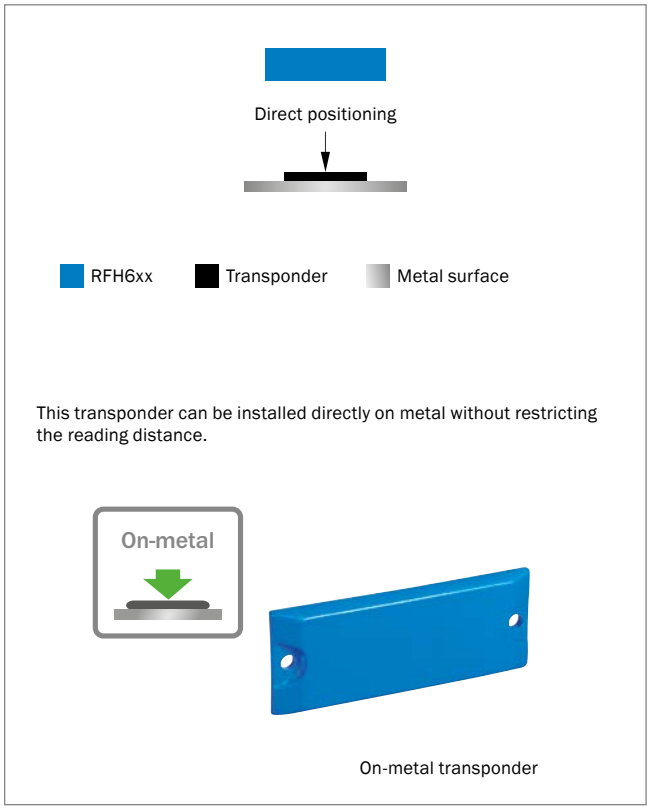
Positioning on metal for RFH6xx

The reading distance of standard transponders is reduced when in the vicinity of metal. The greater the distance between the transponder and the metal, the larger the maximum reading distance. The following diagram (on the left) displays the behavior of three transponders in a metallic environment. The recommended distance between the transponder and metal is 20 mm. In comparison, the disc transponder can achieve more than 90% of its reading distance in a non-metallic environment. The diagram on the right illustrates an alternative to directly positioning it on metal.

Positioning with distance to metal



Positioning directly on metal



Ideal positioning for RFH6xx

For disc, coin, and card transponders as well as on-metal transponders (6047938, 6052179)

For cylinder and glass transponders as well as on-metal transponders (6039051)

UHF transponder

Properties

	Type	Part no.	Dimensions	IC	Max. reading distance [1] (m) RFU62x, transmitting power 250 mW (ERP) RFU63x/65x, transmitting power 2 W (ERP) 0.1 0.2 0.5 1 2 5 10	Temperature range				
						Temperature (constant)		Temperature (cyclical)		
						min. (°C)	max. (°C)	up to (°C)	Duration	Cycles
	On-metal global	6052346	52 x 48 x 10 mm³	Impinj Monza 4QT		-40	+85	+125	60 min.	1
	On-metal ETSI	6061180	155 x 26 x 15 mm³	NXP G2iM+		-35	65	–	–	–
	On-metal FCC	6060819	155 x 26 x 15 mm³	Impinj Monza 4QT		-35	65	–	–	–
	On-metal global	6052186	27 x 27 x 6 mm³	Impinj Monza 4QT		-35	+85	–	–	–
	ISO card global	6051820	86 x 54 x 1 mm³	Alien Higgs 3		-10	+50	–	–	–
	On-metal global	6063989	85 x 21 x 10 mm³	NXP UCODE 7xm		-35	+85	–	–	–
	On-metal high-temp [2] ETSI	6060472	51 x 37 x 8 mm³	Alien Higgs 3		-30	+85	+220	30 min.	1000
 Illustration may differ	On-metal high-temp FCC [2]	6053159		Alien Higgs 3		-30	+85	+220	30 min.	1000
	High memory global	6054025	41 x 11 x 6 mm³	NXP UCODE I²C		-40	+85	–	–	–
	Special label for wooden pallets, global	6054385	73 x 14 x 0.3 mm³	Impinj Monza 4QT		-35	60	–	–	–
	High-temp label global [2]	6049636	110 x 70 x 0.5 mm³	NXP UCODE G2XM		-40	+85	+220	50 min.	1
	High-temp label global [2]	6052355	110 x 70 x 0.5 mm³	NXP UCODE G2iM		-40	+85	230	60 min.	4
	High memory on-metal global	6061389	65 x 45 x 8 mm³	Quanray Q-Star 2a		-20	+85	–	–	–

[1] Specifications are theoretical values produced under laboratory conditions. Antenna in optimum position and maximum permitted transmitting power according to ETSI EN 302208 (2 W ERP) used. Different surface materials may affect the sensing range.

[2] Tested in the laboratory, qualification required from the customer.

8016267/2017-04-21
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Note on memory organization

The size of the memory in the transponder depends on the IC that is installed. However, the memory is always organized in the same way,
as follows:

- TID (transponder ID number)
  - Unique number from IC manufacturer (cannot be changed)
- UII (Unique Item Identifier)
  - Used for identifying the transponder (can be customized)
- User memory/password management (optional)
  - In addition to the UII, the user memory can be used to store more information on the transponder (can be customized)

Overview of ISO 18000-6C transponder ICs – 865–928 MHz – UHF

Manufacturer	Type	User memory	UII/EPC memory
Alien	Higgs 3	512 bits 64 bits	96 bits 496 bits
	Higgs 4	512 bits	128 bits
Impinj	Monza 4 D	32 bits	128 bits
	Monza 4 E	128 bits	496 bits
	Monza 4 QT	512 bits	128 bits
	Monza 5	0 bits	128 bits
	Monza R6	0 bits	96 bits
	Monza R6-P	64 bits	128 bits
	Monza S6-C	32 bits	96 bits
	Monza X-2K	2,176 bits	128 bits
	Monza X-8K	8,192 bits	128 bits
NXP	UCODE G2iM+	640 bits 320 bits	128 bits 448 bits
	UCODE G2iL+	0 bits	128 bits
	UCODE G2XL	0 bits	240 bits
	UCODE G2XM	512 bits	240 bits
	UCODE G2iL	0 bits	128 bits
	UCODE G2iM	512 bits	256 bits
	UCODE 7	0 bits	128 bits
	UCODE 7M	32 bits	128 bits
	UCODE 7xm	1,000 bits	448 bits
	UCODE 7xm+	2,000 bits	448 bits
	UCODE i^2C	3,328 bits	160 bits
Quanray	Q-Star 2a	64,000 bits	240 bits

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