

## RFU62x



RFID interrogator (UHF)  
with internal antenna

Mid range

RFU620-101xx  
RFU620-104xx  
RFU620-105xx

**SICK**  
Sensor Intelligence.



### Correct use

The RFU620 interrogator (standard device) is an intelligent SICK-IDpro sensor from the RFU62x product family. It is used for the automatic, fixed identification of wireless-based data carriers on moving or stationary objects and their management.

As a compact reading and writing unit, the RFU620 has an integrated antenna. It processes all standard passive transponders in accordance with ISO/IEC-18000-6C and EPC-global UHF C1G2 in the regional UHF carrier frequency range. Thanks to its intelligent process logic it can be used either as a stand-alone solution or as part of a group in a network. The RFU620 sends the read results to a higher-level computer for further processing via its host interface. Or it receives commands for data carrier management (write, read, etc.) via this interface.

Correct use also includes compliance with all information in these operating instructions and the supplementary *RFU62x RFID Interrogator (UHF) Technical Information*, No. 8015930.

The RFU62x product family consists of 3 version series which are distinguished by their functionality (including type of data interface) and the design of the electrical connection:

- Ethernet version (RFU620-101xx), with heating for ambient temperatures as low as  $-40^{\circ}\text{C}$
- Serial version (RFU620-104xx)
- PoE version (RFU620-105xx), PoE = Power-over-Ethernet

Each series contains variants for regional assignment (placeholder xx above, see type label on the device) of the operating license and the carrier frequency range (for an overview  $\rightarrow$  see *“Technical specifications (excerpt)”*, page 5).

In this document, the RFU620 interrogator is simply referred to as the "RFU620", unless a clear distinction needs to be made between variants.

### About this document

These operating instructions apply to all variants of the RFU620. They allow you to commission the RFU620 quickly and easily in an ambient temperature range from  $0^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$  and to achieve initial read results with transponders. They describe the commissioning process for an application with an RFU620, starting with its default setting. Device variant RFU620-10100 (Ethernet version, regional assignment: Europe) is used as the basis for the examples given. The CDB620 connection module is used, for example, for the industrial-standard signal distribution of the RFU620. With the exception of the electrical connection, other variants are commissioned in the same way.

### Supplementary and other applicable documents

More detailed information about mounting and electrical installation as a stand-alone device is available in the *RFU62x RFID Interrogator (UHF) Technical Information*, No. 8015930. This describes and presents:

- Optional mounting accessories (brackets)
- Measures for electrical installation of the RFU620-101xx in an ambient temperature range from  $0^{\circ}\text{C}$  to  $-40^{\circ}\text{C}$
- The suppression of ground potential equalization currents in applications with widely distributed systems
- Pin assignments and lead color assignments of cables
- Electrical wiring plans for the CDB620-001 connection module, based on the RFU620
- Reference list and license texts for open source software used in the firmware

### Operating the RFU620 in a fieldbus with line topology

The optional incorporation of the RFU620 in the PROFIBUS DP, PROFINET IO or EtherCAT® fieldbus is described in the relevant operating instructions for the CDF600-21xx, -2200 or -0300 fieldbus module  $\rightarrow$  see *“Sources for obtaining additional information, page 6”*.

Information about configuration can be found in the online help function of the SOPAS ET configuration software.

The listed documents are available in PDF format on the SICK product pages on the Internet: [www.mysick.com/en/rfu62x,.../CDF600-2](http://www.mysick.com/en/rfu62x,.../CDF600-2) and [.../CDF600](http://www.mysick.com/en/rfu62x,.../CDF600)

In order to view PDF documents on a PC, PDF visualization software is required, e.g. Acrobat Reader (<http://get.adobe.com/reader>).

## Safety information

- This chapter concerns the safety of commissioning personnel as well as operators of the system in which the RFU620 is integrated.
- Read these instructions carefully before commissioning the RFU620 in order to familiarize yourself with the device and its functions. The operating instructions are considered a part of the device and must be kept in an accessible location in the immediate vicinity of the RFU620 at all times!
- For country-specific particulars to consider when operating the RFU620,  $\rightarrow$  see *“Operational restrictions, page 5”*.

### DANGER

#### Health hazard as a result of high-frequency electromagnetic radiation!

The RFU620-10xx00 (region: Europe) is designed for operation in accordance with ETSI EN 302208. During operation, the human exposure regulations covered by EN 50364 must be observed.

- In order to limit human exposure to electromagnetic fields, suitable safety distances must be maintained during both short-term and long-term work in the radiation range of the antenna. Minimum distances to be maintained between the antenna and the human body: 10 cm during long-term transmission and max. radiation power of the antenna of 250 mW (24 dBm) as per ETSI.

The RFU620-10xx01 (region: USA/Canada) satisfies the limit values of the FCC for exposure to radiation in an uncontrolled environment.

- During operation, a safety distance of at least 20 cm must be maintained between the antenna and the human body.

- The following requirements must be met if the IP 67 enclosure rating is to be maintained during operation (otherwise, the device will no longer meet the conditions for any specified IP enclosure rating):
  - The side cover of the USB socket/Micro-SD card slot must be screwed tight to the device
  - The SICK cables plugged into the M12 connections must be screwed tight
  - Electrical connections that are not being used (RFU620-101xx) must be fitted with protective caps/plugs that are screwed tight (as in the delivery condition)

The RFU620 must only be used for a short period without a cover in order to insert or remove the memory card or use the USB interface temporarily. During this time, protect the device against moisture and dust.

- Opening the screws of the RFU620 housing will invalidate any warranty claims against SICK AG. For further warranty provisions, see the General Terms and Conditions of SICK AG, e.g. on the delivery note of the RFU620.
- Data integrity: SICK AG uses standardized data interfaces, such as stan-

dard IP technology, in its products. The emphasis here is on the availability of products and their features. SICK AG always assumes that the integrity and the confidentiality of the data and rights which are affected by the use of these products will be ensured by the customer. In all cases, appropriate security measures, such as network separation, firewalls, virus protection, and patch management, must be taken by the customer on the basis of the situation in question.

## Commissioning and configuration

### Scope of delivery

- RFU620 in the version ordered (functionality/design of the connection, regional assignment). Electrical connections fitted with protective caps/plugs (RFU620-101xx). Without connecting cables (RFU620-101xx, -105xx) and brackets.
- Printed operating instructions: Europe/USA/Canada: English (No. 8015928) and German (No. 8015927)  
Other language versions may be available in PDF format on the RFU620 product page on the Internet: [www.mysick.com/en/rfu62x](http://www.mysick.com/en/rfu62x).

## Step 1: Mounting and alignment

### Equipment required

- 2 x M6 or 4 x M5 screws for mounting the RFU620 on a mounting device (bracket) provided by the customer. Screw length is dependent on the mounting base (wall thickness of the bracket).  
When using an optional SICK bracket, the screws for mounting the RFU620 on the bracket are included in the scope of delivery of the bracket.

### Mounting requirements

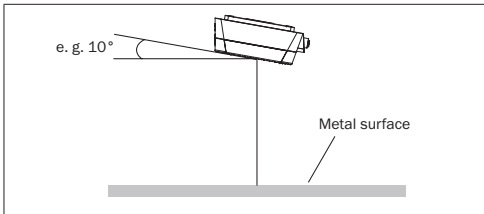
- The permissible ambient conditions for operating the RFU620 must be observed, e.g. assigned region, ambient temperature, ground potential ( $\rightarrow$  see *“Technical specifications (excerpt), page 5”* and *“Step 2: Electrical installation, page 2”*)
- The device must be mounted using all 2 M6 or 4 M5 threaded mounting holes provided ( $\rightarrow$  see *“Device layout”, page 3*).
- Stable mounting device with sufficient load-bearing capacity and suitable dimensions for the RFU620. Weight approx. 780 g (without cables). Dimension drawing  $\rightarrow$  see *“Device layout”, page 3*
- No electrically conductive material between transponder and RFU620.

### Mounting the RFU620

1. Select a suitable mounting location for the RFU620. The mounting location and position depend on the antenna field of the RFU620 and the transponders used.  
Optional: Attach the SICK mounting accessories ordered separately (mounting kit 1, 2, 3, 4 or 5) to the RFU620; see "Mounting" chapter in the *RFU62x RFID Interrogator (UHF) Technical Information*, No. 8015930.

Otherwise, mount the RFU620 on the bracket provided by the customer using the 2 or 4 screws. Screw the M6 screws max. 7 mm, M5 max. 9 mm into the threaded mounting holes (→ see "Device layout, page 3").

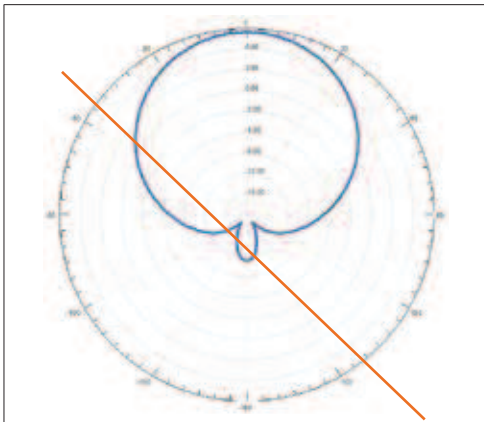
- Align the surface of the integrated antenna of the RFU620 (front face) to the data carrier on the object. While doing so, take into account the shape, alignment, and dimensions of the antenna field (→ see figure below). Avoid as far as possible any large metal surfaces positioned to the front. If this is not possible, do not mount the antenna plane parallel with the surface.



Selecting the approach angle of the RFU620 in the case of a large metal surface on the front

- Ensure that there are no objects (including personnel) between the RFU620 and the transponder during the write or read process. These will absorb/reflect the generated UHF field and thereby reduce the scanning range.

#### Scanning range of the read/write field on the RFU620



Radiation pattern: measured RHCP (dBi) antenna gain of the RFU620 at 886.5 MHz (RHCP = Right Hand Circular Polarized)

The UHF field is influenced by its environment, making it impossible to provide a "clear" demarcation of the scanning range. Application-specific reflections can result in both overreaches and "holes". In addition to the read results, the RFU620 can also output diagnostic data, which gives an indication of the write and read quality. This data can be used when setting up the system in order to achieve optimum read results.

Another key factor in determining the scanning range is the quality of the transponder (antenna gain, integrated tran-

sponder IC and associated sensitivity, reflected energy) and the object itself (plastic, wood, metal). The radiation pattern shown for the antenna of the RFU620 was produced for example purposes in a reproducible environment (absorber chamber) and can therefore only be used as the basis for specific applications to a certain extent.

#### CDB620 connection module

- Mount the CDB620 connection module in the vicinity of the RFU620. If you are using the serial data interfaces (RS-232), we recommend a max. distance of 5 m. Mount the CDB620 in such a way that the device remains accessible at all times. See [CDB620-001 Connection Module Operating Instructions](#) (No. 8012119), which are supplied in printed form with the device.

### Step 2: Electrical installation

- The electrical installation must only be performed by electrically qualified persons.
- Standard safety requirements must be met when working in electrical systems.
- Electrical connections between the RFU620 and other devices may only be created or disconnected when there is no power to the system. Otherwise, the devices may be damaged.
- When using connecting/extension cables with an open end, make sure that bare wire ends are not touching (risk of short-circuit when the supply voltage is switched on). Take appropriate measures to isolate the wires.
- Wire cross-sections in the supply cable from the customer's power system should be designed in accordance with the applicable standards.

If the supply voltage for the RFU620 (10 V DC to 30 V, 20 V DC to 30 V when using the integrated heating, 48 V DC or 57 V DC with the PoE version) is not supplied via the optional CDB620 connection module, the RFU620 must be protected by a separate slow-blow fuse with a rating of 0.8 A at the start of the supply circuit.

- All circuits connected to the RFU620 must be designed as SELV circuits. The power supply/power supply unit must satisfy the requirements of SELV in accordance with the currently applicable EN 60950-1. (SELV = Safety Extra Low Voltage)

### ⚠ DANGER

#### Risk of injury/risk of damage due to electrical current!

The RFU620 is designed to be operated in a system with professional grounding of all connected devices and mounting surfaces to the same ground potential.

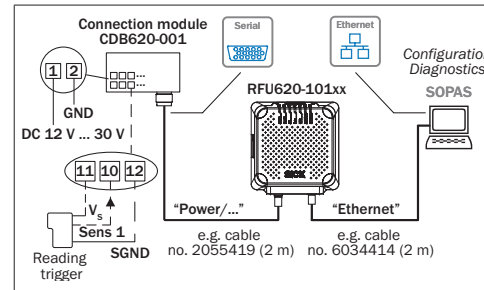
Incorrect grounding of the RFU620 can result in equipotential bonding currents between the RFU620 and other grounded devices in the system. This can lead to hazardous voltages being applied to metal housing, cause devices to malfunction or sustain irreparable damage and damage the cable shield as a result of a heat increase, causing cables to set alight.

- Ensure that the ground potential is the same at all ground-ing points.

- If the cable insulation is damaged, disconnect the power supply immediately and have the damage repaired.
- See the "Electrical installation" chapter in the [RFU62x RFID Interrogator \(UHF\) Technical Information](#), No. 8015930 on the product page on the Internet: [www.mysick.com/en/rfu62x](http://www.mysick.com/en/rfu62x) for measures for eliminating hazards.

#### Connecting the RFU620 depending on the model

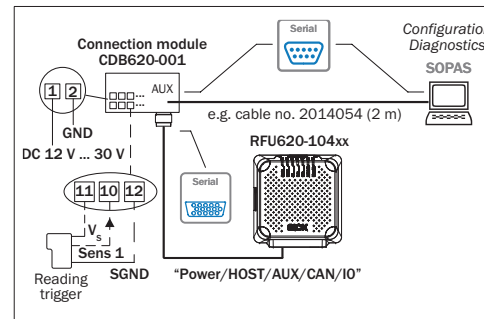
##### a. Ethernet version



Electrical connection of the RFU620-101xx for commissioning

- Connect the communication interface (e.g. Ethernet) of the RFU620-101xx directly to the PC.
- Connect the 17-pin M12 male connector ("Power/AUX/CAN/I/O") via a suitable adapter cable (e.g. No. 2055419, 2 m) to the 15-pin D-Sub-HD female connector of the CDB620.

##### b. Serial version



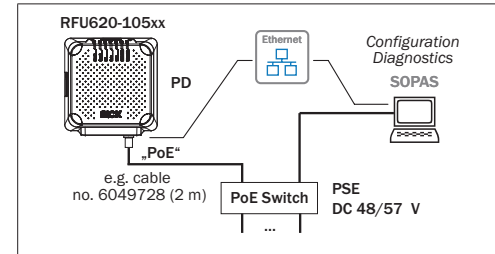
Electrical connection of the RFU620-104xx for commissioning

- Connect the 15-pin D-Sub-HD male connector of the RFU620-104xx connecting cable to the corresponding female connector on the CDB620. In order to maintain enclosure rating IP 65 for the connecting cable of the device when using an optional extension cable (e.g. No. 2043413, 2 m), use the optional rubber seal (No. 4038847) between the male connector and the female connector of the 15-pin D-Sub-HD connection and screw the connection in place.
- Connect the serial AUX interface (RS-232) of the RFU620-104xx to the PC. To do so, connect the internal

9-pin D-Sub "AUX" male connector of the CDB620 with a null-modem cable (e.g. No. 2014054, 2 m) to the PC (9-pin D-Sub male connector).

If the PC does not have an RS-232 interface, use an additional suitable adapter cable with integrated RS-232 <-> USB converter (e.g. No. 6042499, 1.5 m).

##### c. PoE version



Electrical connection of the RFU620-105xx for commissioning

- Connect the 8-pin M12 female connector via a suitable cable (e.g. No. 6049728, 2 m) to the PoE switch.

##### d. General information

- If necessary, connect a read pulse sensor, such as a photoelectric switch, to the "Sens 1" switching input of the RFU620 via the CDB620. Does not apply to RFU620-105xx. See the "Electrical installation" chapter of the [RFU62x RFID Interrogator \(UHF\) Technical Information](#), No. 8015930.
- Supply power to the RFU620. RFU620-101xx/-104xx: 10 to 30 V DC, RFU620-101xx: when used in the low-temperature range below -25 °C: 20 to 30 V DC RFU620-105xx: 48 V/57 V DC according to PoE technology. After successful initialization, the "Device Ready" LED lights up green. The power supply via a power supply unit must be capable of buffering a brief power failure of 20 ms.
- Turn on the PC and start Windows.

### Step 3: Configuration with PC

In case of error, the SOPAS ET configuration software is used by default to adjust the RFU620 parameters to the application and to the diagnostics.

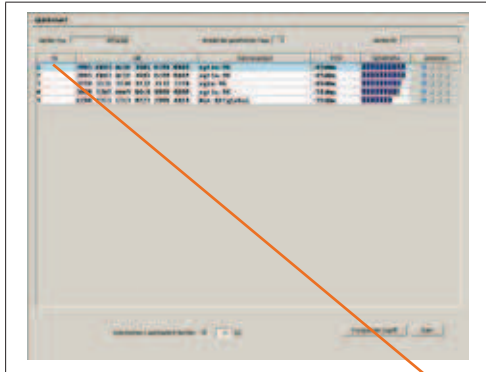
#### a. Installing and starting the configuration software

- Download and install the latest version of the SOPAS ET configuration software, as well as current device description files (\*.sdd), from the online product page for the software: [www.mysick.com/en/SOPAS\\_ET](http://www.mysick.com/en/SOPAS_ET) by following the instructions provided there. In this case, select the "Complete" option as suggested by the install wizard. Administrator rights may be required on the PC to install the software.
- Start the "SOPAS ET" program option after completing the installation. Path: Start > Programs > SICK > SOPAS ET Engineering Tool > SOPAS.

3. Establish a connection between SOPAS ET and RFU620 via the wizard which opens automatically. In order to do this, select the desired communication interface for searching in the connection wizard. (Default Ethernet address: IP address: 192.168.0.1, Subnet mask: 255.255.255.0) SOPAS ET establishes communication with the RFU620 and loads the associated device description file for the RFU620. The QUICKSTART tab opens.

### b. Detecting a transponder in Quickstart mode

1. Bring one or more standards-compliant UHF transponders into the working area of the RFU620 antenna. The UUI/EPC of the individual transponders must be different so that multiple transponders can be detected.
2. In SOPAS ET, in the QUICKSTART tab, click the START button. SOPAS ET generates an automatic reading cycle and lists the detected transponders one after another in the Quickstart window.



SOPAS ET: Display of several detected transponders in the QUICKSTART window

In the default configuration, the blue light output of the process feedback LEDs (5) in the corners of the RFU620 antenna cover indicates whether a UHF field is present and transponders have been detected.

Light output of the LEDs in Quickstart mode	Meaning
Lights up with medium intensity	UHF field present
High intensity slow flashing	1 transponder in field
High intensity rapid flashing	2 or more transponders in field

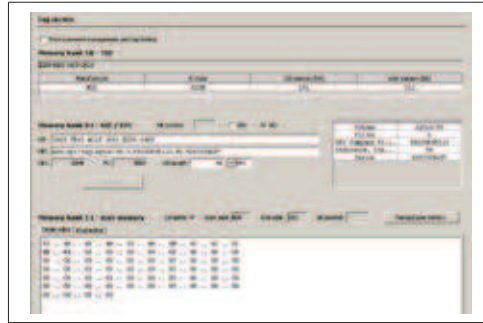
### Important!

The automatic triggering in Quickstart mode is intended for (initial) commissioning and not for permanent use when operating the RFU620 under real conditions.

### c. Accessing the data on a transponder

1. In order to access the memory area of a transponder, in QUICKSTART click the STOP button.
2. Mark the desired transponder (click it with the mouse).
3. Click the TRANSPONDER ACCESS button.

The TAG ACCESS tab now displays the content of the selected transponder.



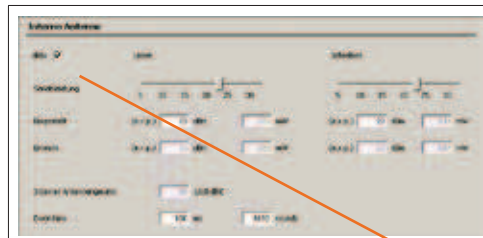
SOPAS ET: TAG ACCESS display window

### Important!

The TID (Tag Identifier) of the transponder cannot be changed.

### d. Continuing the configuration process

1. In the SOPAS ET navigation tree on the left, edit the required RFU620 tabs for the application using the additional entries under PARAMETERS. These include antenna configuration, filter functions, transponder processing, object trigger control (e.g. via "Sensor 1" switching input), data processing, data output, interfaces, function of the switching inputs and outputs, and the possible use of an optional Micro-SD memory card.
2. On the ANTENNA CONFIGURATION tab, the transmitting power for the antenna can be set using sliders.



Configuration: Example setting for the internal antenna

### RFU620 default setting:

Transmitting power: 15 dBm (30 mW)

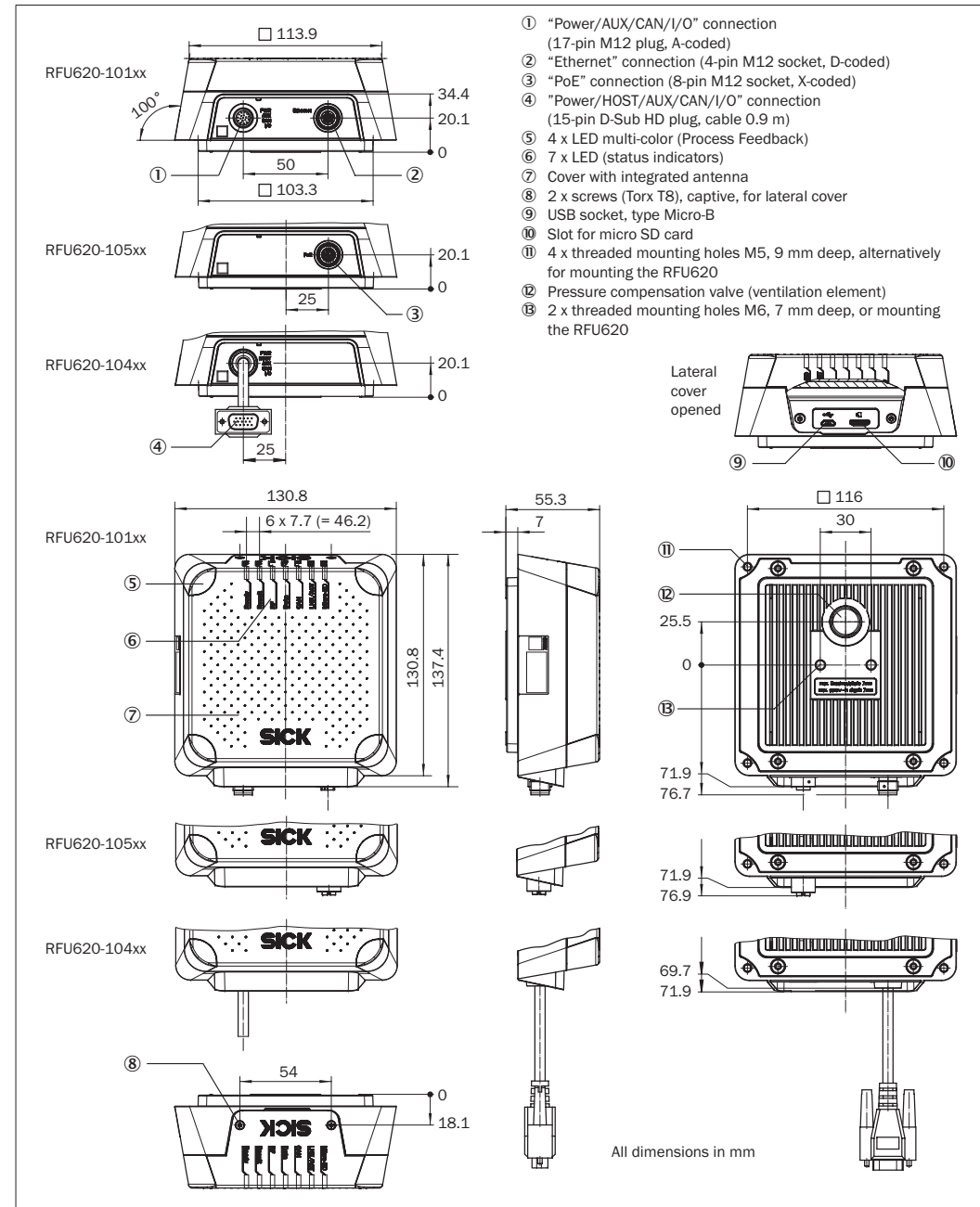
3. Test and, if necessary, modify the specified settings when operating the system under real conditions.

### e. Completing the configuration process

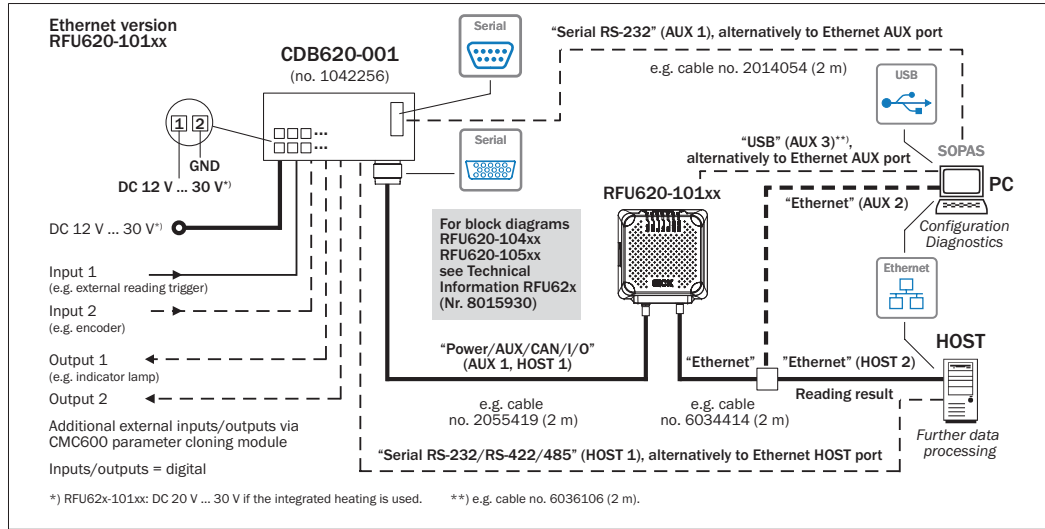
- Permanently save the entire configuration once it has been successfully tested:  
Parameter set in the RFU620: Click the button  
Configuration file on the PC: Click the button.

## Device description

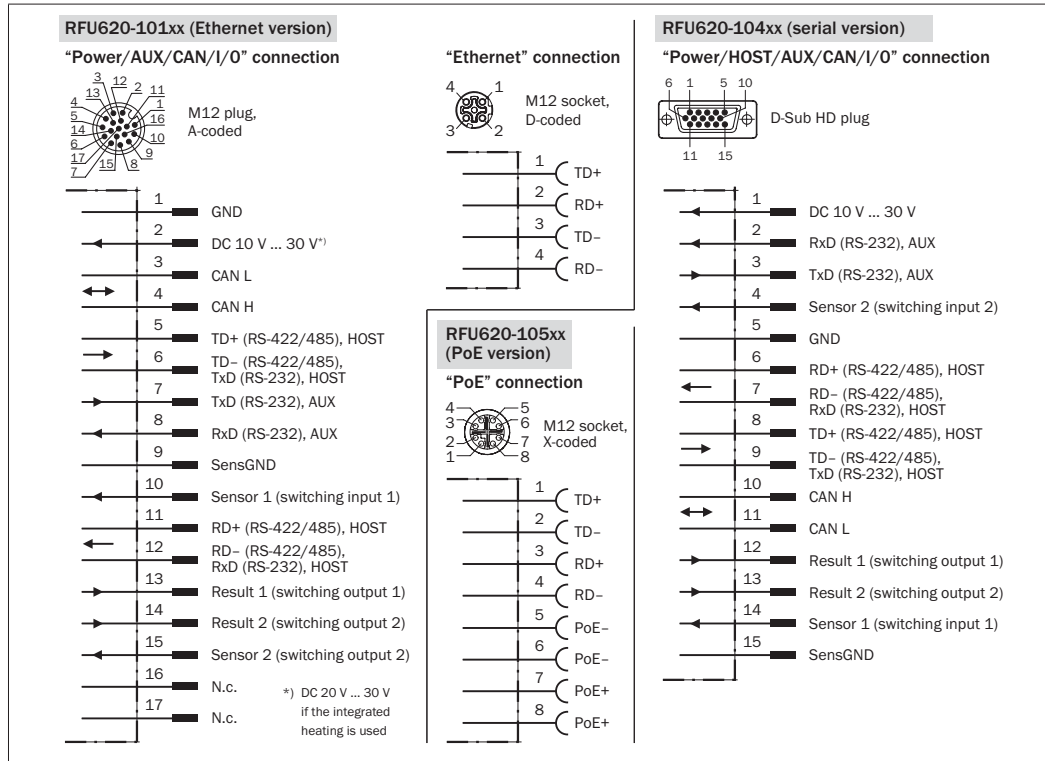
### Device layout



## Overview of all interfaces and connection options

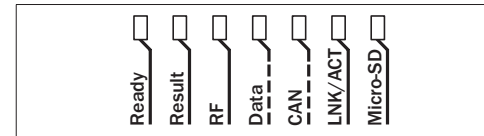


## Overview of pin assignments



## Status displays

### Optical status indicators



### Status indicators on the first display level

Display	LED	Color	Status
Ready	●	Green	Device ready
		Red	Hardware fault
Result	●	Green	Read or write successful
RF	●	Green	UHF field switched on
Data <sup>1)</sup>	●	Green	Data receipt at the serial host interface
		Yellow	Data output at the serial host interface
CAN <sup>1)</sup>	●	Green	Data traffic via CAN bus
LNK/ACT	●	Green	Data traffic via Ethernet
Micro-SD	●	Green	Micro-SD card inserted and ready for operation. If the LED lights up, however, this does not indicate that the RFU620 is accessing the card!
		Red	Micro-SD card inserted, cannot, however, be read or is defective
		Orange	The use of the Micro-SD card in connection with a device function has been manually configured with SOPAS ET on the "SD card required" tab. The SD card is not, however, ready for operation.

<sup>1)</sup> PoE version: LEDs have no function

● = illuminated; ● = flashing

### Micro-SD memory card (optional accessory)

#### Function

The RFU620 can execute the following functions on the plug-in memory card:

- Automatic, additional storage of the last parameter set to be permanently stored internally after a change on an external medium (cloning function), if available. This is performed within the scope of the recommended safety concept for the parameter sets of IDpro devices. The function is used, among other things, to conveniently transfer the parameter set to an exchange unit of the same type in the event of an error. Optional external media include a memory card which can be plugged into the device or the CMC600 parameter storage module, which can be used in the optional connection module, e.g. CDB620-001 or CDM420-0001.
- Continuous recording of diagnostic read data after the first manual start, e.g. via SOPAS ET. Recording is resumed after a RFU620 restart when the function is set permanently.

Other functions on request.

The first time a parameter set is stored, we recommend that an **empty** memory card is used (if necessary, check and delete the contents of the card on the PC using a card reader).

The memory card is not included in the scope of delivery.

To ensure that the memory card functions reliably, only use types approved by SICK (see [RFID Product Information](#), No. 8016267). The memory card has no write protection that can be activated.

### Inserting the memory card

- To avoid damaging the memory card, make sure there is no power to the RFU620 when you insert or remove it.

The card slot (→ see ⑩ in "Device overview, page 5") can be accessed on the RFU620 behind the folding plastic cover.

Maintaining the IP 67 enclosure rating: → see "Safety information", page 1

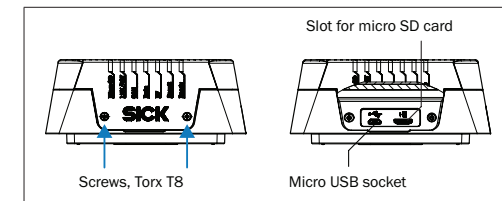
#### 1. Turn off the supply voltage to the RFU620!

2. To open the cover, unscrew both screws.

3. Making sure it is in the correct position (with the contacts pointing to the rear and down, see the symbol on the card slot), insert the memory card into the card slot until it locks into place.

4. Screw the cover back on.

5. Turn on the supply voltage to the RFU620.



6. Once it is switched on, the RFU620 automatically detects the presence of a memory card and, depending on the card's content, behaves as follows:

- If the card is empty or if it contains a parameter set that cannot be interpreted by the RFU620, the RFU620 saves its currently valid internal parameter set to the card (provided there is sufficient storage space) and starts with the internal parameter set.
- If the card contains a parameter set that can be interpreted by the RFU620, the RFU620 temporarily overwrites the currently valid internal parameter set with this external parameter set. When switched off, this internal parameter set is lost. If necessary, the "Save permanently" command in SOPAS ET can be used to save the temporary parameter set permanently in the RFU620. The objective is for the internal parameter set and the parameter set saved externally to always be identical.

## NOTE

### Risk of data loss or irreparable damage to the memory card!

The "Micro-SD" (Ⓜ) LED lights up green when a memory card which is ready for operation is inserted into the RFU620. In this status, the RFU620 can either read data from the card or write data to the card. Access to the card itself is **not** signaled by the RFU620 (compare electronic camera with memory card).

The "Micro-SD" (Ⓜ) LED lights up orange when, for example, a function which requires a memory card has been started **manually** with SOPAS ET and the card is not ready for operation (e.g. not inserted, contacts contaminated or no free storage space).

- To avoid damaging the memory card, make sure there is no power to the RFU620 when you insert or remove it.
- If parameter values are changed with the "permanent" option in the RFU620 using the SOPAS ET configuration software while the memory card is inserted or if functions are started which access the memory card (e.g. logging of data), do **not** remove the memory card and do **not** switch off the supply voltage.
- In order to remove the memory card in a controlled manner while working with SOPAS ET when the RFU620 is switched on, select the REMOVE CARD function under ANALYSIS TOOLS/MICROSD CARD and wait for confirmation from SOPAS ET.

## Technical specifications (excerpt)

Model name	RFU620-10xxx
Regional assignment	Model-dependent, see Table 2
Firmware version	Model-dependent, see Table 2
Carrier frequency	Model-dependent, see Table 2
Transmitting power	1 internal antenna, adjustable: ETSI: Max. 24 dBm, 250 mW (ERP*) FCC: Max. 25 dBm, 320 mW (EIRP**)
Internal antenna	Circularly polarized. Axial ratio typically 2 dB (ETSI), 3 dB (FCC) Opening angle 100° (ETSI), 100° (FCC) Front-to-back ratio typically > 7 dB (ETSI), > 7 dB (FCC)
Protocol air interface	EPCglobal UHF Class 1 Generation 2 ISO/IEC 18000-6C
Scanning range	Typically up to 1 m (depending on the transponder used and ambient conditions)
Serial RS-232/422/485	RFU620-101xx/-104xx only: HOST (0.3 kBd ... 115.2 kBd) for data output
Serial RS-232	RFU620-101xx/-104xx only: AUX (57.6 kBd) for configuration
USB	AUX (USB 2.0) for configuration
CAN	RFU620-101xx/-104xx only: CAN (CANopen™), 20 KBit/s ... 1 MBit/s. Max. bus length 30 m
Ethernet	RFU620-101xx/-105xx only: HOST (TCP/IP, PROFINET IO, Ethernet-IP) AUX (TCP/IP) 10/100 MBit/s, Services: DHCP, NTP, HTTP
Fieldbus PROFIBUS DP	RFU620-101xx/-104xx only: HOST via external CDF600-21xx module
Fieldbus PROFINET IO	RFU620-101xx/-104xx only: HOST via external CDF600-2200 module
Fieldbus EtherCAT®	RFU620-101xx/-104xx only: HOST via external CDF600-0300 module (Gateway mode)
Digital switching inputs	RFU620-101xx/-104xx only: 2 x physical, 2 x additional external via optional CMC600 module in the CDB620/CDM420-0001 connection module $V_{in} = \max. 30 V, I_{in} = \max. 5 mA$ Opto-decoupled, reverse polarity protected. Adjustable debounce time
Digital switching outputs	RFU620-101xx/-104xx only: 2 x physical, 2 x additional external via optional CMC600 module in the CDB620/CDM420-0001 connection module $V_{out} = V_s - 1.5 V, I_{out} \leq 100 mA$ Short-circuit protected, temperature protected, not electrically isolated from the supply voltage

## Device overview

Regional assignment	Radio equipment type approval	Firmware	Carrier frequency range	Transmitting power of the internal antenna	Device designation	Part no.
Europe	ETSI EN 302 208 V.1.4.1	From V.1.40	865.6 ... 867.6 MHz	Max. 250 mW (ERP*)	RFU620-10100 RFU620-10400 RFU620-10500	1062599 1062600 1062601
USA/Canada	FCC Part 15.247	From V.1.40	902.75 ... 927.25 MHz	Max. 320 mW (EIRP**)	RFU620-10101 RFU620-10401 RFU620-10501	1062602 1062603 1062604

\*) ERP = Equivalent Radiated Power

\*\*) EIRP = Equivalent Isotropic Radiated Power

Table 2

Model name	RFU620-10xxx
Electrical connections	RFU620-101xx: 1 x 17-pin M12 male connector, 1 x 4-pin M12 female connector RFU620-104xx: 1 x cable, 0.9 m with 15-pin D-Sub-HD male connector RFU620-105xx: 1 x 8-pin M12 female connector All: 1 x 5-pin USB female connector, type Micro-B 1 x 8-pin Micro-SD card slot
Optical indicators	7 x RGB LED (status indicator) on front top/side 4 x RGB LED (process feedback), Function/color can be adjusted via SOPAS ET
Parametric data backup	Optional: Via plug-in Micro-SD card or externally via CMC600 module in the CDB620/CDM420-0001 connection module
Supply voltage	All voltages: As per SELV in accordance with currently applicable EN 60950-1 RFU620-101xx/-104xx: 10 V ... 30 V DC RFU620-101xx: 20 V ... 30 V DC when using the integrated heating (from -25 °C) RFU620-105xx: 48 V/57 V DC according to PoE technology
Power consumption	Operation: All: Typically 8 W (with switching outputs without load and full transmitting power) RFU620-101xx: Also typically 8 W for heating from -25 °C Readiness (standby): All: Typically 3 W
Housing/weight	Aluminum/approx. 780 g
Safety	EN 60950-1: 2006-04/A11: 2009-03/A1: 2010-03/A12: 2011-02
Electrical protection class	III according to EN 61140: 2006-08
Enclosure rating	IP 67, according to EN 60529: 1991-10/A2: 2000-02
MTBF	23 years
Radio equipment type approval	Model-dependent, see Table 2
EMC	Radiated emission: EN 61000-6-3: 2007 + A1: 2011 Electromagnetic immunity: EN 61000-6-2: 2005-08
Vibration resistance Shock resistance	EN 60068-2-6: 2008-02 EN 60068-2-27: 2009-05
Ambient temperature	RFU620-101xx: Operation: -40 °C ... +50 °C RFU620-104xx/-105xx: Operation: -25 °C ... +50 °C All: Storage: -40 °C ... +70 °C
Permissible relative air humidity	0% ... 90%, non-condensing
Time	NTP - Network Time Protocol/none

\*) ERP = Equivalent radiated power.

\*\*) EIRP = Equivalent isotropic radiated power.

Table 1

For further technical specifications, see the *Online data sheet* on the product page on the Internet ([www.mysick.com/en/rfu62x](http://www.mysick.com/en/rfu62x)).

## Warnings

### NOTE

#### Operational restrictions

When delivered, the frequency band of the RFU620 is configured in such a way that it can be operated in the following assigned regions without interfering with protected frequencies (such as mobile communications):

- RFU620-10x00 in the Europe region
- RFU620-10x01 in the USA/Canada region

The operation of the same RFU620 in other regions can interfere with protected frequencies.

- Only use the RFU620 in the region for which it has been approved.
- When reselling the RFU620, inform the buyer of the regional assignment.

- **France:** The RFU620 must not be operated within a 20 km radius of 13 military zones.
- **Lithuania:** In Lithuania there may be restrictions (extent not currently known).
- **Russia:** Only licensed operation is possible in Russia.
- **USA:** This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. To comply with FCC Part 15 rules in the United States, the system must be professionally installed to ensure compliance with the Part 15 certification. It is the responsibility of the operator and professional installer to ensure that only certified systems are deployed in the United States. The use of the system in any other combination (such as co-located antennas transmitting the same information) is expressly forbidden. This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and your body.
- **USA/Canada:** This Class A digital apparatus complies with Canadian ICES-003. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.  
Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

- **Canada:** Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada. Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

## Maintenance and care

The RFU620 does not contain any components that require maintenance.

- If it is dirty (e.g. metal dust), clean the antenna cover (🔗) (plastic) carefully using a soft, damp cloth (with a mild cleaning agent) in order to achieve the full read and write speed.

## Transport and storage

Transport and store the RFU620 (here RFU620- 101xx (Ethernet version)) in its original packaging with protective plugs and caps completely screwed on. Do not store outdoors. To ensure that any residual moisture present can escape, do not store the device in airtight containers. Do not expose to any aggressive substances.

Storage conditions: Dry, dust-free, no direct sunlight, as little vibration as possible, storage temperature -40°C... +70°C, relative air humidity max. 90% (non-condensing).

## Repair

Repair work on the RFU620 may only be performed by qualified and authorized service personnel from SICK AG.

## Disassembly and disposal

Any RFU620 which can no longer be used at the end of the product life cycle must be disposed of in an environmentally friendly manner in accordance with the respective applicable country-specific waste disposal regulations. The RFU620 is electronic waste and must under no circumstances be disposed of with general waste! SICK AG is not currently able to take back devices that can no longer be used.

## Sources for obtaining additional information

Additional information about the RFU620, its optional accessories, and fieldbus modules can be found in electronic format on the following product pages on the Internet:

### RFU620 interrogator (www.mysick.com/en/rfu62x)

- Detailed technical specifications (online data sheet)
- EC declaration of conformity
- Dimensional drawing and 3D CAD dimension models in various electronic formats
- Compatible accessories (including transponders, cables, brackets, trigger sensors)
- RFU62x RFID Interrogator (UHF) Operating Instructions in English (No. 8015928) and German (No. 8015927), in

other languages if required

- RFU62x RFID Interrogator (UHF) Technical Information in English (No. 8015930) and German (No. 8015929)
- Ordering information in the RFID product information in English (No. 8016267) and German (No. 8016266)
- Publications dealing with accessories

### Function modules for the RFU620 interrogator (www.sick.com/software)

- Function modules for communication between a SIMATIC controller (S7-300/S7-400) and the RFU620. Function modules for other controllers on request.

### CDF600-21xx PROFIBUS DP fieldbus module (www.mysick.com/en/cdf600-2)

- CDF600-21xx PROFIBUS DP Fieldbus Module Operating Instructions in English (No. 8015335) and German (No. 8015334), in other languages if required

### CDF600-2200 PROFINET IO fieldbus module (www.mysick.com/en/cdf600-2)

- CDF600-2200 PROFINET IO Fieldbus Module Operating Instructions in English (No. 8015922) and German (No. 8015921), in other languages if required

### CDF600-0300 EtherCAT® fieldbus module (www.mysick.com/en/cdf600)

- CDF600-0300 EtherCAT® Fieldbus Module Operating Instructions in English (No. 8013919) and German (No. 8013918), in other languages if required

### Documents on request

- Overview of RFU620 command strings

Support is also available from your sales partner: [www.sick.com/worldwide](http://www.sick.com/worldwide).

### Copyright notices

#### EtherCAT®

"EtherCAT® is a registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany."

#### Copyright notices for open source programs

#### Exclusion of liability

The firmware of the RFU620 was developed using open source software. The user is exclusively responsible for any modifications made to open source components. All warranty claims shall be invalidated in this case. The following exclusion of liability applies to the **GPL components** in relation to the rights holders:

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### List of software licenses and license texts

In the RFU620 product, SICK uses unmodified open source software and, insofar as required and permitted in accordance with the relevant license conditions, modified open source software.

The firmware of the RFU620 is therefore subject to the copyrights listed below.

The associated license texts that relate to the license overview provided below can be found in the *RFU62x RFID Interrogator (UHF) Technical Information*, No. 8015930. This can be downloaded from the RFU62x product page on the Internet: [www.mysick.com/en/rfu62x](http://www.mysick.com/en/rfu62x)

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