



RFU62x

QUICKSTART

en

1 About this document

The purpose of this Quickstart is to allow you to commission the RFU620-10xxx RFID read/write device (UHF) quickly and easily and to achieve initial read results with transponders.

The Quick Start Guide is valid for all the regional radio device variants listed: [see Device overview, page 8](#).

In the following, the Quick Start Guide refers to the RFU620-10xxx (UHF) RFID read/write device simply as "device". If variants are to be differentiated in the regional assignment, the respective device name RFU620-10xxx is specified (xx = regional assignment).

The Quick Start Guide describes the commissioning process for an application with **one** device in an ambient temperature range of 0 °C to +50 °C.

Commissioning is carried out as an example for the RFU620-10100 device variant (Ethernet variant, Europe region and other countries if necessary, [see Device overview, page 8](#)). The basis is the basic parameter setting of the device. The optional CDB620-001 connection module handles the industrial-standard signal distribution for the device depending on the device itself. Other connection modules are available. With the exception of the electrical connection, other device variants are commissioned in the same way.

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Supplementary and other relevant documents

Information, such as application examples and downloads of associated documents (e.g. operating instructions) and software, can be found on the SICK product page on the Internet at: www.sick.com/RFU62x. For an overview [see Sources for obtaining more information, page 9](#) in this Quick Start Guide.

More detailed information on mounting and electrically installing the device as a stand-alone unit than provided in this Quickstart is available in the RFU62x RFID read/write device (UHF) operating instructions. The operating instructions add the following information to the Quick Start Guide:

- Requirements and notes for mounting and electrical installation at operating ambient temperatures below 0 °C
- For applications in widely distributed systems: Notes on the suppression of ground potential equalizing currents
- Electrical wiring plans for the optional connection modules of the CDB and CDM product families when used in conjunction with the RFU620-101xx and RFU620-104xx devices

2 Safety information

- This chapter is dedicated to the safety of commissioning personnel and the operator of the system in which the device is integrated.
- Read this Quickstart carefully to familiarize yourself with the device and its functions before commissioning the device. The Quickstart is considered a part of the device and must be kept in an accessible location in the immediate vicinity of the device at all times!

Electromagnetic radiation

⚠ WARNING

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

The RFU620-10x00 (Europa region and possibly other countries) is designed for operation in accordance with ETSI EN 302208. During operation, the human exposure regulations covered by EN 50364 must be observed.

- 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 integrated antenna. Minimum distances to be maintained between the antenna and the human body during long-term transmission: 10 cm and maximum radiation power of the antenna of 250 mW ERP (24 dBm) as per ETSI.

The RFU620-10x01 (USA region and possibly other countries) 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.

Complete region assignment of the RFU620-10x0x [see Device overview, page 8](#).

Conditions for specified enclosure rating

- To ensure compliance with the IP67 or IP65 enclosure rating of the device during operation, the following requirements must be met. If these requirements are not met, the device does not fulfill any specified enclosure rating.
 - The joint side cover for the USB interface and the memory card slot is screwed tightly onto the device. Recommended tightening torque for the cover screws: 60 Ncm ± 5 Ncm.
 - The cables plugged into the electrical M12 connections are screwed tight.

- Any unused M12 connections must be sealed with screw-on protective caps (for male connectors) or plugs (for female connectors) as supplied.
 - Only operate the device without a cover for a short period while inserting or removing the memory card or temporarily using the USB interface. During this time, protect the device against moisture and dust.
- Opening the screws of the device 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 device.

Standard IP technology

ⓘ NOTE

SICK uses standard IP technology in its products. The emphasis is placed on availability of products and services.

SICK always assumes the following prerequisites:

- The customer ensures the integrity and confidentiality of the data and rights affected by its own use of the aforementioned products.
- In all cases, the customer implements the appropriate security measures, such as network separation, firewalls, virus protection, and patch management.

2.1 Intended use

The RFU620 RFID read/write device is an intelligent ID sensor from the RFU6xx (UHF) product family. Version (working range): Mid Range.

The stationary device automatically identifies wireless-based data cards (transponders) on stationary and moving objects. The device also supports data card management.

The compact read/write device has an (internal) antenna integrated in the housing. The device processes the data of all standard passive transponders in accordance with ISO/IEC 18000-6C and EPCglobal UHF C1G2 in the regional UHF carrier frequency range.

Intelligent process logic enables processing either as a stand-alone solution or as part of a group in a network with several devices. The device sends the read results to a higher-level computer via its host interface. The computer coordinates further processing of the data in the process.

The device receives corresponding commands for data card management (write, read, etc.) via its host interface.

The RFU620-10xxx product family consists of 3 variant lines. The devices of various lines differ, among other things, in the number and type of data interfaces as well as in the designs of the electrical connections:

- RFU620-101xx: Ethernet variant with integrated heating for ambient temperatures as low as -40 °C
- RFU620-104 xx: Serial variant
- RFU620-105 xx: PoE variant (PoE: Power-over-Ethernet)

Each device variant line contains device variants with reference to the regional assignment, [see Device overview, page 8](#).

ⓘ NOTE

The device approval was granted for a specific region. The region assignment cannot be changed.

- Only use the device in the region and the country for which it has been approved.
- When reselling the device, inform the buyer of the fixed region assignment.
- Should the device be passed on to a third party, these operating instructions and the Quick Start Guide should be handed over with it.
- For country-specific particulars to consider when operating the device, [see Operational restrictions, page 9](#).

Intended use also includes compliance with all information in this Quickstart and the supplementary RFU62x RFID read/write device (UHF) operating instructions.

3 Device description

3.1 Device view

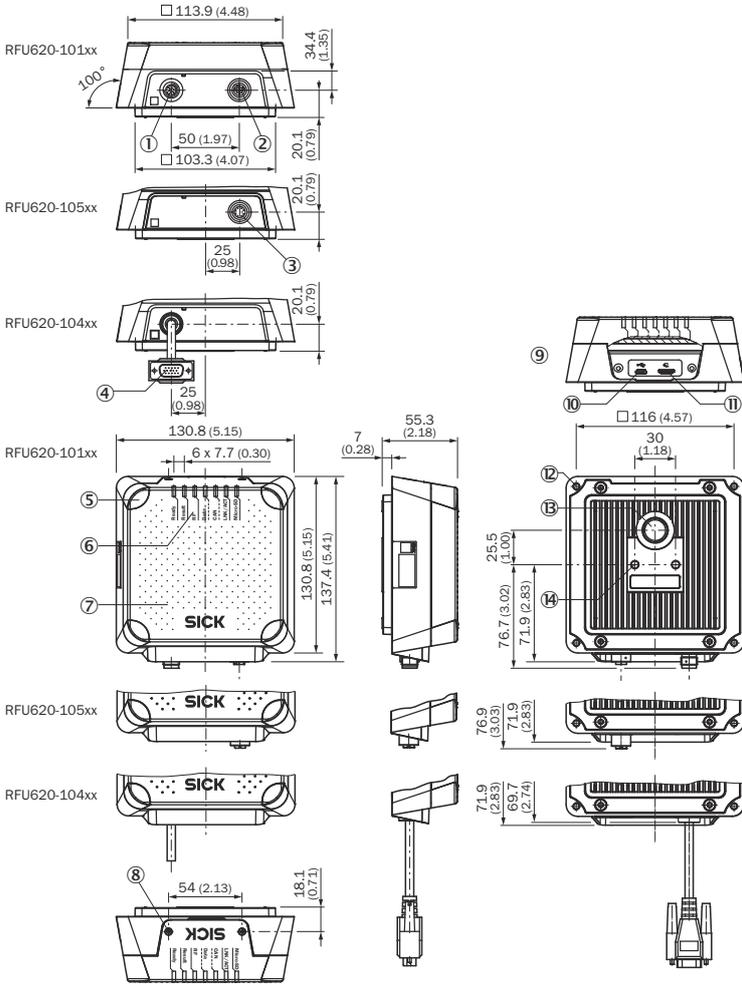
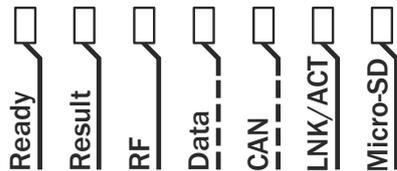


Figure 1: RFU620 (all variants): Structure and dimensions, unit: mm (inch), decimal separator: period

- ① "Power/Serial Data/CAN/I/O" connection (male connector, M12, 17-pin, A-coded)
- ② "Ethernet" connection (female connector, M12, 4-pin, D-coded)
- ③ "PoE" connection (female connector, M12, 8-pin, X-coded)
- ④ "Power/Serial data/CAN/I/O" connection (male connector, D-Sub-HD, 15-pin), cable 0.9 m
- ⑤ 4 x LED, multi-colored (process feedback)
- ⑥ 7 x LED, multi-colored (status indicator)
- ⑦ Optics cover with integrated antenna
- ⑧ 2 x screw (Torx T8), captive, for side cover
- ⑨ Side cover open
- ⑩ "USB" connection (female connector, 5-pin, Micro B type). The USB interface is only for temporary use as a service interface.
- ⑪ Slot for microSD memory card
- ⑫ 4 x M5 blind tapped holes, 9 mm deep, for alternative mounting of the device
- ⑬ Pressure compensation valve (ventilation element)
- ⑭ 2 x M6 blind tapped holes, 6 mm deep for mounting the device

3.2 Status displays



Status displays

Advertisement	LED	Color	Status
Ready	Lights up	Green	The device is ready for use.
	Lights up	Red	The device is not ready for use: hardware fault
	Flashing	Green	PROFINET operation (single port):
	Flashing	Red	The LEDs flash cyclically and alternating 4 x red, 1 x green. <ul style="list-style-type: none"> • The device attempts to establish a connection to a PLC (IO controller) - or - • During operation: the connection between the device and the PLC (IO controller) is interrupted
Result	Lights up	Green	Read or write was successful

Advertisement	LED	Color	Status
RF	Lights up	Green	The UHF field is switched on.
	Lights up	Red	Fault: integrated antenna or RF part.
Data ²⁾	Lights up	Green	Data output via the host interface
CAN ²⁾	Lights up	Orange	Data traffic via CAN bus (CAN Rx)
Link/Act	Lights up	Green	Data traffic on the Ethernet interface
microSD	Lights up	Green	The memory card is inserted and ready for operation. <ul style="list-style-type: none"> • In this state, the device can either write data to the memory card or read data on the card. • If the LED lights up, however, this does not indicate that the device is accessing the card!
	Lights up	Red	The memory card is inserted. However, the device cannot read data on the memory card. Possible causes: <ul style="list-style-type: none"> • The memory card does not contain any data • The content is not readable • The memory card is defective
	Lights up	Orange ¹⁾	A function is started with SOPAS ET which requires a memory card for writing. However, the memory card is not connected.

- 1) Prerequisite: In SOPAS ET, the "SD card required" function has been activated under the "Service" user level.
- 2) RFU620-105 xx (PoE variant): LED without function

Additional indicators for ambient temperatures below -40 °C/-25 °C

Advertisement	LED	Color	Status
Ready	Flashing	Orange	Flashing, frequency 1 Hz. The device is not ready for use: <ul style="list-style-type: none"> • RFU620-101xx: The internal temperature of the device is below -40 °C. • RFU620-104xx/-105xx: The internal temperature of the device is below -25 °C
		Green	Flashing, frequency 1 Hz. Warm-up phase of the device: <ul style="list-style-type: none"> • RFU620-101xx: The internal temperature of the device is between -40 °C and -20 °C. The device starts up regular operation after a maximum of 5 min • RFU620-104xx/-105xx: The internal temperature of the device is between -25 °C and -20 °C. The device starts regular operation again after about 1 min.

3.3 Memory card (optional accessory)

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

- Cloning function: If a MicroSD memory card is present, the device automatically saves its internal parameter set on the memory card as well. This procedure is carried out in the framework of the recommended storing concept for the device parameter sets. Storing the internal parameter set with the "permanent" option triggers the cloning function. The function is used, among other things, to conveniently transfer the parameter set to an replacement device of the same type in the event of a fault.
- Data logging: The device continuously records read diagnosis data after the first manual start, e.g. via SOPAS ET. If the function is permanently set, the device automatically resumes recording after a restart.
- Alternatively, with 4Dpro sensors (RFU620-101xx and RFU620-104xx), the optional CMC600 parameter memory module can also be used as an external storage medium for the cloning function. The parameter memory module can be used in the optional connection module, e.g. CDB620 or CDM420-0001. If the device is connected to a data bus via the bus connection module CDF600-2xxx, an external storage medium is also available.

NOTE

Recommendation:

Use an empty memory card to save a parameter set for the first time. If necessary, check the contents of the card on the computer using a card reader and delete if necessary.

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

Only use types approved by SICK to ensure reliable function of the memory card, see www.sick.com/RFU62x. The memory card has no write protection that can be activated.

NOTICE

Possible data loss or irreparable damage to the memory card!

The device does not signal the direct access (read/write) to the card but the current status of the card, see [Status displays, page 2](#).

- Only use the memory card when the device power is off.
- Do not remove the memory card or switch off the supply voltage while the following functions are taking place in the device:
 - Storage of parameter values with the SOPAS ET configuration software with the "Permanent" option
 - Functions have been started that access the memory card (e.g. concurrent logging of data)
- To remove the memory card safely during operation, select the **Remove card** function under **Analysis tools/MicroSD card** in SOPAS ET. Wait for the feedback from SOPAS ET to release the card.

The card slot can be accessed on the device behind the side cover (plastic foil), see [Device view, page 2](#).

Maintaining enclosure rating IP65 or IP67: see [Safety information, page 1](#).

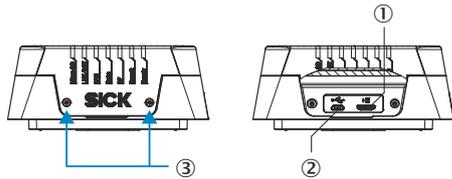


Figure 2: Access to USB interface and memory card slot

- ① Slot for microSD memory card
- ② "USB" connection (female connector, 5-pin, Micro B type)
- ③ 2 x screw, Torx T8

1. Switch off the supply voltage to the device.
2. Loosen both screws on the cover.
3. Carefully fold up the cover.
4. Making sure it is in the correct position, insert the memory card into the card slot until it locks into place. When doing so, orient the contacts forwards and downwards as per the symbol on the device.
5. Screw the cover back on. Recommended tightening torque for the cover screws: 60 Ncm ± 5 Ncm.
6. Switch the supply voltage for the device back on.
7. Once it is switched on, the device automatically detects the presence of a memory card and, depending on the memory card's content, behaves as follows:
 - If the memory card is empty or if does not contain a parameter set that can be interpreted by the device: the device 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 device: the device overwrites the currently valid internal parameter set with this external parameter set. The goal is for the internal parameter set and the parameter set saved externally to always be identical.

4 Mounting

4.1 Scope of delivery

- Device in the version ordered (variant line, regional assignment). Electrical M12 connections are fitted with protective caps or plugs. RFU620-101xx/RFU620-105xx: Without connecting cables. All devices: Without brackets.
- Regional printed Quickstarts. Included language versions: see [Device overview, page 8](#). Other language versions may be available in PDF format on the device product page on the Internet at: www.sick.com/RFU62x.

4.2 Equipment required

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

4.3 Mounting requirements

- The permissible ambient conditions for operating the device must be observed, e.g. assigned radio region, ambient temperature: see [Technical data, page 7](#) and ground potential see [Electrical installation, page 4](#).
- The device must be mounted using all 2 M6 or 4 M5 blind tapped holes provided, see [Device view, page 2](#).
- If necessary, provide stable mounting equipment with sufficient load-bearing capacity and appropriate dimensions for the device. Weight of the device (without cables) see [Technical data, page 7](#).
- Make sure there is no electrically conductive material between transponder and device.

4.4 Mounting the device

1. Select a suitable mounting location for the device. The mounting location and position depend on the antenna field of the device and the transponders used.
2. Perform one of the following steps:

- a) Mount the device on the bracket provided by the customer using 2 or 4 screws. Screw the M6 screws no more than 6 mm deep or M5 screws no more than 9 mm deep into the blind tapped holes, see [Device view, page 2](#).
 - b) Mount the device on the SICK mounting accessories ordered separately. Proceed as described under a).
3. Align the surface of the integrated antenna of the device (front face) to the transponder on the object. While doing so, take into account the shape, alignment, and dimensions of the antenna field. 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.

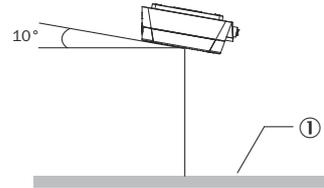


Figure 3: Selection of the approach angle with a large metal surface on the front. e.g. 10°

- ① Metal surface

4. Ensure there is no electrically conductive material (e.g., metal, liquids) or persons between the device and the transponder during the write or read process. This will absorb or reflect the generated UHF field and thereby reduce the read range.

Read range

The environment influences the UHF field of the integrated antenna, making it impossible to provide a "clear" demarcation of the read range.

- Application-specific reflections can result in both overreaches and "holes"
- Other factors that can significantly impact the read range include:
 - Quality of the transponder: antenna gain, the integrated transponder chip and related sensitivity, reflected energy
 - Material of the carrier object (plastic, wood, metal)
 - Objects between the device and transponder that can affect the UHF field (items, liquids, people)

In addition to the read results, the device can also output diagnostic data. The diagnostic data provides an indication of the write and read quality. This diagnostic data can be used to achieve optimum read results when setting up the system. The radiation pattern shown here for the device's integrated antenna was obtained in a repeatable environment (absorber chamber as a reflection-free space) for illustrative purposes. The diagram shows how the UHF field propagates in the reflection-free space, but cannot be used to draw any conclusions on the likely read range in a real application on-site.

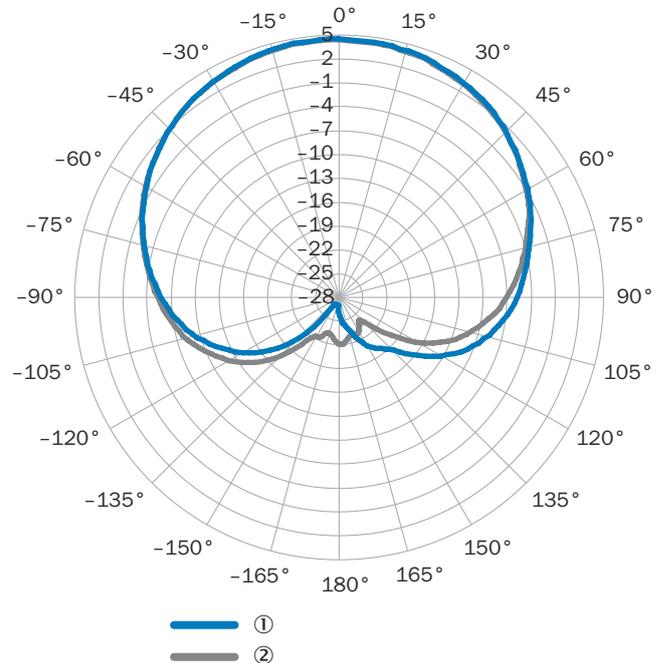


Figure 4: Radiation pattern of the integrated antenna of the RFU62x (typical): Measured antenna gain in dBic at 866.5 MHz, RHCP (right-hand circularly polarized)

- ① Horizontal plane (azimuth)
- ② Vertical plane (elevation)

4.5 Mounting the CDB620 connection module

- ▶ Mount the CDB620 connection module in the vicinity of the device (RFU620-101xx, RFU620-104xx). When using the serial data interfaces (RS-232), the recommended cable length between the devices is 5 m maximum. Mount the CDB620 in such a way that the connection module can be accessed at all times, see the CDB620 connection module operating instructions.

5 Electrical installation

Notes on electrical installation

- The electrical installation must only be performed by an electrically qualified person.
- Standard safety requirements must be met when working on electrical systems.
- Electrical connections between the read/write device and other devices are only allowed to be established or separated in a voltage-free state. Otherwise, there is a risk of damaging the devices.
- When using connecting or 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). Wires must be appropriately insulated from each other. This also applies to unused wires.
- Wire cross-sections in the supply cable from the customer's power system must be designed in accordance with the applicable national standards.
- Connect the device only to the permissible supply voltage, see [Technical data, page 7](#).
- If the supply voltage is not supplied via the optional CDB620 connection module, the device must be protected by a separate 0.8 A slow-blow fuse at the start of the supply circuit.
- All circuits connected to the device must be designed as SELV circuits. The voltage supply or power supply unit must satisfy SELV requirements in accordance with the currently applicable EN 60950-1. (SELV = Safety Extra Low Voltage).

NOTE

The voltage supply via a power supply unit must be capable of buffering a brief power failure of 20 ms.

WARNING

Risk of injury and damage caused by electrical current!

As a result of equipotential bonding currents between the device and other grounded devices in the system, faulty grounding of the device can give rise to the following dangers and faults:

- Dangerous voltages are applied to the metal housings.
- Devices will behave incorrectly or be destroyed.
- Cable shielding will be damaged by overheating and cause cable fires.

Remedial measures

- Only skilled electricians should be permitted to carry out work on the electrical system.
- If the cable insulation is damaged, disconnect the voltage supply immediately and have the damage repaired.
- Ensure that the ground potential is the same at all grounding points.
- Where local conditions do not meet the requirements for a safe earthing method, take appropriate measures (e.g., ensuring low-impedance and current-carrying equipotential bonding).

NOTE

For measures for eliminating hazards, see the "Electrical installation" chapter in the RFU62x RFID read/write device (UHF) operating instructions on the product page on the Internet at www.sick.com/RFU62x

NOTICE

Risk of damage to the device due to reverse polarity of the supply voltage!

The supply voltage input for the device is designed with internal circuit protection to provide reverse polarity protection. The internal functional earth, which also corresponds to the negative pole of the supply voltage for the device, is connected directly to the metal housing of the device due to reasons relating to high frequency.

If the supply voltage is polarity-reversed, this will not cause any damage provided that the following conditions are met for the device:

The device is not connected in an electrically conductive manner, either via other cables or via its housing, to other peripheral devices which use the same reference potential.

NOTE

For a more in-depth examination, see the "Electrical installation" chapter in the RFU62x RFID read/write device (UHF) operating instructions on the product page on the Internet at www.sick.com/RFU62x.

5.1 Connecting the device electrically

NOTE

The USB interface of the device is used in industrial environments only as a service interface for temporary use (e.g. for configuration, troubleshooting). Permanent use in operational use of the system as a host interface is not intended.

NOTE

The numbering of the data interfaces (Aux 1, etc.) in the following block diagrams provides a better overview, but is not shown in configuration tools such as the SOPAS ET configuration software.

RFU620-101 xx: Ethernet variant

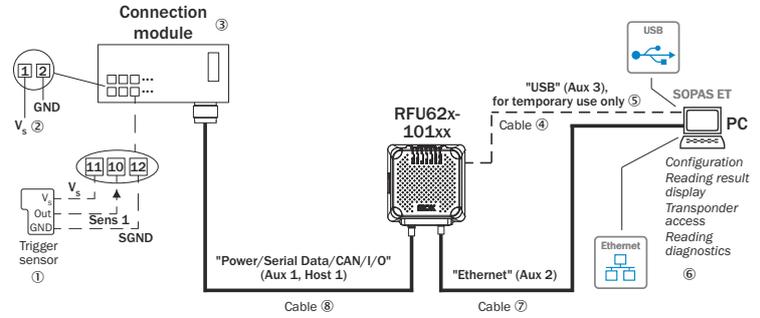


Figure 5: Commissioning: Electrical connection block diagram of the RFU620-101xx together with the optional connection module

- ① Trigger sensor for read cycle
- ② Supply voltage V_s
- ③ CDB620, CDB650-204 or CDM420 connection module
- ④ Adapter cable (male connector, USB, Micro-B type/male connector, USB, type A)
- ⑤ USB, alternative to Ethernet Aux port. The USB interface is only for temporary use as a service interface.
- ⑥ Configuration with SOPAS ET, prepared representation of the read result, transponder access or reading diagnostics
- ⑦ Adapter cable (male connector, M12, 4-pin, D-coded / male connector, RJ-45, 8-pin)
- ⑧ For CDB620 and CDM420: Adapter cable (female connector, M12, 17-pin, A-coded / male connector, D-Sub-HD, 15-pin)
For CDB650-204: Connection cable 1:1 (female connector, M12, 17-pin, A-coded / male connector, M12, 17-pin, A-coded)

"Power/Serial data/CAN/I/O" connection

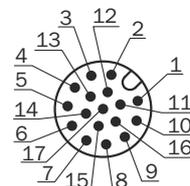


Figure 6: Male connector, M12, 17-pin, A-coding

Pin assignment of the "Power/Serial data/CAN/I/O" connection (M12)

Pin	Signal	Function
1	GND	Ground
2	V_s	Supply voltage
3	CAN L	CAN bus (IN/OUT)
4	CAN H	CAN bus (IN/OUT)
5	TD+ (RS-422/485), Host	Host interface (sender+)
6	TD- (RS-422/485), Host TxD (RS-232), Host	Host interface (sender-)
7	TxD (RS-232), Aux	Aux interface (sender)
8	RxD (RS-232), Aux	Aux interface (receiver)
9	SensGND	Digital input ground
10	Sensor 1	Digital input 1
11	RD+ (RS-422/485), Host	Host interface (receiver+)
12	RD- (RS-422/485), Host Rx D (RS-232), Host	Host interface (receiver-)
13	Result 1	Digital output 1
14	Result 2	Digital output 2
15	Sensor 2	Digital input 2
16	N.c.	-
17	N.c.	-
-	-	Screen

"Ethernet" connection

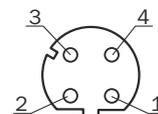


Figure 7: M12 female connector, 4-pin, D-coded

Pin assignment of the "Ethernet" connection

Pin	Signal	Function
1	TD+	Sender+
2	RD+	Receiver+
3	TD-	Sender-
4	RD-	Receiver-

Procedure:

1. Connect the communication interface (e.g. Ethernet) of the device directly to the computer (PC) using the suitable cable.
2. Attach the "Power/Serial Data/CAN/I/O" connection (male connector, M12, 17-pin, A-coded) to the corresponding female connector on the connection module using a suitable cable.

RFU620-104xx (serial variant)

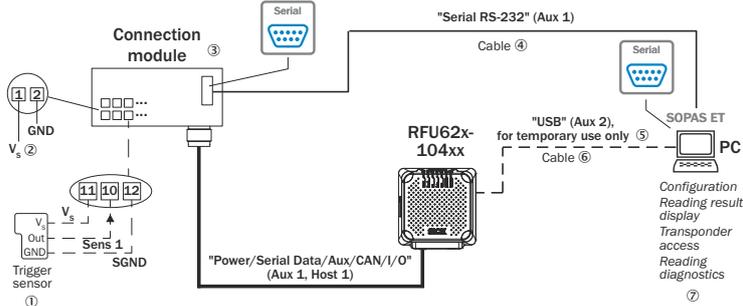


Figure 8: Commissioning: Electrical connection block diagram of the RFU620-104 xx with optional connection module

- ① Trigger sensor for read cycle
- ② Supply voltage V_s
- ③ CDB620 or CDM420 connection module
- ④ Null modem cable (female connector, D-Sub, 9-pin/female connector, D-Sub, 9-pin), crossed TxD and RxD
- ⑤ USB, alternative to Serial RS-232. The USB interface is only for temporary use as a service interface.
- ⑥ USB adapter cable (male connector, USB, Micro-B type/male connector, USB, type A)
- ⑦ Configuration with SOPAS ET, prepared representation of the read result, transponder access or reading diagnostics

"Power/Serial data/CAN/I/O" connection

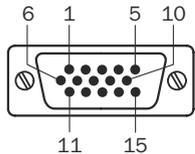


Figure 9: Male connector, D-Sub-HD, 15-pin

Pin assignment of the "Power/Serial data/CAN/I/O" connection (D-Sub-HD)

Pin	Signal	Function
1	V_s	Supply voltage
2	RxD (RS-232), Aux	Aux interface (receiver)
3	TxD (RS-232), Aux	Aux interface (sender)
4	Sensor 2	Digital input 2
5	GND	Ground
6	RD+ (RS-422/485), Host	Host interface (receiver+)
7	RD- (RS-422/485), Host RxD (RS-232), Host	Host interface (receiver-)
8	TD+ (RS-422/485), Host	Host interface (sender+)
9	TD- (RS-422/485), Host TxD (RS-232), Host	Host interface (sender-)
10	CAN H	CAN bus (IN/OUT)
11	CAN L	CAN bus (IN/OUT)
12	Result 1	Digital output 1
13	Result 2	Digital output 2
14	Sensor 1	Digital input 1
15	SensGND	Digital input ground

Procedure:

1. Connect the 15-pin D-Sub-HD male connector of the connecting cable to the corresponding female connector on the connection module.
2. Connect the serial Aux interface (RS-232) of the device to the computer (PC). To do so, attach the internal "Aux" connection (male connector, D-Sub, 9-pin) of the connection module to the computer (male connector, D-Sub, 9-pin) using a null mode cable (e.g. part no. 2014054, 2 m). If the computer does not have an RS-232 interface, you can also use the USB interface of the device.

Use of an optional extension cable (e.g. part no. 2043413, 2 m)

To maintain the IP65 enclosure rating for the connecting cable of the device, use the optional rubber seal, part no. 4038847, between the male and female connectors of the 15-pin D-Sub-HD male connector, and screw the pin connectors together.

RFU620-105 xx (PoE version)

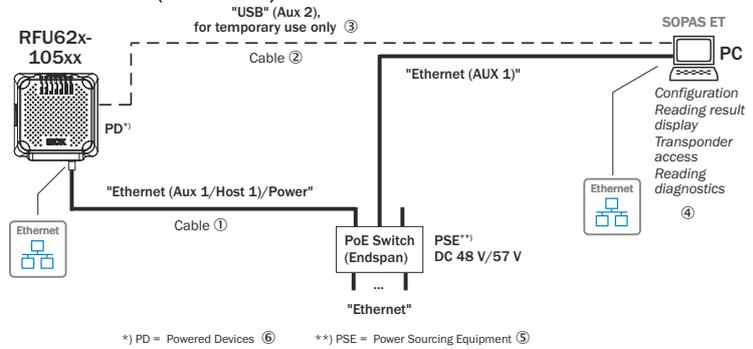


Figure 10: Commissioning: Electrical connection block diagram of the RFU620-105 xx

- ① Adapter cable (male connector, M12, 8-pin, X-coded / male connector, RJ-45, 8-pin)
- ② Adapter cable (male connector, USB, Micro-B type/male connector, USB, type A)
- ③ USB, alternative to Ethernet Aux port. The USB interface is only for temporary use as a service interface.
- ④ Configuration using SOPAS ET, processed read result display, transponder access, or reading diagnostics
- ⑤ PSE = Energy source
- ⑥ PD = Energy consumer

"PoE" connection

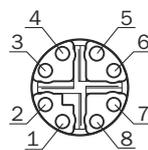


Figure 11: Female connector, M12, 8-pin, X-coded

Pin assignment of the "PoE" connection

Pin	Signal	Function
1	TD+	Sender+
2	TD-	Sender-
3	RD+	Receiver+
4	RD-	Receiver-
5	PoE-	Supply voltage-
6	PoE-	Supply voltage-
7	PoE+	Supply voltage+
8	PoE+	Supply voltage+

Procedure:

- ▶ Connect the "PoE" connection to the PoE switch using a suitable cable (e.g. part no. 6049728, 2 m).

General information for all variants

1. **RFU620-101xx and RFU620-104xx:** If necessary, connect a trigger for read cycles, e.g. a photoelectric sensor to the digital input of the connection module, "Sens 1" (CDB620), "SENS/IN1" (CDB650-204) or "Sensor 1" (CDM420), see the "Electrical installation" chapter, operating instructions of the RFID read/write device RFU62x (UHF).
2. Supply the device with voltage.

NOTE

The voltage supply via a power supply unit must be capable of buffering a brief power failure of 20 ms.

- RFU620-101 xx: DC 10 V ... 30 V
When using -25 °C to -40 °C: DC 20 V ... 30 V
- RFU620-104 xx: DC 10 V ... 30 V
- RFU620-105 xx: DC 48 V/57 V in accordance with PoE technology.

- ✓ After successful initialization, the "Device Ready" LED lights up green.

3. Turn on the PC and start Windows.

Block diagram of all interfaces of the RFU620-101xx (Ethernet variant) together with the optional connection module: **A**

Block diagram of all interfaces of the RFU620-104xx (serial variant) together with the optional connection module: **B**

Block diagram of all interfaces of the RFU620-105xx (PoE variant): **C**

6 Commissioning and configuration with computer (Windows PC)

Adaptation of the device parameters to the application as well as diagnostics in the event of malfunctions take place as default with the SOPAS ET configuration software.

6.1 Installing and starting the configuration software

- Download and install the latest version of the SOPAS ET configuration software, as well as the current device description files (*.sdd): www.sick.com/SOPAS_ET. In this case, select the "Complete" option as suggested by the installation wizard. Administrator rights may be required on the computer (PC) to install the software.
- Start the "SOPAS ET" program option after completing the installation. Path: Start > Programs > SICK > SOPAS ET Engineering Tool > SOPAS.
- Establish communication between SOPAS ET and device with the automatically launching wizard. To do so, select the RFU620 under the devices available depending on the connected communication interface, e.g. in the Ethernet (default Ethernet address: IP address: 192.168.0.1, subnet mask: 255.255.255.0). SOPAS ET establishes communication with the device and loads the associated device description file. The **Quickstart** tab opens.

6.2 Detecting a transponder in Quickstart mode

- Bring one or more standards-compliant UHF transponders into the working range of the integrated antenna of the device. The UUI/EPC of the individual transponders must be differentiated so that the device can detect several transponders.
- Click the **Start** button on the **Quickstart** tab of SOPAS ET. SOPAS ET generates an automated read cycle and lists the detected transponders one after another in the Quickstart window.

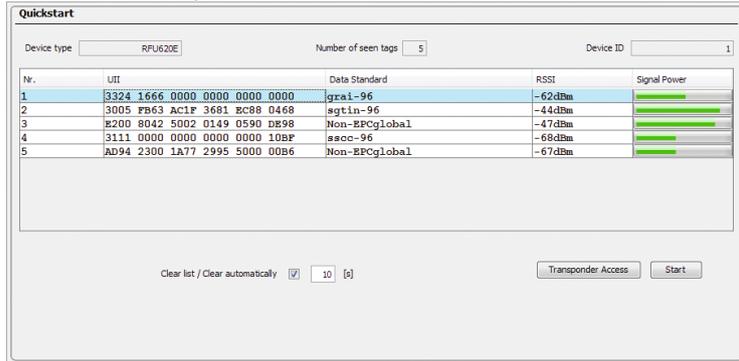


Figure 12: SOPAS ET display of the detected transponders in the Quickstart window

Feedback about transponder detection in the UHF field

In Quickstart mode, the default lighting behavior of the process feedback LEDs indicates whether a UHF field is present and whether the device has detected transponders. The process feedback LEDs are located in the four corners of the antenna cover and light up blue in this case.

Process feedback LEDs

LED status	Status
At half brightness:	
Lit up (permanently)	UHF field available, no transponder in the field
At full brightness:	
Flashing slowly (f = 1.25 Hz)	1 transponder in field
Flashing quickly (f = 2.5 Hz)	2 transponders in field
Flashing faster (f = 5 Hz)	More than 2 transponders in field

NOTE

Quickstart mode is not intended to be used during normal operation. For operational use, set a read cycle using the object trigger control in SOPAS ET.

6.3 Accessing the data on a transponder

- In order to access the memory area of a transponder, click the **Stop** button in **Quickstart**.
- Highlight the desired transponder (click it with the mouse).
- Click the **Transponder Access** button. The **Transponder Management Access** tab displays the content of the selected transponder.

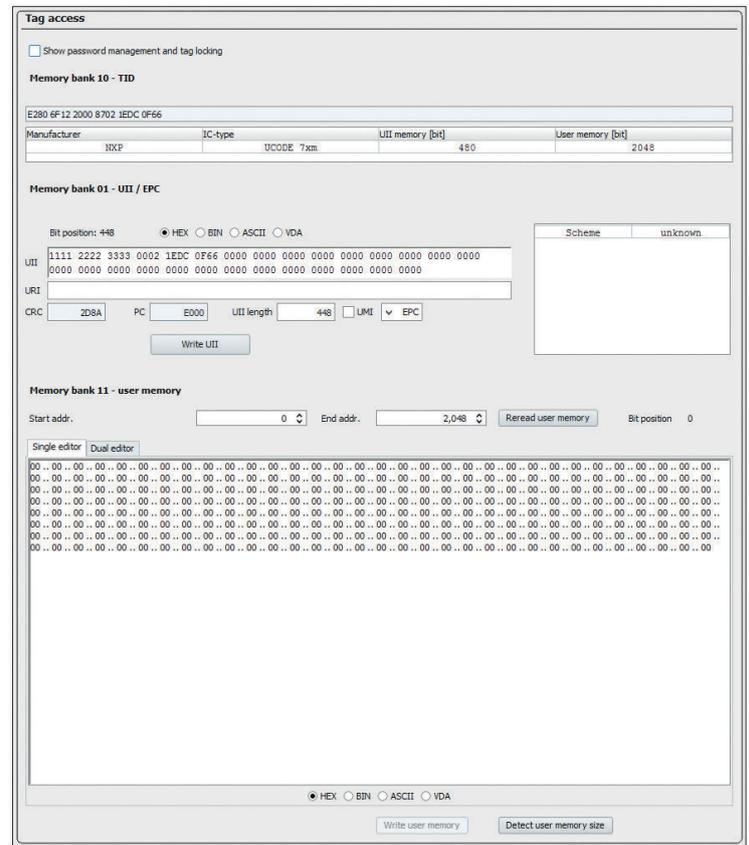


Figure 13: SOPAS ET: Transponder Access display window

NOTE

The device cannot write the TID (tag identifier) of the transponder.

6.4 Continuing the configuration

- Under SOPAS ET in the left-hand navigation tree, edit the required tabs for the application using the additional entries under **Parameters**. These include amongst others:
 - antenna configuration, performance optimization, data pre-processing, transponder processing
 - Object trigger control (e.g. via digital input "Sensor 1"), data processing and output
 - Data output interface(s), function of the digital inputs and outputs and use of an optional memory card if necessary.
- Set the transmitting power for the integrated antenna using sliders on the **Antenna Configuration** tab.
 - Regional permissible values for the antenna, see [Device overview, page 8](#).
 - RFU620 transmitting power default: 15 dBm (30 mW)

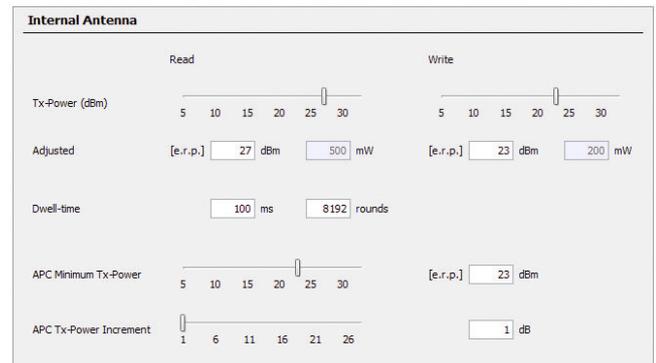


Figure 14: SOPAS ET: Example setting for the integrated antenna

- Test and, if necessary, modify the settings made during operational use of the system.

6.5 Completing the configuration

- Permanently save the entire configuration once it has been successfully tested:
 - Parameter set in the device: Click the button
 - Configuration file on the PC: Click buttons **Device** > **Export SDV** file.

7 Maintenance and care

The device does not contain components that require maintenance.

- If it is contaminated (e.g. metal dust), clean the front of the device (antenna hood) carefully using a soft, damp cloth (with a mild cleaning agent) in order to achieve the full read and write speed. The antenna hood is made of plastic.

8 Transport and storage

Transport and store the device in the 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 or indirect sunlight, as little vibration as possible. Storage temperature and relative humidity see [Technical data, page 7](#).

9 Repairs

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

10 Disassembly and disposal

Any device which can no longer be used must be disposed of in an environmentally friendly manner in accordance with the applicable national waste disposal regulations. As it is categorized as electronic waste, the device must never be disposed of with household waste!

11 Technical data

11.1 Features

	RFU620-101xx	RFU620-104xx	RFU620-105xx
Version (Working area)	Mid range		
Product category	RFID read/write device (UHF) with integrated antenna		
Frequency band	UHF (860 MHz ... 960 MHz)		
Radio equipment approval (Region assignment)	Depending on type, see Device overview, page 8		
Carrier frequency			
Transmitting power			
RFID standard (air interface)	EPCglobal UHF Class 1 Generation 2, ISO/IEC 18000-6 C		
Modulation	PR-ASK		
Connection type	Ethernet	Serial (cable)	PoE
Heater (integrated)	Yes ¹⁾	No ¹⁾	No ¹⁾
Read range	≤ 2 m ²⁾		
Antenna	Integrated antenna <ul style="list-style-type: none"> • Transmitting power: adjustable • Polarization: circular (RHCP ³⁾) • Axis behavior: typically 2 dB (ETSI), 3 dB (FCC) • Aperture angle: 100° • Front-to-back ratio: Typically > 7 dB 		
Service functions	Semi-automated saving of current device parameters (parameter cloning) outside the device memory: <ul style="list-style-type: none"> • By inserting a microSD memory card ⁴⁾ into the device • Externally via the CMC600 parameter cloning module ^{4) 5)} in the CDB ^{4) 5)} or CDM connection module ^{4) 5)} • Externally via the CDF ⁴⁾ fieldbus module ⁵⁾ 		
Clock	Network time protocol (NTP), no internal clock		
Conformities	Type-dependent. The type-specific data sheets are available online at: www.sick.com/RFU62x UL: RFU620-10101 (USA and Canada) ⁶⁾		
Certificates	Type-dependent. See the "Downloads" section online at: www.sick.com/RFU62x		

¹⁾ Permissible ambient operating temperature range, see [Ambient data, page 8](#).

²⁾ The read range depends on the transponder used and the ambient conditions.

³⁾ RHCP = right-hand circular polarization.

⁴⁾ Optional accessories.

⁵⁾ Function not supported for RFU620-105xx (PoE variant).

⁶⁾ UL-certified if the type label contains the UL logo and the UL conditions are met during device operation.

11.2 Interfaces

	RFU620-101xx	RFU620-104xx	RFU620-105xx
Ethernet	<ul style="list-style-type: none"> • Protocol: TCP/IP • Function: host (data output of the read result) • Function: Aux for service ¹⁾ • Data transmission rate: 10/100 Mbit/s • Services: DHCP, NTP, HTTP/HTTPS 	–	<ul style="list-style-type: none"> • Protocol: TCP/IP • Function: host (data output of the read result) • Function: Aux for service ¹⁾ • Data transmission rate: 10/100 Mbit/s • Services: DHCP, NTP, HTTP/HTTPS • Power over Ethernet (PoE)

	RFU620-101xx	RFU620-104xx	RFU620-105xx
PROFINET	<ul style="list-style-type: none"> • Protocol: PROFINET 	–	<ul style="list-style-type: none"> • Protocol: PROFINET
	<ul style="list-style-type: none"> • Function: host (data output of the read result) 		
	<ul style="list-style-type: none"> • PROFINET single port ²⁾ • PROFINET dual port via an external CDF600-22xx fieldbus module ³⁾ 	<ul style="list-style-type: none"> • PROFINET single port or dual port via external CDF600-22xx fieldbus module ³⁾ 	<ul style="list-style-type: none"> • PROFINET single port ²⁾
<ul style="list-style-type: none"> • Data transmission rate 10/100 Mbit/s 			
EtherNet/IP™	<ul style="list-style-type: none"> • Protocol: EtherNet/IP™ • Function: host (data output of the read result) • Data transmission rate: 10/100 Mbit/s 	–	<ul style="list-style-type: none"> • Protocol: EtherNet/IP • Function: host (data output of the read result) • Data transmission rate: 10/100 Mbit/s
EtherCAT®	<ul style="list-style-type: none"> • Protocol: EtherCAT® • Function: host (data output of the read result) ²⁾ • Via external CDF600-0300 fieldbus module ³⁾ (gateway mode) to EtherCAT® 		–
PROFIBUS	<ul style="list-style-type: none"> • Protocol: PROFIBUS • Function: host (data output of the read result) ²⁾ • Via external CDF600-21xx fieldbus module ³⁾ to PROFIBUS (RS-485) 		–
Serial	Host: <ul style="list-style-type: none"> • Protocol: RS-232, RS-422/485 • Function: host (data output of the read result) • Data transmission rate: 0.3 kBd ... 115.2 kBd • Cable: RS-232 (2-wire + ground) • Cable: RS-422 (4-wire + ground), RS-485 (4-wire + ground) Aux: <ul style="list-style-type: none"> • Protocol: RS-232 • Function: Aux (service) ¹⁾ • Data transmission rate: 57.6 kBd • Cable: RS-232 (2-wire + ground) 		–
CAN	<ul style="list-style-type: none"> • Protocol: <ul style="list-style-type: none"> ◦ CSN (SICK CAN sensor network) ◦ CANopen® • Function: host (data output of the read result) • Data transmission rate: 20 kBit/s ... 1 MBit/s • Bus length: depends on data transmission rate and cable cross-section ⁴⁾ 		–
USB 2.0 ⁵⁾	<ul style="list-style-type: none"> • Function: Aux (service) ¹⁾ 		
Digital inputs	<ul style="list-style-type: none"> • Quantity: 2 • Version: physical, switching • Optional additionally: 2 inputs, version: logic, switching. Implemented using CMC600 module ³⁾ in the CDB ³⁾ or CDM connection module ³⁾ • $V_{in}^{6)} = \max. 30 V$, $I_{in}^{7)} = \max. 5 mA$ • Opto-decoupled, reverse polarity protected, adjustable debounce time 		–
Digital outputs	<ul style="list-style-type: none"> • Quantity: 2 • Version: physical, switching • Optional additionally: 2 outputs, version: logic, switching. Implemented using CMC600 module ³⁾ in the CDB ³⁾ or CDM connection module ³⁾ • $V_{out}^{8)} = V_s^{9)} - 1.5 V$, $I_{out}^{10)} \leq 100 mA$ (typical) • Short-circuit protected, temperature protected, not electrically isolated from the supply voltage 		–
Optical indicators	<ul style="list-style-type: none"> • 7 x RGB LEDs (status indicator) ¹¹⁾ at the top front and at the side • 4 x RGB LEDs (process feedback) in the four corners of the antenna cover. Display function can be set with pre-defined color assignment ¹²⁾ 		
Acoustic indicator	–		

	RFU620-101xx	RFU620-104xx	RFU620-105xx
Operating elements	-		
Configuration	SOPAS ET configuration software, CoLa commands (telegrams), web server ¹³⁾ , fieldbus controller (PLC) with additional assistance from SICK function blocks		
Programming	Application-specific programming with SICK AppStudio ¹⁴⁾ development environment. Further information on this is available online at: www.sick.com/SICK_AppStudio		

- 1) Service, for example configuration, diagnosis, transponder access or display of the read result.
- 2) Function blocks for PLC types from different manufacturers are available online at: www.sick.com/RFU62x.
- 3) Optional accessories.
- 4) Typically: 250 m at 250 kBit/s and wire cross-section $\geq 0.34 \text{ mm}^2$.
- 5) The USB interface is only for temporary use as a service interface.
- 6) Input voltage.
- 7) Input current.
- 8) Output voltage.
- 9) Supply voltage.
- 10) Output current.
- 11) RFU620-105xx (PoE variant): "Data" and "CAN" LEDs are non-functional.
- 12) For example using the SOPAS ET configuration software.
- 13) RFU620-104xx (serial variant): Function not supported
- 14) This functionality can be enabled with the SDK6U SD card. Available at: www.sick.com

11.3 Mechanics and electronics

	RFU620-101xx	RFU620-104xx	RFU620-105xx
Electrical connection	<ul style="list-style-type: none"> 1 male connector, M12, 17-pin, A-coded 1 female connector, M12, 4-pin, D-coded 1 female connector, USB ¹⁾, 5-pin, Micro-B type 	<ul style="list-style-type: none"> 1 cable, 0.9 m with male connector, D-Sub-HD, 15-pin 1 female connector, USB ¹⁾, 5-pin, Micro-B type 	<ul style="list-style-type: none"> 1 female connector, M12, 8-pin, X-coded 1 female connector, USB ¹⁾, 5-pin, Micro-B type
Supply voltage V_S	SELV in accordance with currently applicable standard EN 60950-1.		
	DC 10 V ... 30 V. DC 20 V ... 30 V for use in the ambient temperature range of $-25 \text{ }^\circ\text{C}$ to $-40 \text{ }^\circ\text{C}$	DC 10 V ... 30 V	DC 48 V/ 57 V according to PoE technology
	UL-certified devices require a SELV/LPS-compliant supply voltage in accordance with UL/IEC/EN60950-1 or Class 2 according to NEC, UL1310.		
Power consumption	Operation: <ul style="list-style-type: none"> Typical 8 W ²⁾ 14 W ³⁾ Maximum 26 W ⁴⁾ Standby: 3 W typical	Operation: <ul style="list-style-type: none"> Typical 8 W ²⁾ Maximum 14 W ³⁾ 	Operation: <ul style="list-style-type: none"> Typical 8 W ²⁾
Housing	Cast aluminum, plastic (PPS)		
Side cover	<ul style="list-style-type: none"> Plastic foil. Hinged for temporary access to the USB interface and memory card slot Recommended tightening torque for the cover screws: 60 Ncm $\pm 5 \text{ Nm}$. 		
Housing color	Black, silver		
MTBF	23 years ⁵⁾		
Enclosure rating	IP67 (EN 60529:1991-10/A2:2000-02)	IP65 (EN 60529:1991-10/A2:2000-02)	IP67 (EN 60529:1991-10/A2:2000-02)
Protection class	III (EN 61140:2006-08)		
Safety	EN 60950-1:2006-04/A11: 2009-03/A1: 2010-03/A12: 2011-02		
Weight	Approx. 780 g		
Dimensions (L x W x H)	138 mm x 131 mm x 56 mm ⁶⁾		

- 1) Behind side cover.
- 2) At full transmitting power and unloaded digital outputs.
- 3) At full transmitting power and with a typical loading of the 2 digital outputs of 100 mA each and with a 30 V DC supply voltage.
- 4) At full transmitting power, active heating from $-25 \text{ }^\circ\text{C}$ and with a typical loading of the 2 digital outputs of 100 mA each and with a 30 V DC supply voltage.
- 5) Continuous operation at an ambient operating temperature of $+50 \text{ }^\circ\text{C}$.
- 6) With no protruding connector elements, see [Device view, page 2](#).

11.4 Ambient data

	RFU620-101xx	RFU620-104xx	RFU620-105xx
Electromagnetic compatibility (EMC)	EN 301489-3		
Vibration resistance	EN 60068-2-6:2008-02		
Shock resistance	EN 60068-2-27:2009-05		

	RFU620-101xx	RFU620-104xx	RFU620-105xx
Ambient operating temperature	$-40 \text{ }^\circ\text{C} \dots +50 \text{ }^\circ\text{C}$	$-25 \text{ }^\circ\text{C} \dots +50 \text{ }^\circ\text{C}$	$-25 \text{ }^\circ\text{C} \dots +50 \text{ }^\circ\text{C}$
Storage temperature ¹⁾	$-40 \text{ }^\circ\text{C} \dots +70 \text{ }^\circ\text{C}$		
Permissible relative humidity	0% ... 90%, non-condensing		

- 1) Storage conditions see [Transport and storage, page 7](#)

12 Device overview

RFU620-101xx: Device overview

Regional assignment	Firmware version	Carrier frequency	Transmitting power of the integrated antenna	Device type	Part no.	Supplied Quickstarts (part no.)
Europe/South Africa	V1.40	865.7 MHz ... 867.5 MHz	Max. 250 mW (ERP ¹⁾)	RFU620-10100	1062599	English (8015928), German (8015927)
				RFU620-10400	1062600	
				RFU620-10500	1062601	
USA/Canada/Mexico/Ecuador	V1.40	902.75 MHz ... 927.25 MHz	Max. 320 mW (EIRP ²⁾)	RFU620-10101	1062602	English (8015928), French (8018966), Spanish (8018883)
				RFU620-10401	1062603	
				RFU620-10501	1062604	
Australia	V2.02	920.25 MHz ... 925.75 MHz	Max. 320 mW (EIRP ²⁾)	RFU620-10102	1101700	English (8015928)
India	V1.60	865.7 MHz ... 866.9 MHz	Max. 250 mW (ERP ¹⁾)	RFU620-10103	1091355	English (8015928)
				RFU620-10503	1069453	
Brazil	V1.50	902.75 MHz ... 907.25 MHz ... 915.25 MHz ... 927.25 MHz	Max. 320 mW (EIRP ²⁾)	RFU620-10104	1069677	English (8015928), Portuguese (8017353)
				RFU620-10504	1070407	
China/Thailand	V1.50	920.625 MHz ... 924.375 MHz	Max. 200 mW (ERP ¹⁾)	RFU620-10105	1068728	English (8015928), Chinese (8017351), Thai (8021903)
				RFU620-10505	1077860	
Japan	V1.42	916.8 MHz ... 920.4 MHz	Max. 320 mW (EIRP ²⁾)	RFU620-10107	1068727	English (8015928), Japanese (8017352)
				RFU620-10507	1083976	
Russia	V1.71	866.3 MHz ... 867.5 MHz	Max. 200 mW (ERP ¹⁾)	RFU620-10108	1094605	English (8015928), Russian (8021504)
				RFU620-10508	1088871	
Korea	V1.64	917.3 MHz ... 920.3 MHz	Max. 320 mW (EIRP ²⁾)	RFU620-10110	1086439	English (8015928), Korean (8020185)
				RFU620-10510	1083557	
New Zealand	V1.71	920.25 MHz ... 927.25 MHz	Max. 320 mW (EIRP ²⁾)	RFU620-10111	1084997	English (8015928)
Indonesia	2.0.0R	923.25 MHz ... 924.75 MHz	Max. 200 mW (ERP ¹⁾)	RFU620-10112	1092037	English (8015928)
Malaysia	V1.63	919.25 MHz ... 922.75 MHz	Max. 200 mW (ERP ¹⁾)	RFU620-10114	1096414	English (8015928)
				RFU620-10514	1077863	
Vietnam	V2.20	918.25 MHz ... 922.75 MHz	Max. 320 mW (EIRP ²⁾)	RFU620-10118	1101686	English (8015928)

- 1) ERP = equivalent radiated power.
- 2) EIRP = equivalent isotropic radiated power.

12.1 Operational restrictions



NOTICE

Operational restrictions!

Depending on its type, the RFU620-10xxx is configured in its frequency band so that it corresponds to the respective region-dependent specifications. The relevant settings cannot be changed.

Without interfering with nationally protected frequencies (e.g. mobile radio), the device can be operated in the following assigned regions depending on the type, see [Device overview, page 8](#) "Device type" and "Regional assignment" column.

Operating the same RFU620-10xxx in other regions can interfere with protected frequencies.

- Only use the RFU620-10xxx in the region for which a certification is available.
- When reselling the RFU620-10xxx, inform the buyer that the regional assignment cannot be changed.

France

The RFU620-10xxx must not be operated within a 20 km radius of 13 military zones.

Lithuania

There may be restrictions in Lithuania (extent not currently known).

Russia

Only licensed operation is possible in Russia.

USA

(1) 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.

(2) Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

(3) 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.

(4) 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.

(5) 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.

(6) This device complies with the limit values defined by the FCC for radio radiation in an uncontrolled environment. The device must have a minimum distance of 20 cm between the source of radiation and your body.

Canada

(1) This Class A digital apparatus complies with Canadian ICES-003.

(2) This device satisfies the Industry Canada CNR applicable to license-free radio equipment. Use is permitted providing the two following conditions are met: (1) The device must not cause any faults and (2) the user of the device must accept any fault produced in the device, even if this may impair its function.

Mexico

(1) IFETEL note:

"Operation is subject to the following two conditions: (1) This device must not produce any harmful faults and (2) this device must be able to withstand faults, including faults that may cause unwanted operating behavior."

Korea

(1) This equipment is Industrial (Class A) electromagnetic wave suitability equipment and seller or user should take notice of it, and this equipment is to be used in the places except for home.

(2) That wireless equipment is likely to cause propagation interference, and so can not be associated with lifesaving services.

Thailand

(1) This telecommunication equipment is in compliance with NBTC requirements.

(2) This radiocommunication equipment has the electromagnetic field strength in compliance with the Safety Standard for the Use of Radiocommunication Equipment on Human Health announced by the National Telecommunications Commission.

13 Sources for obtaining more information

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

13.1 RFID read/write device RFU620 (UHF)

www.sick.com/RFU62x

Ordering information

- Device and its regional radio variants as well as device connection variants
- Compatible accessories, including transponders, cables, brackets, trigger sensors, connection modules, fieldbus modules

Documentation

- Online data sheet: summary of type-specific technical data including dimensional drawing for the selected device
- Quickstart RFID read/write device RFU620 (UHF)
- RFID read/write device operating instructions RFU62x (UHF)
- Technical information RFU parameters to support the configuration of the device
- Dimensional drawing and 3D CAD dimension models of the device and its device connection variants in various electronic formats
- On request: Overview of the command strings of the device
- Documentation of the fieldbus modules
- Documentation of accessories (mounting systems, connection technology)

Certificates

- EU declaration of conformity and further certificates

Software

- SOPAS ET configuration software
- SDD files (device description files for SOPAS ET)
- Function blocks for communication between a programmable logic controller (PLC) from different manufacturers and the device or the fieldbus modules.

Support is also available from your sales partner: www.sick.com

13.2 Copyright notices

EtherCAT®

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

Open source programs

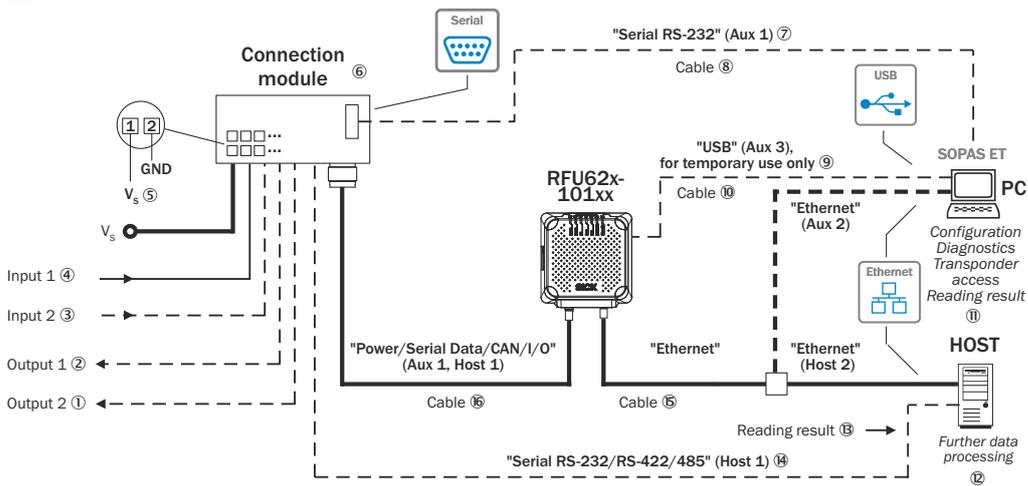
SICK uses open-source software in the device. This software is licensed by the rights holders using the following licenses among others: the free licenses GNU General Public License (GPL Version2, GPL Version3) and GNU Lesser General Public License (LGPL), the MIT license, zLib license, and the licenses derived from the BSD license.

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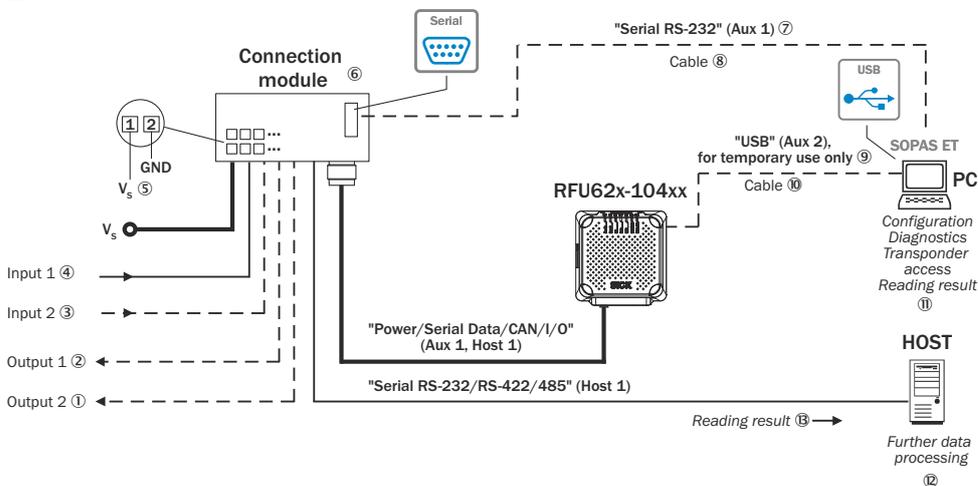
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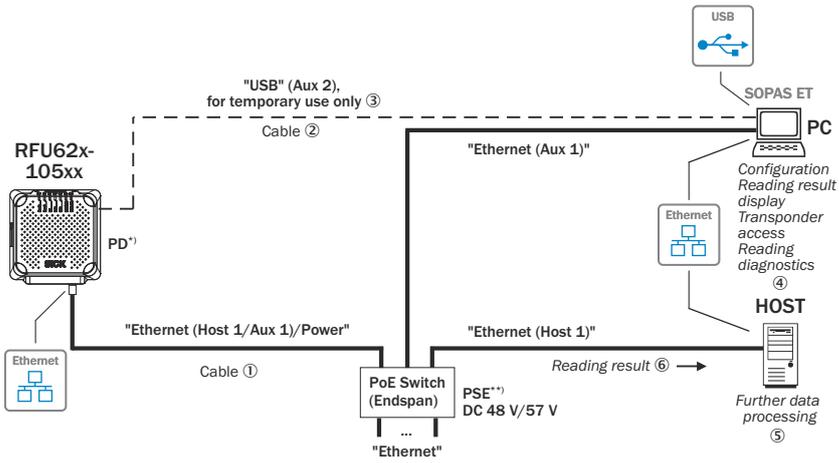
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A

- ① Digital output 2, e.g. for connecting an LED
- ② Digital output 1, e.g. for connecting an LED
- ③ Digital input 2, e.g. for connecting an incremental encoder
- ④ Digital input 1, e.g. for connecting a trigger sensor (read cycle)
- ⑤ Supply voltage V_s
- ⑥ CDB620, CDB650-204 or CDM420 connection module
- ⑦ Alternative to USB or Ethernet Aux port
- ⑧ Null modem cable (female connector, D-Sub, 9-pin / female connector, D-Sub, 9-pin), crossed TxD and RxD
- ⑨ USB, alternative to serial RS-232 or Ethernet Aux port. The USB interface is only for temporary use as a service interface.
- ⑩ Adapter cable (male connector, USB, Micro-B type / male connector, USB, type A)
- ⑪ Configuration with SOPAS ET, prepared representation of the read result, transponder access or reading diagnostics
- ⑫ Further data processing
- ⑬ Read result
- ⑭ Alternative to Ethernet host port
- ⑮ Adapter cable (male connector, M12, 4-pin, D-coded / male connector, RJ-45, 8-pin)
- ⑯ For CDB620 and CDM420: Adapter cable (female connector, M12, 17-pin, A-coded / male connector, D-Sub-HD, 15-pin)
- ⑰ For CDB650-204: Connection cable 1:1 (female connector, M12, 17-pin, A-coded / male connector, M12, 17-pin, A-coded)

B

- ① Digital output 2, e.g. for connecting an LED
- ② Digital output 1, e.g. for connecting an LED
- ③ Digital input 2, e.g. for connecting an incremental encoder
- ④ Digital input 1, e.g. for connecting a read cycle sensor
- ⑤ Supply voltage V_s
- ⑥ Connection module CDB620 or CDM420
- ⑦ Serial RS-232, alternative to USB
- ⑧ Cable (female connector, D-Sub, 9-pin / female connector, D-Sub, 9-pin)
- ⑨ USB, alternative to Serial RS-232. The USB interface is only for temporary use as a service interface.
- ⑩ Adapter cable (male connector, USB, Micro-B type / male connector, USB, type A)
- ⑪ Configuration with SOPAS ET, prepared representation of the read result, transponder access or reading diagnostics
- ⑫ Data further processing
- ⑬ Read result

C

*) PD = Powered Devices ⑧ **) PSE = Power Sourcing Equipment ⑦

- ① Adapter cable (male connector, M12, 8-pin, X-coded/male connector, RJ-45, 8-pin)
- ② Adapter cable (male connector, USB, Micro-B type / male connector, USB, type A)
- ③ USB, alternative to Ethernet Aux port. The USB interface is only for temporary use as a service interface.
- ④ Configuration with SOPAS ET, prepared representation of the read result, transponder access or reading diagnostics
- ⑤ Data further processing
- ⑥ Read result
- ⑦ PSE = Energy source
- ⑧ PD = Energy consumer