OPERATING INSTRUCTIONS

RFH620-1001201S01
Radio Frequency Interrogator (13.56 MHz)

Special Version

SICK
Sensor Intelligence.

Software Versions

Software/Tool	Function	Version
RFH620-1001201S01	Firmware	S 0.60

Contents

Tables & Figures

1 Notes about this Document

1.1 Purpose

This document provides instructions for technical staff on the installation and operation of the RFID special device RFH620 with two integrated LED's in the front side:

This document contains information about:

- Mounting and electrical installation
- Start-up
- Use and configuration
- Replacing

A step-by-step approach is taken for all tasks.

1.2 Target Groups

The target groups for this user guide are:

- Operating electricians
- Technicians and engineers

1.3 Deep of information

This document contains all the required information for installation, electrical installation and operation of the RFID device at the installation location. The factory default setting (basic configuration) of the RFID device is prepared for the use as a stand-alone device. Configuration of the RFID device for the application-specific reading conditions and operation is carried out using the SOPAS-ET configuration software on a Windows™ PC, or – if available – via an external middleware. The SOPAS-ET configuration software contains an online help system to facilitate configuration.

1.4 Symbols Used

To gain easier access, some information in this documentation is emphasised as follows:


ATTENTION

NOTICE!

Warnings are provided to prevent injury to operating personnel or serious damage to the RFID Interrogator.

➢ Always read warnings carefully and observe them at all times.


WARNING

Warning notice!

A warning notice indicates real or potential danger. This should protect you against accidents. The safety symbol next to the warning notice indicates why there is a risk of accident, e.g. due to electricity. The warning levels (DANGER, WARNING, CAUTION) indicate the seriousness of the risk.

- Carefully read and follow the warning notices!

Note Notes provide information on special features or characteristics.

Explanation Explanations provide background information on technical aspects.

Recommendation Recommendations provide advice on how to carry out a task more effectively


This symbol refers to additional technical documentation.

2 Safety Information

This chapter deals with your safety and operator safety in the operational area.

- Read this chapter carefully before using the RFID device.

2.1 Authorised User

For correct and safe functioning, the RFID device must be installed, operated and maintained by sufficiently qualified staff.

Repairs to the RFID device should only be carried out by qualified and authorised SICK service staff.

- The operating instructions should be made available to the end user.
- The end user should be briefed and urged to read the operating instructions by the technicians.

The following qualifications are required for different activities:

Task	Qualification
Installation, maintenance	➢ Practical technical training ➢ Knowledge of current health and safety regulations at the workplace
Electrical installation, device replacement	➢ Practical electrical training ➢ Knowledge of current electrical safety regulations ➢ Knowledge of start-up and operation of the device in each operational ➢ area (e. g. conveyor system)
Startup, configuration	➢ Basic knowledge of the Windows™ operating system ➢ Basic knowledge of designing and setting up (addressing) Ethernet ➢ connections for connecting the bar code system to the Ethernet ➢ Basic knowledge of working with an HTML browser (e. g. Internet Explorer™) for using the online help ➢ Basic knowledge of data transfer ➢ Basic knowledge of bar code technology
Operation of the device in each operational area	➢ Knowledge of start-up and operation of the device in each operational area (e. g. conveyor system) ➢ Knowledge of the software and hardware environment in each operational area (e. g. conveyor system)

Table 2-1 Required qualification for starting up the RFH620

2.2 Intended use

The RFH620 RFID device is an intelligent sensor for the automatic recognition and decoding of 13.56 MHz, ISO 15693 compliant RFID transponder signals e.g. placed on objects in a conveyor system.

The RFID device enable the bi-directional communication with a host for, e.g., further processing.

The intended use of the RFID device results from the following description of the function:

- In a reading station/situation the RFH620 could be installed in a holder, either on the side of a conveyor system (side reading) or under it (reading from below)
- In a writing station/situation the RFH620 gets the date to be written from the host system
- The LED's in the front antenna panel could be switch by either the system depending on the reading result or by the host via command language.
- The RFID device transfers the reading data via the host interface to a superordinate host computer for further processing.
- The RFH620 could be configured/operated using the SOPAS-ET configuration software that runs on a standard client PC provided by the customer or via command language. Communication takes place using RS-232 or Ethernet.

Any warranty claims against SICK AG shall be deemed invalid in the case changes to the RFH620, such as opening the housing, this includes modifications during installation and electrical installation or changes to the SICK software.

2.3 Electrical Connection and Replacement

- Practical training in electrical technology
- Knowledge of the standard safety guidelines relating to electrical technology
- Knowledge regarding the operation of the devices in the relevant application (e.g. conveyor belt)

2.4 Start-up, Operation and Configuration

- Knowledge regarding the operation of the devices in the relevant application (e.g. conveyor belt)
- Knowledge of the software and hardware environment of the relevant application
- Basic understanding of data transfer methods
- Basic understanding of RFID technology

2.2 General Safety Instructions and Protective Measures

Read carefully the general safety instructions and observe them at all times. This also applies to the warnings provided for the activities described in each chapter of this document.

2.3 Quick stop and quick restart

The RFH620 can be switched on or off using the main switch for connection modules CDB620 or CDM420.

3.1.1 2.3.1 Switching off the RFH620

- Switch off the power supply to the RFH620 (the connection module)

- or -

- Remove (pull out) the 15-pole D-Sub-HD connector of the RFID device

When the RFH620 is switched off, the following data is lost:

- Application-specific parameter sets in the bar code scanner that were only saved temporarily in the device
- The last reading result of the bar code scanner
- Daily operating hours counter of the RFH620

3.1.2 2.3.2 Switching the RFH620 back on

- Switch on the power supply to the RFH620 (the connection module) back on

- or -

- Connect the 15-pole D-Sub-HD connector of the RFH620

The RFH620 starts up using the most recent **permanently** saved configuration. The daily operating hours counter is reset.

2.4 Environmental Conditions

The RFI341 is designed to cause minimum impact to the environment.

3.1.3 2.4.1 Energy requirements

The RFH620 consumes typically < 4,5W with 24V DC ± 10%.

3.1.4 2.4.2 Disposal of the device after decommissioning

SICK AG will not currently accept the return of any devices which can no longer be operated or repaired.

- Inoperable or irreparable devices must be disposed of in an environmentally friendly manner and in accordance with valid country-specific waste disposal guidelines.

The design of the RFID device allows for its separation as recyclable secondary raw materials and hazardous waste (electronic scrap).

3 Product Description

This chapter describes the design, the features and the functions of the RFH620 RFID device. The RFID works at a frequency of 13.56 MHz and reads passive ISO/IEC 15693 tags.

➢ For installation, electrical installation and startup assistance as well as for the application specific configuration of the RFH620 using the SOPAS-ET configuration software, please read this chapter prior to carrying out any of the tasks.

3.1 Setting up the RFH620

The RFH620 consists of an integrated antenna and an electronic unit with an integrated decoder. The RFID field enters via the black top plastic part of the housing. The RFH620 (depending on the version) is electrically connected by a revolving connector unit with two connections.

3.1.5 3.1.2 Device view

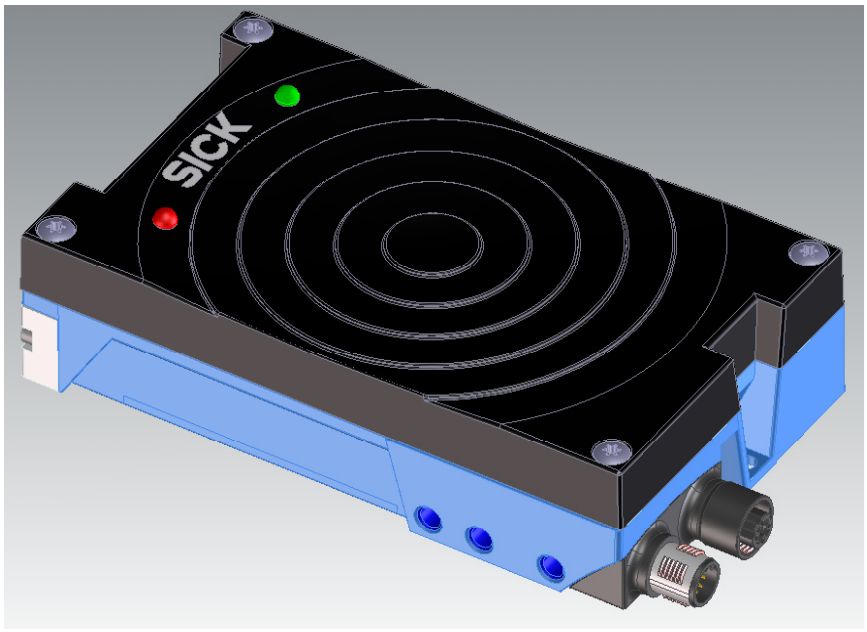


Table 3-1: Variant of the RFH620

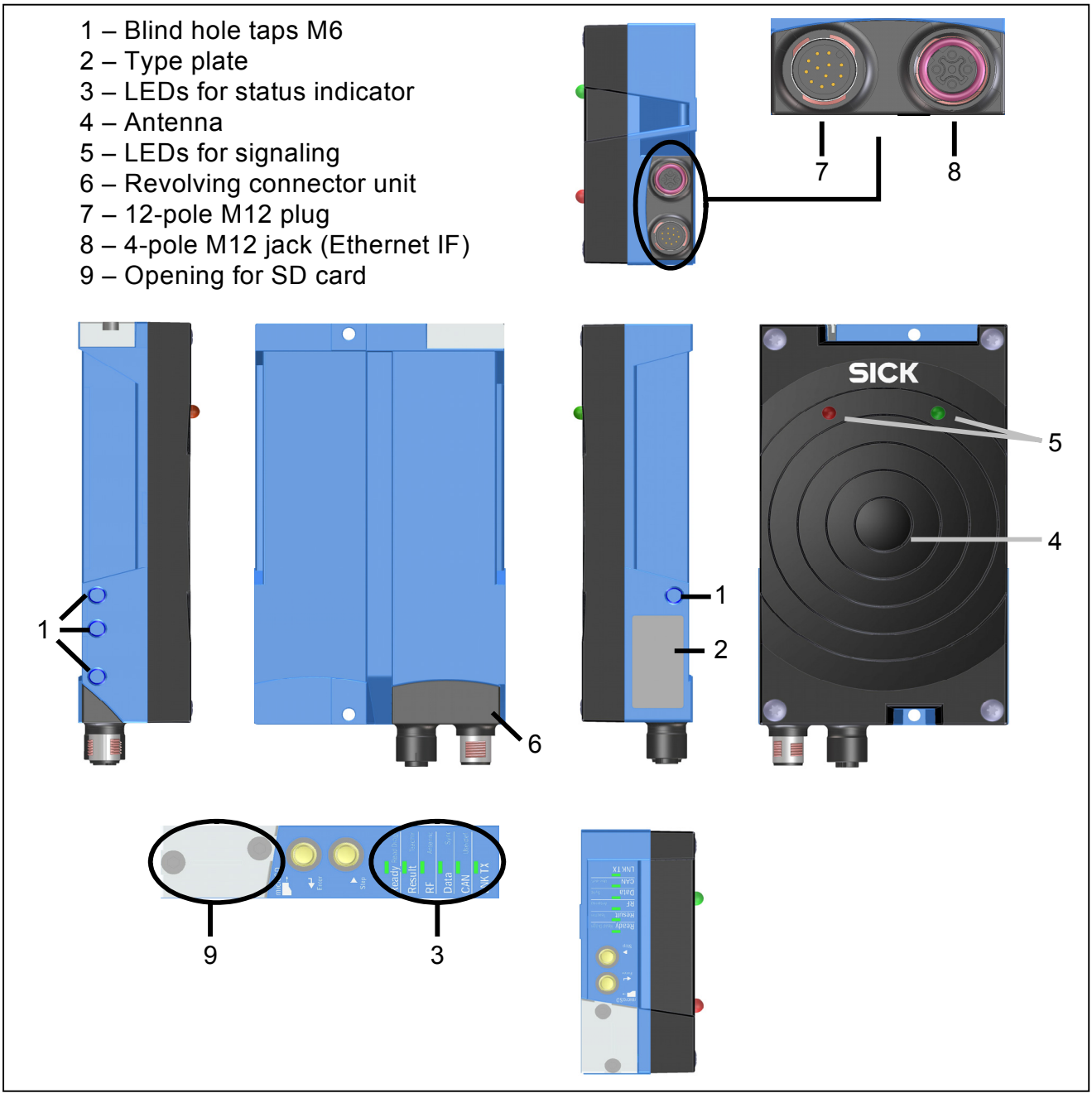


Table 3-2: Device view of the RFH620 (Ethernet version)

3.2 Included in delivery

Delivery of the RFH620 includes the following components:

Pieces	Components	Comment
1	RFID Device	RFH620
1	Notes on device with electrical connection diagram as primary information	Included in the device packaging of the RFH620
1	CD-ROM "Manuals & Software Auto Ident"	SICK Order No. 2049555

Table 3-3: RFH620 delivery

An overview of in-stock installation accessories, connection modules, cables and connectors as well as sensors for reading pulses is available in chapter “Ordering information for RFH620.

3.1.6 3.2.1 Contents of the CD-ROM 2049555

- "SOPAS-ET Engineering Tool“: Configuration software for WindowsTM PCs with integrated online help system (HTML files)
- RFH620 operating instructions: PDF version in English
- “Acrobat Reader“: Freely available PC software for reading PDF files

The current versions of publications and programs on the CD-ROM can also be downloaded at www.sick.com.

3.3 Device versions

Delivery of the RFH620 includes the following components:

Type	**Order No.**	**Description**
RFH620-1001201S01	1046849	RFID device for proximity read range (up to 16cm) with two in antenna plate integrated LEDs

Table 3-4: Variants of the RFH620

3.4 System Requirements

General system requirements are derived from the RFH620 technical data (see chapter "Technical data").
The requirements and conditions for Installation, electrical installation and "startup and configuration" are summarised in the respective chapters.

3.5 Product features and functions (overview)

RFH620 RFID device	➢ supports ISO/IEC 15693 (18000-3M1) compliant transponder ICs (mandatory and optional command set) ➢ Reading direction to front side ➢ Large reading area to address high speed applications ➢ International radio approval (CE&FCC)
User safety and convenience	➢ Robust, compact metal housing, CE/FCC mark ➢ Automatic self-test on system startup ➢ Diagnosis tools for system setup and system (remote) monitoring ➢ Operational data retrieval, error code display on request in case of errors ➢ Activatable test string function (heartbeat) for signalling readiness for operation ➢ Password protected configuration mode ➢ Future proof due to firmware update (flash PROM) via data interface ➢ Future-proof SOPAS-ET configuration software ➢ Extended power supply range
Convenient operation/configuration	➢ Configuration (online/offline) using the SOPAS-ET configuration software (incl. Help system) ➢ Status indicators via five LEDs ➢ Beeper that can be switched off to confirm device functioning
Reading operation modi	➢ Start/Stop operation ➢ Free running reading method
Reading pulse	➢ Pulse sources for start: switching inputs; data interface (command); automatic cycle; CAN ➢ Pulse sources for stop: reading pulse source, switching inputs, command, timer, condition
Data processing	➢ Manipulation of the output of the reading data via event-dependent evaluation conditions ➢ Manipulation of the output strings through filter and output sort options ➢ Switching the outputs via interface command language
Data communication	➢ Host interface: two data output formats configurable, switchable to different physical interfaces, parallel operation possible ➢ Aux interface: fixed data output format, switchable to different physical interfaces, parallel operation possible
Electrical interfaces	➢ Host interface: RS-232, RS-422/485 (data format and protocol can be configured) and Ethernet, or CAN ➢ Aux interface: RS-232, (fixed data format, data transfer rate and protocol) and Ethernet ➢ CAN interface for integration into the SICK-specific CAN-SENSOR network ➢ One digital switching input on the device ➢ Digital switching outputs connected with LEDs in front side
Connection technology (design)	➢ Revolving connector unit on the device with two M12 circular connectors ➢ Connection module CDB620/CDM420 for connection to the host computer (standalone) and for integrating into the SICK-specific CAN-SENSOR network ➢ Bus connection module CMF4001) in connection module CDM420 for connecting to field bus systems

Table 3-5: Overview of the RFH620 product features and functions

3.5 RFH620 method of operation

The RFH620 is an intelligent sensor system for automatic and non-contact detection and decoding of SISO/IEC15693 compliant transponders. In principle, the transponders can be detected on any side of still or moving objects in a conveyor system. Several RFID devices can be combined to allow detection of several sides in one passage (multi-side reading).

The RFH620 creates a high frequency field to recognise transponders. The transponder itself generate out of the field the power for operation and the data send from the RFID device and respond data to the interrogator using field load modulation. The size of the reading field depends mainly on the used transponder (size and Q-factor) and the environment (metal objects).

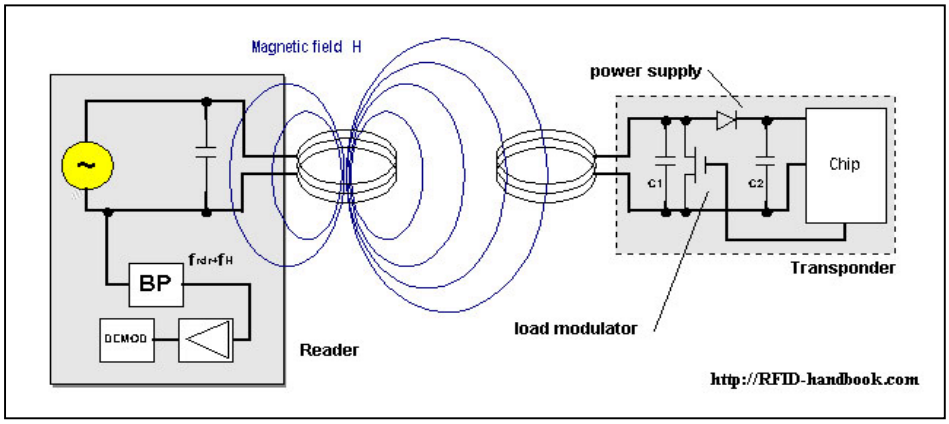


Figure 3-6: HF Technology – principle overview

To control a process, external sensors could deliver information via the reading pulse, the object distance and the conveyor speed (increment). The reading/writing results are output to the RFH620 data interfaces and forwarded to a host/PC.

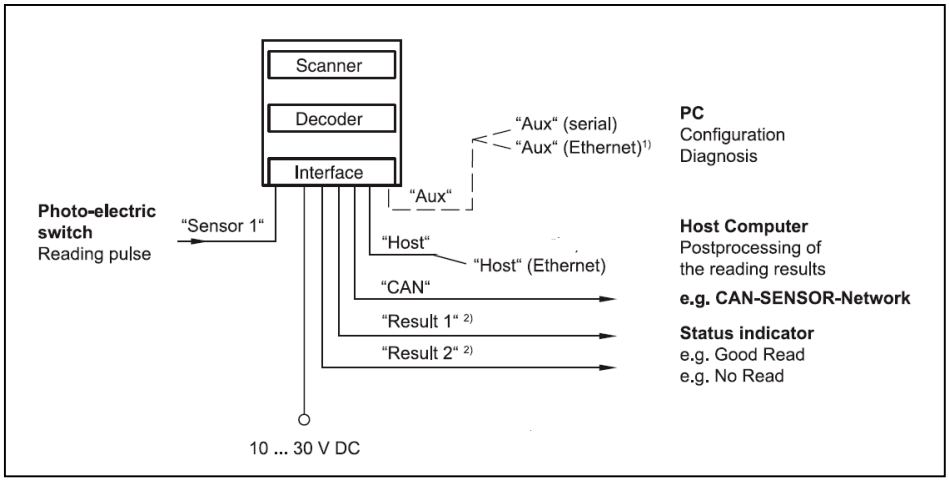


Figure 3-7: Methods of operation in a conveyor system

3.5.1 Reading / Writing configuration

The RFH60 is compliant with the ISO 15693 Standard. Via SOPAS tool standard specific setting could be set.
In addition parameters could be set that e.g could be used to define reading window conditions as well as conditions for the actions to be taken within.

3.5.2 Object trigger control

In order to start an object-related reading process, the RFH620 requires an appropriate external signal (trigger source) for reporting an object in the reading area. The start signal is emitted via an external reading pulse sensor (e. g. photoelectric reflex switch) as standard. As soon as an object has passed the reading pulse sensor, a time window opens in the RFH620 (“reading/writing gate“) for the reading/writing process.

Alternatively, a command activates the reading process via a data interface or the CAN-SENSOR network. In Automatic mode, the RFID device generates the reading gate internally with an adjustable mark-space ratio.

The reading pulse can be ended in a number of ways: With external triggering by the reading pulse source or a command, internally by a timer or an evaluation condition to be met.

The trigger source could be configured using the SOPAS-ET configuration software: PROJECT TREE, RFH620, PARAMETER, READING CONFIGURATION, OBJECT TRIGGER CONTROL, register tab START/STOP OF OBJECT TRIGGER

3.5.3 Increment configuration

The RFID device receives information about the conveyor speed from an external incremental encoder, for example. The incremental encoder delivers pulses which are used to determine the current conveyor speed.
The conveyor speed results from the number of impulses and the resolution of the external incremental encoder.

The increment source and the resolution/speed can be configured using the SOPAS-ET configuration software: PROJECT TREE, RFH620, PARAMETER, INCREMENT CONFIGURATION, register tab INCREMENT

3.5.4 ISO/IEC 15693 configuration

The RFH620 is compliant with the ISO 15693 Standard. All mandatory and optional command set as defined in the standard are supported. All transponders that comply full with the standard could be used in a customer application. A actual list of supported transponder IC’s could be requested via SICK sales channel.

3.5.5 Reading operation mode (object related)

There is only one object in the reading field during start/stop operation, i.e. all the read data should be unambiguously assigned to the object. The start and stop of the reading process control one/two reading pulse sensors at the beginning and at the end of the reading field as standard. The distance between each sensor is determined by the size of the reading field. The reading process can be alternatively controlled with command strings via the data interface. The output of the reading results is carried out either at the end of the reading pulse (the rear edge of the object has left the end of the reading field) or during the reading pulse if certain configurable conditions have been fulfilled.

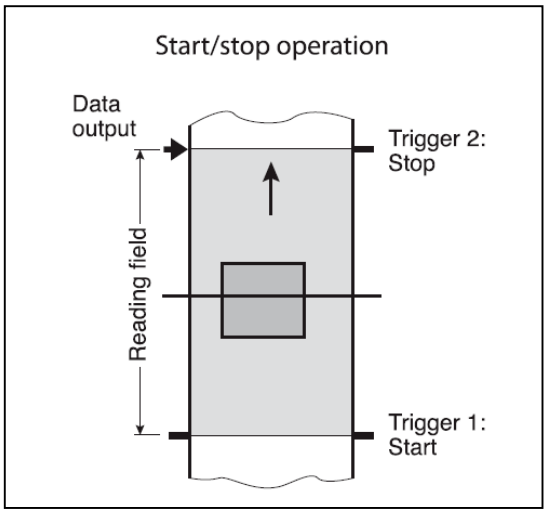


Figure 3-8: reading operation mode for the RHF620 in stand-alone operation

The reading operation mode can be configured using the SOPAS-ET configuration software: PROJECT TREE, RFH620, PARAMETER, DATA PROCESSING, register tab TRACKING

3.5.6 Data Processing

The output time in the reading process with regard to the reading pulse start can be configured using the SOPAS-ET configuration software: PROJECT TREE, RFH620, PARAMETER, DATA PROCESSING, OUTPUT CONTROL

Furthermore, the evaluation conditions and filters and sorters for data output to the host computer can be configured: PROJECT TREE, RFH620, PARAMETER, DATA PROCESSING, EVALUATION CONDITION

PROJECT TREE, RFH620, PARAMETER, DATA PROCESSING, FILTER/SORTER FOR OUTPUT

3.5.7 Output format

The reading result (decoded codes) is displayed via selectable physical interfaces. Two different output formats (telegrams) can be defined for this task, one format for "No Read" and one for the heartbeat (signalisation of readiness).

Note The output formats can be configured using the SOPAS-ET configuration software: PROJECT TREE, RFH620, PARAMETER, DATA PROCESSING, OUTPUT FORMAT

3.5.8 Network / Interface / IOs

All important interfaces for displaying the reading results are available on the RFH620. Several RFID devices can be connected to each other via the CAN bus in the SICK-specific CAN-SENSOR network.

The network parameters can be configured using the SOPAS-ET configuration software: PROJECT TREE, RFH620, PARAMETER, NETWORK / INTERFACE / IOS, tab pages NETWORK OPTIONS

3.5.9 Data interfaces

The following data interfaces are available on the RFH620:

Data interface	Function
Host interface (RS-232 or RS-422/485 and Ethernet host port)	➢ Preparation of the reading result for further processing by the host processor
Auxiliary interface (RS-232 and Ethernet aux port)	➢ Reading diagnosis or host interface monitoring
CAN	➢ Networking several bar code scanners

Table 3-9: data interface function

The data interfaces can be configured using the SOPAS-ET configuration software:

PROJECT TREE, RFH620, PARAMETER, NETWORK / INTERFACE / IOS, SERIAL
PROJECT TREE, RFH620, PARAMETER, NETWORK / INTERFACE / IOS, ETHERNET
PROJECT TREE, RFH620, PARAMETER, NETWORK / INTERFACE / IOS, CAN

3.5.10 Digital Inputs

The external sensor for the object triggering (photoelectric reflex switch) and the incremental encoder, e.g., can be connected to the digital switching inputs.

The digital inputs can be configured using the SOPAS-ET configuration software:

PROJECT TREE, RFH620, PARAMETER, NETWORK / INTERFACE / IOS, DIGITAL INPUTS

For the Ethernet version of the RFH620, this input 2 is only available with the connection module CDB620/CDM420 in combination with the parameter memory module CMC600.

3.5.11 Digital Outputs

With certain events in the reading process (e.g. for unsuccessful decoding "No Read"), two independent switch signals can be generated at both digital outputs and can be used, e.g., to display the event status. The RFH620 “Ethernet-Version” do have two in the antenna front integrated LEDs that are logical connected to the digital outputs. The LEDs could be controlled via event result message or via command string send from the host system.

The digital outputs could be configured using the SOPAS-ET configuration software: PROJECT TREE, RFH620, PARAMETER, NETWORK / INTERFACE / IOS, DIGITAL OUTPUTS

- or - via command language.

The switching outputs "Result 1" and "Result 2" are not only available on the RFH620 “Ethernet version”. The two outputs are only available with the connection module CDB620/CDM420 in combination with the parameter memory module CMC600.

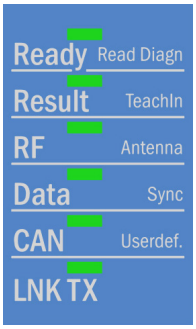
3.6 Indicators and control elements

3.5.1 User Interface

The RFH620 could be configured application-specifically using the SOPAS-ET configuration software (see chapter “Overview of the startup procedure”). The software for this runs on a PC which must be connected to data interfaces (aux interface: Ethernet or RS-232, host interface: Ethernet) of the RFH620. As an alternative to the SOPAS-ET configuration software, command strings are available upon which the user interface of the SOPAS-ET configuration software is based.

3.5.2 LEDs on the RFH620 housing

The RFH620 housing has six LEDs that display the operating status, the HF field activity, the status of the reading result and the transfer to the RS-232/RS-422/485, CAN and Ethernet interfaces.



LED	Colour	Meaning
Ready	green	➢ Lights up constantly after switching on and a successful self-test ➢ Goes out when parameter values are being uploaded from or downloaded to the RFID device
	red	➢ Lights up when a hardware error has been detected
Result	green	➢ Lights up after a successful read (Good Read, 100 ms)
	red	➢ Lights up after unsuccessful read
HF	green	➢ Reading operation: Lights up when the HF field is switched on (depends on the reading pulse)
	yellow	➢ Antenna detuned
	red	➢ Antenna defect
Data	green	➢ Lights up during the data transfer for 100 ms
	yellow	➢ Host SYNC
CAN	green	➢ CAN on
	Yellow	➢ Flickers during the data transfer via the CAN interface
LNK TX	Green	➢ Lights up when the physical Ethernet connection is o.k.
	yellow	➢ Ethernet Speed

Table 3-10: LED indications

4 Installation

4.1 Overview of installation sequences

This chapter describes the installation sequences for the RFH620 and its external components.

The typical installation sequences are displayed below:

- Selecting the installation location for the RFID device
- Aligning the RFH620 to the object carrying the transponder
- Installing the power supply

Important **Do not open the bar code scanner's housing. If the device is opened, the SICK AG warranty shall not apply.**

4.2 Installation preparations

The following general requirements should be observed for installation:

- Typical space requirement: application-specific and type-dependent (reading range)
- Stable installation bracket with sufficient load capacity and measurements suited to the RFH620 (see chapter RFH620 dimensional drawings)
- Shock absorbent and vibration free attachment

The following tools and resources are required for installation:

- Two M6 bolts: The bolt length depends on the wall thickness of the base
- Tool

4.2.1 Components to be installed

The following components have to be placed ready for installation:

- RFH620
- Power supply

4.2.2 Accessories

The following accessories are not included in the delivery of the RFH620. They have to be ordered separately and placed ready for installation:

- Mounting device, see next chapter
- Power supply
- Ethernet Cable

4.2.3 Mounting device

The RFH620 is fixed using blind hole taps (M6) that are each located on the narrow sides of the device (chapter RFH620 dimensional drawings).

The RFID device can be mounted using the following SICK holders:

- Bracket no. 4057051 (set with screws No. 2048551)

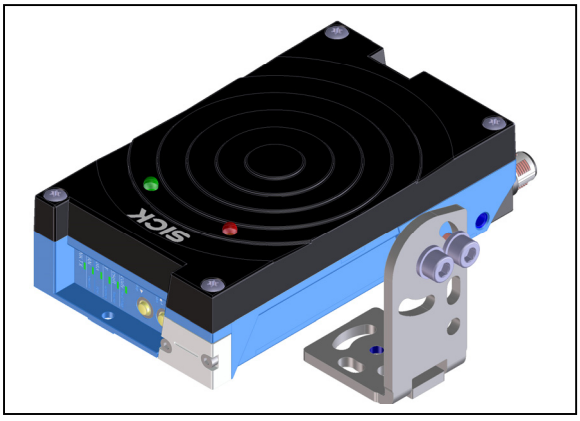


Table 4-1: Example: Fixing the RFH620 with the angle with adapter plate no. 2048551

The dimensioning of the SICK-holders is shown in chapter “Dimensional drawing accessories”.

Alternatively, the user can provide a holder. The holder should meet the following requirements:

- Stable mounting device
- Adjustable alignment of the RFH620 in the x and y axis
- The mounting device must be able to bear the weight of the RFID device including its connection cable (depending on the device version) without vibrating.
- Two M6 bolts to fix the RFH620.
- The screw length depends on the thickness of the mounting device.
- The maximum thread reach in the RFH620 is 6 mm (0.2 in) from the housing surface.

4.3 Installation location

The following aspects are relevant for the selection of the installation location:

- Reading distance to the transponder and aperture angle α
- Avoiding metal surface in front of antenna opening

Furthermore, the distance between the RFH620 and the host computer and the distance to the connection module has to be taken into account (see chapter Electrical installation preparation, chapter Installing connection module CDB620 or CDM420).

4.4 Installation of the RFH620

4.4.1 Installing the RFH620

NOTICE

Damage to the device!

The maximum thread reach of the two blind hole taps M6 is 6 mm (0.2 in). Longer bolts will damage the device.

- Use bolts of a suitable length.

1. Preparing base for the installation of the RFH620 holder (see chapter accessories)
2. Place the transponder at the designated position where the reading should be taken in the RFID reading field (no conveyor movement).
3. Visually align the RFH620 to the transponder..
4. Installing the RFH620 holder on the base.
5. Screw M6 bolts through the holder and into the bar code scanner's blind hole taps and gently tighten them.
6. Adjusting the RFH620, see chapter adjusting the RFH620

5 Electrical Installation

5.1 Overview of installation sequences

Electrical installation must be performed by qualified staff. The following list provides an overview of a typical installation sequence:

- Connecting the RFH620 to the power supply
- Connecting a PC for start-up and configuration (Ethernet)

The actual installation work which has to be carried out depends on the respective system configuration and the version of the RFH620 (see chapter electrical installation preparation). Once electrical installation has been completed, the RFH620 is started up and configured (see chapter Start-up and configuration)

5.2 Electrical installation preparation

The following general requirements should be observed for the electrical installation:

- Supply voltage 10 ... 30 V DC (ELV - EN60950) and min. 5 W output power:
  - Using connection module CDB620/CDM420: supply voltage provided by terminals of the connection module

  - or -
  - Free wiring by customer (without connection module CDB620/CDM420): connection of supply voltage e.g. by cable no. 6034418 (15-pole D-Sub-HD socket to open end)

  - or –
  - Use the power supply device with M12 connector at cable end
- With external reading pulsing
  - Appropriate reading pulse sensor (start/stop), e. g. photoelectric reflex switch: for registering an object in the reading area
  - Additional appropriate reading pulse sensor (stop), e.g. photoelectric reflex switch: For registering the end of pulse with extended external reading pulse
- Appropriate incremental encoder: For separating identical bar codes
- Host computer with RS-232, RS-422/485 data interface or Ethernet: For further processing the reading data
- Connection cables: See chapter 11.4.7 Accessories: Cables for Ethernet version

Important

The possible distance between the RFH620 and the host computer depends on the physical version of the selected host interface and the set data transfer rate. The following tools and resources are required for electrical installation:

- Tool
- Digital measuring device (current/voltage measurement)

5.3 Electrical connections and cables

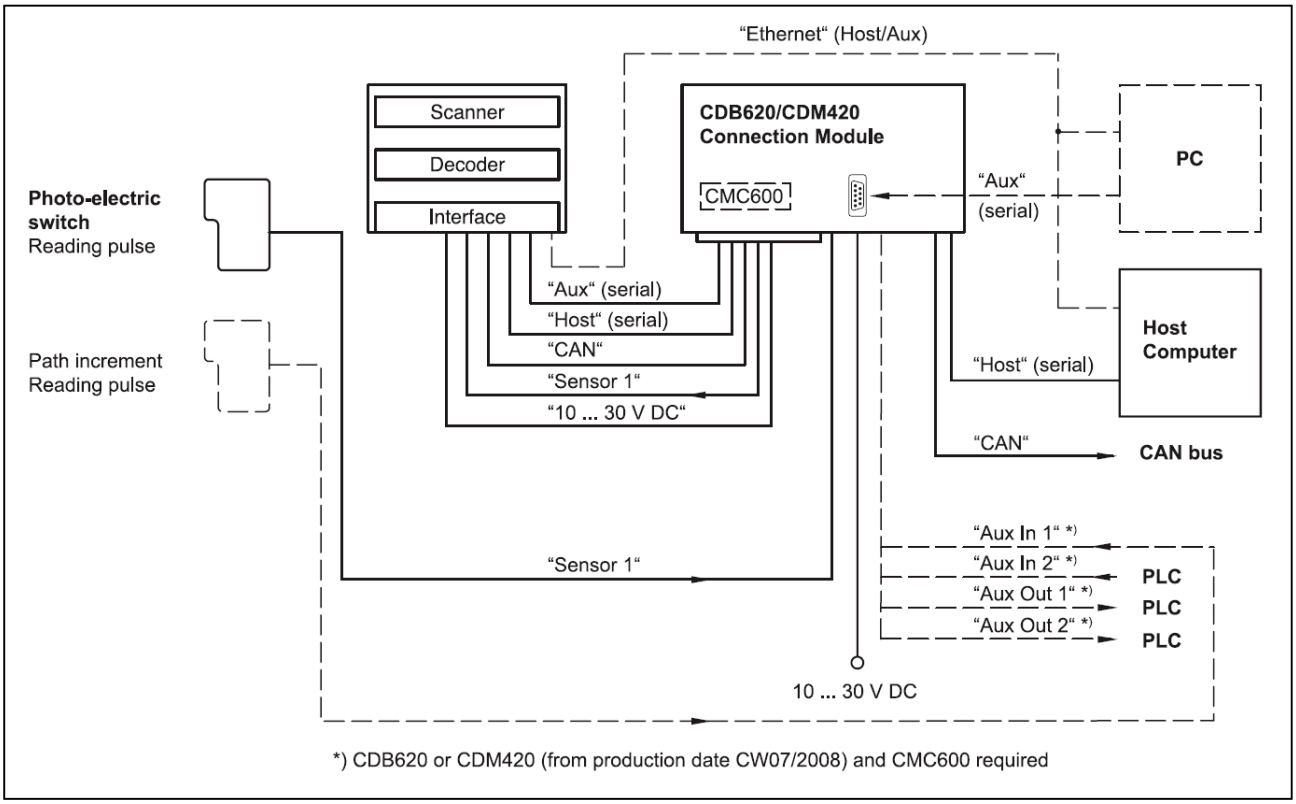


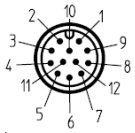
Table 5-1: Ethernet version: Electrical connections at the RFH620 with connector unit

5.3.1 Electrical connections

Device version	Connection (design)	Interfaces	For connection to
RFH620	Connector 1 at the connector unit (M12, 4-pole socket)	Ethernet	Network provided by the client
	Connector 2 at the connector unit (M12, 12-pole plug)	RS-232 RS-422/485 CAN One digital in Power supply	e.g. connection module CDB620 or CDM420

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

5.3.2 RFH620 connections



Pin	Signal	Function
1	GND	Ground
2	10 ... 30 V DC	Operating voltage
3	CAN L	CAN bus (IN/OUT)
4	CAN H	CAN bus (IN/OUT)
5	TD+ (RS-422/485)	Host interface (sender)
6	TD– (RS-422/485); TxD (RS-232)	Host interface (sender)
7	TxD (Aux)	Aux interface (sender)
8	RxD (Aux)	Aux interface (receiver)
9	SensGND	Switching input Sensor 1 ground
10	Sensor 1	Digital switching input (external reading pulse)
11	RD+ (RS-422/485)	Host interface (receiver)
12	RD– (RS-422/485); RxD (RS-232)	Host interface (receiver)
-	–	Shield

5.4 Performing electrical installation

To ensure secure fastening of the connected connectors and adherence to the enclosure rating, the knurled nuts/coupling rings of the M12 connectors have to be tightened or the cable connectors have to be secured.

1. Connect or release current linkages only under de-energised conditions.

2. All wire cross sections and their shields on customer side have to be selected and implemented according to valid engineering standards

NOTICE

Damage to the connector unit at the bar code scanner due to overwinding. The connector unit at the bar code scanner has two end positions.

- Never turn the connector unit more than 180° in one direction (coming from one of the end positions).
- Always rotate the connector unit via the RFH620 centre line

5.4.1 Connecting the power supply for the RFH620

The RFH620 requires a supply voltage of 10 ... 30 V DC (functional extra-low voltage in accordance with IEC 364-4-41 (VDE 0100 (Part 410)) for operation. The functional extra-low voltage can be created using a safety transformer in accordance with IEC 742 (VDE 0551). The maximum current consumption is 4.5 W.

The RFH620 is supplied with 10 ... 30V DC via connection module CDB620 or CDM420, in case of installing an additional field bus gateway CMF400 or display CMD400 into CDM420 with 18 ... 30 V DC.

Connecting supply voltage

When wiring the RFH620 using connection module CDB620 or CDM420, the RFH620 data and function interfaces are contacted to the connection module together with the power supply.

1. Ensure that the connection module's supply voltage has been switched off.

2. Ethernet version: Connect the RFH620 12-pole plug via a corresponding cable (e.g. 2042916) to the connection module's 15-pole socket and screw it tight

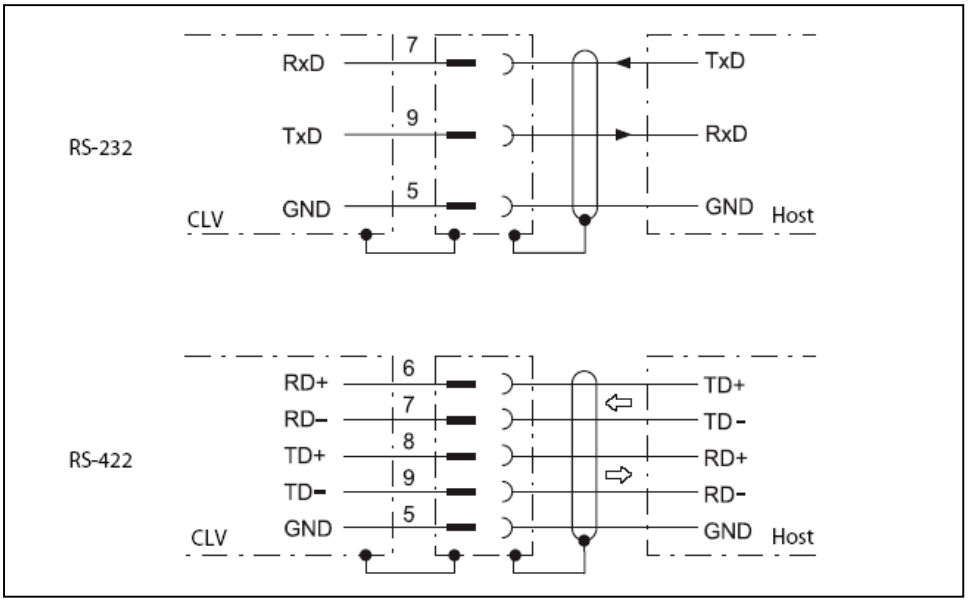
- or –

use the external power supply.

5.4.2 Wiring serial data interface

The maximum data transfer rate depends on the cable length and the interface type.

Interface type	Transfer rate	Distance to the host
RS-232	up to 19,200 Bd	max. 10 m (32.8 ft)
	38,400 ... 57,600 Bd	max. 3 m (9.8 ft)
	115,200 Bd	max. 2 m (6.6 ft)
RS-422/485[1)]	max. 38,400 Bd	max. 1,200 m (3,937 ft)
	max. 115,200 Bd	max. 500 m (1,640 ft)
1) With corresponding line termination according to specification		



Pin assignment for the serial auxiliary data interface on the 15-pole D-Sub-HD plug:

- RxD = Pin 2
- TxD = Pin 3
- GND = Pin 5

NOTICE

Damage to the interface module!

Incorrect wiring of the serial data interfaces can damage electronic components in the RFH620.

- Observe information about wiring the serial data interface.
- Check the wiring carefully before switching on the RFH620.

1. Connect the connect the RFID device's serial interface to the host in accordance with the EMC regulations using shielded cables.
   Adhere to the maximum cable lengths.
2. To prevent interference, do not lay cables parallel to power supply cables and motor lines over a longer distance, e. g. in cable channels.

Terminating the RS-422 data interface

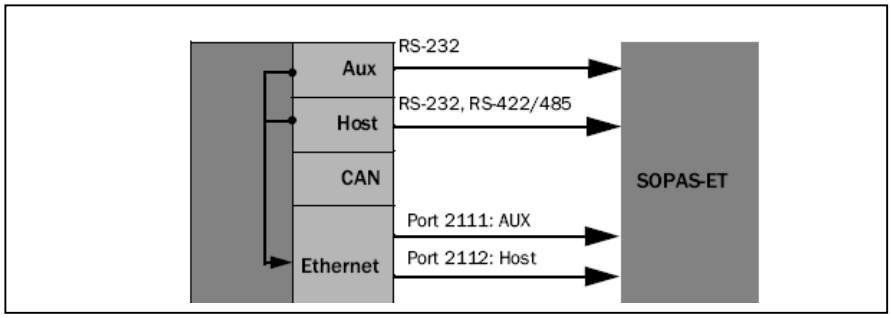
Termination can be performed either in connection module CDB620 or CDM420. See operating instructions "Connection module CDB620" or "Connection module CDM420".

5.4.3 Wiring CAN interface

To wire and configure the bar code scanner's CAN interface for use in the CAN-SENSOR-network, see the operating instructions "Using the CAN Interface“ (no. 8009180, English).

5.4.3 Wiring Ethernet interface

Aux and host interface communication can also be executed in parallel via the Ethernet interface.

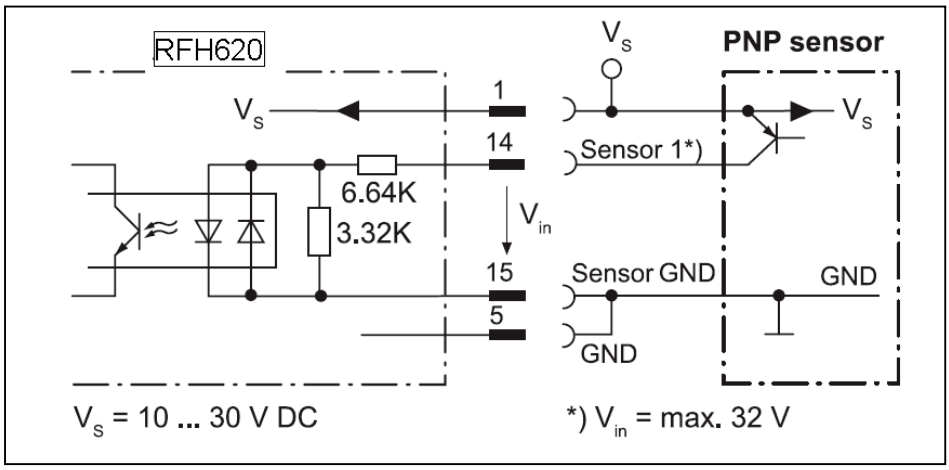


The Ethernet interface has an auto-MDIX function. This automatically sets the speed and any cross connection that is required.

Important

5.4.4 Wiring switching inputs

If the RFH620 reading process should be triggered by an external sensor, the reading pulse sensor is connected to the "Sensor 1" switching input.



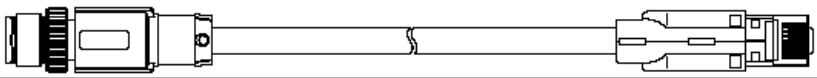
Switching behaviour	Power fed to the input opens the internal reading gate of the RFH620. (Default setting: active high; debouncing: max. 30 ms (standard))
Features	➢ Optodecoupled, reverse polarity protected ➢ Can be wired with the PNP output of a sensor
Electrical values	Low: |Vin| ≤ 2 V; |Iin| ≤ 0.3mA High: 6 V ≤ |Vin| ≤ 32 V; 0.7 mA ≤ |Iin| ≤ 5.0 mA

➢ Connect switching inputs depending on the application

5.5 Pin assignment and wire colour assignment of the assembled cables

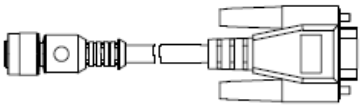
5.4.1 Pin assignment of the assembled cables

Cable no. 6034414, 6029630, 6034415, 6030928 (Ethernet version)



Pin (4-pole)	**Signal**	**Function**	**Pin** (6-pole)
1	TD+	Transmitter+	1
3	TD-	Transmitter-	2
2	RD+	Receiver+	3
	-	-	4
	-	-	5
4	RD-	Receiver-	6
-	-	Shield	-

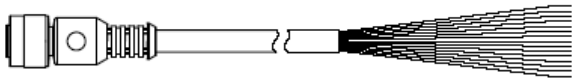
Cable no. 2042916, 2041834, 2042914, 2042915 (Ethernet version)



Pin (12-pole)	**Signal**	**Function**	**Pin** (15-pole)
2	10 ... 30 V DC	Operating voltage	1
8	RxD (Aux)	Aux interface (receiver)	2
7	TxD (Aux)	Aux interface (sender)	3
-	-	-	4
1	GND	Ground	5
11	RD+ (RS-422/485)	Host interface (receiver)	6
12	RD– (RS-422/485); RxD (RS-232)	Host interface (receiver)	7
5	TD+ (RS-422/485)	Host interface (sender)	8
6	TD– (RS-422/485); TxD (RS-232)	Host interface (sender)	9
4	CAN H	CAN bus (IN/OUT)	10
3	CAN L	CAN bus (IN/OUT)	11
-	-	-	12
-	-	-	13
10	Sensor 1	Digital switching input for external reading pulse	14
9	SensGND	Common ground for the switching inputs	15
-	–	Shield	-

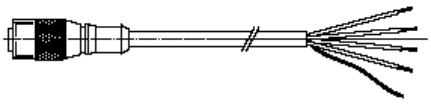
5.4.2 Pin assignment of the assembled cables with an open end

Cable no. 6034605 (Ethernet Version)



Pin (12-pole)	**Signal**	**Function**	**Wire colour**
1	GND	Ground	brown
2	10 ... 30 V DC	Operating voltage	blue
3	CAN L	CAN bus (IN/OUT)	white
4	CAN H	CAN bus (IN/OUT)	green
5	TD+ (RS-422/485)	Host interface (sender)	pink
6	TD– (RS-422/485); TxD (RS-232)	Host interface (sender)	yellow
7	TxD (Aux)	Aux interface (sender)	black
8	RxD (Aux)	Aux interface (receiver)	grey
9	SensGND	Common ground for the switching inputs	red
10	Sensor 1	Digital switching input for external reading pulse	violet
11	RD+ (RS-422/485)	Host interface (receiver)	grey-pink
12	RD– (RS-422/485); RxD (RS-232)	Host interface (receiver)	red-blue

Cable no. 6012266



Pin (5-pole)	**Signal**	**Function**	**Wire colour**
1	–	Shield	-
2	+24 V DC	Operating voltage	red
3	GND	Ground	black
4	CAN H	CAN bus (IN/OUT)	white
5	CAN L	CAN bus (IN/OUT)	blue

6 Startup and configuration

Startup, adjustments and diagnostics are carried out via SOPAS-ET configuration software, or via command language.

6.1 Overview of the startup procedure

- Start up the RFH620 with the factory default settings
- Install SOPAS-ET configuration software
- Connect the PC with the SOPAS-ET configuration software to the RFH620
- In order to optimise the functionality of the RFH620, if necessary, configure the RFH620
- Check correct functioning of the RFH620 in reading/writing operation

6.2 SOPAS-ET configuration software

The SOPAS-ET configuration software optimises the RFH620 to the reading/writing conditions on site. The configuration data can be saved and archived as a parameter set (project file) on the PC.

6.2.1 Functions of the SOPAS-ET configuration software for the RFH620

The online help in the SOPAS-ET configuration software describes the general functions of the software and their operation: MENU, HELP, HELP F1

- Selecting the menu language (English, German)
- Setup communication with theRFH620
- Password protected configuration for various operating levels
- Recording of data during the current mode (recording and analyzing the data of certain RFH620 memory areas via the data recorder)
- Diagnosing the system

6.2.2 System requirements for the SOPAS-ET configuration software

PC system requirements: Recommendation: Pentium III, 500 MHz, 512 MB RAM, CD drive, RS-232 serial data interface or Ethernet interface card, mouse (recommended) and colour monitor (recommended resolution 1,024 x 768 pixels)

- Operating system Windows 2000TM, Windows XPTM or Windows VistaTM
- Free storage space on the hard drive: approx. 100 MB for SOPAS-ET (V. 2.14) configuration software with help files and approx. 70 MB for "Acrobat Reader"
- PC HTML browser, e.g. Internet ExplorerTM: For online help system for the SOPAS-ET configuration software

Connection cables: See chapter Accessories: Cables for Ethernet version and chapter Accessories: General cables and connectors.

6.2.3 Installing the SOPAS-ET configuration software

1. Start the PC and insert the installation CD
2. If installation does not start automatically, call setup.exe on the CD.
3. Follow the operating instructions to conclude installation.

6.2.4 Default setting for SOPAS-ET configuration software

Parameter	Value
User interface language	English (the software has to be restarted after changes)
Units of length	Metric
User group (operating level)	Maintenance
Download parameter for changes	Immediate, temporary
Upload parameter after online switching	Automatic
Window layout	3 (project tree, help, work area)
Serial communication	COM 1: 9,600 Bd/19,200 Bd, 8 data bits, 1 stop bit, no parity 1)

6.3 Establish communication with the RFH620

The TCP-IP protocol at the PC has to be active to enable communication via TCP-IP.

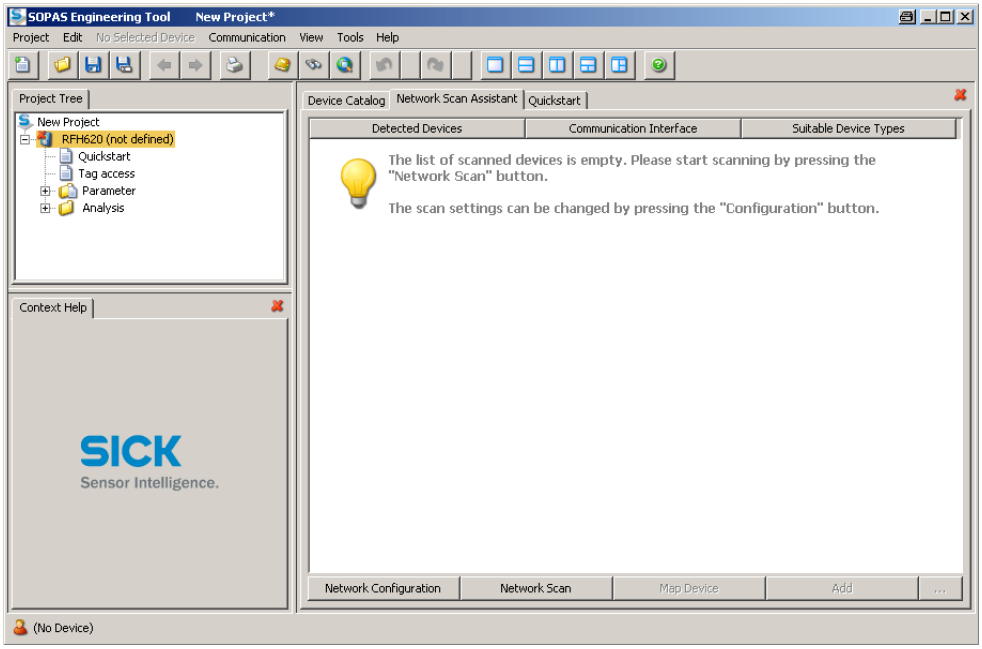
6.3.1 Connecting data interface

➢ Start the PC and insert the installation CD

Connection	Via data interface	Comment
RFH620	Ethernet (10/100 Mbit/s)	Directly connect the PC (Ethernet interface) to the ETHERNET connection of the RFH620 (see chapter Accessories: Cables for Ethernet version)

6.3.2 Starting the SOPAS-ET configuration software

1. Switch the power supply to the RFH620 on. The bar code scanner performs a self-test and is initialised.
2. Switch on the PC and start the SOPAS-ET configuration software. The SOPAS-ET configuration software opens the program window with an English program interface as standard.
3. In order to change the language setting, click on CANCEL and change the language of the program interface to e. g. GERMAN/DEUTSCH via the menu TOOLS/OPTIONS.
4. Once the language setting has been changed, shut down the SOPAS-ET configuration software and restart it.
5. In the dialog window, select the option CREATE A NEW PROJECT and click on OK to confirm it.
6. In the main window under NETWORK SCAN ASSISTENT click on the NETWORK CONFIGURATION button. The dialog window SCAN WIZARD appears.

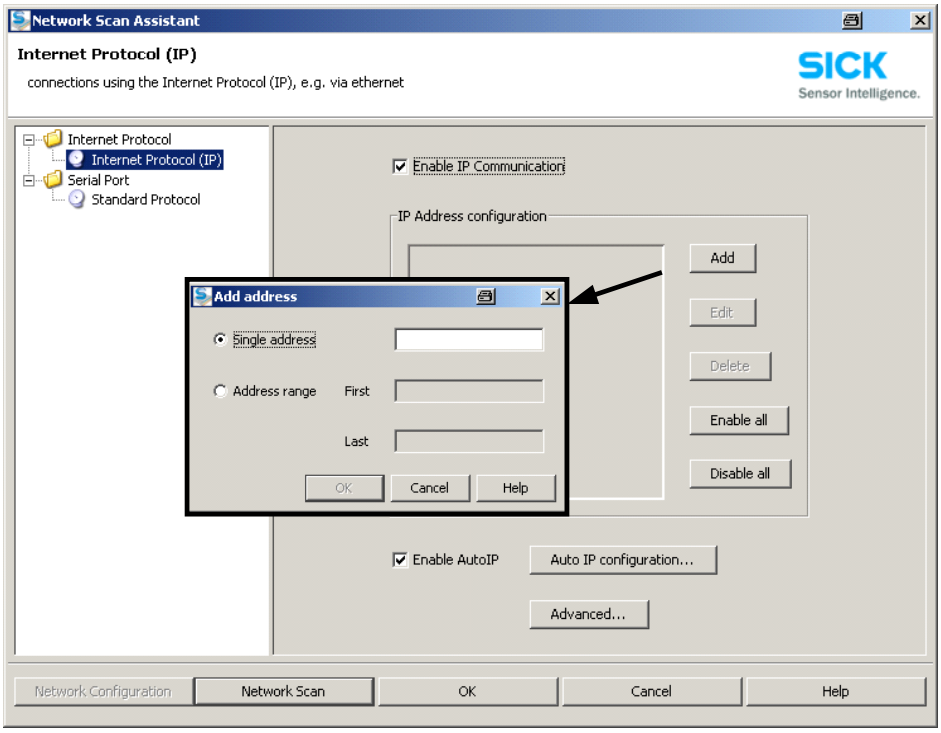


6.3.3 Starting the SOPAS-ET configuration software

To establish a connection quickly and easily via Ethernet, the SOPAS-ET configuration software has a CONNECTION WIZARD in the TOOLS menu.

Manual configuration:

1. In the dialog window NETWORK SCAN WIZARD under INTERNET PROTOCOL/INTERNET PROTOCOL (IP), check the check box for ENABLE IP COMMUNICATION.
2. Click on the ADD button.
3. Enter the IP address of the RFH620 and confirm it by pressing OK in the dialog window. The dialog window closes. A new entry appears in the IP ADDRESS CONFIGURATION list.
4. Click on OK to confirm settings. The dialog window ADVANCED SCAN SETTINGS closes.



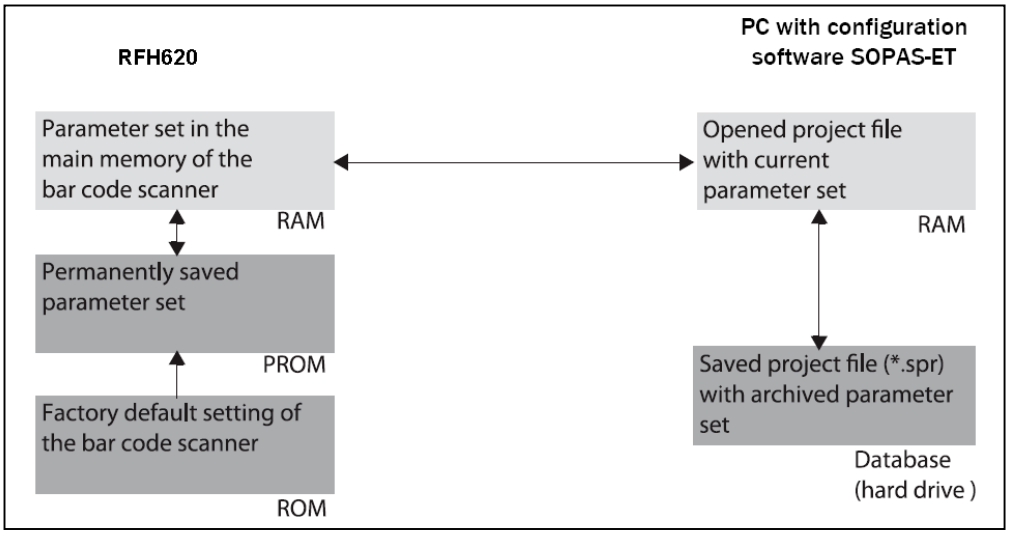
6.3.4 Carrying out a scan

1. In the dialog window SCAN ASSISTENT click on the NETWORK SCAN button.
2. Select the listed devices (RFH620) and confirm via ADD DEVICE. Connected devices are searched for via the connection. The SOPAS-ET configuration software inserts the found device in the project tree and uploads the current parameter set (SYNC CHECK).
3. For configuration of the devices see chapter Configuring the RFH620

6.4 First startup

The TCP-IP protocol at the PC has to be active to enable communication via TCP-IP.

The SOPAS-ET configuration software optimises the RFH620 to the reading/writing conditions on site. Starting point for this is the factory default setting which can be adjusted to RFID device. The SOPAS-ET configuration software is used to create an application-specific parameter set which can be loaded permanently into the RFH620 and saved/archived as a project file (spr file with configuration data) on the PC.



If the RFH620 is containing the Micro SD cloning card the parameter set is saved permanently to the MicroSD card with every permanent storage of the parameter set to the RFH620.

After the RFH620 is restarted, the data from the cloning card automatically transferred to the RFH620. As such, RFH620 can be exchanged, for example, without losing configuration data (see chapter “Replacing a RFH620”).

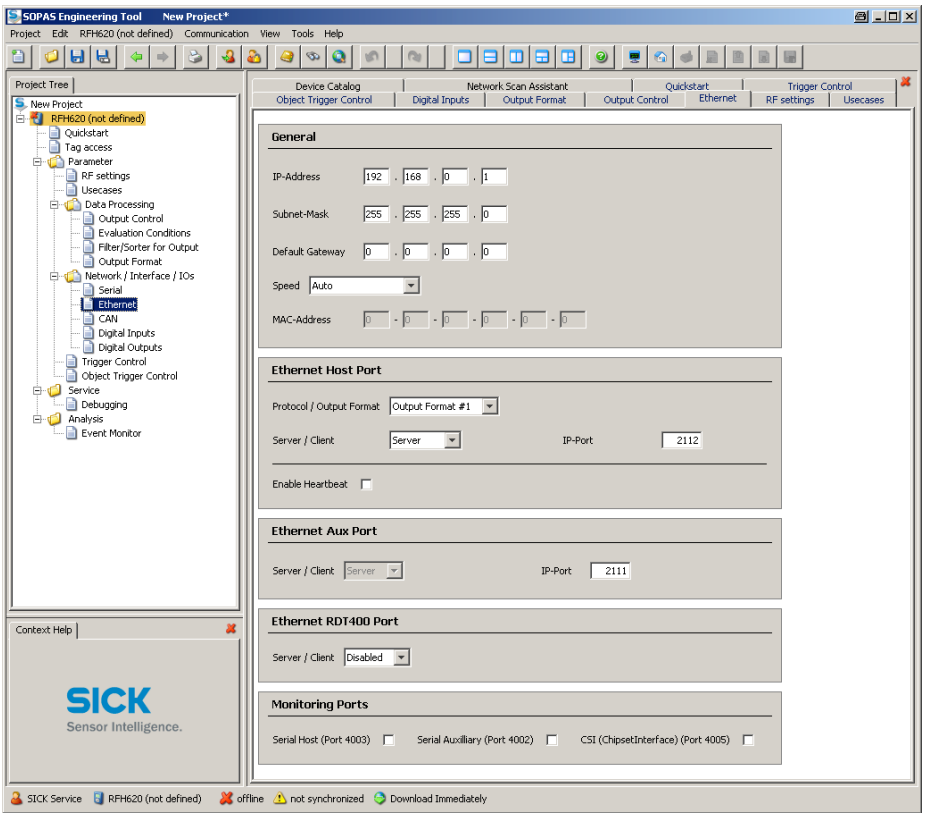
6.4.1 Overview of the startup procedure

- Connect data interfaces of the PC and the RFH620
- Start the SOPAS-ET configuration software and create a new project file
- Configure the scan assistant (activate PC communication)
- Establish communication with the RFH620
- Accept current configuration of the RFH620 in the project tree
- Log on as an "Authorized client" to the RFH620
- Configure the RFH620 for use
- If necessary, apply the "Event Monitor" diagnosis tool
- Load the optimised configuration into the RFH620 and save permanently
- Save the project file with the configuration data of on the PC

6.4.2 Configure the RFH620

All configurable parameters for the RFH620 are grouped into a device description (jar-file) for the SOPAS-ET configuration software. The device description's project tree acts as a guideline for the configuration.

The function of each respective parameter is explained in a context-sensitive manner in an online help (F1 key). The valid value range and the default setting list the display window PARAMETER INFO (right mouse button, when the cursor is positioned over the parameter).



In order to configure a device via the SOPAS-ET configuration software, the respective operating level has to be selected in advance. After the start, the SOPAS-ET configuration software functions at the operating level "MAINTENANCE".

1. In the menu bar under TOOLS select the command LOGIN DEVICE.
2. In the dialog window under USERLEVEL in the list box select the entry AUTHORIZED CLIENT.
   If the parameter set is password-protected, enter the password "client" in PASSWORD.
   Activate/deactivate password protection on the PARAMETER register tab.
3. Click on OK to confirm the dialog window.
   The previously greyed out parameters on the register tabs are now accessible.

6.4.3 Permanently load changed parameter sets into the device

Changed parameter values are immediately transferred to the RFH620 main memory (RAM) depending on the option ("Immediate download"). To ensure that the changes remain even after the bar code scanner is restarted, the configuration has to be permanently saved in the RFH620's PROM.

- In order to load the current settings permanently in the bar code scanner, select the command PARAMETER/SAVE PERMANENT in the menu bar under CLV62X or click on "save" in the tool bar

6.4.4 Save, display and print the current parameter set

When archiving a parameter set it is recommended to not only save the project file on the PC but also print out the contents of the file.

1. In order to save the current parameter set, select the menu item SAVE PROJECT AS in the menu bar under PROJECT.
2. Enter a file name in the dialog window and confirm it via SAVE.
   The SOPAS-ET configuration software saves the current settings in a configuration file "*.SPR".
3. In order to print out the current parameter set, select the command PRINT/PRINT PREVIEW in the menu bar under PROJECT.
   The SOPAS-ET configuration software displays a preview of a table with a list of all the parameter values.
4. Click on in the tool bar at the top of the dialog window.
   The dialog window PRINT for the printer configuration appears.
5. Edit setting accordingly and confirm with OK.
   The current project settings are printed as a table on several pages.

6.5 Default settings

The values of the default setting are permanently saved in the bar code scanner (ROM) and in the database of the SOPAS-ET configuration software in the device-specific jar file (see chapter "First startup"). A PC is not required to start up the RFH620 with the default setting.

6.5.1 Resetting the default setting in the RFH620

The SOPAS-ET configuration software is connected online to the RFH620. Two default setting types can be called up via the SOPAS-ET configuration software:

- Complete default setting (LOAD FACTORY DEFAULT)
  SOPAS-ET resets all parameter values of the RFH620 to default. Settings which have been previously made for the communication parameters of the Ethernet

interfaces or serial data interfaces (e.g. Ethernet address) are overwritten. The connection(s) to the RFH620 might be interrupted and has (have) to be reconfigured.

- Application-specific default setting (LOAD APPLICATION DEFAULT)
  SOPAS-ET resets the parameter values of the RFH620 but does not change the communication parameters. Settings which have been previously made for the communication parameters of the Ethernet interfaces or serial data interfaces are kept and the current connection(s) to the RFH620 remain(s) established.

1. In order to discard changes to the parameter set as described above, select the corresponding command in the menu bar under RFH620.
   The SOPAS-ET configuration software loads the default setting from the RFH620 and displays the parameter values in the register tabs. In the RFH620, the default setting will first be active in the temporary main memory only.
   The default setting can also be saved on or printed via the PC, chapter “Save, display and print the current parameter set”.
2. In the menu bar under TOOLS select the command LOGIN DEVICE.
3. In the dialog window under USERLEVEL in the list box select the entry AUTORIZED CLIENT.
   If the parameter set is password-protected, enter the password "client" in PASSWORD.
4. Click on OK to confirm the dialog window.
5. In the menu bar under RFH620 select the command PARAMETER/SAVE PERMANENT.
   The SOPAS-ET configuration software transfers the default setting to the permanent parameter memory (PROM) of the RFH620.
   If the bar code scanner is connected to a connection module CDB620/CDM420 with parameter memory module CMC600, the parameter set is also saved permanently in the CMC600.

Important Once the default setting has been restored, password-protection is deactivated.

7 Maintenance during operation

The RFH620 functions maintenance free.

7.1 Checking the incremental encoder

If an optional incremental encoder is used, the position of the friction wheel at the drive system should be checked at regular intervals.

- Ensure that the incremental encoder has direct and fixed contact with the drive system and that the friction wheel rotates without slipping.

7.2 Replacing RFH620

Incorrect or damaged RFH620 have to be removed and replaced with either new or repaired RFH620 devices

Important

Repairs to the RFH620 should only be carried out by qualified and authorised SICK AG service staff.

7.2.1 Removing the RFH620

1. Switch the power supply to the RFH620 off.
2. Disconnect all the connection cables on the RFH620.
3. Remove the RFH620 from the holder. Mark the scanner's situation and alignment on the holder or environment.

7.2.2 Replacing the RFH620

1. Align and install the new or repaired RFH620 (see chapter Installation). Observe any marks made previously on the holder or the environment (chapter Removing the RFH620).
2. Reconnect connection cables to the RFH620 (see chapter Electrical installation)
3. Switch the power supply to the RFH620
4. The RFH620 starts with the default setting
5. If a parameter memory module CMC600 is used in connection module CDB620/CDM420:
   The RFH620 automatically loads the current parameter set from the CMC600 into the permanent memory and, subsequently, is ready for operation.
   - or -
   Without parameter memory module CMC600:
   Connect to the RFH620 via the SOPAS-ET configuration software, transfer the configuration stored on the PC via download to the RFH620 and permanently store the configuration there..

8 Troubleshooting

This chapter describes how errors at theRFH620 can be recognised and eliminated.

8.1 Overview of errors and malfunctions which could occur

8.1.1 Installation error

- The RFH620 has been unsuitably aligned to objects with transponders
- Reading pulse sensor has been incorrectly positioned (e.g. internal reading gate opens too late or shuts too early)
- Incremental encoder (optional) positioned incorrectly

8.1.2 Electrical installation error

- Interfaces of the RFH620 wired incorrectly

8.1.3 Configuration error

- Functions have not been adjusted to the local conditions, e.g. parameters for the data interface set incorrectly
- Device-related limits have not been considered, e.g. reading distance, aperture angle
- Selected trigger source for reading pulse incorrect

8.1.4 Malfunctions during operation

- Start/Stop operation: External reading pulse is missing, more than one object is in the reading area
- Device error (hardware/software

8.2 Detailed malfunction analysis

8.2.1 LEDs on the RFH620

The following statuses can, among other things, be read from the LEDs on the RFH620s housing (see chapter LEDs on the RFH620 housing):

- Ready
- Status of the reading result (Result)
- Data trafic on the Host-, Aux- and CAN-interface

The LEDs can display possible malfunctions or errors. Please refer to the system information for further details.

8.2.2 System information

The RFH620 displays errors in various ways. The error output is hierarchised and always allows a detailed analysis:

- Communication errors can occur while transferring telegrams to the RFH620. In this case, the RFH620 returns an error code.
- Error codes are written into a status protocol for errors which occur during a reading (chapter “Status protocol”).

8.3 Status protocol

The status protocol remains even after switching the RFH620 off and on again. The RFH620 differentiates between four error types:

- Information
- Warning
- Error
- Fatal error

The RFH620 only saves the last five entries for each of the error types.

8.3.1 Displaying the status protocol using the SOPAS-ET configuration software

In order to display the status protocol, the SOPAS-ET configuration software has to be online and connected to the bar code scanner.

1. Connect the SOPAS-ET configuration software with the device.
2. Open the project tree RFH620, SERVICE, SYSTEMSTATUS, register tab SYSTEMINFORMATION.

8.4 SICK Support

If an error cannot be eliminated, it is possible that the RFH620 is defective. The RFH620 cannot be repaired by the user, meaning that it is not possible to re-establish functions after a failure. However, the bar code scanner can be rapidly replaced by the user. See chapter “Replacing the RFH620).

- If an error occurs which cannot be eliminated, please contact SICK Service: International: Competent SICK branch office or SICK subsidiary

Telephone numbers and e-mail addresses on the reverse side of these operating instructions. For the postal address please visit www.sick.com

- Only return devices after consultation with the SICK Service.

Important

Repairs to the RFH620 should only be performed by qualified and authorised SICK AG service staff.

9 Technical Data

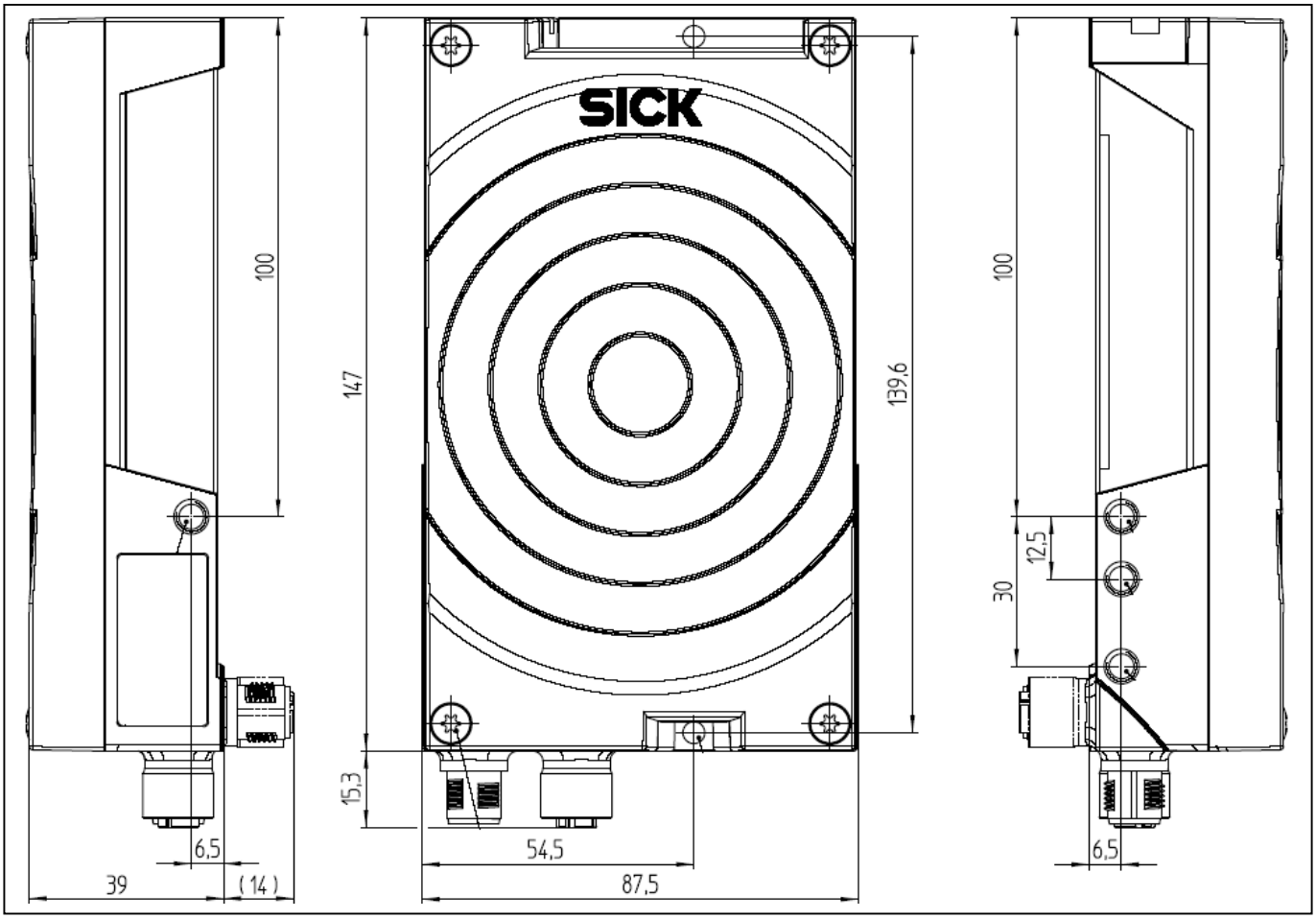
9.1 Datasheet of RFH620 RFID device

Type	RFH620-1001201S0
Carrier frequency	13,56MHz
HF transmitting energy	200mW
Transponder standards supported	ISO/IEC 15693 (18000-3M1)
MTTR (mean time to repair)	tbd
Otical Indicators	6 LEDs (READY, RESULT, HF, DATA, CAN, LNK TX) 2 LEDs in antenna front (logical connected to the outputs Result 1;2)
Acoustic display	Beeper, can be switched off, with function for result status display
Reading pulsing	Pulse sources for start: Switching inputs "Sensor 1"[2)] ; command; Automatic Cycle; CAN Pulse sources for stop: Reading pulse source, "Sensor 1", command, timer, good read, condition
HOST data interface	Ethernet (port 2112), adjustable data output format
Protocols	SICK standard (SOPAS-COLA-A)
Physical configuration	Stand alone
“AUX” data interface	Serial: RS-232 (57.6 kbd; 8 data bits, no parity, 1 stop bit); Ethernet (port 2111); fixed data output format
“Ethernet” data interface	10/100 MBit/s, TCP/IP, half/full duplex
"CAN" data interface	20 kBit/s ... 1 MBit/s, SICK CAN-SENSOR network (Master, Slave, Multiplexer)
Digital switching inputs	Ethernet version: 1 ("Sensor 1"), 2 additional inputs via CMC600 in CDB620, opto-decoupled, Vin = max. 32 V, reverse polarity protected, can be wired with PNP output, configurable debouncing 0...10.000 ms
Digital switching outputs	no output, 2 outputs via CMC600 in CDB620 PNP, Iout = max. 100 mA, short circuit-proof, configurable impulse duration (static, 10 ... 1.000 ms)
Electrical connection	Revolving connector unit with two M12 circular connectors (12-pole plug, 4-pole socket)
Operating voltage/ Power consumption	10 ... 30 V DC (SELV according to EN 61140, EN60950) typ. 5 W
Housing	Die-cast aluminium
Reading area material	Ryton Glass/Mineral filled PPS
Electrical safety	according to EN 60950-1 (2006-04)
Safety class	III, according to EN 61140 (2002-03)
Enclosure rating	IP 67, according to EN 60529 (1991-10); A1 (2002-02)
EMC test	Emission / immunity: EN 301 489-3 ; emission: EN 300 330-2
Vibration-/ shock-test	according to EN 60068-2-6 (1995) / according to EN 60068-2-27 & 60069-2-29 (1993)
Weight	450 g
Ambient operating temperature/ storage temperature	-25°C ... +60°C/–25°C ...+70 °C
Max. rel. humidity	0...90%, non condensation
Housing colour	SICK Blue (light blue according to RAL 5012)

9.2 Reading Diagrams

to be added.

9.3 RFH620 dimensional drawings



Regulatory notes
Europe: Simplified EU declaration of conformity SICK AG hereby declares that the RFH620-1001201S01 radio equipment complies with the 2014/53/EU directive. The complete text of the EU declaration of conformity is available at the following web address: www.sick.com/RFH620.

10 Appendix

11.1 Appendix overview

The appendix contains the following additional information:

- Configuring the RFH620 System with command strings
- Ordering information
- Glossary
- Copy of EC Declaration of Conformity

11.2 Configuration the RFH620 with command strings

As an alternative to the SOPAS-ET configuration software, the RFH620 can also be configured and operated with command strings via all the data interfaces. The command strings can be displayed separately via the SOPAS-ET configuration software.

Important

Both the command strings and the SOPAS-ET configuration software are based on command language which directly accesses the command interpreter of the bar code scanner. This command language must be used with care as the RFH620 executes sent commands immediately. Parameter values altered via commands are at first only active in the current parameter set in the working memory (RAM) of the bar code scanner. To save in the permanent memory, the altered parameter set must be copied into the PROM using a special command, this ensures that the alterations are not lost when the power supply is switched off.

Command strings for triggering the reading pulse:

- START: <STX>sMN mTCgateon<ETX>
- STOP: <STX>sMN mTCgateoff<ETX>

If the commands are entered via the terminal emulator in the SOPAS-ET configuration software, the two control characters <STX> and <ETX> are omitted. Connection to the RFH620 when using the terminal emulator and Ethernet:

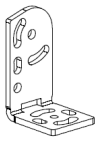
1. Select TOOLS/TERMINAL in the SOPAS-ET configuration software menu to call up the terminal emulator and in the terminal emulator, select CONNECTION/ CONNECT to call up the connection assistant.
2. Select option USER DEFINED CONNECTION in the connection assistant and confirm by pressing NEXT.
3. Select option TCP/IP and confirm by pressing NEXT.
4. Select option SHOW ONLY COLA TELEGRAMS.
5. Enter the RFH620's IP address in the relevant field and confirm by pressing NEXT.
6. In the ADDRESSING MODE selection list, select BY NAME and confirm the settings by pressing CONNECT. The connection with the RFH620 is established. The command strings can be transferred.

11.3 Order information for the RFH620 and the accessories

11.3.1 Order information for the RFH620 RFID device

Order No.	Type	Description
1046849	RFH620-1001201S01	RFID device for proximity read range (up to 16cm) with two in antenna plate integrated LEDs

11.3.2 Accessories: Mounting devices

Order No.	Description	Figure
2048551	Fixing bracket incl. Installation material. For dimensional drawing see chapter “dimensional drawing fixing bracket”	

11.3.3 Accessories: Connection modules

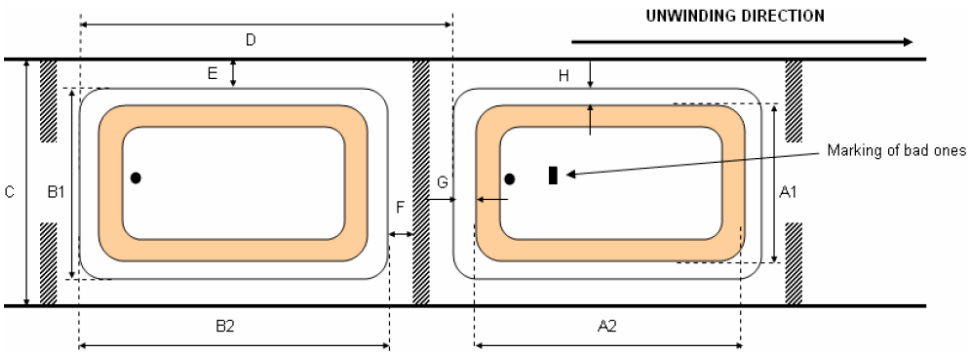
Order No.	Type	Description	Figure
1042256	CDB620-001	Connection module for a RFH620, with: ➢ 1 x 15-pole D-Sub-HD device socket ➢ 4 x cable connections M16 (clamping range Ø 4.5 ...10 mm (0.18 ... 0.39 in)) ➢ Terminal strips (signal distribution unit) for wiring the data and function interfaces (digital switching inputs and outputs) ➢ 1 x internal 9-pole D-Sub "Aux" plug ➢ 9 x LED (status indicators) ➢ Operating voltage 10...30 V DC ➢ Polycarbonate housing, enclosure rating IP 651) ➢ Operating temperature -352) ...+40 °C (-312) ... +104 °F) ➢ Dimensions (124.2 x 113.1 x 53.9)mm (7.56 x 6.54 x 2.74)in ➢ Weight approx. 260 g (9.17oz)	
1042257	CDB620-101	As CDB620-001, but with: ➢ 2 x cable connections M16 (clamping range Ø 4.5 ...10 mm(0.18 ... 0.39 in)) ➢ 2 x 5-pole M12 circular connector (1 x plug, 1 x socket)	

1042258	CDB620-201	As CDB620-001, but with: ➢ 4 x cable connections M16 (clamping range Ø 4.5 ...10 mm (0.18 ... 0.39 in)) ➢ 1 x cable connection M12 (clamping range Ø 4.5...7mm (0.18...0.28in))	
1025362	CDM420-0001	Connection module for a RFH620, with: ➢ 1 x 15-pole D-Sub-HD device socket ➢ 6 x cable connections M16 (clamping range Ø 4.5...10mm (0.18...0.39in)) ➢ Terminal strips (signal distribution unit) for wiring the data and function interfaces (digital switching inputs and outputs) ➢ 1 x internal 9-pole D-Sub "Aux" plug ➢ 5 x LED (status indicators) ➢ Operating voltage 10...30 V DC, current consumption 0.5 W without RFH620 ➢ Polycarbonate housing, enclosure rating IP 65 ➢ Operating temperature –35°C ...+40 °C (-3°F ... +104 °F) ➢ Dimensions (191.9 x 166.2 x 69.7)mm (7.56 x 6.54 x2.74)in ➢ Weight approx. 800 g (9.17oz)	
1028487	CDM420-0004	As CDM420-0001, but for max. two RFH620 with: ➢ 2 x 15-pole D-Sub-HD device sockets ➢ 2 x internal 9-pole D-Sub "Aux" plug ➢ 2 x 5 LED (status indicators)	
1042259	CMC600-101	Parameter memory module (connection module cloning) ➢ Plug-in using connection module CDB620 or CDM420 ➢ Storage of the parameter set of RFH620 (from firmware V 1.00) ➢ Rotary switch for activating RFH620 network operation ➢ Operating voltage 10 ... 30 V DC using CDB620 or CDM420 ➢ Current consumption 0.5 W ➢ Operating temperature 0 ... +40 °C Application of RFH620 in combination with the parameter memory module CMC600 available Mid 2009.	
2029468	CMP400	Power supply module (connection module power) ➢ Installed in connection module CDM420 ➢ Power supply of RFH620 from the alternating current network ➢ Input voltage 100 ... 250 VAC/50 ...60 Hz ➢ Output voltage 24 V DC, max. 10.8 W (short-circuit proof) ➢ Connection to CDM420 via flat cable ➢ Operating temperature 0 ... +40 °C	
2049552		Power supply module ➢ Power supply for RFH620 ➢ M12 (12-pole) connector ➢ Wide input range (90-264V AC) ➢ 6W output power ➢ IP54 protection class ➢ 18V DC output voltage ➢ 0..40°C operating temperature	

11.3.3 Accessories: cables for Ethernet Version

Order No.	Description	Wires	length	connection
6034414	Ethernet cable (patch), twisted pair, shielded, with 4- pole M12 round plug (D coded), IP 67 and 8-pole RJ45 plug	2 x 2	2m	RFH620 to Ethernet
6029630			3m	
6034415			5m	
6030928			10m	
6034420	Ethernet cable (patch), twisted pair, shielded, with 2 x 4-pole M12 round plug (D coded), IP 67	2 x 4	2m	RFH620 to Ethernet
6034421			3m	
6034422			5m	
2042916	Connection cable for data and function interfaces, shielded, with 12-pole M12 round socket and 15-pole, D-Sub-HD plug, IP 67	12	0,9m	RFH620 to CDB620, CDM420
2041834			2m	
2042914			3m	
2042915			5m	
6034605	Connection cable for data and function interfaces, Ø 6.2 mm (0.24 in), shielded, with 12-pole M12 round socket and open end.	12 x 0.14 mm² (26 AWG)	5m	RFH620 for free wiring

11.3.4 Accessories: ISO/IEC 15693 compliant Transponder



Order No.	Type	Description
6037763	ISO/IEC 15693 transponder label	Credit card sized RFID Label with NXP I-Code-SLI IC inside (SL2ICS20), 1024 bit memory (system memory + 896 bit user memory)

Electrical characteristics

Integrated Circuit (IC)	NXP I-Code SLI, SL2ICS20
IC's protocol / anti-collision	ISO 15693
Operating frequency	13,56 MHz
Unloaded resonance frequency	14,40 ± 0,35 MHz
Memory	1024 -bit R/W EEPROM

Delivery form

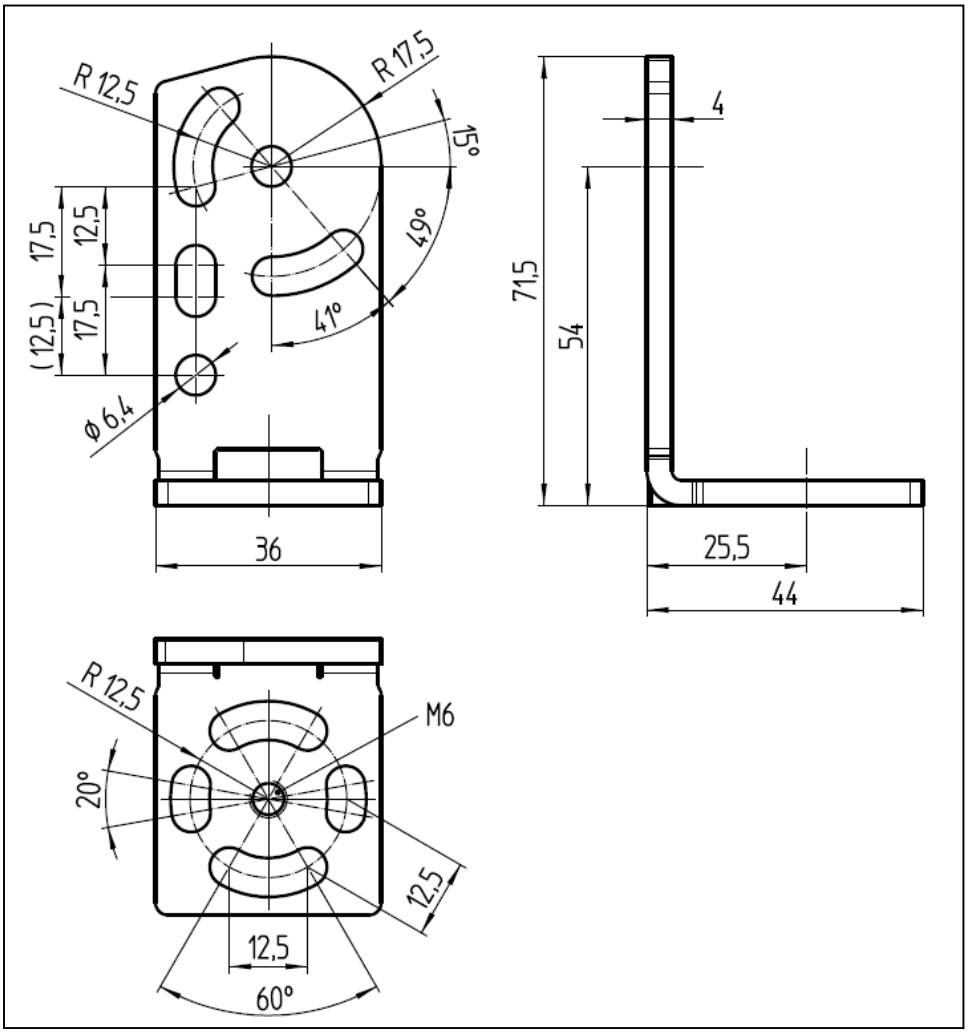
Transponder format	Die-cut
Transponder face material	Opaque matt paper 79
Transponder backing material	Siliconized paper 56
Transponder adhesive	RA-2
- labeling temperature	min. +5°C
- usage temperature	min. -10°C - +120°C
- peel	min. 8N/25mm (FTM 2)
Transponder antenna material	Aluminium, crimped coil
Final inspection	100% inspection, yield >97%, known faulty ones marked
Reel labeling	Reel number, product number, amount, prod. order number, yield and date
Printability	TTR with selected ribbons, do not print over IC area

11.3.5 Accessories: SD Card

Order No.	Type	Description
4051366	MicroSD	512MB Memory Card 

11.4 Dimensional drawing accessories

11.4.1 Dimensional drawing fixing bracket no. 2048551



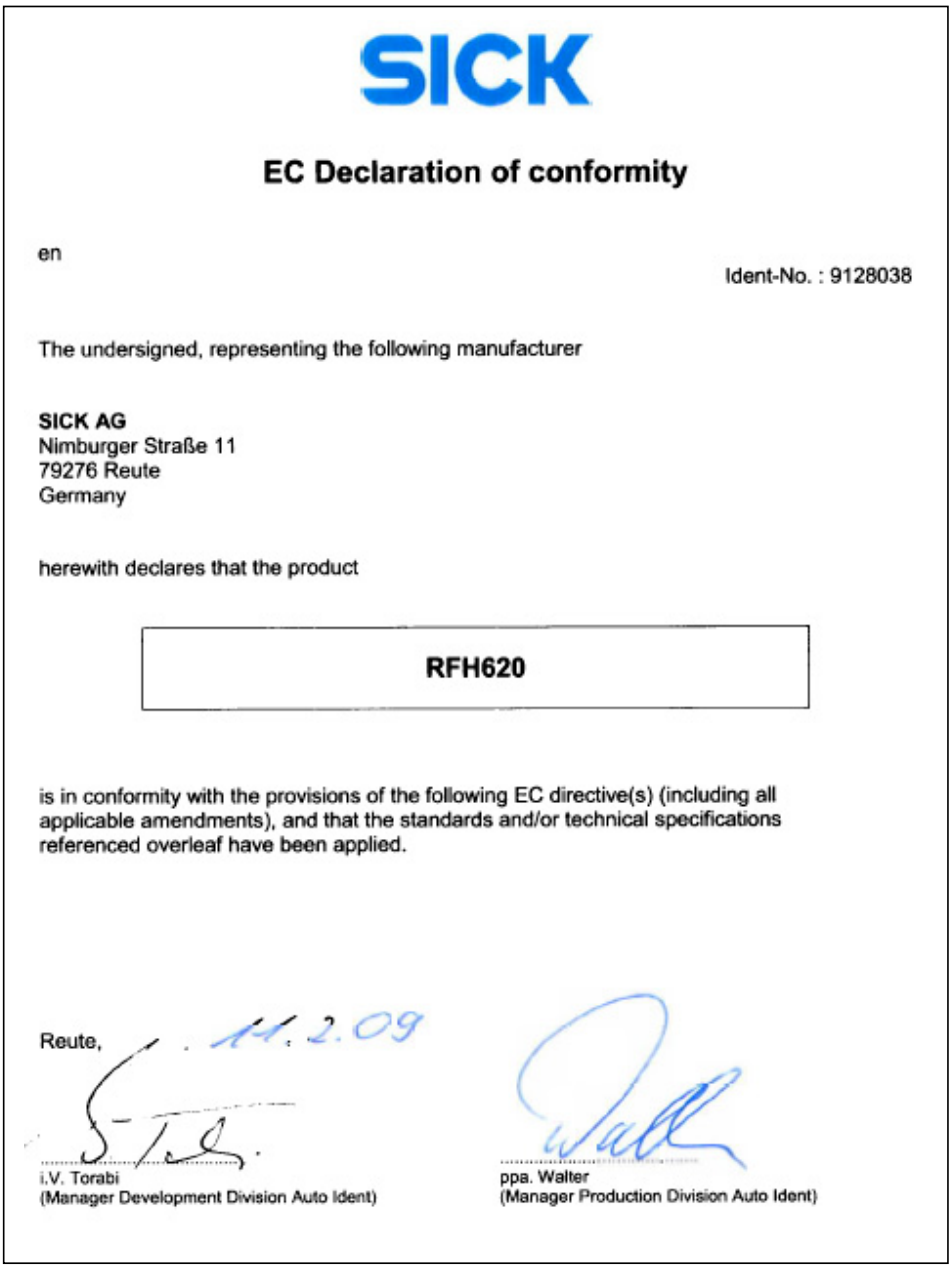
11.5 Glossary

11.6 EC Declaration of Conformity

The figure shows a scaled down version of the EC Declaration of Conformity (page 1) for the RFH620 RFID device.

➢ The complete EC Declaration of Conformity and the list of device versions and the standards met can be requested from SICK AG.

Regulatory notes
Europe: Simplified EU declaration of conformity SICK AG hereby declares that the RFH620-1001201S01 radio equipment complies with the 2014/53/EU directive. The complete text of the EU declaration of conformity is available at the following web address: www.sick.com/RFH620.



SICK

EC Declaration of conformity

en

Ident-No. : 9128038

The undersigned, representing the following manufacturer

SICK AG
Nimburger Straße 11
79276 Reute
Germany

herewith declares that the product

RFH620

is in conformity with the provisions of the following EC directive(s) (including all applicable amendments), and that the standards and/or technical specifications referenced overleaf have been applied.

Reute, 11.2.09

i.V. Torabi
(Manager Development Division Auto Ident)

ppa. Walter
(Manager Production Division Auto Ident)

8013171/ZO93/2017-08-08 · BU07 <PM6.5/WORD97/PDF> · Printed in Germany · Subject to change without notice · The specified product features and technical data do not represent any guarantee · 05 Pre int62

Australia
Phone +61 3 9497 4100
1800 33 48 02 – tollfree
E-Mail sales@sick.com.au

Belgium/Luxembourg
Phone +32 (0)2 466 55 66
E-Mail info@sick.be

Brasil
Phone +55 11 3215-4900
E-Mail sac@sick.com.br

Ceská Republika
Phone +420 2 57 91 18 50
E-Mail sick@sick.cz

China
Phone +852-2763 6966
E-Mail ghk@sick.com.hk

Danmark
Phone +45 45 82 64 00
E-Mail sick@sick.dk

Deutschland
Phone +49 211 5301-270
E-Mail info@sick.de

España
Phone +34 93 480 31 00
E-Mail info@sick.es

France
Phone +33 1 64 62 35 00
E-Mail info@sick.fr

Great Britain
Phone +44 (0)1727 831121
E-Mail info@sick.co.uk

India
Phone +91–22–4033 8333
E-Mail info@sick-india.com

Israel
Phone +972-4-999-0590
E-Mail info@sick-sensors.com

Italia
Phone +39 02 27 43 41
E-Mail info@sick.it

Japan
Phone +81 (0)3 3358 1341
E-Mail support@sick.jp

Nederlands
Phone +31 (0)30 229 25 44
E-Mail info@sick.nl

Norge
Phone +47 67 81 50 00
E-Mail austefjord@sick.no

Österreich
Phone +43 (0)22 36 62 28 8-0
E-Mail office@sick.at

Polska
Phone +48 22 837 40 50
E-Mail info@sick.pl

Republic of Korea
Phone +82-2 786 6321/4
E-Mail kang@sickkorea.net

Republika Slowenija
Phone +386 (0)1-47 69 990
E-Mail office@sick.si

România
Phone +40 356 171 120
E-Mail office@sick.ro

Russia
Phone +7 495 775 05 34
E-Mail info@sick-automation.ru

Schweiz
Phone +41 41 619 29 39
E-Mail contact@sick.ch

Singapore
Phone +65 6744 3732
E-Mail admin@sicksgp.com.sg

Suomi
Phone +358-9-25 15 800
E-Mail sick@sick.fi

Sverige
Phone +46 10 110 10 00
E-Mail info@sick.se

Taiwan
Phone +886 2 2375-6288
E-Mail sickgrc@ms6.hinet.net

Türkiye
Phone +90 216 587 74 00
E-Mail info@sick.com.tr

USA/Canada/México
Phone +1(952) 941-6780
1 800-325-7425 – tollfree
E-Mail info@sickusa.com

More representatives and agencies
in all major industrial nations at
www.sick.com

SICK
Sensor Intelligence.