RFH620
Radio Frequency Interrogator
(13.56 MHz)

SICK
Sensor Intelligence.

Software Versions

Software/Tool	Function	Version
Interrogator RFH620	SICK firmware	From v 1.00
Device Description RFH620	Device-specific software module for SOPAS-ET configuration software	From v 1.00
SOPAS-ET	Configuration software	From v 2.20

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Latest manual version

For the latest version of this manual (PDF), see **www.sick.com**.

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Abbreviations used

AM	**A**mplitude **M**odulation
CAN	**C**ontrolled **A**rea **N**etwork. Field bus protocol on the basis of the CAN bus
CDB	**C**onnection **D**evice **B**asic
CDM	**C**onnection **D**evice **M**odular
CMC	**C**onnection **M**odule **C**loning
CMD	**C**onnection **M**odule **D**isplay
CMF	**C**onnection **M**odule **F**ield bus
CMP	**C**onnection **M**odule **P**ower
DSFID	**D**ata **S**torage **F**ormat **ID**entifier
DSP	**D**igital **S**ignal **P**rocessor
EOF	**E**nd **O**f **F**rame
ETX	**E**nd **O**f **T**ext
FCC	**F**ederal **C**ommunications **C**ommission
HTML	**H**yper **T**ext **M**arkup **L**anguage (page description language in the internet)
I	**I**nput
IC	**I**ntegrated **C**ircuit
ID	**ID**entification
IP	**I**nternet **P**rotocol
ISO/IEC	**I**nternational **O**rganisation for **S**tandardisation / **I**nternational **E**lectrotechnical **C**ommission
ITF	**I**nterrogator **T**alks **F**irst
LED	**L**ight **E**mitting **D**iode. Light emitting diode
LSB	**L**east **S**ignificant **B**it
MAC	**M**edium **A**ccess **C**ontrol
MSB	**M**ost **S**ignificant **B**it
MTTF	**M**ean **T**ime **T**o Failure
MTTR	**M**ean **T**ime **T**o Repair
O	**O**utput
PC	**P**ersonal **C**omputer
PID	**P**rocess **ID**
PROM	**P**rogrammable **R**ead **O**nly **M**emory. Programmable read only memory
RAM	**R**andom **A**ccess **M**emory. Random access memory
RF	**R**adio **F**requency
RFID	**R**adio **F**requency **ID**entification
ROM	**R**ead **O**nly **M**emory. Read only memory (non-volatile)
RSSI	**R**eceived **S**ignal **S**trength **I**ndication
RTF	**R**ich **T**ext **F**ormat (standardised document format with format description)
SD	**S**ecure **D**igital
SOF	**S**tart **O**f **F**rame
SOPAS-ET	**S**ICK **O**pen **P**ortal for **A**pplication and **S**ystems **E**ngineering **T**ool (PC software for Windows for configuring the interrogator)
PLC	**P**rogammable **L**ogic **C**ontroller
STX	**S**tart **O**f **T**ext

TCP/IP	**T**ransmission **C**ontrol **P**rotocol/**I**nternet **P**rotocol
TID	**T**ag **ID**entifier
UID	**U**nique **ID**entification code

TCP/IP   **T**ransmission **C**ontrol **P**rotocol/**I**nternet **P**rotocol

Tables

Figures

1   Notes on this document

1.1   Purpose of this document

This document provides instructions for technical staff on the installation and operation of the radio frequency interrogator of series RFH620 in the following versions:

• With the cable and connector (standard version)

• With connector unit (Ethernet version)

A summary of all device versions is shown in *chapter 4.1 Device versions, page 19*.

This document contains information for:

• Installation

• Electrical installation

• Commissioning and configuration

• Maintenance and replacement of the interrogator

• Troubleshooting

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

Important   To simplify, the radio frequency interrogator RFH620 is described in these operating instructions as an interrogator or RFH620.

The description "interrogator" and "writing/reading device" are interchangeable. The description "interrogator" is used in these instructions. The description "transponder" and "tag" are interchangeable. The description "transponder" is used in these instructions.

1.2   Target group

The target group of this document is persons assigned the following tasks:

Tasks	Target group
Installation, electrical installation, maintenance, device replacement	Qualified staff, e.g., service technicians and factory electricians
Commissioning and configuration	Trained staff, e.g., technicians or engineers

Tab. 1-1:   Target group of this document

1.3   Depth of information

This document contains all the information required for the installation, electrical installation and commissioning of the interrogator at the installation location.

Configuration of the interrogator for **application-specific reading conditions** and the commissioning is carried out using the SOPAS-ET configuration software on a Windows™ PC. The SOPAS-ET configuration software contains an online help system to facilitate configuration.

Important   Further information about the design of the interrogator as well as the RFID technology is available at SICK AG, Auto Ident division. On the Internet at **www.sick.com**.

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1.4   Used symbols

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

NOTICE

Notice!

Notice indicates a potential risk of damage or impair on the functionality of the interrogator or other devices.

➢   Carefully read and follow the notice details!

⚠ 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!

Reference	Italic script denotes a reference to further information.
Important	This important note informs you about specific features.
Explanation	An explanation provides background knowledge of technical nature.
Recommendation	A recommendation helps you to carry out tasks correctly.
TIP	A tip explains setting options in the SOPAS-ET configuration software.
PROJECT	This type of script denotes a term in the user interface in the SOPAS-ET configuration software.
💾	A symbol indicates a button in the user interface of the SOPAS-ET configuration software.
➢	There is a procedure which needs to be carried out. This symbol indicates standard operating procedures, which contain only one operational step or operational steps in warning notices that do not have to be followed in any particular order. Operational instructions comprising several steps are denoted using consecutive numbers.

This symbol denotes a section, in which the operation steps with the SOPAS-ET configuration software are described.

This symbol indicates supplementary technical documentation.

2 For your safety

This chapter deals with your safety and that of the system operator.

➢ Read this chapter carefully **before** using the interrogator.

2.1 Authorised users

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

Important | **Repairs to the interrogator should only be carried out by qualified and authorised SICK AG 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:

Tasks	Qualification
Installation, maintenance	• Practical technical training • Knowledge of current health and safety regulations at the workplace • Basic knowledge of HF technology
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) • Basic knowledge of HF technology
Start-up and configuration	• Basic knowledge of the Windows™ operating system in use • Basic knowledge of designing and setting up (addressing) Ethernet connections for connecting the interrogator 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 RFID technology • Basic knowledge of HF 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)

Tab. 2-1:   Required qualification for commissioning the interrogator

2.2 Intended use

The interrogator RFH620 is an ISO/IEC-15693 compatible transponder printer/reader unit for the close-up range (operating range of up to 16 cm), e. g., in a conveyor system.

The intended use of the interrogator results from the following description of the function:

- The interrogator is installed in a holder in a reading station.
- The interrogator transfers the reading data via the host interface to a superordinate host computer for further processing.
- The interrogator is configured/operated using the SOPAS-ET configuration software that runs on a standard client PC provided by the customer. In this connection, communication takes place via RS-232 or Ethernet.
- The Interrogator controls (locally), e. g., switches in the conveyor system via the digital switching outputs.

Important Any warranty claims against SICK AG shall be deemed invalid in case changes are made to the interrogator, e. g., opening the housing, this includes modifications during installation and electrical installation or changes to the SICK software.

➢ The interrogator is only to be operated in ambient air temperature limit.

2.2.1 CE authorisation

The interrogator RFH620 fulfils the requirements of CE authorisation.

2.2.2 FCC authorisation

The interrogator RFH620 is in accordance with part 15 of FCC guidelines.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- this device must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

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2.3   General safety precautions and protection measures

➢ Read the general safety precautions thoroughly and observe them during all operations on the interrogator. Also observe the warning notices in each chapter of this document before the standard operating procedures.

Electrical installation work

⚠ **WARNING**

Risk of injuries due to electrical current!

The optional power supply module CMP400/CMP490 is connected to the power supply (100 ... 250 V AC/50 ... 60 Hz) in the connection module CDM420.

➢ Observe current safety regulations when working with electrical equipment.

Important

➢ Electrical installation must be performed by qualified staff only.

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

➢ Wire cross sections and their correct shields have to be selected and implemented according to valid engineering standards.

2.4   Quick stop and quick restart

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

2.4.1   Switching off the interrogator

➢ Switch off the power supply to the interrogator (via the connection module)

   - or -

   Unplug the 15-pole D-Sub-HD connector of the interrogator´s connection cable from the connection module.

When the interrogator is switched off, the following data are lost:

- Application-specific parameter sets in the interrogator that were only saved **temporarily** in the device
- The last reading result of the interrogator
- Daily operating hours counter of the interrogator

2.4.2   Switching the interrogator back on

➢ Switch the power supply to the interrogator (via the connection module) back on

   - or -

   Re-connect the 15-pole D-Sub-HD connector of the interrogator´s connection cable to the connection module.

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

2.5   Environmental information

The interrogator has been constructed with minimum environmental pollution in mind. Excluding the housing, the interrogator does not contain any materials made of silicone.

2.5.1   Energy requirement

The interrogator serial RFH620 consumes the following energy:

- Typical 5 W in 10 ... 30 V DC (in unwired switching outputs)

2.5.2   Dispose of the device after decommissioning

Currently, SICK AG will not 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 interrogator allows for its separation as recyclable secondary raw materials and hazardous waste (electronic scrap).

3   Quick-Start

3.1   Preparing the interrogator for the quick start

The interrogator can be operated quickly and easily using the supplied SOPAS-ET configuration software.

Among others, the software offers the following options:

- Fast connection with the interrogator
- Easy access to the transponder data and display of the reading results on **two** clear register tabs of the configuration software

System requirements for using the SOPAS-ET configuration software

See *chapter 7.2.2 System requirements for the SOPAS-ET configuration software, page 49*

Additional accessories required (not in the scope of delivery)

- Connection module CDB620 or CDM420
- For the Ethernet version of the interrogator: Connection cable for data and function interfaces (see ordering designations of the product information "Interrogator RFH620")
- 3-wire RS-232 data cable (null modem cable), no. 2014054 for the connection of the PC with the connection module

    - or -

    To connect an Ethernet version of the interrogator to the PC's Ethernet interface

    (For corresponding cable, see ordering designations of the product information "Interrogator RFH620" Nr. 8013102)

Establish an electric connection to the interrogator

1. Connect the interrogator to connection module CDB620/CDM420.
2. Switch on the power supply for CDB620/CDM420.
3. Switch on the PC for the configuration and install and start the supplied SOPAS-ET configuration software.
4. Connect the PC to the interrogator.

    To achieve this, connect the PC using a 3-wire RS-232 data cable (null modem cable) to the "Aux" connection in CDB620/CDM420.

    - or -

    In Ethernet version, connect the PC to the interrogator's Ethernet interface.

For detailed instructions, see *chapter 5 Installation, page 31* and *chapter 6 Electrical installation, page 35*.

3.2   Establishing connection with the interrogator

➢ Communicate with the interrogator according to the selected data interface (RS-232 or Ethernet) (see *chapter 7.3 Establishing communication with the interrogator, page 50*).

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

3.3   Performing the reading

An inventory of all transponders within the reading range of the interrogator is determined via the register tab QUICKSTART of the SOPAS-ET configuration software:

PROJECT TREE, RFH620, register tab QUICKSTART
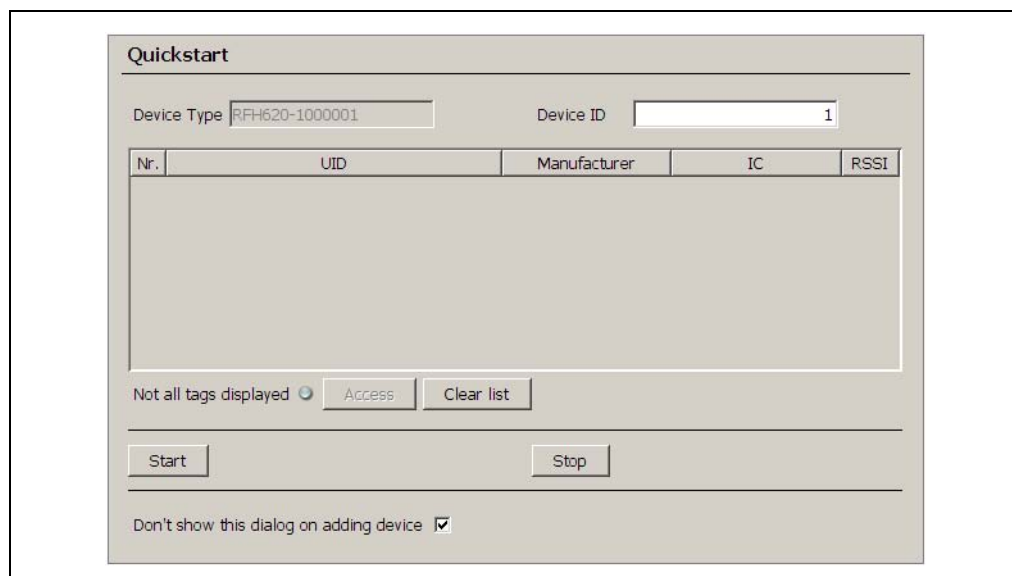
Fig. 3-1:   Register tab Quickstart

Determining the transponder inventory

1.   Ensure that the relevant transponder types on the register tab TAG PROZESSING are activated.
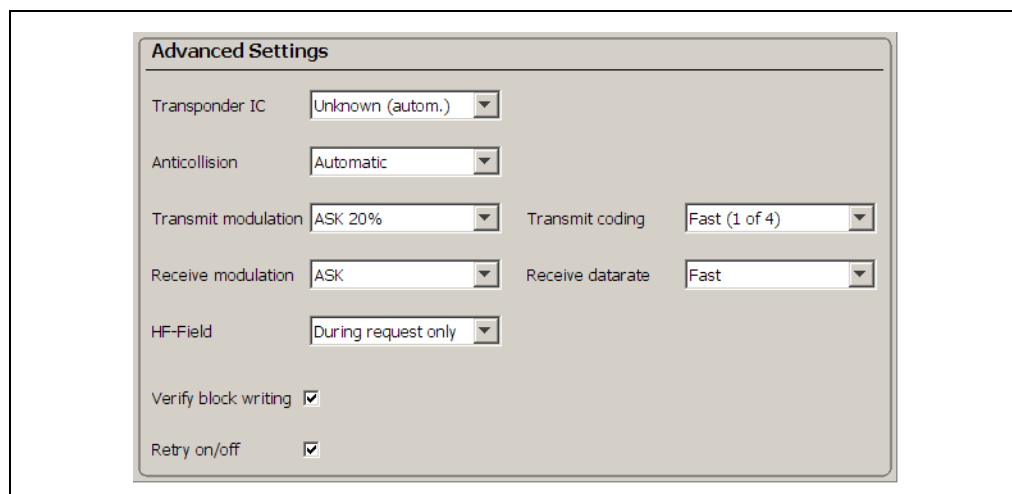
Fig. 3-2:   Advanced settings on the Tag Prozessing register tab

2.   Carry out test reading with transponder.

    To this end, hold the transponder in the reading area of the interrogator and trigger the reading by clicking on START.

    The unique ID, manufacturer and IC type of the detected transponder are registered.

    The signal-to-noise ratio (RSSI: Received Signal Strength Indication) is displayed in the display field RSSI respectively.

3.   In order to end the reading process, click on STOP.

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Optimising the reading conditions

If no transponder is displayed or if you wish to increase the RSSI value, the reading can be repeated by taking the following measures:

1. Correct or optimise the parameter values, where necessary, via the SOPAS-ET configuration software.

2. In order to optimise the RSSI value, reduce the distance between the interrogator and the transponder.

Reading/writing the user data of the transponder

The user data of a transponder can be read/written via the register tab TAG ACCESS of the SOPAS-ET configuration software:

Important
When accessing, the transponder must be located in the reading area of the interrogator.

➢ Select a transponder from the list on the register tab QUICKSTART and click on ACCESS.

The register tab TAG ACCESS opens.

The user data of the transponder are read and displayed.
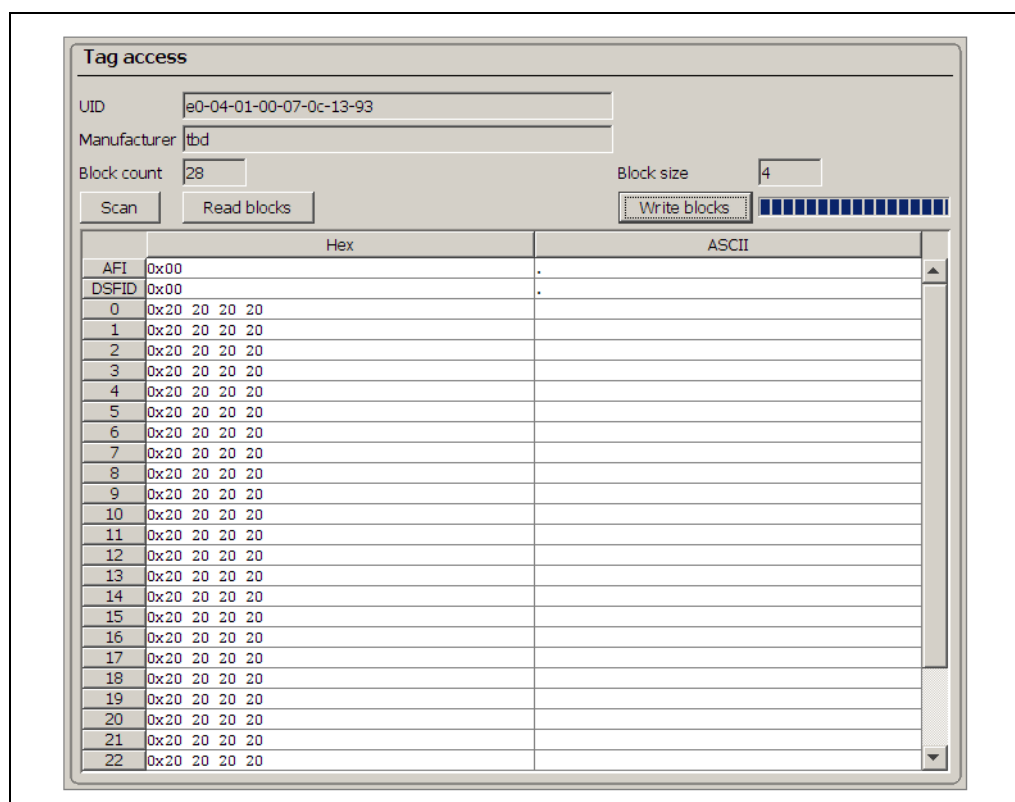
Fig. 3-3: Register tab Tag access

➢ In order to change the user data of the transponder, overwrite corresponding values block by block and transmit them to the transponder by clicking on BLOC WRITING.

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4   Product description

This chapter describes the design, the features and the functions of the interrogator RFH620.

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

4.1   Device versions

Among others, the interrogator RFH620 is available in the following versions:

Order no.	Type	Version	Connection (design)
1044838	RFH620-1000001	Standard version	Cable with plug
1044839	RFH620-1001201	Ethernet version	Connector unit on the device

Tab. 4-1:   Variants of the interrogator RFH620

Important   The following are available depending on the connection (design):

- **Standard version (cable with plug)**
  - RS-232, RS-422/485, CAN, two digital switching inputs, two digital switching outputs, power supply

- **Ethernet version (revolving connector unit)**
  - Connector 1: Ethernet
  - Connector 2: RS-232, RS-422/485, CAN, one digital switching input, power supply

4.2   Mounting and mode of operation of the interrogator

The interrogator RFH620 is an ISO/IEC-15693 compatible transponder writing/reading device with integrated antenna for the close-up range. All the components are located in a housing suitable for the industry. Depending on the version, the electric connection of the interrogator takes place via a cable with a connector or a revolving connector unit with two connections.

The interrogator RFH620 is an intelligent sensor for automatic and non-contact detection of RFID transponders. In principle, the transponder can be detected on any location of still or moving objects in a conveyor system. The reading range expands through the combination of many devices.

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4.2.1   Device view RFH620 (standard version)

① Blind hole thread M6 for fastening

② Cover for Micro-SD card slot

③ Type plate

④ LEDs for status indicator

⑤ Antenna

⑥ Cable with plug

⑦ Button for function selection/activation

⑧ Micro SD memory card (optional)

Fig. 4-1:   Device view of the interrogator RFH620 (standard version)

4.2.2   Device view RFH620 Ethernet version

①	Blind hole thread M6 for fastening	⑥	Revolving connector unit
②	Cover for Micro-SD card slot	⑦	Button for function selection/activation
③	Type plate	⑧	Micro SD memory card (optional)
④	LEDs for status indicator	⑨	4-pole M12 jack (Ethernet connection)
⑤	Antenna	⑩	12-pole M12 plug

Fig. 4-2:   Device view RFH620 (Ethernet version)

4.3   Scope of delivery

Delivery of the interrogator RFH620 includes the following components:

Piece	Components	Comment
1	Interrogator	RFH620 depending on version
1	Notes on device with electrical connection diagrams as primary information	Included in the device packaging of the interrogator RFH620
1	CD-ROM "Manuals & Software Auto Ident"	
	Operating Instructions RFH620 in German and/or English, in printed form	Optional, depending on the number of issues explicitly ordered upon purchase

Tab. 4-2:   RFH620 interrogator´s scope of delivery

Important   The Micro-SD memory card is not included in the scope of delivery.

An overview of in-stock installation accessories, connection modules, cables and connectors, transponder as well as memory media (see *chapter 11.4 Supplementary documentation, page 67*) is available in the product information "Interrogator RFH620".

Important   For save operation of the Micro-SD memory card, use only SICK approved memory card.

Contents of the CD-ROM

- **"SOPAS-ET"**: Configuration software for Windows™ PCs with integrated online help system (HTML files)
- **Operating instructions RFH620**: PDF version in German and English as well as further publications of other SICK devices
- **Product information RFH620**: PDF version in German and English including ordering information for the interrogator and accessories
- **"Acrobat Reader"**: Freely available PC software for reading PDF files

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

4.4   System requirements

General system requirements are derived from the interrogator's technical data (see *chapter 10 Technical data, page 61*).

The requirements and conditions for *Installation*, *Electrical installation* as well as *Commissioning and configuration* are summarised in the respective chapters.

4.5   Product features and functions (overview)

Interrogator RFH620	• 13.56 MHz ISO/IEC-15693 compatible RFID writing/reading device • Compact, industry-type design with integrated antenna • Connection technology for all current field bus and network concepts • Application-specific operation mode: Command, trigger and freewheel mode • EDP operating system with SOPAS operating software and additional script functionality • Far-ranging internal and external diagnosis functions (RDT400, not available for market launch in May 09. More information on request.)

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Customer value	• Reliable identification • Effective safe investment • Easy integration • High functionality • Maintenance-free • Compatible SICK connection technology
User safety and convenience	• Robust, compact metal housing, CE mark, FCC authorisation • Automatic self-test on system start-up • Diagnosis tools for system setup and system (remote) monitoring • Configurable reading data display in two reading result formats • Operational data retrieval, error code display on request in case of errors • Test string function (heartbeat), capable of being activated, for signalling readiness for operation • Password-protected configuration mode • In addition, secured configured parameter values (cloning) on a Micro SD memory card (can be removed in the case of interrogator replacement) • Future proof due to firmware update (flash PROM) via data interface • Future-proof SOPAS-ET configuration software • Low current consumption • Extended power supply range
Convenient operation/configuration	• Configuration (online/offline) using the SOPAS-ET configuration software (incl. help system) • 2 buttons on the device for calling up preset functions without connecting a PC • Status indicators via LEDs • Beeper, which can be switched off, to confirm device functioning
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 • Freewheel mode
RFID evaluation	• All current ISO/IEC-15693 compatible transponder
Data processing	• Manipulation of the output of the reading data via event-dependent evaluation conditions
Data communication	• Host interface: two configurable data output formats, 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
	• Digital switching inputs
	  – Standard version: two digital switching inputs for external reading pulse sensor(s), using optocoupler
	  – Ethernet version: one digital switching input on the device
	• Digital switching outputs
	  – Standard version: two digital switching outputs for signalling definable results in the reading process (reading result status)
	  – Ethernet version: no digital switching output on the device

Connection technology (design)	• Standard version: Cable with 15-pole D-Sub-HD connector • Ethernet version: revolving connector unit on the device with two M12 circular connectors • Optional connection module CDB620/CDM420 for connection to the host computer (stand-alone) and for integrating into the SICK-specific CAN-SENSOR network • Optional bus connection module CDF600 for PROFIBUS-DP

Tab. 4-3:   Overview of the product features and functions of the interrogator

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4.6   Functions of the interrogator

In order to control the read operation, external sensors deliver information via the reading pulse. The reading results are output to the interrogator´s data interfaces and are forwarded to a host/PC.
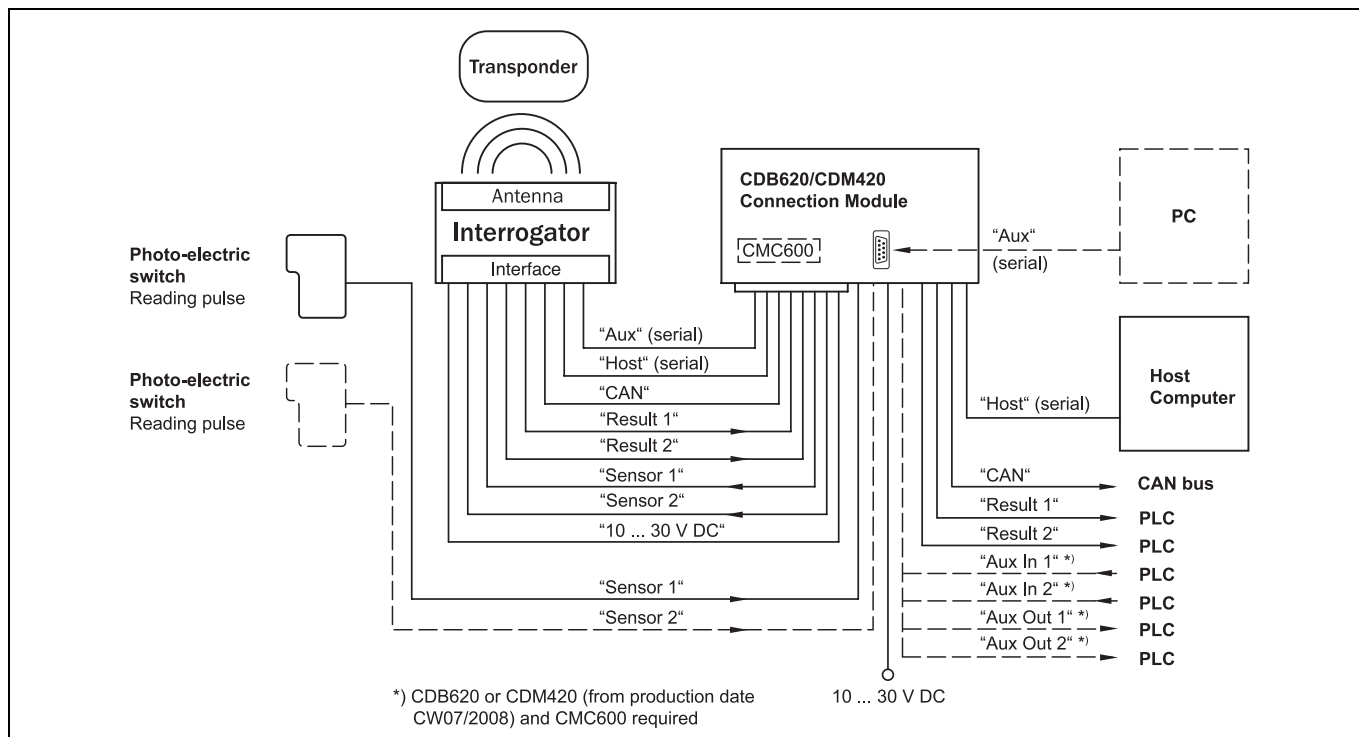
Fig. 4-3:   Standard version: Electric connections to the interrogator with connection cable
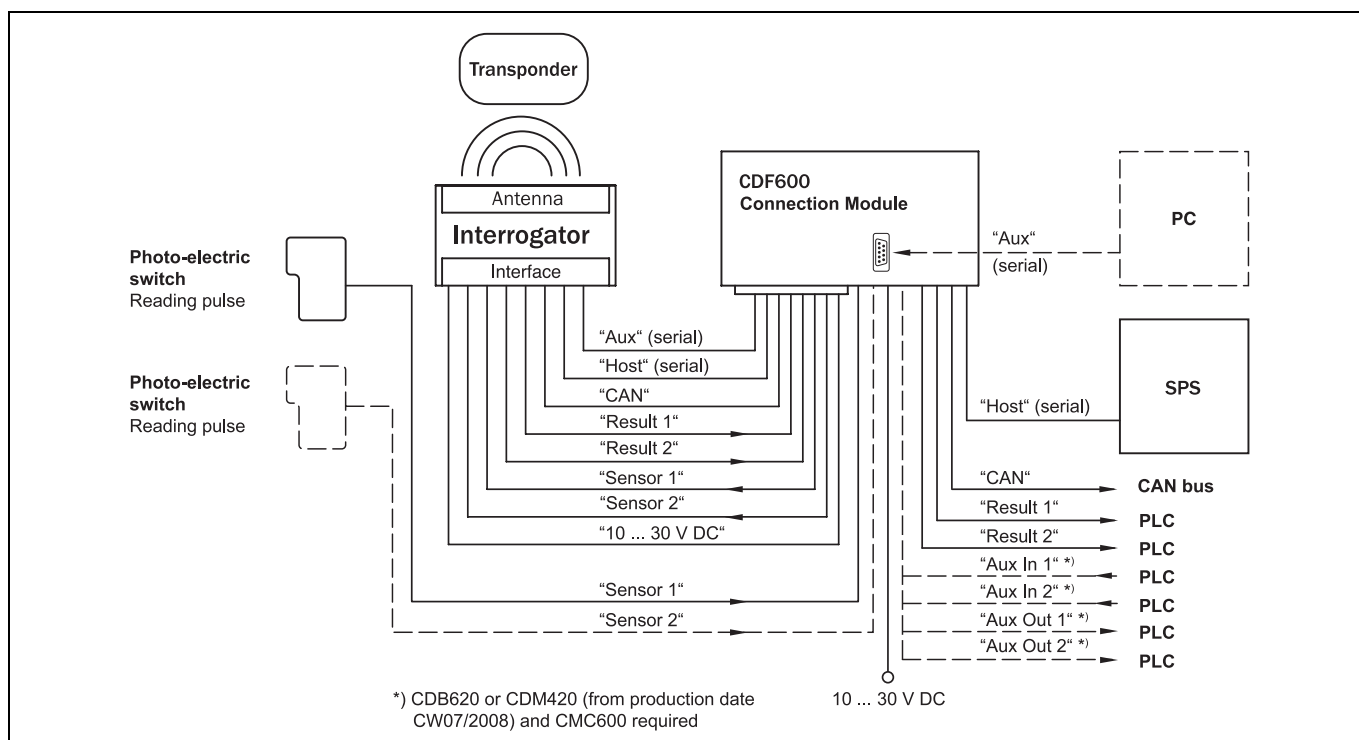
Fig. 4-4:   Standard version: Electric connections to the interrogator with connection cable by using a CDF600 bus connection module
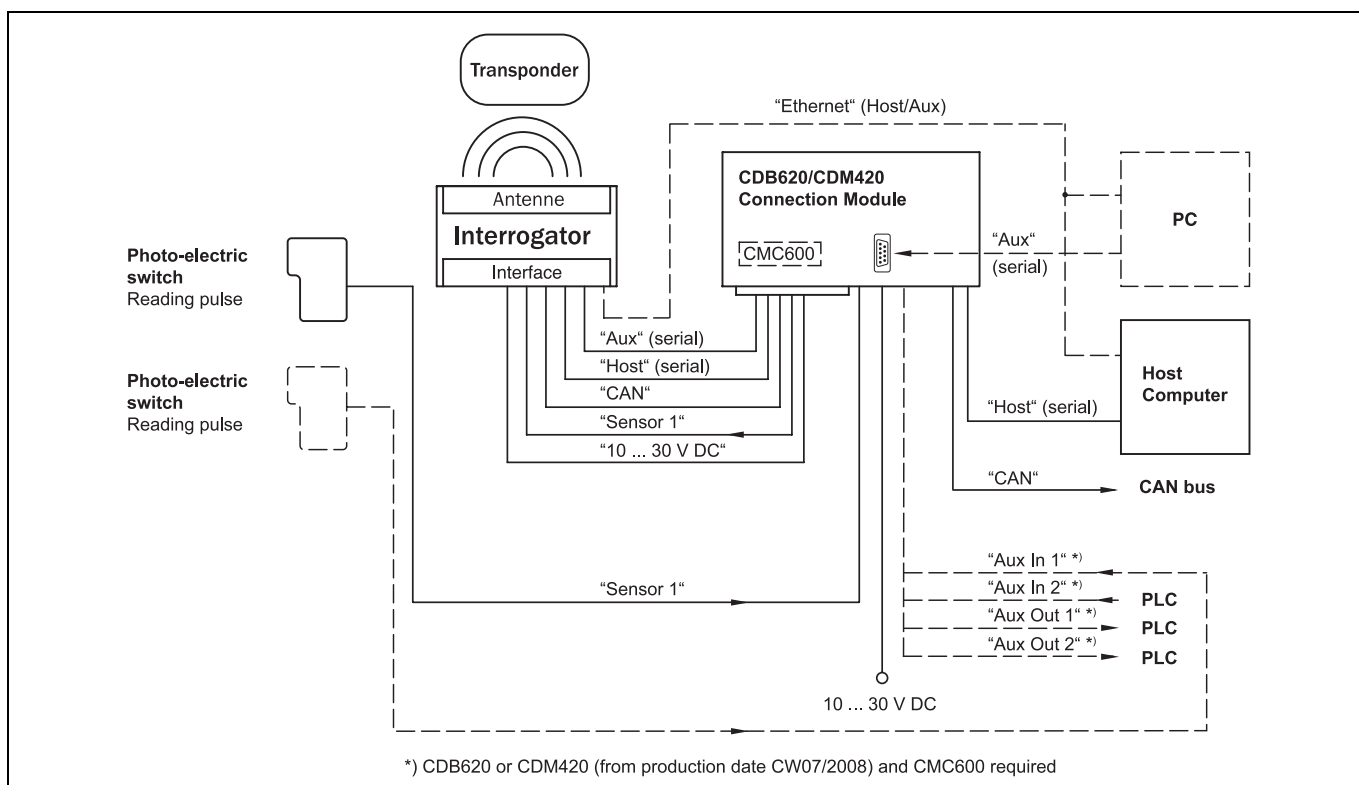
Fig. 4-5:   Ethernet version: Electrical connections to the interrogator with plug connector unit

The detailed wiring of the interrogator and the connections to the host/PC and to the external sensors is described in *chapter 6 Electrical installation, page 35*.

Among other things, the following functions can be configured using the SOPAS-ET configuration software:

Function	Description	Configuration with SOPAS-ET
Object trigger control	In order to start an object-related reading process, the interrogator requires an appropriate external signal (trigger source) for reporting an object in the reading area. As standard, the start signal is emitted via an external reading pulse sensor (e. g. photoelectric reflex switch). As soon as an object has passed the reading pulse sensor, a time window opens in the interrogator ("reading gate") for the reading process. Alternatively, a command activates the reading process via a data interface or the CAN-SENSOR network. In Automatic Cycle mode, the actual interrogator 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.	PROJECT TREE, RFH620, PARAMETER, OBJECT TRIGGER CONTROL

Function	Description	Configuration with SOPAS-ET
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 • PROJECT TREE, RFH620, PARAMETER, DATA PROCESSING, EVALUATION CONDITIONS
Output format	The reading result 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).	PROJECT TREE, RFH620, PARAMETER, DATA PROCESSING, OUTPUT FORMAT
Network / interfaces / IOs	All important interfaces for displaying the reading results are available on the interrogator. Several devices can be connected to each other via the CAN bus in the SICK-specific CAN-SENSOR network.	PROJECT TREE, RFH620, PARAMETER, NETWORK / INTERFACES / IOS register tab NETWORK OPTIONS
Data interfaces	Depending on the version, the following data interfaces are available on the interrogator: • 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 of several devices	• PROJECT TREE, RFH620, PARAMETER, NETWORK / INTERFACES / IOS, SERIAL • PROJECT TREE, RFH620, PARAMETER, NETWORK / INTERFACES / IOS, ETHERNET • PROJECT TREE, RFH620, PARAMETER, NETWORK / INTERFACES / IOS, CAN
Digital inputs	For example, the external sensor for the object triggering (photoelectric reflex switch) can be connected to the digital switching inputs. **Important** The connection "sensor 2" is only available on the standard version of the interrogator. For the Ethernet version of the interrogator, this input is only available with the connection module CDB620/CDM420 in combination with the parameter memory module CMC600.	PROJECT TREE, RFH620, PARAMETER, NETWORK / INTERFACES / IOS, DIGITAL INPUTS
Digital outputs	With certain events in the reading process (e. g. for unsuccessful reading "No Read"), two independent switch signals, which can be used to display the event status, can be generated at both digital outputs. **Important** The switching outputs "result 1" and "result 2" are only available on the standard version of the interrogator. For the Ethernet version of the interrogator, the two outputs are only available with the connection module CDB620/CDM420 in combination with the parameter memory module CMC600.	PROJECT TREE, RFH620, PARAMETER, NETWORK / INTERFACES / IOS, DIGITAL OUTPUTS

Tab. 4-4:   Configurable functions of the interrogator

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4.7 Control elements and indicators

4.7.1 User interface

The interrogator is configured application-specifically using the SOPAS-ET configuration software (see *chapter 7.1 Overview of the start-up procedure, page 49*). For this purpose, the software runs on a PC, which must be connected to one of the two data interfaces (aux interface: Ethernet or RS-232, host interface: RS-232/RS-422/485 or Ethernet) of the interrogator.

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 (see *chapter 11.2 Configuring the interrogator with command strings, page 65*).

In case of an error, start-up and diagnosis can be carried out via the SOPAS-ET configuration software. The interrogator operates fully automated in normal operation.

4.7.2 LEDs on the interrogator's housing

The interrogator's housing has six LEDs that display the operating status, the RF activity, the status of the reading result as well as transfer to the RS-232/RS-422/485, CAN and Ethernet interfaces.

In reading operation the LEDs indicate the following:

	LED	Colour	Denotation
	Ready	green	• Lights up constantly when system is ready • Goes out when parameter values are being uploaded from or downloaded to the interrogator respectively
	Result	green	• Lights up after a successful read (Good Read, 100 ms)
	RF	green	• Lights up when the antenna field is switched on (depends on the reading pulse)
	Data	green	• Flickers during data transfer via the serial host interface (RxD)
		yellow	• Flickers during data transfer via the serial host interface (TxD)
	CAN	green	• Lights up when the CAN interface is switched on • Flickers during the data transfer via the CAN interface
	LNK TX	green	• Flickers during data transfer via the Ethernet interface
		yellow	• Lights up when the physical Ethernet connection is established

Tab. 4-5: LED indications

Important The "result" LED is coupled with none of the two digital switching outputs "result 1" or "result 2".

4.7.3   Buttons on the interrogator's housing

There are two yellow buttons on the interrogator´s housing in the LED area (see *chapter 4.2.1 Device view RFH620 (standard version), page 20*). You can call up predefined functions via these buttons.

After changing to the button operating mode, you can select any one function by repeatedly pressing the step button (▶) respectively. The selected function is then activated and deactivated with the enter button (◀) respectively.

The selected function is shown via the corresponding LED below the buttons.

The functions "TeachIn", "Antenna", "Sync" und "Userdef." cannot be called up at the moment.

When using both of buttons, the display of the LEDs have different meanings other than in normal reading operation:

	LED	Colour	Function
	Read Diagn	green	Flashes slowly: the function "reading diagnosis" is selected Flashes swiftly: the function "reading diagnosis" is started
	TeachIn	green	(momentarily not available)
	Antenna	green	(momentarily not available)
	Sync	green	(momentarily not available)
	Userdef.	yellow	(momentarily not available)

Tab. 4-6:   Meaning of the LEDs during activation of buttons

Use of the buttons

In order to use one of the possible function with the buttons, do as follows:

1. Press the enter button (◀) for approx. 3 seconds.

    The interrogator stops the current reading operation, switches off the LEDs and changes to the button operating mode. The bar code scanner ignores all the other external reading pulses with immediate effect. No reading results are displayed via the host interface.

    The beeper confirms this process with an ascending melody.

    The "Read Diagn" function is pre-selected as first function (LED flashes slowly).

2. Press the enter button (◀) once to start the selected function.

    The LED flashes faster and the beeper confirms the start with two sounds.

3. Press the enter button (◀) again to stop the selected function.

    The LED flashes more slowly again and the beeper confirms the end with two sounds.

4. In order to return from the button operating mode to the reading operation, press the enter button (◀) again for approx. 3 seconds.

    The beeper confirms the change with a descending melody.

    The LED "Ready" lights up again.

    The interrogator is ready for reading again and waits for a reading pulse.

Further behaviour of the interrogator when operated by buttons

- Changing into button operating mode is only possible if no other user is logged onto the interrogator for changing the parameters via the SOPAS-ET configuration software. If this is the case, however, the beeper gives a descending melody when trying to change into the button operating mode. Furthermore, the interrogator remains in reading operation.
- In case a user logs onto the interrogator in button operating mode, the interrogator leaves the button operating mode and restarts the reading operation. The beeper confirms the change with a descending melody.
- If no function is started in button operating mode or if no button operation can be performed after using a function, the interrogator automatically returns to the reading operation after 30 seconds. The beeper confirms the change with a descending melody.
- The interrogator terminates an activated continuous function 5 minutes after start. It returns to reading operation automatically. The beeper confirms the change with a descending melody.
- You cannot switch off or turn down the beeper in button operating mode.

4.7.4 Parameter set on the Micro SD memory card (optional)

The interrogator stores configured parameter values in its internal PROM as well as on the Micro SD memory card (cloning), provided that this card has been inserted into the interrogator. If the interrogator needs to be replaced, the memory card enables easy and quick transfer of the parameter set to the new device (see *chapter 8.4 Replacing an interrogator, page 57*).

Important In order to avoid data loss, the Micro SD memory card may only be removed and inserted into the new device after the respective interrogator has been switched off and de-energized. When inserting the memory card, make sure that the card's notches point to the direction of the two yellow keys.

The memory card is located behind a silver cover attached to the interrogator.
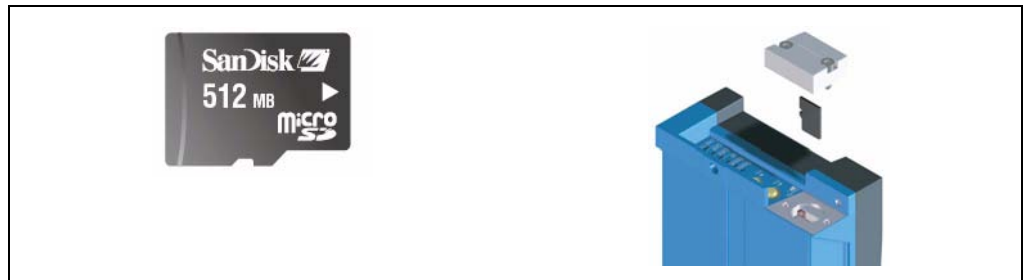
Fig. 4-6:   Micro SD memory card for storing the parameter set

Important To maintain the enclosure rating IP 67, the cover has to be installed and screwed together tightly. Width across flats WAF 2.5.

As an alternative to the Micro SD memory card in the interrogator, the external, optional parameter memory module CMC600 in connection module CDB620/CDM420 may also be used for storing the parameter set. If both the Micro SD memory card and the parameter memory module CMC600 are available, the interrogator loads the parameter set from CMC600.

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5   Installation

5.1   Overview of installation sequence

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

The typical installation sequences are listed below:

- Select the installation location for the interrogator
- Install the interrogator
- Install connection module CDB620 or CDM420
- Connect the interrogator to connection module CDB620 or CDM420
- Install the reading pulse sensor for reading pulse triggering

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

5.2   Installation preparations

In general, the following requirements should be observe for the installation:

- Typical space requirement: application-specific
- More stable installation bracket with sufficient load capacity and measurements suited for the interrogator (see *chapter 10.2 Interrogator´s dimensional drawings RFH620., page 63*)
- Shock absorbent and vibration free attachment

The following tools and resources are required for the installation:

- Two M6 bolts:
  The bolts serve for the installation of fastening bracket no. 2048551 to the base.
  The bolt length depends on the wall thickness of the base.
- Tool
- Tape measure (up to 1 m (3.28 ft))

5.2.1   Components to be installed

For the installation, the following must be handy:

- Interrogator RFH620

5.2.2   Accessories

The following accessories are not included in the delivery of the interrogator. If required, they have to be ordered separately and placed ready for installation:

- Mounting device, see next chapter
- Connection module CDB620 or CDM420
- Reading pulse sensor for external reading pulse triggering, e. g., photoelectric reflex switch/photoelectric proximity switch

5.2.3   Mounting device

The interrogator is fixed using two blind hole taps (M6), which are located on each narrow side of the device (see *chapter 10.2 Interrogator´s dimensional drawings RFH620., page 63*) respectively .

The interrogator is mounted using the SICK fastening bracket no. 2048551. The construction of the angle supports e. g. varied mounting options and the alignment of the interrogator in two axes.

Fig. 5-1:   Example: Fixing the interrogator with bracket no. 2048551

Important   **Always mount the bolts with washers.**

When fixing the interrogator with bracket no. 2048551, pay attention to the following dimensions:

- Max. thread reach of the blind hole taps: 6.5 mm (0.26 in)
- Plate thickness of the fastening bracket: 4.0 mm (0.16 in)
- Thickness of the washers: 1.6 mm (0.06 in)
- Length of bolt M6x12: 12.0 mm (0.47 in)

The dimensioning of the SICK-holders shows *chapter 11.3 Dimensional drawing accessories, page 66*.

Alternatively, the user can provide a holder.

The holder should meet the following requirements:

- Stable mounting device
  - Adjustable alignment of the interrogator in the x and y axis
  - The mounting device must be able to bear the weight of the interrogator including its connection cable (depending on the device version) without vibrating.
- Two M6 bolts to fix the interrogator
  - The screw length depends on the thickness of the mounting device
  - Maximum thread reach in the interrogator 6.5 mm (0.26 in) from the housing surface

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5.3   Installation location

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

- Reading distance to the transponder
- Angle alignment of the interrogator

Furthermore, the distance between the interrogator and the host computer and the distance to the connection module has to be taken into account (see *chapter 6.2 Electrical installation preparations, page 35* and *chapter 5.5.1 Installing connection module CDB620 or CDM420, page 33*).

5.4   Installation of the interrogator

NOTICE

Damage to the device!

The maximum thread reach of the two blind hole taps M6 is 6.5 mm. Longer bolts damage the device.

➢   Use bolts of a suitable length.

1. Prepare base for the installation of the interrogator holder, see *chapter 5.2.3 Mounting device, page 32*.
2. Install the interrogator holder on the base.
3. Screw M6 bolts through the holder and into the interrogator's blind hole taps and gently tighten them.

5.5   Installing external components

5.5.1   Installing connection module CDB620 or CDM420

Depending on the application, you can install either connection module CDB620 or CDM420. The installation process is the same for both modules.

Important   If the PC with the SOPAS-ET configuration software accesses the Interrogator´s auxiliary interface (RS-232; 57.6 kBd) via the connection module, the connection module should not be installed more than 3 m cable lengths away from the interrogator.

1. Install the connection module close to the interrogator.
2. Install the connection module in such a way that the opened device can be accessed at any time.

For detailed information about installation and electrical installation, see the operating instructions "Connection Module CDB620" (no. 8012119, German/English edition) and "Connection Module CDM420-0001" (no.8010004, German/English edition) respectively.

5.5.2 Installing the external reading pulse sensor

If the interrogator is triggered by an external reading pulse sensor (photoelectric reflex switch), the sensor has to be installed close to the interrogator.

The SICK catalogue "SENSICK Sensors for Automation" (order no. 8006529, German edition) contains a large selection of photoelectric reflex switches and photoelectric proximity switches as well as accessories (holders, connection cables).

The installation location of the sensor depends on the distance of the transponder to the front edge of the object. Depending on the application, the sensor should be attached in such a way that transponders on different sized objects can be fully read during the evaluation (reading gate).

5.6 Dismantling the interrogator

Removal of the components is described in .

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6   Electrical installation

6.1   Overview of installation sequence

Important   Electrical installation must be performed by qualified staff only.

The following list provides an overview of a typical installation sequence:

- Connecting the interrogator to connection module CDB620 or CDM420
- Wiring the interrogator's data and function interfaces
- Connecting the connection module to the supply voltage
- Connecting a PC for commissioning and configuration (RS-232 or Ethernet)

The actual installation work, which has to be carried out, depends on the respective system configuration and the version of the interrogator (see *chapter 6.2 Electrical installation preparations, page 35*). Once electrical installation has been completed, the interrogator is started up and configured (see *chapter 7 Commissioning and configuration, page 49*).

6.2   Electrical installation preparations

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

- Supply voltage 10 ... 30 V (functional extra-low voltage in accordance with IEC 60364-4-41 (VDE 0100 Part 410)), the power supply must provide, at least, 5 W output power
    - using connection module CDB620/CDM420: Connection of the supply voltage via the terminals of the connection module

      - or -

      using free wiring by customer (without connection module CDB620/CDM420): Connection of supply voltage, e. g., via the cable no. 6034418 (15-pole D-Sub-HD socket on open end)
- With external reading pulsing
    - Appropriate reading pulse sensor (start), 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
- Host computer with data interface RS-232, RS-422/485 or Ethernet: for further processing the reading data
- Connection cables: refer to the ordering designations of the product information "radio frequency interrogator RFH620"

Important   The possible distance between the interrogator and the host computer depends on the physical design of the selected host interface and the set data transfer rate.

The following tools are required for the electrical installation:

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

6.3 Electric connections and cables

6.3.1 Electric connections to the interrogator

Important   Prerequisites for enclosure rating IP 67:

• The cover of the memory card (optional) has to be installed and screwed together tightly. Width across flats WAF 2.5.

• The connectors are to be firmly screwed to the electric connections of the Ethernet version in use.

The same applies to the EMC requirement (ESD) according to CE.

Depending on the device version, the following electric connections are available on the interrogator:

Device version	Connection (design)	Interfaces	for connection to
RFH620-1000001	Cable with connector (D-Sub-HD, 15-pole, plug)	• RS 232 • RS-422/485 • CAN • two digital inputs • two digital outputs • Power supply	e. g. connection module CDB620 or CDM420
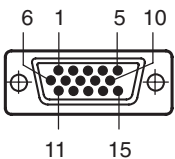
Tab. 6-1:   Electric connections to the interrogator with a fixed cable and connector (standard version)

Device version	Connection (design)	Interfaces	for connection to
RFH620-1001201	Connector 1 at the connector unit (M-12, 4-pole, socket)	• Ethernet	Network provided by the client
	Connector 2 at the connector unit M-12, 12-pole, plug	• RS 232 • RS-422/485 • CAN • one digital input • Power supply	e. g. connection module CDB620 or CDM420 or power supply unit with M-12 socket (no. 2049552), (power supply only)

Tab. 6-2:   Electric connections to the interrogator with connector unit (Ethernet version)

Important   Additional digital inputs and outputs are available at connection module CDB620/CDM420 (available from week 07/2008) in combination with the parameter memory module CMC600.

6.3.2   Interrogator´s connections to the cable and connector (standard version)
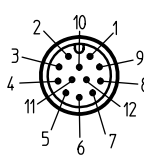
Pin	Signal	Function
1	10 ... 30 V DC	Supply voltage
2	RxD (Aux)	Aux interface (receiver)
3	TxD (Aux)	Aux interface (sender)
4	Sensor 2	Digital switching input (adjustable function, e. g. external reading pulse)
5	GND	Ground
6	RD+ (RS-422/485)	Host interface (receiver)
7	RD– (RS-422/485); RxD (RS-232)	Host interface (receiver)
8	TD+ (RS-422/485)	Host interface (sender)
9	TD– (RS-422/485); TxD (RS-232)	Host interface (sender)
10	CAN H	CAN bus (IN/OUT)
11	CAN L	CAN bus (IN/OUT)
12	Result 1	Digital switching output, adjustable function
13	Result 2	Digital switching output, adjustable function
14	Sensor 1	Digital switching input for external reading pulse
15	SensGND	Common ground for the switching inputs
–	–	Shield

Tab. 6-3:   Standard version: Pin assignment on the 15-pole D-Sub-HD cable connector

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6.3.3   Interrogator´s connections to the connector unit (Ethernet version)

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

Tab. 6-4:   Ethernet version: Pin assignment to the 4-pole M12 socket

Pin	Signal	Function
1	GND	Ground
2	10 ... 30 V DC	Supply 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

Tab. 6-5:   Ethernet version: Pin assignment on the 12-pole M12 plug

Important   The "sensor 2", "result 1" and "result 2" connections are only available on the interrogator with a cable and connector (standard version) and for the Ethernet version via the CDB620/ CDM420 connection module in combination with the parameter memory module CMC600.

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6.4   Performing electrical installation

Important   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 on the interrogator due to overwinding.

The connector unit on the interrogator has two end positions.

➢   Never turn the connector unit, of one of the two end positions, more than 180° in one direction.

➢   Always rotate the connector unit in the direction of the type plate.
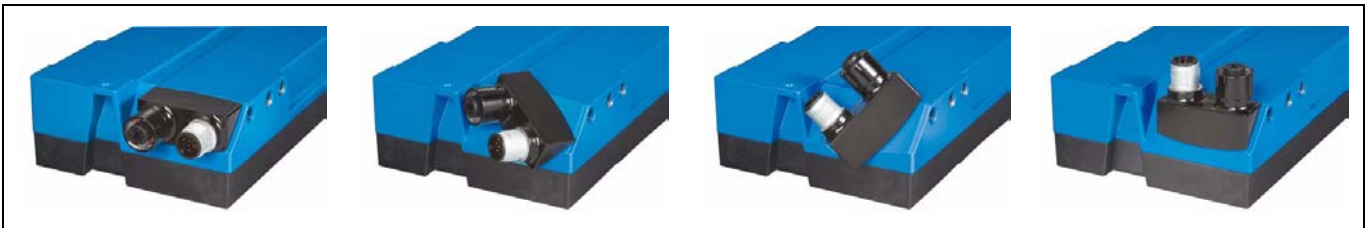
Fig. 6-1:   Direction of rotation of the connector unit

6.4.1   Connecting the power supply for the interrogator

For the operation, the interrogator requires a supply voltage of 10 … 30 V DC (functional extra-low voltage in accordance with IEC 60364-4-41 (VDE 0100 (part 410)). The functional extra-low voltage can be created using a safety transformer in accordance with IEC 742 (VDE 0551). The maximum current consumption is 5 W.

Via the connection module CDB620 or CDM420, the interrogator is supplied with 10 … 30 V DC. If the power supply module CMP400/CMP490 is used, the input voltage is 100 … 250 V AC/50 … 60 Hz on the module.

Important   **The output circuit of the power supply unit must be electrically separated from the input circuit. This is usually created by means of a safety transformer in accordance with IEC 742 (VDE 0551).**

Connecting the supply voltage

When wiring the interrogator using connection module CDB620 or CDM420, the interrogator's 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. Standard version: connect the bar code scanner's 15-pole cable plug to the connection module's 15-pole socket and screw it tight.

    - or -

    Ethernet version: connect the interrogator's 12-pole plug via a corresponding cable (e.g., no. 2042916) to the connection module's 15-pole socket and screw it tight.

6.4.2 Wiring serial data interfaces

The maximum data transfer rate of the serial data interface 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 (9.84 ft)
	115,200 Bd	Max. 2 m (6.56 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]in corresponding line termination according to the specification		

Tab. 6-6:   Recommended maximum cable lengths, depending on the selected data transfer rate
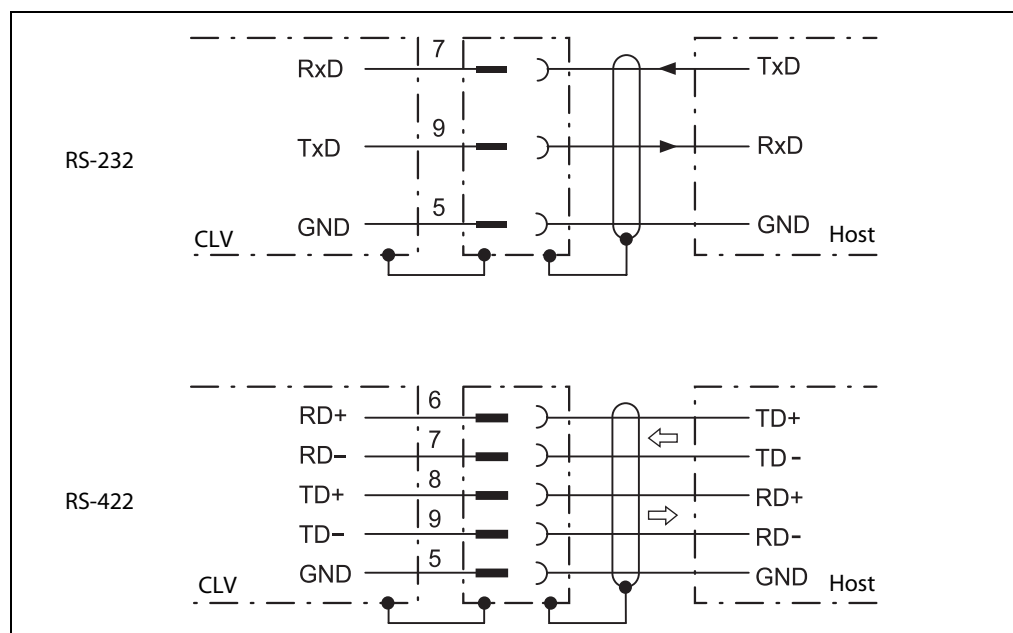
Fig. 6-2:   Wiring the serial host data interfaces (RS-232 and RS-422 respectively) on the 15-pole D-Sub-HD plug

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 interrogator.

➢ Observe information about wiring the serial data interface.

➢ Check the wiring carefully before switching on the interrogator.

1. Connect the interrogator's serial interface to the host using shielded cables in accordance with the EMC regulations.

   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" and "Connection module CDM420" respectively.

6.4.3   Wiring CAN interface

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

6.4.4   Wiring the Ethernet interface

Aux and host interface communication can also be executed in parallel via the Ethernet interface.
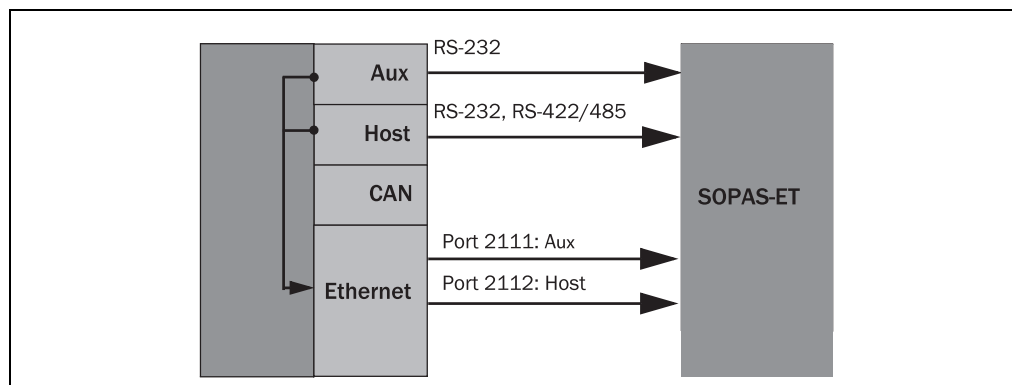
Fig. 6-3:   Function of the Ethernet interface

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

6.4.5   Wiring switching inputs

If the interrogator's reading process should be triggered by an external sensor, the reading pulse sensor is connected to the "**sensor 1**" switching input.
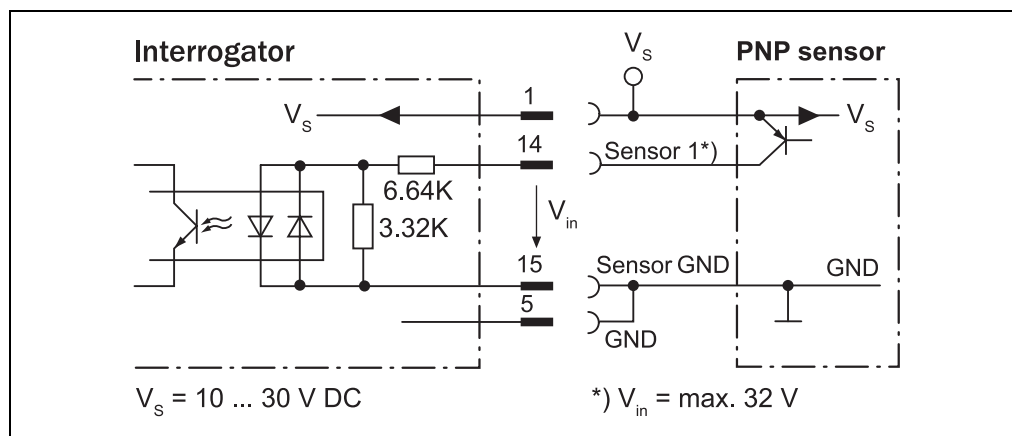
Fig. 6-4:   Wiring "sensor 1" switching input on the 15-pole D-Sub-HD plug

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The "**sensor 2**" switching input has the following functions, among others:

Trigger source for

- Reading pulse generator for reading pulse end
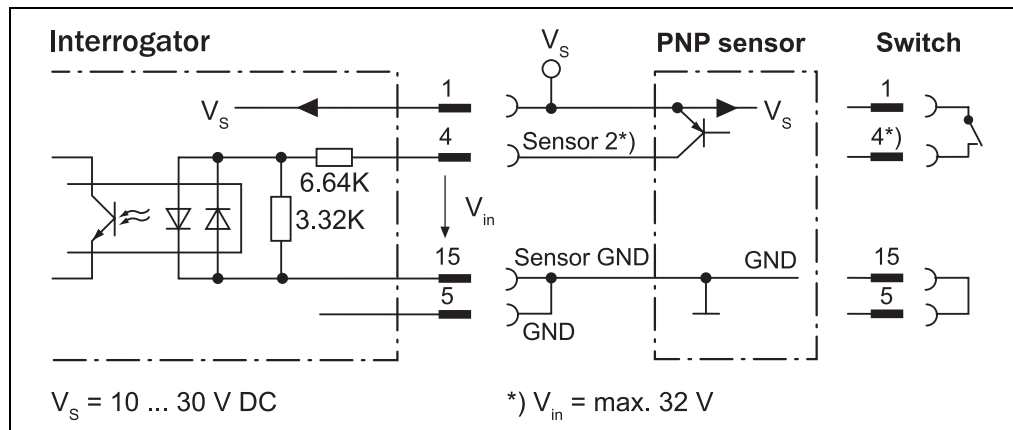
Fig. 6-5:   Wiring "sensor 2" switching input on the 15-pole D-Sub-HD plug

Important   The ratings for "sensor 1" and "sensor 2" are identical.

Switching behaviour	Power fed to the input opens the internal reading gate of the interrogator. (Default setting: active high, debouncing: max. 30 ms (standard))
Features	– Optodecoupled, reverse polarity protected – Can be wired with the PNP output of a sensor – Switching input has no hysteresis
Electrical values	Low: $\lvert U_e \rvert \leq 2\ V$; $\lvert I_e \rvert \leq 0.3\ mA$ High: $6\ V \leq \lvert V_e \rvert \leq 32\ V$; $0.7\ mA \leq \lvert I_e \rvert \leq 5\ mA$ Signal threshold > 3.9 V

Tab. 6-7:   Ratings for the switching inputs

➢ Connect switching inputs depending on application.

To wire the switching inputs using connection module CDB620 or CDM420, see operating instructions "Connection Module CDB620" (no. 8012119, German/English edition) and "Connection Module CDM420" (no. 8010004, German/English edition) respectively.

6.4.6   Wiring switching outputs

The two switching outputs "result 1" and "result 2" can be allocated various functions for outputting the result status independent of each other. If the assigned result occurs in the reading process, the corresponding switching output at the end of the reading pulse is live for the selected impulse duration.

Important   The "result" LED is coupled with none of the two digital switching outputs "result 1" or "result 2".
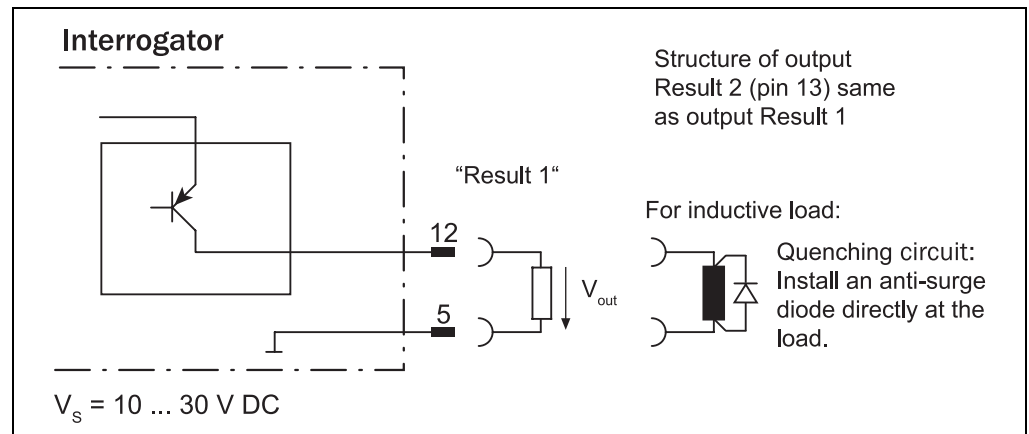
Fig. 6-6:   Possible wiring of "result 1" switching output on the 15-pole D-Sub-HD plug

Important   The ratings of the two switching outputs are identical.

Switching behaviour	PNP switching against the distribution voltage U_V
Features	Short-circuit proof and temperature-protected, not galvanically separated from U_V
Electrical values	$0\ V \leq U_a \leq U_V$ Guaranteed: $(U_V - 1.5\ V) \leq U_a \leq U_V$ in $I_a \leq 100\ mA$

Tab. 6-8:   Ratings for the switching outputs

Important   **Capacitance loads** on the switching output affect the switching behaviour. Threshold is a maximum capacitance of 100 nF. Exceeding this value can lead to unwanted pulsing behaviour of the output.

1. Connect switching outputs depending on application.
2. Wire the switching outputs with a load resistance to test the switching functions using a high-resistance digital voltmeter.

   Indication of incorrect voltages/switching statuses is avoided this way.
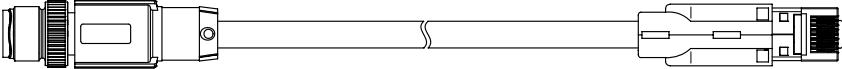
To wire the switching outputs using connection module CDB620 or CDM420, see the operating instructions "Connection Module CDB620" (no. 8012119, German/English edition) and "Connection Module CDM420" (no. 8010004, German/English edition) respectively.

6.5 Pin assignment and wire colours of the assembled cables

6.5.1 Pin assignment of the assembled cables
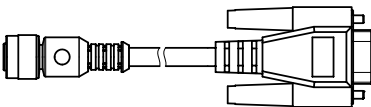
Cable no. 6034414, 6029630, 6034415, 6030928 (Ethernet version)

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	–

Tab. 6-9: Pin assignment on the 4-pole M12 plug and the 6-pole RJ45 plug

Cable no. 2042916, 2041834, 2042914, 2042915 (Ethernet version)
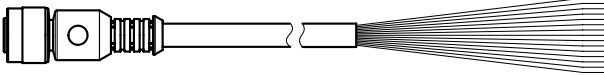
Pin (12-pole)	Signal	Function	Pin (15-pole)
2	10 ... 30 V DC	Supply voltage	1
8	RxD (Aux)	Aux interface (receiver)	2
7	TxD (Aux)	Aux interface (sender)	3
–	–	–	4
1	GND	Ground	5
11	RD+ (RS-422/485)	Host interface (receiver)	6
12	RD– (RS-422/485); RxD (RS-232)	Host interface (receiver)	7
5	TD+ (RS-422/485)	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	-

Tab. 6-10: Pin assignment on the 12-pole M12 socket and the 15-pole D-Sub-HD plug
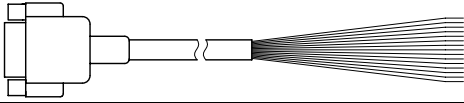
6.5.2   Pin assignment and wire colours of the assembled cables with an open end

Cable no. 6034605 (Ethernet version)

Pin (12-pole)	Signal	Function	Wire colour
1	GND	Ground	brown
2	10 … 30 V DC	Supply 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

Tab. 6-11:   Pin assignment on the 12-pole M12 socket and wire colours at the open end

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Cable no. 6034418 (Standard version)

Pin (15-pole)	Signal	Function	Wire colour
1	10 ... 30 V DC	Supply voltage	red
2	RxD (Aux)	Aux interface (receiver)	violet
3	TxD (Aux)	Aux interface (sender)	yellow
4	Sensor 2	Digital switching input (adjustable function, e. g. external reading pulse)	red-black
5	GND	Ground	black
6	RD+ (RS-422/485)	Host interface (receiver)	light blue
7	RD− (RS-422/485); RxD (RS-232)	Host interface (receiver)	blue
8	TD+ (RS-422/485)	Host interface (sender)	light grey-turquoise
9	TD− (RS-422/485); TxD (RS-232)	Host interface (sender)	green
10	CAN H	CAN bus (IN/OUT)	grey
11	CAN L	CAN bus (IN/OUT)	pink
12	Result 1	Digital switching output, adjustable function	brown
13	Result 2	Digital switching output, adjustable function	orange
14	Sensor 1	Digital switching input for external reading pulse	white
15	SensGND	Common ground for the switching inputs	white-black

Tab. 6-12: Pin assignment on the 15-pole D-Sub-HD socket and wire colours at the open end

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7 Commissioning and configuration

Commissioning, adjustments as well as configuration and diagnosis are carried out with the SOPAS-ET configuration software. Among other things, two buttons on the device offer the possibility to call up a simple reading rate diagnosis (see *chapter 4.7.3 Buttons on the interrogator's housing, page 28*).

7.1 Overview of the start-up procedure

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

7.2 SOPAS-ET configuration software

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

7.2.1 Functions of the SOPAS-ET configuration software for the interrogator (overview)

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

- Selection of the menu language
- Communication set-up with the interrogator
- Password-protected configuration for various operating levels
- Recording of data during the current mode (recording and analysing the data of certain memory areas of the interrogator with the data recorder)
- Diagnosing the system

7.2.2 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 a colour monitor (recommended resolution 1,024 x 768 pixels)
- Operating system Windows 2000™, Windows XP™ or Windows Vista™
- Free storage space on the hard drive: approx. 300 MB for SOPAS-ET (V. 2.20) configuration software with help files and approx. 70 MB for "Acrobat Reader"
- HTML browser on the PC, e.g., Internet Explorer™: For online help system for the SOPAS-ET configuration software

Connection cables: refer to the ordering designations of the Product information "Interrogator RFH620".

7.2.3 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.

7.2.4 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 (interrogator's RAM)
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

Tab. 7-1:   Default setting for the SOPAS-ET configuration software (excerpt)

7.3 Establishing communication with the interrogator

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

7.3.1 Connecting data interfaces

➢ Connect the PC and the interrogator via one of the two data interfaces according to the chart.

via the data interface	Comment
ETHERNET (10/100 MBit/s)	Directly connect the PC (Ethernet interface) to the ETHERNET connection of the interrogator.
RS 232	Connect the PC (serial interface) to the AUX or HOST connection of the interrogator using a suitable cable.

Tab. 7-2:   Connection between PC with SOPAS-ET configuration software and the interrogator

7.3.2 Starting the SOPAS-ET configuration software and calling the scan assistants

1. Switch on the power supply to the interrogator.

   The interrogator performs a self-test and is initialised.
2. Switch on the PC and start the SOPAS-ET configuration software.

   As standard, the SOPAS-ET configuration software opens the program window with an English program interface.
3. In order to change the language setting, click on CANCEL and change the language of the program interface to 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 SCAN ASSISTANT, click on CONFIGURATION.

   The dialog window SCAN ASSISTANT appears.

7.3.3 Configuring the Ethernet connection

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

Manual configuration:

1. In the dialog window NETWORK SCAN ASSISTANT under INTERNET PROTOCOL/IP COMMUNICATION, select the check box for ENABLE IP COMMUNICATION.

2. Click on the button ADD.

3. Enter the IP address of the interrogator in the dialog window and confirm it by pressing OK.

   The dialog window closes. A new entry appears in the list IP ADDRESS CONFIGURATION.

4. Click on OK to confirm settings.

   The dialog window ADVANCED SCAN SETTINGS closes.

7.3.4 Configuring the serial connection

1. In the dialog window NETWORK SCAN ASSISTANT under SERIAL PORT/STANDARD PROTOCOL, select the check box for ENABLE SERIAL COMMUNICATION.

2. Click on ADVANCED….

3. Under SELECT BAUD RATE(S), deactivate all the baud rates except 57.6 KBD.

4. Select the following PORT SETTINGS: 8 data bits, no parity, 1 stop bit.

5. Click on OK to confirm settings.

   The dialog window ADVANCED SCAN SETTINGS closes.

7.3.5 Carrying out a scan

1. In the dialog window SCAN ASSISTANT, click on START SCAN.

2. Select the listed devices (RFH620) and confirm with ADD DEVICE.

   Connected devices are searched for via the connection. The SOPAS-ET configuration software inserts the devices found in the project tree and uploads the current parameter set (SYNC CHECK).

3. For the configuration of the devices, see .

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Commissioning and configuration

7.4 Initial commissioning

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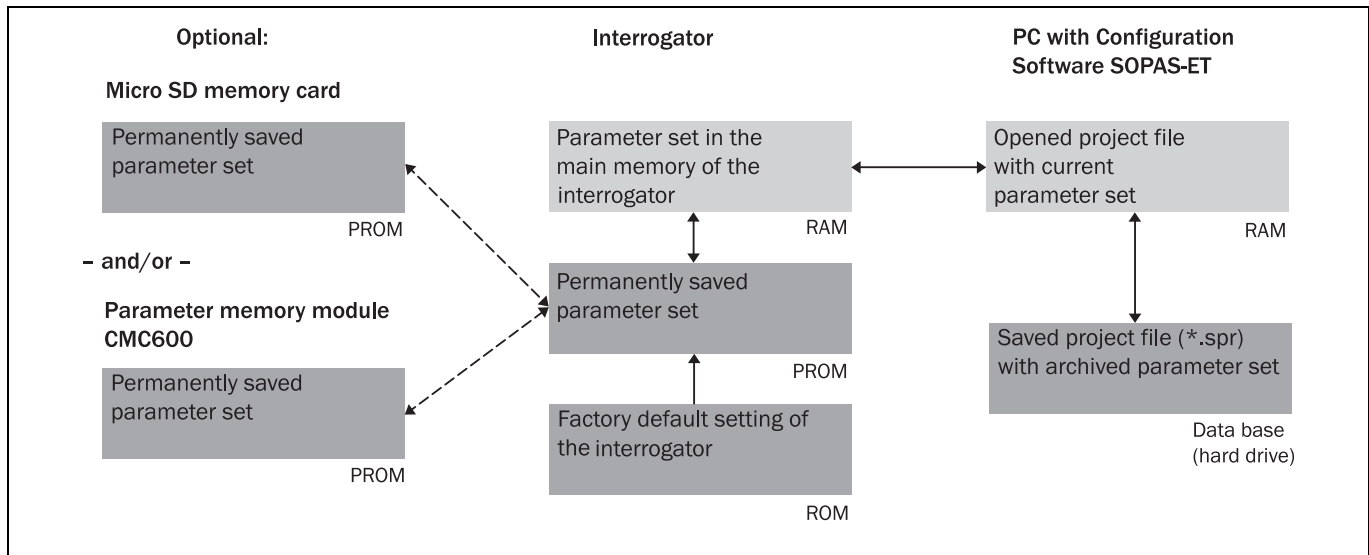

Fig. 7-1: Configuration with SOPAS-ET and storage of the parameter set

If the interrogator is optionally connected to a Micro SD memory card (see *chapter 4.7.4 Parameter set on the Micro SD memory card (optional), page 29*) or connected to a module with parameter memory mode CMC600, the parameter set is saved permanently to the memory card, or to the CMC600 respectively, with every permanent storage of the parameter set in the interrogator.

After the interrogator is restarted, it automatically transfers the parameter set from the memory card and the CMC600 to its permanent memory respectively. Thus, an interrogator can, e. g., be exchanged without losing configuration data (see *chapter 8.4.2 Replacing the interrogator, page 58*). If a memory card and a CMC600 are available, the interrogator will load the parameter set from the CMC600.

7.4.1 Overview of the start-up procedure

• Connect data interfaces of the PC and the interrogator
• Start the SOPAS-ET configuration software and create a new project file
• Configure the scan assistant (activate PC communication)
• Establishing communication with the interrogator
• Accept current configuration of the interrogator in the project tree
• Log on to the interrogator as an "authorised client"
• Configure the interrogator for use
• Load the optimised configuration into the interrogator and save permanently
• Save the project file with the configuration data of the interrogator on the PC

7.4.2 Configuring the interrogator

All configurable parameters for the interrogator 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 TO 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.

   The password protection is activated/deactivated on the register tab PARAMETER.
3. Click on OK to confirm the dialog window.

   The previously greyed out parameters on the register tabs are now accessible.

7.4.3 Permanently load changed parameter sets into the device

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

➢ In order to load the current settings permanently in the interrogator, in the menu bar under RFH620, select the command PARAMETER/SAVE PERMANENT or click on 🖫 in the tool bar.

7.4.4 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 to print out the contents of the file.

1. In order to save the current parameter set, select the menu item SAVE AS in the menu bar under PROJECT.

2. Enter a file name in the dialog window and confirm it by clicking on 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.

TIP To save the current parameter set as a PDF, in the menu bar under PROJECT select the command PRINT/SAVE AS PDF FILE.

7.5 Default setting

The values of the default setting are permanently saved in the interrogator (ROM) and in the database of the SOPAS-ET configuration software in the device-specific jar file (see *chapter 7.4 Initial commissioning, page 52*). A PC is not required to start up the interrogator with the default setting.

7.5.1 Resetting the default setting in the interrogator

Prerequisite   The SOPAS-ET configuration software is connected online to the interrogator.

Two default setting types can be called up via the SOPAS-ET configuration software:

- Complete default setting (LOAD DEFAULT SETTING)

    SOPAS-ET resets all parameter values of the interrogator 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. In the process, the connection(s) to the interrogator disappear(s) as the case may be and must to be reconfigured.

- Application-specific default setting (LOAD APPLICATION DEFAULT SETTING)

    SOPAS-ET resets the parameter values of the interrogator, 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 interrogator 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 interrogator and displays the parameter values in the register tabs. In the interrogator, the default setting will first be active in the temporary main memory only.

    The default setting can also be saved in the PC or printed (see *chapter 7.4.4 Save, display and print the current parameter set, page 54*).

2. In the menu bar under TOOLS, select the command LOGIN TO DEVICE.

3. In the dialog window under USERLEVEL in the list box, select the entry AUTHORISED 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 interrogator.

    If the interrogator is equipped with the Micro SD memory card or connected to a connection module CDB620/CDM420 with parameter memory module CMC600, the default setting will be permanently transferred to the parameter memory CMC600 and memory card respectively.

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

8 Maintenance

8.1 Maintenance during operation

It RFH620 operates maintenance-free in all variants.

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

8.2 Cleaning the housing

➢ Use a soft cloth to free the housing of dust.
➢ If necessary, also clean the LEDs on the housing.

8.3 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.

8.4 Replacing an interrogator

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

Important | **Repairs to the interrogator should only be carried out by qualified and authorised SICK AG service staff.**

8.4.1 Dismantling the interrogator

1. Switch off the power supply to the interrogator.
2. Disconnect all the connection cables of the interrogator.
3. Remove the interrogator from the holder. In the process, mark the interrogator´s situation and alignment on the holder or environment.
4. If available, remove the Micro SD memory card (optional) with the stored parameter set from the faulty interrogator (see *chapter 4.7.4 Parameter set on the Micro SD memory card (optional), page 29*). To do this, open the cover and slightly press on the memory card in order to unlock it.
5. Insert the memory card accordingly into the empty space of the new, turned-off interrogator the right way round (the card's notches point to the two yellow keys) until it is locked.
6. Close the cover again.

8.4.2　　Replacing the interrogator

1. Align and install the new or repaired interrogator (see *chapter 5 Installation, page 31*). In the process, observe any marks made previously on the holder or the environment (*chapter 8.4.1 Dismantling the interrogator, page 57*).

2. Re-connect connection cables to the interrogator (see *chapter 6 Electrical installation, page 35*).

3. Switch the power supply to the interrogator back on.

   The interrogator starts with the default setting.

4. If, as an option, a Micro SD memory card has been inserted into the interrogator or a parameter memory module CMC600 into connection module CDB620/CDM420, the new interrogator will automatically load the stored parameter set from the memory card or CMC600 into its permanent memory. If both a memory card and a CMC600 are available, the interrogator will load the parameter set from the CMC600.

   - or -

   Without Micro SD memory card /parameter memory module CMC600: Connect to the interrogator via the SOPAS-ET configuration software, transfer the configuration stored on the PC via download to the interrogator and permanently store the configuration there.

9   Troubleshooting

This chapter describes how errors in the interrogator can be recognised and eliminated.

9.1   Overview of errors and malfunctions which could occur

9.1.1   Error during the installation

- The interrogator has been unsuitably aligned to objects with transponders (e. g. a shield)
- Reading pulse sensor has been positioned incorrectly (e.g. internal reading gate is opened too late or shut too early)

9.1.2   Error during the electrical installation

- Interfaces of the interrogator were wired incorrectly

9.1.3   Error during configuration

- Functions have not been adjusted to the local conditions, e.g. parameters for the data interface are set incorrectly
- Device-related limits have not been considered, e.g. reading distance
- Trigger source for reading pulse selected incorrectly

9.1.4   Malfunctions during operation

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

9.2   Detailed malfunction analysis

9.2.1   LEDs on the interrogator

Among other things, the following statuses can be read from the LEDs on the interrogator's housing (see *chapter 4.7.2 LEDs on the interrogator's housing, page 27*):

- Ready
- Status of the reading result (result)
- Data traffic on the host, aux and CAN interface

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

9.2.2   System information

The interrogator 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 interrogator. In this case, the interrogator returns an error code.
- Error codes are written into a status protocol for errors which occur during a reading (see subsequent chapter).

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9.3 Status protocol

Important | The status protocol remains even after switching the interrogator off and on again.

The interrogator differentiates between four types of error:

- Information
- Warning
- Error
- Fatal error

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

9.3.1 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 interrogator.

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

9.4 SICK support

If an error cannot be eliminated, it is possible that the interrogator is defective. The interrogator cannot be repaired by the user, meaning that it is not possible to re-establish functions after a failure. However, the interrogator can be rapidly replaced by the user (see *chapter 8.4 Replacing an interrogator, page 57* for this).

➢ If an error occurs which cannot be eliminated, please contact SICK service:

- In Germany: Technical hotline of SICK Vertriebs-GmbH
    - Tel. +49 211 5301-270
    - Fax. +49 211 5301-100
    - E-mail: info@sick.de
- International: your appropriate SICK branch office and SICK subsidiary respectively.
    - For telephone numbers and e-mail addresses, please see the back page 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 interrogator should only be carried out by qualified and authorised SICK AG service staff.**

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10   Technical data

10.1   Interrogator´s data sheet RFH620.

Type	RFH620-1000001	RFH620-1001201
Wave band (Carrier frequency)	13.56 MHz (13.553 … 13.567 MHz)	
HF transmitter power	200 mW	
Transponder type	ISO/IEC 15693 (18000-3M1)	
MTTF	20,000 h	
Cruising range	Up to 16 cm (depending on the size of the transponder)	
Useable antenna surface area	125 x 75 mm^2 (4.92 x 2.95 in^2)	
Optical indicators	6 LEDs: Ready, result, HF, data, CAN, LNK TX	
Acoustic display	Beeper, which can be switched off, with function for result status display is available	
Reading pulsing	• Pulse sources for start: Switching inputs "sensor 1" and/or "sensor 2"; command; automatic cycle; CAN • Pulse sources for stop: Reading pulse source, "sensor 1", "sensor 2", command, timer, good read, condition • Freewheel	• Pulse sources for start: Switching inputs "sensor 1"; command; automatic cycle; CAN • Pulse sources for stop: Reading pulse source, "sensor 1", command, timer, good read, condition • Freewheel
"Host" data interface	Serial: RS-232 or RS-422/485; Ethernet (port 2112), adjustable data format (serial) and data output format	
Data transfer rate	0.3 … 500 kBd	
Protocols	SICK standard (SOPAS-Cola-A)	
Physical configurations	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	Only for Ethernet version: 10/100 MBit/s, TCP/IP, half/full duplex	
Data interface "CAN"*	20 kBit/s … 1 MBit/s, SICK CAN-SENSOR network (master, slave, multiplexer)	
Digital switching inputs	2 ("sensor 1", "sensor 2"), 2 additional inputs via CMC600 in CDB620	1 ("sensor 1"), 2 additional inputs via CMC600 in CDB620, optodecoupled, U_e = max. 32 V, reverse polarity protected, which can be wired with PNP output, configurable debouncing 0 … 10,000 ms
Digital switching outputs	2 ("result 1", "result 2"), 2 additional outputs via CMC600 in CDB620 PNP, I_a = max. 100 mA, short circuit-proof, configurable impulse duration (static, 10 … 1,000 ms)	No output, 2 outputs via CMC600 in CDB620
Electric connection	Cable (0.9 m (2.95 ft)) with 15-pole D-Sub-HD plug	Revolving connector unit with 2 M12 circular connectors (12-pole plug, 4-pole socket)
Operating voltage/ Power consumption	10 … 30 V DC (PELV according to EN 61140 (2002-03)) / max. 5 W	
Housing	Die-cast aluminium	
Antenna cover material	PPS Plastic	
Electrical safety	According to EN 60950-1 (2006-04)	
Enclosure rating	III, according to EN 61140 (2002-03)	
Enclosure rating	IP 67, according to EN 60529 (1991-10); A1 (2002-02)	
EMV tested	According to EN 301489	

Type	RFH620-1000001	RFH620-1001201
Wireless authorisation	According to EN 300330 (2006-04) FCC version: according to FCC part 15	
Vibration/shock test	According to EN 60068-2-6 (1995) / according to EN 60068-2-27 (1993)	
Weight	520 g (18.34 oz) with connecting cable	450 g (15.87 oz) without connecting cables
Ambient operating/ storage temperature	–25 … +60 °C (-13 … 140 °F)/–25 … +70 °C (-13 … 158 °F)	
Max. rel. humidity	90 %, non condensing	
Housing colour	Light blue (according to RAL 5012)	
* in priming		

Tab. 10-1:   Technical specifications of the interrogator RFH620

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10.2 Interrogator´s dimensional drawings RFH620.

10.2.1 Dimensional drawing of interrogator RFH620-1000001

mm	inch
4.5	0.18
6	0.23
6.5	0.25
12.5	0.49
30	1.18
39	1.53
54.5	2.15
87.5	3.45
100	3.94
139.6	5.50
147	5.79
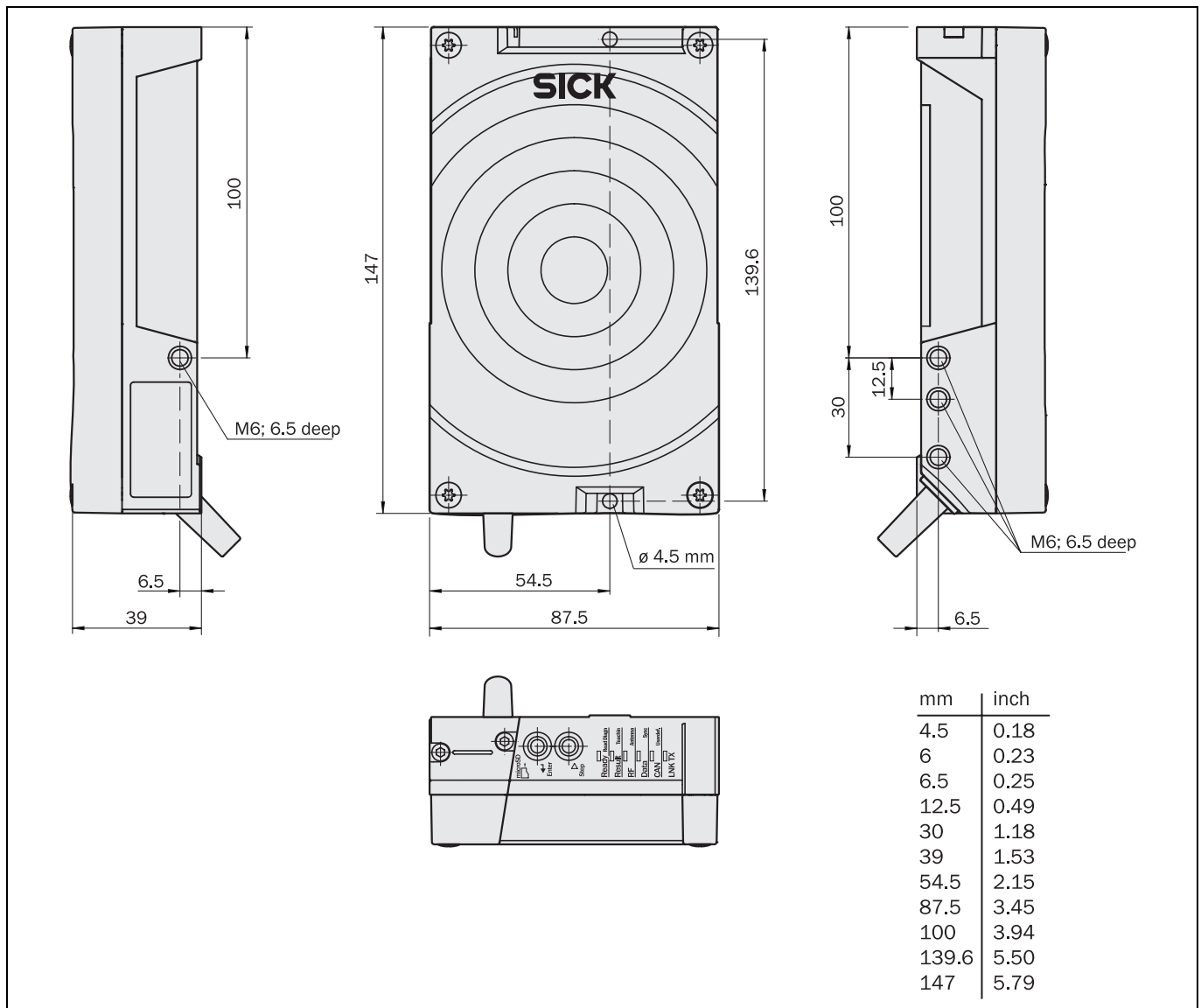
Fig. 10-1: Standard version: Dimensions of the interrogator (RFH620-1000001)

10.2.2   Dimensional drawing of interrogator RFH620-1001201

mm	inch
4.5	0.18
6	0.23
6.5	0.25
12.5	0.49
14	0.55
15.3	0.60
30	1.18
39	1.53
54.5	2.15
87.5	3.45
100	3.94
139.6	5.50
147	5.79
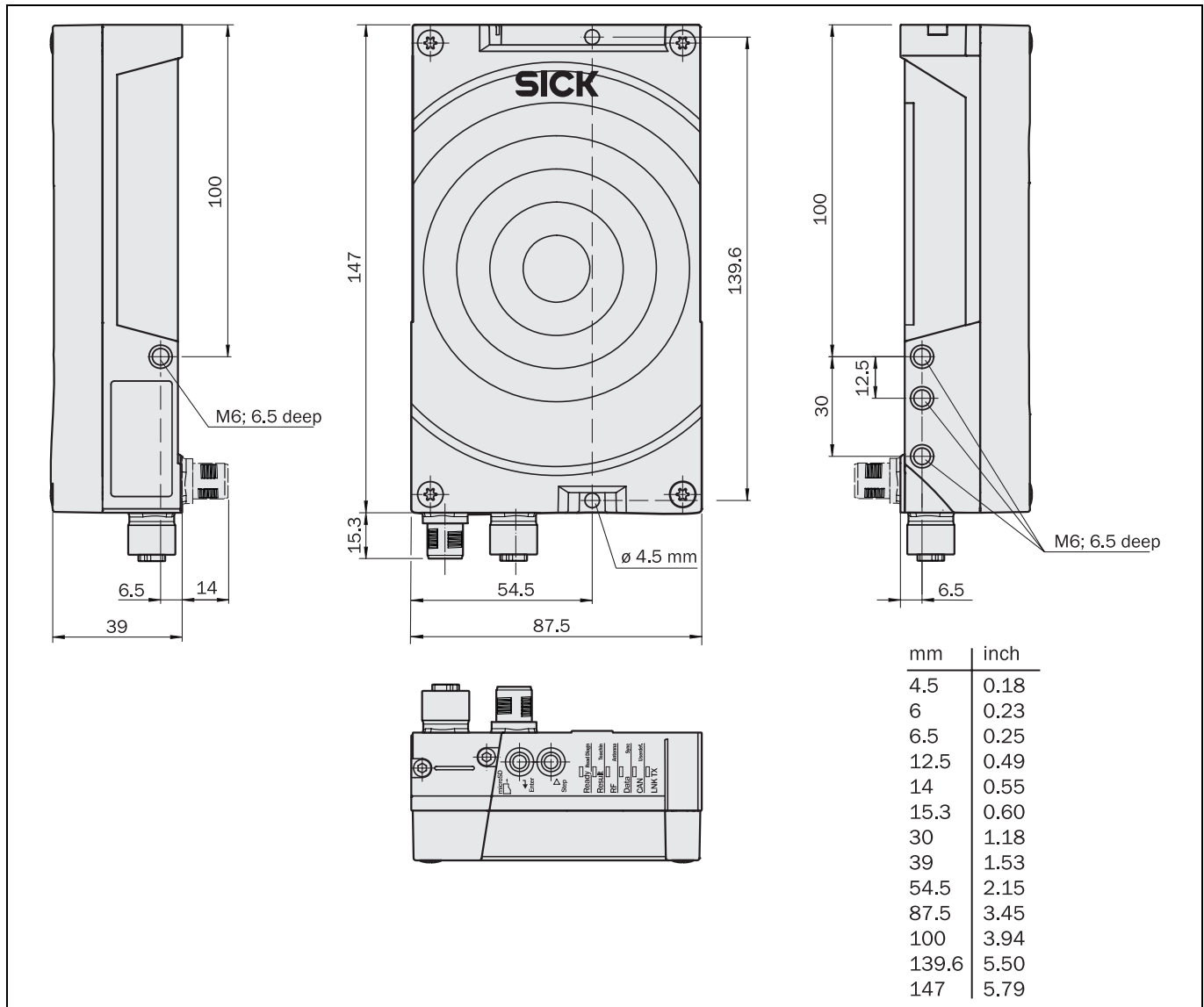
Fig. 10-2:   Ethernet version: Dimensions of the interrogator (RFH620-1001201)

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11   Appendix

11.1   Overview of the Appendixes

The appendix contains the following additional information:

- Configuration with command strings
- Dimensional drawings of the accessories
- Supplementary documentation (overview)
- Copy of EC Declaration of Conformity

11.2   Configuring the interrogator with command strings

As an alternative to the SOPAS-ET configuration software, the interrogator 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.

For this purpose, select the setting COMMAND on the register tab OBJECT TRIGGER CONTROL as Trigger source.

Important   Both the command strings and the SOPAS-ET configuration software are based on command language which directly accesses the command interpreter of the interrogator. This command language must be used with care as the interrogator 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 interrogator. 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 of the SOPAS-ET configuration software, the two control characters <STX> and <ETX> are omitted.

Connection to the interrogator using the terminal emulator via the Ethernet:

1. Call up the terminal emulator via the menu TOOLS/TERMINAL of the SOPAS-ET configuration software and, in the terminal emulator, call up the connection assistant via the menu SET UP CONNECTIONS/CONNECTION.
2. Select the option USER-DEFINED CONNECTION in the connection assistant and confirm by pressing NEXT.
3. Select the option TCP/IP and confirm by pressing NEXT.
4. Select the option SHOW ONLY COLA TELEGRAMS.
5. Enter the interrogator's IP address in the relevant field and confirm by pressing NEXT.
6. In the selection list ADDRESSING MODE, select the setting NAME and confirm by pressing CONNECT.

   The connection with the interrogator is established. The command strings can be transferred.

11.3   Dimensional drawing accessories

11.3.1   Dimensional drawing fixing bracket no. 2048551

mm	inch
4	0.16
6	0.24
6.4	0.25
12.5	0.49
17.5	0.69
25.5	1.00
36	1.42
44	1.73
54	2.13
71.5	2.81

Included to fix the interrogator to the bracket:
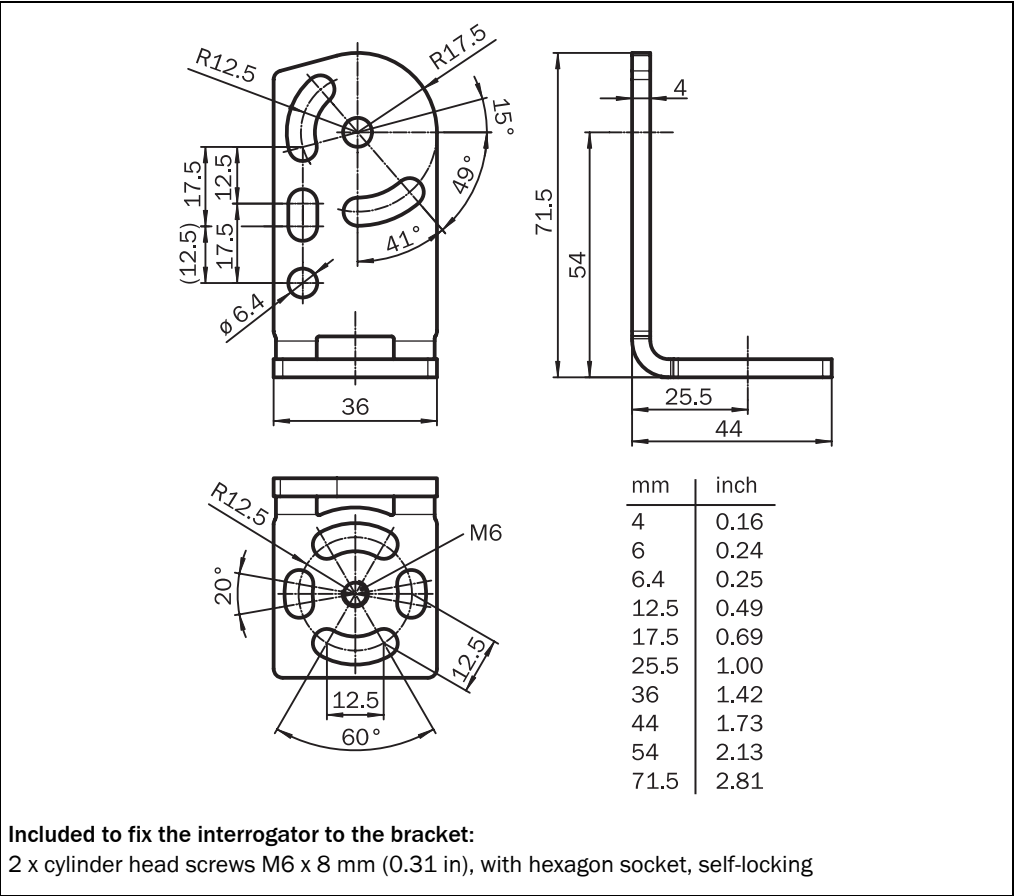2 x cylinder head screws M6 x 8 mm (0.31 in), with hexagon socket, self-locking

Fig. 11-1:   Dimensions of the fixing bracket no. 2048551

11.4   Supplementary documentation

Order no.	Title	Language	Contents
8013102	Product information "Radio frequency interrogator RFH620"	English	Information on the interrogator and overview of in-stock installation accessories, connection modules, cables and connectors, transponder as well as memory media.
8013107	Online help "Radio frequency interrogator RFH620"	English	Description of parameter to facilitate configuration using SOPAS-ET configuration software
8012119	Operating instructions "Connection Module CDB620"	German/English	Description of the wiring of the interrogator with the host/PLC/sensor using connection module CDB620
8010004	Operating instructions "Connection Module CDM420-0001"	German/English	Description of the wiring for the interrogator with the host/PLC/sensor using connection module CDM420
8011155	Operating instructions "Connection Module CDM420-0004"	German/English	Description of the wiring of two devices with the host/PLC/sensor using connection module CDM420
8012120	Operating instructions "Parameter Memory Module CMC600"	German/English	Description of the commissioning of the module in connection module CDB620 or CDM420
8010365	Operating instructions "Power Supply Module CMP400"	German/English	Description of the installation of the module in connection module CDM420
8010601	Operating instructions "Power Supply Module CMP490"	German/English	Description of the installation of the module in connection module CDM420
8012214	Operating instruction "Field Bus Module CDF600-0100 for PROFIBUS-DP"	English	Description of the installation, operation and configuration
8009180	Operating instructions "Use of the CAN Interface"	English	Description of setting up a CAN scanner network (electric connection, configuring the interrogator, functions) and integrating it in a CAN open network

Tab. 11-1:   Supplementary documentation

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11.5　EC Declaration of Conformity

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

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

SICK

EC Declaration of conformity

en

Ident-No. : 9128038

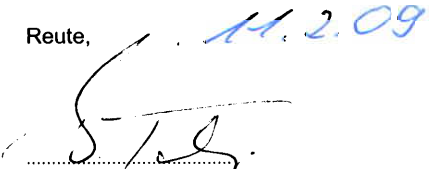The undersigned, representing the following manufacturer

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)

Fig. 11-2:　EC Declaration of Conformity for the interrogator (page 1, scaled down version)

　　8013105/0000/2009-05-12

11.6   FCC authorisation

The documentation for FCC authorisation is not available for the market launch of RFH620 in May 2009. More information on request.

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