RFU62x
RFID-Interrogator (UHF)

Mounting, electrical installation and license texts for Open Source Software
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Germany

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1 About this document

1.1 Purpose

This document summarizes information about mounting and electrical installation as well as about licence texts which complete the "RFU62x RFID Interrogator (UHF)" operating instructions (no. 8015928):

- Optional mounting accessories (brackets)
- Pin and lead color assignments of cables
- Measures for electrical installation of the RFU620 at an ambient temperature below 0 °C
- Prevention of ground potential equalization currents in applications with widely distributed systems
- Electrical wiring diagrams for the CDB620-001 and CDM420-0001 connection modules relating to the RFU620
- License conditions for open source software used in the firmware

The document is valid for all RFU62x standard variants in the following three versions series (see also type plate):

<table>
<thead>
<tr>
<th>Device name</th>
<th>Version serie</th>
<th>Regional assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>RFU620-10100</td>
<td>Ethernet</td>
<td>Europe/South Africa</td>
</tr>
<tr>
<td>RFU620-10101</td>
<td></td>
<td>USA/Canada</td>
</tr>
<tr>
<td>RFU620-10104</td>
<td></td>
<td>Brazil</td>
</tr>
<tr>
<td>RFU620-10105</td>
<td></td>
<td>Chine</td>
</tr>
<tr>
<td>RFU620-10107</td>
<td></td>
<td>Japan</td>
</tr>
<tr>
<td>RFU620-10400</td>
<td>Serial</td>
<td>Europe</td>
</tr>
<tr>
<td>RFU620-10401</td>
<td></td>
<td>USA/Canada</td>
</tr>
<tr>
<td>RFU620-10500</td>
<td>PoE</td>
<td>Europe</td>
</tr>
<tr>
<td>RFU620-10501</td>
<td></td>
<td>USA/Canada</td>
</tr>
<tr>
<td>RFU620-10503</td>
<td></td>
<td>India</td>
</tr>
</tbody>
</table>


In the following the different standard variants of the RFU62x RFID interrogator are referred to in simplified form as "RFU620", except where a distinction of the variants is necessary.

The specified material numbers (no.) for components are used as part numbers for the SICK ordering system.

1.2 Target group

This document is intended for qualified and technical staff, authorized for mounting and electrical installation.

1.3 Further sources for obtaining information

"RFU62x RFID Interrogator (UHF)" Operating Instructions, no. 8015928

Notes on intended use, scope of delivery, mounting and electrical installation in principle, commissioning, configuration with SOPAS ET, maintenance, transport and storage as well as on repair is included in the RFU620 operating instructions.

Internet Product page of RFU620
www.mysick.com/en/rfu62x
About this document

• Detailed, type-depended technical data in the online data sheets (PDF)
• Dimensional drawing and 3D CAD dimension models in various electronic formats
• Radiation pattern diagram of the integrated antenna (PDF)
• EC Declaration of Conformity (PDF)
• Overview and description of the command strings (on request)
• SOPAS ET configuration software with online help function
• Product information with an overview of the accessories (PDF), in English (no. 8016267) or German (no. 8016266)
• RFU62x operating instructions (PDF), in English or German, other languages if applicable
• This RFU62x Technical Information (PDF), in English (no. 8015930) or German (no. 8015929)

Support is also available from your sales partner to be found under www.sick.com/worldwide.

1.4 Used symbols

Some information in this document is highlighted as follows to facilitate quick access to this information.

1.4.1 Design of safety notes

Safety notes are marked by symbols. The safety notes are introduced by signal words in capital letters that indicate the extent of the danger.

⚠️ WARNING

Risk of injury or risk of damage!

A warning refers to specific or potential dangers to the physical safety of the user. It is there to protect the user against accidents.

The safety mark next to the warning, on the left, refers to the type of accident risk, e.g. electricity-related. The ascending warning levels (CAUTION, WARNING, DANGER) refer to the severity of the possible danger.

➢ Always read the warnings carefully and make sure you comply with them.

1.4.2 Further markings

Important! This important note is there to advise you on special aspects.

DATA PROCESSING This type of script denotes a term in the user interface of the SOPAS ET configuration software.

This symbol refers to supplementary technical documentation.
2 Safety information

2.1 General notes

- This chapter is about the safety of commissioning personnel, as well as operators of the system in which the RFU620 is integrated.
- Read the RFU62x operating instructions (no. 8015928, printed version delivered with device) carefully before starting any work on the RFU620 in order to familiarize yourself with the device and its functions.
- The printed operating instructions are considered a part of the device and must be kept in an accessible location in the immediate vicinity of the RFU620 at all times!
- Read additionally the notes on mounting and the electrical installation in this technical information as supplement to the operating instructions.
- Opening the screws of the RFU620 housing will invalidate any warranty claims against SICK AG. For further warranty provisions, see the General Terms and Conditions of SICK AG, e.g., on the delivery note of the RFU620.
- Repair work on the RFU620 may only be performed by qualified and authorized service personnel from SICK AG.

2.2 Categories of safety notes

DANGER
Risk of injury!
The combination of symbol and signal word indicates a situation of imminent danger, which will lead to a fatality or serious injuries if not prevented.

WARNING
Risk of injury!
The combination of symbol and signal word indicates a potentially dangerous situation, which may lead to a fatality or serious injuries if not prevented.

CAUTION
Risk of injury!
The combination of symbol and signal word indicates a potentially dangerous situation, which may lead to minor/slight injuries if not prevented.

NOTICE
Risk of damage!
A note indicates a potential risk of damage or impair on the functionality of the RFU620 RFID interrogator or other connected devices.
2.3 Warning note for electromagnetic radiation

**CAUTION**

Health hazard due to high-frequency electromagnetic radiation!

The **RFU620-10x00** (region: Europe/South Africa) is designed for operation in accordance with ETSI EN 302208. During operation the human exposure regulations covered by EN 50364 must be observed.

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

The **RFU620-10x01** (region: USA/Canada) satisfies the limit values of the FCC for exposure to radiation in an uncontrolled environment.

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

3.1 Notes on mounting

- The RFU620 should be attached as free from shock and vibration as possible.
- If the RFU620 is mounted in front of the front metal surfaces, observe an angle of approx. 10°.
- Use one of the optional SICK mounting sets 1 to 5, also in combination if required depending on the application. For mounting samples, see the following pages.
3.2 Optional mounting sets

3.2.1 Installing mounting bracket no. 2071067 on the RFU620

**Mounting samples (adjustment possible in 2 axes)**

- **Fixed position**
- **Variable position (±45°)**
- **Variable position (±45°)**

**Included to fix the bracket to the RFU620:**
2 x cylinder head screws M6 x 12, with hexagon socket (AF5)
2 x washers A 6.4

Screw the screws max. 7 mm into the M6 threaded blind holes of the RFU620!

**All dimensions in mm**
### 3.2.2 Installing frame bracket no. 2071773 on the RFU620

**Mounting samples**

- **No. 2071773**
- **Front view**
  - 4 x screws M5 x 14
  - 2 x screws M5 x 20
  - A - A
  - 2 x hexagon socket AF3
  - A - A
- **Rear view**
  - Horizontal axis of the mounting flaps
  - Vertical axis of the mounting flaps
  - Threaded blind hole M5 x 9
  - A - A
- **View without screws**
  - 2 x hexagon socket AF3
  - A - A
  - 4 x hexagon socket AF3
  - A - A

**Included to fix the frame bracket to the RFU620 and to the base:**
- 4 x counter-sunk screws M5 x 14
- 2 x counter-sunk screws M5 x 20
- Each with hexagon socket (AF3)

Screw the screws max. 9 mm into the M5 threaded blind holes of the RFU620!

**All dimensions in mm**
### 3.2.3 Installing combination of quick-action lock system no. 2016110 and mounting bracket no. 2071067 on the RFU620

**Mounting steps 1 and 2:**

- 2 x threaded blind holes M6 x 7

No. 2016110 = 1+2+3+5+6
No. 2071067 = 4

**Mounting step 3:**

- Threaded pin M8, hexagon socket AF4

Included to fix the quick release clamp to the RFU620:
- 2 x counter-sunk screws M6 x 12 with hexagon socket (AF4)

Screw the screws max. 7 mm into the M6 threaded blind holes of the RFU620!

View without screws

1 x threaded pin M8, hexagon socket (AF4)

A - A

2 x M6 x 12, hexagon socket (AF4)

2 x washers A 6.4

2 x M6 x 16, hexagon socket (AF5)

All dimensions in mm
3.2.4 Installing VESA adapter plate no. 2071862 on the RFU620

Included to fix the VESA adapter plate to the RFU620:
2 x cylinder head screws M6 x 12, hexagon socket (AF4)

Screw the screws max. 7 mm into the M6 threaded blind holes of the RFU620!

2 x M6 x 12, hexagon socket (AF4)

All dimensions in mm
3.2.5 Installing a customer-specific holder for the RFU620 by using pipe elements and clamp-connections, with VESA adapter plate no. 2071862 (sample)

Part 1: Total view

Mounting sample

1. VESA adapter plate no. 2071862, with 2 counter-sunk screws M6 x 12, hexagon socket (AF4)
2. Link clamp with 4 cylinder head screws M6 x 12, no. 2068919
3. Pipe, Ø 30 mm, length 1 m, no. 5327610
4. Sealing plug, Ø 30 mm, no. 5327613
5. Cross clamp, no. 5327612
6. Base clamp, no. 5327611
Part 2: Dimensional drawings of components

Link clamp no. 2068919, with 4 cylinder head screws M6 x 12

Cross clamp, no. 5327612

Sealing plug, ∅ 30 mm, no. 5327613

Pipe, ∅ 30 mm, length 1 m, no. 5327610

Base clamp, no. 5327611

All dimensions in mm
3.3 Mounting the CDB620-001 or CDM420-0001 connection module

RFU620-101xx/-104xx

The mounting location for the connection module (distance to RFU620) depends on the physical design (RS-232) of the both serial data interfaces AUX and HOST and the transmission rates used.

Recommended cable length between RFU620 and connection module:
Max. 5 m when using max. data transmission rate 115.2 kBd of the HOST interface.
(fixed data transmission of AUX interface: 57.6 kBd).

For detailed information on mounting and the electrical installation, please see:

- "CDB620-001 connection module" operating instructions (no. 8012119, German + English version) e.g. as PDF in the web via www.mysick.com/de/CDB
- "CDM420-0001 connection module" operating instructions (no. 8010004 German + English version) e.g. as PDF in the web via www.mysick.com/de/CDM

The documents are also supplied in printed form with the relating connection module.
4 Electrical installation

4.1 Notes on the Electrical Installation

- The electrical installation must only be performed by qualified electricians.
- The currently applicable safety regulations must be observed when working in electrical systems!
- Electrical connections between the RFU620 and other devices must only be created and disconnected when there is no power to the system. Otherwise, the devices may be damaged. The permissible ambient temperature range for this work is 0 °C to +50 °C.
- Operation of the RFU620 below 0 °C:
  For information on configuring the electrical installation when using the RFU620-101xx at temperatures down to -40 °C or the RFU620-104xx/-105xx at temperatures down to -25 °C, see Chapter 4.5, Page 34
- When using extension cables with open ends, ensure that bare wire ends do not come into contact with each other (risk of short-circuit when supply voltage is switched on!). Wires (also not used) must be appropriately insulated from each other.
- Customer-specific provided cables:
  Wire cross sections of the supply cable from the customer's power system as well of data and switching signal cables should be designed in accordance with the applicable standards.
- Circuits connected to the RFU620 must be designed as SELV circuits (SELV = Safety Extra Low Voltage). The power supply or power supply unit must satisfy the requirements of SELV in accordance with the currently applicable EN 60950-1.
- Do not switch on the supply voltage for the RFU620 respectively the CDB620-001 or CDM420-0001 connection module until the connection work has been completed and the wiring work has been tested thoroughly.

Prerequisites for enclosure rating IP 65

- All variants:
  The side cover of the USB female connector and Micro-SD card slot must be screwed tight to the device. Protect the RFU620 against moisture and dust when the cover is open.
- RFU620-101xx (Ethernet version):
  Electrical connections that are not being used must be fitted with protective caps/plugs that are screwed tight.
- RFU620-104xx (Serial version):
  In order to maintain enclosure rating IP 65 for the connecting cable of the device when using an optional extension cable (e.g. no. 2043413, 2 m), use the optional rubber seal (no. 4038847) between the male connector and the female connector of the 15-pin D-Sub-HD connection and screw the connection in place.
- The same also applies for the EMC requirements (ESD) according to CE

Cable lengths

The possible length of cable between RFU620 and the host computer depends on the selected physical design of the host interface and the set data transmission rate. For the serial interfaces, see Chapter 4.7.3 Wiring the data interface, Page 42.
4.2 Overview of all interfaces and connection options

4.2.1 RFU620-101xx (Ethernet version)

**Configuration and diagnostics**

<table>
<thead>
<tr>
<th>Interface</th>
<th>Connection</th>
<th>Cable No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethernet</td>
<td>CDB620-001</td>
<td>2014054</td>
</tr>
<tr>
<td>Serial</td>
<td>CDB620-001</td>
<td>6034414</td>
</tr>
<tr>
<td>“Power/AUX/CAN/I/O”</td>
<td>(AUX 1,</td>
<td>1042256</td>
</tr>
<tr>
<td>“Ethernet” (HOST 2)</td>
<td>HOST 1)</td>
<td></td>
</tr>
<tr>
<td>“Serial RS-232” (AUX 1)</td>
<td>HOST 1)</td>
<td></td>
</tr>
<tr>
<td>“USB” (AUX 3)</td>
<td>HOST 1)</td>
<td></td>
</tr>
</tbody>
</table>

Note: Configuration/diagnosis of the RFU620 can be done via each of the 5 data interfaces (AUX 1, AUX 2, AUX 3, HOST 1, HOST2). Here the Aux port of the Ethernet interface and alternatively the serial Aux and the USB interfaces are shown.

*) DC 20 V to 30 V if the RFU620-101xx is used at an ambient temperature from -20 °C to -40 °C.

**Reading mode**

**Using the Data Interfaces**

<table>
<thead>
<tr>
<th>Interface</th>
<th>Connection</th>
<th>Cable No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>RS-232</td>
<td>AUX 1</td>
<td></td>
</tr>
<tr>
<td>RS-232</td>
<td>HOST 1</td>
<td></td>
</tr>
<tr>
<td>RS-422</td>
<td>HOST 1</td>
<td></td>
</tr>
<tr>
<td>RS-485</td>
<td>HOST 1</td>
<td></td>
</tr>
<tr>
<td>CAN</td>
<td>AUX 3</td>
<td></td>
</tr>
<tr>
<td>USB</td>
<td>AUX 2</td>
<td></td>
</tr>
<tr>
<td>Ethernet</td>
<td>HOST 2</td>
<td></td>
</tr>
</tbody>
</table>

1) Select one of the three options
2) Recommended on high data volume
### Important!

Only one of several selectable functions can be allocated to each interface.

The logical AUX interface of the RFU620-101xx can operate the serial data interface, USB interface and Aux port of the Ethernet interface in parallel.

In a similar manner, the logical HOST interface of the RFU620-101xx can operate the serial data interface and the Host port of the Ethernet interface in parallel. The physical RS-232 and RS-422/485 Host interfaces cannot be used simultaneously.

However, the data released by means of a command string is only output on the interface on which the request was received. For output in real time, one of the two ports of the Ethernet interface must be selected.

<table>
<thead>
<tr>
<th>Possible interface →</th>
<th>HOST 1</th>
<th>AUX 1</th>
<th>HOST 2</th>
<th>AUX 2</th>
<th>AUX 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignable function</td>
<td>Serial RS-232/422/485</td>
<td>Serial RS-232</td>
<td>Ethernet</td>
<td>Ethernet</td>
<td>USB</td>
</tr>
<tr>
<td>Read result output (format 1)</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>Read result output (format 2)</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>Read diagnosis output (fixed format)</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Observation of HOST interface traffic</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Configuration (SOPAS, commands)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

○ = Output of the same function simultaneously possible via the interfaces
● = Access only makes practical sense via one of the interfaces (risk of collision)
4.2.2 RFU620-104xx (Serial version)

Configuration and diagnostics

Reading mode

Using the Data Interfaces

*) Select one of the three options
### Important!

Only one of several selectable functions can be allocated to each interface.

The logical AUX interface of the RFU620-104xx can operate the serial data interface and USB interface in parallel.

The logical HOST interface of the RFU620-104xx can only operate the serial data interface. The physical RS-232 and RS-422/485 Host interfaces cannot be used simultaneously.

However, the data released by means of a command string is only output on the interface on which the request was received.

<table>
<thead>
<tr>
<th>Possible interface</th>
<th>HOST 1</th>
<th>AUX 1</th>
<th>AUX 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignable function</td>
<td>Serial RS-232/422/485</td>
<td>Serial RS-232</td>
<td>USB</td>
</tr>
<tr>
<td>Read result output (format 1)</td>
<td>●</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>Read result output (format 2)</td>
<td>●</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>Read diagnosis output (fixed format)</td>
<td>●</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Observation of HOST interface traffic</td>
<td></td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>Configuration (SOPAS, commands)</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

● = Output of the same function simultaneously possible via the interfaces  
○ = Access only makes practical sense via one of the interfaces (risk of collision)
4.2.3 RFU620-105xx (PoE version)

Configuration and diagnostics

Using the Data Interfaces
Important! Only one of several selectable functions can be allocated to each interface. The logical AUX interface of the RFU620-105xx can operate the USB interface and Aux port of the Ethernet interface in parallel. The logical HOST interface of the RFU620-105xx only operates the Host port of the Ethernet interface. However, the data released by means of a command string is only output on the interface on which the request was received.
4.3 Male and female connector pin assignments of the device version series

**RFU620-101xx (Ethernet version)**

*“Power/AUX/CAN/I/0” connection*

- M12 male connector, A-coded

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GND</td>
</tr>
<tr>
<td>2</td>
<td>DC 10 V ... 30 V*</td>
</tr>
<tr>
<td>3</td>
<td>CAN L</td>
</tr>
<tr>
<td>4</td>
<td>CAN H</td>
</tr>
<tr>
<td>5</td>
<td>TD+ (RS-422/485), HOST</td>
</tr>
<tr>
<td>6</td>
<td>TD- (RS-422/485), TxD (RS-232), HOST</td>
</tr>
<tr>
<td>7</td>
<td>TxD (RS-232), AUX</td>
</tr>
<tr>
<td>8</td>
<td>RxD (RS-232), AUX</td>
</tr>
<tr>
<td>9</td>
<td>SensGND</td>
</tr>
<tr>
<td>10</td>
<td>Sensor 1 (switching input 1)</td>
</tr>
<tr>
<td>11</td>
<td>RD+ (RS-422/485), HOST</td>
</tr>
<tr>
<td>12</td>
<td>RD- (RS-422/485), RxD (RS-232), HOST</td>
</tr>
<tr>
<td>13</td>
<td>Result 1 (switching output 1)</td>
</tr>
<tr>
<td>14</td>
<td>Result 2 (switching output 2)</td>
</tr>
<tr>
<td>15</td>
<td>Sensor 2 (switching input 2)</td>
</tr>
<tr>
<td>16</td>
<td>N.c.</td>
</tr>
<tr>
<td>17</td>
<td>N.c.</td>
</tr>
</tbody>
</table>

*“Ethernet” connection*

- M12 female connector, D-coded

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TD+</td>
</tr>
<tr>
<td>2</td>
<td>RD+</td>
</tr>
<tr>
<td>3</td>
<td>TD-</td>
</tr>
<tr>
<td>4</td>
<td>RD-</td>
</tr>
</tbody>
</table>

*“PoE” connection*

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>105</td>
</tr>
<tr>
<td>2</td>
<td>115</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
</tr>
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<td>4</td>
<td>3</td>
</tr>
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<td>5</td>
<td>2</td>
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<td>6</td>
<td>8</td>
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<td>7</td>
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<tr>
<td>10</td>
<td>4</td>
</tr>
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<td>3</td>
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<tr>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>13</td>
<td>1</td>
</tr>
</tbody>
</table>

*RFU620-104xx (serial version)*

*“Power/HOST/AUX/CAN/I/0” connection*

- D-Sub HD male connector

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DC 10 V ... 30 V</td>
</tr>
<tr>
<td>2</td>
<td>RxD (RS-232), AUX</td>
</tr>
<tr>
<td>3</td>
<td>TxD (RS-232), AUX</td>
</tr>
<tr>
<td>4</td>
<td>Sensor 2 (switching input 2)</td>
</tr>
<tr>
<td>5</td>
<td>GND</td>
</tr>
<tr>
<td>6</td>
<td>RD+ (RS-422/485), HOST</td>
</tr>
<tr>
<td>7</td>
<td>RD- (RS-422/485), RxD (RS-232), HOST</td>
</tr>
<tr>
<td>8</td>
<td>TD+ (RS-422/485), HOST</td>
</tr>
<tr>
<td>9</td>
<td>TxD (RS-232), HOST</td>
</tr>
<tr>
<td>10</td>
<td>CAN H</td>
</tr>
<tr>
<td>11</td>
<td>CAN L</td>
</tr>
<tr>
<td>12</td>
<td>Result 1 (switching output 1)</td>
</tr>
<tr>
<td>13</td>
<td>Result 2 (switching output 2)</td>
</tr>
<tr>
<td>14</td>
<td>Sensor 1 (switching input 1)</td>
</tr>
<tr>
<td>15</td>
<td>SensGND</td>
</tr>
</tbody>
</table>

*RFU620-105xx (PoE version)*

*“Power/HOST/AUX/CAN/I/0” connection*

- M12 female connector, X-coded

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TD+</td>
</tr>
<tr>
<td>2</td>
<td>TD-</td>
</tr>
<tr>
<td>3</td>
<td>RD+</td>
</tr>
<tr>
<td>4</td>
<td>RD-</td>
</tr>
<tr>
<td>5</td>
<td>PoE+</td>
</tr>
<tr>
<td>6</td>
<td>PoE-</td>
</tr>
<tr>
<td>7</td>
<td>PoE-</td>
</tr>
<tr>
<td>8</td>
<td>PoE+</td>
</tr>
</tbody>
</table>

*“PoE” connection*

- M12 female connector, X-coded

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>105</td>
</tr>
<tr>
<td>2</td>
<td>115</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>

*DC 20 V to 30 V* if the RFU620-101xx is used at an ambient temperature from -20 °C to -40 °C.
4.4 Pin assignments and lead color assignments of cables

4.4.1 RFU620-101xx (Ethernet version):
"Power/AUX/CAN/I/0" connection to CDB620-001 or CDM420-0001 connection module

a) Adapter cable no. 2056184 (0.35 m), no. 2049764 (0.9 m), no. 2055419 (2 m), no. 2055420 (3 m), no. 2055859 (5 m)
b) Adapter cable, suitable for drag chain use, no. 2061480 (2 m), no. 2061605 (3 m), no. 2061148 (5 m)

Ambient temperature range:
Stationary installation: –40 °C to +80°C, mobile installation: –25 °C to +80°C

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>DC 10 V ... 30 V)</td>
<td>Supply voltage</td>
</tr>
<tr>
<td>8</td>
<td>RxD (RS-232), Aux</td>
<td>Aux interface (receiver)</td>
</tr>
<tr>
<td>7</td>
<td>TxD (RS-232), Aux</td>
<td>Aux interface (sender)</td>
</tr>
<tr>
<td>15</td>
<td>Sensor 2</td>
<td>Switching input 2</td>
</tr>
<tr>
<td>1</td>
<td>GND</td>
<td>Ground</td>
</tr>
<tr>
<td>11</td>
<td>RD+ (RS-422/485), Host</td>
<td>Host interface (receiver+)</td>
</tr>
<tr>
<td>12</td>
<td>RD– (RS-422/485)/RxD (RS-232), Host</td>
<td>Host interface (receiver–)</td>
</tr>
<tr>
<td>5</td>
<td>TD+ (RS-422/485), Host</td>
<td>Host interface (sender+)</td>
</tr>
<tr>
<td>6</td>
<td>TD– (RS-422/485)/TxD (RS-232), Host</td>
<td>Host interface (sender–)</td>
</tr>
<tr>
<td>4</td>
<td>CAN H</td>
<td>CAN-Bus (IN/OUT)</td>
</tr>
<tr>
<td>3</td>
<td>CAN L</td>
<td>CAN-Bus (IN/OUT)</td>
</tr>
<tr>
<td>13</td>
<td>Result 1</td>
<td>Switching output 1</td>
</tr>
<tr>
<td>14</td>
<td>Result 2</td>
<td>Switching output 2</td>
</tr>
<tr>
<td>10</td>
<td>Sensor 1</td>
<td>Switching input 1</td>
</tr>
<tr>
<td>9</td>
<td>SensGND</td>
<td>Common ground for all inputs</td>
</tr>
<tr>
<td>16</td>
<td>N.c.</td>
<td>–</td>
</tr>
<tr>
<td>17</td>
<td>N.c.</td>
<td>–</td>
</tr>
</tbody>
</table>

*) DC 20 V to 30 V if the RFU620-101xx is used at an ambient temperature from –20 °C to –40 °C.
### Electrical Installation

#### 4.4.2 RFU620-101xx (Ethernet version):

"Power/AUX/CAN/I/O" connection to customer-specific connection unit (power supply unit or switching cabinet)

- Adapter cable no. 6042772 (3 m), no. 6042773 (5 m), no. 6048817 (10 m)

**Ambient temperature range:**
- Stationary installation: -40 °C to +80°C
- Mobile installation: -5 °C to +80°C

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal</th>
<th>Function</th>
<th>Aderfarbe</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GND</td>
<td>Ground</td>
<td>Brown</td>
</tr>
<tr>
<td>2</td>
<td>DC 10 V ... 30 V*)</td>
<td>Supply voltage</td>
<td>Blue</td>
</tr>
<tr>
<td>3</td>
<td>CAN L</td>
<td>CAN-Bus (IN/OUT)</td>
<td>White</td>
</tr>
<tr>
<td>4</td>
<td>CAN H</td>
<td>CAN-Bus (IN/OUT)</td>
<td>Green</td>
</tr>
<tr>
<td>5</td>
<td>TD+ (RS-422/485), Host</td>
<td>Host interface (sender+)</td>
<td>Pink</td>
</tr>
<tr>
<td>6</td>
<td>TD− (RS-422/485)/ TxD (RS-232), Host</td>
<td>Host interface (sender−)</td>
<td>Yellow</td>
</tr>
<tr>
<td>7</td>
<td>TxD (RS-232), Aux</td>
<td>Aux interface (sender)</td>
<td>Black</td>
</tr>
<tr>
<td>8</td>
<td>RxD (RS-232), Aux</td>
<td>Aux interface (receiver)</td>
<td>Gray</td>
</tr>
<tr>
<td>9</td>
<td>SensGND</td>
<td>Common ground for all inputs</td>
<td>Red</td>
</tr>
<tr>
<td>10</td>
<td>Sensor 1</td>
<td>Switching input 1</td>
<td>Purple</td>
</tr>
<tr>
<td>11</td>
<td>RD+ (RS-422/485), Host</td>
<td>Host interface (receiver+)</td>
<td>Gray-pink</td>
</tr>
<tr>
<td>12</td>
<td>RD− (RS-422/485)/ RxD (RS-232), Host</td>
<td>Host interface (receiver−)</td>
<td>Red-blue</td>
</tr>
<tr>
<td>13</td>
<td>Result 1</td>
<td>Switching output 1</td>
<td>White-green</td>
</tr>
<tr>
<td>14</td>
<td>Result 2</td>
<td>Switching output 2</td>
<td>Brown-green</td>
</tr>
<tr>
<td>15</td>
<td>Sensor 2</td>
<td>Switching input 2</td>
<td>White-yellow</td>
</tr>
<tr>
<td>16</td>
<td>N.c.</td>
<td>-</td>
<td>Yellow-brown</td>
</tr>
<tr>
<td>17</td>
<td>N.c.</td>
<td>-</td>
<td>White-gray</td>
</tr>
</tbody>
</table>

*) DC 20 V to 30 V if the RFU620-101xx is used at an ambient temperature from -20 °C to -40 °C.
b) Adapter cable, suitable for drag chain use, ECOLAB no. 2070425 (3 m), no. 2070426 (5 m), no. 2070427 (10 m)

**Ambient temperature range:**
Stationary installation: –40 °C to +80°C, mobile installation: –25 °C to +80°C

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal</th>
<th>Function</th>
<th>Color of lead</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GND</td>
<td>Ground</td>
<td>Blue</td>
</tr>
<tr>
<td>2</td>
<td>DC 10 V ... 30 V*)</td>
<td>Supply voltage</td>
<td>Brown</td>
</tr>
<tr>
<td>3</td>
<td>CAN L</td>
<td>CAN-Bus (IN/OUT)</td>
<td>Green</td>
</tr>
<tr>
<td>4</td>
<td>CAN H</td>
<td>CAN-Bus (IN/OUT)</td>
<td>White</td>
</tr>
<tr>
<td>5</td>
<td>TD+ (RS-422/485), Host</td>
<td>Host interface (sender+)</td>
<td>Pink</td>
</tr>
<tr>
<td>6</td>
<td>TD– (RS-422/485)/ TxD (RS-232), Host</td>
<td>Host interface (sender–)</td>
<td>Yellow</td>
</tr>
<tr>
<td>7</td>
<td>TxD (RS-232), Aux</td>
<td>Aux interface (sender)</td>
<td>Black</td>
</tr>
<tr>
<td>8</td>
<td>RxD (RS-232), Aux</td>
<td>Aux interface (receiver)</td>
<td>Gray</td>
</tr>
<tr>
<td>9</td>
<td>SensGND</td>
<td>Common ground for all inputs</td>
<td>White-black</td>
</tr>
<tr>
<td>10</td>
<td>Sensor 1</td>
<td>Switching input 1</td>
<td>Purple</td>
</tr>
<tr>
<td>11</td>
<td>RD+ (RS-422/485), Host</td>
<td>Host interface (receiver+)</td>
<td>Gray-pink</td>
</tr>
<tr>
<td>12</td>
<td>RD– (RS-422/485)/ RxD (RS-232), Host</td>
<td>Host interface (receiver–)</td>
<td>Red-blue</td>
</tr>
<tr>
<td>13</td>
<td>Result 1</td>
<td>Switching output 1</td>
<td>Brown-green</td>
</tr>
<tr>
<td>14</td>
<td>Result 2</td>
<td>Switching output 2</td>
<td>White-yellow</td>
</tr>
<tr>
<td>15</td>
<td>Sensor 2</td>
<td>Switching input 2</td>
<td>Yellow-brown</td>
</tr>
<tr>
<td>16</td>
<td>N.c.</td>
<td>–</td>
<td>White-gray</td>
</tr>
<tr>
<td>17</td>
<td>N.c.</td>
<td>–</td>
<td>White-gray</td>
</tr>
</tbody>
</table>

*) DC 20 V to 30 V if the RFU620-101xx is used at an ambient temperature from –20 °C to –40 °C.
c) Adapter cable, suitable for drag chain use, no. 6045141 (5 m)

*Ambient temperature range:*
Stationary installation: –40 °C to +85°C, mobile installation: –25 °C to +80°C

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal</th>
<th>Function</th>
<th>Color of lead</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GND</td>
<td>Ground</td>
<td>Gray</td>
</tr>
<tr>
<td>2</td>
<td>DC 10 V ... 30 V*)</td>
<td>Supply voltage</td>
<td>White</td>
</tr>
<tr>
<td>3</td>
<td>CAN L</td>
<td>CAN-Bus (IN/OUT)</td>
<td>Gray-pink</td>
</tr>
<tr>
<td>4</td>
<td>CAN H</td>
<td>CAN-Bus (IN/OUT)</td>
<td>Purple</td>
</tr>
<tr>
<td>5</td>
<td>TD+ (RS-422/485), Host</td>
<td>Host interface (sender+)</td>
<td>Red</td>
</tr>
<tr>
<td>6</td>
<td>TD– (RS-422/485)/ TxD (RS-232), Host</td>
<td>Host interface (sender–)</td>
<td>Black</td>
</tr>
<tr>
<td>7</td>
<td>TxD (RS-232), Aux</td>
<td>Aux interface (sender)</td>
<td>Green</td>
</tr>
<tr>
<td>8</td>
<td>RxD (RS-232), Aux</td>
<td>Aux interface (receiver)</td>
<td>Brown</td>
</tr>
<tr>
<td>9</td>
<td>SensGND</td>
<td>Common ground for all inputs</td>
<td>White-yellow</td>
</tr>
<tr>
<td>10</td>
<td>Sensor 1</td>
<td>Switching input 1</td>
<td>Brown-green</td>
</tr>
<tr>
<td>11</td>
<td>RD+ (RS-422/485), Host</td>
<td>Host interface (receiver+)</td>
<td>Pink</td>
</tr>
<tr>
<td>12</td>
<td>RD– (RS-422/485)/ RxD (RS-232), Host</td>
<td>Host interface (receiver–)</td>
<td>Blue</td>
</tr>
<tr>
<td>13</td>
<td>Result 1</td>
<td>Switching output 1</td>
<td>Red-blue</td>
</tr>
<tr>
<td>14</td>
<td>Result 2</td>
<td>Switching output 2</td>
<td>White-green</td>
</tr>
<tr>
<td>15</td>
<td>Sensor 2</td>
<td>Switching input 2</td>
<td>Yellow</td>
</tr>
<tr>
<td>16</td>
<td>N.c.</td>
<td>–</td>
<td>Yellow-brown</td>
</tr>
<tr>
<td>17</td>
<td>N.c.</td>
<td>–</td>
<td>White-gray</td>
</tr>
</tbody>
</table>

*) DC 20 V to 30 V if the RFU620-101xx is used at an ambient temperature from –20 °C to –40 °C.
4.4.3 RFU620-101xx (Ethernet version):
"Power/AUX/CAN/I/O" connection to customer-specific power supply unit

Adapter cable no. 6048319 (10 m)

Ambient temperature range:
Stationary installation: –40 °C to +85°C, mobile installation: –25 °C to +80°C

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal</th>
<th>Function</th>
<th>Color of lead</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GND</td>
<td>Ground</td>
<td>Brown</td>
</tr>
<tr>
<td>2</td>
<td>DC 10 V ... 30 V</td>
<td>Supply voltage</td>
<td>Blue</td>
</tr>
</tbody>
</table>

*) DC 20 V to 30 V if the RFU620-101xx is used at an ambient temperature from –20 °C to –40 °C.
Electrical installation

4.4.4 RFU620-101xx (Ethernet version):
“Ethernet” connection to Ethernet (RJ-45) or PROFINET (RJ-45)

Ethernet cables:

a) Adapter cable no. 6034414 (2 m), no. 6044400 (3 m), no. 6034415 (5 m), no. 6030928 (10 m), no. 6036158 (20 m)

Ambient temperature range:
Stationary installation: –20 °C to +60°C, mobile installation: –0 °C to +50°C

b) Adapter cable, suitable for drag chain use, ECOLAB no. 6050198 (2 m), no. 6050199 (3 m), no. 6050200 (5 m), no. 6050201 (10 m), no. 6050596 (20 m)

Ambient temperature range: mobile installation: –25 °C to +60°C

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal</th>
<th>Function</th>
<th>Pin</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TD+ (Ethernet)</td>
<td>Sender+</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>TD- (Ethernet)</td>
<td>Sender-</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>RD+ (Ethernet)</td>
<td>Receiver+</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>RD- (Ethernet)</td>
<td>Receiver-</td>
<td>6</td>
</tr>
</tbody>
</table>

PROFINET cables:

a) Adapter cable no. 6048244 (2 m), no. 6048245 (5 m), no. 6048246 (10 m)

b) Adapter cable with M12 male connector, angled (here not shown): no. 6048253 (2 m), no. 6048254 (5 m), no. 6048255 (10 m)

Ambient temperature range:
Stationary installation: –40 °C to +70°C, mobile installation: –20 °C to +60°C
4.4.5 RFU620-101xx (Ethernet version):
"Ethernet" connection to PROFINET (open end)

Ethernet cables:
a) Adapter cable no. 6048247 (2 m), no. 6048248 (5 m), no. 6048249 (10 m)

Ambient temperature range:
Stationary installation: –40 °C to +70 °C, mobile installation: –20 °C to +60 °C

PROFINET cables:
b) Adapter cable with M12 male connector, angled (here not shown): no. 6048256 (2 m),
no. 6048257 (5 m), no. 6048258 (10 m), no. 6048259 (25 m)

Ambient temperature range:
Stationary installation: –40 °C to +70 °C, mobile installation: –20 °C to +60 °C

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal</th>
<th>Function</th>
<th>Color of lead</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TD+ (Ethernet)</td>
<td>Sender+</td>
<td>Yellow</td>
</tr>
<tr>
<td>2</td>
<td>TD- (Ethernet)</td>
<td>Sender-</td>
<td>White</td>
</tr>
<tr>
<td>3</td>
<td>RD+ (Ethernet)</td>
<td>Receiver+</td>
<td>Orange</td>
</tr>
<tr>
<td>4</td>
<td>RD- (Ethernet)</td>
<td>Receiver-</td>
<td>Blue</td>
</tr>
</tbody>
</table>
4.4.6 RFU620-104xx (Serial version):
"Power/AUX/CAN/I/O" connection to customer-specific connection unit (power supply unit or switching cabinet)

Adapter cable no. 2043413 (2 m)

Ambient temperature range: 0 °C to +80 °C, not suitable for low temperature applications

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal</th>
<th>Function</th>
<th>Color of lead</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DC 10 V ... 30 V</td>
<td>Supply voltage</td>
<td>Red</td>
</tr>
<tr>
<td>2</td>
<td>RxD (RS-232), Aux</td>
<td>Aux interface (receiver)</td>
<td>Purple</td>
</tr>
<tr>
<td>3</td>
<td>TxD (RS-232), Aux</td>
<td>Aux interface (sender)</td>
<td>Yellow</td>
</tr>
<tr>
<td>4</td>
<td>Sensor 2</td>
<td>Switching input 2</td>
<td>Red–black</td>
</tr>
<tr>
<td>5</td>
<td>GND</td>
<td>Ground</td>
<td>Black</td>
</tr>
<tr>
<td>6</td>
<td>RD+ (RS-422/485)</td>
<td>Host interface (receiver+)</td>
<td>Light blue</td>
</tr>
<tr>
<td>7</td>
<td>RD– (RS-422/485)/RxD (RS-232), Host</td>
<td>Host interface (receiver–)</td>
<td>Blue</td>
</tr>
<tr>
<td>8</td>
<td>TD+ (RS-422/485)</td>
<td>Host interface (sender+)</td>
<td>Light gray or turquois</td>
</tr>
<tr>
<td>9</td>
<td>TD– (RS-422/485)/TxD (RS-232), Host</td>
<td>Host interface (sender–)</td>
<td>Green</td>
</tr>
<tr>
<td>10</td>
<td>CAN H</td>
<td>CAN-Bus (IN/OUT)</td>
<td>Gray</td>
</tr>
<tr>
<td>11</td>
<td>CAN L</td>
<td>CAN-Bus (IN/OUT)</td>
<td>Pink</td>
</tr>
<tr>
<td>12</td>
<td>Result 1</td>
<td>Switching output 1</td>
<td>Brown</td>
</tr>
<tr>
<td>13</td>
<td>Result 2</td>
<td>Switching output 2</td>
<td>Orange</td>
</tr>
<tr>
<td>14</td>
<td>Sensor 1</td>
<td>Switching input 1</td>
<td>White</td>
</tr>
<tr>
<td>15</td>
<td>SensGND</td>
<td>Common ground for all inputs</td>
<td>White–black</td>
</tr>
</tbody>
</table>

15-pin D-Sub HD female connector (front view)

Braid shield contacted with metal housing of female connector
4.4.7 RFU620-104xx (Serial version):
CDB620-001 connection module to PC (HOST interface RS-232)

RS-232 data cable no. 2020319 (3 m)

Ambient temperature range:
Stationary installation: –30 °C to +90°C, mobile installation: –5 °C to +90°C

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal</th>
<th>Function</th>
<th>Color of lead</th>
<th>Terminal CDB620-001/ CDM420-0001</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>2</td>
<td>RxD (RS-232)</td>
<td>Host interface (receiver)</td>
<td>Brown</td>
<td>43 / 34 (TxD Host)</td>
</tr>
<tr>
<td>3</td>
<td>TxD (RS-232)</td>
<td>Host interface (sender)</td>
<td>Blue</td>
<td>44 / 35 (RxD Host)</td>
</tr>
<tr>
<td>4</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>5</td>
<td>GND</td>
<td>Ground</td>
<td>Black</td>
<td>42 / 36 (GND)</td>
</tr>
<tr>
<td>6 ... 9</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

4.4.8 RFU620-101xx (Ethernet version) and RFU620-104xx (Serial version):
CDB620-001 connection module to CAN network

CAN data cable no. 6021166 (5 m)

Ambient temperature range:
Stationary installation: –40 °C to +70°C, mobile installation: –20 °C to +70°C

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal</th>
<th>Funktion</th>
<th>Color of lead</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Shield</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>2</td>
<td>DC +24 V</td>
<td>Supply voltage</td>
<td>Red</td>
</tr>
<tr>
<td>3</td>
<td>GND</td>
<td>Ground</td>
<td>Black</td>
</tr>
<tr>
<td>4</td>
<td>CAN H</td>
<td>CAN-Bus (IN/OUT)</td>
<td>White</td>
</tr>
<tr>
<td>5</td>
<td>CAN L</td>
<td>CAN-Bus (IN/OUT)</td>
<td>Blue</td>
</tr>
</tbody>
</table>
4.5 Notes on the electrical installation of the RFU620 at an ambient temperature below 0 °C

All RFU620 variants can be operated at ambient temperatures between +50 °C and –25 °C. The RFU620-101xx (Ethernet version) with an integrated heater has an additional deep-freeze range down to –40 °C.

4.5.1 Prerequisites

- For use outdoors, use suitable weather protection, which prevents the device from heating up due to direct sunlight during the summer and protects the device from being cooled by the wind during the winter.

- Supply voltage:

<table>
<thead>
<tr>
<th>Variant</th>
<th>Supply voltage</th>
<th>Ambient temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>RFU620-104xx</td>
<td>DC 10 V ... 30 V</td>
<td>+50 °C ... –25 °C</td>
</tr>
<tr>
<td>RFU620-101xx</td>
<td>DC 10 V ... 30 V</td>
<td>+50 °C ... –20 °C</td>
</tr>
<tr>
<td></td>
<td>DC 20 V ... 30 V</td>
<td>–20 °C ... –40 °C</td>
</tr>
<tr>
<td>RFU620-105xx</td>
<td>DC 48 V or 57 V</td>
<td>+50 °C ... –25 °C</td>
</tr>
</tbody>
</table>

- Use SICK standard cables for the ambient temperature range specified, also see Chapter 4.4 Pin assignments and lead color assignments of cables, Page 25.

Only carry out connection work in ambient temperatures ranging from 0 °C to +50 °C. The connecting cables must be fixed in place.

- All cables connected to the device are locked (RFU620-101xx/-105xx) or male connector on the connecting cable fixed (RFU620-104xx). Yellow protective caps or plugs are screwed onto any electrical connections that are not in use.

- The RFU620 may only be operated in ambient temperatures below 0 °C when no mounting or connection work is being carried out.

4.5.2 Behavior of the device after switch-on and in regular operation

Following application of the supply voltage and initialization, all variants of the RFU620 can immediately be addressed by the SOPAS ET configuration software.

<table>
<thead>
<tr>
<th>Variant</th>
<th>Internal temperature of housing</th>
<th>Behavior after switch-on</th>
</tr>
</thead>
<tbody>
<tr>
<td>RFU620-104xx</td>
<td>Below –25 °C</td>
<td>&quot;Ready&quot; LED continuously flashes yellow. Device is not operational as –25 °C is below the specified minimum limit value.</td>
</tr>
<tr>
<td>RFU620-105xx</td>
<td>–25 °C ... –20 °C</td>
<td>&quot;Ready&quot; LED continuously flashes green (warm-up phase). Device is not operational (communication channel still disabled) until the internal temperature has increased to –20 °C as a result of the heat generated by the electronics. Duration approx. 1 min.</td>
</tr>
<tr>
<td>RFU620-101xx</td>
<td>Below –40 °C</td>
<td>&quot;Ready&quot; LED continuously flashes yellow. Device is not operational as –40 °C is below the specified minimum limit value.</td>
</tr>
<tr>
<td>RFU620-104xx</td>
<td>–40 °C ... –20 °C</td>
<td>&quot;Ready&quot; LED continuously flashes green (heat-up phase). Device is not operational (communication channel still disabled) until the internal temperature has increased to –20 °C by the heater. Max. duration 5 min.</td>
</tr>
<tr>
<td>RFU620-105xx</td>
<td>From –20 °C</td>
<td>&quot;Ready&quot; LED permanently lights up green. The device has started regular operation.</td>
</tr>
</tbody>
</table>
Once the supply voltage has been applied, the device uses integrated temperature sensors to measure its internal temperature. This occurs on power-up for all variants.

**RFU620-101xx**

In addition, the RFU620-101xx has an integrated heater that monitors its internal temperature at regular intervals during operation. The device switches the heater off once it has heated up to +5 °C and switches it back on if the internal temperature falls to –15 °C. Circuit protection prevents the heater from overheating.

**Addition to the RFU62x operating instructions:**

Status indicators on the first display level

<table>
<thead>
<tr>
<th>Display</th>
<th>LED</th>
<th>Color</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ready</td>
<td>☐</td>
<td>Yellow</td>
<td>RFU620-104xx/-105xx: internal temperature below –25 °C&lt;br&gt;RFU620-101xx: internal temperature below –40 °C.&lt;br&gt;Device is not operational.</td>
</tr>
</tbody>
</table>

[LED flashes]
4.6 Prerequisites for the safe operation of the RFU620 in a system.

The RFU620 is designed and tested for electrical safety according to EN 60950-1: 2006-04/A11: 2009-03/A1: 2010-03/A12: 2011-02. It is connected to the peripheral devices (power supply, reading pulse sensor(s), PLC, Host etc.) via shielded cables. The cable shield, for example, for the data cable rests against the metal housing of the RFU620. The device can either be grounded through the cable shield or through one of the threaded blind holes.

If the peripheral devices have metal housings and if the cable shields also lie on their housings, it is assumed that all devices involved in the installation have the same ground potential.

This is achieved for instance by complying with the following conditions:

- Mounting the devices on conductive metal surfaces
- Correctly grounding the devices and metal surfaces in the system
- If necessary, low-impedance and current carrying equipotential bonding between areas with different ground potentials

If these conditions are not met, e.g. on devices in a widely distributed system over several buildings, potential equalization currents may, due to different ground potentials, flow along the cable shields between the devices, which can lead to hazards.

---

**DANGER**

Risk of injury or risk of damage due to electrical current!

Incorrect grounding of the RFU620 can, due to equipotential bonding currents between the RFU620 and other grounded devices in the system, place the metal housing under a dangerous voltage, cause malfunction and destruction of devices as well as damage to the cable shielding through heating, and thus cause cable fires.

- Work on the electrical system must only be performed by qualified electricians.
- Ensure ground potential at all grounding points.
- In the event of damage to the cable insulation, immediately switch off the power supply and have the damage repaired.
- Where local conditions are unfavorable and thus do not meet conditions for a safe earthing method (same ground potential at all grounding points), take measures in accordance with the following explanations.
**Remedial measures**

The most common solution to prevent potential equalization currents on cable shields is to ensure low-impedance and current carrying equipotential bonding. If this is not possible, the following solution approaches serve as a suggestion.

**Important!** We expressly advise against opening up the cable shields. Doing this means that the EMC limit values can no longer be complied with and that the safe operation of the device data interfaces can no longer be guaranteed.

**a) Measures for widely distributed system installations**

On widely distributed system installations with correspondingly large potential differences, we recommend setting up local islands and connecting them using commercially available **electro-optical signal isolators**. This measure achieves a high degree of resistance to electromagnetic interference while at the same time complying with all the requirements of EN 60950-1.

The ground loop is isolated by using the electro-optical signal isolator between the islands. Within the islands, a stable equipotential bonding prevents equalizing currents at the cable shields.
b) Measures for small system installations

For smaller installations with only slight potential differences, insulated installation of the RFU620 and of peripheral devices may be a sufficient solution.

Even in the event of large differences in the ground potential, ground loops are effectively prevented, meaning that equalizing currents can no longer flow via the cable shields and metal housing.

**Important!**

The power supply for the RFU620 and the connected peripheral devices must also guarantee the required level of insulation.

Under certain circumstances, a tangible potential can develop between the insulated metal housings and the local ground potential.

**Special national regulations for Sweden and Norway**

**Varning och atjarder**

Utrustning som är kopplad till skyddsjord via jordat vagguttag och/eller via annan utrustning och samtidigt är kopplad till kabel-TV nat kan i vissa fall medföra risk för brand.

- For att undvika detta skall vid anslutning av utrustningen till kabel-TV nat galvanisk isolator finnas mellan utrustningen och kabel-TV natet.

**Advarsel og tiltaker**

Utstyr som er koplet til beskyttelsesjord via nettoplug og/eller via annet jordtilkoplet utstyr - og er tilkoplet et kabel - TV nett, kan forarsake brannfare.

- For å unngå dette skal det ved tilkopling av utstyret til kabel-TV nettet installeres en galvanisk isolator mellom utstyret og kabel-TV nettet.

**Corresponding English translation**

Devices which are connected to the electrical system PE of the building via a mains connection or other devices with a connection to the PE, and which are connected to a cable distribution system with coaxial cables, can under certain circumstances cause a risk of fire.

- Connections to a cable distribution system must therefore be made such that electrical insulation is offered below a certain frequency range (galvanic separating link).
4.7 Installation steps for RFU620-101xx (Ethernet version) and RFU620-104xx (Serial version)

4.7.1 Block diagram: wiring the optional CDB620-001 or CDM420-0001 connection module

The commissioning and configuration of the connection module as well as the technical data are described in the:

- "CDB620-001 connection module" operating instructions (no. 8012119, German + English version) e.g. as PDF in the web via [www.mysick.com/de/CDB](http://www.mysick.com/de/CDB)
- "CDM420-0001 connection module" operating instructions (no. 8010004 German + English version) e.g. as PDF in the web via [www.mysick.com/de/CDM](http://www.mysick.com/de/CDM)

The documents are also supplied in printed form with the relating connection module.
**Important! Wiring the Signals without SICK Connection Module**

If a customer-specific connection unit is used, the wiring in principle of the data interfaces (serial and CAN) and switching interfaces signals can be designed according to the following wiring diagrams for the SICK connection modules.

- **RFU620-101xx (Ethernet version):**
  If the 15-pin D-Sub HD male connector of the adapter cable, e.g. no. 2055419 (2 m), is not compatible with the customer-specific connection unit, the adapter cable e.g. no. 6042772 (3 m) with open leads is available.
  See Chapter 4.4.2 RFU620-101xx (Ethernet version): "Power/AUX/CAN/I/O" connection to customer-specific connection unit (power supply unit or switching cabinet), Page 26

- **RFU620-104xx (Serial version):**
  If the 15-pin D-Sub HD male connector of the connection cable cannot be used, the adapter cable e.g. no. 2043413 (2 m) with corresponding 15-pin D-Sub HD female connector and open leads is available.
  See Chapter 4.4.6 RFU620-104xx (Serial version): "Power/AUX/CAN/I/O" connection to customer-specific connection unit (power supply unit or switching cabinet), Page 32.

### 4.7.2 Connecting the Supply Voltage

**Note on reverse polarity protected supply voltage for the RFU620**

**NOTICE**

**Risk of damage to the RFU620 due to possible short-circuit!**

The supply voltage input for the RFU620 is designed with internal circuit protection to provide reverse polarity protection. The internal ground of the RFU620 has a direct galvanic connection to the metal housing of the RFU620 due to reasons relating to high frequency.

If the supply voltage has the incorrect polarity, this will not cause any damage provided that the RFU620 is not connected (by either other cables or its housing) to other peripheral devices that use the same grounding point.

If, however, the RFU620 has already established a connection to other devices linked to the same ground (e.g., chassis), reverse polarity of the RFU620's supply voltage can result in a short-circuit and damage to the RFU620.

The RFU620 requires a power supply unit with the following characteristics:

- **Supply voltage DC 10 V to 30 V accord. to SELV (safety extra-low voltage).**
  The power supply unit must satisfy the requirements of SELV in accordance with the currently applicable EN 60950-1.

- **If the RFU620-101xx is used at an ambient temperature from –20 °C to –40 °C:** limited power supply voltage range of **DC 20 V** to 30 V

- **The power source must be able to provide the following power at maximum radiation power of the RFU620:**
If the optional CDB620-001 or CDM420-0001 connection module is used:
additional 0.5 W output power when the optional CMC600 parameter cloning module is also used

Protection of Supply Cables
To ensure protection against short-circuits or overload in the supply cables from the customer’s power system, the lead cross sections used have to be selected and protected according to the national standards.

The supply voltage is fed via the connection module, please see:

<table>
<thead>
<tr>
<th>Connection module</th>
<th>Interface</th>
<th>Chapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDB620-001</td>
<td>Supply voltage</td>
<td>Chapter 4.8.2 Wiring the supply voltage in the CDB620-001 connection module, Page 46</td>
</tr>
<tr>
<td>CDM420-0001</td>
<td>Supply voltage</td>
<td>Chapter 4.9.2 Wiring the supply voltage in the CDM420-0001 connection module, Page 62</td>
</tr>
</tbody>
</table>

The connection modules have each one fuse (0.8 A slow blow) in the electrical circuit downstream of the S1 switch.

Wiring without SICK connection module
The RFU620 must be protected using a separate, slow-blow fuse (max. 0.8 A) in the supplying circuit at the start of the supply cable.
4.7.3 Wiring the data interface

**Wiring the Ethernet interface (RFU620-101xx)**

1. Connect the RFU620 to the PC via an Ethernet cable (patch 1:1).
2. Set up communication via SOPAS ET configuration software.

**Important!** The Ethernet interface for the RFU620 has an Auto-MDIX function. This automatically adjusts the transmission speed as well as any necessary crossover connections.

**Wiring serial data interfaces (RFU620-101xx/RFU620-104xx)**

The maximum data transmission rate for the serial interface depends on the cable length and on the type of interface. The following recommendations apply:

<table>
<thead>
<tr>
<th>Type of interface</th>
<th>Data transmission rate</th>
<th>Distance to the target computer (Host)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RS-232</td>
<td>Up to 19.2 kBd</td>
<td>Max. 10 m</td>
</tr>
<tr>
<td></td>
<td>38.4 kBd ... 57.6 kBd</td>
<td>Max. 3 m</td>
</tr>
<tr>
<td></td>
<td>115.2 kBd ... 500 kBd</td>
<td>Max. 2 m</td>
</tr>
<tr>
<td>RS-422/485*)</td>
<td>Up to 38.4 kBd</td>
<td>Max. 1.200 m</td>
</tr>
<tr>
<td></td>
<td>38.4 kBd ... 57.6 kBd</td>
<td>Max. 500 m</td>
</tr>
<tr>
<td></td>
<td>57.6 kBd ... 500 kBd</td>
<td>Max. 10 m</td>
</tr>
</tbody>
</table>

*) RS-422/485 suitable cable and the according termination as per specification.

**NOTICE**

Damage to the internal interface modules!

If the serial data interfaces are wired incorrectly, then electronic components of the RFU620 could get damaged.

- Observe the information on wiring.
- Carefully check the wiring prior to switching on the RFU620.

The wiring is done using the connection module, please see:

<table>
<thead>
<tr>
<th>Connection module</th>
<th>Data interface</th>
<th>Chapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDB620-001</td>
<td>RS-232</td>
<td>Chapter 4.8.3 Wiring the RS-232 serial host data interface in the CDB620-001 connection module, Page 47</td>
</tr>
<tr>
<td></td>
<td>RS-422</td>
<td>Chapter 4.8.4 Wiring the RS-422 serial host data interface in the CDB620-001 connection module, Page 48</td>
</tr>
<tr>
<td></td>
<td>RS-485</td>
<td>Chapter 4.8.5 Wiring the RS-485 serial host data interface in the CDB620-001 connection module, Page 50</td>
</tr>
<tr>
<td>CDM420-0001</td>
<td>RS-232</td>
<td>Chapter 4.9.3 Wiring the RS-232 serial host data interface in the CDM420-0001 connection module, Page 63</td>
</tr>
<tr>
<td></td>
<td>RS-422</td>
<td>Chapter 4.9.4 Wiring the RS-422 serial host data interface in the CDM420-0001 connection module, Page 64</td>
</tr>
<tr>
<td></td>
<td>RS-485</td>
<td>Chapter 4.9.5 Wiring the RS-485 serial host data interface in the CDM420-0001 connection module, Page 66</td>
</tr>
</tbody>
</table>

**Recommendation**

Use shielded data cables (twisted pair leads).

To prevent interference factors, do not lay data cables over a longer route in parallel with power supply cables and motor cables, in cable channels, for example.
Termination of the RS-422 or RS-485 data interface (RFU620-104xx)
Termination can be implemented in the CDB620-001 or CDM420-0001 connection module using switches. See “CDB620 connection module” operating instructions (no. 8012119) respectively “CDM420-0001 connection module” operating instructions (no. 8010004).

4.7.4 Wiring the CAN interface (RFU620-101xx/RFU620-104xx)
The wiring is done using the connection module, please see:

<table>
<thead>
<tr>
<th>Connection module</th>
<th>Data interface</th>
<th>Chapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDB620-001</td>
<td>CAN</td>
<td>Chapter 4.8.6 Wiring the CAN interface in the CDB620-001 connection module, Page 52</td>
</tr>
<tr>
<td>CDM420-0001</td>
<td>CAN</td>
<td>Chapter 4.9.6 Wiring the CAN interface in the CDM420-0001 connection module, Page 68</td>
</tr>
</tbody>
</table>

4.7.5 Wiring the digital switching inputs (RFU620-101xx/RFU620-104xx)
Physical switching inputs on the RFU620
The two physical switching inputs "Sensor 1" and "Sensor 2" of the RFU620 can be used for starting and/or ending the clock reading pulse or for feeding an incremental signal.
The RFU620-105xx (PoE version) has no switching inputs.

Expansion: Additional logical switching inputs converted to physical "external" switching inputs in the optional connection module
Thanks to the optional CMC600 parameter memory module in combination with the CDB620-001 or CDM420-0001 connection module, the two additional switching inputs "External input 1" and "External input 2" are available on the terminals in the connection module.

Important! These two external switching inputs are not suitable for time critical applications.
The wiring of the switching inputs is done using the connection module, please see:

<table>
<thead>
<tr>
<th>Connection module</th>
<th>Switching input</th>
<th>Chapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDB620-001</td>
<td>Sensor 1</td>
<td>Chapter 4.8.7 Wiring the &quot;Sensor 1&quot; switching input in the CDB620-001 connection module, Page 53</td>
</tr>
<tr>
<td></td>
<td>Sensor 2</td>
<td>Chapter 4.8.8 Wiring the &quot;Sensor 2&quot; switching input in the CDB620-001 connection module, Page 54</td>
</tr>
<tr>
<td></td>
<td>External input 1 („In 1“)</td>
<td>Chapter 4.8.9 Wiring the &quot;External input 1&quot; switching input in the CDB620-001 connection module, Page 55</td>
</tr>
<tr>
<td></td>
<td>External input 2 („In 2“)</td>
<td>Chapter 4.8.10 Wiring the &quot;External input 2&quot; switching input in the CDB620-001 connection module, Page 56</td>
</tr>
<tr>
<td>CDM420-0001</td>
<td>Sensor 1</td>
<td>Chapter 4.9.7 Wiring the &quot;Sensor 1&quot; switching input in the CDM420-0001 connection module, Page 69</td>
</tr>
<tr>
<td></td>
<td>Sensor 2</td>
<td>Chapter 4.9.8 Wiring the &quot;Sensor 2&quot; switching input in the CDM420-0001 connection module, Page 70</td>
</tr>
<tr>
<td></td>
<td>External input 1 („Aux In 1“)</td>
<td>Chapter 4.9.9 Wiring the &quot;External input 1&quot; switching input in the CDM420-0001 connection module, Page 71</td>
</tr>
<tr>
<td></td>
<td>External input 2 („Aux In 2“)</td>
<td>Chapter 4.9.10 Wiring the &quot;External input 2&quot; switching input in the CDM420-0001 connection module, Page 72</td>
</tr>
</tbody>
</table>
4.7.6 Wiring the digital switching outputs (RFU620-101xx/RFU620-104xx)

Physical switching outputs on the RFU620

The two physical switching outputs "Result 1" and "Result 2" of the RFU620 can be allocated independently of each other with various functions for the output of events in the reading process. If the allocated event occurs, the corresponding switching output is live after the end of the reading clock for the selected pulse duration.

The RFU620-105xx (PoE version) has no switching outputs.

Expansion: Additional logical switching outputs converted to physical "external" switching outputs in the optional connection module

Thanks to the optional CMC600 parameter cloning module in combination with the CDB620-001 or CDM420-0001 connection module, the two additional switching outputs "External output 1" and "External output 2" are available on the terminals in the connection module.

Important! These two external switching outputs are not suitable for time critical applications.

The wiring of the switching outputs is done using the connection module, please see:

<table>
<thead>
<tr>
<th>Connection module</th>
<th>Switching output</th>
<th>Chapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDB620-001</td>
<td>Result 1</td>
<td>Chapter 4.8.11 Wiring the &quot;Result 1&quot; switching output in the CDB620-001 connection module, Page 57</td>
</tr>
<tr>
<td></td>
<td>Result 2</td>
<td>Chapter 4.8.12 Wiring the &quot;Result 2&quot; switching output in the CDB620-001 connection module, Page 58</td>
</tr>
<tr>
<td></td>
<td>External Output 1</td>
<td>Chapter 4.8.13 Wiring the &quot;External output 1&quot; switching output in the CDB620-001 connection module, Page 59</td>
</tr>
<tr>
<td></td>
<td>(.Out 1&quot;)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>External Output 2</td>
<td>Chapter 4.8.14 Wiring the &quot;External output 2&quot; switching output in the CDB620-001 connection module, Page 60</td>
</tr>
<tr>
<td></td>
<td>(.Out 2&quot;)</td>
<td></td>
</tr>
<tr>
<td>CDM420-0001</td>
<td>Result 1</td>
<td>Chapter 4.9.11 Wiring the &quot;Result 1&quot; switching output in the CDM420-0001 connection module, Page 73</td>
</tr>
<tr>
<td></td>
<td>Result 2</td>
<td>Chapter 4.9.12 Wiring the &quot;Result 2&quot; switching output in the CDM420-0001 connection module, Page 74</td>
</tr>
<tr>
<td></td>
<td>External Output 1</td>
<td>Chapter 4.9.13 Wiring the &quot;External output 1&quot; switching output in the CDM420-0001 connection module, Page 75</td>
</tr>
<tr>
<td></td>
<td>(.Aux Out 1&quot;)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>External Output 2</td>
<td>Chapter 4.9.14 Wiring the &quot;External output 2&quot; switching output in the CDM420-0001 connection module, Page 76</td>
</tr>
<tr>
<td></td>
<td>(.Aux Out 2&quot;)</td>
<td></td>
</tr>
</tbody>
</table>

Important! Capacitive loads on the switching outputs have an effect on the switch-on and switch-off behavior. The maximum capacity of 100 nF is a limit value.
4.8 Using the CDB620-001 connection module

4.8.1 Wiring overview (one switching input used)

VS = DC 10 V ... 30 V on terminal \( U_{IN} \), \( U_{IN}^* \) after fuse F and switch S1.

\( V_s = \) DC 10 V ... 30 V if the RFU620-101xx is used at an ambient temperature from –20 °C to –40 °C.

---

* An optional CMC600 parameter cloning module is required to provide the additional switching inputs and outputs.

---

*) DC 20 V to 30 V if the RFU620-101xx is used at an ambient temperature from –20 °C to –40 °C.
4.8.2 Wiring the supply voltage in the CDB620-001 connection module

**Switch S1:**

**ON:**
- Power supply voltage $U_{\text{IN}}$ switched to $U_{\text{IN}}^*$ via fuse to CDB620-001 and RFU620-101xx/-104xx.
- $U_{\text{IN}}^*$ additionally available on terminals 11 and 14.

**OFF:**
- CDB620-001 and RFU620-101xx/-104xx disconnected from power supply voltage.
- Recommended position during all electrical installation work.

**Pin and wire color assignment of prefabricated cables for RFU620-101xx**

<table>
<thead>
<tr>
<th>Signal</th>
<th>M12 female connector, 17-pin</th>
<th>D-Sub HD male connector, 15-pin</th>
<th>M12 female connector, 17-pin</th>
<th>Open end*, 17 cores</th>
<th>Open end*, 17 cores</th>
<th>Open end*, 17 cores</th>
<th>Open end*, 2 core</th>
</tr>
</thead>
<tbody>
<tr>
<td>$V_s$</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>Blue</td>
<td>Brown</td>
<td>White</td>
<td>Blue</td>
</tr>
<tr>
<td>GND</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>Brown</td>
<td>Blue</td>
<td>Gray</td>
<td>Brown</td>
</tr>
</tbody>
</table>

1) Adapter cable no. 2056184 (0.35 m), no. 2049764 (0.9 m), no. 2055419 (2 m), no. 2055420 (3 m), no. 2055859 (5 m).
2) Adapter cable, suitable for drag chain use, no. 2061480 (2 m), no. 2061605 (3 m), no. 2061481 (5 m).
3) Adapter cable no. 6042772 (3 m), no. 6042773 (5 m), no. 6048817 (10 m).
4) Adapter cable ECOLAB, suitable for drag chain use, no. 2070425 (3 m), no. 2070426 (5 m), no. 2070427 (10 m).
5) Adapter cable, suitable for drag chain use no. 6045141 (5 m).
6) Adapter cable no. 6048319 (10 m).

**Pin and wire color assignment of prefabricated cables for RFU620-104xx**

<table>
<thead>
<tr>
<th>Signal</th>
<th>D-Sub HD female connector, 15-pin</th>
<th>Open end, 15 cores</th>
</tr>
</thead>
<tbody>
<tr>
<td>$V_s$</td>
<td>1</td>
<td>Red</td>
</tr>
<tr>
<td>GND</td>
<td>5</td>
<td>Black</td>
</tr>
</tbody>
</table>

7) Adapter cable no. 2043413 (2 m).
### 4.8.3 Wiring the RS-232 serial host data interface in the CDB620-001 connection module

#### RFU620-101xx/-104xx

- **M12 male connector, 17-pin, A-coded**

- **D-Sub HD female connector, 15-pin**

#### CDB620-001

- **Shield**

#### Host

- **RS-232**

**Pin and wire color assignment of prefabricated cables for RFU620-101xx**

<table>
<thead>
<tr>
<th>Signal</th>
<th>Adapter cable&lt;sup&gt;1)&lt;/sup&gt;</th>
<th>Adapter cable&lt;sup&gt;2)&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M12 female connector, 17-pol.</td>
<td>D-Sub HD male connector, 15-pin</td>
</tr>
<tr>
<td></td>
<td>M12 female connector, 17-pin</td>
<td>Open end&lt;sup&gt;3)&lt;/sup&gt;, 17 cores</td>
</tr>
<tr>
<td>TxD</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>RxD</td>
<td>12</td>
<td>7</td>
</tr>
<tr>
<td>GND</td>
<td>1</td>
<td>5</td>
</tr>
</tbody>
</table>

1. Adapter cable no. 2056184 (0.35 m), no. 2049764 (0.9 m), no. 2055419 (2 m), no. 2055420 (3 m), no. 2055859 (5 m).
2. Adapter cable, suitable for drag chain use, no. 2061480 (2 m), no. 2061605 (3 m), no. 2061481 (5 m).
3. Adapter cable no. 6042772 (3 m), no. 6042773 (5 m), no. 6048817 (10 m).
4. Adapter cable ECOLAB, suitable for drag chain use, no. 2070425 (3 m), no. 2070426 (5 m), no. 2070427 (10 m).
5. Adapter cable, suitable for drag chain use no. 6045141 (5 m).

**Pin and wire color assignment of prefabricated cables for RFU620-104xx**

<table>
<thead>
<tr>
<th>Signal</th>
<th>Adapter cable&lt;sup&gt;5)&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>D-Sub HD female connector, 15-pin</td>
</tr>
<tr>
<td>TxD</td>
<td>9</td>
</tr>
<tr>
<td>RxD</td>
<td>7</td>
</tr>
<tr>
<td>GND</td>
<td>5</td>
</tr>
</tbody>
</table>

6. Adapter cable no. 2043413 (2 m)
4.8.4 Wiring the RS-422 serial host data interface in the CDB620-001 connection module

Pin and wire color assignment of prefabricated cables for RFU620-101xx

<table>
<thead>
<tr>
<th>Signal</th>
<th>Adapter cable¹⁾</th>
<th>Adapter cable²⁾</th>
<th>Adapter cable³⁾</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M12 female connector, 17-pin</td>
<td>D-Sub HD male connector, 15-pin</td>
<td>M12 female connector, 17-pin</td>
</tr>
<tr>
<td>TD+</td>
<td>5</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>TD−</td>
<td>6</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>RD+</td>
<td>11</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>RD−</td>
<td>12</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td>GND</td>
<td>1</td>
<td>5</td>
<td>1</td>
</tr>
</tbody>
</table>

1) Adapter cable no. 2056184 (0.35 m), no. 2049764 (0.9 m), no. 2055419 (2 m), no. 2055859 (5 m).
2) Adapter cable, suitable for drag chain use, no. 2061480 (2 m), no. 2061605 (3 m), no. 2061481 (5 m).
3) Adapter cable no. 6042772 (5 m), no. 6048817 (10 m).
4) Adapter cable ECOLAB, suitable for drag chain use, no. 2070425 (3 m), no. 2070426 (5 m), no. 2070427 (10 m).
5) Adapter cable, suitable for drag chain use no. 6045141 (5 m).

Pin and wire color assignment of prefabricated cables for RFU620-104xx

<table>
<thead>
<tr>
<th>Signal</th>
<th>Adapter cable⁴⁾</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>D-Sub HD female connector, 15-pin</td>
</tr>
<tr>
<td>TD+</td>
<td>8</td>
</tr>
<tr>
<td>TD−</td>
<td>9</td>
</tr>
<tr>
<td>RD+</td>
<td>6</td>
</tr>
<tr>
<td>RD−</td>
<td>7</td>
</tr>
<tr>
<td>GND</td>
<td>5</td>
</tr>
</tbody>
</table>

1) Adapter cable no. 2043413 (2 m)

S7: Term 485 Switch to ON if the RS-422 receiver in the RFU620 has to be terminated to improve the noise ratio of the on the cable.
Note on using the RS-422 data interface of the RFU620-101xx/-104xx

- The relevant interface drivers for the RFU620 comply with the standard for RS-422 and RS-485
- Activation in the RFU620 with the SOPAS ET configuration software:
  SERIAL HOST INTERFACE/HARDWARE/RS-422/485 4 WIRE (POINT TO POINT) device page
- The connection shown above is configured for operation of the host with permanently activated drivers (often described as "RS-422 operation"). I.e., not RS-485 bus operation.
4.8.5 Wiring the RS-485 serial host data interface in the CDB620-001 connection module

---

**Pin and wire color assignment of prefabricated cables for RFU620-101xx**

<table>
<thead>
<tr>
<th>Signal</th>
<th>Adapter cable 1</th>
<th>Adapter cable 2</th>
<th>Adapter cable 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M12 female connector, 17-pin</td>
<td>D-Sub HD male connector, 15-pin</td>
<td>M12 female connector, 17-pin</td>
</tr>
<tr>
<td>TD+</td>
<td>5</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>T+</td>
<td>33</td>
<td>43</td>
<td>485</td>
</tr>
<tr>
<td>TD‒</td>
<td>6</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>R+</td>
<td>34</td>
<td>43</td>
<td>485</td>
</tr>
<tr>
<td>RD+</td>
<td>11</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>RD‒</td>
<td>12</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td>GND</td>
<td>1</td>
<td>5</td>
<td>1</td>
</tr>
</tbody>
</table>

1) Adapter cable no. 2056184 (0.35 m), no. 2049764 (0.9 m), no. 2055419 (2 m), no. 2055420 (3 m), no. 2055859 (5 m).
2) Adapter cable, suitable for drag chain use, no. 2061480 (2 m), no. 2061605 (3 m), no. 2061481 (5 m).
3) Adapter cable no. 6042772 (3 m), no. 6042773 (5 m), no. 6048817 (10 m).
4) Adapter cable ECOLAB, suitable for drag chain use, no. 2070425 (3 m), no. 2070426 (5 m), no. 2070427 (10 m).
5) Adapter cable, suitable for drag chain use no. 6045141 (5 m).

**Pin and wire color assignment of prefabricated cables for RFU620-104xx**

<table>
<thead>
<tr>
<th>Signal</th>
<th>Adapter cable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>D-Sub HD female connector, 15-pin</td>
</tr>
<tr>
<td>TD+</td>
<td>8 Light gray or turquoise</td>
</tr>
<tr>
<td>TD‒</td>
<td>9 Green</td>
</tr>
<tr>
<td>RD+</td>
<td>6 Light blue</td>
</tr>
<tr>
<td>RD‒</td>
<td>7 Blue</td>
</tr>
<tr>
<td>GND</td>
<td>5 Black</td>
</tr>
</tbody>
</table>

6) Adapter cable no. 2043413 (2 m)
Note on using the RS-485 data interface of the RS-485 des RFU620-101xx/-104xx

- The relevant interface drivers for the RFU620 comply with the standard for RS-422 and RS-485
- This operating mode is only permitted if all connected devices (RFU620 and host) use a corresponding RS-485 protocol
- Activation in the RFU620 with the SOPAS ET configuration software: SERIAL HOST INTERFACE/HARDWARE/RS-485 4 WIRE (BUS) device page
- This configuration is not permitted in the standard data output/protocol for the RFU620. In case of doubt, contact SICK Service.
4.8.6 Wiring the CAN interface in the CDB620-001 connection module

(RFU620-101xx only)

Connection of power supplies as well as of reading clock sensor e.g. to the master here not shown.

Connection cable¹

1) Adapter cables for RFU620-101xx:
   - no. 2056184 (0.35 m)
   - no. 2049764 (0.9 m)
   - no. 2055419 (2 m)
   - no. 2055420 (3 m)
   - no. 2055859 (5 m)

Alternative connection module:

GN = Device number

(max. 32 participants)
GN = Device number
4.8.7 Wiring the "Sensor 1" switching input in the CDB620-001 connection module

**a) Sensor supplied by CDB620-001**

- **e.g. photo-electric switch**
- **CDB620-001**
- **RFU620-101xx/-104xx**
- **PNP sensor**
- **M12 male connector, 17-pin, A-coded (RFU620-101xx)**

- **Pin and wire color assignment of prefabricated cables for RFU620-101xx**

<table>
<thead>
<tr>
<th>Signal</th>
<th>Adapter cable&lt;sup&gt;1)2)&lt;/sup&gt;</th>
<th>Adapter cable&lt;sup&gt;3)4)5)&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>V&lt;sub&gt;n&lt;/sub&gt;</td>
<td>2 1 2 Blue Brown White</td>
<td>1 5 1 Brown Blue Gray</td>
</tr>
<tr>
<td>Sensor 1</td>
<td>10 14 10 Purple Purple Brown-green</td>
<td></td>
</tr>
<tr>
<td>SensGND</td>
<td>9 15 9 Red White-black White-yellow</td>
<td></td>
</tr>
<tr>
<td>GND</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

1) Adapter cable no. 2056184 (0.35 m), no. 2049764 (0.9 m), no. 2055419 (2 m), no. 2055420 (3 m), no. 2055859 (5 m).
2) Adapter cable, suitable for drag chain use, no. 2061481 (2 m), no. 2061605 (3 m), no. 2061481 (5 m).
3) Adapter cable no. 6042772 (3 m), no. 6042773 (5 m), no. 6048817 (10 m).
4) Adapter cable ECOLAB, suitable for drag chain use, no. 2070425 (3 m), no. 2070426 (5 m), no. 2070427 (10 m).
5) Adapter cable, suitable for drag chain use no. 6045141 (5 m).

**b) Sensor connected electrically isolated/externally supplied**

- **e.g. photo-electric switch**
- **CDB620-001**
- **RFU620-104xx: cable male connector**
- **RFU620-101xx: adapter cable, e.g. no. 2055419 (2 m)**

- **Pin and wire color assignment of prefabricated cables for RFU620-104xx**

See Chapter 4.4.6 (Adapter cable no. 2043413)

**c) Switch supplied by CDB620-001**

- **CDB620-001**
- **D-Sub HD female connector, 15-pin**
- **M12 male connector, 17-pin, A-coded (RFU620-101xx)**

**d) Switch connected electrically isolated/externally supplied**

Connect the switch as shown in b)

**Switching behavior**
- Power fed to the input the assigned function, e.g. start of reading clock.
- (default setting: logic not inverted [active high], debouncing 10 ms)

**Features**
- Optodcoupled, reverse polarity protected
- Can be wired with the PNP output of a sensor
- SensGND is the shared isolated ground of all switching inputs

**Electrical values**
- Low: $V_n \leq 2 \text{ V}$; $I_n \leq 0.3 \text{ mA}$
- High: $6 \text{ V} \leq V_n \leq 30 \text{ V}$; $0.7 \text{ mA} \leq I_n \leq 5 \text{ mA}$

Function assignment to "Sensor 1" switching input via SOPAS ("Sensor/Input 1"):  
- Start or stop of reading clock
- Increment input
- If required further functions in the future

**Switch S3: SensGND**
- ON: GND of the sensor connected to GND of CDB620-001/RFU620-101xx/-104xx.
- OFF: GND of the sensor connected to SensGND of CDB620-001/RFU620-101xx/-104xx. (Sensor connected electrically isolated to the CDB620-001/RFU620-101xx/-104xx)

Selected reference potential valid for all switching inputs ("Sensor 1/2" and "In 1/2").
4.8.8 Wiring the "Sensor 2" switching input in the CDB620-001 connection module

a) Sensor supplied by CDB620-001

b) Sensor connected electrically isolated/externally supplied

c) Switch supplied by CDB620-001

d) Switch connected electrically isolated/externally supplied

Connect the switch as shown in b)
4.8.9 Wiring the "External input 1" switching input in the CDB620-001 connection module

a) Sensor supplied by CDB620-001

- e.g. photo-electric switch

b) Sensor connected electrically isolated and externally supplied

- e.g. photo-electric switch

- Connect the switch as shown in b)

Software-controlled, the CMC600 transfers the switching status of its physical "In 1" input automatically via the cable to the serial Aux data interface of the RFU620-101xx/-104xx. The RFU620-101xx/-104xx converts the status internally to its logical "External input 1".

### Ratings for "External input 1" (*"In 1" switching input*)

<table>
<thead>
<tr>
<th>Feature</th>
<th>Electrical values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>( V_{in} \leq 2 ) ( V ), ( I_{in} \leq 0.3 ) mA</td>
</tr>
<tr>
<td>High</td>
<td>( 6 ) ( V \leq V_{in} \leq 30 ) ( V ), (0.7 ) mA ( \leq I_{in} \leq 5 ) mA</td>
</tr>
</tbody>
</table>

Function assignment to "External input 1" via SOPAS:
- Start of reading clock
- Stop of reading clock
- If required further functions in the future

### Switch S3: SGND-GND

ON: GND of the sensor connected to GND of CDB620-001/CMC600.
OFF: Sensor connected electrically isolated to the CDB620-001/CMC600.
Reference potential valid for all switching inputs ("Sensor 1/2" and "In 1/2")
4.8.10 Wiring the "External input 2" switching input in the CDB620-001 connection module

**a) Sensor supplied by CDB620-001**

- **e.g. photo-electric switch**

```
<table>
<thead>
<tr>
<th>CDB620-001</th>
<th>CMC600</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>17</td>
</tr>
<tr>
<td>In 2</td>
<td>U_{in}^{*}</td>
</tr>
<tr>
<td>18</td>
<td>8</td>
</tr>
<tr>
<td>SGND</td>
<td>Shield</td>
</tr>
<tr>
<td>S3 : SGND-GND</td>
<td>S4 : CMC</td>
</tr>
<tr>
<td>ON</td>
<td>OFF</td>
</tr>
<tr>
<td>No</td>
<td>YES</td>
</tr>
</tbody>
</table>
```

\[ U_{in}^{*} = \text{DC 10 V} \ldots \text{30 V} \]
\[ V_{in} = \text{max. 30 V} \]

**b) Sensor connected electrically isolated and externally supplied**

- **e.g. photo-electric switch**

```
<table>
<thead>
<tr>
<th>CDB620-001</th>
<th>CMC600</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>17</td>
</tr>
<tr>
<td>In 2</td>
<td>U_{in}^{*}</td>
</tr>
<tr>
<td>18</td>
<td>8</td>
</tr>
<tr>
<td>SGND</td>
<td>Shield</td>
</tr>
<tr>
<td>S3 : SGND-GND</td>
<td>S4 : CMC</td>
</tr>
<tr>
<td>ON</td>
<td>OFF</td>
</tr>
<tr>
<td>No</td>
<td>YES</td>
</tr>
</tbody>
</table>
```

\[ U_{in}^{*} = \text{DC 10 V} \ldots \text{30 V} \]
\[ V_{in} = \text{max. 30 V} \]

Software-controlled, the CMC600 transfers the switching status of its physical "In 2" input automatically via the cable to the serial Aux data interface of the RFU620-101xx/-104xx. The RFU620-101xx/-104xx converts the status internally to its logical "External input 2".

**Ratings for "External input 2"**

*="In 2" switching input*

- **Power fed to the input starts the assigned function, e.g. stop of reading clock.** (default setting: logic not inverted [active high], debouncing 10 ms)
- **Optodecoupled, reverse polarity protected**
- **Can be wired with the PNP output of a sensor**
- **SensGND is the shared isolated ground of all switching inputs**

**Features**

- Low: \( V_{in} \leq 2 \text{ V} \); \( I_{in} \leq 0.3 \text{ mA} \)
- High: \( 6 \text{ V} \leq V_{in} \leq 30 \text{ V} \); \( 0.7 \text{ mA} \leq I_{in} \leq 5 \text{ mA} \)

**Electrical values**

**Function assignment to "External input 2" via SOPAS:**
- Start of reading clock
- Stop of reading clock
- If required further functions in the future

**Switch S3: SGND-GND**

- **ON:** GND of the sensor connected to GND of CDB620-001/CMC600.
- **OFF:** Sensor connected electrically isolated to the CDB620-001/CMC600.

Reference potential valid for all switching inputs ("Sensor 1/2" and "In 1/2")

**c) Switch supplied by CDB620-001**

```
<table>
<thead>
<tr>
<th>CDB620-001</th>
<th>CMC600</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>17</td>
</tr>
<tr>
<td>In 2</td>
<td>U_{in}^{*}</td>
</tr>
<tr>
<td>18</td>
<td>8</td>
</tr>
<tr>
<td>SGND</td>
<td>Shield</td>
</tr>
<tr>
<td>S3 : SGND-GND</td>
<td>S4 : CMC</td>
</tr>
<tr>
<td>ON</td>
<td>OFF</td>
</tr>
<tr>
<td>No</td>
<td>YES</td>
</tr>
</tbody>
</table>
```

**d) Switch connected electrically isolated and externally supplied**

Connect the switch as shown in b)
4.8.11 Wiring the "Result 1" switching output in the CDB620-001 connection module

**RFU620-104xx:** cable male connector

**RFU620-101xx/-104xx**

![Diagram of electrical connections](image)

**Quenching circuit:** Install an anti-surge diode directly at the load!

### Ratings for "Result 1" switching output

<table>
<thead>
<tr>
<th>Switching behavior</th>
<th>PNP switching against the supply voltage (V_s) (default setting: no function, logic: not inverted [active high])</th>
</tr>
</thead>
</table>
| Features           | - Short-circuit proof + temperature protected  
                     - Galvanically not separate from \(V_s\) |
| Electrical values  | \(0 \leq V_{out} \leq V_s\)  
                     Guaranteed: \((V_s - 1.5 \text{ V}) \leq V_{out} \leq V_s \text{ with } I_{out} \leq 100 \text{ mA}\) |

### Pin and wire color assignment of prefabricated cables for RFU620-101xx

| Signal          | Adapter cable
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M12 female connector, 17-pin</td>
</tr>
<tr>
<td>(V_s)</td>
<td>2</td>
</tr>
<tr>
<td>Result 1</td>
<td>13</td>
</tr>
<tr>
<td>GND</td>
<td>1</td>
</tr>
</tbody>
</table>

1) Adapter cable no. 2056184 (0.35 m), no. 2049764 (0.9 m), no. 2055419 (2 m), no. 2055420 (3 m).
2) Adapter cable no. 2056180 (2 m), no. 2055859 (5 m).
3) Adapter cable no. 6042772 (3 m), no. 6042773 (5 m), no. 6048817 (10 m).
4) Adapter cable ECOLAB, suitable for drag chain use, no. 2070425 (3 m), no. 2070426 (5 m), no. 2070427 (10 m).
5) Adapter cable, suitable for drag chain use no. 6045141 (5 m).

### Pin and wire color assignment of prefabricated cables for RFU620-104xx

| Signal   | Adapter cable
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(V_s)</td>
<td>D-Sub-HD female connector, 15-pin</td>
</tr>
<tr>
<td>Result 1</td>
<td>Red</td>
</tr>
<tr>
<td>GND</td>
<td>Brown</td>
</tr>
</tbody>
</table>

6) Adapter cable no. 2043413 (2 m)
4.8.12 Wiring the "Result 2" switching output in the CDB620-001 connection module

**RFU620-104xx: cable male connector**  
**RFU620-101xx: adapter cable, e.g. no. 2055419 (2 m)**

**CD620-001**

**Load (e.g. PLC)**

*U_in* = DC 10 V ... 30 V

---

**M12 male connector, 17-pin, A-coded (RFU620-101xx)**

**D-Sub HD female connector, 15-pin**

**Pin and wire color assignment of prefabricated cables for RFU620-101xx**

<table>
<thead>
<tr>
<th>Signal</th>
<th>M12 female connector, 17-pin</th>
<th>D-Sub HD male connector, 15-pin</th>
<th>M12 female connector, 17-pin</th>
<th>Open end[^6], 17 cores</th>
<th>Open end[^7], 17 cores</th>
<th>Open end[^8], 17 cores</th>
</tr>
</thead>
<tbody>
<tr>
<td>VS</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>Blue</td>
<td>Brown</td>
<td>White</td>
</tr>
<tr>
<td>GND</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>Brown-green</td>
<td>Brown-green</td>
<td>White-green</td>
</tr>
<tr>
<td>Result 2</td>
<td>14</td>
<td>13</td>
<td>14</td>
<td>Brown-green</td>
<td>Brown-green</td>
<td>White-green</td>
</tr>
</tbody>
</table>

[^1]: Adapter cable no. 2056184 (0.35 m), no. 2049764 (0.9 m), no. 2055419 (2 m), no. 2055420 (3 m), no. 2055859 (5 m).
[^2]: Adapter cable, suitable for drag chain use, no. 2061480 (2 m), no. 2061605 (3 m), no. 2061481 (5 m).
[^3]: Adapter cable no. 6042772 (3 m), no. 6042773 (5 m), no. 6048817 (10 m).
[^4]: Adapter cable ECOLAB, suitable for drag chain use, no. 2070425 (3 m), no. 2070426 (5 m), no. 2070427 (10 m).
[^5]: Adapter cable, suitable for drag chain use no. 6045141 (5 m).

**Pin and wire color assignment of prefabricated cables for RFU620-104xx**

<table>
<thead>
<tr>
<th>Signal</th>
<th>D-Sub-HD female connector, 15-pin</th>
<th>Open end, 15 cores</th>
</tr>
</thead>
<tbody>
<tr>
<td>VS</td>
<td>1</td>
<td>Red</td>
</tr>
<tr>
<td>Result 2</td>
<td>13</td>
<td>Orange</td>
</tr>
<tr>
<td>GND</td>
<td>5</td>
<td>Black</td>
</tr>
</tbody>
</table>

[^6]: Adapter cable no. 2043413 (2 m)
4.8.13 Wiring the "External output 1" switching output in the CDB620-001 connection module

RFU620-
101xx/-104xx

"External output 1"
Serial Aux
(RS-232)

CDB620-001

CMC600

Load (e.g. PLC)

Shield 6

Out 1 23

GND

GND 22

U_{\text{in}*} = \text{DC 10 V} ... \text{30 V}

For inductive load:

Quenching circuit:
Install an anti-surge diode directly at the load!

Ratings for “External output 1” ("Out 1" switching output)

<table>
<thead>
<tr>
<th>Switching behavior</th>
<th>PNP switching against the supply voltage (U_{\text{in}*}) (default setting: no function/disabled, logic: not inverted [active high])</th>
</tr>
</thead>
<tbody>
<tr>
<td>Features</td>
<td>- Short-circuit proof + temperature protected - Galvanically not separate from (U_{\text{in}^*})</td>
</tr>
<tr>
<td>Electrical values</td>
<td>(0 \leq V_{\text{out}} \leq U_{\text{in}^<em>}) Guaranteed: ((U_{\text{in}^</em>} - 1.5 \text{ V}) \leq V_{\text{out}} \leq U_{\text{in}^*}) with (I_{\text{out}} \leq 100 \text{ mA})</td>
</tr>
</tbody>
</table>

The RFU620-101xx/-104xx indicates the switching status of its logical “External output 1” via the serial Aux data interface. Software-controlled, the status is automatically taken over by the CMC600 via the cable and converted to the physical “Out 1” output in the CDB620-001.

The RFU620-101xx/-104xx indicates the switching status of its logical “External output 1” via the serial Aux data interface. Software-controlled, the status is automatically taken over by the CMC600 via the cable and converted to the physical “Out 1” output in the CDB620-001.
4.8.14 Wiring the "External output 2" switching output in the CDB620-001 connection module

Ratings for "External output 2" ("Out 2" switching output)

<table>
<thead>
<tr>
<th>Switching behavior</th>
<th>PNP switching against the supply voltage $U_{in}^*$ (default setting: no function, logic: not inverted [active high])</th>
</tr>
</thead>
<tbody>
<tr>
<td>Features</td>
<td>- Short-circuit proof + temperature protected</td>
</tr>
<tr>
<td></td>
<td>- Galvanically not separate from $U_{in}^*$</td>
</tr>
<tr>
<td>Electrical values</td>
<td>$0 \leq V_{out} \leq U_{in}^<em>$ Guaranteed: $(U_{in}^</em> - 1.5 V) \leq V_{out} \leq U_{in}^*$ with $I_{out} \leq 100 \text{ mA}$</td>
</tr>
</tbody>
</table>

The RFU620-101xx/-104xx indicates the switching status of its logical “External output 2” via the serial Aux data interface. Software-controlled, the status is automatically taken over by the CMC600 via the cable and converted to the physical “Out 2” output in the CDB620-001.
4.9 Using the CDM420-0001 connection module

4.9.1 Wiring overview (one switching input used)

External sensor for reading trigger (e.g., photo-electric switch)

\[ V_s = DC 10 \, V \ldots 30 \, V \]

\[ V_r = DC 10 \, V \ldots 30 \, V \ldots 24 \, V \]

* An optional CMC600 parameter cloning module is required to provide the additional switching inputs and outputs.

*) DC 20 V to 30 V if the RFU620-101xx is used at an ambient temperature from –20 °C to –40 °C.
### Wiring the supply voltage in the CDM420-0001 connection module

**RFU620-101xx/-104xx**

VS = DC 10 V ... 30 V*)

Switch S1:

**ON:**
- Power supply voltage $V_s$ (+24 V) switched to $V_s$ (+24 V*) via fuse to CDM420-0001 and RFU620-101xx/-104xx.
- $V_s$ (+24 V*) additionally available on terminals 29 and 39.

**OFF:**
- CDM420-0001 and RFU620-101xx/-104xx disconnected from power supply voltage.

Recommended position during all electrical installation work.

Pin and wire color assignment of prefabricated cables for RFU620-101xx

<table>
<thead>
<tr>
<th>Signal</th>
<th>M12 female connector, 17-pin</th>
<th>D-Sub HD male connector, 15-pin</th>
<th>M12 female connector, 17-pin</th>
<th>Open end(^b), 17 cores</th>
<th>Open end(^c), 17 cores</th>
<th>Open end(^d), 17 cores</th>
<th>Open end(^e), 2 core</th>
</tr>
</thead>
<tbody>
<tr>
<td>$V_s$</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>Blue</td>
<td>Brown</td>
<td>White</td>
<td>Blue</td>
</tr>
<tr>
<td>GND</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>Brown</td>
<td>Blue</td>
<td>Gray</td>
<td>Brown</td>
</tr>
</tbody>
</table>

1) Adapter cable no. 2056184 (0.35 m), no. 2049764 (0.9 m), no. 2055419 (2 m), no. 2055859 (5 m)
2) Adapter cable, suitable for drag chain use, no. 2061480 (2 m), no. 2061605 (3 m), no. 2061481 (5 m)
3) Adapter cable no. 6042772 (3 m), no. 6042773 (5 m), no. 6048817 (10 m)
4) Adapter cable ECOLAB, suitable for drag chain use, no. 2070425 (3 m), no. 2070426 (5 m), no. 2070427 (10 m)
5) Adapter cable, suitable for drag chain use, no. 6045141 (5 m)
6) Adapter cable no. 6048319 (10 m)

Pin and wire color assignment of prefabricated cables for RFU620-104xx

<table>
<thead>
<tr>
<th>Signal</th>
<th>D-Sub-HD female connector, 15-pin</th>
<th>Open end, 15 cores</th>
</tr>
</thead>
<tbody>
<tr>
<td>$V_s$</td>
<td>1</td>
<td>Red</td>
</tr>
<tr>
<td>GND</td>
<td>5</td>
<td>Black</td>
</tr>
</tbody>
</table>

7) Adapter cable no. 2043413 (2 m)
4.9.3 Wiring the RS-232 serial host data interface in the CDM420-0001 connection module

RFU620-101xx/-104xx

- TxD
- RxD
- GND
- RS-232

CDM420-0001

- T-/TxD
- R-/RxD
- GND
- Shield
- S2: RS 485 ON
- S3: Term 422 ON

RFU620-104xx: cable male connector
RFU620-101xx: adapter cable, e.g. no. 2055419 (2 m)

M12 male connector, 17-pin, A-coded (RFU620-101xx)
D-Sub HD female connector, 15-pin

Pin and wire color assignment of prefabricated cables for RFU620-101xx

<table>
<thead>
<tr>
<th>Signal</th>
<th>Adapter cable 1)</th>
<th>Adapter cable 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M12 female connector, 17-pol.</td>
<td>D-Sub HD male connector, 15-pin</td>
</tr>
<tr>
<td>TxD</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>RxD</td>
<td>12</td>
<td>7</td>
</tr>
<tr>
<td>GND</td>
<td>1</td>
<td>5</td>
</tr>
</tbody>
</table>

1) Adapter cable no. 2056184 (0.35 m), no. 2049764 (0.9 m), no. 2055419 (2 m), no. 2055420 (3 m), no. 2055869 (5 m).
2) Adapter cable, suitable for drag chain use, no. 2061480 (2 m), no. 2061605 (3 m), no. 2061481 (5 m).
3) Adapter cable no. 6042772 (3 m), no. 6042773 (5 m), no. 6048817 (10 m).
4) Adapter cable ECOLAB, suitable for drag chain use, no. 2070425 (3 m), no. 2070426 (5 m), no. 2070427 (10 m).
5) Adapter cable, suitable for drag chain use no. 6045141 (5 m).

Pin and wire color assignment of prefabricated cables for RFU620-104xx

<table>
<thead>
<tr>
<th>Signal</th>
<th>Adapter cable 6)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>D-Sub-HD female connector, 15-pin</td>
</tr>
<tr>
<td>TxD</td>
<td>9</td>
</tr>
<tr>
<td>RxD</td>
<td>7</td>
</tr>
<tr>
<td>GND</td>
<td>5</td>
</tr>
</tbody>
</table>

6) Adapter cable no. 2043413 (2 m)
4.9.4 Wiring the RS-422 serial host data interface in the CDM420-0001 connection module

**RFU620-104xx: cable male connector**
**RFU620-101xx: adapter cable, e.g. no. 2055419 (2 m)**

---

**Pin and wire color assignment of prefabricated cables for RFU620-101xx**

<table>
<thead>
<tr>
<th>Signal</th>
<th>Adapter cable 1)</th>
<th>Adapter cable 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M12 female connector, 17-pin</td>
<td>D-Sub HD male connector, 15-pin</td>
</tr>
<tr>
<td>TD+</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>TD−</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>RD+</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>RD−</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>GND</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Pink</td>
<td>Pink</td>
</tr>
<tr>
<td></td>
<td>Yellow</td>
<td>Yellow</td>
</tr>
<tr>
<td></td>
<td>Gray-pink</td>
<td>Gray-pink</td>
</tr>
<tr>
<td></td>
<td>Red</td>
<td>Red</td>
</tr>
</tbody>
</table>

1) Adapter cable no. 2056184 (0.35 m), no. 2049764 (0.9 m), no. 2055419 (2 m), no. 2055420 (3 m), no. 2055889 (5 m).

2) Adapter cable, suitable for drag chain use, no. 2061480 (2 m), no. 2061605 (3 m), no. 2061481 (5 m).

3) Adapter cable no. 6042772 (3 m), no. 6042773 (5 m), no. 6048817 (10 m).

4) Adapter cable ECOLAB, suitable for drag chain use, no. 2070425 (3 m), no. 2070426 (5 m), no. 2070427 (10 m).

5) Adapter cable, suitable for drag chain use no. 6045141 (5 m).

---

**Pin and wire color assignment of prefabricated cables for RFU620-104xx**

<table>
<thead>
<tr>
<th>Signal</th>
<th>Adapter cable 5)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>D-Sub HD female connector, 15-pin</td>
</tr>
<tr>
<td>TD+</td>
<td>8</td>
</tr>
<tr>
<td>TD−</td>
<td>9</td>
</tr>
<tr>
<td>RD+</td>
<td>6</td>
</tr>
<tr>
<td>RD−</td>
<td>7</td>
</tr>
<tr>
<td>GND</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Light gray or turquoise</td>
</tr>
<tr>
<td></td>
<td>Green</td>
</tr>
<tr>
<td></td>
<td>Light blue</td>
</tr>
<tr>
<td></td>
<td>Blue</td>
</tr>
<tr>
<td></td>
<td>Black</td>
</tr>
</tbody>
</table>

5) Adapter cable no. 2043413 (2 m)
Note on using the RS-422 data interface of the RFU620-101xx/-104xx

- The relevant interface drivers for the RFU620 comply with the standard for RS-422 and RS-485
- Activation in the RFU620 with the SOPAS ET configuration software:
  SERIAL HOST INTERFACE/HARDWARE/RS-422/485 4 WIRE (POINT TO POINT) device page
- The connection shown above is configured for operation of the host with permanently activated drivers (often described as "RS-422 operation"). I.e., not RS-485 bus operation.
4.9.5 Wiring the RS-485 serial host data interface in the CDM420-0001 connection module

Pin and wire color assignment of prefabricated cables for RFU620-101xx

Pin and wire color assignment of prefabricated cables for RFU620-104xx

1) Adapter cable no. 2056184 (0.35 m), no. 2049764 (0.9 m), no. 2055419 (2 m), no. 2055420 (3 m), no. 2055859 (5 m).
2) Adapter cable, suitable for drag chain use, no. 2061480 (2 m), no. 2061605 (3 m), no. 2061481 (5 m).
3) Adapter cable no. 6042772 (3 m), no. 6042773 (5 m), no. 6048817 (10 m).
4) Adapter cable ECOLAB, suitable for drag chain use, no. 2070425 (3 m), no. 2070426 (5 m), no. 2070427 (10 m).
5) Adapter cable, suitable for drag chain use no. 6045141 (5 m).
6) Adapter cable no. 2043413 (2 m)
Note on using the RS-485 data interface of the RS-485 des RFU620-101xx/-104xx

- The relevant interface drivers for the RFU620 comply with the standard for RS-422 and RS-485
- This operating mode is only permitted if all connected devices (RFU620 and host) use a corresponding RS-485 protocol
- Activation in the RFU620 with the SOPAS ET configuration software:
  SERIAL HOST INTERFACE/HARDWARE/RS-485 4 WIRE (BUS) device page
- This configuration is not permitted in the standard data output/protocol for the RFU620. In case of doubt, contact SICK Service
4.9.6 Wiring the CAN interface in the CDM420-0001 connection module

Connection of power supplies as well as of reading clock sensor e.g. to the master here not shown.

1) Connection cables for RFU620-101xx:
   - no. 2056184 (0.35 m)
   - no. 2049764 (0.9 m)
   - no. 2055419 (2 m)
   - no. 2055420 (3 m)
   - no. 2055859 (5 m)
4.9.7 Wiring the "Sensor 1" switching input in the CDM420-0001 connection module

**a) Sensor supplied by CDM420-0001**

**Pin and wire color assignment of prefabricated cables for RFU620-101xx**

<table>
<thead>
<tr>
<th>Signal</th>
<th>Adapter cable</th>
<th>Adapter cable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M12 female connector, 17-pin</td>
<td>D-Sub HD male connector, 15-pin</td>
</tr>
<tr>
<td></td>
<td>M12- female connector, 17-pin</td>
<td>Open end*, 17 cores</td>
</tr>
<tr>
<td></td>
<td>M12- female connector, 17-pin</td>
<td>Open end*, 17 cores</td>
</tr>
<tr>
<td></td>
<td>M12- female connector, 17-pin</td>
<td>Open end*, 17 cores</td>
</tr>
</tbody>
</table>

1) Adapter cable no. 2056184 (0.35 m), no. 2049764 (0.9 m), no. 2055419 (2 m), no. 2055420 (3 m), no. 2055859 (5 m)
2) Adapter cable, suitable for drag chain use, no. 2061480 (2 m), no. 2061605 (3 m), no. 2061481 (5 m)
3) Adapter cable no. 6042772 (3 m), no. 6042773 (5 m), no. 6048817 (10 m)
4) Adapter cable ECOLAB, suitable for drag chain use, no. 2070425 (3 m), no. 20700426 (5 m)
5) Adapter cable, suitable for drag chain use, no. 6045141 (5 m)

**b) Sensor connected electrically isolated/externally supplied**

**Features**
- Optodecoupled, reverse polarity protected
- Can be wired with the PNP output of a sensor
- SensGND reference potential valid for all switching inputs

**Electrical values**
- Low: \( V_i \leq 2 \quad I_{i\text{max}} \leq 0.3 \text{ mA} \)
- High: \( 6 \quad V_i \leq 30 \quad I_{i\text{max}} \leq 0.7 \text{ mA} \)

**Function assignment to “Sensor 1” switching input**
- Via SOPAS (“Sensor/Input 1”):
  - Start or stop of reading clock
  - Increment input
  - If required further functions in the future

**Switching behavior**
- Power fed to the input the assigned function, e.g. start of reading clock.
  (default setting: logic not inverted [active high], debouncing 10 ms)

**c) Switch supplied by CDM420-0001**

**d) Switch connected electrically isolated/externally supplied**

Connect the switch as shown in b)
4.9.8 Wiring the "Sensor 2" switching input in the CDM420-0001 connection module

- **a) Sensor supplied by CDM420-0001**
  
  - e.g. photo-electric switch
  
  - CDM420-0001

- **b) Sensor connected electrically isolated/externally supplied**
  
  - e.g. photo-electric switch

- **c) Switch supplied by CDM420-0001**

- **d) Switch connected electrically isolated/externally supplied**
  
  Connect the switch as shown in b)

---

**Pin and wire color assignment of prefabricated cables for RFU620-101xx**

<table>
<thead>
<tr>
<th>Signal</th>
<th>M12 female connector, 15-pin</th>
<th>M12 female connector, 15-pin</th>
<th>Open end, 17 cores</th>
<th>Open end, 17 cores</th>
<th>Open end, 17 cores</th>
</tr>
</thead>
<tbody>
<tr>
<td>V_s</td>
<td>2</td>
<td>2</td>
<td>Blue</td>
<td>Brown</td>
<td>White</td>
</tr>
<tr>
<td>Sensor 2</td>
<td>15</td>
<td>4</td>
<td>White-yellow</td>
<td>White-yellow</td>
<td>Yellow</td>
</tr>
<tr>
<td>SensGND</td>
<td>9</td>
<td>15</td>
<td>Red</td>
<td>White-black</td>
<td>White-yellow</td>
</tr>
<tr>
<td>GND</td>
<td>1</td>
<td>5</td>
<td>Brown</td>
<td>Blue</td>
<td>Gray</td>
</tr>
</tbody>
</table>

1) Adapter cable no. 2056184 (0.35 m), no. 2049764 (0.9 m), no. 2055419 (2 m), no. 2056420 (3 m), no. 2055859 (5 m)
2) Adapter cable, suitable for drag chain use, no. 2061480 (2 m), no. 2061605 (3 m), no. 2061481 (5 m)
3) Adapter cable no. 6042772 (3 m), no. 6042773 (5 m), no. 6048817 (10 m)
4) Adapter cable ECOLAB, suitable for drag chain use, no. 2070425 (3 m), no. 2070426 (5 m), no. 2070427 (10 m)
5) Adapter cable, suitable for drag chain use, no. 6045414 (5 m)

**See Chapter 4.4.6 (Adapter cable no. 2043413)**

**Switching behavior**

- Power fed to the input the assigned function, e.g. stop of reading clock, (default setting: logic not inverted [active high], debouncing 10 ms)

**Features**

- Optodecoupled, reverse polarity protected
- Can be wired with the PNP output of a sensor
- SensGND reference potential valid for all switching inputs

**Electrical values**

- Low: \( V_s \leq 2 \text{ V} \), \( I_s \leq 0.3 \text{ mA} \)
- High: \( 5 \text{ V} \leq V_s \leq 30 \text{ V} \), \( 0.7 \text{ mA} \leq I_s \leq 5 \text{ mA} \)

**Function assignment to “Sensor 2” switching input via SOPAS (“Sensor/Input 2”):**

- Start or stop of reading clock
- Increment input
- If required further functions in the future

**Switch S6: SensGND**

- ON: GND of the sensor connected to GND of CDM420-0001/RFU620-101xx/-104xx
- OFF: GND of the sensor connected to SensGND of CDM420-0001/RFU620-101xx/-104xx (Sensor connected electrically isolated to the CDM420-0001/RFU620-101xx/-104xx).

Selected reference potential valid for all switching inputs (“Sensor 1/2” and “In 1/2”).
4.9.9 Wiring the "External input 1" switching input in the CDM420-0001 connection module

a) Sensor supplied by CDM420-0001

```
+24 V* = DC 10 V ... 30 V
Vin = max. 30 V
```

b) Sensor connected electrically isolated and externally supplied

```
+24 V* = DC 10 V ... 30 V
Vin = max. 30 V
```

Software-controlled, the CMC600 transfers the switching status of its physical "Aux In 1" input automatically via the cable to the serial Aux data interface of the RFU620-101xx/-104xx. The RFU620-101xx/-104xx converts the status internally to its logical "External input 1".

Ratings for "External input 1" (*"Aux In 1" switching input)

<table>
<thead>
<tr>
<th>Switching behavior</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power fed to the input starts the assigned function, e.g. start of reading clock. (default setting: logic not inverted (active high), debouncing 10 ms)</td>
<td>Optocoupled, reverse polarity protected</td>
</tr>
<tr>
<td>Can be wired with the PNP output of a sensor</td>
<td>SensGND is the shared isolated ground of all switching inputs</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Electrical values</th>
<th>Low: Vin ≤ 2 V; Iin ≤ 0.3 mA</th>
</tr>
</thead>
<tbody>
<tr>
<td>High: 6 V ≤ Vin ≤ 30 V; 0.7 mA ≤ Iin ≤ 5 mA</td>
<td></td>
</tr>
</tbody>
</table>

Function assignment to "External input 1" via SOPAS:
- Start of reading clock
- Stop of reading clock
- If required further functions in the future

Switch S6: SensGND-GND

ON: GND of the sensor connected to GND of CDM420-0001/CMC600.
OFF: Sensor connected electrically isolated to the CDM420-0001/CMC600. Reference potential valid for all switching inputs ("Sensor 1/2" and "Aux In 1/2")

Connect the switch as shown in b)
4.9.10 Wiring the "External input 2" switching input in the CDM420-0001 connection module

**a) Sensor supplied by CDM420-0001**

Connect the switch as shown in b)

**b) Sensor connected electrically isolated and externally supplied**

Connect the switch as shown in b)

**c) Switch supplied by CDM420-0001**

**d) Switch connected electrically isolated and externally supplied**

Software-controlled, the CMC600 transfers the switching status of its physical "Aux In 2" input automatically via the cable to the serial Aux data interface of the RFU620-101xx/-104xx. The RFU620-101xx/-104xx converts the status internally to its logical "External input 2".

**Ratings for "External input 2"**

<table>
<thead>
<tr>
<th><strong>Switching behavior</strong></th>
<th><strong>Features</strong></th>
</tr>
</thead>
</table>
| Power fed to the input starts the assigned function, e.g. stop of reading clock. (default setting: logic not inverted [active high], debouncing 10 ms) | - Optodecoupled, reverse polarity protected  
- Can be wired with the PNP output of a sensor  
- SensGND is the shared isolated ground of all switching inputs |

<table>
<thead>
<tr>
<th><strong>Electrical values</strong></th>
<th><strong>Function assignment to &quot;External input 2&quot; via SOPAS:</strong></th>
</tr>
</thead>
</table>
| Low: $V_i \leq 2 \text{ V}$, $I_{in} \leq 0.3 \text{ mA}$ | - Start of reading clock  
- Stop of reading clock  
- If required further functions in the future |
| High: $6 \text{ V} \leq V_i \leq 30 \text{ V}$; $0.7 \text{ mA} \leq I_{in} \leq 5 \text{ mA}$ | |

Connect the switch as shown in b)
4.9.11 Wiring the "Result 1" switching output in the CDM420-0001 connection module

Ratings for "Result 1" switching output

<table>
<thead>
<tr>
<th>Switching behavior</th>
<th>PNP switching against the supply voltage $V_s$ (default setting: no function, logic: not inverted [active high])</th>
</tr>
</thead>
</table>

Features
- Short-circuit proof + temperature protected
- Galvanically not separate from $V_s$ (24 V+)

Electrical values
$0 \, V \leq V_{\text{out}} \leq V_s$
Guaranteed:
$V_s - 1.5 \, V \leq V_{\text{out}} \leq V_s$ with $I_{\text{out}} \leq 100 \, mA$

Pin and wire color assignment of prefabricated cables for RFU620-101xx

<table>
<thead>
<tr>
<th>Signal</th>
<th>M12 female connector, 17-pin</th>
<th>D-Sub HD male connector, 15-pin</th>
</tr>
</thead>
<tbody>
<tr>
<td>$V_s$</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Result</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td>GND</td>
<td>1</td>
<td>5</td>
</tr>
</tbody>
</table>

1) Adapter cable no. 2056184 (3.5 m), no. 2049764 (0.9 m), no. 2055419 (2 m), no. 2055420 (3 m), no. 2055859 (5 m).
2) Adapter cable, suitable for drag chain use, no. 2061440 (2 m), no. 2061605 (3 m), no. 2061481 (5 m).
3) Adapter cable no. 6042772 (3 m), no. 6042773 (5 m), no. 6048817 (10 m).
4) Adapter cable ECOLAB, suitable for drag chain use, no. 2070425 (3 m), no. 207425 (5 m), no. 2070427 (10 m).
5) Adapter cable, suitable for drag chain use no. 6045141 (5 m).

Pin and wire color assignment of prefabricated cables for RFU620-104xx

<table>
<thead>
<tr>
<th>Signal</th>
<th>D-Sub HD female connector, 15-pol.</th>
<th>Open end, 15 cores</th>
</tr>
</thead>
<tbody>
<tr>
<td>$V_s$</td>
<td>1</td>
<td>Red</td>
</tr>
<tr>
<td>Result</td>
<td>12</td>
<td>Brown</td>
</tr>
<tr>
<td>GND</td>
<td>5</td>
<td>Black</td>
</tr>
</tbody>
</table>

6) Adapter cable no. 2043413 (2 m)
4.9.12 Wiring the "Result 2" switching output in the CDM420-0001 connection module

**Electrical installation**

**RFU62x RFID-Interrogator (UHF)**

**Chapter 4**

**Technical Information**

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**RFU620-104xx: cable male connector**

**RFU620-101xx: adapter cable, e.g. no. 2055419 (2 m)**

---

**Ratings for **"Result 2"** switching output**

<table>
<thead>
<tr>
<th>Switching behavior</th>
<th>Features</th>
<th>Electrical values</th>
</tr>
</thead>
</table>
| PNP switching against the supply voltage $V_s(+24\text{ V*})$ (default setting: no function, logic: not inverted [active high]) | ~Short-circuit proof + temperature protected
~Galvanically not separate from $V_s(+24\text{ V*})$ | $0\text{ V} \leq V_{\text{out}} \leq V_s$
Guaranteed: $(V_s - 1.5\text{ V}) \leq V_{\text{out}} \leq V_s$ with $I_{\text{out}} \leq 100\text{ mA}$ |

---

**Pin and wire color assignment of prefabricated cables for RFU620-101xx**

<table>
<thead>
<tr>
<th>Signal</th>
<th>Adapter cable 1)</th>
<th>Adapter cable 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$V_s$</td>
<td>M12 female connector, 17-pin</td>
<td>D-Sub HD male connector, 15-pin</td>
</tr>
<tr>
<td>Result 2</td>
<td>14</td>
<td>13</td>
</tr>
<tr>
<td>GND</td>
<td>1</td>
<td>5</td>
</tr>
</tbody>
</table>

1) Adapter cable no. 2056184 (0.35 m), no. 2049764 (0.9 m), no. 2055419 (2 m), no. 2055420 (3 m), no. 2055859 (5 m).
2) Adapter cable, suitable for drag chain use, no. 2061480 (2 m), no. 2061755 (3 m), no. 2061481 (5 m).
3) Adapter cable no. 6042772 (3 m), no. 6042773 (5 m), no. 6048817 (10 m).
4) Adapter cable ECOLAB, suitable for drag chain use, no. 2070426 (3 m), no. 2070426 (5 m), no. 2070427 (10 m).
5) Adapter cable, suitable for drag chain use no. 6045141 (5 m).

**Pin and wire color assignment of prefabricated cables for RFU620-104xx**

<table>
<thead>
<tr>
<th>Signal</th>
<th>Adapter cable 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$V_s$</td>
<td>D-Sub HD female connector, 15-pol.</td>
</tr>
<tr>
<td>Result 2</td>
<td>13</td>
</tr>
<tr>
<td>GND</td>
<td>5</td>
</tr>
</tbody>
</table>

6) Adapter cable no. 2043413 (2 m)

---

**For inductive load:**

**Quenching circuit:**
Install an anti-surge diode directly at the load!
4.9.13  Wiring the “External output 1” switching output in the CDM420-0001 connection module

---

**RFU620-101xx/-104xx**

---

**CDM420-0001**

---

**Load (e.g. PLC)**

---

![Diagram](image)

\[ V_s = \text{DC 10 V} ... 30 \text{ V} \]

---

**Ratings for “External output 1” (“Aux Out 1” switching output)**

| Switching behavior | PNP switching against the supply voltage \( V_s \) (+24 V*)
|--------------------|-----------------------------------------------
| (default setting: no function/disabled, logic: not inverted [active high]) | |
| Features | – Short-circuit proof + temperature protected
| – Galvanically not separate from \( V_s \) (+24 V*) | |
| Electrical values | \( 0 \text{ V} \leq V_{\text{out}} \leq V_s \)
| Guaranteed: | \( (V_s - 1.5 \text{ V}) \leq V_{\text{out}} \leq V_s \) with \( I_{\text{out}} \leq 100 \text{ mA} \)

---

The RFU620-101xx/-104xx indicates the switching status of its logical “External output 1” via the serial Aux data interface. Software-controlled, the status is automatically taken over by the CMC600 via the cable and converted to the physical “Aux Out 1” output in the CDM420-0001.
4.9.14 Wiring the "External output 2" switching output in the CDM420-0001 connection module

The RFU620-101xx/-104xx indicates the switching status of its logical "External output 2" via the serial Aux data interface. Software-controlled, the status is automatically taken over by the CMC600 via the cable and converted to the physical "Aux Out 2" output in the CDM420-0001.

Ratings for “External output 2” (“Aux Out 2” switching output)

<table>
<thead>
<tr>
<th>Switching behavior</th>
<th>PNP switching against the supply voltage $V_s$ (+24 V*) (default setting: no function/disabled, logic: not inverted [active high])</th>
</tr>
</thead>
<tbody>
<tr>
<td>Features</td>
<td>- Short-circuit proof + temperature protected - Galvanically not separate from $V_s$ (+24 V*)</td>
</tr>
<tr>
<td>Electrical values</td>
<td>$0 , \text{V} \leq V_{out} \leq V_s$ Guaranteed: $(V_s - 1.5 , \text{V}) \leq V_{out} \leq V_s$ with $I_{out} \leq 100 , \text{mA}$</td>
</tr>
</tbody>
</table>

The load is typically controlled by the RFU620-101xx/-104xx, which communicates with the CMC600 via the serial Aux interface. The CMC600 then converts this status to a physical output, typically labeled as Aux Out 2, which can be connected to a PLC or similar device.

For inductive loads, it is recommended to install an anti-surge diode directly at the load to protect the system from voltage spikes or surges.
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