

Lector621

Image-based code reader

SICK
Sensor Intelligence.



Described product

Lector621

Lector621 ECO

Manufacturer

SICK AG

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Germany

Legal information

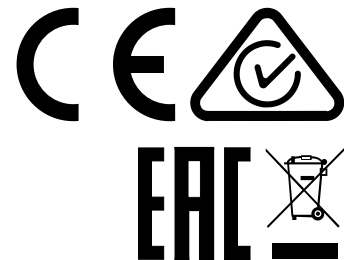
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Original document

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1 About this document

1.1 Information on the operating instructions

These operating instructions provide important information on how to use devices from SICK AG.

Prerequisites for safe work are:

- Compliance with all safety notes and handling instructions supplied.
- Compliance with local work safety regulations and general safety regulations for device applications

The operating instructions are intended to be used by qualified personnel and electrical specialists.



NOTE

Read these operating instructions carefully before starting any work on the device, in order to familiarize yourself with the device and its functions.

The instructions constitute an integral part of the product and are to be stored in the immediate vicinity of the device so they remain accessible to staff at all times. Should the device be passed on to a third party, these operating instructions should be handed over with it.

These operating instructions do not provide information on operating the machine or system in which the device is integrated. For information about this, refer to the operating instructions of the specific machine.

1.2 Scope

These operating instructions serve to incorporate the device into a customer system. Instructions are given by stages for all actions required.

These operating instructions apply to all available device variants of the product. More detailed information for identification of the available device type see "Type code", page 13.

Available device variants are listed on the online product page:

- www.sick.com/Lector62x

Various device variants are used as examples for commissioning, based on the default parameter settings for the relevant device.

1.3 Explanation of symbols

Warnings and important information in this document are labeled with symbols. The warnings are introduced by signal words that indicate the extent of the danger. These warnings must be observed at all times and care must be taken to avoid accidents, personal injury, and material damage.



DANGER

... indicates a situation of imminent danger, which will lead to a fatality or serious injuries if not prevented.

**WARNING**

... indicates a potentially dangerous situation, which may lead to a fatality or serious injuries if not prevented.

**CAUTION**

... indicates a potentially dangerous situation, which may lead to minor/slight injuries if not prevented.

**NOTICE**

... indicates a potentially harmful situation, which may lead to material damage if not prevented.

**NOTE**

... highlights useful tips and recommendations as well as information for efficient and trouble-free operation.

1.4 Further information

**NOTE**

Further documentation for the device can be found on the online product page at:

- www.sick.com/Lector62x

The following information is available for download there:

- Model-specific online data sheets for device variants, containing technical data, dimensional drawing, and specification diagrams
 - EU declaration of conformity for the product family
 - Dimensional drawings and 3D CAD dimension models in various electronic formats
 - These operating instructions, available in English and German, and in other languages if necessary
 - Other publications related to the devices described here
 - Publications dealing with accessories
-

Documents on request

Overview of command strings for the device.

2 Safety information

2.1 Intended use

The image-based code reader Lector621 is an intelligent SICK-4Dpro sensor.

The device is used for automatic, stationary identification and decoding of codes on moving or stationary objects. The device reads all commonly used 1D codes (bar codes/stacked codes) and 2D codes (matrix codes). The device uses its host interface to send the read data to a higher-level computer (e.g. PLC) for coordinating further processing.

The device is designed for use in industrial and logistics applications in its two variant lines **Lector621** and **Lector621 ECO**. The device meets the applicable requirements for industrial robustness, interfaces and data processing.

SICK AG assumes no liability for losses or damage arising from the use of the product, either directly or indirectly. This applies in particular to use of the product that does not conform to its intended purpose and is not described in this documentation.

2.1.1 Operating restrictions



NOTICE

Radio interference may occur when the device is used in residential areas!

- Only use the device in industrial environments (EN 61000-6-4).

2.1.2 Conditions for specified enclosure rating

To ensure compliance with the specified IP65 enclosure rating of the device during operation, the following requirements must be met: If these requirements are not met, the device does not fulfill any specified enclosure rating.

Lector621

- The cables plugged into the two electrical M12 connections are screwed tight.
- Any electrical M12 connections that are not being used (Ethernet connection) must be sealed with protective plugs that are screwed tight (as in the delivery condition).
- The black cover (flap) on the rear of the device must be flush with the device and screwed tight.

Lector621 ECO

- The D-Sub male connector of the connecting cable must be screwed tight with the contacted female connector.
- If an extension cable is used, a corresponding rubber seal (SICK accessory) must be fitted between the two D-Sub plug connectors. The plug connectors are screwed together. You can find a suitable IP65 rubber seal online at: www.sick.com/Lector62x
- The black cover (flap) on the rear of the device must be flush with the device and screwed tight.



NOTICE

Operate the device with open black cover only for a short time for the following tasks as required:

- Type-dependent: inserting or removing the optional memory card
- Temporary use of the USB interface as a service interface

During this time, protect the device against moisture and dust.

2.1.3 Using the USB interface



NOTE

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

2.2 Improper use

Any use outside of the stated areas, in particular use outside of the technical specifications and the requirements for intended use, will be deemed to be incorrect use.

- The device does not constitute a safety component in accordance with the respective applicable safety standards for machines.
 - The device must not be used in explosion-hazardous areas, in corrosive environments or under extreme environmental conditions.
 - The device must not be operated in the temperature range below 0 °C.
 - Any use of accessories not specifically approved by SICK AG is at your own risk.
-



WARNING

Danger due to improper use!

Any improper use can result in dangerous situations.

Therefore, observe the following information:

- Device should be used only in accordance with its intended use.
 - All information in these operating instructions must be strictly observed.
-

2.3 IP technology



NOTE

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

SICK always assumes the following prerequisites:

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

2.4 Limitation of liability

Applicable standards and regulations, the latest state of technological development, and our many years of knowledge and experience have all been taken into account when assembling the data and information contained in these operating instructions. The manufacturer accepts no liability for damage caused by:

- Failing to observe the operating instructions
- Incorrect use
- Use by untrained personnel
- Unauthorized conversions
- Technical modifications
- Use of unauthorized spare parts, consumables, and accessories

With special variants, where optional extras have been ordered, or owing to the latest technical changes, the actual scope of delivery may vary from the features and illustrations shown here.

2.5 Modifications and conversions



NOTICE

Modifications and conversions to the device may result in unforeseeable dangers.

Interrupting or modifying the device or SICK software will invalidate any warranty claims against SICK AG. This applies in particular to opening the housing, even as part of mounting and electrical installation.

2.5.1 Exception: temporarily opening the cover on the device



NOTICE

The user may open the housing only in order to obtain temporary access to the USB interface or the slot for the optional memory card, depending on type. For this purpose, the corresponding black cover (flap) at the top of the device at the rear can be opened temporarily.

In open state, the device does not conform to a specified enclosure rating. The device must be protected appropriately against moisture and dust.

- ▶ Operate the device only for a short time without closed cover.



NOTE

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

For further warranty provisions, see the General Terms and Conditions of SICK AG, e.g. on the delivery note of the device.

2.6 Requirements for skilled persons and operating personnel



WARNING

Risk of injury due to insufficient training.

Improper handling of the device may result in considerable personal injury and material damage.

- All work must only ever be carried out by the stipulated persons.

The operating instructions state the following qualification requirements for the various areas of work:

- **Instructed personnel** have been briefed by the operator about the tasks assigned to them and about potential dangers arising from improper action.
- **Skilled personnel** have the specialist training, skills, and experience, as well as knowledge of the relevant regulations, to be able to perform tasks delegated to them and to detect and avoid any potential dangers independently.
- **Electricians** have the specialist training, skills, and experience, as well as knowledge of the relevant standards and provisions to be able to carry out work on electrical systems and to detect and avoid any potential dangers independently. In Germany, electricians must meet the specifications of the BGV A3 Work Safety Regulations (e.g. Master Electrician). Other relevant regulations applicable in other countries must be observed.

The following qualifications are required for various activities:

Table 1: Activities and technical requirements

| Activities | Qualification |
|--|---|
| Mounting, maintenance | <ul style="list-style-type: none"> ■ Basic practical technical training ■ Knowledge of the current safety regulations in the workplace |
| Electrical installation, device replacement | <ul style="list-style-type: none"> ■ Practical electrical training ■ Knowledge of current electrical safety regulations ■ Knowledge of the operation and control of the devices in their particular application |
| Commissioning, configuration | <ul style="list-style-type: none"> ■ Basic knowledge of the Windows™ operating system in use ■ Basic knowledge of the design and setup of the described connections and interfaces ■ Basic knowledge of data transmission ■ Basic knowledge of 1D technology (bar code) or 2D technology (Data Matrix code) |
| Operation of the device for the particular application | <ul style="list-style-type: none"> ■ Knowledge of the operation and control of the devices in their particular application ■ Knowledge of the software and hardware environment for the particular application |

2.7 Operational safety and particular hazards

Please observe the safety notes and the warnings listed here and in other chapters of these operating instructions to reduce the possibility of risks to health and avoid dangerous situations.

Illumination LEDs

The product is fitted with LEDs of risk group 0 or 1 for object illumination, depending on type.

- The accessible radiation from LEDs of risk group 0 does not pose a risk to human eyes or skin.
- The accessible radiation from LEDs of risk group 1 poses a slight risk to human eyes.



CAUTION

Warning! Optical radiation: LED risk group 1

The LEDs may pose a danger to the eyes and skin in the event of incorrect use.

- Protect the eyes and skin against radiation.
- Use suitable eye protection.
- Use protective measures such as a screen to shield the radiation.
- Do not open the housing. Opening the housing will not switch off the light source. Opening the housing may increase the level of risk.
- Comply with the current national regulations on photobiological security of lamps and lamp systems.

Aiming laser (only Lector621 variant)

**CAUTION****Optical radiation: Laser class 1**

The accessible radiation does not pose a danger when viewed directly for up to 100 seconds. It may pose a danger to the eyes and skin in the event of incorrect use.

- Do not open the housing. Opening the housing may increase the level of risk.
- Current national regulations regarding laser protection must be observed.

For both radiation types:

It is not possible to entirely rule out temporary disorienting optical effects, particularly in conditions of dim lighting. Disorienting optical effects may come in the form of daz-zle, flash blindness, afterimages, photosensitive epilepsy , depending on parameteriza-tion), or impairment of color vision, for example.

**CAUTION****Hazardous radiation.**

If any operating or adjusting devices other than those specified here are used or other methods are employed, this can lead to dangerous exposure to radiation. Damage to the eyes is possible.

- If the product is operated in conjunction with external illumination systems, the risks described here may be exceeded. This must be taken into consideration by users on a case-by-case basis.
- Do not look into the light source when it is switched on.
- Comply with the latest version of the applicable regulations on photobiological safety of lamps and lamp systems as well as on laser protection.

**CAUTION****Risk of injury due to hot device surface.**

The surface of the device can become hot during operation.

- When performing work directly on the device (e.g. cleaning, disassembly), switch off the device if necessary and allow it to cool down.

**WARNING****Electrical voltage!**

Electrical voltage can cause severe injury or death.

- Work on electrical systems must only be performed by qualified electricians.
- The power supply must be disconnected when attaching and detaching electrical connections.
- The product must only be connected to a voltage supply as set out in the require-ments in the operating instructions.
- National and regional regulations must be complied with.
- Safety requirements relating to work on electrical systems must be complied with.



WARNING

Dangerous equipotential bonding currents!

Improper grounding can lead to dangerous equipotential bonding currents, which may in turn lead to dangerous voltages on metallic surfaces, such as the housing. Electrical voltage can cause severe injury or death.

- Work on electrical systems must only be performed by qualified electricians.
 - Follow the notes in the operating instructions.
 - Install the grounding for the product and the system in accordance with national and regional regulations.
-

3 Product description

3.1 Product ID

3.1.1 Type label

The type label gives information for identification of the device.

The UL certification is dependent on the type. Any existing UL certification can be found on the type label. The corresponding UL logo is then printed on the label.

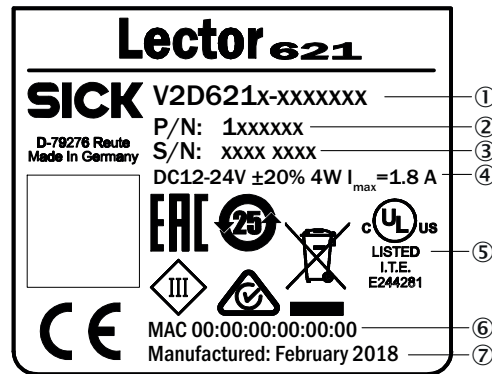


Figure 1: Structure of the type label

- ① Type designation according to type code
- ② Part number
- ③ Serial number
- ④ Supply voltage, power consumption and maximum current consumption
- ⑤ Certificates and symbols
- ⑥ MAC address (placeholder)
- ⑦ Production date

3.1.2 Type code

The devices of the Lector621 product family are arranged according to the following type code:

V2D6xyz-abcdefg

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|----|----|----|----|----|
| V | 2 | D | 6 | x | y | z | - | a | b | c | d | e | f | g |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 8 | 9 | 10 | 11 | 12 | 13 | 14 |

| Position | Description | Characteristic |
|----------|---|---|
| 1 ... 3 | Technology | Image-based code reader |
| 4 ... 6 | Product family | Lector621 Image sensor resolution 1.3 Mpx (1280 px x 1024 px) |
| 7 | Function | R: Reading D: Reading with DPM and OCR |
| 8 | Generation | 2: 2nd generation |
| 9 | Imager type / color | CMOS matrix sensor M: Monochrome (black-and-white) |
| 10 | Integrated illumination unit / aiming laser | S: red left, blue right / aiming laser D: left IR , right IR / aiming laser R: red left / no aiming laser |

| Position | Description | Characteristic |
|----------|--------------------|--|
| 11 | Parameter set | L: Limited Feature Set for variant Lector621 ECO F: Full Feature Set for variant Lector621 |
| 12 | Focal length | B: 9.6 mm F: 17, 1 mm G: 17, 1 mm with visible block filter |
| 13 | Connection package | B: Ethernet, serial, CAN, I/O, USB, memory card slot C: Ethernet, serial, CAN, I/O, USB D: Serial, CAN, I/O, USB, memory card slot E: Serial, CAN, I/O, USB |
| 14 | Protection class | 5: IP 65 |

- 1) Front view
- 2) IR = Infrared light



NOTE

Not all combinations are possible according to the type code. The available device variants can be found online at:

- www.sick.com/Lector62x

3.1.2.1 Device variants

The Lector621 product family consists of 2 variant lines:

- Lector621
- Lector621 ECO

The two variant lines differ with respect to the following features:

Table 2: Differences between the variant lines

| Feature | Lector621 | Lector621 ECO |
|-------------------------------------|---|---|
| Integrated illumination unit | 4 x LED, colors type-dependent | 2 x LED, red |
| Focus setting | Teach auto focus | Manual with SOPAS ET configuration software |
| Aiming laser | Yes | No |
| Additional evaluation | DPM, OCR/OCV type-dependent | Not applicable |
| Focal length | depending on type | 9.6 mm |
| Image recording rate (with 1.3 Mpx) | 50 Hz | 25 Hz |
| Readable code structures | 1D, 2D, stacked codes. Type-dependent: DPM, OCR/OCV | 1D, 2D, stacked codes |
| Code quality determination | Yes | No |
| Shutter time | ≥100 µs | ≥200 µs |
| Slot for memory card | Yes | No |
| Automatic parameter switching | Yes | No |

| Feature | Lector621 | Lector621 ECO |
|--------------------------------|---|---|
| Electrical Interfaces | <ul style="list-style-type: none"> • Power • Serial Data ²⁾ • CAN • 2 digital switching inputs • 4 digital switching outputs • Ethernet • USB | <ul style="list-style-type: none"> • Power • Serial Data ²⁾ • CAN • 2 digital switching inputs • 2 digital switching outputs • USB |
| Type of electrical connections | <ul style="list-style-type: none"> • 1 x male connector, M12, 17-pin, A-coded • 1 x female connector, M12, 4-pin, D-coded | <ul style="list-style-type: none"> • Cable ³⁾, length 0.9 m, with male connector, D-Sub-HD, 15-pin |
| Dimensions | 88.5 mm x 43 mm x 35.6 mm | 71 mm x 43 mm x 35.6 mm |

- 1) MicroSD memory card.
 2) Host: RS-232/RS-422, Aux: RS-232.
 3) Permanently connected with the housing.

3.2 Scope of delivery

The delivery of the device includes the following components:

Table 3: Lector621: scope of delivery

| No. of units | Component | Comment |
|--------------|--|---|
| 1 | Device in the version ordered | Lector621: M12 female connector for Ethernet sealed with screwed-tight protective plug. Without holders and optional connecting cables. |
| 1 | Multilingual safety notes in a printed document | Informs about the requirements for safe use of the product. |
| 2 | Sliding nut, 5.5 mm deep, with M5 threaded fixing hole | Alternative mounting option for the device instead of tapped blind hole. Use in pairs! |
| | Optional accessories | e.g. cables, installation accessories only if ordered additionally. |

Associated components not contained in the delivery:

Table 4: Lector621: Other components

| Component | Comment |
|--|---|
| SOPAS ET configuration software | Available online at: <ul style="list-style-type: none"> • www.sick.com/SOPAS_ET |
| Lector621 operating instructions as PDF in English and German. Other languages also available online where applicable. | Available online at: <ul style="list-style-type: none"> • www.sick.com/Lector62x |

3.3 Product characteristics

3.3.1 Device view

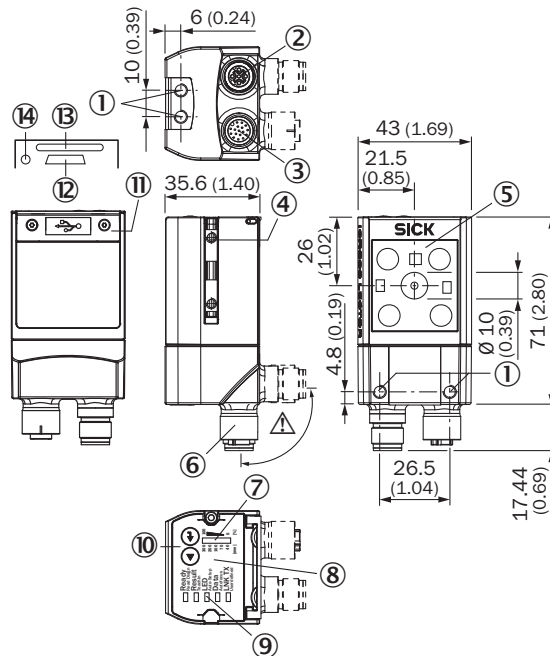


Figure 2: Lector621: design and device dimensions, all dimensions in mm or inch

- ① M5 tapped blind hole, 5 mm deep (4 x), for mounting the device
- ② “Ethernet” connection (female connector, M12, 4-pin, D-coded)
- ③ “Power/Serial Data/CAN/I/O” connection (male connector, M12, 17-pin, A-coded)
- ④ Sliding nut M5, 5.5 mm deep (2 x), for an alternative method of mounting the device
- ⑤ Reading window with internal illumination LEDs (4 x)
- ⑥ Swivel connector (swivel range 180°)
- ⑦ Bar graph display
- ⑧ Beeper (under housing cover)
- ⑨ RGB LEDs for status indication (2 levels), 5 x
- ⑩ Function button (2 x)
- ⑪ Cover (flap) with fixing screw (Torx TX6, captive), 2 x
- ⑫ USB port (female connector, type Micro-B, 5-pin). Only for temporary use as a service interface!
- ⑬ Slot for microSD memory card
- ⑭ Status display (LED) for microSD memory card



NOTICE

Lector621: Damage to the swivel connector from over-rotation!

- The swivel connector may be moved up to a maximum of 180° from end point to end point. Do not exceed the respective limit position.
- Carry out the rotational movement slowly.

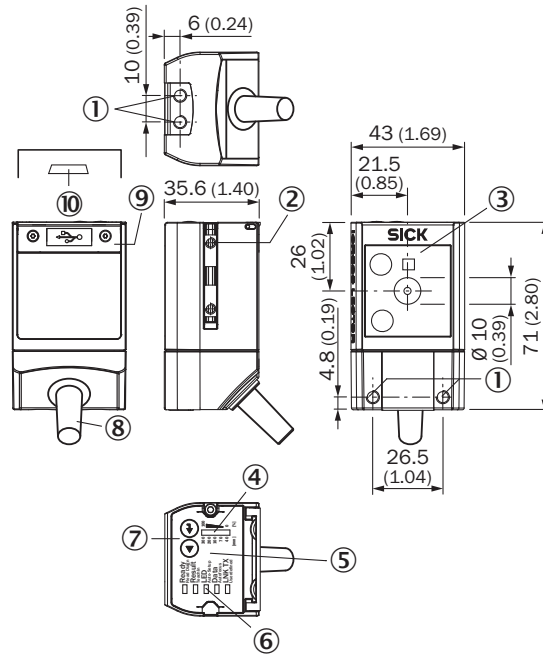


Figure 3: Lector621 ECO: design and device dimensions, all dimensions in mm or inch

- ① M5 tapped blind hole, 5 mm deep (4 x), for mounting the device
- ② Sliding nut M5, 5.5 mm deep (2 x), for an alternative method of mounting the device
- ③ Reading window with internal illumination LEDs (2 x)
- ④ Bar graph display
- ⑤ Beeper (under housing cover)
- ⑥ RGB LEDs for status indication (2 levels), 5 x
- ⑦ Function button (2 x)
- ⑧ Cable (0.9 m) permanently attached to device with male connector, D-Sub-HD, 15-pin (connection "Power/Serial Data/CAN/I/O")
- ⑨ Cover (flap) with fixing screw (Torx TX6, captive), 2 x
- ⑩ USB port (female connector, type Micro-B, 5-pin). Only for temporary use as a service interface!

3.3.1.1 Illumination unit

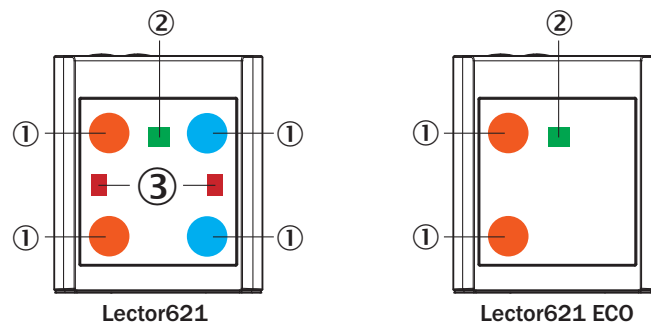


Figure 4: Illumination unit (integrated illumination), light colors type-dependent for variant Lector621

- ① Lector621: 4 x LED (2 x left/2 x right)
Lector621 ECO: 2 x LED (2 x left)
- ② Feedback spot (e.g. for Good Read) = 1 x green LED
- ③ Aiming laser for alignment, can be deactivated = 2 x red laser LEDs

The Lector621 ECO variant does not have an aiming laser.



NOTE

Do not look into the viewing window of the device in order to avoid dazzling from the integrated illumination unit.

3.3.2 Display and operating elements

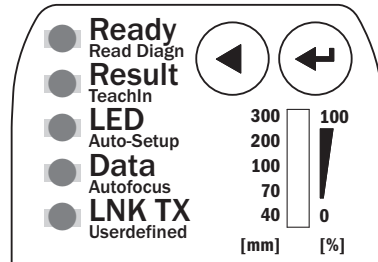


Figure 5: LED status displays, bar graph display and function keys on the top of the device

Status displays in read mode

Table 5: First display level

| Display | LED | Color | Status |
|---------|-----------|--------|--|
| Ready | Lights up | Green | Device is ready |
| | Lights up | Red | Hardware or software error |
| Result | Lights up | Green | Read operation successful |
| | Lights up | Red | Read operation unsuccessful |
| LED | Lights up | Green | Read mode: illumination on, internal reading interval open |
| Data | Lights up | Yellow | Data output via host interface |
| LNK TX | Flashing | Green | Data traffic via Ethernet |

Operating buttons, status displays and functions

The two buttons are used for manually calling up device functions without using a PC. On the second display level, the LEDs indicate the selectable functions and execution of a function.

1. Start “Setup” mode: press the return key (↵) for approx. 3 s. The device interrupts the current read mode, switches off all LEDs and the bar graph display and switches into button operating mode.
As from now, the device ignores all further external reading cycles. The device does not output any read results via the host interface. The beeper confirms this process with an ascending melody. The “Read Diagn” function is preselected as the first function (LED is lit).
2. Press the arrow button (◀) repeatedly until the LED of the desired function lights up. The device runs through all possible functions step-by-step without executing them and then starts again from the beginning.
The beeper confirms every step with a tone.
3. Press the return key to confirm the selected function. The LED now flashes, the beeper confirms start with a double beep. The device executes the function and automatically returns to read mode after 5 minutes without button operation.
The device automatically ends the “TeachIn” (for match code), “Auto-Setup” and “Auto focus” (only Lector621 variant) functions when it has successfully read the presented code. The assigned LED lights up green in each case, and the beeper confirms this with an ascending melody.

4. To end (cancel) a function manually, press the Return key again and hold for 3 seconds.
The beeper confirms the change with an ascending melody. The “Ready” LED lights up again.
- ✓ The device is again ready for reading and is waiting for a reading cycle.



NOTE

With the Auto-Setup function, make sure that a medium-high object is in the reading field.

Table 6: Second display level for action with buttons

| Display | LED | Color | Status |
|--------------------------|-----------|--------|--|
| Read diagn | Lights up | Blue | Test (reading diagnostics) selected |
| | Flashing | Blue | Test started |
| TeachIn | Lights up | Blue | Teach-in selected (default: Match code) |
| | Flashing | Blue | Teach-in started |
| | Lights up | Green | Teach-in successful |
| | Lights up | Red | Teach-in unsuccessful (match code default setting: the device was not able to teach in any code) |
| Auto setup | Lights up | Blue | Auto-Setup selected |
| | Flashing | Blue | Auto-Setup started |
| | Lights up | Green | Auto-Setup successfully quit |
| | Lights up | Yellow | Auto-Setup was partially successful |
| | Lights up | Red | Auto-Setup was unsuccessful |
| Auto focus ¹⁾ | Lights up | Green | Function can be defined by user |
| | Lights up | Yellow | Function can be defined by user |
| | Lights up | Blue | Function can be defined by user |
| | Lights up | Red | Function can be defined by user |

¹⁾ No applicable for Lector621 ECO

Functions

Table 7: Function overview

| Function | Description |
|-----------------------------|---|
| Read Diagn (read diagnosis) | Percentage analysis: The device records a series of images and uses the current reading performance settings to decode them. The read rate of the last 10 read operations is displayed in % with the bar graph display 0 ... 100 %. The bar graph display is deactivated in standard read mode. |
| TeachIn | When you teach in a match code, the device reads the code that is presented and saves it permanently as a target code for future code comparisons during read mode. The “TeachIn” function is not possible for OCR detection (only Lector621 variant). With Pharmacodes, you must first define the “Code type & Code length” function in SOPAS ET. |
| Auto-Setup | The device adjusts itself automatically to suit the lighting conditions and the quality of the code presented. The Lector621 variant also adjusts to the working distance. The device stores these determined values permanently. The “Auto-Setup” function is not possible for OCR detection (only Lector621 variant) or Pharmacodes. |

| Function | Description |
|------------|---|
| Auto focus | Only Lector621 variant: the device only adjusts itself to the working distance and stores this permanently. |

Status display of the microSD memory card



NOTE

The Lector621 ECO variant does not have a slot for a microSD memory card.

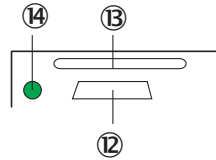


Figure 6: Display under flap on rear of device

- ⑫ USB interface
- ⑬ Slot for microSD memory card (only Lector621 variant)
- ⑭ Display for microSD memory card (only Lector621 variant)

Table 8: Lector621: status display of the microSD memory card

| Display | LED | Color | Status |
|---------|-----------|-------|--|
| MicroSD | Lights up | Green | The device writes data to the correctly installed memory card. Read access to the card is not signaled. |

3.3.3 Acoustic status indicator

The beeper (buzzer) is located on the top of the device under the cover in the middle between the visual status displays. The beeper has two volume levels and can also be switched off.

In read mode, the beeper indicates a selectable event with a signal tone (basic setting: event: Good Read, volume: quiet).

The beeper also accompanies user operations with different tone sequences. For example, calling up and starting a function with the two function keys.

3.3.4 Memory card

The Lector621 variant has a card slot integrated in the housing. This slot accommodates a memory card in microSD format.



NOTE

The memory card is optional and is not included with the device scope of delivery. The device supports memory cards up to max 32 GB.

Only use types (industrial standard) approved by SICK to ensure reliable function of the memory card. You can find these as accessories online at:

- www.sick.com/Lector62x

The memory card has no write protection that can be activated.

Functions

An inserted memory card serves as a local external memory medium for the device outside the internal device memory, see "Initial commissioning", page 53.

The device can execute the following functions using the memory card:

- **Cloning function: saving the currently valid parameter set**
Automatic, additional storage of the parameter set with the configuration data of the device on an external memory medium that is quickly accessible to the user. This takes place in the framework of the recommended backup concept for the 4Dpro device parameter sets. The externally stored parameter set is also updated automatically each time the currently valid configuration data is permanently saved. For devices without card slot, the optional cloning module CMC600, installed in the CDB/CDM connection module, also offers the same external storage possibility in addition to other functions. The otherwise necessary connection of a PC/laptop to the device in order to manually save the parameter set is not required with this data backup method.
 - The cloning function serves as a basis to perform the following tasks, for example:
 - in the event of a device fault, convenient and fast manual transfer of the currently valid parameter set to a replacement device of the same type in the read station.

Automatic saving to the external memory medium is triggered by saving the parameter set in the device with the option “permanent”, e.g. via the SOPAS ET configuration software.
- **Firmware download (update)**
The prerequisites and procedure for downloading and updating the firmware are available on the SICK Support Portal.
- Other functions on request.

The first time a parameter set is stored, we recommend that an empty memory card is used.

- ▶ If necessary, check and delete the contents of the card in question on the PC using a card reader.

Device access to the memory card



NOTE

The device does not directly signal access (read, write) to the memory card.

By observing the “Device Ready” LED, it is possible to see when the storage process has been completed when the parameter set is saved with the option “permanent”:

- When the device starts saving, the “**Device Ready**” LED goes out.
- When the device has completed saving, the “**Device Ready**” LED lights up green again.



NOTICE

Possible data loss!

- ▶ Do not remove the memory card or switch off the supply voltage as long as the following started operations using the SOPAS ET configuration software are being executed on the device:
 - Permanent change in the parameter set by saving with the “permanent” option.
- ▶ To remove the memory card safely during operation, select the Remove SD card option under **Analysis/SD card** in SOPAS ET and wait for **SOPAS ET** to provide confirmation.

Inserting the memory card in the device:



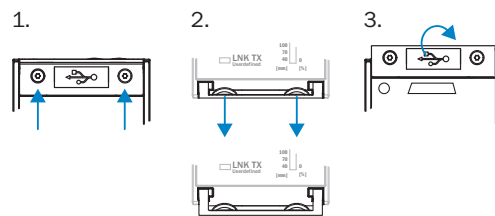
NOTICE

Risk of damage to the memory card!

- ▶ To avoid damaging the memory card, make sure the device is **de-energized** when you insert or remove it. For this purpose, disconnect the device from the supply voltage.

Access to the card slot

The card slot for the memory card is located at the top of the device at the rear under the hinged cover.



1. Switch off the supply voltage to the device.
2. Undo the screws (Torx TX6, captive) on the hinged cover (in Figure: step 1) and open the cover as follows:
 - Carefully pull the upper edge of the flap away from the housing a little at the level of the hinges on the side (in Figure: step 2). Use both of the recesses on the inside of the flap to do this.
 - Fold the flap upwards starting from the bottom edge.
3. Making sure it is in the correct position, insert the memory card into the slot until it locks into place. When doing this, position the contacts so that they are facing to the rear and upwards, see the card symbol on the device.
4. Close the hinged cover again (in Figure: step 3). Make sure that the cover is completely flush with the housing.
5. Tighten the screws on the hinged cover again.
6. Switch on the supply voltage for the device.

Interpretation of the stored parameter set

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

- If the card is empty or if it contains a parameter set that cannot be interpreted by the device, the device saves its currently valid internal parameter set to the card (provided there is sufficient storage space). The device then starts with its internal parameter set.
- If the card contains a parameter set that can be interpreted by the device, the device permanently overwrites the currently valid internal parameter set with this external parameter set. The device then starts with its new valid parameter set.
- The goal is for the internal parameter set and the parameter set saved externally to always be identical.

The highest-ranking parameter set is used by the device when operated in the PRPOFINET with the following sequence hierarchy:

- 1 After starting, the device loads the last permanently stored internal parameter set to its working memory.
- 2 The device then searches for a valid parameter set in the optional memory card slot. If there is a positive search result, the device uses this parameter set to overwrite the existing parameter set in its working memory.
- 3 If the PROFINET controller sends a parameter set via the PROFINET with central configuration of the bus users, the device again overwrites corresponding parameter values in its working memory. These changes are lost again when the device is switched off. The PROFINET controller must then again send the last-valid parameter values each time the device is restarted (supply voltage is switched on).

Removing the memory card from the device:



NOTICE

Risk of damage to the memory card!

- ▶ To avoid damaging the memory card, make sure the device is **de-energized** when you insert or remove it. For this purpose, disconnect the device from the supply voltage.
-
1. Switch off the supply voltage to the device.
 2. Undo the screws on the hinged cover.
 3. Making sure it is in the correct position, push the memory card into the slot until it is released. When doing this, position the contacts so that they are facing to the rear and upwards, see the card symbol on the device.
 4. Remove the memory card.
 5. Close the hinged cover again. Make sure that the cover is completely flush with the housing.
 6. Tighten the screws on the hinged cover.
 7. Switch on the supply voltage for the device.

3.3.5 Product features and functions

The Lector621 image-based code reader with integrated illumination unit is an intelligent SICK-4Dpro sensor. It is used for automatic, stationary identification and decoding of codes on moving or stationary objects. The device reads all commonly used 1D codes (bar codes/stacked codes) and 2D codes (Data Matrix codes). The device uses its host interface to send the read data to a higher-level computer for coordinating further processing.

The device is available in the two variant lines **Lector621** and **Lector621 ECO** with different technical characteristics. The Lector621 variant can store images recorded during the read operation or create parameter backup copies on the optional microSD memory card.

Connection of an external illumination unit for triggering by the device is not possible.

4 Transport and storage

4.1 Transport

For your own safety, please read and observe the following notes:



NOTICE

Damage to the product due to improper transport.

- The device must be packaged for transport with protection against shock and damp.
- Recommendation: Use the original packaging as it provides the best protection.
- Transport should be performed by trained specialist staff only.
- The utmost care and attention is required at all times during unloading and transportation on company premises.
- Note the symbols on the packaging.
- Do not remove packaging until immediately before you start mounting.

4.2 Unpacking

- Before unpacking, it may be necessary to equalize the temperature to protect the device from condensation.
- Handle the device with care and protect it from mechanical damage.

4.3 Transport inspection

Immediately upon receipt in Goods-in, check the delivery for completeness and for any damage that may have occurred in transit. In the case of transit damage that is visible externally, proceed as follows:

- Do not accept the delivery or only do so conditionally.
- Note the scope of damage on the transport documents or on the transport company's delivery note.
- File a complaint.



NOTE

Complaints regarding defects should be filed as soon as these are detected. Damage claims are only valid before the applicable complaint deadlines.

4.4 Storage

Store the device under the following conditions:

- Recommendation: Use the original packaging.
- Electrical connections are provided with protective caps and plugs (as they are on delivery).
- Do not store outdoors.
- Store in a dry area that is protected from dust.
- So that any residual damp can evaporate, do not package in airtight containers.
- Do not expose to any aggressive substances.
- Protect from sunlight.
- Avoid mechanical shocks.
- Storage temperature: see "Technical data", page 62.
- Relative humidity: see "Technical data", page 62.
- For storage periods of longer than 3 months, check the general condition of all components and packaging on a regular basis.

5 Mounting

5.1 Mounting instructions

- Observe the technical data.
- Protect the sensor from direct sunlight.
- To prevent condensation, avoid exposing the sensor to rapid changes in temperature.
- The mounting site has to be designed for the weight of the device.

5.2 Preparation for mounting

5.2.1 Mounting requirements



NOTICE

Radio interference may occur when the device is used in residential areas!

- Only use the device in industrial environments (EN 61000-6-4).
- Typical space requirement: see "Field of view diagrams", page 28 and type-specific dimensional drawing.
- Comply with technical data, such as the permitted ambient conditions for operation (e.g. temperature range, EM interference emissions, ground potential), see "Technical data", page 62
- To prevent condensation, avoid exposing the device to rapid changes in temperature
- Protect from direct sunlight
- Ensure that there is good heat transfer from the device, in particular at high ambient temperatures (e.g., via the bracket to the mounting base or ensure that the back of the device is a sufficient distance from the wall of a housing)
- Only to be mounted using the threaded mounting holes provided for this purpose or the sliding nuts.
- Shock and vibration-free mounting
- Clear view of the codes of the objects to be detected

Equipment required

- Mounting device (bracket) with sufficient load-bearing capacity and suitable dimensions
- Two or four M5 screws for mounting on a mounting device supplied by the customer. Screw length is dependent on the mounting base (wall thickness of the bracket)
When using an optional SICK bracket, the screws for mounting are included with delivery.
- Tool and tape measure

5.2.2 Mounting the device

The device is mounted using threaded mounting holes (M5) or sliding nuts.

The threaded mounting holes are located on the rear of the device.

The sliding nuts can each be inserted into a slot on the side of the housing.

SICK offers prefabricated brackets which are optimally suited for mounting the device in a wide range of applications (www.sick.com).

User-supplied brackets

A user-supplied bracket must meet the following requirements:

- Alignment of the device in the x and y axes can be adjusted
- The mounting device must be able to bear the weight of the device and connecting cables free of vibrations
- In mounting situations with strong vibrations, shock mounts may need to be provided
- Mounting options must be available for the 4 threaded mounting holes or the two sliding nuts

5.3 Mounting location

5.3.1 Determining alignment

Vertical mounting

For highest transport speed

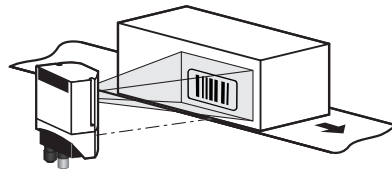


Figure 7: Vertical mounting

Horizontal mounting

For maximum reading field width

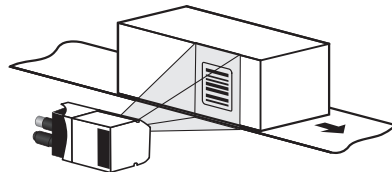


Figure 8: Horizontal mounting

5.3.2 Working distance

The possible working distance for reading is 70 mm to 2000 mm.

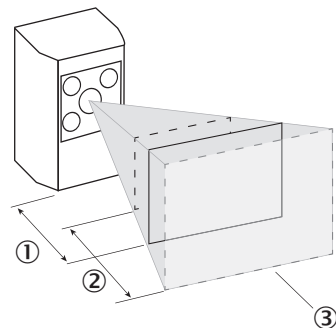


Figure 9: Field of view geometry

- ① Working distance
- ② Depth of field
- ③ Field of view

- Lector621: the device automatically adjusts its focus position to the working distance with the Auto-Setup function.
- Lector621 ECO: the focus position of the device is set by entering the working distance.

The user does this with the SOPAS ET configuration software. Alternatively, the Lector621 can also teach in the working distance by means of the two function keys. This function is not available on the Lector621 ECO variant.

The focus position set via Auto-Setup is valid for one working distance. The device does not perform automatic tracking (auto focus) if the working distance changes significantly, for example.

5.3.3 Mounting bracket and reflection prevention

In order to avoid reflections from the surfaces to be scanned, mount the device so that it is tilted from the perpendicular to the surface.

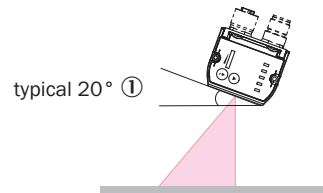


Figure 10: Selection of the skew angle, depending on the application

① Typical angle 20°

The typical value is 20°.

Depending on the application, an angle of between 0° (bright field light) and 45° (dark field light) may be advisable.

5.3.4 Reading angle in space

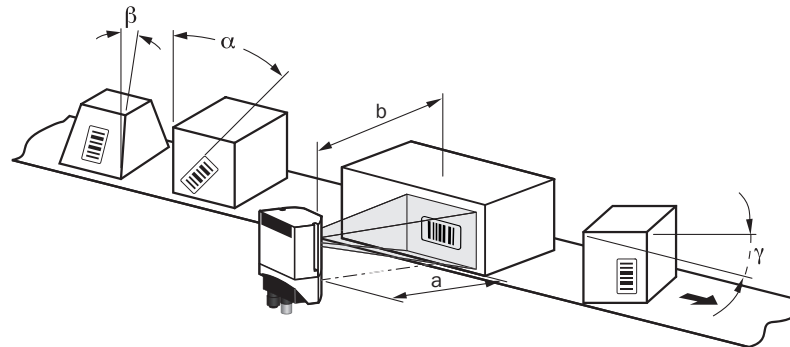


Figure 11: Possible reading angles at which the codes can occur with respect to the field of view

Table 9: Permissible values

| Reading angle | Permissible value (limit value) |
|---------------------------------|--|
| α tilt angle | 0 to 360° |
| β pitch angle | max. $\pm 45^\circ$ (depending on cell size and symbol size) |
| γ skew angle | max. $\pm 45^\circ$ (depending on cell size and symbol size) |
| Distances | |
| a Reading distance | see "Field of view diagrams", page 28 |
| b Reading area / Depth of field | see "Field of view diagrams", page 28 |

5.3.5 Field of view diagrams

Take into account the following aspects in application design:

- Field of view geometry of the device and position of the field of view in the space in front of the device
- Possible reading angles at which the codes can occur with respect to the device
- For the planned working distance: resultant field of view length and width and minimum possible resolution

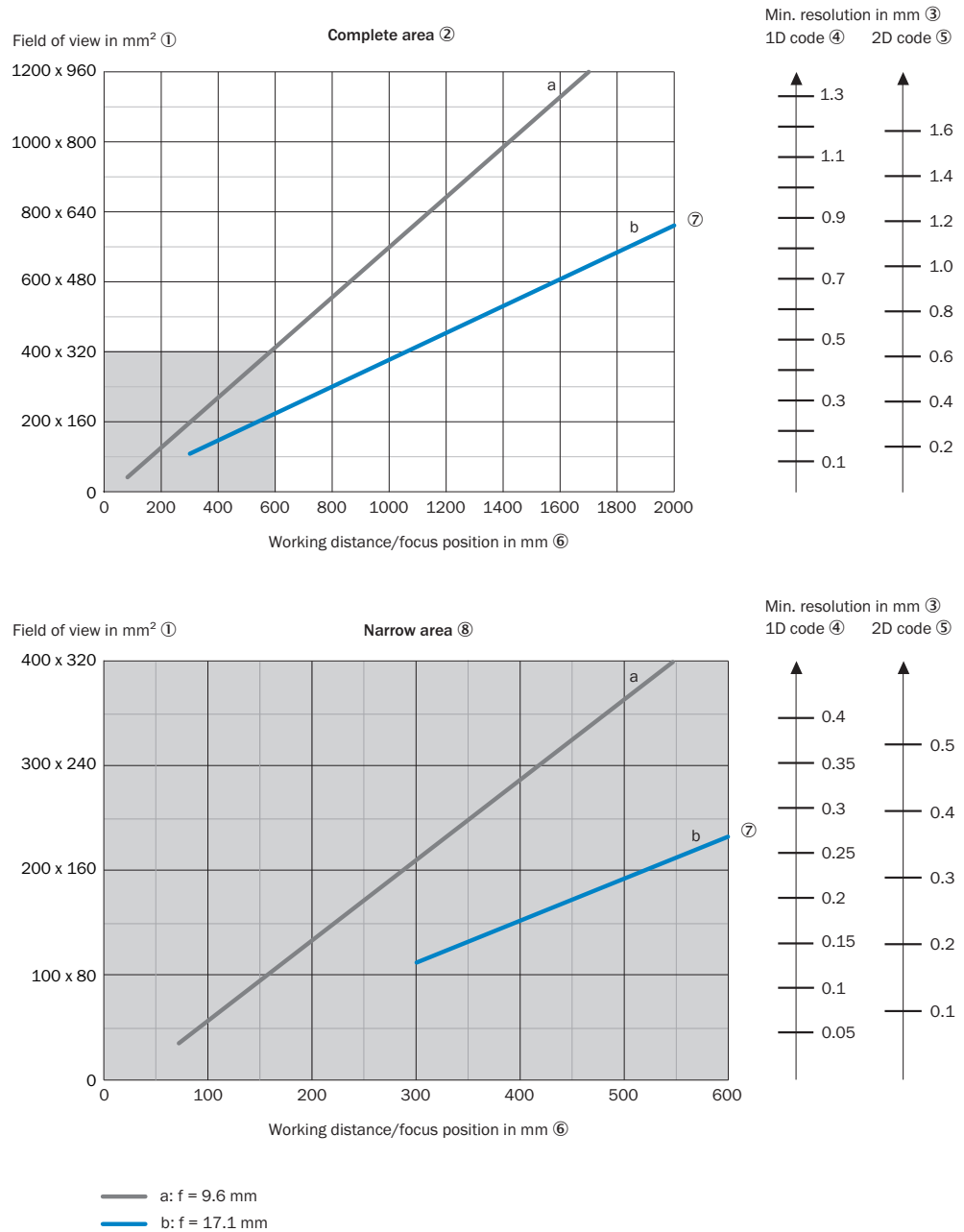


Figure 12: Field of view diagram Lector621/Lector621 ECO

- ① Field of view in mm²
- ② Overall range
- ③ Minimum resolution in mm
- ④ 1D code
- ⑤ 2D code
- ⑥ Working distance/Focus position in mm

- ⑦ Focal length of lens, here example for $f = 17.1$ mm
- ⑧ Near range

Interpretation aid for the field of view diagram

Using the diagram, you can determine the following data for each device type:

- The maximum working distance for a selected code resolution
- The dimensions of the field of view that is available for this distance

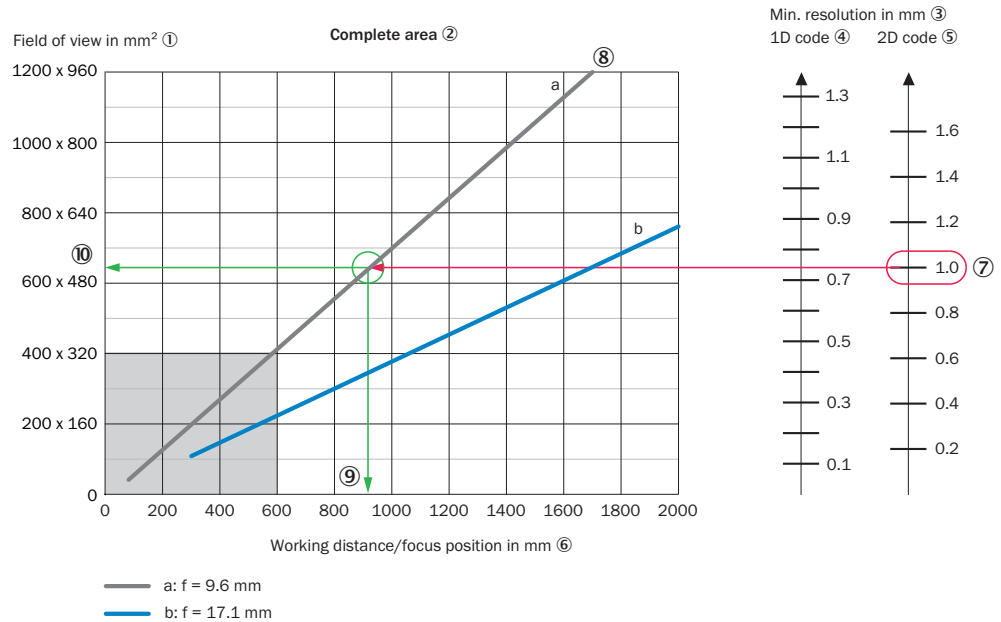


Figure 13: Interpretation aid for the field of view diagram

- ① Field of view in mm²
- ② Overall range
- ③ Minimum resolution in mm
- ④ 1D code
- ⑤ 2D code
- ⑥ Working distance/Focus position in mm
- ⑦ Selected code resolution
- ⑧ Focal length of lens, here example for $f = 9.6$ mm
- ⑨ Reading off: resultant maximum working distance
- ⑩ Reading off: resultant field of view (mm x mm)

Given (in red):

- Code resolution 2D code ⑦: 1.0 mm
- Focal length of lens ⑧: 9.6 mm

Read off (in green):

- Maximum working distance ⑨: approx. 920 mm
- Field of view ⑩: approx. 640 mm x approx. 510 mm

Both axes of the diagrams must be interpreted linearly.

5.4 Mounting the device

Aligning the device with viewing window to object

The device must be aligned in consideration of the field of view (see "Mounting requirements", page 25) and the application circumstances (see "Field of view diagrams", page 28).

Mounting the device

Perform one of the following steps:

- Mount the device on a bracket supplied by the customer using M5 screws. Screw the screws no more than 5 mm into the tapped blind holes or sliding nuts.
 - To do this, either use the tapped blind holes in the housing in pairs at the front or below or use the two M5 sliding nuts in the lateral slots.
 - Attach the optional SICK bracket that has been ordered separately (e.g. mounting bracket part no. 2042902) to the device using the two sliding nuts.

5.5 Mounting the read cycle sensor (optional)

If the device is triggered by means of an external trigger sensor, the sensor must be mounted close to the device.

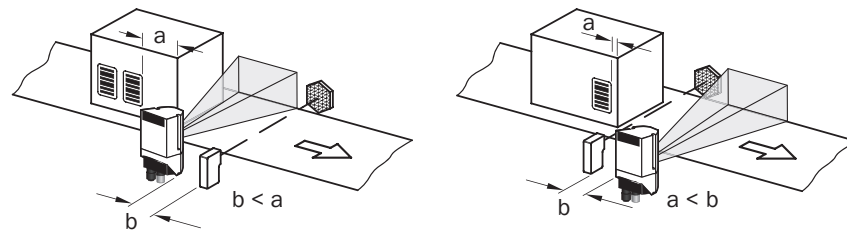


Figure 14: Mounting example for positioning an external trigger sensor for the read cycle

The mounting location of the device depends on the distance a of the codes from the front object edge. Depending on application, the device must be mounted so that codes on objects of different sizes can be read completely during the evaluation time window (reading interval).

6 Electrical installation

6.1 Safety

6.1.1 Notes on electrical installation



NOTICE

Hazard due to unsuitable voltage source!

- Note the supply voltage range
- The voltage source must meet the requirements of ES1 and PS2 or lower (EN62368-1), or SELV (EN60950-1).



NOTICE

Equipment damage or unpredictable operation due to working with live parts.

Working with live parts may result in unpredictable operation.

- Only carry out wiring work when the power is off.
- Only connect and disconnect electrical connections when the power is off.

- **The electrical installation must only be performed by electrically qualified personnel.**
- **Standard safety requirements must be observed when working on electrical systems.**
- Only switch on the supply voltage for the device when the connection tasks have been completed and the wiring has been thoroughly checked.
- Perform all connection work only at ambient temperatures above 0 °C.
- Only connect the device to the permitted supply voltage, [see "Connecting the supply voltage", page 42](#).
- In the case of adapter cables with open end, make sure that bare wire ends do not touch (risk of short circuit when the supply voltage is switched on). Wires must be appropriately insulated from each other. This also applies to unused wires.
- Wire cross-sections in the supply cable from the user's power system must be designed in accordance with the applicable national standards.
- Wire cross-sections of the data and switching signal cables must also be designed in accordance with the applicable national standards.
- Circuits connected to the device must be designed as SELV circuits (SELV = Safety Extra Low Voltage). The supply voltage must satisfy the requirements of SELV in accordance with the currently applicable standards.
- Protect the device with a separate fuse at the start of the supply circuit.

Data cables



NOTE

Layout of data cables

- Use screened data cables with twisted-pair wires.
- Implement the screening design correctly and completely.
- To avoid interference, e.g. from switching power supplies, motors, clocked drives, and contactors, always use cables and layouts that are suitable for EMC.
- Do not lay cables over long distances in parallel with power supply cables and motor cables in cable channels.

Serial data transmission (RS-232, RS422/485)

- The possible cable length between the device and host computer depends on:

- the chosen physical version of the host interface
- the data transmission rate set in the device

For further information, see "Wiring data interfaces", page 44.

6.1.2 Conditions for specified enclosure rating

To ensure compliance with the specified IP65 enclosure rating of the device during operation, the following requirements must be met: If these requirements are not met, the device does not fulfill any specified enclosure rating.

Lector621

- The cables plugged into the two electrical M12 connections are screwed tight.
- Any electrical M12 connections that are not being used (Ethernet connection) must be sealed with protective plugs that are screwed tight (as in the delivery condition).
- The black cover (flap) on the rear of the device must be flush with the device and screwed tight.

Lector621 ECO

- The D-Sub male connector of the connecting cable must be screwed tight with the contacted female connector.
- If an extension cable is used, a corresponding rubber seal (SICK accessory) must be fitted between the two D-Sub plug connectors. The plug connectors are screwed together. You can find a suitable IP65 rubber seal online at:
www.sick.com/Lector62x
- The black cover (flap) on the rear of the device must be flush with the device and screwed tight.



NOTICE

Operate the device with open black cover only for a short time for the following tasks as required:

- Type-dependent: inserting or removing the optional memory card
- Temporary use of the USB interface as a service interface

During this time, protect the device against moisture and dust.

6.1.3 Note on the swivel connector



NOTICE

Damage to the connector from over-rotation!

The swivel connector of the Lector621 variant has two opposite end positions.

- Do not rotate the connector from either of the two end positions by more than 180° in the opposite direction. Do not exceed the respective limit position.
 - Carry out the rotational movement slowly.
-

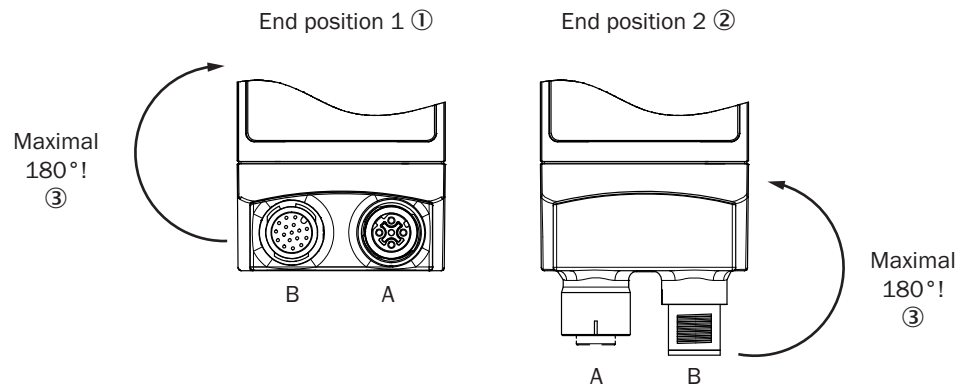


Figure 15: Rear view of Lector621: end positions of the swivel connector

- ① End position 1
- ② End position 2
- ③ Maximum 180°

6.1.4 Prerequisites for safe operation of the device



WARNING

Risk of injury and damage caused by electrical current!

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

- Metal housings are vulnerable to dangerous currents.
- Devices will behave incorrectly or be destroyed.
- Cable shielding will be damaged by overheating and cause cable fires.

Remedial measures

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

The device is connected to the peripheral devices (voltage supply, any local pulse sensor(s), system controller) via shielded cables. The cable shield – for the data cable, for example – rests against the metal housing of the device. The device can be grounded through the cable shield or through a blind tapped hole in the housing, for example.

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 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

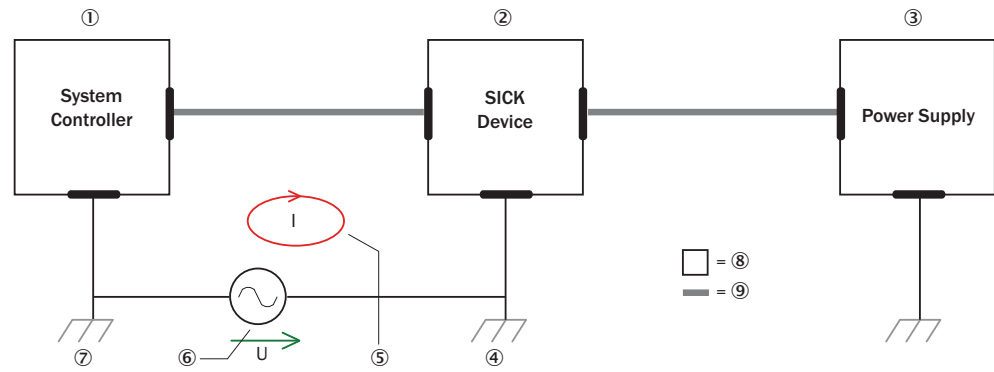


Figure 16: Example: Occurrence of equipotential bonding currents in the system configuration

- ① System controller
- ② Device
- ③ Voltage supply
- ④ Grounding point 2
- ⑤ Closed current loop with equalizing currents via cable shield
- ⑥ Ground potential difference
- ⑦ Grounding point 1
- ⑧ Metal housing
- ⑨ Shielded electrical cable

If these conditions are not fulfilled, equipotential bonding currents can flow along the cable shielding between the devices due to differing ground potentials and cause the hazards specified. This is, for example, possible in cases where there are devices within a widely distributed system covering several buildings.

Remedial measures

The most common solution to prevent equipotential bonding 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.



NOTICE

We expressly advise against opening up the cable shields. This would mean 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.

Measures for widely distributed system installations

On widely distributed system installations with correspondingly large potential differences, the setting up of local islands and connecting them using commercially available **electro-optical signal isolators** is recommended. This measure achieves a high degree of resistance to electromagnetic interference.

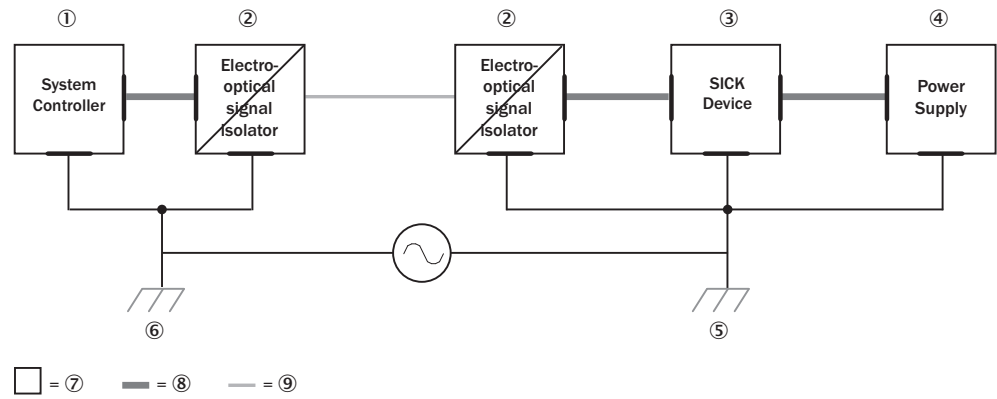


Figure 17: Example: Prevention of equipotential bonding currents in the system configuration by the use of electro-optical signal isolators

- ① System controller
- ② Electro-optical signal isolator
- ③ Device
- ④ Voltage supply
- ⑤ Grounding point 2
- ⑥ Grounding point 1
- ⑦ Metal housing
- ⑧ Shielded electrical cable
- ⑨ Optical fiber

The use of electro-optical signal isolators between the islands isolates the ground loop. Within the islands, a stable equipotential bonding prevents equalizing currents on the cable shields.

Measures for small system installations

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

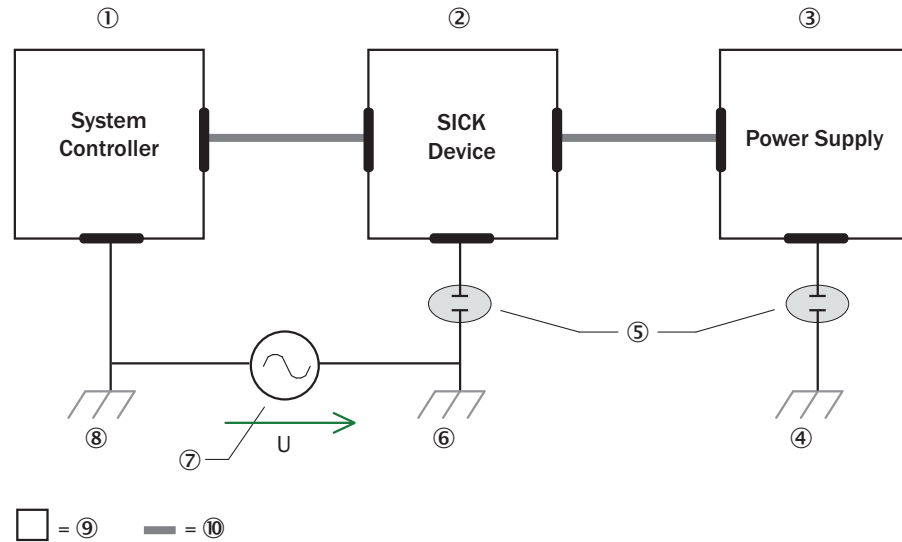


Figure 18: Example: Prevention of equipotential bonding currents in the system configuration by the insulated mounting of the device

- ① System controller
- ② Device
- ③ Voltage supply

- ④ Grounding point 3
- ⑤ Insulated mounting
- ⑥ Grounding point 2
- ⑦ Grounding potential difference
- ⑧ Grounding point 1
- ⑨ Metal housing
- ⑩ Shielded electrical cable

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



NOTICE

The voltage supply for the device 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.

6.2 Wiring instructions



NOTICE

Faults due to incorrect wiring.

Incorrect wiring may result in operational faults.

- Follow the wiring notes precisely.
-

Pre-assembled cables



NOTE

Pre-assembled cables can be found online at: www.sick.com/Lector62x

Pre-assembled cables with open cable end at one end



NOTE

Information about pin, signal and wire color assignments see "Signal assignment of cables with open cable end at one end", page 68 in the Annex.

6.3 Connection diagrams

6.3.1 Connection principle for service operation

This operating mode is recommended for initial commissioning of the device.



NOTE

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

Lector621

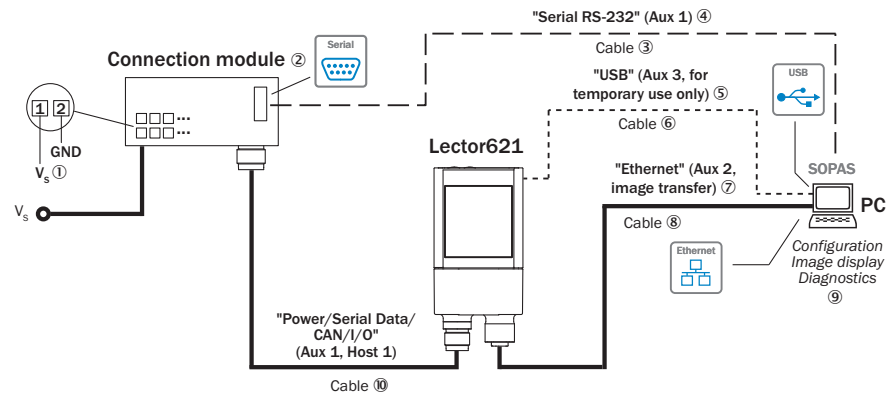


Figure 19: Lector621 commissioning: connection block diagram

- ① Supply voltage V_s ($V_s = U_V$)
- ② Connection module CDB650-204 or CDM420-0006
- ③ Null modem cable (female connector, D-Sub, 9-pin/female connector, D-Sub, 9-pin), crossed TxD and RxD
- ④ Serial RS-232, alternative to USB or Ethernet Aux port. Serial RS-232 without image transmission.
- ⑤ USB, alternative to serial RS-232 or Ethernet Aux port. USB only for temporary use as a service interface.
- ⑥ Adapter cable (male connector, USB, Micro-B type / male connector, USB, type A)
- ⑦ Ethernet Aux port alternatively to RS-232 or USB
- ⑧ Adapter cable (male connector, M12, 4-pin, D-coded/male connector, RJ-45, 8-pin)
- ⑨ Configuration with SOPAS ET, image display or reading diagnostics
- ⑩ For CDB650-204: Connection cable 1:1 (female connector, M12, 17-pin, A-coded/male connector, M12, 17-pin, A-coded)
For CDM420-0006: Adapter cable (female connector, M12, 17-pin, A-coded/male connector, D-Sub-HD, 15-pin)

Lector621 ECO

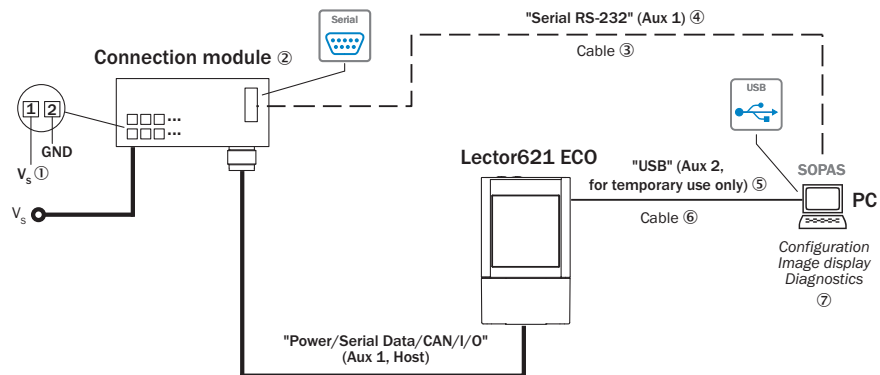


Figure 20: Lector621 ECO commissioning: connection block diagram

- ① Supply voltage V_s ($V_s = U_V$)
- ② Connection module CDB620 or CDM420
- ③ Null modem cable (female connector, D-Sub, 9-pin/female connector, D-Sub, 9-pin), crossed TxD and RxD
- ④ Serial RS-232, alternative to USB, but no image transmission
- ⑤ USB, alternative to Serial RS-232. USB only for temporary use as a service interface.

- ⑥ Adapter cable (male connector, USB, Micro-B type / male connector, USB, type A)
- ⑦ Configuration with SOPAS ET, image display or reading diagnostics

6.3.2 Connection principle for read mode

Lector621

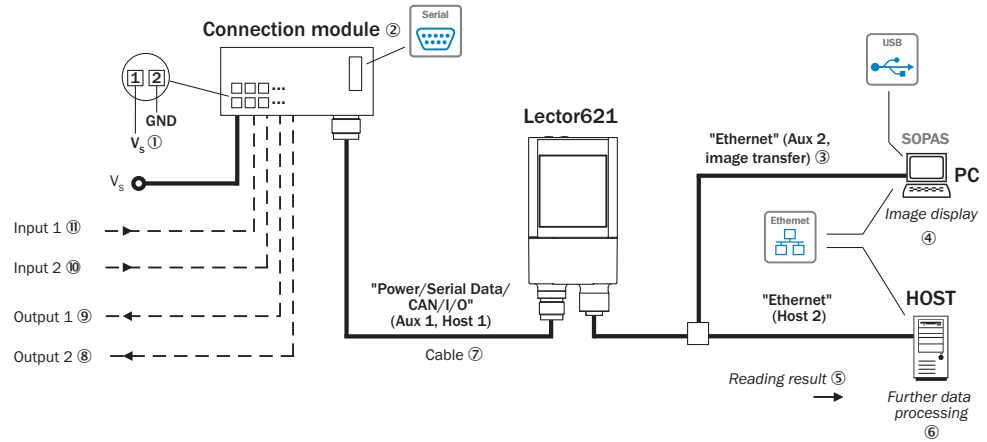


Figure 21: Lector621 read mode: connection block diagram

- ① Supply voltage V_s ($V_s = U_V$)
- ② Connection module CDB650-204 or CDM420-0006
- ③ Ethernet-Aux port (image transmission)
- ④ Image display
- ⑤ Read result
- ⑥ Data further processing
- ⑦ For CDB650-204: Connection cable 1:1 (female connector, M12, 17-pin, A-coded/male connector, M12, 17-pin, A-coded)
For CDM420-0006: Adapter cable (female connector, M12, 17-pin, A-coded/male connector, D-Sub-HD, 15-pin)
- ⑧ Digital switching output 2, e.g. for connecting an LED
- ⑨ Digital switching output 1, e.g. for connecting an LED
- ⑩ Digital switching input 2, e.g., for connecting an incremental encoder
- ⑪ Digital switching input 1, e.g., for connecting a read cycle trigger sensor

Lector621 ECO

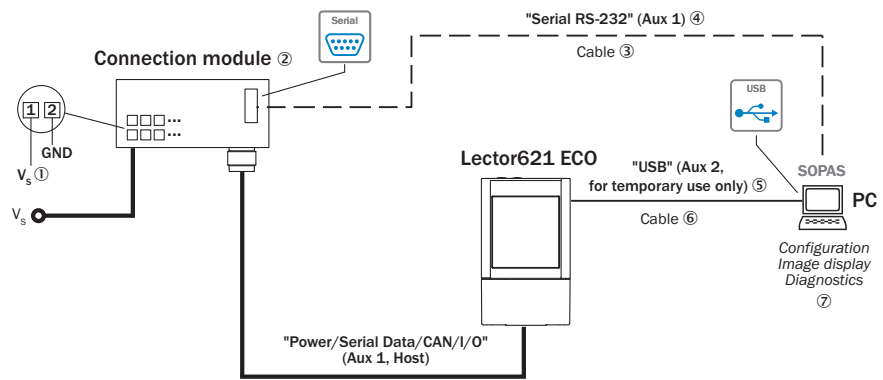


Figure 22: Lector621 ECO read mode: connection block diagram

- ① Supply voltage V_s ($V_s = U_V$)
- ② Connection module CDB620 or CDM420
- ③ Null modem cable (female connector, D-Sub, 9-pin/female connector, D-Sub, 9-pin), crossed TxD and RxD
- ④ Serial RS-232, alternative to USB, but no image transmission
- ⑤ USB, alternative to Serial RS-232. USB only for temporary use as a service interface.
- ⑥ Adapter cable (male connector, USB, Micro-B type / male connector, USB, type A)
- ⑦ Configuration with SOPAS ET, image display or reading diagnostics

6.3.3 Example applications

Lector621

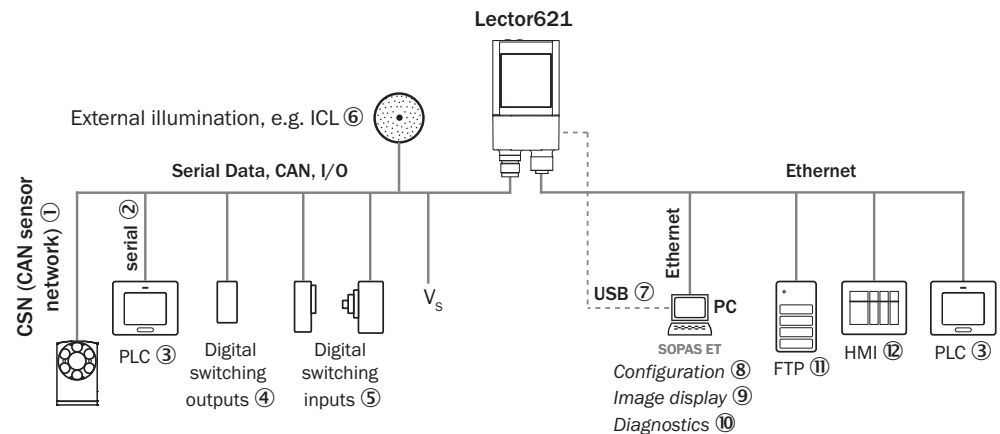


Figure 23: Lector621: connection options

- ① CSN (CAN sensor network)
- ② Serial
- ③ PLC (programmable logic controller)
- ④ Digital switching outputs, e.g. for signal lamps
- ⑤ Digital switching inputs e.g. for encoders, photoelectric sensors (trigger sensor)
- ⑥ External illumination unit, e.g. ICL
- ⑦ USB interface (only for temporary use as a service interface)
- ⑧ Configuration
- ⑨ Image display
- ⑩ Diagnostics
- ⑪ FTP server (image storage)

⑫ HMI interface

Lector621 ECO

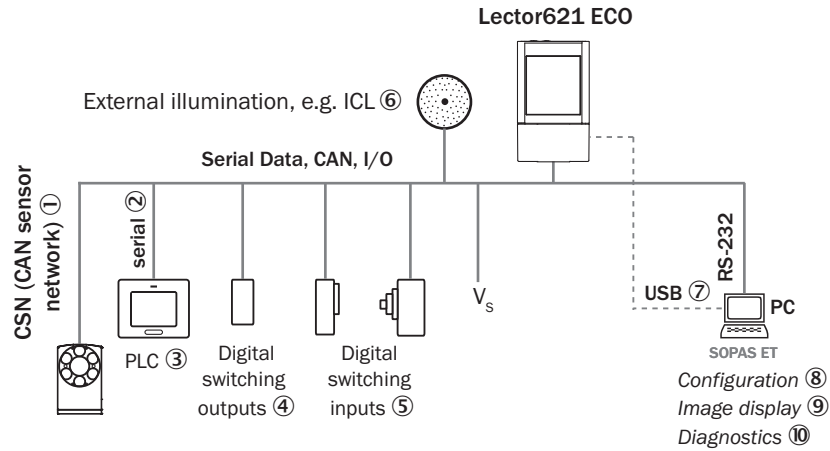


Figure 24: Lector621 ECO: connection options

- ① CSN (CAN sensor network)
- ② Serial
- ③ PLC (programmable logic controller)
- ④ Digital switching outputs, e.g. for signal lamps
- ⑤ Digital switching inputs e.g. for encoders, photoelectric sensors (trigger sensor)
- ⑥ External illumination unit, e.g. ICL
- ⑦ USB interface (only for temporary use as a service interface)
- ⑧ Configuration
- ⑨ Image display
- ⑩ Diagnostics

6.4 Pin assignments of electrical connections

6.4.1 Lector621

“Power/Serial data/CAN/I/O” connection

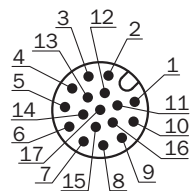


Figure 25: Male connector, M12, 17-pin, A-coded

Table 10: Pin assignment of the “Power/Serial data/CAN/I/O” connection

| Pin | Signal | Function |
|-----|--|--------------------------|
| 1 | GND | Ground |
| 2 | V _s | Supply voltage |
| 3 | CAN L | CAN bus (IN/OUT) |
| 4 | CAN H | CAN bus (IN/OUT) |
| 5 | TD+ (RS-422/485), host | Host interface (sender+) |
| 6 | TD- (RS-422/485), host TxD (RS-232), host | Host interface (sender-) |

| Pin | Signal | Function |
|-----|--|----------------------------|
| 7 | TxD (RS-232), Aux | Aux interface (sender) |
| 8 | RxD (RS-232), AUX | Aux interface (receiver) |
| 9 | SensGND | Switching input ground |
| 10 | Sensor 1 | Digital switching input 1 |
| 11 | RD+ (RS-422/485), host | Host interface (receiver+) |
| 12 | RD- (RS-422/485), host RxD (RS-232), host | Host interface (receiver-) |
| 13 | Result 1 | Digital switching output 1 |
| 14 | Result 2 | Digital switching output 2 |
| 15 | Sensor 2 | Digital switching input 2 |
| 16 | Result 3 | Digital switching output 3 |
| 17 | Result 4 | Digital switching output 4 |
| - | - | Shield |

“Ethernet” connection

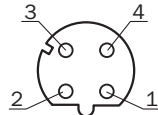


Figure 26: M12 female connector, 4-pin, D-coded

Table 11: Pin assignment of the “Ethernet” connection

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

6.4.2 Lector621 ECO

“Power/Serial data/CAN/I/O” connection

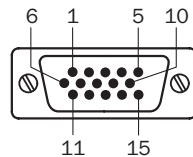


Figure 27: Male connector, D-Sub-HD, 15-pin

Table 12: Pin assignment of the “Power/Serial data/CAN/I/O” connection (D-Sub-HD)

| Pin | Signal | Function |
|-----|------------------------|----------------------------|
| 1 | V _S | Supply voltage |
| 2 | RxD (RS-232), AUX | Aux interface (receiver) |
| 3 | TxD (RS-232), Aux | Aux interface (sender) |
| 4 | Sensor 2 | Digital switching input 2 |
| 5 | GND | Ground |
| 6 | RD+ (RS-422/485), host | Host interface (receiver+) |

| Pin | Signal | Function |
|-----|--|----------------------------|
| 7 | RD- (RS-422/485), host RxD (RS-232), host | Host interface (receiver-) |
| 8 | TD+ (RS-422/485), host | Host interface (sender+) |
| 9 | TD- (RS-422/485), host TxD (RS-232), host | Host interface (sender-) |
| 10 | CAN H | CAN bus (IN/OUT) |
| 11 | CAN L | CAN bus (IN/OUT) |
| 12 | Result 1 | Digital switching output 1 |
| 13 | Result 2 | Digital switching output 2 |
| 14 | Sensor 1 | Digital switching input 1 |
| 15 | SensGND | Switching input ground |

6.5 Connecting the device

6.5.1 Using the optional connection modules CDB and CDM

Table 13: Possible combinations of device and connection modules

| Device (variant) | Connection on the device | Connection module | Connection cable |
|------------------|---|---------------------------|-----------------------------|
| Lector621 | Male connector, M12, 17-pin, A-coded | CDB650-204 | Cable 1:1 ¹⁾ |
| | | CDM420-0006 ²⁾ | Adapter cable ³⁾ |
| Lector621 ECO | Cable with male connector, D-Sub-HD, 15-pin | CDB620 ⁴⁾ | - |
| | | CDM420 ⁴⁾⁵⁾ | |

- 1) Connection cable 1:1 (female connector, M12, 17-pin, A-coded / male connector, M12, 17-pin, A-coded)
- 2) CDM420-0007: for connection of 2 devices each.
- 3) Adapter cable (female connector, M12, 17-pin, A-coded/male connector, D-Sub-HD, 15-pin)
- 4) All variants of the connection module in each case.
- 5) CDM420-0004 and CDM420-0007: for connection of 2 devices each.



NOTE

Connection module

For detailed information about mounting and electrical installation, please refer to the operating instructions for the connection module in question. These are available online at.

- www.sick.com/CDB
- www.sick.com/CDM

6.5.2 Connecting the supply voltage

SELV in accordance with currently applicable standard EN 60950-1.

The power source for the device must be able to provide the following power outputs:

Table 14: Lector62x: required supply voltage V_S

| Device variant | Supply voltage V_S | Power source: required power output ¹⁾ |
|----------------|----------------------------|---|
| Lector621 | DC 12 V ... 24 V \pm 20% | Maximum 25 W |
| Lector 621 ECO | DC 12 V ... 24 V \pm 20% | Maximum 18 W |

- 1) For device with 4 (2) loaded switching outputs (each 100 mA).

In the case of connection via the optional connection module CDB/CDM: additionally required output power 0.5 W when using the optional parameter cloning module CMC600 in the connection module.

Table 15: Lector621 variant: typical current consumption depending on supply voltage

| Designation | | Supply voltage (V_S) in [DC V] | | | |
|---|-------------------------------------|------------------------------------|------|-------|----------------------|
| | | 9.6 (12 V -20 %) | 12 | 24 | 28.8 (24 V +20 %) |
| Current consumption, switching outputs unloaded | $I_{B\text{ RMS}}$ [A] | 0.4 | 0.32 | 0.17 | 0.14 |
| Power loss, switching outputs unloaded | P_{RMS} [W] | 3.84 | 3.84 | 4.08 | 4.03 |
| Maximum current consumption, switching outputs unloaded | $I_{B\text{ peak}}^{1)}$ [A] | 1.05 | 0.90 | 0.45 | 0.35 |
| Typical, all 4 switching outputs loaded (0.1 A per output) | $I_{B\text{ RMS }40\text{out}}$ [A] | 0.8 | 0.72 | 0.57 | 0.54 |
| Power loss, all 4 switching outputs loaded (0.1 A per output) | $P_{\text{RMS }40\text{out}}$ [W] | 7.68 | 8.64 | 13.68 | 15.55 |

1) For design of the power supply unit, supply cable and fuse protection at the start of the line.

Table 16: Lector621 ECO variant: typical current consumption depending on supply voltage

| Designation | | Supply voltage (V_S) in [DC V] | | | |
|---|-------------------------------------|------------------------------------|------|------|----------------------|
| | | 9.6 (12 V -20 %) | 12 | 24 | 28.8 (24 V +20 %) |
| Current consumption, switching outputs unloaded | $I_{B\text{ RMS}}$ [A] | 0.39 | 0.31 | 0.16 | 0.14 |
| Power loss, switching outputs unloaded | P_{RMS} [W] | 3.74 | 3.72 | 3.84 | 4.03 |
| Maximum current consumption, switching outputs unloaded | $I_{B\text{ peak}}^{1)}$ [A] | 1.05 | 0.90 | 0.45 | 0.35 |
| Typical, both switching outputs loaded (0.1 A per output) | $I_{B\text{ RMS }20\text{out}}$ [A] | 0.59 | 0.51 | 0.36 | 0.34 |
| Power loss, all 4 switching outputs loaded (0.1 A per output) | $P_{\text{RMS }20\text{out}}$ [W] | 5.66 | 6.12 | 8.64 | 9.79 |

1) For design of the power supply unit, supply cable and fuse protection at the start of the line.

Protecting the supply cables

To ensure protection against short-circuits/overload in the customer's supply cables, the wire cross-sections used must be appropriately selected and protected.

The following standards must be observed in Germany:

- DIN VDE 0100 (part 430)
- DIN VDE 0298 (part 4) and/or DIN VDE 0891 (part 1)

Connection without connection module

With a supply voltage of DC 12 V to 24 V \pm 20 %, protect the device with a separate fuse with the following rating:

- Lector621: 2 A
 - Lector621 ECO: 0.8 A
- Install the fuse in the supply circuit at the start of the supply cable.

Connection with connection module

The supply voltage for the device is protected as follows in the connection modules in the circuit after switch S1:

Table 17: Supply voltage: fuse protection in the connection module

| Device | Connection module | Supply voltage fuse protection | Reference |
|---------------|-------------------|--------------------------------|---|
| Lector621 | CDB650-204 | 3 A (slow-blow) | see "Connecting supply voltage for the device in CDB650-204", page 74 |
| | CDM420-0006 | 2 A (slow-blow) | see "Connecting supply voltage for the device in CDM420-0006", page 88 |
| Lector621 ECO | CDB620 | 0.8 A (slow-blow) | see "Connecting supply voltage for the device in CDB620-001", page 102 |
| | CDM420-0001 | 0.8 A (slow-blow) | see "Connecting supply voltage for the device in CDM420-0001", page 115 |

6.5.3 Wiring data interfaces

Wiring Ethernet interface (only variant Lector621)

1. Connect the device to the Ethernet connection of the PC via an adapter cable.
2. Set up communication via SOPAS ET configuration software.



NOTE

The Ethernet interface of the device has an Auto-MDIX function. This automatically adjusts the transmission speed as well as any necessary crossover connections.

Wiring serial data interfaces (all variants)

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

Table 18: Serial interfaces: data transmission rates and recommended max. cable lengths

| Interface | Data transmission rate | Distance to the target computer (host) |
|----------------------|--|---|
| RS-232 | Up to 19.2 kBd 38.4 kBd ... 57.6 kBd 115.2 kBd ... 500 kBd | Max. 15 m Max. 5 m < 2 m |
| RS-422 ¹⁾ | Up to 38.4 kBd 38.4 kBd ... 57.6 kBd 57.6 kBd ... 500 kBd | Max. 1,200 m Max. 500 m Max. 10 m |

¹⁾ For RS-422-compatible cable and corresponding cable termination as per specification

**NOTICE****Risk of damage to the internal interface modules!**

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

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

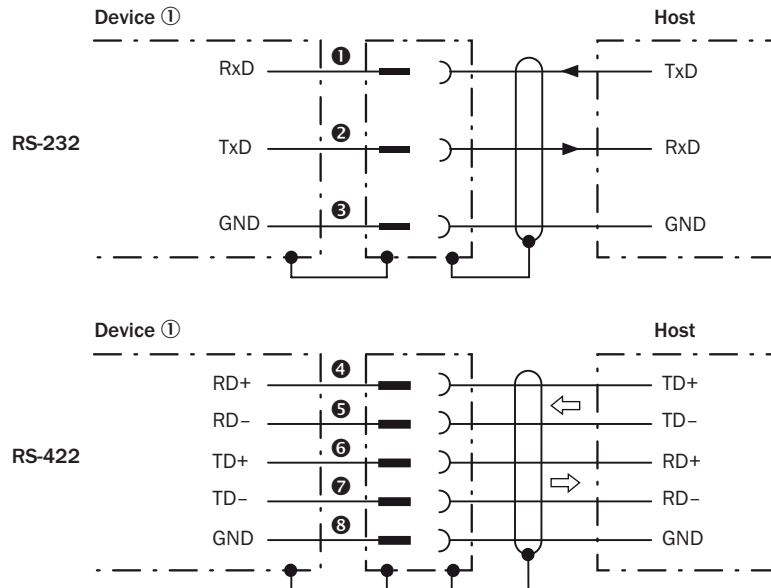


Figure 28: Wiring of the serial data interfaces RS-232 and RS-422

① Device

①...③ Pin assignment: see RS-232 pin assignment for the respective device

④...⑧ Pin assignment: see RS-422 pin assignment for the respective device

**NOTE**

Activate the serial data interface type in the device with a configuration tool, e.g. the configuration software SOPAS ET.

Wiring the data interfaces of the device via a connection module:

| Device | Connection module | Data interface | Reference |
|-----------|-------------------|----------------|---|
| Lector621 | CDB650-204 | RS-232 | see "Wiring serial host interface RS-232 of the device in CDB650-204", page 74 |
| | | RS-422 | see "Wiring serial host interface RS-422 of the device in CDB650-204", page 75 |
| | CDM420-0006 | RS-232 | see "Connecting serial host interface RS-232 of the device in CDM420-0006", page 88 |
| | | RS-422 | see "Connecting serial host interface RS-422 of the device in CDM420-0006", page 89 |

| Device | Connection module | Data interface | Reference |
|---------------|-------------------|----------------|--|
| Lector621 ECO | CDB620-001 | RS-232 | see "Wiring serial host interface RS-232 of the device in CDB620-001", page 102 |
| | | RS-422 | see "Wiring serial host interface RS-422 of the device in CDB620-001", page 103 |
| | CDM420-0001 | RS-232 | see "Wiring serial host interface RS-232 of the device in CDM420-0001", page 115 |
| | | RS-422 | see "Wiring serial host interface RS-422 of the device in CDM420-0001", page 116 |

Termination of the RS-422/485 data interface

Termination can be implemented in the connection module via switches.

Additional information on this can be found in the operating instructions for the relevant connection module.

6.5.4 Wiring the CAN interface



NOTE

Activate the CAN data interface in the device with a configuration tool, e.g. the configuration software SOPAS ET.

Make further settings in the device corresponding to the function of the device in the system configuration.

Wiring the CAN interface of the device via a connection module:

| Device | Connection module | Interface | Reference |
|---------------|-------------------|-----------|---|
| Lector621 | CDB650-204 | CAN | see "Wiring the CAN interface in the CDB650-204", page 76 |
| | CDM420-0006 | CAN | see "Wiring the CAN interface in the CDM420-0006", page 90 |
| Lector621 ECO | CDB620-001 | CAN | see "Wiring the CAN interface in the CDB620-001", page 104 |
| | CDM420-0001 | CAN | see "Wiring the CAN interface in the CDM420-0001", page 117 |

6.5.5 Wiring digital switching inputs

Physical switching inputs on the device

The two physical digital switching inputs “Sensor 1” and “Sensor 2” can be used for starting and/or ending the external read cycle or for feeding an incremental signal, for example.

Lector621:

The full complement of digital switching inputs is available in each case:

- at the male connector of the device (M12, 17-pin, A-coded)
- at the adapter cable (female connector, M12, 17-pin, A-coded/male connector, D-Sub-HD, 15-pin)
- at the open end of the adapter cable (female connector, M12, 17-pin, A-coded / open end)

Lector621 ECO:

The two digital switching inputs are available at the male connector, D-Sub-HD, 15-pin, of the connecting cable.

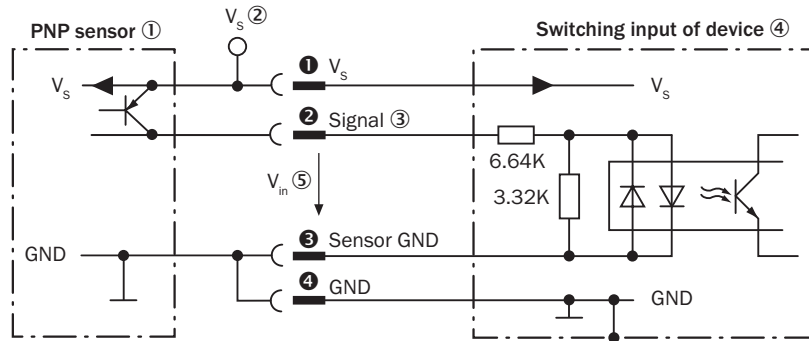


Figure 29: Wiring a digital switching input

- ① Trigger sensor (PNP sensor)
 - ② Supply voltage V_s
 - ③ Input signal
 - ④ Switching input of the device (“Sensor 1” or “Sensor 2”)
 - ⑤ Input voltage V_{in} ($V_{in} = U_e$)
- ①... ④ For pin assignment, see respective device

Table 19: Characteristic data of the digital switching inputs “Sensor 1” and “Sensor 2”

| | |
|---------------------------|--|
| Switching behavior | Power to the input starts the assigned function, e.g. start of the internal reading interval of the device Default: active high, debounce time: 10 ms (standard) |
| Properties | <ul style="list-style-type: none"> • Opto-decoupled, reverse polarity protected • Can be wired with PNP output of a trigger sensor |
| Electrical values | The electrical values are identical for all digital switching inputs. Low: $V_{in} \leq 2 \text{ V}$; $I_{in} \leq 0.3 \text{ mA}$ High: $6 \text{ V} \leq V_{in} \leq 30 \text{ V}$; $0.7 \text{ mA} \leq I_{in} \leq 5 \text{ mA}$ |

Extension: additional logical switching inputs in the device for physical “external” digital switching inputs on the optional connection module

Thanks to the optional CMC600 parameter cloning module in combination with the CDB or CDM connection module, the two digital switching inputs “External input 1” and “External input 2” are additionally available at the relevant terminals of the connection module.



NOTE

The external digital switching inputs are software-controlled and therefore do not offer the same timing precision as physical inputs. They may therefore not be suitable for time-critical applications.

Function assignment

**NOTE**

Assign the functions for the digital switching inputs in the device with a configuration tool, e.g. the configuration software SOPAS ET.

For electrical characteristic data of the two external digital switching inputs, see connection diagrams for the respective connection modules in these operating instructions.

Wiring the digital switching inputs of the device via a connection module:

| Device | Connection module | Digital switching inputs | Reference |
|---------------|-------------------|--|--|
| Lector621 | CDB650-204 | "SENS/IN 1" "SENS/IN 2" | see "Wiring digital switching inputs "Sensor 1" and "Sensor 2" of the device in the CDB650-204", page 78 |
| | | External input 1 ("EXT. IN 1") External input 2 ("EXT. IN 2") | see "Wiring digital switching inputs "External input 1" and "External input 2" of the device in the CDB650-204", page 80 |
| | CMD420-0006 | "Sensor 1" "Sensor 2" | see "Wiring digital switching inputs "Sensor 1" and "Sensor 2" of the device in the CDM420-0006", page 92 |
| | | External input 1 ("Aux In 1") External input 2 ("Aux In 2") | see "Wiring digital switching inputs "External input 1" and "External input 2" of the device in the CDM420-0006", page 94 |
| Lector621 ECO | CDB620-001 | "Sens 1" "Sens 2" | see "Wiring digital switching inputs "Sensor 1" and "Sensor 2" of the device in the CDB620-001", page 106 |
| | | External input 1 ("In 1") External input 2 ("In 2") | see "Wiring digital switching inputs "External input 1" and "External input 2" of the device in the CDB620-001", page 108 |
| | CMD420-0001 | "Sensor 1" "Sensor 2" | see "Wiring digital switching inputs "Sensor 1" and "Sensor 2" of the device in the CDM420-0001", page 119 |
| | | External input 1 ("Aux In 1") External input 2 ("Aux In 2") | see "Wiring digital switching inputs "External input 1" and "External input 2" of the device in the CDM420-0001", page 121 |

6.5.6 Wiring digital switching outputs

Physical switching outputs on the device

The physical digital switching outputs "Result 1" to "Result 4" or "Result 1" and "Result 2" are used to signal events in the read operation. Different functions can be assigned to them independently of each other for this purpose. If the assigned event occurs, then the corresponding switching output becomes live after the end of the read cycle for the selected pulse duration, for example (default).

Lector621:

The full complement of four digital switching outputs is available in each case:

- at the male connector of the device (M12, 17-pin, A-coded)
- at the adapter cable (female connector, M12, 17-pin, A-coded/male connector, D-Sub-HD, 15-pin)
- at the open end of the adapter cable (female connector, M12, 17-pin, A-coded / open end)
- in the CDB650-204 connection module

The four digital switching outputs are available reduced to 2 outputs:

- in the CDM420-0006 connection module

Lector621 ECO:

The two digital switching outputs are available at the male connector, D-Sub-HD, 15-pin, of the connecting cable.

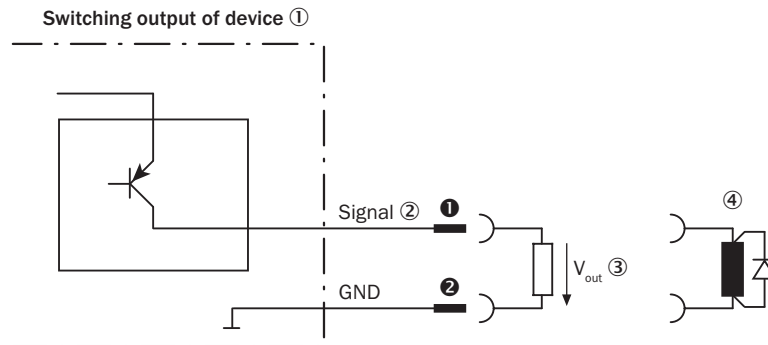


Figure 30: Wiring a digital switching output

- ① Lector621: switching output of the device (“Result 1” to “Result 4”)
Lector621 ECO: switching output of the device (“Result 1” or “Result 2”)
- ② Output signal
- ③ Output voltage V_{out}
- ④ With inductive load: see note
- ①... ② For pin assignment, see respective device

Table 20: Characteristic data of the digital switching outputs “Result 1” to “Result 4”

| | |
|---------------------------|--|
| Switching behavior | PNP switching to supply voltage V_S Default: no function, logic: not inverted (active high) |
| Properties | <ul style="list-style-type: none"> • Short-circuit protected + temperature protected • Not electrically isolated from V_S |
| Electrical values | $0\text{ V} \leq V_{out} \leq V_S$ $(V_S - 1.5\text{ V}) \leq V_{out} \leq V_S$ for $I_{out} \leq 100\text{ mA}$ |



NOTE

Provide an arc-suppression circuit at the digital switching output if an inductive load is present.

- Attach a freewheeling diode directly to the load for this purpose.



NOTE

Capacitive loads at the digital switching outputs have an effect on the switch-on and switch-off behavior. A maximum capacitance of 100 nF is the limit value.

Extension: additional logical switching outputs in the device for physical “external” digital switching outputs on the optional connection module

Thanks to the optional CMC600 parameter cloning module in combination with the CDB or CDM connection module, the two digital switching outputs “External output 1” and “External output 2” are additionally available at the relevant terminals of the connection module.



NOTE

The external digital switching outputs are software-controlled and therefore do not offer the same timing precision as physical outputs. They may therefore not be suitable for time-critical applications.

Function assignment



NOTE

Assign the functions for the digital switching outputs in the device with a configuration tool, e.g. the configuration software SOPAS ET.

For electrical characteristic data of the two external digital switching outputs, see connection diagrams for the respective connection modules in these operating instructions.

Wiring the digital switching outputs of the device via a connection module:

| Device | Connection module | Digital switching outputs | Reference |
|---------------|-------------------|--|---|
| Lector621 | CDB650-204 | “RES/OUT 1” “RES/OUT 2” | see "Wiring the digital switching outputs “Result 1” to “Result 4” of the device in the CDB650-204", page 81 |
| | | External output 1 (“EXT. OUT 1”) External output 2 (“EXT. OUT 2”) | see "Wiring digital switching outputs “External output 1” and “External output 2” of the device in the CDB650-204", page 83 |
| | CDM420-0006 | “Result 1” “Result 2” | see "Wiring digital switching outputs “Result 1” and “Result 2” of the device in CDM420-0006", page 96 |
| | | External output 1 (“Aux Out 1”) External output 2 (“Aux Out 2”) | see "Wiring digital switching outputs “External output 1” and “External output 2” of the device in the CDM420-0006", page 97 |
| Lector621 ECO | CDB620-001 | “Res 1” “Res 2” | see "Wiring digital switching outputs “Result 1” and “Result 2” of the device in CDB620-001", page 109 |
| | | External output 1 (“Out 1”) External output 2 (“Out 2”) | see "Wiring digital switching outputs “External output 1” and “External output 2” of the device in the CDB620-001", page 111 |
| | CDM420-0001 | “Result 1” “Result 2” | see "Wiring digital switching outputs “Result 1” and “Result 2” of the device in CDM420-0001", page 122 |
| | | External output 1 (“Aux Out 1”) External output 2 (“Aux Out 2”) | see "Wiring digital switching outputs “External output 1” and “External output 2” of the device in the CDM420-0001", page 124 |

7 Commissioning

7.1 Configuring the device with SOPAS ET

Adaptation of the device parameters to the application as well as diagnostics in the event of malfunctions take place as default with the SOPAS ET configuration software. The device supports this process by displaying the images it has recorded in SOPAS ET (requirement SOPAS ET: at least version 3.0). Image output takes place only via the Ethernet interface and USB interface.

If the reading characteristics of the device have been adapted without a PC, SOPAS ET is generally used to continue the configuration process (reading clock, result formats, output data interface ...).

Installing and starting the configuration software

1. Download and install the latest version of the SOPAS ET configuration software, as well as current device description files (*.sdd), from the online product page for the software by following the instructions provided there, www.sick.com/SOPAS_ET.
In this case, select the **complete** option as suggested by the installation wizard. Administrator rights may be required on the PC to install the software.
2. Start the program. Path: **Start > Programs > SICK > SOPAS EngineeringTool > SOPAS EngineeringTool**
3. Establish a connection between the software and the device via Ethernet or USB. The connection wizard starts automatically.
4. The following IP addresses are configured by default on the device:
 - IP address P1: 192.168.1.1
 - Subnet mask: 255.255.255.0
5. Select the desired device from the available devices and add to the project by double-clicking. The device is shown on the left side of the window.
6. In the **Wizard** window, click on the **Start** button.
The device will now continuously record images, decode them and attempt to automatically find the appropriate settings for the image and the decoder. If the read is successful, these settings can be saved immediately.
In the case of time-critical applications, fine adjustment can be used to automatically identify time-optimized settings to reduce the analysis time per image. Alternatively, it is possible to record images in "Setup" mode and manually adjust the settings on the right-hand side of the screen. The effects of any parameter changes are directly visible.

Configuring the device manually

1. In the **Online Image** window, click the **Live** button. In **Live** mode, the device starts recording images continuously and uses the current settings to decode them. The effects of any parameter changes are thus directly visible.



NOTE



The following functions are deactivated in **Live** mode:

- Switching inputs and outputs
 - Data output via the host interface.
2. Align the device in the desired depth of field range with a medium-height object with a test code.
 3. Click the **Camera & Illumination** configuration bar. Use the **Shutter timer** and **Brightness** sliders to adjust the image brightness so that the code is easy to see.
 4. Activate the sharpness diagnosis bar. To do this, go to the **Camera & Illumination** area and click the **Display sharpness** checkbox.

Continuing configuration

1. Adjust the settings for additional functions during planned operation such as codes, triggers, result formats, data interface, etc.
2. In the image display window (Online images), click the **Operation** button, and test the settings in operation (real operation).

Completing the configuration

1. Save the parameters set permanently in the device:
Click on the  button.
2. Save the parameter set on the PC:
Click on the  button.

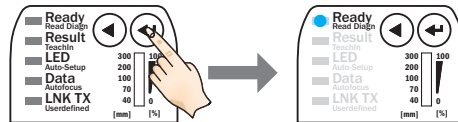
7.2 Configuring the device via buttons without configuration software (SOPAS ET)

The two function buttons, the LEDs with their second display level and the bar graph display are used for manually adjusting the reading characteristics of the device with Auto-Setup.

NOTICE
Auto-Setup is not possible with a Pharmacode.

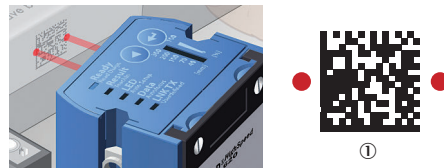
1. Start “Setup” mode.

Press key 3 seconds ①



① Press button  for 3 seconds

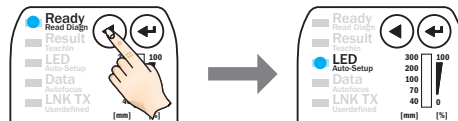
2. Align the device with the code. The Lector621 ECO does not have an aiming laser.




① Code pattern

3. Select Auto-Setup.

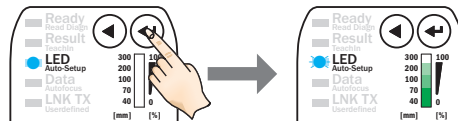
Press key 2 x shortly ①




① Press button  twice briefly. The “Auto-Setup” LED lights up blue.

4. Start Auto-Setup.

Press key 1 x shortly ①



① Press button  once briefly. The “Auto-Setup” LED flashes blue.

- Lector621: the device adjusts itself automatically to the lighting conditions, code quality and working distance.
- Lector621 ECO: the device adjusts itself automatically to suit the lighting conditions and the quality of the code.



NOTE

If the “Auto-Setup” LED lights up yellow or red, the read result is insufficient. Check the alignment and distance of the device in relation to the code and repeat the procedure.

5. Wait until Auto-Setup has finished. The bar graph display shows the progress of the Auto-Setup function in percent. 100% means the Auto-Setup has finished. The color of the LED signals the result (see “Display and operating elements”, page 18).
6. Exit “Setup” mode and save the parameters. The existing configuration in the device is overwritten.

Alternatively, the device saves the parameters automatically if 5 minutes elapse without a pushbutton being pressed, and it returns to read mode.

7.3 Initial commissioning

The device is adjusted to the application situation on site using the SOPAS ET configuration software on the PC. The default factory settings of the device are the starting point for this. Their parameter values (configuration data) can be adapted in the working memory of the device for optimization purposes. For this purpose, the user creates an application-specific parameter set with the SOPAS ET configuration software or changes this later as required. He then loads the current parameter set to the permanent parameter memory of the device.

Memory organization for parameter set

The following diagram shows the principle of memory management for the involved internal and external components:

Lector621

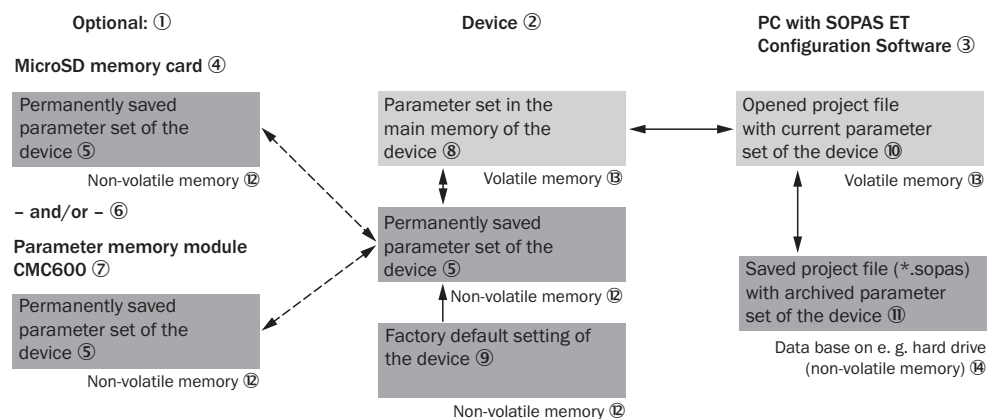


Figure 31: Lector621: configuration with SOPAS ET and saving the parameter set

- ① Optional
- ② Device: Lector621
- ③ PC with SOPAS ET configuration software
- ④ MicroSD memory card
- ⑤ Permanently saved device parameter set

- ⑥ and/or
- ⑦ CMC600 parameter cloning module
- ⑧ Parameter set in the working memory of the device
- ⑨ Factory-set defaults for the device
- ⑩ Opened project file with current device parameter set
- ⑪ Saved project file with archived device parameter set
- ⑫ Nonvolatile memory
- ⑬ Volatile memory
- ⑭ Database on the hard drive, for example (nonvolatile memory)

Save process:

The Lector621 is optionally equipped with a microSD memory card or connected to a CDB or CDM connection module with optional CMC600 parameter cloning module:

- Each time the currently valid parameter set is saved in the device with the option “Permanent”, the parameter set is also permanently saved externally on the memory card or in the CMC600.

Lector621 ECO

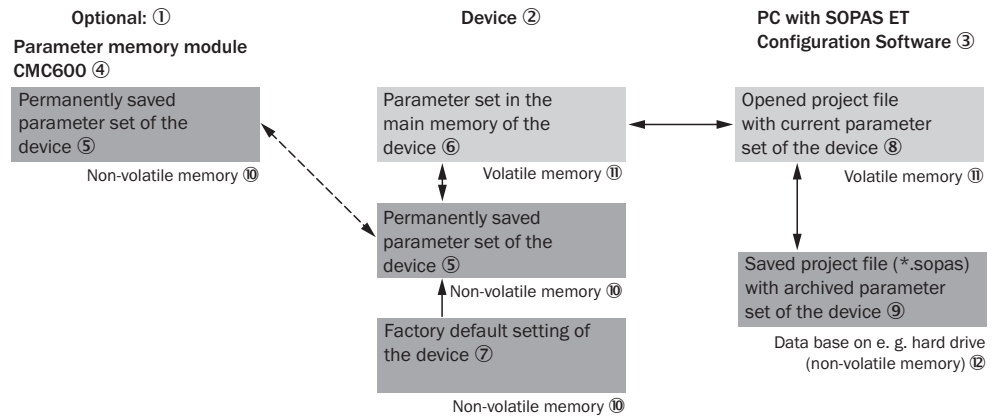


Figure 32: Lector621 ECO: configuration with SOPAS ET and saving the parameter set

- ① Optional
- ② Device: Lector621 ECO
- ③ PC with SOPAS ET configuration software
- ④ CMC600 parameter cloning module
- ⑤ Permanently saved device parameter set
- ⑥ Parameter set in the working memory of the device
- ⑦ Factory-set defaults for the device
- ⑧ Opened project file with current device parameter set
- ⑨ Saved project file with archived device parameter set
- ⑩ Nonvolatile memory
- ⑪ Volatile memory
- ⑫ Database on the hard drive, for example (nonvolatile memory)

Save process:

The Lector621 ECO is connected to a CDB or CDM connection module with optional CMC600 parameter cloning module:

- Each time the currently valid parameter set is saved in the device with the option “Permanent”, this parameter set is also permanently saved externally in the CMC600.

8 Maintenance

8.1 Maintenance

During operation, the device works maintenance-free.



NOTE

No maintenance is required to ensure compliance with the laser class.



NOTE

No maintenance is required to ensure compliance with the LED risk group.

Depending on the assignment location, the following preventive maintenance tasks may be required for the device at regular intervals:

Table 21: Maintenance schedule

| Maintenance work | Interval | To be carried out by |
|--|---|----------------------|
| Clean housing and front screen | Cleaning interval depends on ambient conditions and climate. | Specialist |
| Check screw connections and plug connectors | Interval depends on the place of use, ambient conditions, or operational regulations. Recommended: At least every 6 months. | Specialist |
| Check that the unused connections are sealed with protective caps or plugs | Interval depends on ambient conditions and climate. Recommended: At least every 6 months. | Specialist |

8.2 Cleaning

Cleaning includes the viewing window and the housing of the device.



NOTICE

Equipment damage due to improper cleaning.

Improper cleaning may result in equipment damage.

- Only use recommended cleaning agents.
- Never use sharp objects for cleaning.

Cleaning the inspection window

Check the viewing window of the device for accumulated dirt at regular intervals. This is especially relevant in harsh operating environments (dust, abrasion, damp, fingerprints, etc.).

The inspection window lens must be kept clean and dry during operation.



NOTE

Static charging may cause dust particles to stick to the inspection window. This effect can be reduced by using an anti-static cleaning agent in combination with the SICK lens cloth (part no. 4003353) (can be obtained from www.sick.com).

The viewing window is made of plastic, see "Technical data", page 62.



NOTICE

Damage to the inspection window/.

Reduced read performance due to scratches or streaks on the window.

- Clean the window only when wet.
 - Use a mild cleaning agent that does not contain powder additives. Do not use aggressive cleaning agents, such as acetone, etc.
 - Avoid any movements that could cause scratches or abrasions on the window.
 - Only use cleaning agents suitable for the screen material.
-

Cleaning procedure:



CAUTION

Warning! Optical radiation: LED risk group 1

The LEDs may pose a danger to the eyes and skin in the event of incorrect use.

- Protect the eyes and skin against radiation.
 - Use suitable eye protection.
 - Use protective measures such as a screen to shield the radiation.
 - Do not open the housing. Opening the housing will not switch off the light source. Opening the housing may increase the level of risk.
 - Comply with the current national regulations on photobiological security of lamps and lamp systems.
-

Aiming laser (only Lector621 variant):



CAUTION

Optical radiation: Laser class 1

The accessible radiation does not pose a danger when viewed directly for up to 100 seconds. It may pose a danger to the eyes and skin in the event of incorrect use.

- Do not open the housing. Opening the housing may increase the level of risk.
 - Current national regulations regarding laser protection must be observed.
-

For both radiation types:

It is not possible to entirely rule out temporary disorienting optical effects, particularly in conditions of dim lighting. Disorienting optical effects may come in the form of dizziness, flash blindness, afterimages, photosensitive epilepsy, depending on parameterization), or impairment of color vision, for example.



CAUTION

Hazardous radiation.

If any operating or adjusting devices other than those specified here are used or other methods are employed, this can lead to dangerous exposure to radiation. Damage to the eyes is possible.

- If the product is operated in conjunction with external illumination systems, the risks described here may be exceeded. This must be taken into consideration by users on a case-by-case basis.
 - Do not look into the light source when it is switched on.
 - Comply with the latest version of the applicable regulations on photobiological safety of lamps and lamp systems as well as on laser protection.
-

- ▶ Switch off the device for the duration of the cleaning operation. If this is not possible, use suitable laser protection goggles. These must absorb radiation of the device's wavelength effectively.
- ▶ Clean the viewing window only with a clean, damp, lint-free cloth, and a mild anti-static lens cleaning fluid.

**NOTICE**

If the inspection window is scratched or damaged (cracked or broken), the lens must be replaced. Contact SICK Support to arrange this.

- If the inspection window is cracked or broken, take the device out of operation immediately for safety reasons and have it repaired by SICK.

Cleaning the housing

In order to ensure that heat is adequately dissipated from the device, the housing surface must be kept clean.

- ▶ Clear the build up of dust on the housing with a soft brush.

9 Troubleshooting

9.1 General faults, warnings, and errors

Possible errors and corrective actions are described in the table below for troubleshooting. In the case of errors that cannot be rectified using the information below, please contact the SICK Service department. To find your agency, see the final page of this document.



NOTE

Before calling, make a note of all type label data such as type designation, serial number, etc., to ensure faster telephone processing.

Table 22: Other possible error sources

| Situation | Error/fault |
|-------------------------|--|
| Mounting | <ul style="list-style-type: none"> ■ Device poorly aligned to objects with codes (e.g. glare). ■ Trigger sensor for reading cycle incorrectly positioned (e.g., internal reading interval is opened too late or closed too early). ■ Incremental encoder (optional) incorrectly positioned. |
| Electrical installation | <ul style="list-style-type: none"> ■ Interfaces of the device incorrectly wired. |
| Configuration | <ul style="list-style-type: none"> ■ Functions not adapted to local conditions, e.g. parameters for the data interface not set correctly. ■ Device limits not observed, e.g. reading distance, aperture angle. ■ Trigger source for reading cycle not selected correctly. |
| Operation | <ul style="list-style-type: none"> ■ Start/stop operation: external reading cycle missing, more than one object is in the reading field. ■ Device faults (hardware/software). |

9.2 Displaying the status log

To display the status log, the SOPAS ET configuration software must be connected with the device online.

1. Connect the SOPAS ET configuration software to the device.
2. Open Lector6xx in the project tree: **SERVICE > SYSTEM STATUS > Register card SYSTEM INFORMATION.**

9.3 SICK service

If the fault cannot be rectified, the device may be defective.

The device may not be repaired by the user. Interference with or modification of the device will invalidate any warranty claims against SICK AG.

Rapid replacement of a device by the user is, however, possible.

- ▶ Where a fault cannot be rectified, make contact with the SICK Service department. To find your agency, see the final page of this document.



NOTE

Before calling, make a note of all type label data such as type designation, serial number, etc. to ensure faster telephone processing.

9.4 Repairs

Repair work on the device may only be performed by qualified and authorized personnel from SICK AG. Interruptions or modifications to the device by the customer will invalidate any warranty claims against SICK AG.

9.5 Returns

- ▶ Do not dispatch devices to the SICK Service department without consultation.
- ▶ The device must be sent in the original packaging or an equivalent padded packaging.



NOTE

To enable efficient processing and allow us to determine the cause quickly, please include the following when making a return:

- Details of the contact person
- Description of the application
- Description of the fault that occurred

9.6 Replacing the device

Replacing a device with transfer of the current configuration data

The current configuration data of the device to be replaced can be transferred to a replacement device in four ways. The configuration data of the device is combined as a parameter set. The replacement device saves the parameter set to the permanent parameter memory.

Prerequisites:

- The replacement device is a device of the same type.
- The current configuration data of the device to be replaced is accessible in a storage medium outside the device.

The available options depend on the backup concept chosen by the user at the time of installation and configuration of the device to be replaced.

The first three methods are performed automatically by the device. The fourth method is operated by the user manually.

1 Transfer of the current configuration data using the optional memory card removed from the device to be replaced.

It is not necessary to connect a PC or laptop with the SOPAS ET configuration software for transfer to the replacement device.

Prerequisite:

If there is sufficient memory capacity on the memory card, the configuration data from the last save operation in the device with the “Permanent” option was automatically saved on the card.

2 Transfer of the current configuration data using the optional CMC600 parameter cloning module in the optional CDB or CDM connection module.

It is not necessary to connect a PC or laptop with the SOPAS ET configuration software for transfer to the replacement device.

Prerequisite:

The device to be replaced was continuously operated connected to the connection module. If a memory card and a CM600 parameter cloning module are optionally present, the configuration data in the parameter cloning module has higher priority.

3 Transfer of the current configuration data using the parameter memory in the optional CDF600 bus connection module.

It is not necessary to connect a PC or laptop with the SOPAS ET configuration software for transfer to the replacement device.

Prerequisite:

The device to be replaced was continuously operated in proxy mode connected to the bus connection module. If a memory card and a bus connection module are optionally present, the configuration data in the bus connection module has higher priority.

4 Transfer of the current configuration data by means of a download from the PC or laptop.

Prerequisite:

The configuration data of the device was stored on the PC or laptop. This took place on completion of configuration of the device that is now to be replaced with the SOPAS ET configuration software after confirmation by the user.



NOTE

Further information [see "Initial commissioning", page 53](#)

Removing the device to be replaced:



NOTICE

Risk of damage to the memory card

To avoid damaging an optional memory card that may be present in the device, make sure there is no power to the device when you remove or insert it.

1. Switch off the supply voltage to the device that is to be replaced.
2. Mark the position and alignment of the device on the bracket or surroundings.
3. Disconnect and remove all connecting cables from the device.
4. Detach the device and remove from the bracket.
5. Backed-up configuration data: if an optional memory card was installed in the device, removed the memory card with the backed-up parameter set. The memory card is located behind the side cover, [see "Device view", page 16](#)

Putting the replacement device into operation:

1. Backed-up configuration data: install the optional memory card from the device that is to be replaced in the replacement device of the same type.
2. Mount and align the replacement device ([see "Mounting", page 25](#)). When doing so, note the previously applied markings on the bracket or surroundings.
3. Reconnect the connecting cables to the replacement device ([see "Electrical installation", page 31](#)).
4. Switch on the supply voltage for the replacement device.
The device starts with the default setting and searches for external memory media with a valid parameter set. If the device detects a memory card or the CM600 parameter cloning module, the replacement device transfers the valid parameter set from this storage medium to its permanent memory and operates in accordance with its configuration data.
If the replacement device does not detect any external storage media, it will start with its last permanently stored parameter set. In the case of devices that have not been used before, this corresponds to the factory default setting.
Establish a connection with the replacement device using the SOPAS ET configuration software. Transfer the configuration data of the device to be replaced stored on the PC by downloading to the replacement device and permanently store this data in the device.

10 Decommissioning

10.1 Disposal

Any device which can no longer be used must be disposed of in an environmentally friendly manner in accordance with the applicable country-specific waste disposal regulations. Do not dispose of the product along with household waste.



NOTICE

Danger to the environment due to improper disposal of the device.

Disposing of devices improperly may cause damage to the environment.

Therefore, observe the following information:

- Always observe the valid regulations on environmental protection.
 - Separate the recyclable materials by type and place them in recycling containers.
-

11 Technical data



NOTE

The relevant online data sheet for your product, including technical data, dimensional drawing, and connection diagrams can be downloaded, saved, and printed from the Internet:

- www.sick.com/Lector62x

These operating instructions provides additional technical data if required.

11.1 Optics and illumination

Table 23: Technical data: optics and illumination

| Type | Lector621 | Lector621 ECO |
|--|---|---|
| Focus | Teach auto focus when teaching-in the working distance using a configuration tool ¹⁾ | Focus adjustment by manual distance input using a configuration tool ²⁾ |
| Illumination for field of view | 2 x 2 LEDs, light color combination type-dependent. Code see "Type code", page 13 <ul style="list-style-type: none"> • Blue ($\lambda = 470 \text{ nm} \pm 15 \text{ nm}$) • Red ($\lambda = 617 \text{ nm} \pm 15 \text{ nm}$) • Infrared $\lambda = 850 \text{ nm} \pm 25 \text{ nm}$) | 2 x LEDs white. Code see "Type code", page 13 <ul style="list-style-type: none"> • Red ($\lambda = 617 \text{ nm} \pm 15 \text{ nm}$) |
| Feedback LED (spot in field of view) | Green ($\lambda = 525 \text{ nm} \pm 15 \text{ nm}$) Risk group 0 (no risk) according to IEC 62471-1: 2006-07/ EN 62471-1: 2008-09 | |
| LED risk group of integrated illumination unit | Rot or Blue Risk group 1 (low risk) according to IEC 62471-1: 2006-07/ EN 62471-1: 2008-09. Radiance: <ul style="list-style-type: none"> • $L_B: < 10 \times 10^3 \text{ W}/(\text{m}^2\text{sr})$ within 100 s; at a distance of $\geq 200 \text{ mm}$ • $L_R: < 3.7 \times 10^5 \text{ W}/(\text{m}^2\text{sr})$ within 10 s; at a distance of $\geq 200 \text{ mm}$ | – |
| | Infrared Risk group 0 (no risk) according to IEC 62471-1: 2006-07/ EN 62471-1: 2008-09. Irradiance: <ul style="list-style-type: none"> • $E_{IR}: < 100 \text{ W}/\text{m}^2$ within 1,000 s; with a distance $\geq 200 \text{ mm}$ | |
| MTBF of LEDs (illumination and feedback) | 75,000 h, at ambient operating temperature 25 °C | |

| Type | Lector621 | Lector621 ECO |
|--|--|---------------|
| Aiming laser (2 points in field of view) | 2 x LEDs. Visible light. Red ($\lambda = 630 \text{ nm} \dots 680 \text{ nm}$), can be switched off | - |
| Laser class | Class 1 according to EN/IEC 60825-1: 2017. Corresponds to 21 CFR 1040.10 except for tolerances according to Laser Notice 50 from June 24, 2007. P < 0.39 mW per laser module | |

- 1) SOPAS ET configuration software or function buttons on the device.
- 2) With SOPAS ET configuration software.

11.2 Performance

Table 24: Technical data: Performance

| Type | Lector621 | Lector621 ECO |
|--|--|------------------------|
| Code resolution | $\geq 0.05 \text{ mm}$, depending on lens (valid for 1D codes with good print quality) | |
| Working distance | Type-dependent, see "Field of view diagrams", page 28 | |
| Lens | Code see "Type code", page 13 | |
| Image sensor resolution | Code see "Type code", page 13 | |
| Image sensor type (color) | Code see "Type code", page 13 | |
| Image recording rate | 1.3 Mpx: 50 Hz | 1.3 Mpx: 25 Hz |
| Readable code structures | 1D, 2D, stacked codes. Type-dependent: DPM, OCR/OCV | 1D, 2D, stacked codes |
| 1D code types (bar code) | GS1-128 / EAN 128, UPC / GTIN / EAN, Interleaved 2 of 5, Pharmacode, GS1 DataBar, Code 39, Code 128, Codabar, Code 32, Code 93, Plessey Code, MSI/Plessey, Telepen | |
| Postal codes | Postnet, Planet, USPS 4SCB, Australia Post, Post Netherlands, Royal Mail, Post Sweden | |
| 2D code types | Data Matrix ECC200, GS1 Data Matrix, PDF417, PDF417 Truncated, QR-Code, MaxiCode | |
| Code quality determination | On the basis of ISO/IEC 16022, ISO/IEC 15415, ISO/IEC 15416, ISO/IEC 18004 | - |
| No. of codes per reading interval | 1 ... 50 (auto-discriminating) | |
| No. of characters per reading interval | 500 (for multiplexer function in CAN network operation) | |
| Evaluation time | $\geq 100 \mu\text{s}$ | $\geq 200 \mu\text{s}$ |
| Automatic parameter switching | Integrated | - |
| Image and data logging | Via external FTP and/or microSD memory card | - |
| MicroSD memory card | Max. 32 GB | - |

11.3 Interfaces

Table 25: Technical data: Interfaces

| | Lector621 | Lector621 ECO |
|----------------------|--|---------------|
| Serial RS-232/RS-422 | Host 1 (0.3 kBd ... 115.2 kBd) for data output (read result) | |

| | Lector621 | Lector621 ECO |
|----------------------------------|---|---------------|
| Serial RS-232 | Aux 1 (57.6 kBd) for service (e.g. configuration or diagnostics) | |
| USB ¹⁾ | Aux 3 (USB 2.0), for service (e.g. configuration, diagnostics or image transmission) | |
| CAN | Host, 20 kBit/s ... 1 MBit/s Bus length max. 30 m Protocols: <ul style="list-style-type: none"> • CANopen functionality • CSN (SICK CAN sensor network) | |
| Ethernet | Host 2 (10/100 MBit/s) for data output (read result) Protocols: <ul style="list-style-type: none"> • TCP/IP • EtherNet/IP Aux 2 (10/100 MBit/s), for service (e.g. configuration, diagnostics or image transmission) Protocols: <ul style="list-style-type: none"> • TCP/IP Services: DHCP, NTP, HTTP, mDNS, DNS-SD. DNS and HTTPS. MAC address (device-specific), see type label | – |
| PROFIBUS | Host (RS-232) optionally over external field bus module CDF600-21xx ²⁾ to bus (RS-485) Function blocks for various PLC manufacturers are available online at: www.sick.com/Lector62x | |
| PROFINET (line topology) | Host (RS-232) optionally over external field bus module CDF600-22xx ²⁾ with Dual Port to bus (Ethernet) Function blocks for various PLC manufacturers are available online at: www.sick.com/Lector62x | |
| EtherCAT® | Host (RS-232) optionally over external field bus module CDF600-0300 ²⁾ (gateway mode) to bus (Ethernet) | |
| Digital switching inputs | 2 x physical. Optional 2 x additional external logical inputs (software-controlled) via parameter cloning module CMC600 ²⁾ in the CDB ²⁾ or CDM connection module ²⁾ $V_{in} = \text{max. } 30 \text{ V}$, $I_{in} = \text{max. } 5 \text{ mA}$ Opto-decoupled, reverse polarity protected, adjustable debounce time ³⁾ | |
| Digital switching outputs | 4 x physical | 2 x physical |
| | Optional 2 x additional external logical outputs (software-controlled) via parameter cloning module CMC600 ²⁾ in the CDB ²⁾ or CDM connection module ²⁾ $V_{out} = V_S - 1.5 \text{ V}$, $I_{out} \leq 100 \text{ mA}$ (typical) Short-circuit protected, temperature protected, not electrically isolated from the supply voltage | |
| Visual displays | 5 RGB LEDs (status display) on top of device 1 x LED bar graph display (blue) on top of device 1 x feedback LED (green) as light area on code | |
| | 1 x RGB LED (status display for memory card), under hinged cover | – |

| | Lector621 | Lector621 ECO |
|---|---|---------------|
| Acoustic indicator | Beeper (buzzer), can be deactivated ³⁾ Function for event signaling and volume adjustable ³⁾ | |
| Operating elements | 2 x buttons (select and start/stop functions) | |
| Configuration tools (parameterization) | SOPAS ET configuration software, web server, CoLa commands (telegrams), fieldbus controller (PLC) with additional support by SICK function blocks, function buttons | |

- 1) Data interface only for temporary use (service).
 2) Optional accessories.
 3) e.g. with SOPAS ET configuration software.

11.4 Mechanics/electronics

Table 26: Technical data: Mechanics/electronics

| | Lector621 | Lector621 ECO |
|--|--|--|
| Electrical connection | 1 x male connector, M12, 17-pin, A-coded ¹⁾ 1 x female connector, M12, 4-pin, D-coded ¹⁾ 1 x female connector, USB, 5-pin, Micro-B type 1 x microSD card slot | 1 x cable, length 0.9 m, with male connector, D-Sub-HD, 15-pin 1 x female connector, USB, 5-pin, Micro-B type |
| Supply voltage V_s | DC 12 V ... 24 V, $\pm 20\%$ Voltage source as per ES1 and PS2 or lower (EN62368-1), or as per SELV (EN60950-1) | |
| Power consumption | Operation: 4 W typical ³⁾ Maximum 22 W with typical loading of the 4 switching outputs with 100 mA each and 28.8 V DC supply voltage | Operation: 4 W typical ³⁾ Maximum 16 W with typical loading of the 2 switching outputs with 100 mA each and 28.8 V DC supply voltage |
| Current consumption | Max. 0.8 A with DC 28.8 V | Max. 0.6 A with DC 28.8 V |
| Housing material | Die cast aluminum, plastic | |
| Housing color | Blue (RAL 5012), black | |
| Reading window material | Plastic (PMMA), 2 mm thick, with scratch-proof coating | |
| Hinged cover (rear of device) | Plastic. Hinge-open cover ⁴⁾ for temporary access to USB interface and memory card slot (only Lector621). 2 x fixing screws TX6, captive. | |
| Enclosure rating | IP 65 (EN 60529, EN 60529/A2) | |
| Protection class | III | |
| Electrical safety | EN 62368-1 | |
| Weight | 170 g | 170 g |
| Dimensions (L x W x H) | 88.5 mm x 43 mm x 35.6 mm ⁶⁾ | 71 mm x 43 mm x 35.6 mm ⁶⁾ |

- 1) On swivel connector.
 2) Type-dependent.
 3) For switching outputs without load.
 4) When the flap is open, the device no longer conforms with the specified enclosure rating.
 5) Devices without connecting cable.
 6) see "Device view", page 16.

11.5 Ambient data

Table 27: Technical data: Ambient data

| | Lector621 | Lector621 ECO |
|--|--|---------------|
| Electromagnetic compatibility (EMC) | Radiated emission: EN 61000-6-4: 2007-01 + A1: 2011-03 Immunity: EN 61000-6-2: 2005-08 | |
| Vibration resistance | EN 60068-2-6:2008-02 | |
| Shock resistance | EN 60068-2-27:2009-05 | |
| Ambient temperature | Operation ¹⁾ : <ul style="list-style-type: none"> • 0 °C ... +40 °C • 0 °C ... +50 °C, if the device is mounted on a metal mounting bracket to dissipate the heat. Storage: <ul style="list-style-type: none"> • -20 °C ... +70 °C | |
| Permissible relative humidity | 0% ... 90%, non-condensing | |
| Ambient light immunity | 2,000 lx on code | |

¹⁾ Notes regarding adequate dissipation of heat loss, see "[Mounting requirements](#)", page 25.

12 Accessories



NOTE

Accessories and where applicable mounting information can be found online at:

- www.sick.com/Lector62x
-

13 Annex

13.1 EU declaration of conformity / Certificates

The EU declaration of conformity and other certificates can be downloaded from the Internet at:

- www.sick.com/Lector62x

13.2 Dimensional drawings (electronic)

Current dimensional drawings in various electronic formats can be downloaded online:

- www.sick.com/Lector62x

13.3 Signal assignment of cables with open cable end at one end

13.3.1 "Power/SerialData/CAN/I/O" connection to customer-specific connection equipment or control cabinet

Adapter cable suitable for drag chain

Part no. 2070425 (3 m), part no. 2070426 (5 m), part no. 2070427 (10 m), shielded, suitable for drag chain, suitable for 2 A

For variant Lector621, not for variant Lector621 ECO

Ambient temperature range:

For mobile installation: -25 °C to +80 °C, for fixed installation: -40 °C to +80 °C

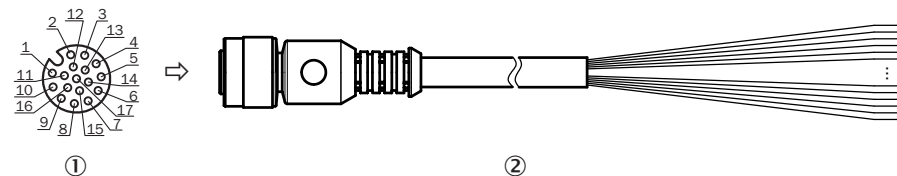


Figure 33: Adapter cable, e.g. part no. 2070425 (3 m)

- ① Female connector, M12, 17-pin, A-coded (view from front)
- ② Illustration may differ

Table 28: Signal assignment of adapter cable with open end

| Pin | Signal | Function | Wire color |
|-----|--|---------------------------|-------------|
| 1 | GND | Ground | Blue |
| 2 | V _S | Supply voltage | Brown |
| 3 | CAN L | CAN bus (IN/OUT) | Green |
| 4 | CAN H | CAN bus (IN/OUT) | White |
| 5 | TD+ (RS-422/485), host | Host interface (sender+) | Pink |
| 6 | TD- (RS-422/485), host TxD (RS-232), host | Host interface (sender-) | Yellow |
| 7 | TxD (RS-232), Aux | Aux interface (sender) | Black |
| 8 | RxD (RS-232), AUX | Aux interface (receiver+) | Gray |
| 9 | SensGND | Switching input ground | White-black |
| 10 | Sensor 1 | Digital switching input 1 | Violet |

| Pin | Signal | Function | Wire color |
|-----|--|----------------------------|--------------|
| 11 | RD+ (RS-422/485), host | Host interface (receiver) | Gray-pink |
| 12 | RD- (RS-422/485), host RxD (RS-232), host | Host interface (receiver-) | Red-blue |
| 13 | Result 1 | Digital switching output 1 | White-green |
| 14 | Result 2 | Digital switching output 2 | Brown-green |
| 15 | Sensor 2 | Digital switching input 2 | White-yellow |
| 16 | N. c. | - | Yellow-brown |
| 17 | N. c. | - | White-gray |

13.3.2 “Power/SerialData/CAN/I/O” connection to customer-specific connection equipment or control cabinet

Adapter cable suitable for drag chain, deep-freeze compatible

Part no. 2075220 (5 m), shielded, suitable for drag chain, deep-freeze compatible, suitable for 2 A

For variant Lector621, not for variant Lector621 ECO

Permitted currents for ambient temperature +40 °C:

- Contact 1 (blue) and contact 2 (brown): 2 A
- All other contacts: 1.5 A

Ambient temperature range:

For mobile installation: -25 °C to +80 °C, for fixed installation: -40 °C to +85 °C

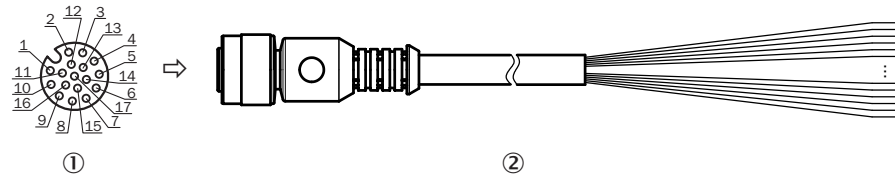


Figure 34: Adapter cable, part no. 2075220 (5 m)

- ① Female connector, M12, 17-pin, A-coded (view from front)
 ② Illustration may differ

Table 29: Signal assignment of adapter cable with open end

| Pin | Signal | Function | Wire color |
|-----|--|---------------------------------|------------|
| 1 | GND | Ground | Blue |
| 2 | V _S | Supply voltage | Brown |
| 3 | CAN L | CAN bus (IN/OUT) | Green |
| 4 | CAN H | CAN bus (IN/OUT) | White |
| 5 | TD+ (RS-422/485), host | Host interface (sender+) | Pink |
| 6 | TD- (RS-422/485), host TxD (RS-232), host | Host interface (sender-) | Yellow |
| 7 | TxD (RS-232), Aux | Aux interface (sender) | Black |
| 8 | RxD (RS-232), AUX | Aux interface (receiver+) | Gray |
| 9 | SensGND | Sensor 1 switching input ground | Gray-brown |
| 10 | Sensor 1 | Digital switching input 1 | Violet |
| 11 | RD+ (RS-422/485), host | Host interface (receiver) | Gray-pink |

| Pin | Signal | Function | Wire color |
|-----|--|----------------------------|--------------|
| 12 | RD- (RS-422/485), host RxD (RS-232), host | Host interface (receiver-) | Red-blue |
| 13 | Result 1 | Digital switching output 1 | White-green |
| 14 | Result 2 | Digital switching output 2 | Brown-green |
| 15 | Sensor 2 | Digital switching input 2 | White-yellow |
| 16 | N. c. | - | Yellow-brown |
| 17 | N. c. | - | White-gray |

13.3.3 “Power/SerialData/CAN/I/O” connection to customer-specific connection equipment or control cabinet

Adapter cable

For Lector621 ECO

Ambient temperature range: 0 °C to +80 °C

The shield braid of the cable has contact with the metal housing of the female connector.

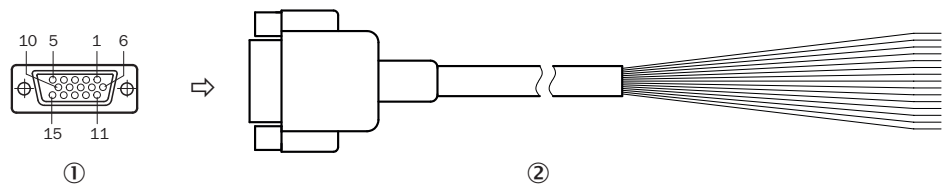


Figure 35: Adapter cable, part no. 2043413

- ① Female connector, D-Sub-HD, 15-pin (view from front)
- ② Illustration may differ

Table 30: Signal assignment of adapter cable with open end

| Pin | Signal | Function | Wire color |
|-----|--|----------------------------|-------------------------|
| 1 | U _v | Supply voltage | Red |
| 2 | RxD (RS-232), AUX | Aux interface (receiver) | Violet |
| 3 | TxD (RS-232), Aux | Aux interface (sender) | Yellow |
| 4 | Sensor 2 | Digital switching input 2 | Red-black |
| 5 | GND | Ground | Black |
| 6 | RD+ (RS-422/485), host | Host interface (receiver+) | Light blue |
| 7 | RD- (RS-422/485), host RxD (RS-232), host | Host interface (receiver-) | Blue |
| 8 | TD+ (RS-422/485), host | Host interface (sender+) | Light-gray or turquoise |
| 9 | TD- (RS-422/485), host TxD (RS-232), host | Host interface (sender-) | Green |
| 10 | CAN H | CAN bus (IN/OUT) | Gray |
| 11 | CAN L | CAN bus (IN/OUT) | Pink |
| 12 | Result 1 | Digital switching output 1 | Brown |
| 13 | Result 2 | Digital switching output 2 | Orange |
| 14 | Sensor 1 | Digital switching input 1 | White |
| 15 | SensGND | Switching input ground | White-black |

13.3.4 Host interface RS-232 via CDB/CDM connection module to host (PC)

| Device | Connection module |
|---------------|--|
| Lector621 | CDB650-204, CDM420-0006, -0007 |
| Lector621 ECO | CDB620-001, CDM420-0001, -0004, -0006, -0007 |

Adapter cable

Part no. 2020319 (3 m), unshielded

Ambient temperature range:

For mobile installation: -5 °C to +90 °C, for fixed installation: -30 °C to +90 °C

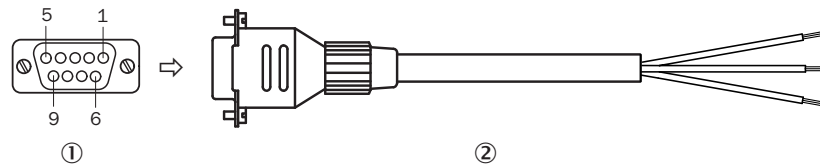


Figure 36: Adapter cable, part no. 2020319 (3 m)

- ① Female connector, D-Sub, 9-pin (view from front)
- ② Illustration may differ

Table 31: Signal assignment of adapter cable with open end

| Pin | Signal at PC | Function | Wire color |
|---------|--------------------|---------------------------|---------------------|
| 1 | - | - | - |
| 2 | RxD (RS-232), host | Host interface (receiver) | Brown ¹⁾ |
| 3 | TxD (RS-232), host | Host interface (sender) | Blue ²⁾ |
| 4 | - | - | - |
| 5 | GND | Ground | Black |
| 6 ... 9 | - | - | - |

- ¹⁾ Connect to the terminal "TxD Host" in the CDB/CDM connection module
- ²⁾ Connect to the terminal "RxD Host" in the CDB/CDM connection module

13.4 Connection diagrams of connection module CDB650-204

13.4.1 Connection of the device to CDB650-204

Device = Lector621 = V2D621x-xxxxYx (Ethernet variant, Y = B or C)

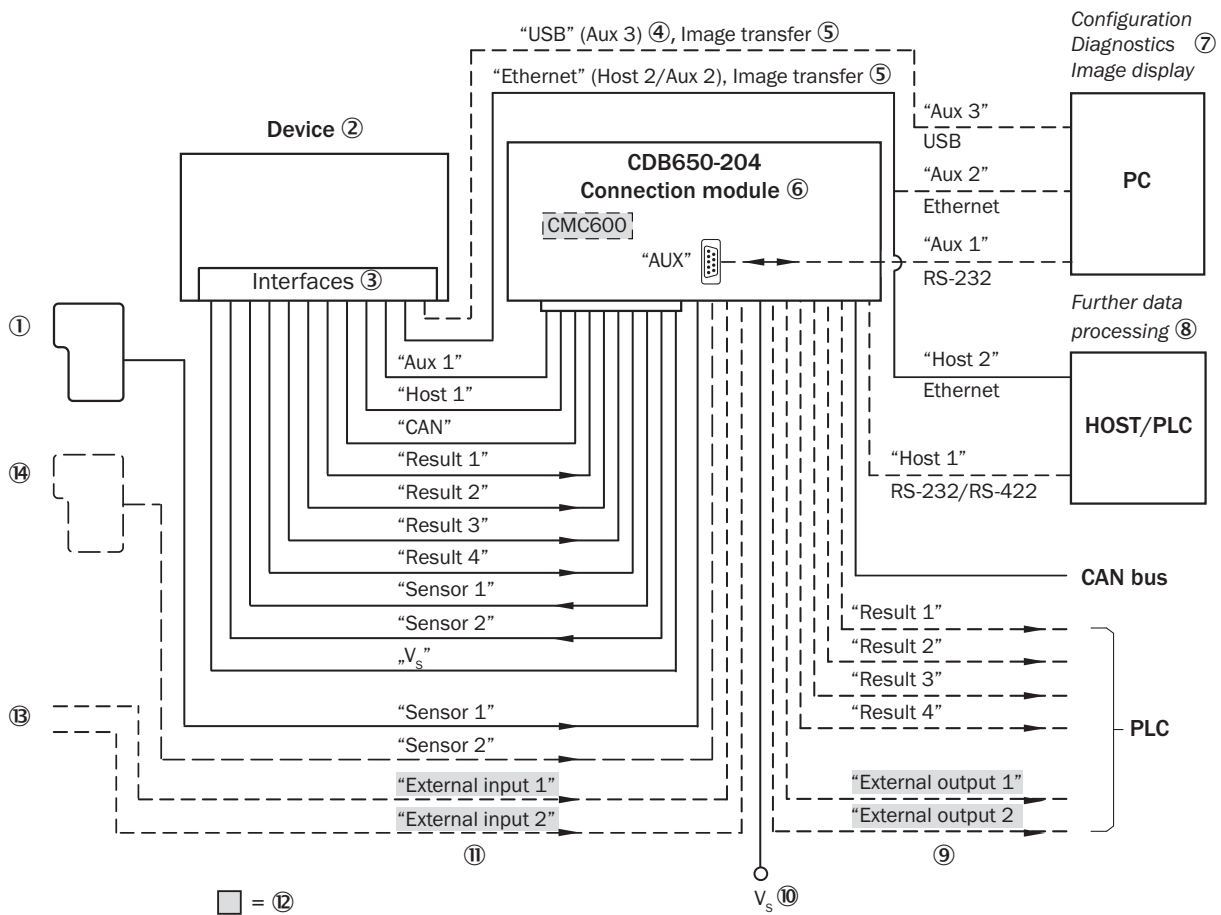


Figure 37: Connection of the device (Ethernet variant) to peripherals via CDB650-204 (overview)

- ① External trigger sensor, e.g. for read cycle generation
- ② Device
- ③ Interfaces
- ④ USB interface only for temporary use (service)
- ⑤ Image transmission
- ⑥ Connection module
- ⑦ Configuration, diagnostics or image display
- ⑧ Data further processing
- ⑨ External digital switching outputs
- ⑩ Supply voltage V_s
- ⑪ External digital switching inputs
- ⑫ The optional parameter cloning module CMC600 is required in the connection module in order to be able to use the additional external digital switching inputs and outputs of the device (highlighted in gray)
- ⑬ Other functions
- ⑭ Application-dependent alternative stop trigger (e.g. photoelectric sensor) or travel increment (incremental encoder)

13.4.2 Wiring overview of the CDB650-204

Device = Lector621 = V2D621x-xxxxYx (Y = B or C), 1 switching input used

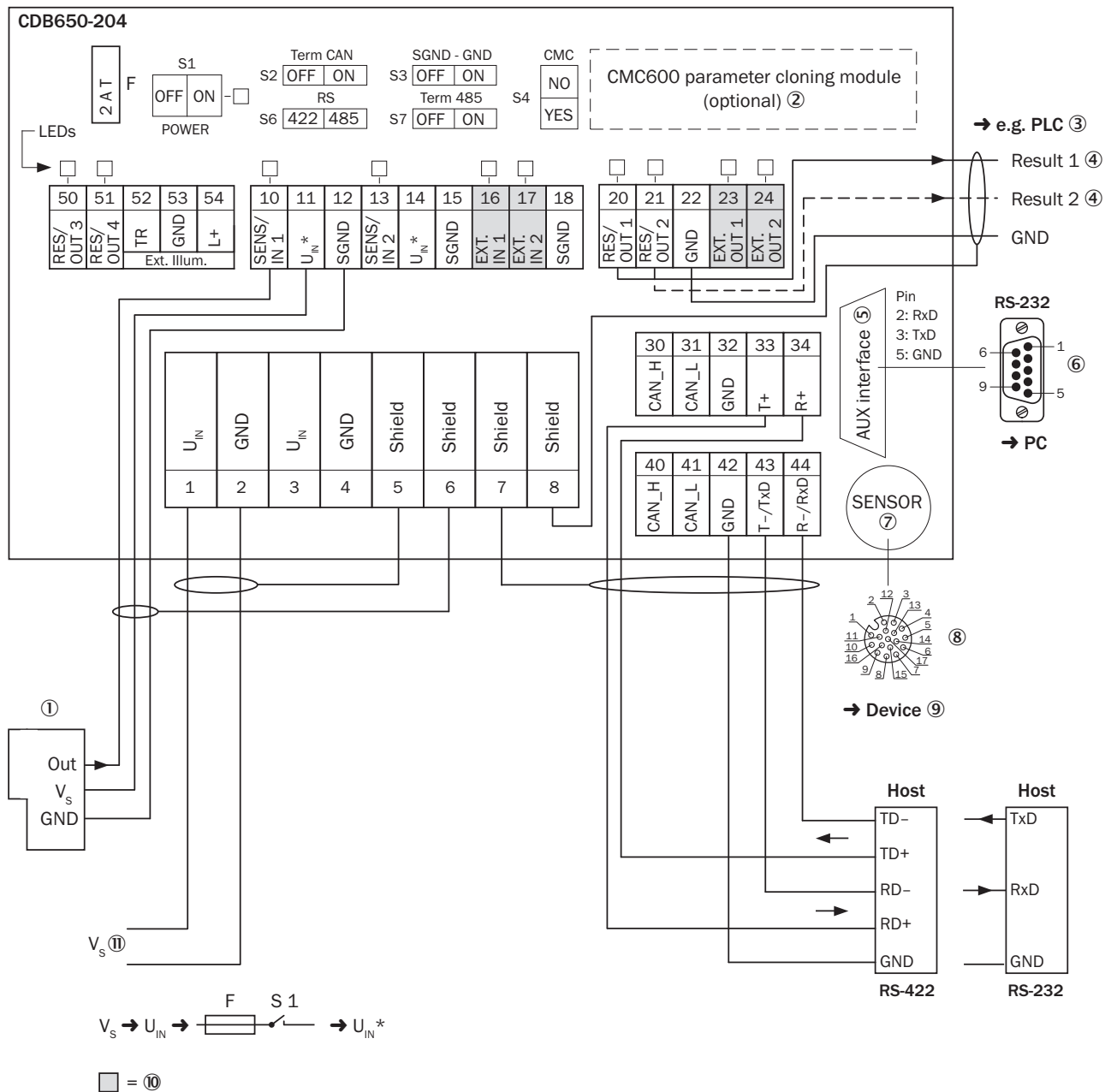


Figure 38: Overview: connection of device and peripherals to the CDB650-204 connection module

- ① External trigger sensor, e.g. for read cycle generation
- ② CMC600 parameter cloning module (optional)
- ③ e.g. PLC (programmable logic controller)
- ④ Name of digital switching output
- ⑤ Auxiliary interface "Aux"
- ⑥ Male connector, D-Sub, 9-pin
- ⑦ SENSOR = Device
- ⑧ Female connector, M12, 17-pin, A-coded
- ⑨ Device to be connected
- ⑩ The optional parameter cloning module CMC600 is required in the connection module in order to be able to use the additional external digital switching inputs and outputs of the device (highlighted in gray)
- ⑪ Supply voltage V_s

13.4.3 Connecting supply voltage for the device in CDB650-204

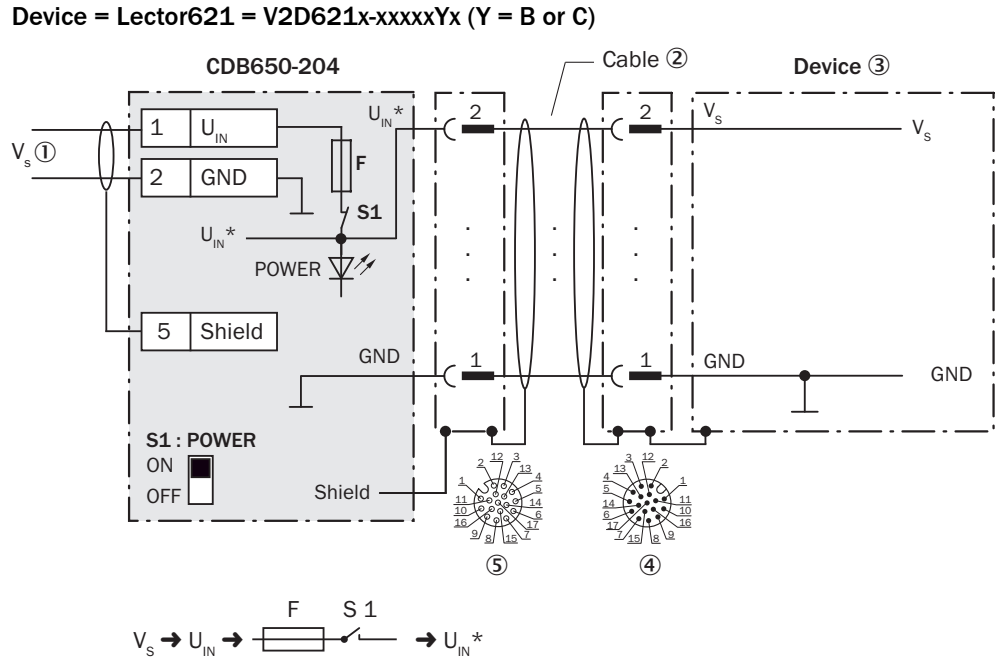


Figure 39: Connecting supply voltage for the device in CDB650-204 connection module

- ① Supply voltage V_s
- ② Connection cable 1:1 (male connector, M12, 17-pin, A-coded / female connector, M12, 17-pin, A-coded)
- ③ Device
- ④ Device: male connector, M12, 17-pin, A-coded
- ⑤ Connection module: female connector, M12, 17-pin, A-coded

Function of switch S1

Table 32: Switch S1: Power

| Switch setting | Function |
|----------------|--|
| ON | Supply voltage U _{IN} connected to CDB650-204 and device via fuse and switch S1 as U _{IN} *. Voltage U _{IN} * can be additionally tapped at terminals 11 and 14. |
| OFF | CDB650-204 and device disconnected from supply voltage. Recommended setting for all connection work. |

13.4.4 Wiring serial host interface RS-232 of the device in CDB650-204

Device = Lector621 = V2D621x-xxxxYx (Y = B or C)

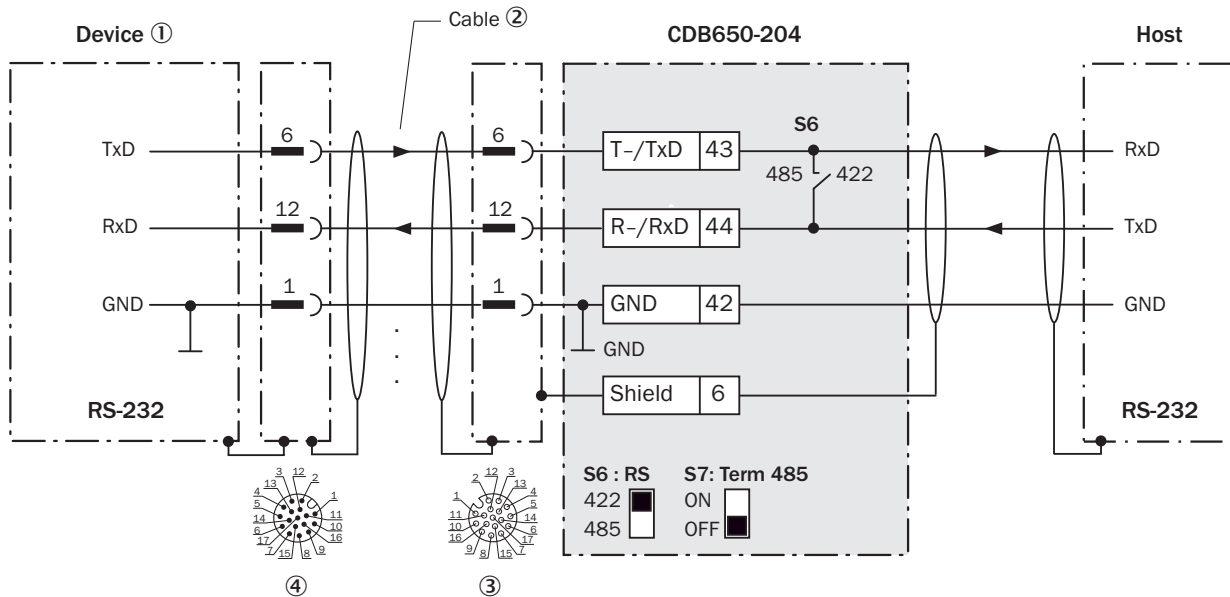


Figure 40: Wiring data interface RS-232 of the device in the connection module CDB650-204

- ① Device
- ② Connection cable 1:1 (female connector, M12, 17-pin, A-coded / male connector, M12, 17-pin, A-coded)
- ③ Connection module: female connector, M12, 17-pin, A-coded
- ④ Device: male connector, M12, 17-pin, A-coded



NOTE

Activate the RS-232 data interface in the device with a configuration tool, e.g. the configuration software SOPAS ET.

13.4.5 Wiring serial host interface RS-422 of the device in CDB650-204

Device = Lector621 = V2D621x-xxxxYx (Y = B or C)

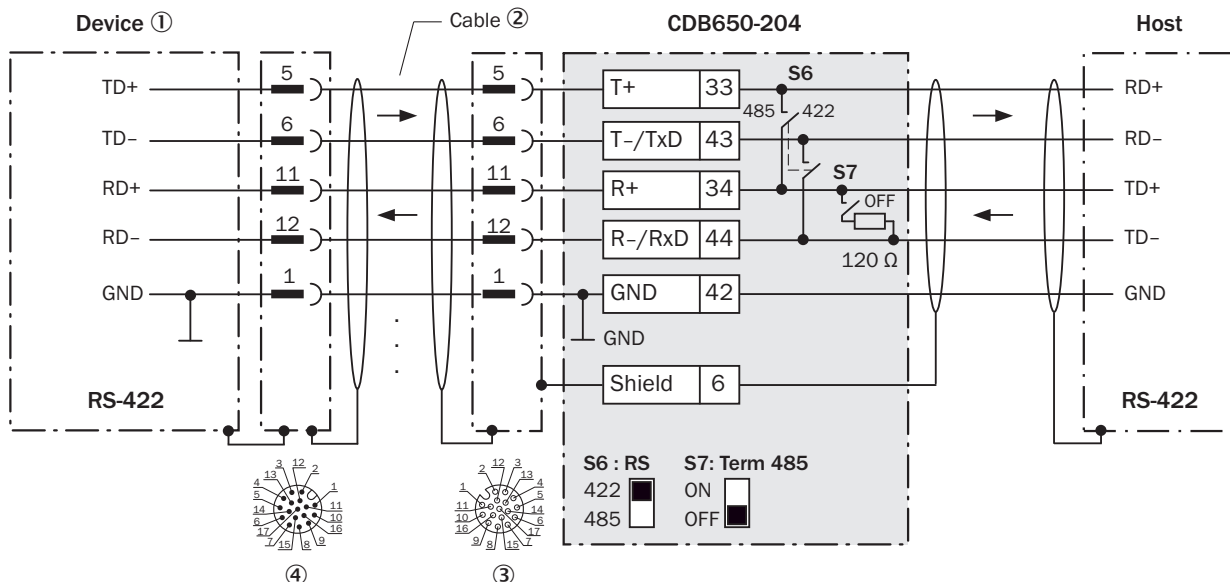


Figure 41: Wiring data interface RS-422 of the device in the connection module CDB650-204

- ① Device
- ② Connection cable 1:1 (female connector, M12, 17-pin, A-coded / male connector, M12, 17-pin, A-coded)
- ③ Connection module: female connector, M12, 17-pin, A-coded
- ④ Device: male connector, M12, 17-pin, A-coded

Function of switch S7

Table 33: Switch S7: Term 485

| Switch setting | Function |
|----------------|--|
| ON | Terminates the RS-422 receiver in the device to improve the noise ratio on the line. |
| OFF | No termination |



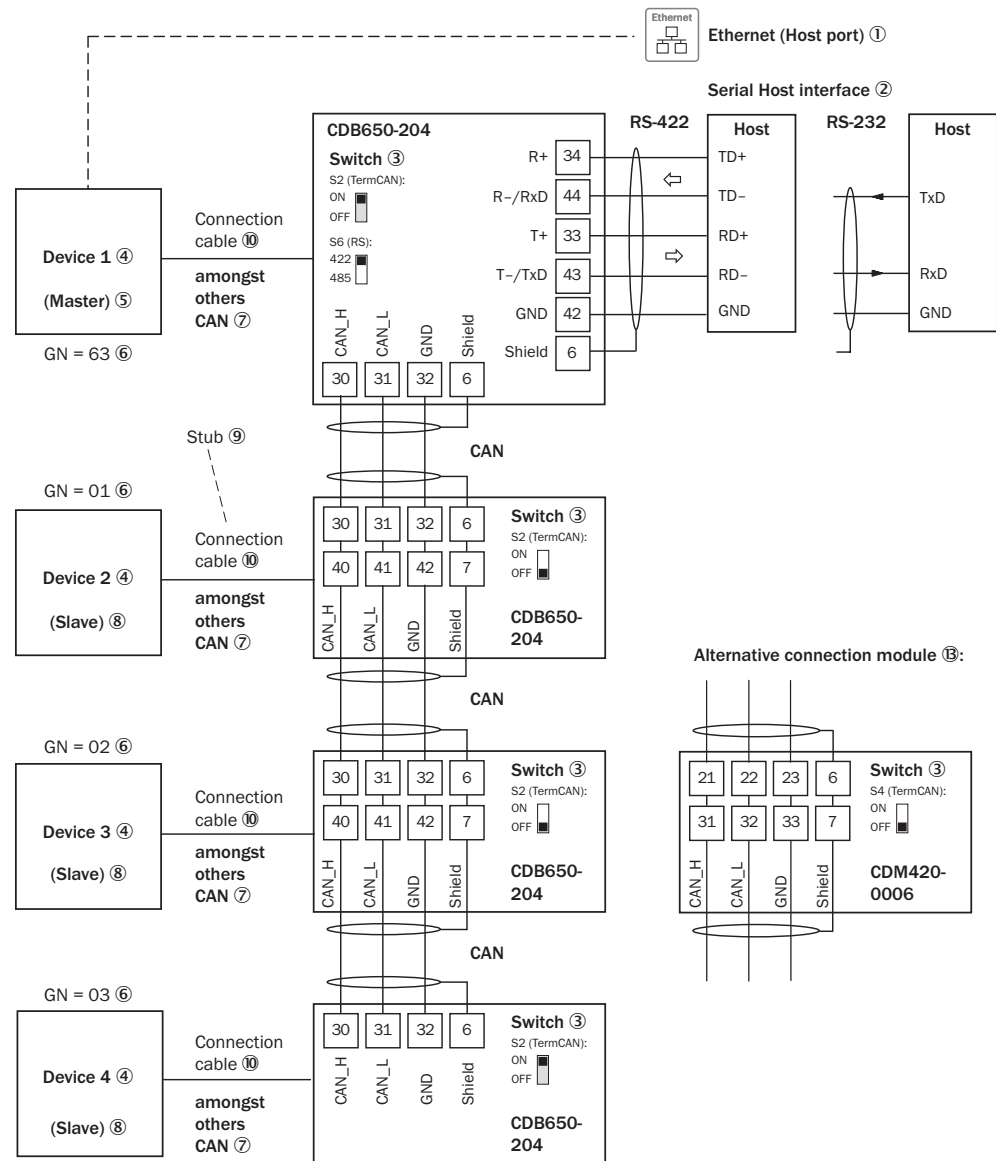
NOTE

User of the RS-422 data interface:

- The relevant interface drivers for the device comply with the standard in accordance with RS-422.
- The connection shown above is configured for operation of the host with permanently activated drivers (often described as “RS-422 operation”).
- Activate the RS-422 data interface (“Point-to-Point” option) in the device with a configuration tool, e.g. the configuration software SOPAS ET.

13.4.6 Wiring the CAN interface in the CDB650-204

Device = Lector621 = V2D621x-xxxxYx (Y = B or C)



GN = Device number ⑪
(max. 32 participants) ⑫

Figure 42: Wire the CAN interface of the device in the CDB650-204 connection module. Connection and looping through of the supply voltage and connection of a trigger sensor for read cycle generation at the master, for example, are disregarded here!

- ① Lector621 = V2D621x-xxxxYx (Y = B or C): Ethernet (host port)
- ② Serial host interface
- ③ Switch
- ④ Device
- ⑤ Master
- ⑥ Device number
- ⑦ CAN etc.
- ⑧ Slave
- ⑨ Branch line
- ⑩ Lector621 = V2D621x-xxxxYx (Y = B or C): connection cable 1:1 (female connector, M12, 17-pin, A-coded/male connector, M12, 17-pin, A-coded)
- ⑪ Device number (GN)
- ⑫ Maximum 32 users

③ Example of alternative connection module.

Alternative connection module for Lector621 = V2D621x-xxxxYx (Y = B or C):
CDM420-0006.

CDM420-0006: an adapter cable (female connector, M12, 17-pin, A-coded / male connector, D-Sub-HD, 15-pin) is required to connect the Lector621 = V2D621x-xxxxYx (Y = B or C)



NOTE

Activate the CAN data interface in the device with a configuration tool, e.g. the configuration software SOPAS ET.

Make further settings in the device corresponding to the function of the device in the system configuration.

13.4.7 Wiring digital switching inputs “Sensor 1” and “Sensor 2” of the device in the CDB650-204

Device = Lector621 = V2D621x-xxxxYx (Y = B or C)

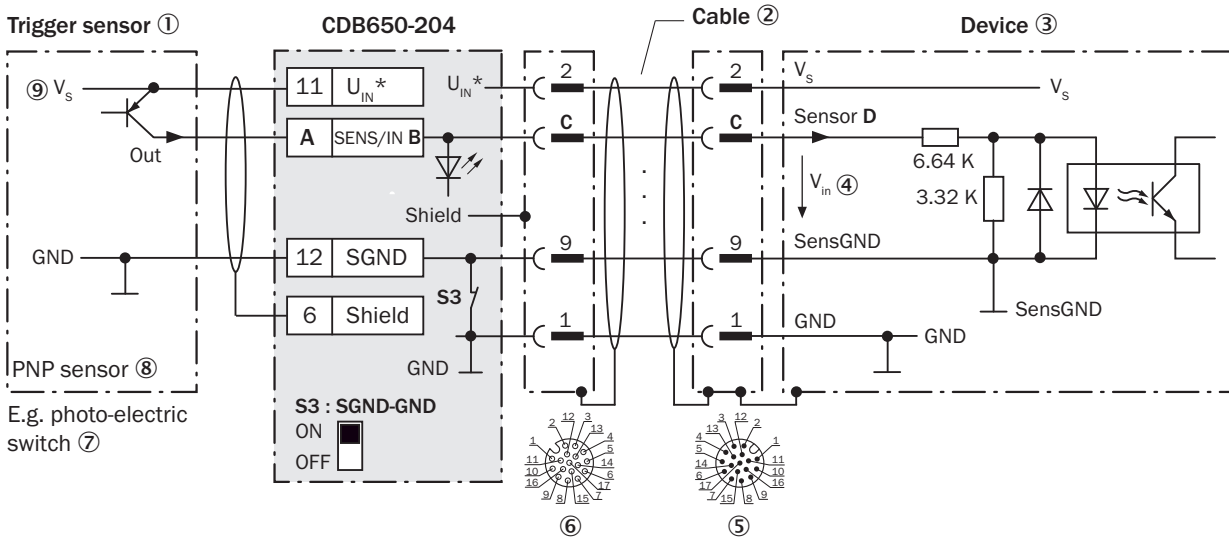


Figure 43: Trigger sensor supplied with power by connection module CDB650-204

- ① Trigger sensor, e.g. for read cycle generation
- ② Connection cable 1:1 (female connector, M12, 17-pin, A-coded / male connector, M12, 17-pin, A-coded)
- ③ Device
- ④ Input voltage V_{in}
- ⑤ Device: male connector, M12, 17-pin, A-coded
- ⑥ Connection module: female connector, M12, 17-pin, A-coded
- ⑦ e.g. photoelectric sensor
- ⑧ PNP sensor
- ⑨ Supply voltage V_s

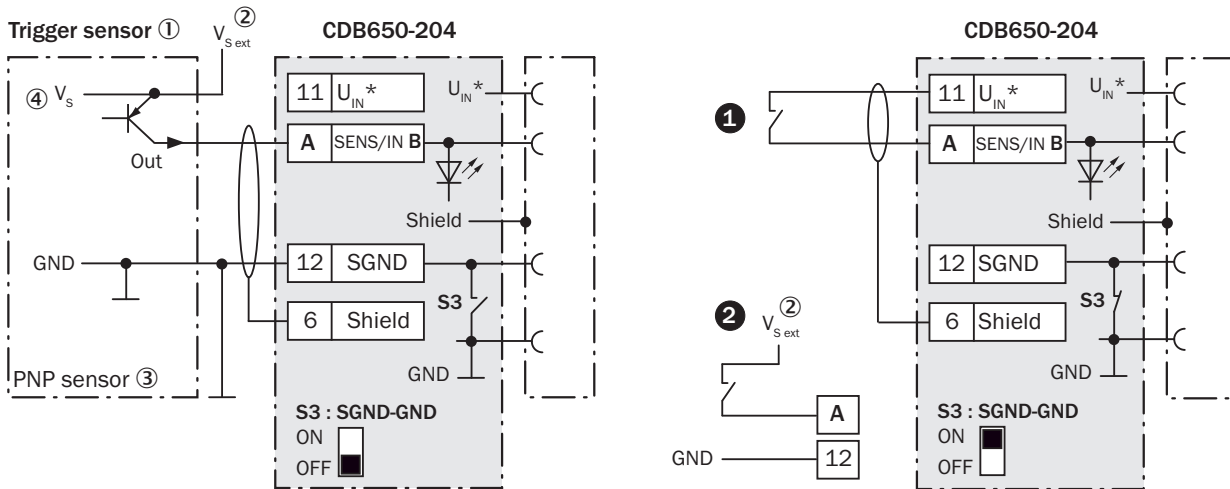


Figure 44: Left: Trigger sensor connected potential-free and supplied with power externally. Right: Alternatively switch, ① supplied with power by connection module CDB650-204 or ② connected potential-free and supplied with power externally. Switch setting S3 then as in left figure.

- ① Trigger sensor, e.g. for read cycle generation
- ② External supply voltage $V_{S \text{ ext}}$ ($V_{S \text{ ext}} = U_{V \text{ ext}}$)
- ③ PNP sensor
- ④ Supply voltage V_S

Table 34: Assignment of placeholders to digital switching inputs

| CDB650-204 | | | Device |
|------------|-----------|-------|----------|
| Terminal A | Signal B | Pin C | Sensor D |
| 10 | SENS/IN 1 | 10 | 1 |
| 13 | SENS/IN 2 | 15 | 2 |

Function of switch S3

Table 35: Switch S3: SGND - GND

| Switch setting | Function |
|----------------|---|
| ON | GND of the trigger sensor connected with GND of CDB650-204 and GND of the device |
| OFF | Trigger sensor connected potential-free at CDB650-204 and device. Common, isolated reference potential of all digital switching inputs is SGND. |

Characteristic data of digital switching inputs

Table 36: Characteristic data of the digital switching inputs "Sensor 1" and "Sensor 2"

| | |
|---------------------------|---|
| Switching behavior | Power to the input starts the assigned function, e.g. start read cycle. Default setting in the device: logic not inverted (active high), debounce time 10 ms |
| Properties | <ul style="list-style-type: none"> • Opto-decoupled, reverse polarity protected • Can be wired with PNP output of a trigger sensor |
| Electrical values | Low: $V_{in} \leq 2 \text{ V}$; $I_{in} \leq 0.3 \text{ mA}$ High: $6 \text{ V} \leq V_{in} \leq 30 \text{ V}$; $0.7 \text{ mA} \leq I_{in} \leq 5 \text{ mA}$ |



NOTE

Assign the functions for the digital switching inputs in the device with a configuration tool, e.g. the configuration software SOPAS ET.

13.4.8 Wiring digital switching inputs “External input 1” and “External input 2” of the device in the CDB650-204

Device = Lector621 = V2D621x-xxxxYx (Y = B or C)

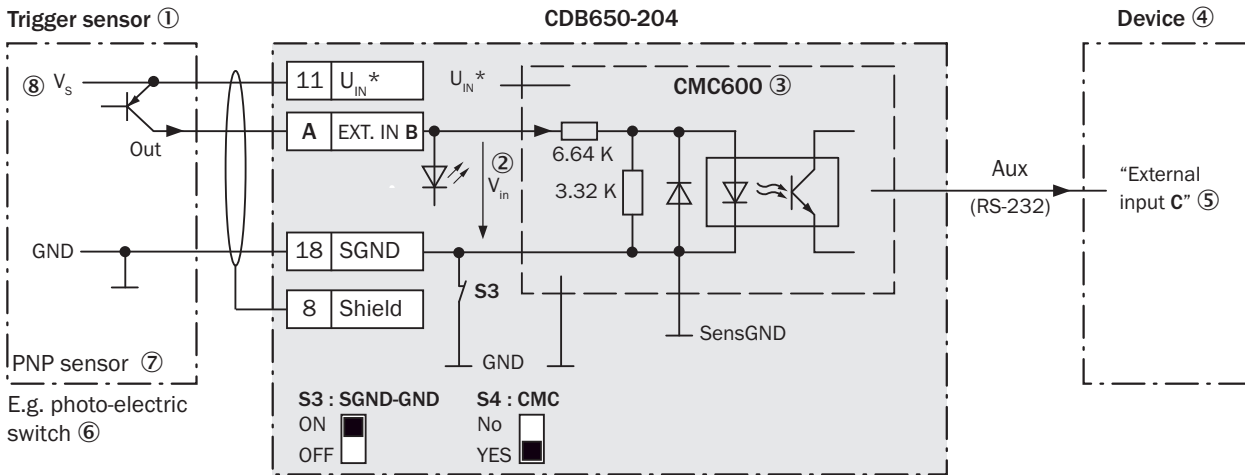


Figure 45: Trigger sensor supplied with power by connection module CDB650-204

- ① Trigger sensor, e.g. for read cycle generation
- ② Input voltage V_{in}
- ③ The optional parameter cloning module CMC600 is required in the connection module in order to be able to use the additional external digital switching inputs and outputs of the device
- ④ Device
- ⑤ Logical “External input” in the device
- ⑥ e.g. photoelectric sensor
- ⑦ PNP sensor
- ⑧ Supply voltage V_S

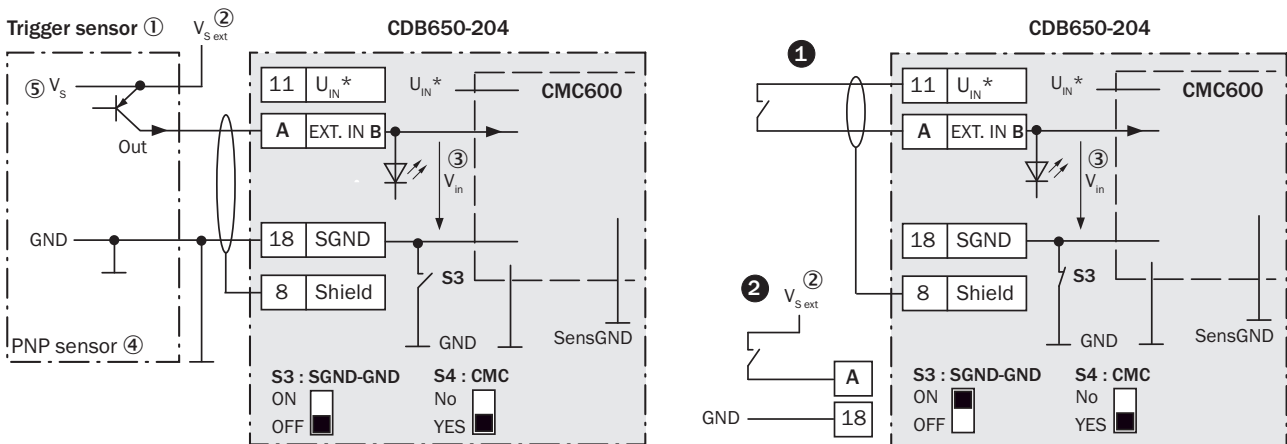


Figure 46: Left: Trigger sensor connected potential-free and supplied with power externally. Right: Alternatively switch, ① supplied with power by connection module CDB650-204 or ② connected potential-free and supplied with power externally. Switch setting S3 then as in left figure.

- ① Trigger sensor, e.g. for read cycle generation
- ② External supply voltage $V_{S\text{ ext}}$
- ③ Input voltage V_{in}
- ④ PNP sensor
- ⑤ Supply voltage V_S

Table 37: Assignment of placeholders to the external digital switching inputs

| CDB650-204 | | Device |
|------------|-----------|------------------|
| Terminal A | Signal B | External input C |
| 16 | EXT. IN 1 | 1 |
| 17 | EXT. IN 2 | 2 |

Function of switch S3

Table 38: Switch S3: SGND - GND

| Switch setting | Function |
|----------------|---|
| ON | GND of the trigger sensor connected with GND of CDB650-204 and CMC600. |
| OFF | Trigger sensor connected potential-free at CDB650-204 and CMC600. Common, isolated reference potential of all digital switching inputs is SGND. |

Functional principle of the external switching inputs

As a software-controlled operation, the CMC600 automatically transmits the output states of its physical digital switching inputs “EXT. IN 1” and “EXT. IN 2” in the connection module via the connecting cable to the serial Aux interface of the device. The device internally implements the states for its logical inputs “External input 1” and “External input 2”.



NOTE

The two external digital switching inputs are not suitable for time-critical applications.

Characteristic data of digital switching inputs

Table 39: Characteristic data of the digital switching inputs “External input 1” and “External input 2”

| | |
|---------------------------|---|
| Switching behavior | Power to the input starts the assigned function, e.g. start read cycle. Default setting in the device: logic not inverted (active high), debounce time 10 ms |
| Properties | <ul style="list-style-type: none"> • Opto-decoupled, reverse polarity protected • Can be wired with PNP output of a trigger sensor |
| Electrical values | Low: $V_{\text{in}} \leq 2 \text{ V}$; $I_{\text{in}} \leq 0.3 \text{ mA}$ High: $6 \text{ V} \leq V_{\text{in}} \leq 30 \text{ V}$; $0.7 \text{ mA} \leq I_{\text{in}} \leq 5 \text{ mA}$ |



NOTE

Assign the functions for the external digital switching inputs in the device with a configuration tool, e.g. the configuration software SOPAS ET.

13.4.9 Wiring the digital switching outputs “Result 1” to “Result 4” of the device in the CDB650-204

Device = Lector621 = V2D621x-xxxxYx (Y = B or C)

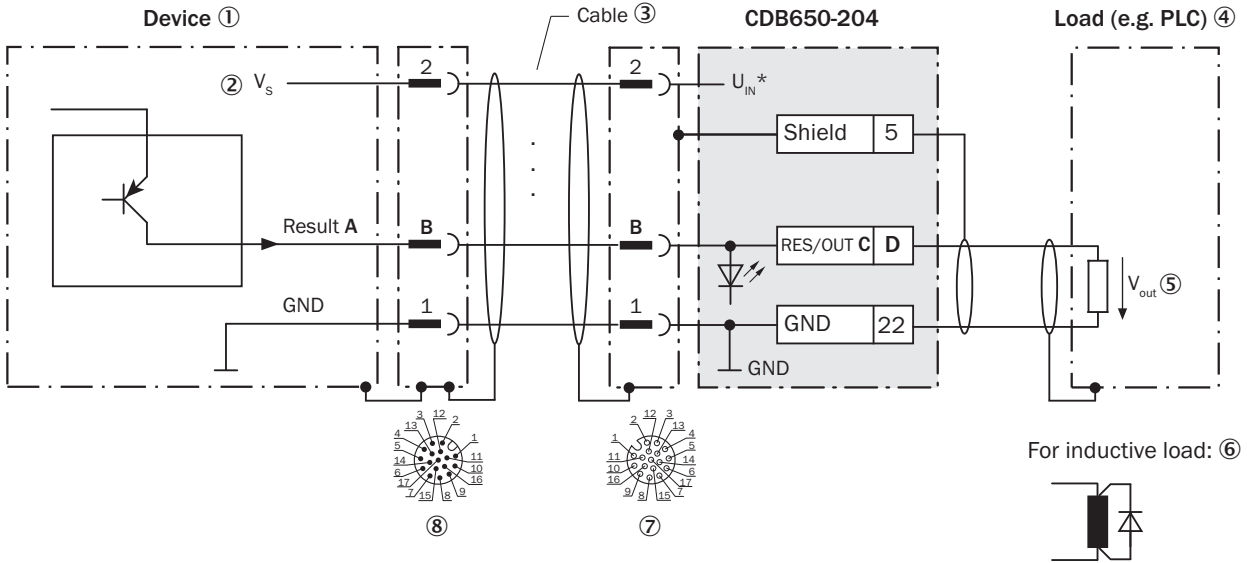


Figure 47: Wiring digital switching outputs “Result 1” to “Result 4” of the device in the connection module CDB650-204

- ① Device
- ② Supply voltage V_S
- ③ Connection cable 1:1 (female connector, M12, 17-pin, A-coded / male connector, M12, 17-pin, A-coded)
- ④ Load (e.g. PLC)
- ⑤ Output voltage V_{out}
- ⑥ With inductive load: see note
- ⑦ Connection module: female connector, M12, 17-pin, A-coded
- ⑧ Device: male connector, M12, 17-pin, A-coded

Inductive load



NOTE

Provide an arc-suppression circuit at the digital switching output if an inductive load is present.

- Attach a freewheeling diode directly to the load for this purpose.

Table 40: Assignment of placeholders to digital switching outputs

| Device | | CDB650-204 | |
|----------|-------|------------|------------|
| Output A | Pin B | Signal C | Terminal D |
| Result 1 | 13 | RES/OUT 1 | 20 |
| Result 2 | 14 | RES/OUT 2 | 21 |
| Result 3 | 16 | RES/OUT 3 | 50 |
| Result 4 | 17 | RES/OUT 4 | 51 |

Characteristic data of digital switching outputs

Table 41: Characteristic data of the digital switching outputs “Result 1” to “Result 4”

| | |
|---------------------------|--|
| Switching behavior | PNP switching to supply voltage V_S Default settings in the device: no function, logic: not inverted (active high) |
| Properties | <ul style="list-style-type: none"> • Short-circuit protected + temperature protected • Not electrically isolated from V_S |

| | |
|--------------------------|---|
| Electrical values | $0\text{ V} \leq V_{\text{out}} \leq V_S$ $(V_S - 1.5\text{ V}) \leq V_{\text{out}} \leq V_S$ at $I_{\text{out}} \leq 100\text{ mA}$ |
|--------------------------|---|

**NOTE**

Assign the functions for the digital switching outputs in the device with a configuration tool, e.g. the configuration software SOPAS ET.

13.4.10 Wiring digital switching outputs “External output 1” and “External output 2” of the device in the CDB650-204

Device = Lector621 = V2D621x-xxxxYx (Y = B or C)

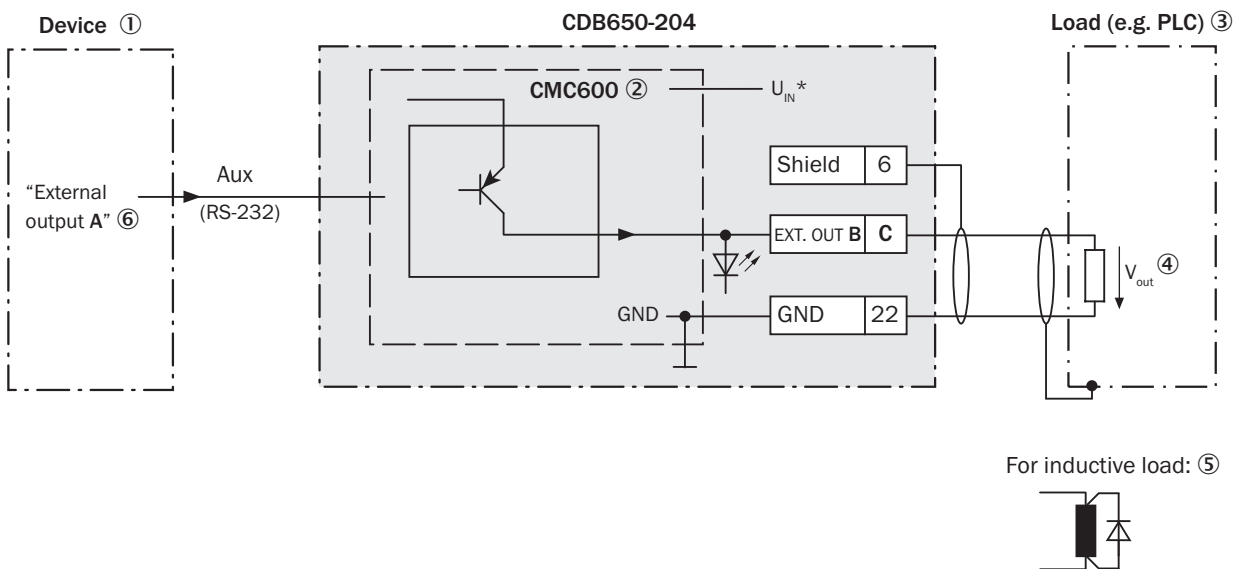


Figure 48: Wiring external digital switching outputs “EXT. OUT 1” and “EXT. OUT 2” of the device in the connection module CDB650-204

- ① Device
- ② The optional parameter cloning module CMC600 is required in the connection module in order to be able to use the additional external digital switching inputs and outputs of the device
- ③ Load (e.g. PLC)
- ④ Output voltage V_{out}
- ⑤ With inductive load: see note
- ⑥ Logical “External output” in the device

Inductive load

**NOTE**

Provide an arc-suppression circuit at the digital switching output if an inductive load is present.

- Attach a freewheeling diode directly to the load for this purpose.

Table 42: Assignment of placeholders to digital switching outputs

| Device | CDB650-204 | |
|-------------------|------------|------------|
| External output A | Signal B | Terminal C |
| 1 | EXT. OUT 1 | 23 |

| | | |
|-------------------|------------|------------|
| Device | CDB650-204 | |
| External output A | Signal B | Terminal C |
| 2 | EXT. OUT 2 | 24 |

Functional principle of the external switching outputs

The device outputs the output states of its logical outputs “External output 1” and “External output 2” via its serial Aux interface. By means of a software-controlled operation, the CMC600 automatically adopts the states via the connecting cable and sets them on its physical digital switching outputs “EXT. 1” and “EXT. OUT 2” in the connection module.



NOTE

The two external digital switching outputs are not suitable for time-critical applications.

Characteristic data of digital switching outputs

Table 43: Characteristic data of the digital switching outputs “External output 1” and “External output 2”

| | |
|--------------------|--|
| Switching behavior | PNP switching to supply voltage V_S Default settings in the device: no function, logic: not inverted (active high) |
| Properties | <ul style="list-style-type: none"> • Short-circuit protected + temperature protected • Not electrically isolated from V_S |
| Electrical values | $0 \text{ V} \leq V_{\text{out}} \leq V_S$ $(V_S - 1.5 \text{ V}) \leq V_{\text{out}} \leq V_S$ at $I_{\text{out}} \leq 100 \text{ mA}$ |



NOTE

Assign the functions for the external digital switching outputs in the device with a configuration tool, e.g. the configuration software SOPAS ET.

13.5 Connection diagrams of connection module CDM420-0006

13.5.1 Connection of the device to CDM420-0006

Device = Lector621 = V2D621x-xxxxYx (Ethernet variant, Y = B or C)

Device = Lector621 ECO = V2D621x-xxxxYx (serial variant, Y = D or E)

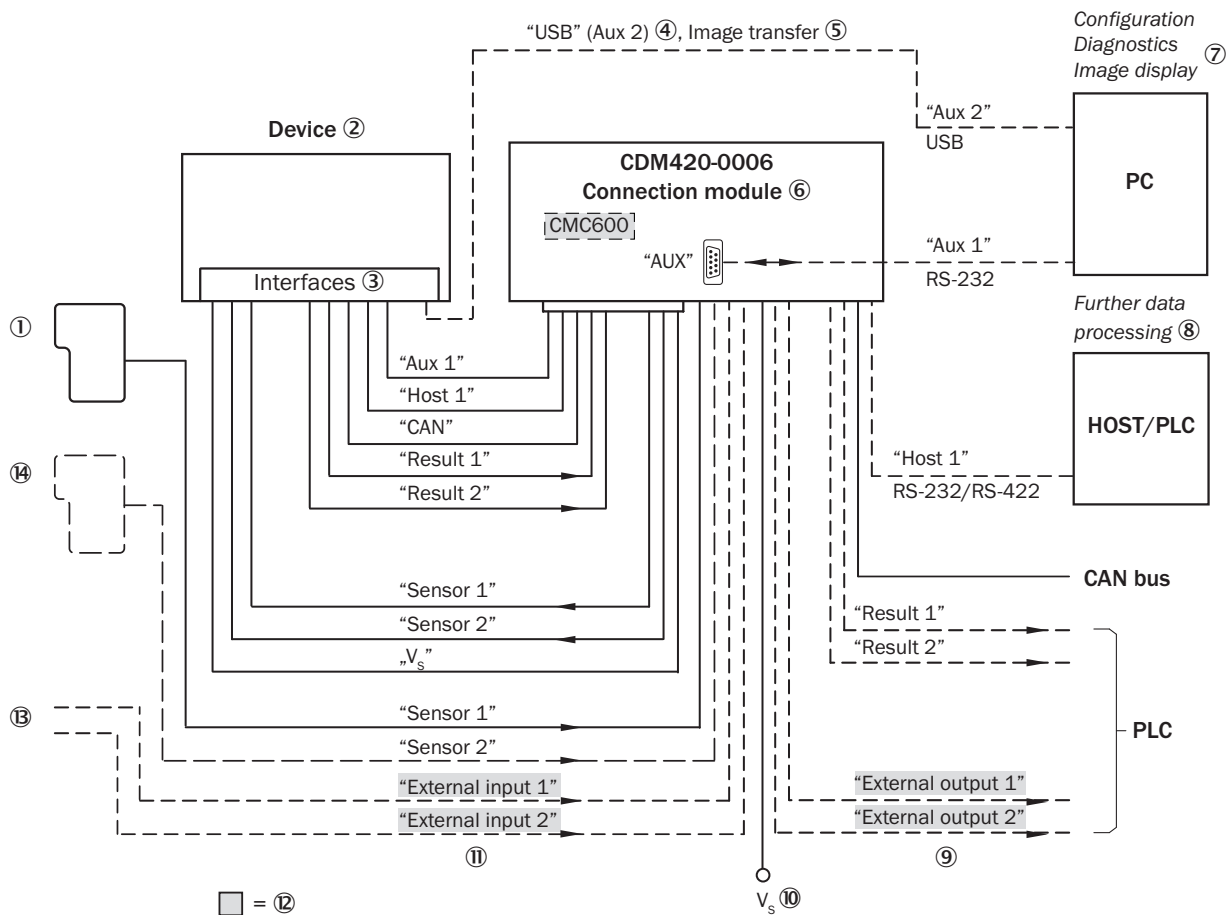


Figure 49: Connection of the device (serial variant) to peripherals via CDM420-0006 (overview)

- ① External trigger sensor, e.g. for read cycle generation
- ② Device
- ③ Interfaces
- ④ USB interface only for temporary use (service)
- ⑤ Image transmission
- ⑥ Connection module
- ⑦ Configuration, diagnostics or image display
- ⑧ Data further processing
- ⑨ External digital switching outputs
- ⑩ Supply voltage V_s
- ⑪ External digital switching inputs
- ⑫ The optional parameter cloning module CMC600 is required in the connection module in order to be able to use the additional external digital switching inputs and outputs of the device (highlighted in gray)
- ⑬ Other functions
- ⑭ Application-dependent alternative stop trigger (e.g. photoelectric sensor) or travel increment (incremental encoder)

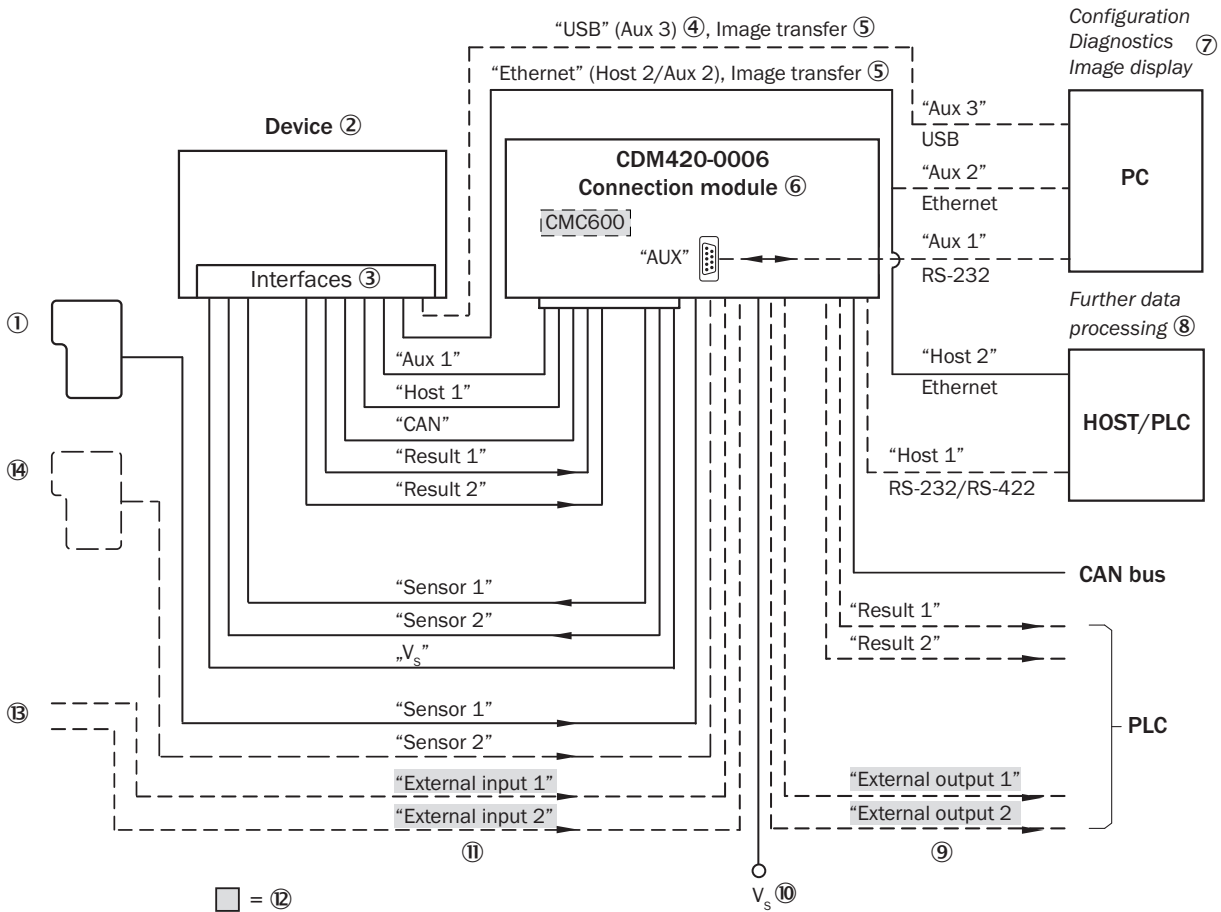


Figure 50: Connection of the device (Ethernet variant) to peripherals via CDM420-0006 (overview)

- ① External trigger sensor, e.g. for read cycle generation
- ② Device
- ③ Interfaces
- ④ USB interface only for temporary use (service)
- ⑤ Image transmission
- ⑥ Connection module
- ⑦ Configuration, diagnostics or image display
- ⑧ Data further processing
- ⑨ External digital switching outputs
- ⑩ Supply voltage V_s
- ⑪ External digital switching inputs
- ⑫ The optional parameter cloning module CMC600 is required in the connection module in order to be able to use the additional external digital switching inputs and outputs of the device (highlighted in gray)
- ⑬ Other functions
- ⑭ Application-dependent alternative stop trigger (e.g. photoelectric sensor) or travel increment (incremental encoder)

13.5.2 Wiring overview of the CDM420-0006

Device = Lector621 ECO = V2D621x-xxxxYx (serial variant, Y = D or E)

Device = Lector621 = V2D621x-xxxxYx (Ethernet variant, Y = B or C)

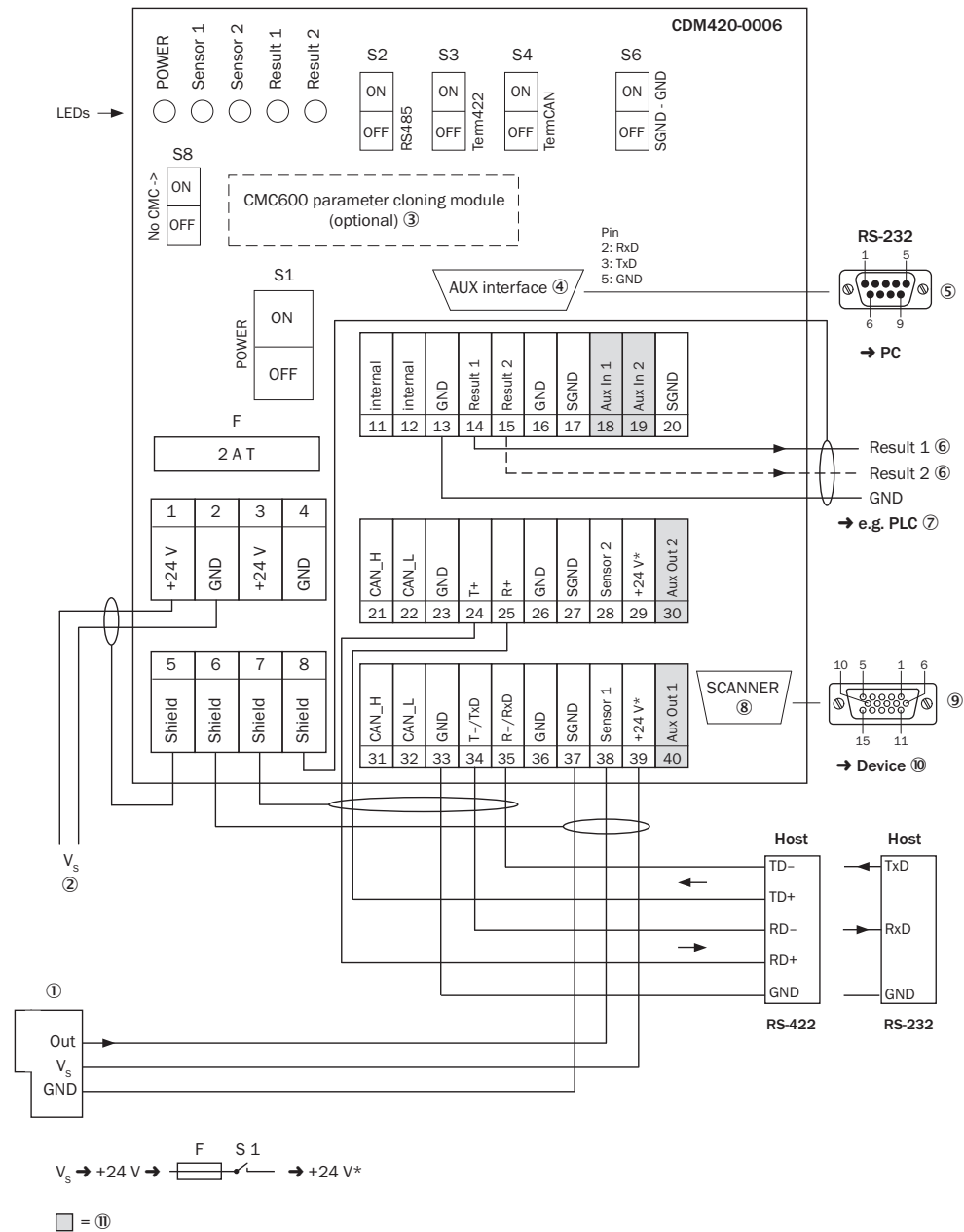


Figure 51: Overview: connection of device and peripherals to the CDM420-0006 connection module

- ① External trigger sensor, e.g. for read cycle generation
- ② CMC600 parameter cloning module (optional)
- ③ e.g. PLC (programmable logic controller)
- ④ Name of switching output
- ⑤ Auxiliary interface "Aux"
- ⑥ Male connector, D-Sub, 9-pin
- ⑦ SCANNER = Device
- ⑧ Female connector, M12, 17-pin, A-coded
- ⑨ Device to be connected
- ⑩ The optional parameter cloning module CMC600 is required in the connection module in order to be able to use the additional external digital switching inputs and outputs of the device (highlighted in gray)
- ⑪ Supply voltage V_s

13.5.3 Connecting supply voltage for the device in CDM420-0006

Device = Lector621 ECO = V2D621x-xxxxYx (serial variant, Y = D or E)

Device = Lector621 = V2D621x-xxxxYx (Ethernet variant, Y = B or C)

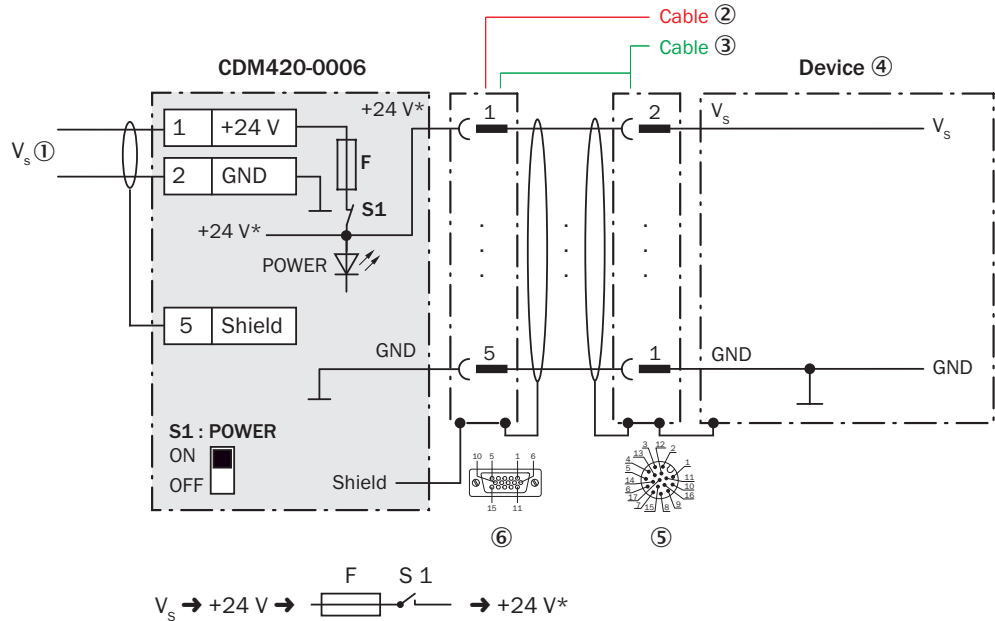


Figure 52: Connecting supply voltage for the device in CDM420-0006 connection module

- ① Supply voltage V_s
- ② V2D621x-xxxxYx (serial variant, Y = D or E): connecting cable permanently connected with the device (male connector, D-Sub-HD, 15-pin)
- ③ V2D621x-xxxxYx (Ethernet variant, Y = B or C): adapter cable (male connector, D-Sub-HD, 15-pin / female connector, M12, 17-pin, A-coded)
- ④ Device
- ⑤ ICR620x-xxx5xx (Ethernet variant): male connector, M12, 17-pin, A-coded
- ⑥ Connection module: female connector, D-Sub-HD, 15-pin

Function of switch S1

Table 44: Switch S1: Power

| Switch setting | Function |
|----------------|--|
| ON | Supply voltage +24 V connected to CDM420-0006 and device via fuse as +24 V*. Voltage +24 V* can be additionally tapped at terminals 29 and 39. |
| OFF | CDM420-0006 and device disconnected from supply voltage. Recommended setting for all connection work. |

13.5.4 Connecting serial host interface RS-232 of the device in CDM420-0006

Device = Lector621 ECO = V2D621x-xxxxYx (serial variant, Y = D or E)

Device = Lector621 = V2D621x-xxxxYx (Ethernet variant, Y = B or C)

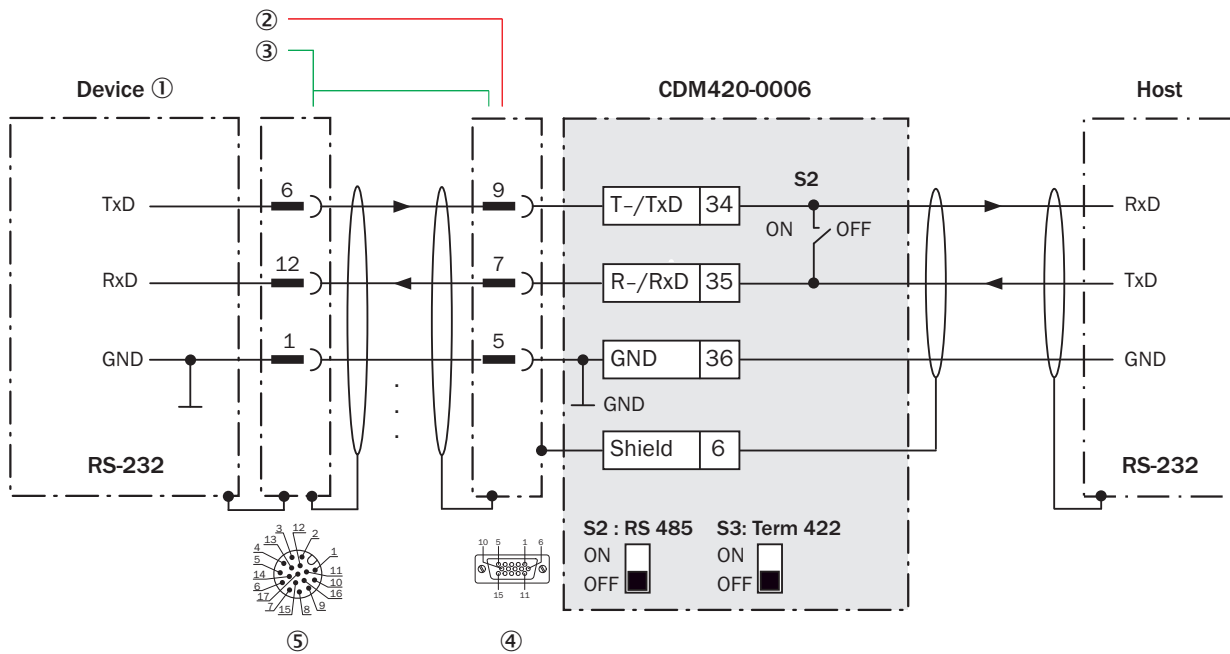


Figure 53: Connecting data interface RS-232 of the device in the connection module CDM420-0006

- ① Device
- ② V2D621x-xxxxYx (serial variant, Y = D or E): connecting cable permanently connected with the device (male connector, D-Sub-HD, 15-pin)
- ③ V2D621x-xxxxYx (Ethernet variant, Y = B or C): adapter cable (male connector, D-Sub-HD, 15-pin / female connector, M12, 17-pin, A-coded)
- ④ Connection module: female connector, D-Sub-HD, 15-pin
- ⑤ V2D621x-xxxxYx (Ethernet variant, Y = B or C): male connector, M12, 17-pin, A-coded



NOTE

Activate the RS-232 data interface in the device with a configuration tool, e.g. the configuration software SOPAS ET.

13.5.5 Connecting serial host interface RS-422 of the device in CDM420-0006

Device = Lector621 ECO = V2D621x-xxxxYx (serial variant, Y = D or E)

Device = Lector621 = V2D621x-xxxxYx (Ethernet variant, Y = B or C)

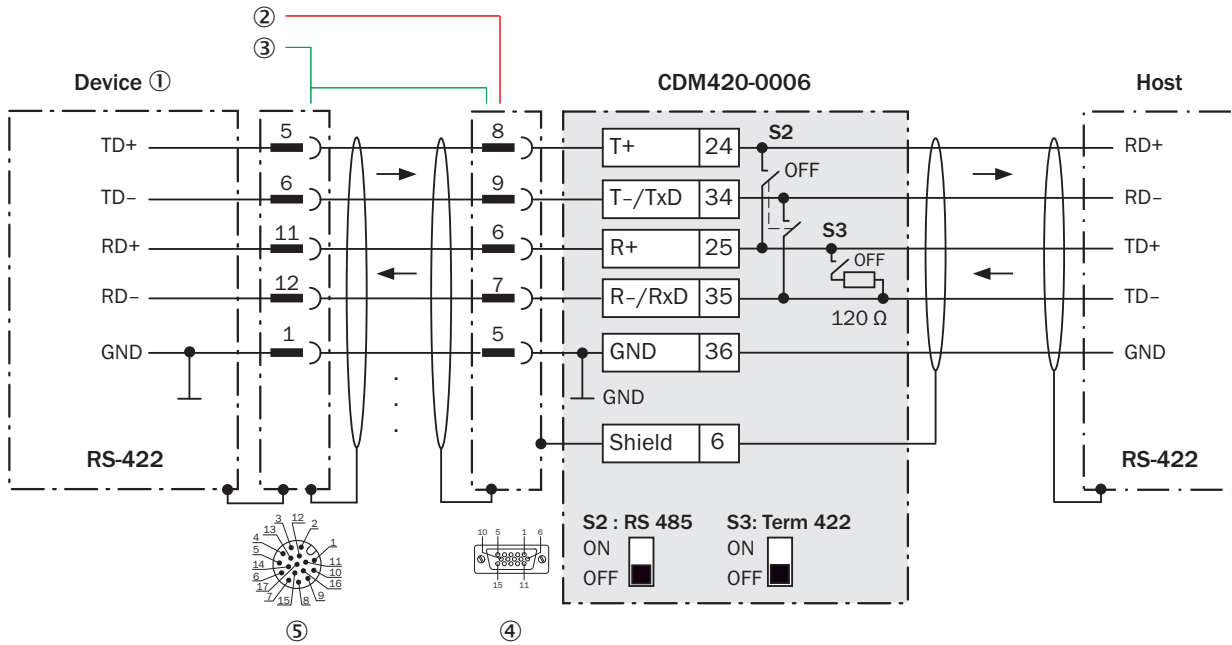


Figure 54: Connecting data interface RS-422 of the device in the connection module CDM420-0006

- ① Device
- ② V2D621x-xxxxYx (serial variant, Y = D or E): connecting cable permanently connected with the device (male connector, D-Sub-HD, 15-pin)
- ③ V2D621x-xxxxYx (Ethernet variant, Y = B or C): adapter cable (male connector, D-Sub-HD, 15-pin / female connector, M12, 17-pin, A-coded)
- ④ Connection module: female connector, D-Sub-HD, 15-pin
- ⑤ ICR620x-xxx5xx (Ethernet variant): male connector, M12, 17-pin, A-coded

Function of switch S3

Table 45: Switch S3: Term 422

| Switch setting | Function |
|----------------|--|
| ON | Terminates the RS-422 receiver in the device to improve the noise ratio on the line. |
| OFF | No termination |



NOTE

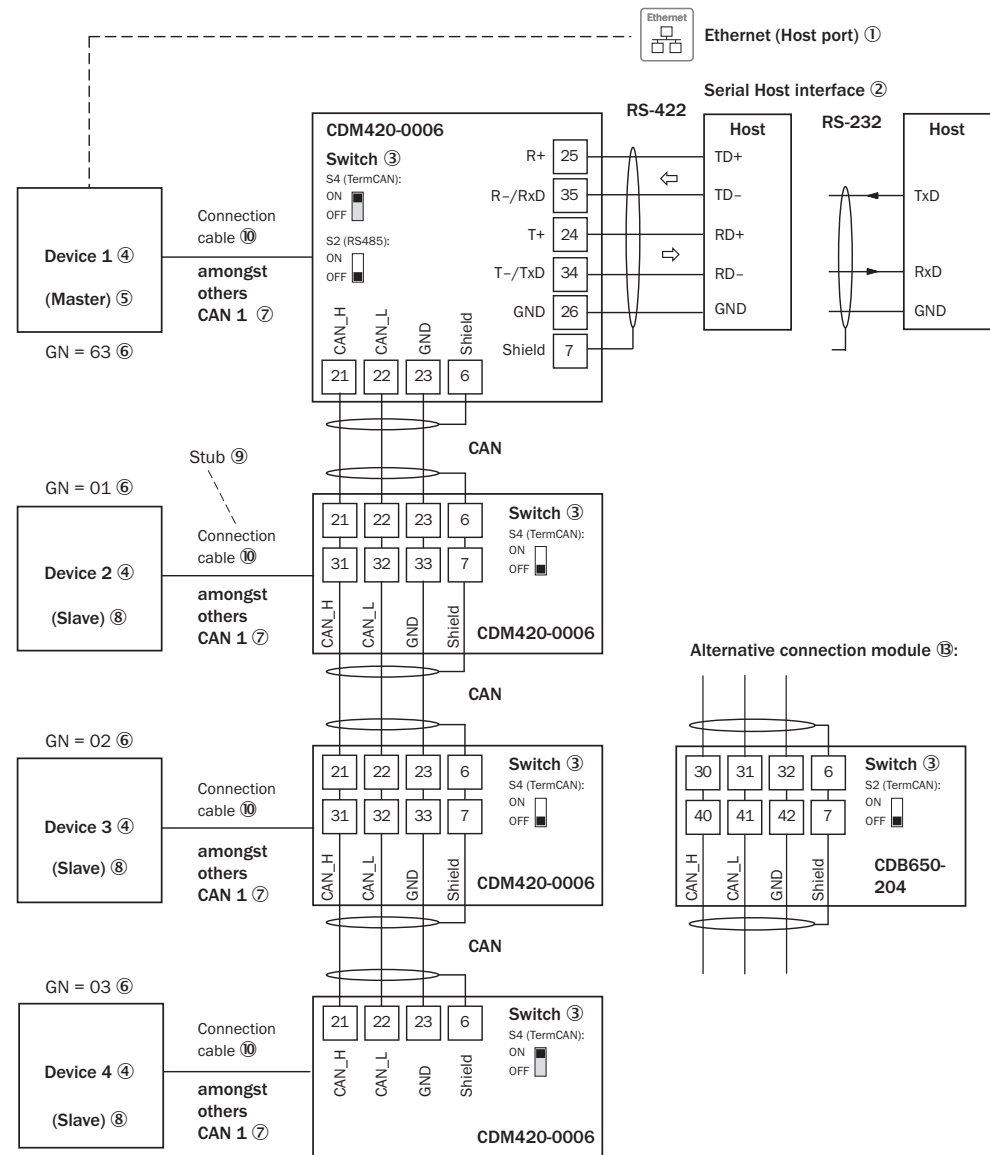
User of the RS-422 data interface:

- The relevant interface driver for the device complies with the standard in accordance with RS-422.
- The connection shown above is configured for operation of the host with permanently activated drivers (often described as “RS-422 operation”).
- Activate the RS-422 data interface (“Point-to-Point” option) in the device with a configuration tool, e.g. the configuration software SOPAS ET.

13.5.6 Wiring the CAN interface in the CDM420-0006

Device = Lector621 ECO = V2D621x-xxxxYx (serial variant, Y = D or E)

Device = Lector621 = V2D621x-xxxxYx (Ethernet variant, Y = B or C)



GN = Device number ⑪
(max. 32 participants) ⑫

Figure 55: Wire the CAN interface of the device in the CDM420-0006 connection module. Connection and looping through of the supply voltage and connection of a trigger sensor for read cycle generation at the master, for example, are disregarded here!

- ① Only V2D621x-xxxxYx (Ethernet variant, Y = B or C): Ethernet (host port)
- ② Serial host interface
- ③ Switch
- ④ Device
- ⑤ Master
- ⑥ Device number
- ⑦ CAN etc.
- ⑧ Slave
- ⑨ Branch line
- ⑩ V2D621x-xxxxYx (serial variant, Y = D or E): connecting cable permanently connected with the device (male connector, D-Sub-HD, 15-pin)
V2D621x-xxxxYx (Ethernet variant, Y = B or C): adapter cable (female connector, M12, 17-pin, A-coded / male connector, D-Sub-HD, 15-pin)
- ⑪ Device number (GN)

- ⑫ Maximum 32 users
- ⑬ Example of alternative connection module.

Alternative connection module for V2D621x-xxxxYx (serial variant, Y = D or E): CDB620 or CDM420-0001.

Alternative connection module for V2D621x-xxxxYx (Ethernet variant, Y = B or C): CDB650-204.

CDB620 or CDM420-0001: An adapter cable (female connector, M12, 17-pin, A-coded / male connector, D-Sub-HD, 15-pin) is required to connect the V2D621x-xxxxYx (Ethernet variant, Y = B or C)

CDB650-204: A connection cable 1:1 (female connector, M12, 17-pin, A-coded/male connector, M12, 17-pin, A-coded) is required to connect the V2D621x-xxxxYx (Ethernet variant, Y = B or C)



NOTE

Activate the CAN data interface in the device with a configuration tool, e.g. the configuration software SOPAS ET.

Make further settings in the device corresponding to the function of the device in the system configuration.

13.5.7 Wiring digital switching inputs “Sensor 1” and “Sensor 2” of the device in the CDM420-0006

Device = Lector621 ECO = V2D621x-xxxxYx (serial variant, Y = D or E)

Device = Lector621 = V2D621x-xxxxYx (Ethernet variant, Y = B or C)

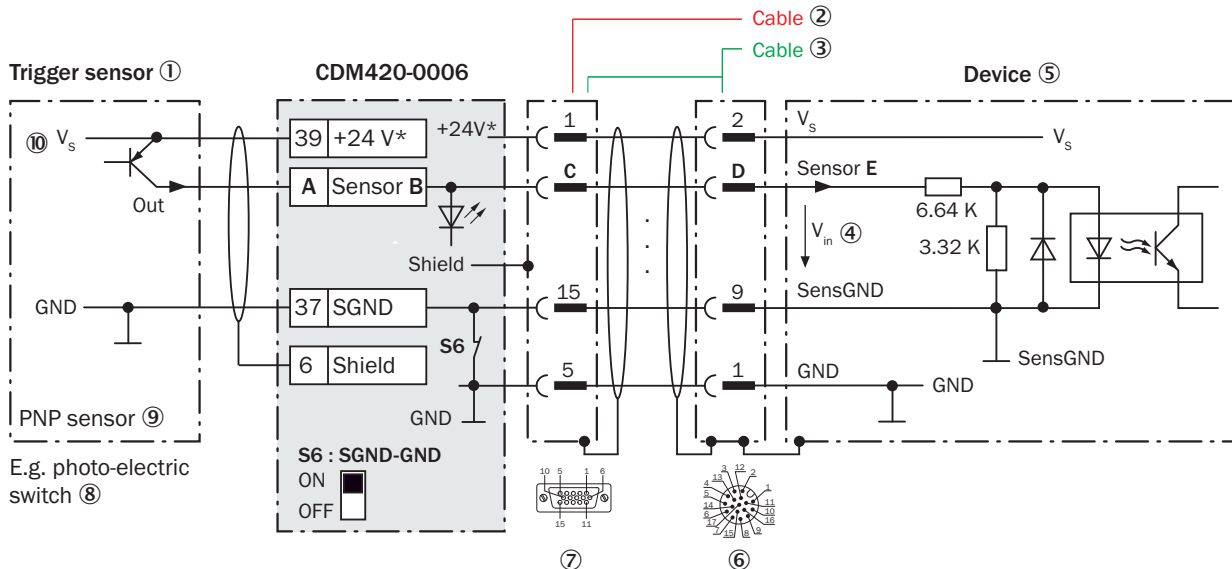


Figure 56: Trigger sensor supplied with power by connection module CDM420-0006

- ① Trigger sensor, e.g. for read cycle generation
- ② V2D621x-xxxxYx (serial variant, Y = D or E): connecting cable permanently connected with the device (male connector, D-Sub-HD, 15-pin)
- ③ V2D621x-xxxxYx (Ethernet variant, Y = B or C): adapter cable (male connector, D-Sub-HD, 15-pin / female connector, M12, 17-pin, A-coded)
- ④ Input voltage V_{in}
- ⑤ Device
- ⑥ V2D621x-xxxxYx (Ethernet variant, Y = B or C): male connector, M12, 17-pin, A-coded

- ⑦ Connection module: female connector, D-Sub-HD, 15-pin
- ⑧ e.g. photoelectric sensor
- ⑨ PNP sensor
- ⑩ Supply voltage V_S

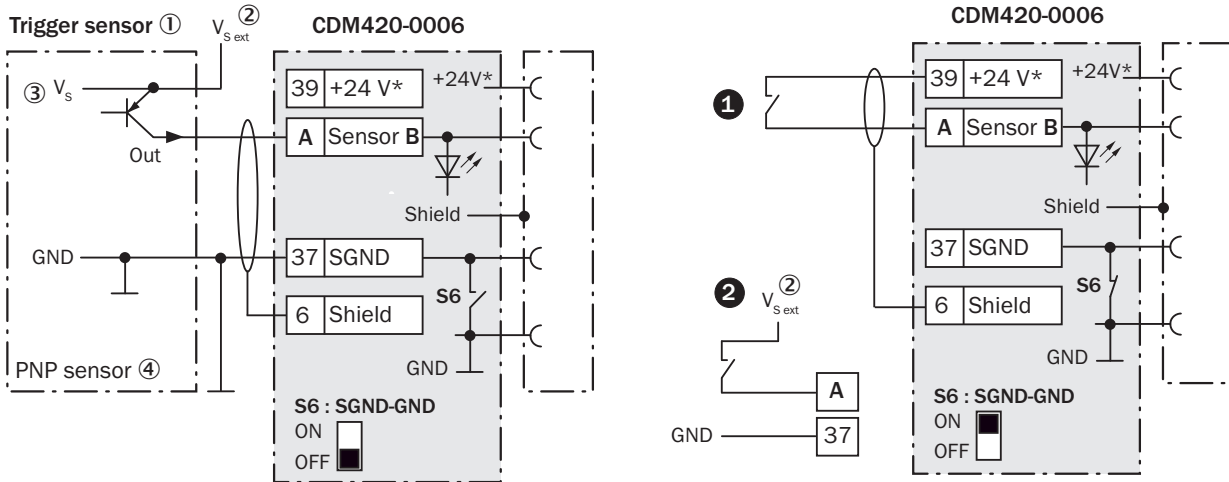


Figure 57: Left: Trigger sensor connected potential-free and supplied with power externally. Right: Alternatively switch, ① supplied with power by connection module CDM420-0006 or ② connected potential-free and supplied with power externally. Switch setting S6 then as in left figure.

- ① Trigger sensor, e.g. for read cycle generation
- ② External supply voltage $V_{S\ ext}$ ($V_{S\ ext} = U_{V\ ext}$)
- ③ PNP sensor
- ④ Supply voltage V_S

Table 46: Assignment of placeholders to digital switching inputs

| CDM420-0006 | | | Device | |
|-------------|----------|-------|--------|----------|
| Terminal A | Signal B | Pin C | Pin D | Sensor E |
| 38 | Sensor 1 | 14 | 10 | 1 |
| 39 | Sensor 2 | 4 | 15 | 2 |

Function of switch S6

Table 47: Switch S6: SGND - GND

| Switch setting | Function |
|----------------|--|
| ON | GND of the trigger sensor connected with GND of CDM420-0006 and GND of the device |
| OFF | Trigger sensor connected potential-free at CDM420-0006 and device. Common, isolated reference potential of all digital switching inputs is SGND. |

Characteristic data of digital switching inputs

Table 48: Characteristic data of the digital switching inputs "Sensor 1" and "Sensor 2"

| | |
|--------------------|--|
| Switching behavior | Power to the input starts the assigned function, e.g. start read cycle. Default setting in the device: logic not inverted (active high), debounce time 10 ms |
|--------------------|--|

| | |
|--------------------------|---|
| Properties | <ul style="list-style-type: none"> • Opto-decoupled, reverse polarity protected • Can be wired with PNP output of a trigger sensor |
| Electrical values | Low: $V_{in} \leq 2\text{ V}$; $I_{in} \leq 0.3\text{ mA}$ High: $6\text{ V} \leq V_{in} \leq 30\text{ V}$; $0.7\text{ mA} \leq I_{in} \leq 5\text{ mA}$ |



NOTE

Assign the functions for the digital switching inputs in the device with a configuration tool, e.g. the configuration software SOPAS ET.

13.5.8 Wiring digital switching inputs “External input 1” and “External input 2” of the device in the CDM420-0006

Device = Lector621 ECO = V2D621x-xxxxYx (serial variant, Y = D or E)

Device = Lector621 = V2D621x-xxxxYx (Ethernet variant, Y = B or C)

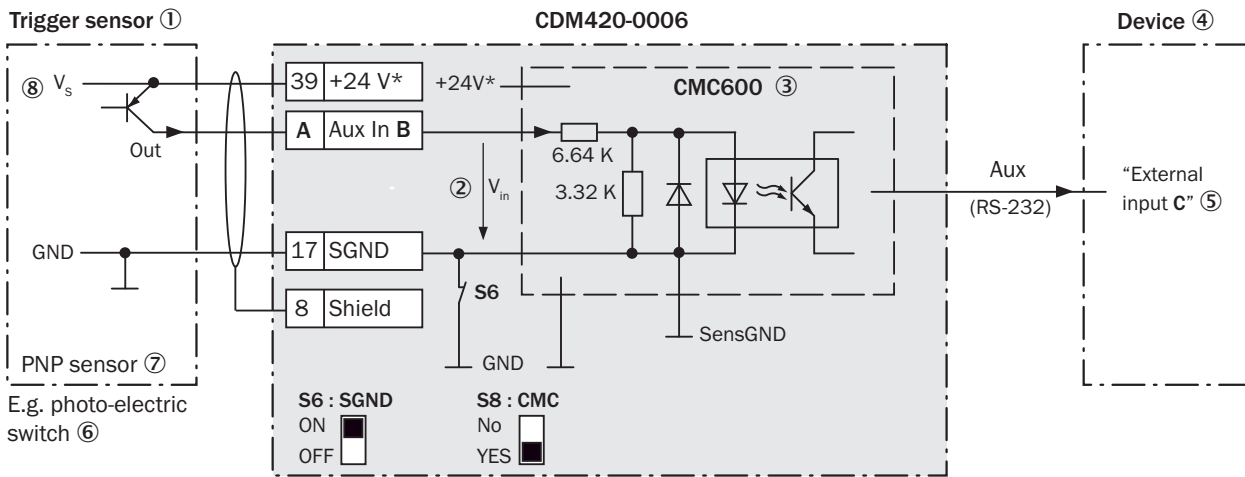


Figure 58: Trigger sensor supplied with power by connection module CDM420-0006

- ① Trigger sensor, e.g. for read cycle generation
- ② Input voltage V_{in}
- ③ The optional parameter cloning module CMC600 is required in the connection module in order to be able to use the additional external digital switching inputs and outputs of the device
- ④ Device
- ⑤ Logical “External input” in the device
- ⑥ e.g. photoelectric sensor
- ⑦ PNP sensor
- ⑧ Supply voltage V_s

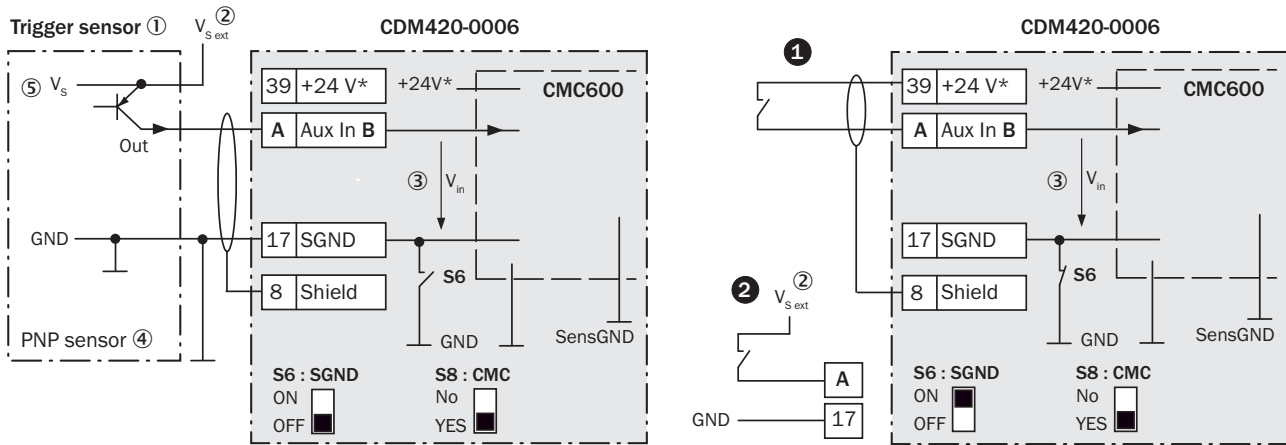


Figure 59: Left: Trigger sensor connected potential-free and supplied with power externally. Right: Alternatively switch, ❶ supplied with power by connection module CDM420-0006 or ❷ connected potential-free and supplied with power externally. Switch setting S3 then as in left figure.

- ❶ Trigger sensor, e.g. for read cycle generation
- ❷ External supply voltage $V_{S\ ext}$
- ❸ Input voltage V_{in}
- ❹ PNP sensor
- ❺ Supply voltage V_s

Table 49: Assignment of placeholders to digital switching inputs

| CDM420-0006 | | Device |
|-------------|----------|------------------|
| Terminal A | Signal B | External input C |
| 18 | Aux In 1 | 1 |
| 19 | Aux In 2 | 2 |

Function of switch S6

Table 50: Switch S6: SGND - GND

| Switch setting | Function |
|----------------|---|
| ON | GND of the trigger sensor connected with GND of CDM420-0006 and CMC600 |
| OFF | Trigger sensor connected potential-free at CDM420-0006 and CMC600. Common, isolated reference potential of all digital switching inputs is SGND. |

Functional principle of the external switching inputs

As a software-controlled operation, the CMC600 automatically transmits the output states of its physical digital switching inputs “Aux In 1” and “Aux In 2” in the connection module via the connecting cable to the serial Aux interface of the device. The device internally implements the states for its logical inputs “External input 1” and “External input 2”.



NOTE

The two external digital switching inputs are not suitable for time-critical applications.

Characteristic data of digital switching inputs

Table 51: Characteristic data of the digital switching inputs “External input 1” and “External input 2”

| | |
|---------------------------|---|
| Switching behavior | Power to the input starts the assigned function, e.g. start read cycle. Default setting in the device: logic not inverted (active high), debounce time 10 ms |
| Properties | <ul style="list-style-type: none"> • Opto-decoupled, reverse polarity protected • Can be wired with PNP output of a trigger sensor |
| Electrical values | Low: $V_{in} \leq 2\text{ V}$; $I_{in} \leq 0.3\text{ mA}$ High: $6\text{ V} \leq V_{in} \leq 30\text{ V}$; $0.7\text{ mA} \leq I_{in} \leq 5\text{ mA}$ |



NOTE

Assign the functions for the external digital switching inputs in the device with a configuration tool, e.g. the configuration software SOPAS ET.

13.5.9 Wiring digital switching outputs “Result 1” and “Result 2” of the device in CDM420-0006

Device = Lector621 ECO = V2D621x-xxxxYx (serial variant, Y = D or E)

Device = Lector621 = V2D621x-xxxxYx (Ethernet variant, Y = B or C)

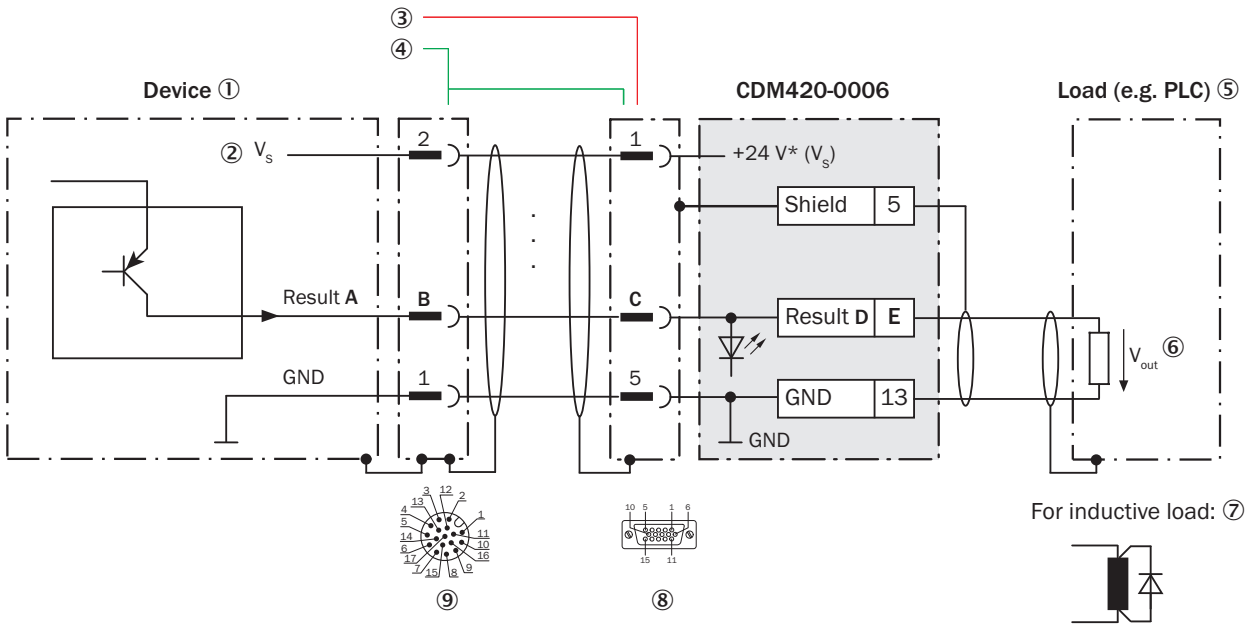


Figure 60: Wiring digital switching outputs “Result 1” and “Result 2” of the device in the connection module CDM420-0006



NOTE

The two digital switching outputs “Result 3” and “Result 4” are not available in the CDM420-0006 for the V2D621x-xxxxYx (Ethernet variant, Y = B or C).

- ① Device
- ② Supply voltage V_s
- ③ V2D621x-xxxxYx (serial variant, Y = D or E): connecting cable permanently connected with the device (male connector, D-Sub-HD, 15-pin)
- ④ V2D621x-xxxxYx (Ethernet variant, Y = B or C): adapter cable (female connector, M12, 17-pin, A-coded / male connector, D-Sub-HD, 15-pin)
- ⑤ Load (e.g. PLC)

- ⑥ Output voltage V_{out}
- ⑦ With inductive load: see note
- ⑧ Connection module: female connector, D-Sub-HD, 15-pin
- ⑨ V2D621x-xxxxYx (Ethernet variant, Y = B or C): male connector, M12, 17-pin, A-coded

Inductive load



NOTE

Provide an arc-suppression circuit at the digital switching output if an inductive load is present.

- ▶ Attach a freewheeling diode directly to the load for this purpose.

Table 52: Assignment of placeholders to digital switching outputs

| Device | | CDM420-0006 | | |
|----------|-------|-------------|----------|------------|
| Output A | Pin B | Pin C | Signal D | Terminal E |
| Result 1 | 13 | 12 | Result 1 | 14 |
| Result 2 | 14 | 13 | Result 2 | 15 |

Characteristic data of digital switching outputs

Table 53: Characteristic data of the digital switching outputs “Result 1” and “Result 2”

| | |
|---------------------------|--|
| Switching behavior | PNP switching to supply voltage V_S Default settings in the device: no function, logic: not inverted (active high) |
| Properties | <ul style="list-style-type: none"> • Short-circuit protected + temperature protected • Not electrically isolated from V_S |
| Electrical values | $0\text{ V} \leq V_{out} \leq V_S$ $(V_S - 1.5\text{ V}) \leq V_{out} \leq V_S$ for $I_{out} \leq 100\text{ mA}$ |



NOTE

Assign the functions for the digital switching outputs in the device with a configuration tool, e.g. the configuration software SOPAS ET.

13.5.10 Wiring digital switching outputs “External output 1” and “External output 2” of the device in the CDM420-0006

Device = Lector62x = ICR620x-xxxYxx (serial variant, Y = 0, 1 or 2), ICR620x-xxx5xx (Ethernet variant)

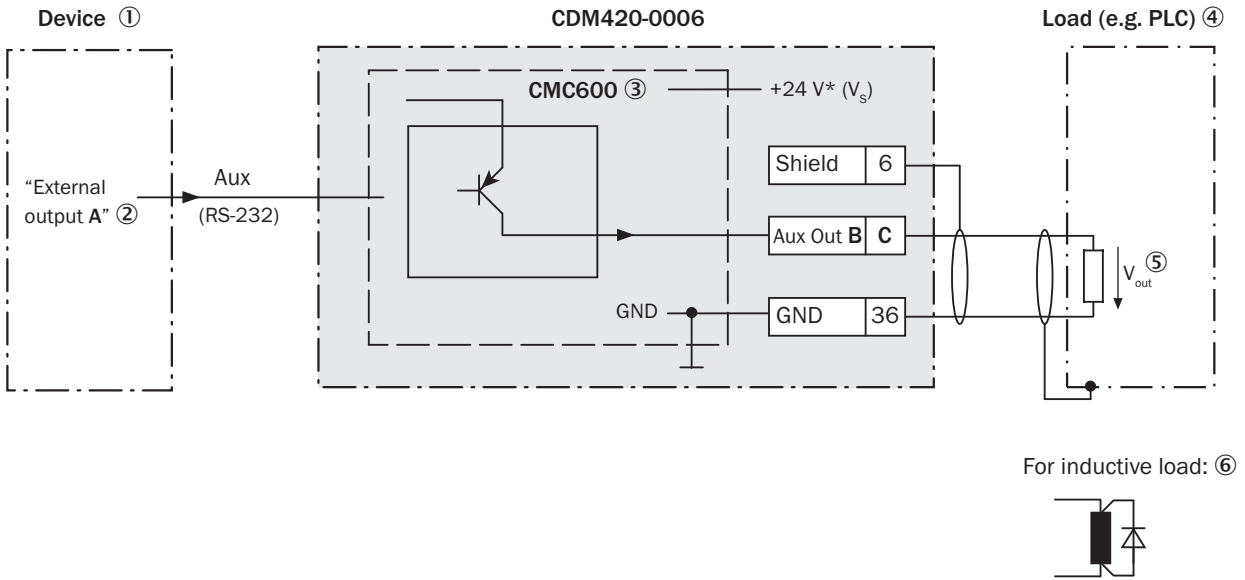


Figure 61: Wiring external digital switching outputs “Aux Out 1” and “Aux Out 2” of the device in the connection module CDM420-0006

- ① Device
- ② Logical “External output” in the device
- ③ The optional parameter cloning module CMC600 is required in the connection module in order to be able to use the additional external digital switching inputs and outputs of the device
- ④ Load (e.g. PLC)
- ⑤ Output voltage V_{out}
- ⑥ With inductive load: see note

Inductive load



NOTE

Provide an arc-suppression circuit at the digital switching output if an inductive load is present.

- Attach a freewheeling diode directly to the load for this purpose.

Table 54: Assignment of placeholders to digital switching outputs

| Device | CDM420-0006 | |
|-------------------|-------------|------------|
| External output A | Signal B | Terminal C |
| 1 | Aux Out 1 | 40 |
| 2 | Aux Out 2 | 30 |

Functional principle of the external switching outputs

The device outputs the output states of its logical outputs “External output 1” and “External output 2” via its serial Aux interface. By means of a software-controlled operation, the CMC600 automatically adopts the states via the connecting cable and sets them on its physical digital switching outputs “Aux Out 1” and “Aux Out 2” in the connection module.



NOTE

The two external digital switching outputs are not suitable for time-critical applications.

Characteristic data of digital switching outputs

Table 55: Characteristic data of the digital switching outputs "External output 1" and "External output 2"

| | |
|---------------------------|--|
| Switching behavior | PNP switching to supply voltage V_S Default settings in the device: no function, logic: not inverted (active high) |
| Properties | <ul style="list-style-type: none"> • Short-circuit protected + temperature protected • Not electrically isolated from V_S |
| Electrical values | $0\text{ V} \leq V_{\text{out}} \leq V_S$ $(V_S - 1.5\text{ V}) \leq V_{\text{out}} \leq V_S$ at $I_{\text{out}} \leq 100\text{ mA}$ |



NOTE

Assign the functions for the external digital switching outputs in the device with a configuration tool, e.g. the configuration software SOPAS ET.

13.6 Connection diagrams of connection module CDB620-001

13.6.1 Connection of the device to CDB620-001

Device = Lector621 ECO = V2D621x-xxxxYx (serial variant, Y = D or E)

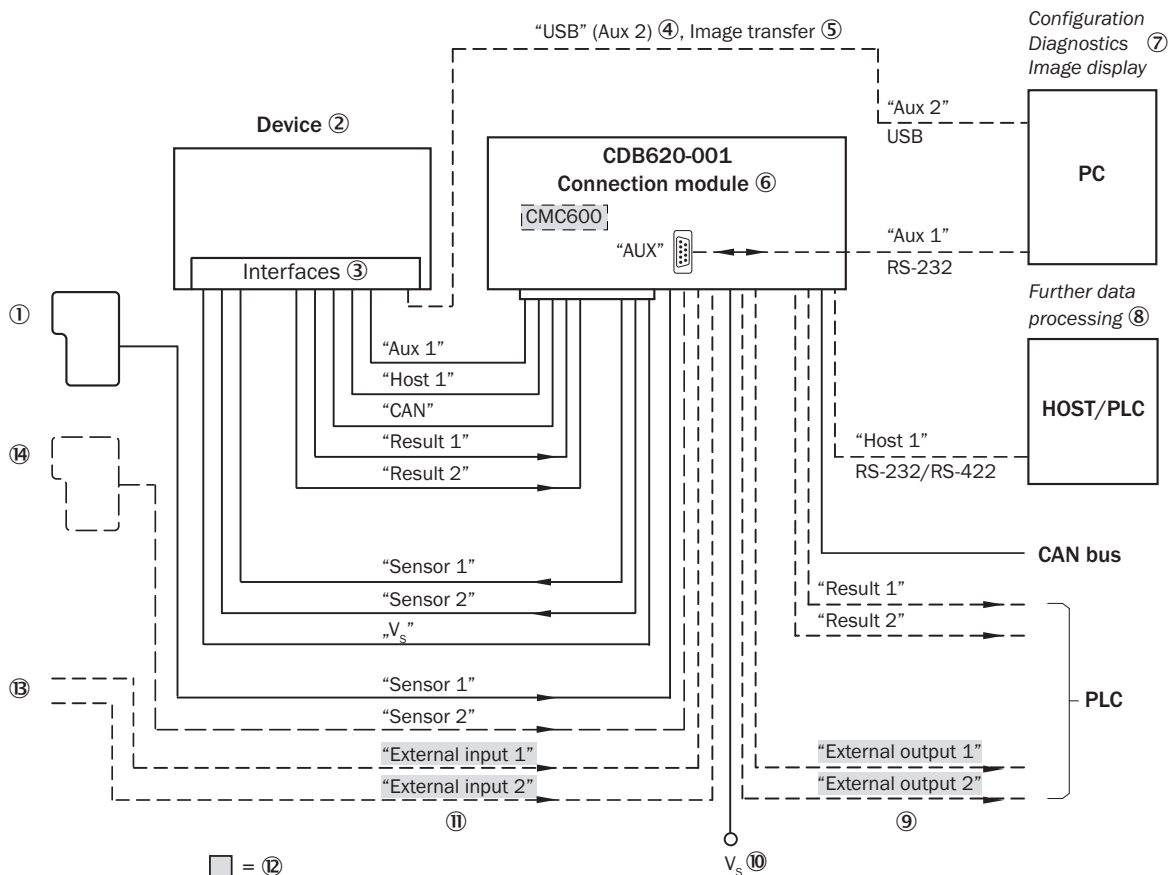


Figure 62: Connection of the device (serial variant) to peripherals via CDB620-001 (overview)

- ① External trigger sensor, e.g. for read cycle generation
- ② Device
- ③ Interfaces

- ④ USB interface only for temporary use (service)
- ⑤ Image transmission
- ⑥ Connection module
- ⑦ Configuration, diagnostics or image display
- ⑧ Data further processing
- ⑨ External digital switching outputs
- ⑩ Supply voltage V_S
- ⑪ External digital switching inputs
- ⑫ The optional parameter cloning module CMC600 is required in the connection module in order to be able to use the additional external digital switching inputs and outputs of the device (highlighted in gray)
- ⑬ Other functions
- ⑭ Application-dependent alternative stop reading cycle (e.g. photoelectric sensor) or travel increment (incremental encoder)

13.6.2 Wiring overview of the CDB620-001

Device = Lector621 ECO = V2D621x-xxxxYx (serial variant, Y = D or E), 1 switching input used

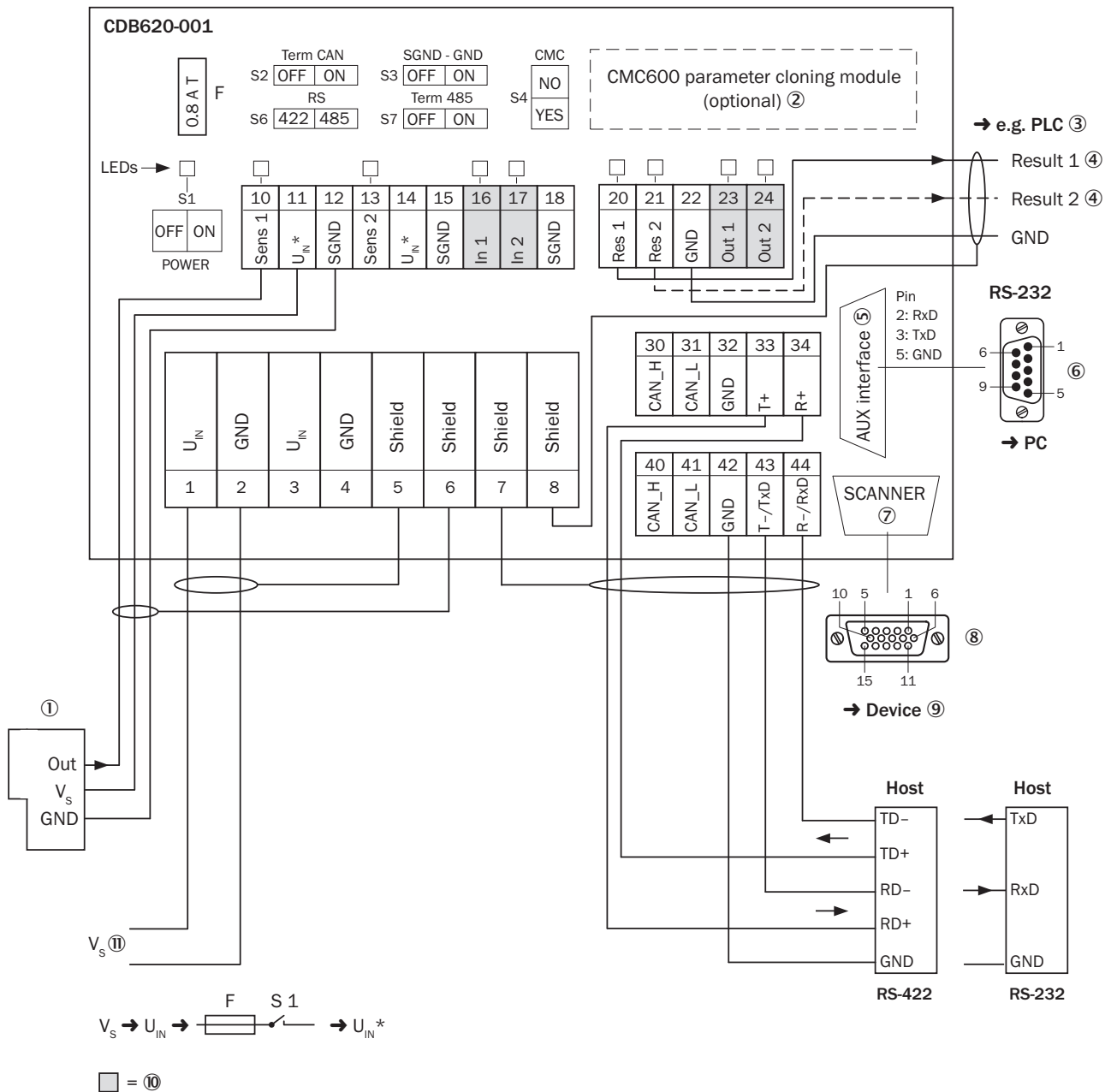


Figure 63: Overview: connection of device and peripherals to the CDB620-001 connection module

- ① External trigger sensor, e.g. for read cycle generation
- ② CMC600 parameter cloning module (optional)
- ③ e.g. PLC (programmable logic controller)
- ④ Name of digital switching output
- ⑤ Auxiliary interface "Aux"
- ⑥ Male connector, D-Sub, 9-pin
- ⑦ SCANNER = Device
- ⑧ Female connector, D-Sub-HD, 15-pin
- ⑨ Device to be connected
- ⑩ The optional parameter cloning module CMC600 is required in the connection module in order to be able to use the additional external digital switching inputs and outputs of the device (highlighted in gray)
- ⑪ Supply voltage V_S

13.6.3 Connecting supply voltage for the device in CDB620-001

Device = Lector621 ECO = V2D621x-xxxxYx (serial variant, Y = D or E)

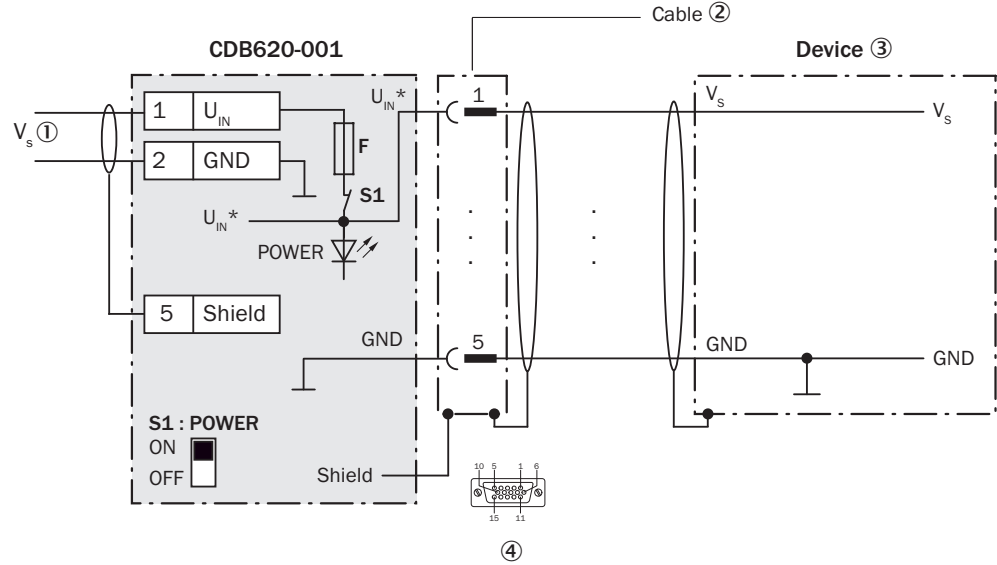


Figure 64: Connecting supply voltage for the device in CDB620-001 connection module

- ① Supply voltage V_s
- ② Connecting cable permanently connected with the device (male connector, D-Sub-HD, 15-pin)
- ③ Device
- ④ Connection module: female connector, D-Sub-HD, 15-pin

Function of switch S1

Table 56: Switch S1: Power

| Switch setting | Function |
|----------------|--|
| ON | Supply voltage U_{IN} connected to CDB620-001 and device via fuse and switch S1 as U_{IN}^* . Voltage U_{IN}^* can be additionally tapped at terminals 11 and 14. |
| OFF | CDB620-001 and device disconnected from supply voltage. Recommended setting for all connection work. |

13.6.4 Wiring serial host interface RS-232 of the device in CDB620-001

Device = Lector621 ECO = V2D621x-xxxxYx (serial variant, Y = D or E)

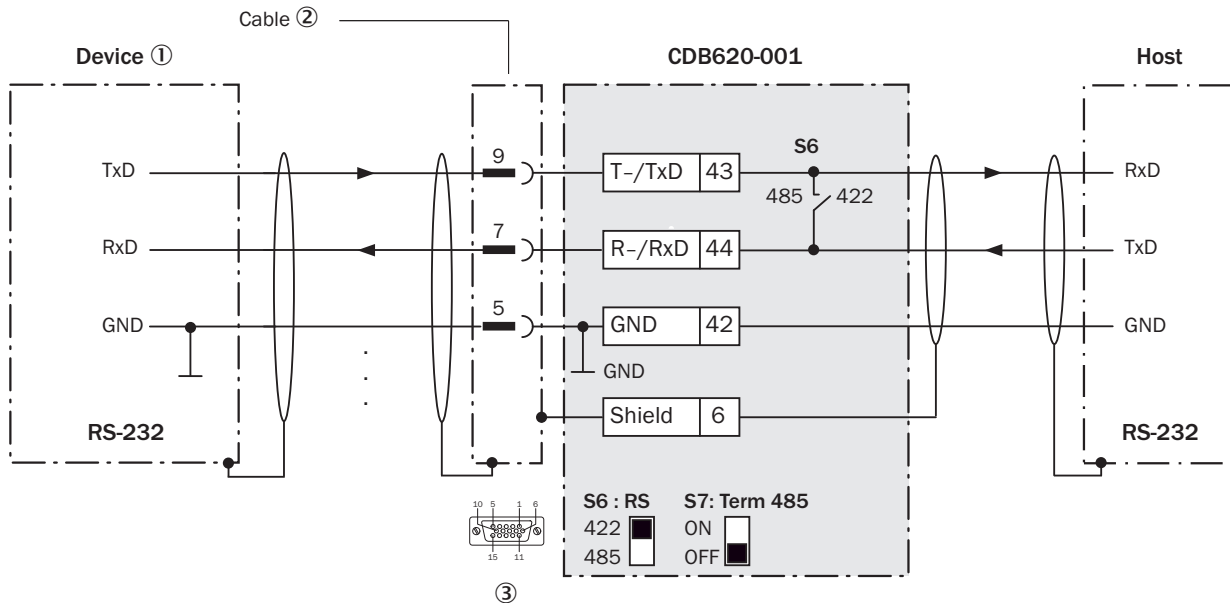


Figure 65: Wiring data interface RS-232 of the device in the connection module CDB620-001

- ① Device
- ② Connecting cable permanently connected with the device (male connector, D-Sub-HD, 15-pin)
- ③ Connection module: female connector, D-Sub-HD, 15-pin



NOTE

Activate the RS-232 data interface in the device with a configuration tool, e.g. the configuration software SOPAS ET.

13.6.5 Wiring serial host interface RS-422 of the device in CDB620-001

Device = Lector621 ECO = V2D621x-xxxxYx (serial variant, Y = D or E)

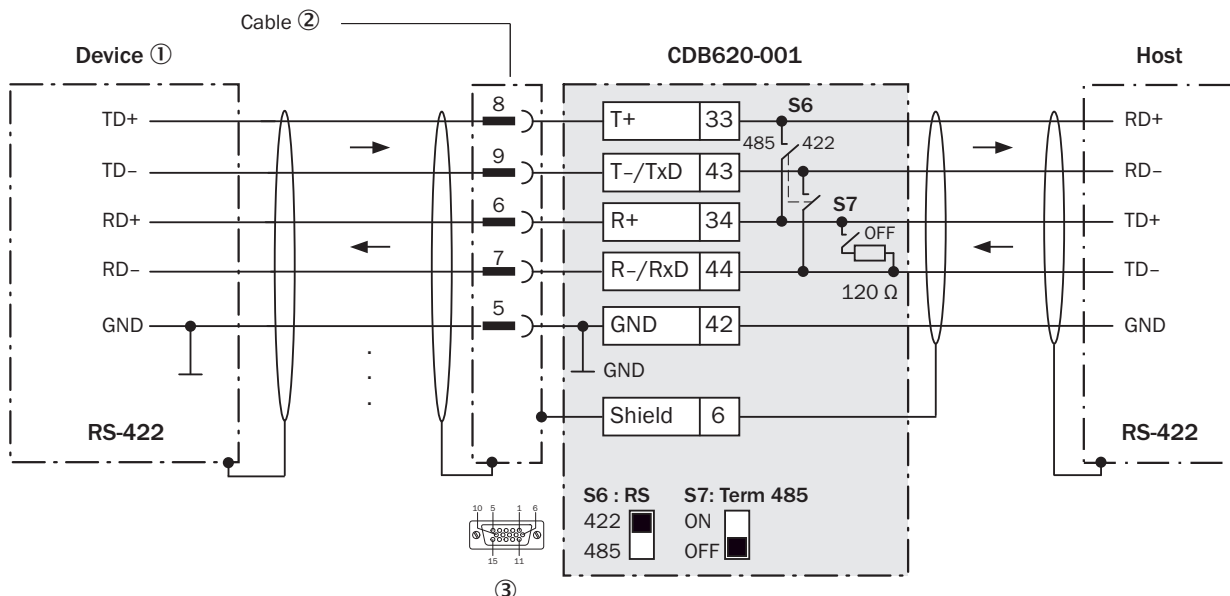


Figure 66: Wiring data interface RS-422 of the device in the connection module CDB620-001

- ① Device
- ② V2D621x-xxxxYx (serial variant, Y = D or E): connecting cable permanently connected with the device (male connector, D-Sub-HD, 15-pin)
- ③ Connection module: female connector, D-Sub-HD, 15-pin

Function of switch S7

Table 57: Switch S7: Term 485

| Switch setting | Function |
|----------------|--|
| ON | Terminates the RS-422 receiver in the device to improve the noise ratio on the line. |
| OFF | No termination |



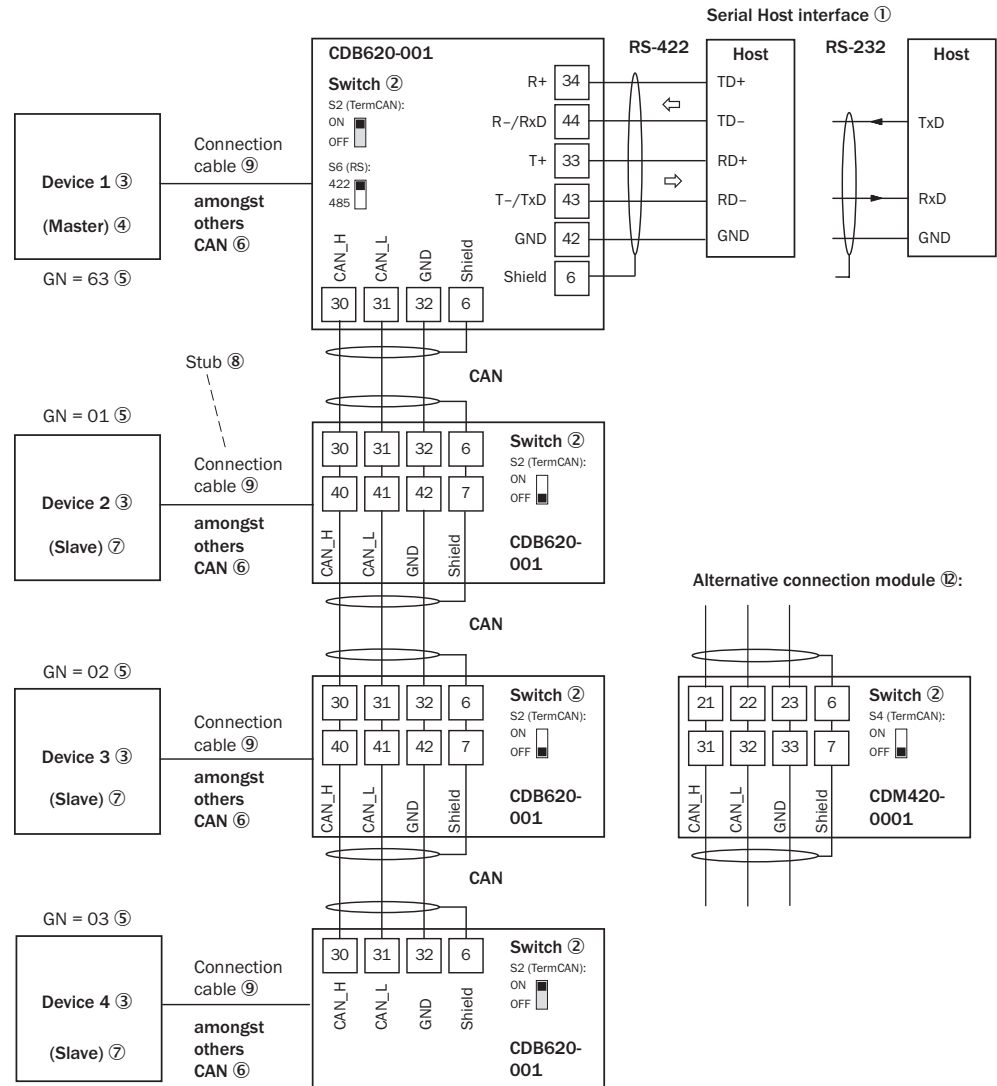
NOTE

User of the RS-422 data interface:

- The relevant interface driver for the device complies with the standard in accordance with RS-422.
- The connection shown above is configured for operation of the host with permanently activated drivers (often described as “RS-422 operation”).
- Activate the RS-422 data interface (“Point-to-Point” option) in the device with a configuration tool, e.g. the configuration software SOPAS ET.

13.6.6 Wiring the CAN interface in the CDB620-001

Device = Lector621 ECO = V2D621x-xxxxYx (serial variant, Y = D or E)



GN = Device number ⑩
 (max. 32 participants) ⑪

Figure 67: Wire the CAN interface of the device in the CDB620-001 connection module. Connection and looping through of the supply voltage and connection of a trigger sensor for read cycle generation at the master, for example, are disregarded here!

- ① Serial host interface
- ② Switch
- ③ Device
- ④ Master
- ⑤ Device number
- ⑥ CAN etc.
- ⑦ Slave
- ⑧ Branch line
- ⑨ Connecting cable permanently connected with the device (male connector, D-Sub-HD, 15-pin)
- ⑩ Device number (GN)
- ⑪ Maximum 32 users
- ⑫ Example of alternative connection module:

Alternative connection module for V2D621x-xxxxYx (serial variant, Y = D or E):
CDM420-0001 or CDM420-0006.



NOTE

Activate the CAN data interface in the device with a configuration tool, e.g. the configuration software SOPAS ET.

Make further settings in the device corresponding to the function of the device in the system configuration.

13.6.7 Wiring digital switching inputs “Sensor 1” and “Sensor 2” of the device in the CDB620-001

Device = Lector621 ECO = V2D621x-xxxxYx (serial variant, Y = D or E)

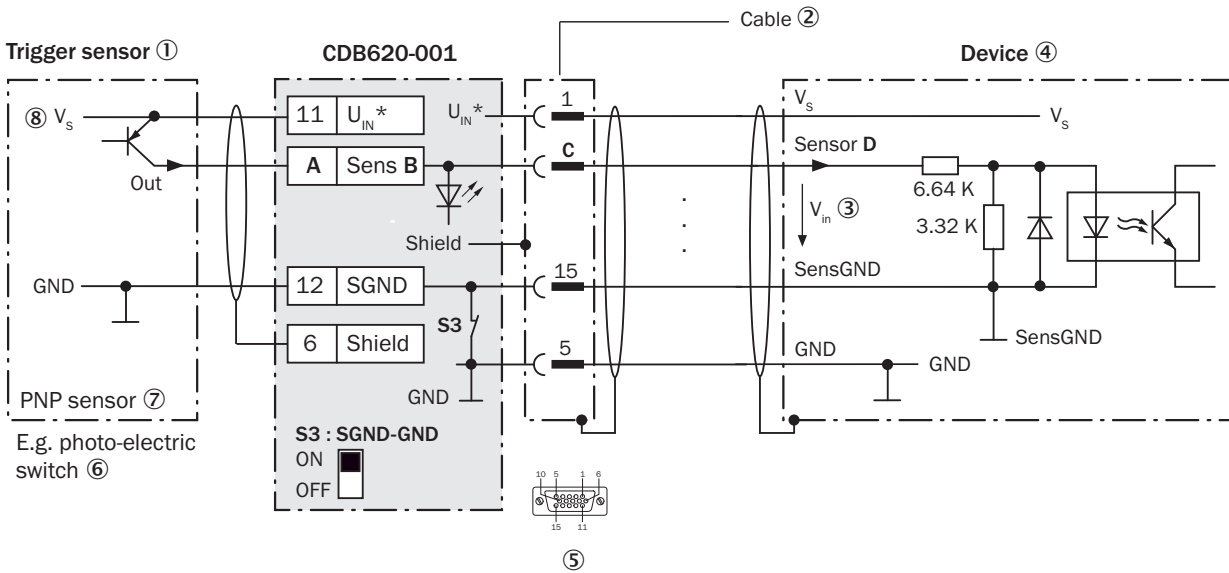


Figure 68: Trigger sensor supplied with power by connection module CDB620-001

- ① Trigger sensor, e.g. for read cycle generation
- ② Connecting cable permanently connected with the device (male connector, D-Sub-HD, 15-pin)
- ③ Input voltage V_{in}
- ④ Device
- ⑤ Connection module: female connector, D-Sub-HD, 15-pin
- ⑥ e.g. photoelectric sensor
- ⑦ PNP sensor
- ⑧ Supply voltage V_s

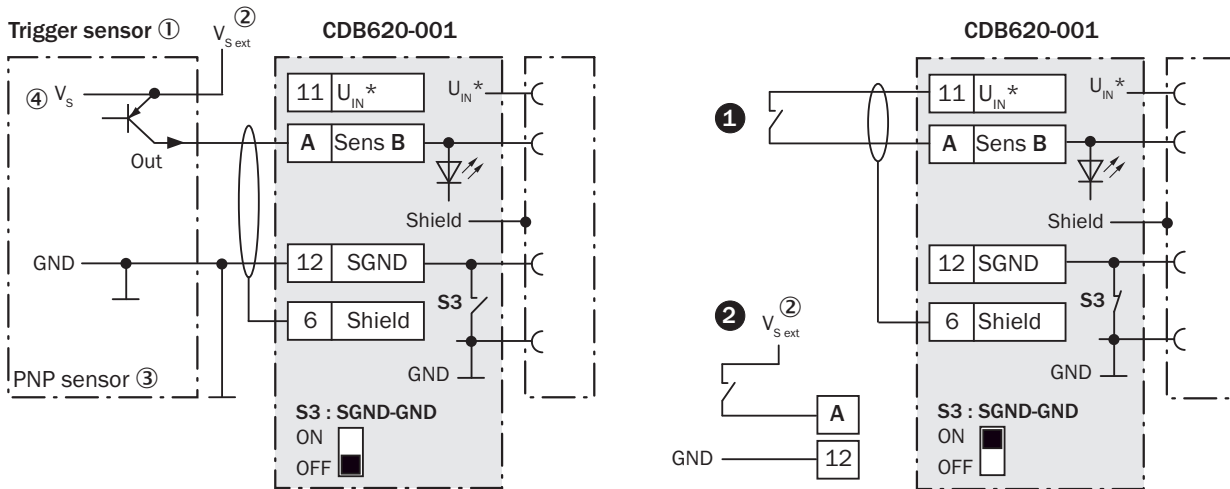


Figure 69: Left: Trigger sensor connected potential-free and supplied with power externally. Right: Alternatively switch, ① supplied with power by connection module CDB620-001 or ② connected potential-free and supplied with power externally. Switch setting S3 then as in left figure.

- ① Trigger sensor, e.g. for read cycle generation
- ② External supply voltage $V_{S\ ext}$
- ③ PNP sensor
- ④ Supply voltage V_S

Table 58: Assignment of placeholders to digital switching inputs

| CDB620-001 | | | Device |
|------------|----------|-------|----------|
| Terminal A | Signal B | Pin C | Sensor D |
| 10 | Sens 1 | 14 | 1 |
| 13 | Sens 2 | 4 | 2 |

Function of switch S3

Table 59: Switch S3: SGND - GND

| Switch setting | Function |
|----------------|---|
| ON | GND of the trigger sensor connected with GND of CDB620-001 and GND of the device |
| OFF | Trigger sensor connected potential-free at CDB620-001 and device. Common, isolated reference potential of all digital switching inputs is SGND. |

Characteristic data of digital switching inputs

Table 60: Characteristic data of the digital switching inputs "Sensor 1" and "Sensor 2"

| | |
|---------------------------|---|
| Switching behavior | Power to the input starts the assigned function, e.g. start read cycle. Default setting in the device: logic not inverted (active high), debounce time 10 ms |
| Properties | <ul style="list-style-type: none"> • Opto-decoupled, reverse polarity protected • Can be wired with PNP output of a trigger sensor |
| Electrical values | Low: $V_{in} \leq 2\text{ V}$; $I_{in} \leq 0.3\text{ mA}$ High: $6\text{ V} \leq V_{in} \leq 30\text{ V}$; $0.7\text{ mA} \leq I_{in} \leq 5\text{ mA}$ |



NOTE

Assign the functions for the digital switching inputs in the device with a configuration tool, e.g. the configuration software SOPAS ET.

13.6.8 Wiring digital switching inputs “External input 1” and “External input 2” of the device in the CDB620-001

Device = Lector621 ECO = V2D621x-xxxxYx (serial variant, Y = D or E)

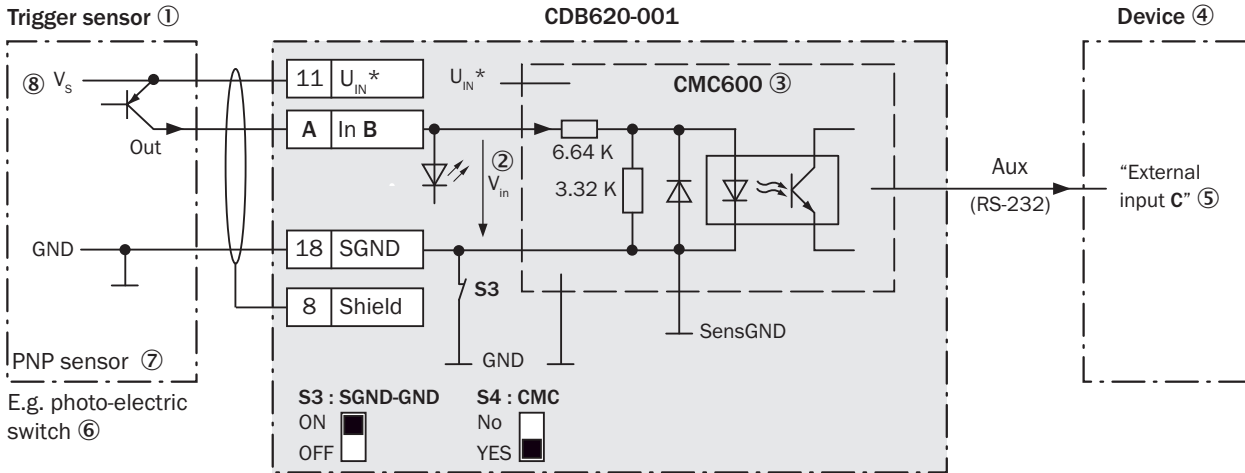


Figure 70: Trigger sensor supplied with power by connection module CDB620-001

- ① Trigger sensor, e.g. for read cycle generation
- ② Input voltage V_{in}
- ③ The optional parameter cloning module CMC600 is required in the connection module in order to be able to use the additional external digital switching inputs and outputs of the device
- ④ Device
- ⑤ Logical “External input” in the device
- ⑥ e.g. photoelectric sensor
- ⑦ PNP sensor
- ⑧ Supply voltage V_s

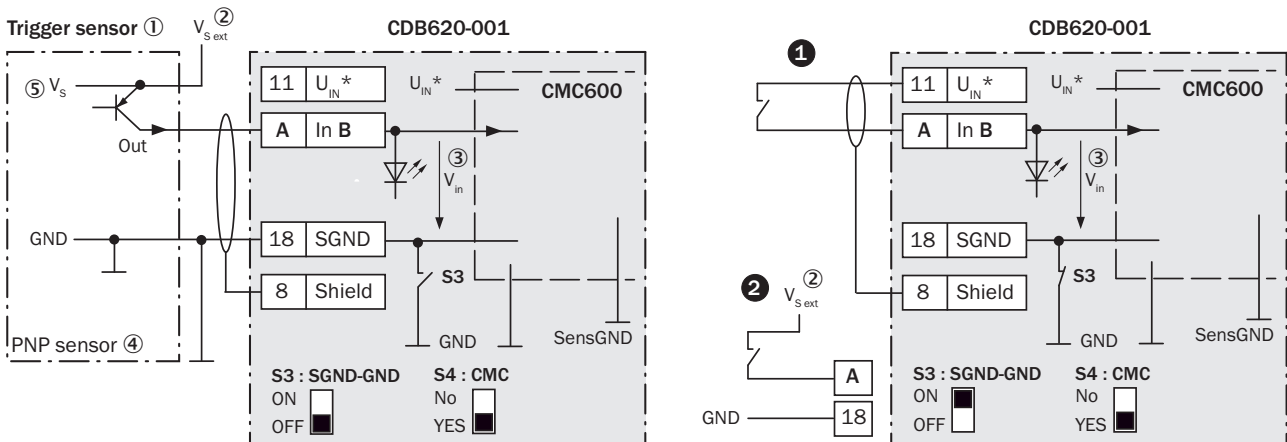


Figure 71: Left: Trigger sensor connected potential-free and supplied with power externally. Right: Alternatively switch, ① supplied with power by connection module CDB620-001 or ② connected potential-free and supplied with power externally. Switch setting S3 then as in left figure.

- ① Trigger sensor, e.g. for read cycle generation
- ② External supply voltage $V_{S\ ext}$
- ③ Input voltage V_{in}
- ④ PNP sensor
- ⑤ Supply voltage V_S

Table 61: Assignment of placeholders to digital switching inputs

| CDB620-001 | | Device |
|------------|----------|------------------|
| Terminal A | Signal B | External input C |
| 16 | In 1 | 1 |
| 17 | In 2 | 2 |

Function of switch S3

Table 62: Switch S3: SGND - GND

| Switch setting | Function |
|----------------|---|
| ON | GND of the trigger sensor connected with GND of CDB620-001 and CMC600 |
| OFF | Trigger sensor connected potential-free at CDB620-001 and CMC600. Common, isolated reference potential of all digital switching inputs is SGND. |

Functional principle of the external switching inputs

As a software-controlled operation, the CMC600 automatically transmits the output states of its physical digital switching inputs “In 1” and “In 2” in the connection module via the connecting cable to the serial Aux interface of the device. The device internally implements the states for its logical inputs “External input 1” and “External input 2”.



NOTE

The two external digital switching inputs are not suitable for time-critical applications.

Characteristic data of digital switching inputs

Table 63: Characteristic data of the digital switching inputs “External input 1” and “External input 2”

| | |
|---------------------------|---|
| Switching behavior | Power to the input starts the assigned function, e.g. start read cycle. Default setting in the device: logic not inverted (active high), debounce time 10 ms |
| Properties | <ul style="list-style-type: none"> • Opto-decoupled, reverse polarity protected • Can be wired with PNP output of a trigger sensor |
| Electrical values | Low: $V_{in} \leq 2\text{ V}$; $I_{in} \leq 0.3\text{ mA}$ High: $6\text{ V} \leq V_{in} \leq 30\text{ V}$; $0.7\text{ mA} \leq I_{in} \leq 5\text{ mA}$ |



NOTE

Assign the functions for the external digital switching inputs in the device with a configuration tool, e.g. the configuration software SOPAS ET.

13.6.9 Wiring digital switching outputs “Result 1” and “Result 2” of the device in CDB620-001

Device = Lector621 ECO = V2D621x-xxxxYx (serial variant, Y = D or E)

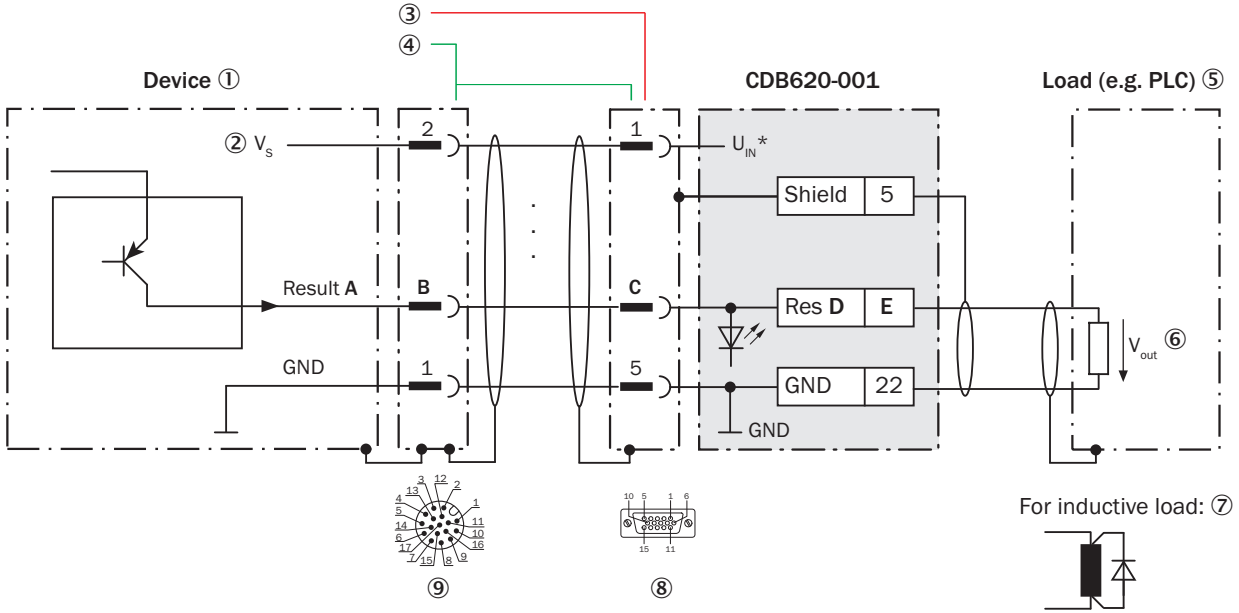


Figure 72: Wiring digital switching outputs “Result 1” and “Result 2” of the device in the connection module CDB620-001

- ① Device
- ② Supply voltage V_s
- ③ V2D621x-xxxxYx (serial variant, Y = D or E): connecting cable permanently connected with the device (male connector, D-Sub-HD, 15-pin)
- ④ V2D621x-xxxxYx (serial variant, Y = D or E): omitted
- ⑤ Load (e.g. PLC)
- ⑥ Output voltage V_{out}
- ⑦ With inductive load: see note
- ⑧ Connection module: female connector, D-Sub-HD, 15-pin
- ⑨ V2D621x-xxxxYx (serial variant, Y = D or E): omitted

Inductive load



NOTE

Provide an arc-suppression circuit at the digital switching output if an inductive load is present.

- Attach a freewheeling diode directly to the load for this purpose.

Table 64: Assignment of placeholders to digital switching outputs

| Device | | CDB620-001 | | |
|----------|-------|------------|----------|------------|
| Output A | Pin B | Pin C | Signal D | Terminal E |
| Result 1 | 13 | 12 | Res 1 | 20 |
| Result 2 | 14 | 13 | Res 2 | 21 |

Characteristic data of digital switching outputs

Table 65: Characteristic data of the digital switching outputs “Result 1” and “Result 2”

| | |
|---------------------------|---|
| Switching behavior | PNP switching to supply voltage V_s Default settings in the device: no function, logic: not inverted (active high) |
|---------------------------|---|

| | |
|--------------------------|--|
| Properties | <ul style="list-style-type: none"> • Short-circuit protected + temperature protected • Not electrically isolated from V_S |
| Electrical values | $0\text{ V} \leq V_{\text{out}} \leq V_S$ $(V_S - 1.5\text{ V}) \leq V_{\text{out}} \leq V_S$ for $I_{\text{out}} \leq 100\text{ mA}$ |

**NOTE**

Assign the functions for the digital switching outputs in the device with a configuration tool, e.g. the configuration software SOPAS ET.

13.6.10 Wiring digital switching outputs “External output 1” and “External output 2” of the device in the CDB620-001

Device = Lector621 ECO = V2D621x-xxxxYx (serial variant, Y = D or E)

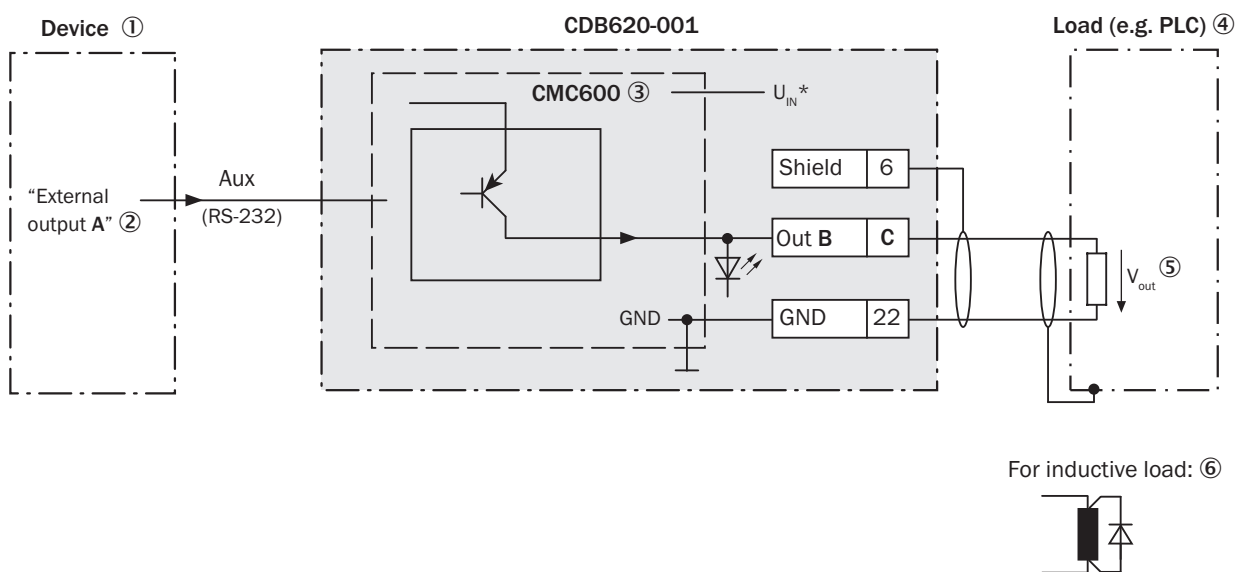


Figure 73: Wiring external digital switching outputs “Out 1” and “Out 2” of the device in the connection module CDB620-001

- ① Device
- ② Logical “External output” in the device
- ③ The optional parameter cloning module CMC600 is required in the connection module in order to be able to use the additional external digital switching inputs and outputs of the device
- ④ Load (e.g. PLC)
- ⑤ Output voltage V_{out}
- ⑥ With inductive load: see note

Inductive load

**NOTE**

Provide an arc-suppression circuit at the digital switching output if an inductive load is present.

- ▶ Attach a freewheeling diode directly to the load for this purpose.

Table 66: Assignment of placeholders to digital switching outputs

| Device | CDB620-001 | |
|-------------------|------------|------------|
| External output A | Signal B | Terminal C |
| 1 | Out 1 | 23 |
| 2 | Out 2 | 24 |

Functional principle of the external switching outputs

The device outputs the output states of its logical outputs “External output 1” and “External output 2” via its serial Aux interface. By means of a software-controlled operation, the CMC600 automatically adopts the states via the connecting cable and sets them on its physical digital switching outputs “Out 1” and “Out 2” in the connection module.



NOTE

The two external digital switching outputs are not suitable for time-critical applications.

Characteristic data of digital switching outputs

Table 67: Characteristic data of the digital switching outputs “External output 1” and “External output 2”

| | |
|---------------------------|--|
| Switching behavior | PNP switching to supply voltage V_S Default settings in the device: no function, logic: not inverted (active high) |
| Properties | <ul style="list-style-type: none"> • Short-circuit protected + temperature protected • Not electrically isolated from V_S |
| Electrical values | $0\text{ V} \leq V_{\text{out}} \leq V_S$ $(V_S - 1.5\text{ V}) \leq V_{\text{out}} \leq V_S$ at $I_{\text{out}} \leq 100\text{ mA}$ |



NOTE

Assign the functions for the external digital switching outputs in the device with a configuration tool, e.g. the configuration software SOPAS ET.

13.7 Connection diagrams of connection module CDM420-0001

13.7.1 Connection of the device to CDM420-0001

Device = Lector621 ECO = V2D621x-xxxxYx (serial variant, Y = D or E)

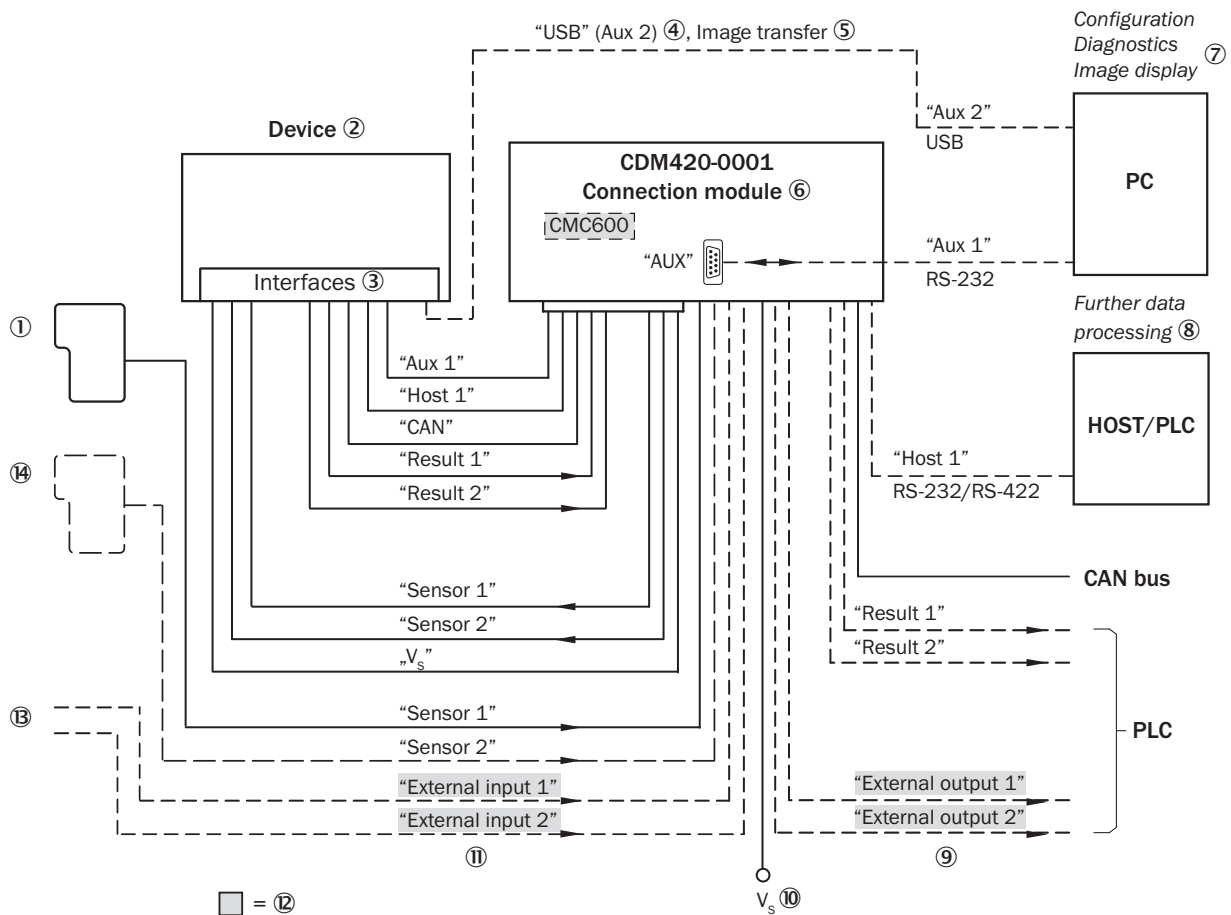


Figure 74: Connection of the device (serial variant) to peripherals via CDM420-0001 (overview)

- ① External trigger sensor, e.g. for read cycle generation
- ② Device
- ③ Interfaces
- ④ USB interface only for temporary use (service)
- ⑤ Image transmission
- ⑥ Connection module
- ⑦ Configuration, diagnostics or image display
- ⑧ Data further processing
- ⑨ External digital switching outputs
- ⑩ Supply voltage V_s
- ⑪ External digital switching inputs
- ⑫ The optional parameter cloning module CMC600 is required in the connection module in order to be able to use the additional external digital switching inputs and outputs of the device (highlighted in gray)
- ⑬ Other functions
- ⑭ Application-dependent alternative stop trigger (e.g. photoelectric sensor) or travel increment (incremental encoder)

13.7.2 Wiring overview of the CDM420-0001

Device = Lector621 ECO = V2D621x-xxxxYx (serial variant, Y = D or E)

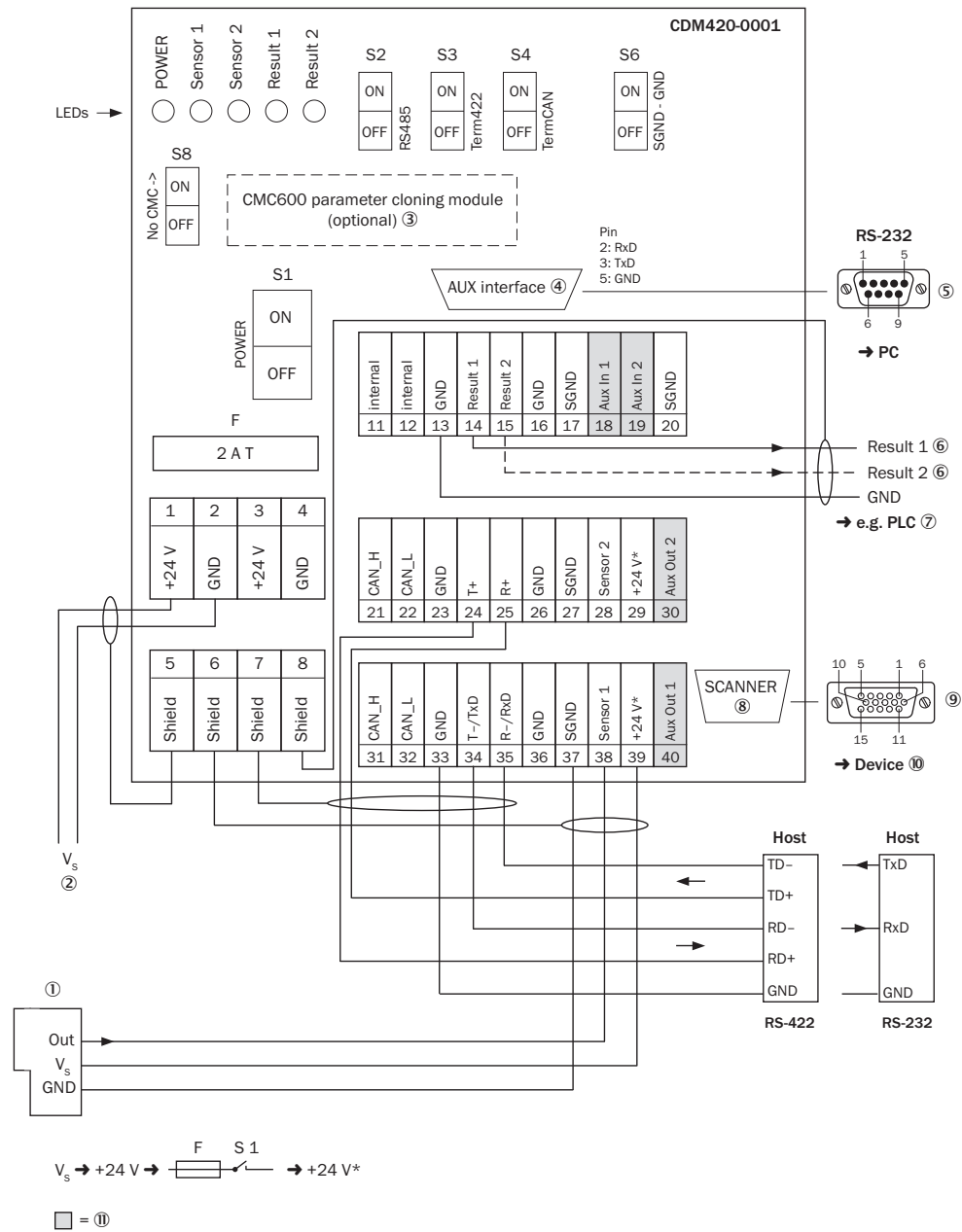


Figure 75: Overview: connection of device and peripherals to the CDM420-0001 connection module

- ① External trigger sensor, e.g. for read cycle generation
- ② CMC600 parameter cloning module (optional)
- ③ e.g. PLC (programmable logic controller)
- ④ Name of digital switching output
- ⑤ Auxiliary interface “Aux”
- ⑥ Male connector, D-Sub, 9-pin
- ⑦ SCANNER = Device
- ⑧ Female connector, M12, 17-pin, A-coded
- ⑨ Device to be connected
- ⑩ The optional parameter cloning module CMC600 is required in the connection module in order to be able to use the additional external digital switching inputs and outputs of the device (highlighted in gray)
- ⑪ Supply voltage V_s

13.7.3 Connecting supply voltage for the device in CDM420-0001

Device = Lector621 ECO = V2D621x-xxxxYx (serial variant, Y = D or E)

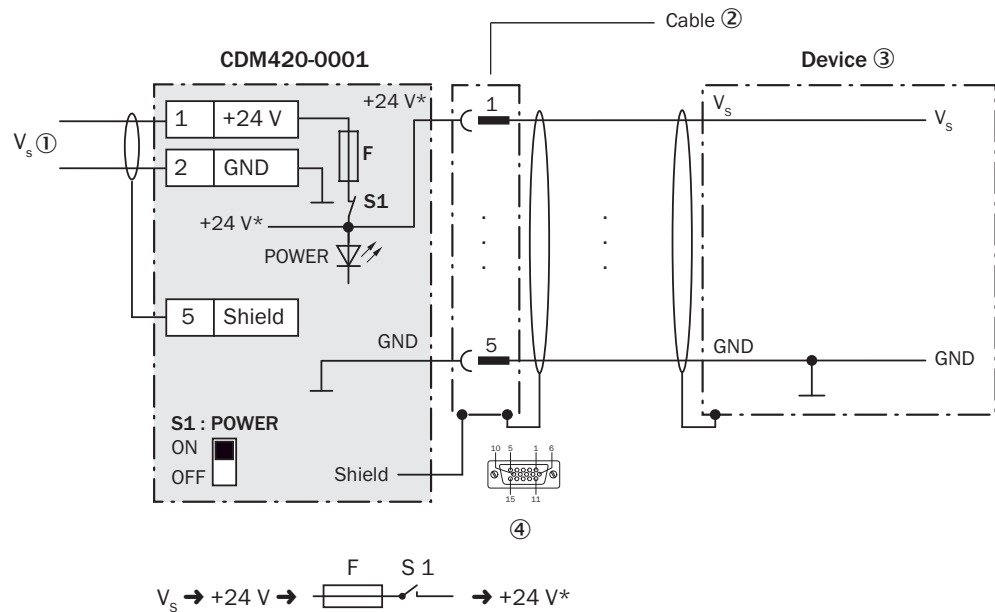


Figure 76: Connecting supply voltage for the device in CDM420-0001 connection module

- ① Supply voltage V_s
- ② Connecting cable permanently connected with the device (male connector, D-Sub-HD, 15-pin)
- ③ Device
- ④ Connection module: female connector, D-Sub-HD, 15-pin

Function of switch S1

Table 68: Switch S1: Power

| Switch setting | Function |
|----------------|--|
| ON | Supply voltage +24 V connected to CDM420-0001 and device via fuse and switch S1 as +24 V*. Voltage +24 V* can be additionally tapped at terminals 29 and 39. |
| OFF | CDM420-0001 and device disconnected from supply voltage. Recommended setting for all connection work. |

13.7.4 Wiring serial host interface RS-232 of the device in CDM420-0001

Device = Lector621 ECO = V2D621x-xxxxYx (serial variant, Y = D or E)

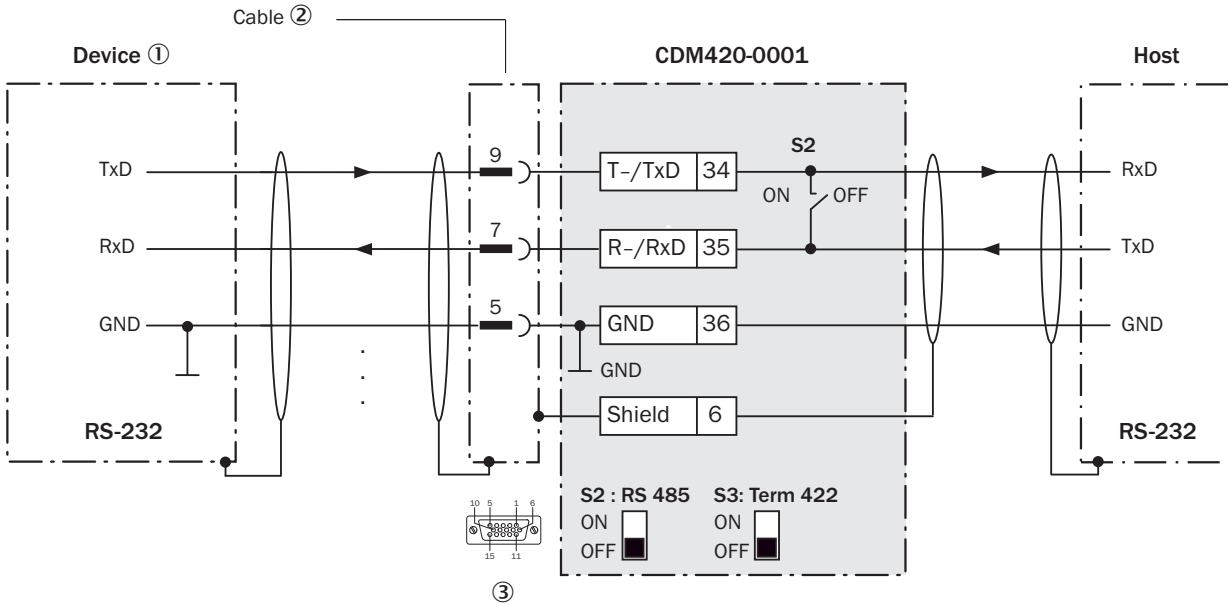


Figure 77: Wiring data interface RS-232 of the device in the connection module CDM420-0001

- ① Device
- ② Connecting cable permanently connected with the device (male connector, D-Sub-HD, 15-pin)
- ③ Connection module: female connector, D-Sub-HD, 15-pin



NOTE

Activate the RS-232 data interface in the device with a configuration tool, e.g. the configuration software SOPAS ET.

13.7.5 Wiring serial host interface RS-422 of the device in CDM420-0001

Device = Lector621 ECO = V2D621x-xxxxYx (serial variant, Y = D or E)

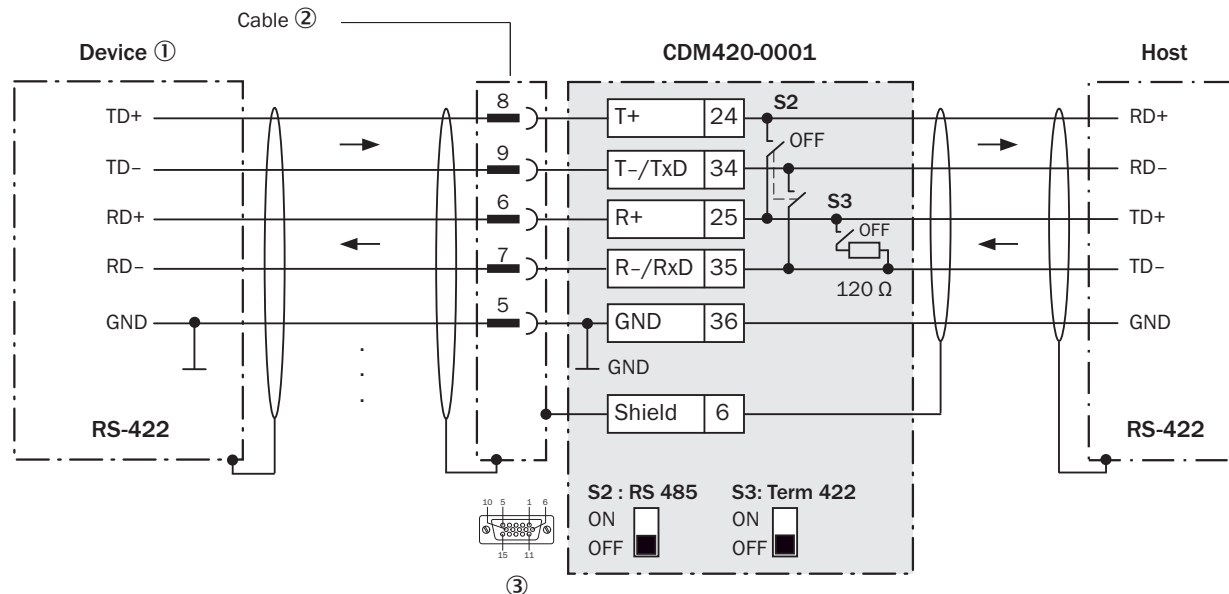


Figure 78: Wiring data interface RS-422 of the device in the connection module CDM420-0001

- ① Device
- ② V2D621x-xxxxYx (serial variant, Y = D or E): connecting cable permanently connected with the device (male connector, D-Sub-HD, 15-pin)
- ③ Connection module: female connector, D-Sub-HD, 15-pin

Function of switch S3

Table 69: Switch S3: Term 422

| Switch setting | Function |
|----------------|--|
| ON | Terminates the RS-422 receiver in the device to improve the noise ratio on the line. |
| OFF | No termination |



NOTE

User of the RS-422 data interface:

- The relevant interface driver for the device complies with the standard in accordance with RS-422.
- The connection shown above is configured for operation of the host with permanently activated drivers (often described as “RS-422 operation”).
- Activate the RS-422 data interface (“Point-to-Point” option) in the device with a configuration tool, e.g. the configuration software SOPAS ET.

13.7.6 Wiring the CAN interface in the CDM420-0001

Device = Lector621 ECO = V2D621x-xxxxYx (serial variant, Y = D or E)

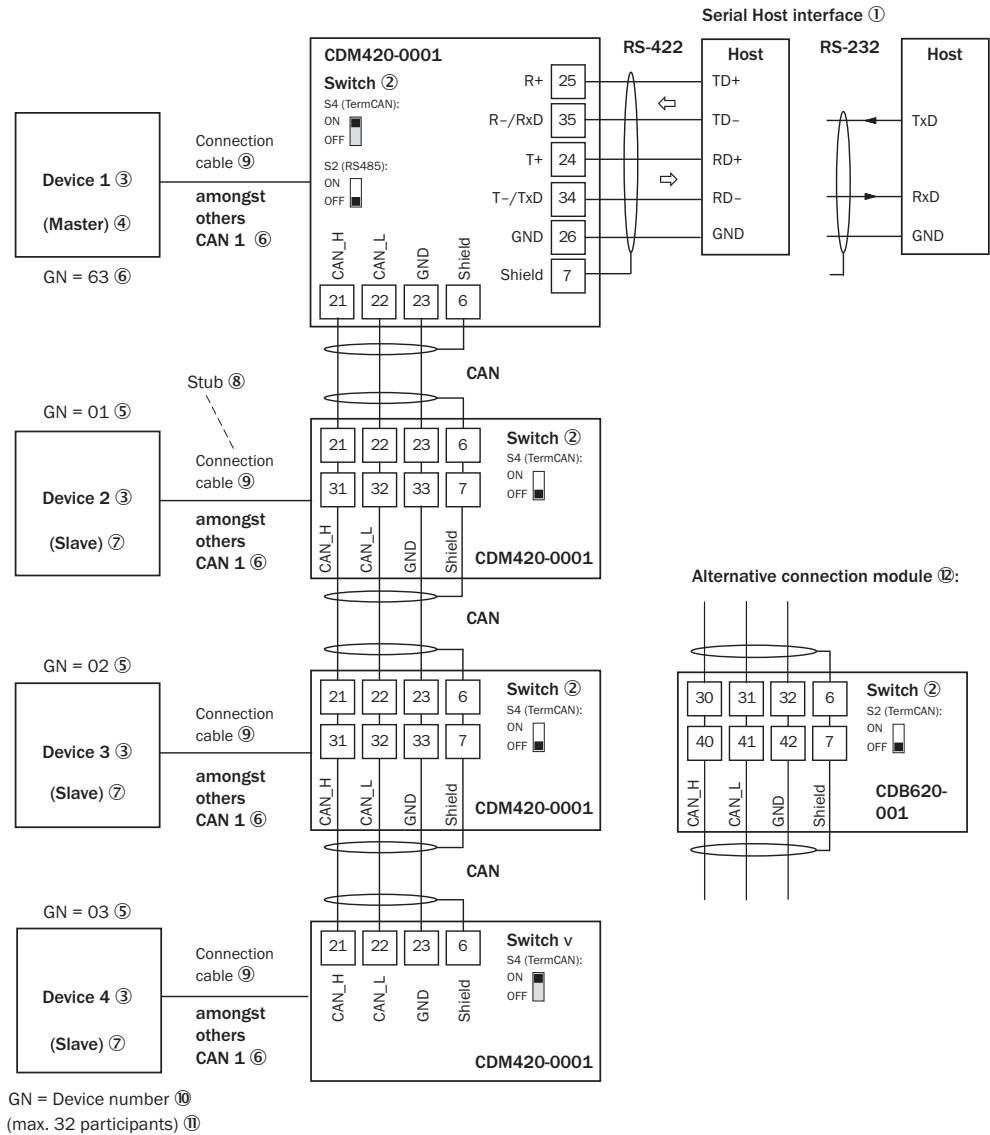


Figure 79: Wire the CAN interface of the device in the CDM420-0001 connection module. Connection and looping through of the supply voltage and connection of a trigger sensor for read cycle generation at the master, for example, are disregarded here!

- ① Serial host interface
- ② Switch
- ③ Device
- ④ Master
- ⑤ Device number
- ⑥ CAN etc.
- ⑦ Slave
- ⑧ Branch line
- ⑨ Connecting cable permanently connected with the device (male connector, D-Sub-HD, 15-pin)
- ⑩ Device number (GN)
- ⑪ Maximum 32 users
- ⑫ Example of alternative connection module:

Alternative connection modules for CLV61x: CDB620 or CDM420-0006.

**NOTE**

Activate the CAN data interface in the device with a configuration tool, e.g. the configuration software SOPAS ET.

Make further settings in the device corresponding to the function of the device in the system configuration.

13.7.7 Wiring digital switching inputs “Sensor 1” and “Sensor 2” of the device in the CDM420-0001

Device = Lector621 ECO = V2D621x-xxxxYx (serial variant, Y = D or E)

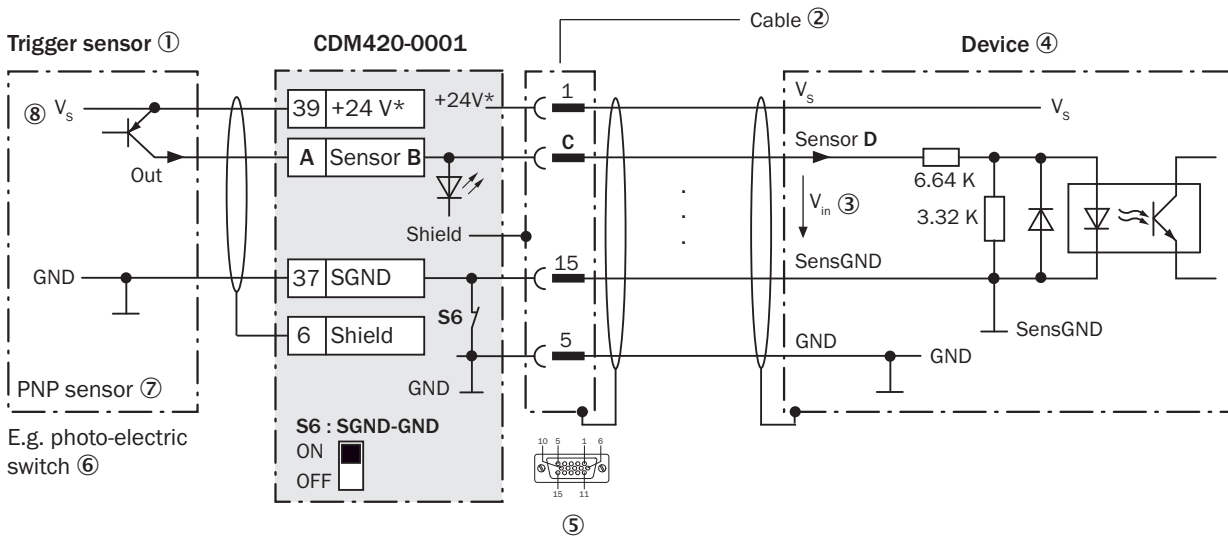


Figure 80: Trigger sensor supplied with power by connection module CDM420-0001

- ① Trigger sensor, e.g. for read cycle generation
- ② Connecting cable permanently connected with the device (male connector, D-Sub-HD, 15-pin)
- ③ Input voltage V_{in}
- ④ Device
- ⑤ Connection module: female connector, D-Sub-HD, 15-pin
- ⑥ e.g. photoelectric sensor
- ⑦ PNP sensor
- ⑧ Supply voltage V_s

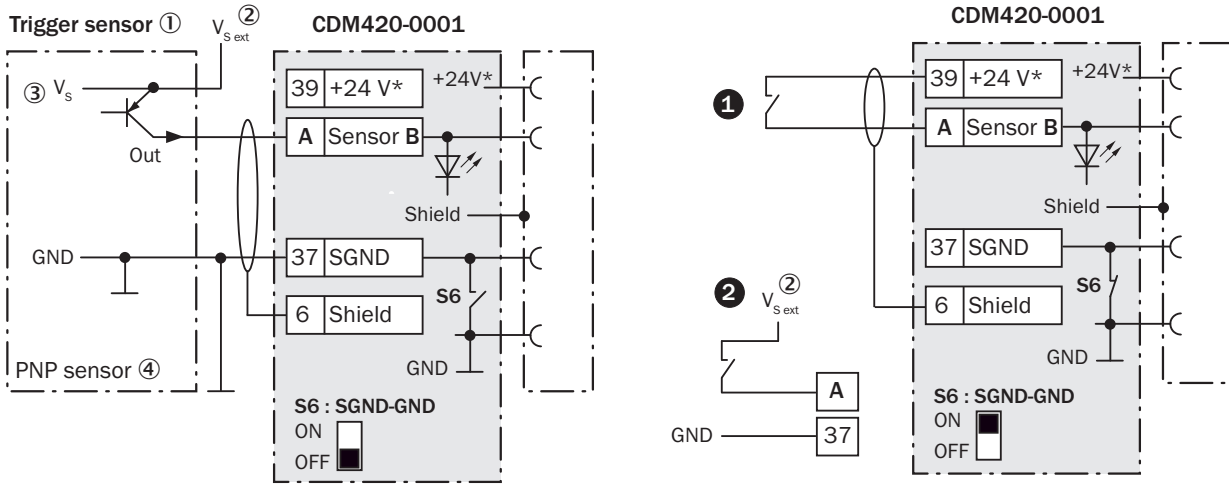


Figure 81: Left: Trigger sensor connected potential-free and supplied with power externally. Right: Alternatively switch, ❶ supplied with power by connection module CDM420-0001 or ❷ connected potential-free and supplied with power externally. Switch setting S6 then as in left figure.

- ❶ Trigger sensor, e.g. for read cycle generation
- ❷ External supply voltage $V_{S\ ext}$
- ❸ PNP sensor
- ❹ Supply voltage V_s

Table 70: Assignment of placeholders to digital switching inputs

| CDM420-0001 | | | Device |
|-------------|----------|-------|----------|
| Terminal A | Signal B | Pin C | Sensor D |
| 38 | Sensor 1 | 14 | 1 |
| 39 | Sensor 2 | 4 | 2 |

Function of switch S6

Table 71: Switch S6: SGND - GND

| Switch setting | Function |
|----------------|--|
| ON | GND of the trigger sensor connected with GND of CDM420-0001 and GND of the device |
| OFF | Trigger sensor connected potential-free at CDM420-0001 and device. Common, isolated reference potential of all digital switching inputs is SGND. |

Characteristic data of digital switching inputs

Table 72: Characteristic data of the digital switching inputs “Sensor 1” and “Sensor 2”

| | |
|---------------------------|--|
| Switching behavior | Power to the input starts the assigned function, e.g. start read cycle. Default setting in the device: logic not inverted (active high), debounce time 10 ms |
| Properties | <ul style="list-style-type: none"> • Opto-decoupled, reverse polarity protected • Can be wired with PNP output of a trigger sensor |
| Electrical values | Low: $V_{in} \leq 2\ V$; $I_{in} \leq 0.3\ mA$ High: $6\ V \leq V_{in} \leq 30\ V$; $0.7\ mA \leq I_{in} \leq 5\ mA$ |

**NOTE**

Assign the functions for the digital switching inputs in the device with a configuration tool, e.g. the configuration software SOPAS ET.

13.7.8 Wiring digital switching inputs “External input 1” and “External input 2” of the device in the CDM420-0001

Device = Lector621 ECO = V2D621x-xxxxYx (serial variant, Y = D or E)

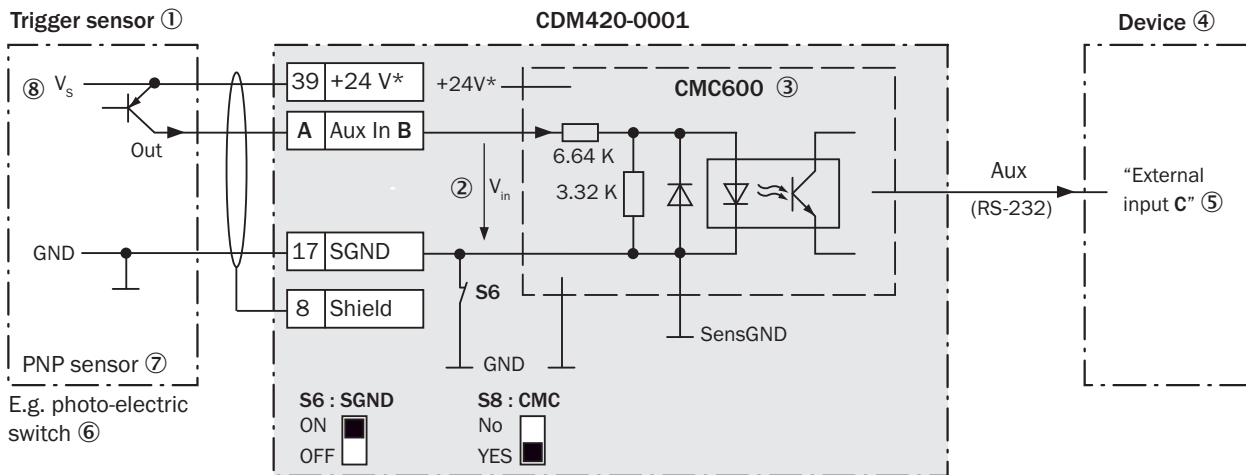


Figure 82: Trigger sensor supplied with power by connection module CDM420-0001

- ① Trigger sensor, e.g. for read cycle generation
- ② Input voltage V_{in}
- ③ The optional parameter cloning module CMC600 is required in the connection module in order to be able to use the additional external digital switching inputs and outputs of the device
- ④ Device
- ⑤ Logical “External input” in the device
- ⑥ e.g. photoelectric sensor
- ⑦ PNP sensor
- ⑧ Supply voltage V_s

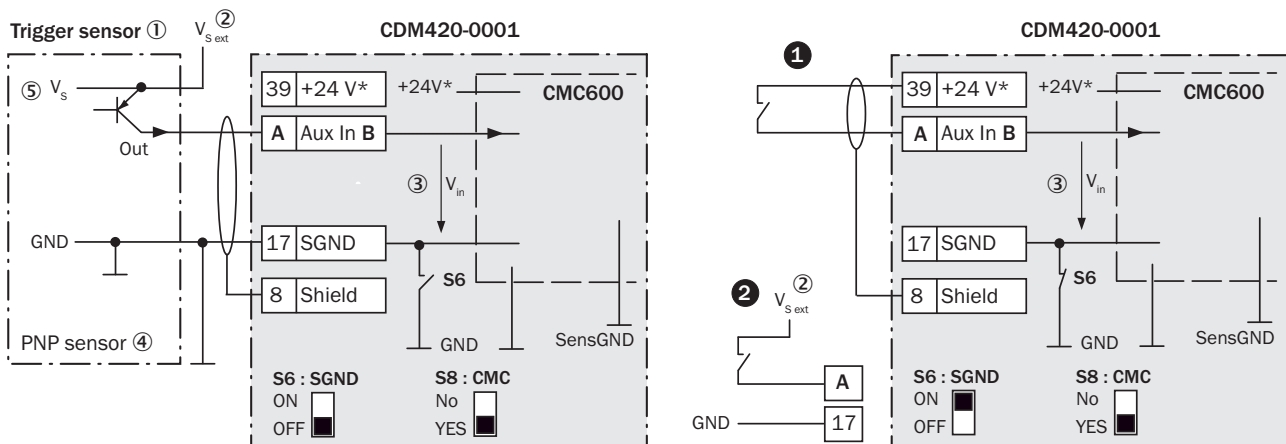


Figure 83: Left: Trigger sensor connected potential-free and supplied with power externally. Right: Alternatively switch, ① supplied with power by connection module CDM420-0001 or ② connected potential-free and supplied with power externally. Switch setting S3 then as in left figure.

- ① Trigger sensor, e.g. for read cycle generation
- ② External supply voltage $V_{S\ ext}$
- ③ Input voltage V_{in}
- ④ PNP sensor
- ⑤ Supply voltage V_S

Table 73: Assignment of placeholders to digital switching inputs

| CDM420-0001 | | Device |
|-------------|----------|------------------|
| Terminal A | Signal B | External input C |
| 18 | Aux In 1 | 1 |
| 19 | Aux In 2 | 2 |

Function of switch S6

Table 74: Switch S6: SGND - GND

| Switch setting | Function |
|----------------|---|
| ON | GND of the trigger sensor connected with GND of CDM420-0001 and CMC600 |
| OFF | Trigger sensor connected potential-free at CDM420-0001 and CMC600. Common, isolated reference potential of all digital switching inputs is SGND. |

Functional principle of the external switching inputs

As a software-controlled operation, the CMC600 automatically transmits the output states of its physical digital switching inputs “Aux In 1” and “Aux In 2” in the connection module via the connecting cable to the serial Aux interface of the device. The device internally implements the states for its logical inputs “External input 1” and “External input 2”.



NOTE

The two external digital switching inputs are not suitable for time-critical applications.

Characteristic data of digital switching inputs

Table 75: Characteristic data of the digital switching inputs “External input 1” and “External input 2”

| | |
|---------------------------|--|
| Switching behavior | Power to the input starts the assigned function, e.g. start read cycle. Default setting in the device: logic not inverted (active high), debounce time 10 ms |
| Properties | <ul style="list-style-type: none"> • Opto-decoupled, reverse polarity protected • Can be wired with PNP output of a trigger sensor |
| Electrical values | Low: $V_{in} \leq 2\ V$; $I_{in} \leq 0.3\ mA$ High: $6\ V \leq V_{in} \leq 30\ V$; $0.7\ mA \leq I_{in} \leq 5\ mA$ |



NOTE

Assign the functions for the external digital switching inputs in the device with a configuration tool, e.g. the configuration software SOPAS ET.

13.7.9 Wiring digital switching outputs “Result 1” and “Result 2” of the device in CDM420-0001

Device = Lector621 ECO = V2D621x-xxxxYx (serial variant, Y = D or E)

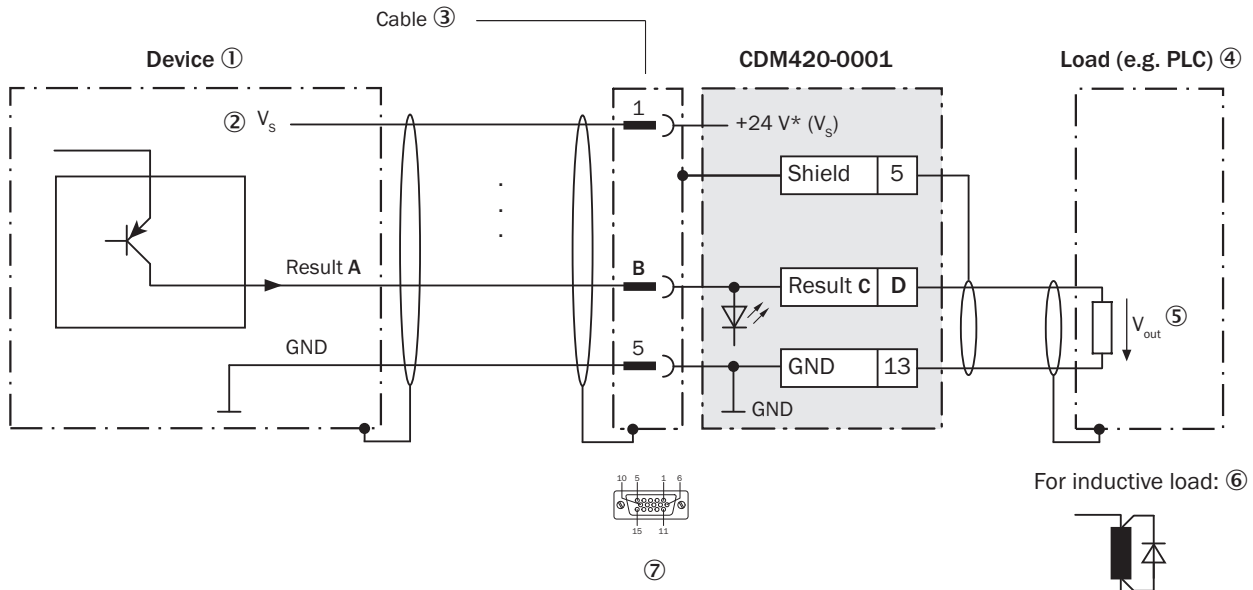


Figure 84: Wiring digital switching outputs “Result 1” and “Result 2” of the device in the connection module CDM420-0001

- ① Device
- ② Supply voltage V_S
- ③ Connecting cable permanently connected with the device (male connector, D-Sub-HD, 15-pin)
- ④ Load (e.g. PLC)
- ⑤ Output voltage V_{out}
- ⑥ With inductive load: see note
- ⑦ Connection module: female connector, D-Sub-HD, 15-pin

Inductive load



NOTE

Provide an arc-suppression circuit at the digital switching output if an inductive load is present.

- Attach a freewheeling diode directly to the load for this purpose.

Table 76: Assignment of placeholders to digital switching outputs

| Device | | CDM420-0001 | |
|----------|-------|-------------|------------|
| Output A | Pin B | Signal C | Terminal D |
| Result 1 | 13 | Result 1 | 14 |
| Result 2 | 14 | Result 2 | 15 |

Characteristic data of digital switching outputs

Table 77: Characteristic data of the digital switching outputs “Result 1” and “Result 2”

| | |
|---------------------------|--|
| Switching behavior | PNP switching to supply voltage V_S Default settings in the device: no function, logic: not inverted (active high) |
| Properties | <ul style="list-style-type: none"> • Short-circuit protected + temperature protected • Not electrically isolated from V_S |
| Electrical values | $0\text{ V} \leq V_{out} \leq V_S$ $(V_S - 1.5\text{ V}) \leq V_{out} \leq V_S$ for $I_{out} \leq 100\text{ mA}$ |



NOTE

Assign the functions for the digital switching outputs in the device with a configuration tool, e.g. the configuration software SOPAS ET.

13.7.10 Wiring digital switching outputs “External output 1” and “External output 2” of the device in the CDM420-0001

Device = Lector621 ECO = V2D621x-xxxxYx (serial variant, Y = D or E)

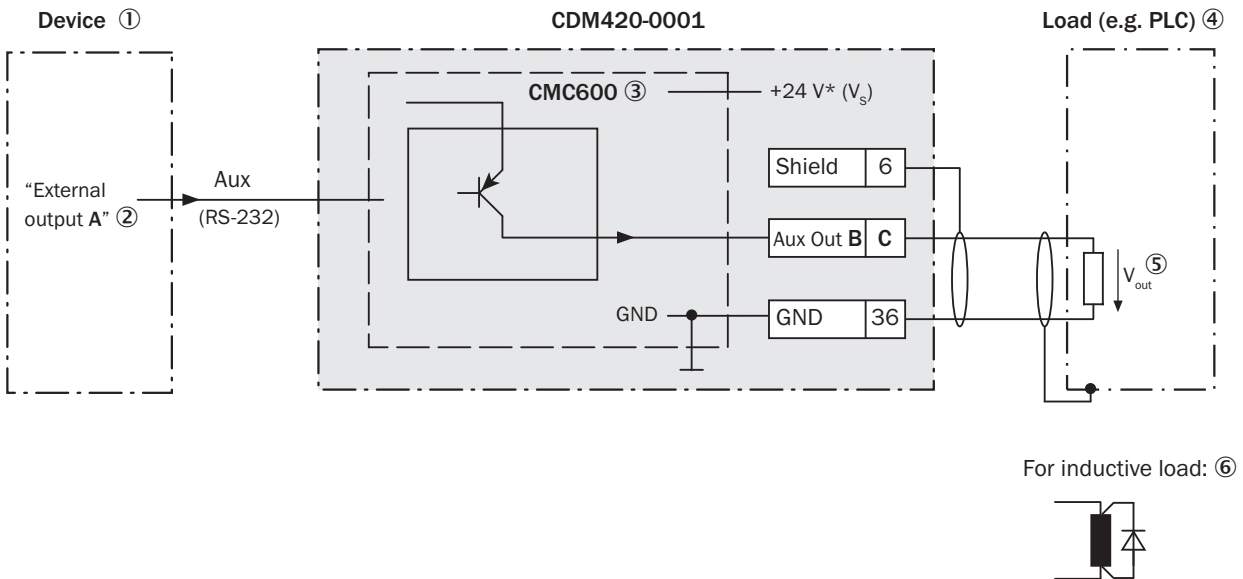


Figure 85: Wiring external digital switching outputs “Aux Out 1” and “Aux Out 2” of the device in the connection module CDM420-0001

- ① Device
- ② Logical “External output” in the device
- ③ The optional parameter cloning module CMC600 is required in the connection module in order to be able to use the additional external digital switching inputs and outputs of the device
- ④ Load (e.g. PLC)
- ⑤ Output voltage V_{out}
- ⑥ With inductive load: see note

Inductive load



NOTE

Provide an arc-suppression circuit at the digital switching output if an inductive load is present.

- ▶ Attach a freewheeling diode directly to the load for this purpose.

Table 78: Assignment of placeholders to digital switching outputs

| Device | CDM420-0001 | |
|-------------------|-------------|------------|
| External output A | Signal B | Terminal C |
| 1 | Aux Out 1 | 40 |
| 2 | Aux Out 2 | 30 |

Functional principle of the external switching outputs

The device outputs the output states of its logical outputs “External output 1” and “External output 2” via its serial Aux interface. By means of a software-controlled operation, the CMC600 automatically adopts the states via the connecting cable and sets them on its physical digital switching outputs “Aux Out 1” and “Aux Out 2” in the connection module



NOTE

The two external digital switching outputs are not suitable for time-critical applications.

Characteristic data of digital switching outputs

Table 79: Characteristic data of the digital switching outputs “External output 1” and “External output 2”

| | |
|---------------------------|--|
| Switching behavior | PNP switching to supply voltage V_S . Default settings in the device: no function, logic: not inverted (active high) |
| Properties | <ul style="list-style-type: none"> • Short-circuit protected + temperature protected • Not electrically isolated from V_S |
| Electrical values | $0 \text{ V} \leq V_{\text{out}} \leq V_S$ $(V_S - 1.5 \text{ V}) \leq V_{\text{out}} \leq V_S$ at $I_{\text{out}} \leq 100 \text{ mA}$ |



NOTE

Assign the functions for the external digital switching outputs in the device with a configuration tool, e.g. the configuration software SOPAS ET.

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14 Abbreviations used

Table 80: Abbreviations used

| | |
|-----------------|---|
| CAN | Controlled Area Network. Field bus protocol based on the CAN bus |
| CDB | Connection Device Basic |
| CDF | Connection Device Fieldbus |
| CDM | Connection Device Modular |
| CE | Communauté Européenne. European Community |
| CMC | Connection Module Cloning |
| CMD | Connection Module Display |
| CMF | Connection Module Fieldbus |
| CMP | Connection Module Power |
| CoLa-A | Command Language ASCII (SICK-specific protocol) |
| CSN | CAN Sensor Network (SICK-specific protocol) |
| DNS | Domain Name Server |
| ESD | ElectroStatic Discharge Electrostatic discharge |
| EMC | Electromagnetic Compatibility |
| GSD | General Station Description (for PROFIBUS/ PROFINET) |
| HTML | Hyper Text Markup Language |
| I | Input |
| LED | Light Emitting Diode. Light emitting diode |
| LPS | Limited Power Supply |
| MAC | Medium Access Control |
| MTBF | Mean Time Between Failures |
| MTTF | Mean Time To Failure |
| MTTR | Mean Time To Repair |
| O | Output |
| OCR | Optical Character Recognition |
| OCV | Optical Character Verification |
| PDF | Portable Document Format |
| SD | Secure Digital |
| SOPAS ET | SICK Open Portal for Application and Systems Engineering Tool (PC software for Windows for device configuration) |
| SDD | SOPAS Device Description (device description file) |
| SELV | Safety Extra Low Voltage |
| PLC | Programmable Logic Controller |
| TCP/IP | Transmission Control Protocol/Internet Protocol |
| UL | Underwriters Laboratories |
| USB | Universal Serial Bus |

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