OPERATING INSTRUCTIONS

Lector620
Image-based code reader

SICK
Sensor Intelligence.

Intended use

The Lector620 image-based code readers are intelligent SICK-4Dpro sensors. The Lector620 is used for automated, fixed identification and decoding of codes on moving or stationary objects. They read all commonly used 1D codes (bar codes/stacked codes) and 2D codes (matrix codes). The Lector620 uses its host interface to send the read data to a higher-level computer for further processing.

The Lector620 product family offers several variants: Professional, High Speed, DPM Plus, OCR and ECO. These include further sub-variants depending on the model. ➜ See "Type code" on page 7.

About this document

In this document, the Lector620 is referred to as "device" for simplicity's sake.

The purpose of these operating instructions is to allow you to commission the device quickly and easily and to achieve initial read results. These instructions describe a stand-alone application for a device based on the default settings. The optional CDB620-001 connection module is used as a sample for the industrial-standard signal distribution of the device.

These operating instructions are applicable for the variants according to the type code. ➜ See "Type code" on page 7.

Supplementary and other relevant documents

More information, such as application examples and downloads of associated documents and associated software, can be found on the SICK product page on the Internet:

www.sick.com/Lector62x

Information about configuration can be found in the online help function of the SOPAS ET configuration software.

For your safety

- This chapter is dedicated to the safety of commissioning personnel and personnel operating the system in which the device is integrated.
- Read these instructions carefully before commissioning the device in order to familiarize yourself with the device and its functions. The operating instructions must be kept in the immediate vicinity of the device where they can be accessed at all times.
- Do not look into the reading window of the device in order to dazzling from the bright, integrated lighting. ➜ See "Warning! Optical radiation: LED risk group 1" on page 1.
- To comply with the variant-dependent IP 67 / 65 enclosure rating in operation, the following requirements must be met. If this is not done, the device does not fulfill any specified IP enclosure rating.
  - The black cover for the microSD card slot and USB port must be screwed tight to the device.
  - Devices with swivel connector: The cables plugged into the M12 connectors are locked in place.
  - Electrical connections that are not being used must be fitted with protective caps or plugs, which must be screwed tight (as they are on delivery).
  - Only operate the device without the cover for the microSD card slot for a short period while inserting or removing the memory card. During this time, protect the device against moisture and dust.
- Opening the screws of the device will invalidate any warranty claims against SICK AG. For further warranty provisions, see the General Terms and Conditions of SICK AG, e.g., on the delivery note of the device.

- Data integrity: SICK AG uses standardized data interfaces, such as standard IP technology, in its products. The emphasis here is on the availability of products and their features. SICK AG always assumes that the integrity and confidentiality of the data and rights affected by the use of these products will be ensured by the customer. In all cases, appropriate security measures, such as network separation, firewalls, virus protection, and patch management, must be taken by the customer on the basis of the situation in question.

Aiming laser

⚠ **CAUTION**

Optical radiation: Class 1 laser
The accessible radiation of the aiming lasers 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 will not switch off the laser. Opening the housing may increase the level of risk.
- Current national regulations regarding laser protection must be observed.

Illumination

⚠ **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.

For both types of radiation:

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 dazzle, flash blindness, afterimages, photosensitive epilepsy, or impairment of color vision for example.
- **CAUTION** – 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.

- If the device 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. It may be advisable to consult the manufacturer.
- ➜ For more information see "Technical data (excerpt)" on page 6.

Commissioning and configuration

Scope of delivery

- The version of the Lector620 ordered, including 2 M5 sliding blocks. Electrical connections M12 fitted with protective caps or plugs. Only the ECO variant has a connecting cable fitted.
- Printed operating instructions in German (no. 8014639), English (no. 8014640) and French (no. 8019984). Other language versions may be available in PDF format from the online product page: *www.sick.com/Lector62x*
- Optional: accessories such as brackets and connecting cables are supplied if ordered separately

Step 1: Mounting and alignment

Equipment required

- 2 or 4 M5 screws for mounting the device on a bracket supplied by the customer. Screw lengths are dependent on the mounting base (wall thickness of bracket). When using optional SICK brackets, screws for the device are included with delivery.

Mounting requirements

- The permissible ambient conditions for operating the device must be observed (e.g., ambient temperature, ground potential). ➜ See "Technical data (excerpt)" on page 6. ➜ See warning "Risk of injury and damage caused by electrical current!" on page 2.
- Stable bracket with sufficient load-bearing capacity and suitable dimensions for the device. Net weight 170 g (without cables). ➜ Dimensional drawings, see "Setup and function" on page 4.
- Shock and vibration-free mounting
- Clear view of the codes to be detected on the objects

Mounting device

1. Perform one of the following steps:
   - Mount the device on a bracket supplied by the customer using M5 screws. To do this, either use the threaded mounting holes in the housing in pairs at the front or below or use the two M5 sliding nuts in the lateral slots. Mounting bracket no. 2042902 can be attached at the bottom or on the sliding nuts. Screw the screws no more than 5 mm into the blind tapped holes. ➔ *Dimensional drawings, see "Setup and function" on page 4.*
   - Attach the SICK bracket that has been ordered separately (e.g., mounting bracket no. 2042902) to the device using the two sliding blocks. Refer to the "Mounting" chapter of the 📖 *Technical Information "Image-Based Code Reader" Lector620.*

Aligning the reading window of the device with the code

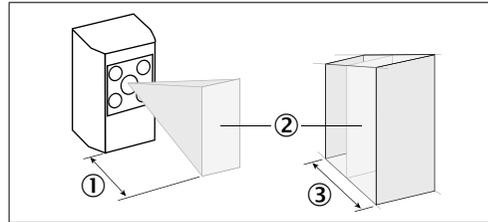Remember to consider the shape and alignment of the field of view in front of the device.

Fig. 1: Example for field of view and reading field, size elongation depends on device

①. Working distance
②. Field of view (area at a certain working distance)
③. Reading field (depth of field)

Taking account of the working distance, depending on the resolution

- Using the Auto-Setup function, the Lector620 automatically adjusts its focal position to suit the working distance from the code.
- ECO variant: The focal position is set by entering the working distance in SOPAS ET.

Variant-dependent visual and reading field diagrams can be found on the SICK product page in the web:

www.sick.com/Lector62x

Maximum working distance with minimum resolution

Max. working distance [mm]	Minimum resolution [mm]
50	0.10
105	0.20
160	0.30
220	0.40
270	0.50
330	0.60
380	0.70

Tab. 1: Example: Working distances of Professional variant
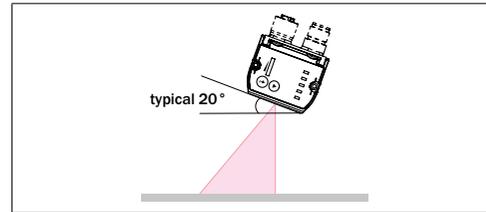
Allowing for reading angle

Fig. 2: Selection of the skew angle, depending on the application

➢ Tilt the device away from the plane that is perpendicular to the surface of the code to avoid as many interfering reflections as possible. Typically, this angle will be between 10° and 20°. In the case of codes created on metal, e.g., by dot peening, an angle of between 0° (bright field light) and 45° (dark field light) may be advisable.

Mounting the CDB connection module

These operating instructions describe the commissioning of the CDB620-001 connection module. For more information, see 📖 *Operating instructions "CDB620-001 connection module operating instructions" (no. 8012119).* Alternatively, you can use the CDB650-204 connection module.

➢ Mount the connection module in the vicinity of the device. If you are using the serial data interface (RS-232), the recommended cable length between the devices is maximum 5 m.
Mount the connection module in such a way that the Lector620 remains accessible at all times.

- **The electrical installation must only be performed by electrically qualified persons.**
- **Standard safety requirements must be met when working on electrical systems.**
- Electrical connections between the device and other devices may only be created or disconnected when there is no power to the system. Otherwise, the devices may be damaged.
- When using connecting or extension cables with an open end, make sure that bare wire ends are not touching (risk of short-circuit when the supply voltage is switched on). Wires must be appropriately insulated from each other.
- Wire cross-sections in the supply cable from the customer's power system must be designed in accordance with the applicable standards.
- If the supply voltage for the device is not supplied via the optional CDB620-001 connection module, the device must be protected by a separate max. 2 A slow-blow fuse in the supply circuit.
- All circuits connected to the device must be designed as SELV circuits. The power supply or power supply unit must satisfy SELV requirements in accordance with the currently applicable EN 60950-1. (SELV = Safety Extra Low Voltage).

NOTE
USB interface

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.

⚠ WARNING
Risk of injury and damage caused by electrical current!

The device is designed to be operated in a system with professional grounding of all connected devices and mounting surfaces to the same ground potential. Incorrect grounding of the Lector620 can result in equipotential bonding currents between the device and other grounded devices in the system. This can lead to hazardous voltages being applied to the metal housing, cause devices to malfunction or sustain irreparable damage, and damage the cable shield as a result of a heat increase, causing cables to set alight.

➢ Ensure that the ground potential is the same at all grounding points.

➢ If the cable insulation is damaged, disconnect the supply voltage immediately and have the damage repaired.

For measures for eliminating hazards, see Chapter "Electrical installation", 📖 in the *Technical Information "Image-based code reader Lector620".*

1. Connect the communication interface of the device to the PC (Ethernet or USB, depending on model).
2. Supply power to the device according to the type label.

➔ *For an overview of all interfaces and connection options, see "Overview of all interfaces and connection options" on page 7.*
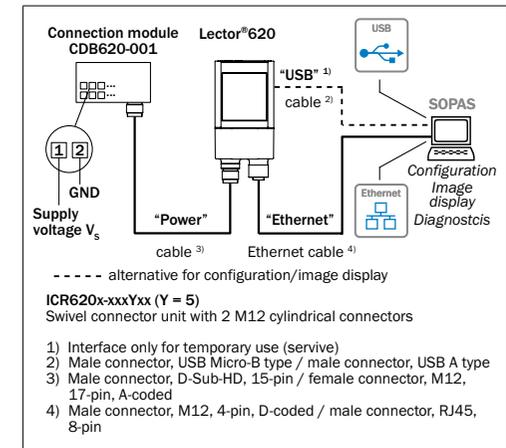

ICR620x-xxxYxx (Y = 5)
Swivel connector unit with 2 M12 cylindrical connectors

1) Interface only for temporary use (servive)
2) Male connector, USB Micro-B type / male connector, USB A type
3) Male connector, D-Sub-HD, 15-pin / female connector, M12, 17-pin, A-coded
4) Male connector, M12, 4-pin, D-coded / male connector, RJ45, 8-pin

Fig. 3: Connection block circuit diagram for Lector620 Professional, High Speed, DPM Plus and OCR with swivel connector

ICR620x-xxxYxx (Y = 0)
Cable with male connector, D-Sub HD, 15-pin

1) Interface only for temporary use (servive)
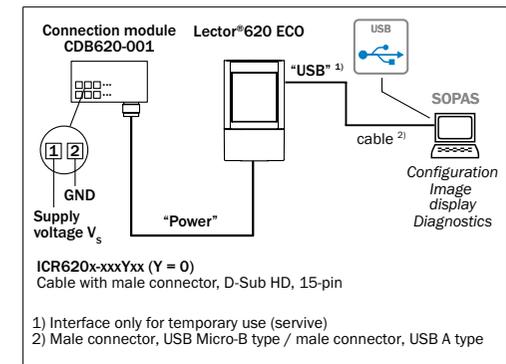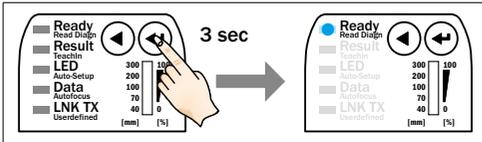2) Male connector, USB Micro-B type / male connector, USB A type

Fig. 4: Connection block circuit diagram for Lector620 ECO with cable outlet

Step 3: Configuration

a. Configuration without PC

You can set the read properties of the device directly on the device using the two function buttons.
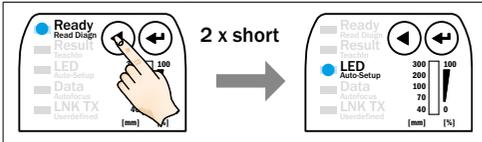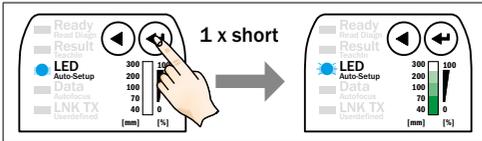
1. Start "Edit" mode.

3 sec

2. Align the device with the code. The ECO variant has no aiming laser.

(Codemuster)

3. Select Auto-Setup.

2 x short

4. Start Auto-Setup.

1 x short

- ECO variant: The device adjusts itself automatically to suit the lighting conditions and the quality of the code.
- Professional, High Speed, DPM Plus and OCR variants: The device adjusts itself automatically to the lighting conditions, code quality and working distance.

5. Wait until Auto-Setup has finished. The bar graph 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.

| Display	LED	Color	Status
Auto-Setup	●	Blue	Auto-Setup selected
	☀	Blue	Auto-Setup started
	●	Green	Auto-Setup successfully quit
	●	Yellow	Auto-Setup was partially successful
	●	Red	Auto-Setup was unsuccessful

● = illuminated; ☀ = flashing
Tab. 2: Feedback of "Auto-Setup" LED

Important!

If the "Auto-Setup" LED lights up yellow or red, the read result is insufficient. Check the alignment and the distance of the device from the code. ➔ *See "Aligning the reading window of the device with the code" on page 2.*

6. Exit "Edit" mode and save the parameters. The existing configuration is overwritten.

3 sec
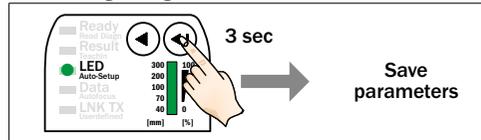
Save parameters

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

b. Configuration with PC

The default configuration software SOPAS ET is used to configure the device. Use at least version V2.38 to do so. We recommend using the newest version.

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 selected by the installation wizard. Administrator rights may be required on the PC to install the software.

2. When starting, select the required user interface:
   - "Standard" user interface for stand-alone applications
   - "Extended" user interface when the device is integrated in a network (e.g. CAN bus).
3. Establish a connection between the software and the device via Ethernet or USB (depending on type).
   The connection wizard starts automatically.
4. The following IP address is configured by default on the device:
   - IP address: 192.168.0.1
   - Subnet mask: 255.255.255.0
5. Select Lector620 from the list of available devices. SOPAS ET establishes communication with the device and loads the associated device description file for the device. The program window, which is divided into three sections, opens.
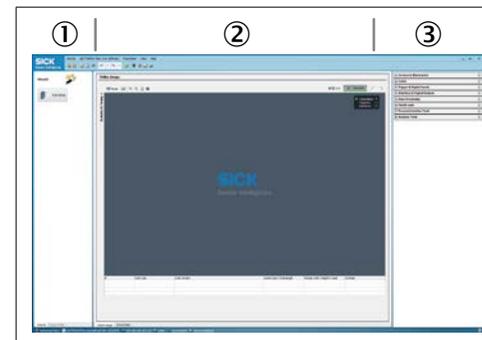

Fig. 5: SOPAS ET program window: example
①. "Wizard and help" area
②. "Image display" area
③. "Configuration" area

Configuring the device

1. In the ONLINE IMAGE window, click the EDIT button. In the EDIT mode, the device starts recording images consecutively and uses the current settings to decode them. The effects of any parameter changes become directly visible.

The following functions are deactivated in EDIT mode:
- Switching inputs and outputs
- Data output via the host interface.

Configuring reading performance with the Wizard

Configuring with the Wizard is not possible with pharma codes.

➤ Start the AUTO-SETUP wizard on the left in the program window and follow the instructions in the dialog box.
   The device adjusts itself automatically with Auto-Setup to suit the lighting conditions, working distance, and quality of the code presented. The device initially temporarily stores these calculated values. SOPAS ET applies the parameters to the two configuration bars CAMERA & ILLUMINATION and CODES.

Continuing the configuration

1. For custom optimization of the image and code settings of the device, click the CAMERA & ILLUMINATION and CODES configuration bars on the right and adjust the parameter values.
2. To make the changes directly visible, go to the image display window ONLINE IMAGES and click the EDIT button.
3. Make settings for additional functions during planned operation such as codes, reading clock, read result formats, data interface, etc.
4. Go to the image display window ONLINE IMAGES, click the OPERATION button, and test the settings in read mode (real operation).

OCR variant only

➤ For optical OCR/OCV character recognition, start the OCR Setup wizard on the left of the program window and follow the instructions in the dialog box.

Completing the configuration

5. To permanently store the overall configuration:
   - Parameter set in the device: Click the 🖳 button.
   - Configuration file on the PC: Click the 💾 button.

Setup and function

NOTE

Risk of damaging the swivel connector
➢ The plug unit may be moved up to 180° from end point to end point of the stop. The ECO variant has no swivel connector.

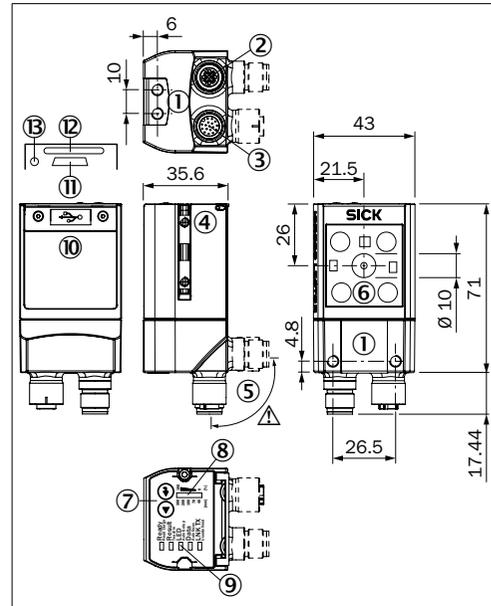### Device structure Lector620 with swivel connector

Fig. 6: Structure of Lector620 Professional, High Speed, DPM Plus and OCR. All dimensions in mm.

①. M5 blind tapped holes, 5 mm deep (4 x), for mounting the Lector620
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. M5 sliding nuts, 5 mm deep (2 x), for mounting the Lector620 (alternative)
⑤. Swivel connector
⑥. Reading window
⑦. Function button (2 x)
⑧. Bar graph display
⑨. RGB LEDs for status indication (2 modes), 5 x
⑩ Cover (flap)
⑪ USB port, female connector, Micro B type, 5-pin. USB interface only for temporary use.
⑫ Slot for microSD memory card
⑬ LED for microSD memory card

Device structure ICR620D-T51503 (part number 1064256)

See downloadable dimensional drawing on the SICK product page in the web. Path:
www.sick.com/Lector62x > Select device > Tab "Technical data" > Section "Technical drawings"

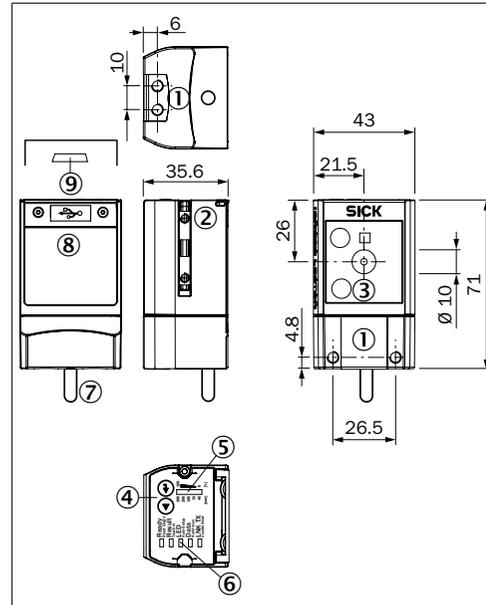### Device structure Lector620 with cable outlet

Fig. 7: Structure of Lector620 ECO. All dimensions in mm.

①. M5 blind tapped holes, 5 mm deep (4 x), for mounting the Lector620
②. M5 sliding nuts, 5 mm deep (2 x), for mounting the Lector620 (alternative)
③. Reading window
④. Function button (2 x)
⑤. Bar graph display
⑥. RGB LEDs for status indication (2 modes), 5 x
⑦. Cable (0.9 m) with male connector, D-Sub HD, 15-pin ("Power/Serial Data/CAN/I/O")
⑧. Cover (flap)
⑨. USB port, female connector, Micro B type, 5-pin. USB interface only for temporary use.
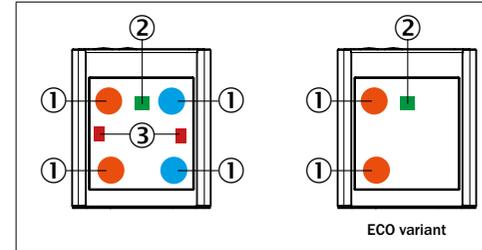
Lighting unit

Fig. 8: Lighting unit
①. Integrated lighting = 4 x LED (2 x left/2 x right); ECO variant: 2 x LED (2 x left)
②. Feed-back spot (e.g. for Good Read) = 1 x green LED
③. Aiming lasers for alignment, can be deactivated = 2 x red laser LEDs

The ECO variant has no aiming laser.
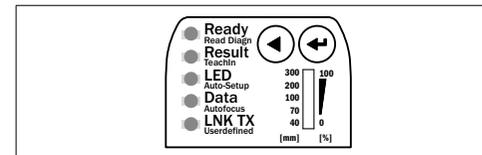
Status indicators, functions

Fig. 9: LED status indicators, function buttons and bar graph display

Status indicators in read mode

Display	LED	Color	Status
Ready	●	Green	Device ready to read
	●	Red	Hardware or software error
Result	●	Green	Read operation successful
	●	Red	Read operation unsuccessful
LED	●	Green	Read mode: Illumination on, internal reading gate open
Data	●	Yellow	Data output via host interface
LNK TX	☀	Green	Data traffic via Ethernet

● = illuminated; ☀ = flashing
Tab. 3: Status indicators in read mode

Status indicators in configuration mode

Display	LED	Color	Status
Read Diagn	●	Blue	Test (reading diagnostics) selected
	☀	Blue	Test started
TeachIn	●	Blue	Teach-in selected (default: Match code)
	☀	Blue	Teach-in started
	●	Green	Teach-in successful
	●	Red	Teach-in unsuccessful (match code default setting: unable to teach in any code)
Auto-Setup	●	Blue	Auto-Setup selected
	☀	Blue	Auto-Setup started
	●	Green	Auto-Setup successfully quit
	●	Yellow	Auto-Setup was partially successful
	●	Red	Auto-Setup was unsuccessful
Auto focus (not with the ECO variant)	●	Green	Function can be defined by user
	●	Yellow	Function can be defined by user
	●	Blue	Function can be defined by user
	●	Red	Function can be defined by user

● = illuminated; ☀ = flashing
Tab. 4: Status indicators in configuration mode

Audible status indicator (beeper)

Signals a selectable event (default: Good Read). User operations are accompanied by a series of sounds. Can be switched off

Functions

For information on operation of functions, see
📖 Online help for device in configuration software SOPAS ET.

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 % using the bar graph.

Teach-in

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 "Teach-in" function is not possible for OCR detection. With pharma codes, 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 Professional, High Speed, DPM Plus and OCR variants also adjust to the working distance. The device stores these calculated values permanently.

The "Auto-Setup" function is not possible for OCR detection or pharma codes.

Auto focus (not in the case of ECO variant)

The device only adjusts itself to the working distance and stores this permanently.

Overview of electrical connections

➔ See "Pin assignment overview" on page 8.

➔ See "Overview of all interfaces and connection options" on page 7.

MicroSD memory card (optional accessory)

The ECO variant has no memory card slot.

Function

With the optional plug-in memory card, the device backs up the last permanently saved parameter set externally as well (cloning). Furthermore, the device has the option of recording images, e.g., in the case of "no reads". The OCR variant can also store learned fonts. *For the parameter safety concept and other functions of the memory card, refer to 📖 Online help for the device in the SOPAS ET configuration software.*

The memory card is not included with delivery.

To ensure that the memory card functions reliably, only use types approved by SICK (no. 4051366 or no. 4077575). The device supports memory cards up to max 32 GB. The memory card has no write protection that can be activated.

NOTE

Possible data loss or irreparable damage to the memory card!

The device does not signal the applicable type of access to the memory card (read or write).

➢ Do not remove the memory card or turn off the supply voltage if there are parameter values in the device that access the memory card and have been set to "continuous" with the SOPAS ET configuration software (e.g., image acquisition).

➢ To remove the memory card safely during operation, select the REMOVE CARD function under ANALYSIS TOOLS/MICROSD CARD in the SOPAS ET configuration software and wait for SOPAS ET to provide confirmation.

Inserting the memory card

The card slot can be accessed on the device behind the black cover. ➔ See "Setup and function" on page 4, dimensional drawings.

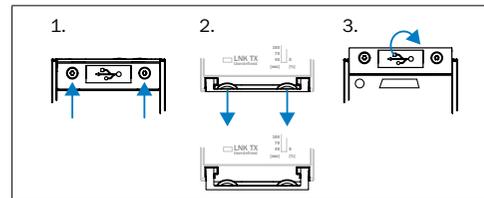Maintaining the IP 67 / IP 65 enclosure rating: ➔ See "For your safety" on page 1.

Fig. 10: Open memory card slot cover

1. Loosen Torx screws (TX6, cannot be lost) on the cover.
2. Carefully pull the upper edge of the flap away from the housing a little at the level of the hinges on the side. Use both of the recesses on the inside of the flap to do this.
3. Fold the flap upwards starting from the bottom edge.
4. Making sure it is in the correct position (with the contacts facing the device and pointing down), insert the memory card into the slot until it locks into place.
5. Screw the cover on tight.

Transport and storage

Transport and store the device in its original packaging, ensuring that the protective caps or plugs have been screwed onto the electrical connections. Do not store outdoors. To ensure that any residual moisture present can escape, do not store the device in airtight containers. Do not expose to aggressive media (e.g., solvents such as acetone).

Storage conditions: dry, dust-free, no direct sunlight, storage temperature –20 °C to 70 °C, as little vibration as possible, relative humidity max. 90% (non-condensing).

Maintenance and care

The device operates maintenance-free. No maintenance is required to ensure compliance with risk group RGO and RG1 and laser class 1.

➢ In order to obtain maximum read performance from the device, the plastic pane of the reading window must be checked for contamination at regular intervals (e.g. weekly). This applies especially when using the device in harsh environments (dust, abrasion, moisture, etc.). The reading window must be kept clean and dry for reading.

➢ If the reading window is dirty, gently clean the window with a soft, damp cloth (mild cleaning agent).

Important!

If the pane of the reading window is scratched or damaged, it must be replaced. Contact SICK Service to arrange this.

Static charge may cause dust particles to adhere to the reading window. This effect can be avoided by using the SICK anti-static plastic cleaner (no. 5600006) in combination with the SICK lens cloth (no. 4003353).

Repairs

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

Disassembly and disposal

Any device which can no longer be used must be disposed of in an environmentally friendly manner in accordance with the respective applicable country-specific waste disposal regulations. As they are cat-egorized as electronic waste, the device must never be disposed of with household waste.

Sources for obtaining more information

Additional information about the device and its optional accessories can be found on the following online product page:

Lector620 image-based code reader

www.sick.com/Lector62x

For example:
- Operating instructions Lector620: German (no. 8014639), English (no. 8014640) and French (no. 8019984) as well as in other languages
- Technical information for Lector620 image-based code readers, Professional, High Speed, DPM Plus and OCR variants: German (no. 8014009), English (no. 8014010)
- Technical information for Lector620 image-based code readers, ECO variant: German (no. 8014569), English (no. 8014570)
- EU declaration of conformity
- Detailed technical specifications (online data sheet)
- Dimensional drawing and 3D CAD dimension models
- Information on accessories (including cables, brackets, trigger sensors, external illumination units)
- Publications dealing with accessories

Function blocks for the Lector620 code reader

www.sick.com/software

- Function blocks for communication between a SIMATIC controller (S7-300/S7-400) and the Lector620. Function blocks for other controllers on request.

CDF600-21xx PROFIBUS DP fieldbus module

www.sick.com/CDF600-2

- CDF600-21xx PROFIBUS DP fieldbus module operating instructions in English (no. 8015335) and German (no. 8015334) as well as in other languages if applicable
- CDF600-21xx PROFIBUS DP fieldbus module technical information in English (no. 8015337) and German (no. 8015336)

CDF600-22xx PROFINET fieldbus module

www.sick.com/CDF600-2

- CDF600-2200 PROFINET fieldbus module (M12 variant) operating instructions in English (no. 8015922) and German (no. 8015921) as well as in other languages if applicable
- CDF600-22xx PROFINET fieldbus module technical information in English (no. 8015924) and German (no. 8015923)

Documents on request

- Overview of command strings for the Lector620

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

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View the complete license texts here: www.sick.com/licensetexts

Printed copies of the license texts are also available on request.

Technical data (excerpt)

Type	Lector620 (ICR620x-xxxxxx)
Focus	• Professional, High Speed, DPM Plus and OCR variants: Auto focus when programming the working distance • ECO variant: Focus adjustment through manual distance entry
Illumination for field of view	LEDs, number depends on variant • Red: (λ = 617 ± 15 nm) • Blue: (λ = 470 ± 15 nm) • Infra-red: (λ = 850 ± 25 nm)
Feedback LED (spot in field of view)	Green: (λ = 525 ± 15 nm), risk group 0 according to IEC 62471-1: 2006-07/EN 62471-1: 2008-09

Type	Lector620 (ICR620x-xxxxxx)

LED risk group of integrated illumination unit	**Red or blue**
	Risk group 1 (low risk) according to IEC 62471-1: 2006-07/EN 62471-1: 2008-09.
	• Radiance:
	  • L_B: < 10 kW/ (m²sr) within 100 s; at a distance of ≥ 200 mm
	  • L_R: < 3.7 x 10⁵ W/(m²sr) within 10 s; at a distance of ≥ 200 mm

	Infrared light • Risk group 0 (no risk) according to IEC 62471-1: 2006-07/EN 62471-1: 2008-09 • Irradiance: • E_{IR}: < 100 W/m² within 1,000 s; with a distance ≥ 200 mm
MTBF of LEDs	75,000 h, at ambient operating temperature 25 °C
Aiming lasers (field of view)	2 x, visible light. Red (λ = 630 nm … 680 nm), can be disengaged ECO variant: no aiming laser
Laser class	Class 1 according to EN/IEC 60825-1: 2014 (identical to EN/IEC 60825-1: 2007). Complies with 21 CFR 1040.10 except for tolerances according to Laser Notice no. 50 of June 24, 2007 and its following versions. P < 0.39 mW per laser module
Code resolution	≥ 0.1 mm, depending on lens unit (Valid for Data Matrix, PDF417, and 1D codes with good print quality)
Working distance	➔ See "Taking account of the working distance, depending on the resolution" on page 2 ➔ See variant-dependent visual and reading field charts www.sick.com/Lector62x
Lens unit	➔ See "Type code" on page 7.
Sensor resolution	➔ See "Type code" on page 7.
Image sensor type	➔ See "Type code" on page 7.
Scanning frequency at full resolution	• 60 Hz at WVGA resolution • With ECO variant: 25 Hz at WVGA resolution
Ambient light immunity	2,000 lx on code
Bar code types (1D)	2/5 Interleaved, Codabar, Code 128, Code 32, Code 39, Code 93, GS1 DataBar GS1-128/EAN 128, Pharmacode, UPC/GTIN/EAN

Type	Lector620 (ICR620x-xxxxxx)
2D code types	Data Matrix ECC200, GS1 Data Matrix, MaxiCode, PDF417, QR code
Image memory	Internal approx. 15 MB
Serial RS-232/422	Host (300 Bd … 115.2 kBd), for data output
Serial RS-232	Aux (57.6 kBd), for configuration/ diagnostics
USB	Aux (USB 2.0), for configuration/ diagnostics and image transmission. Interface only for temporary use
Ethernet	Aux, Host, image transmission (FTP). 10/100 MBit/s, TCP/IP, Ethernet/IP, PROFINET. MAC address(es), see type label.
CAN	20 kBit/s to 1 MBit/s Protocol: SICK CAN sensor network, CANopen®
PROFIBUS	Optional via external fieldbus module CDF600-21xx
PROFINET	Optional via external fieldbus module CDF600-2200
Digital switching inputs	Variants: Professional, High Speed, DPM Plus and OCR • 2 x physical • 2 x additional external via optional CMC600 module in CDB650-204 connection module. In CDB620 or CDM420 connection module when using an adapter cable (female connector, M12, 17-pin, A-codiert / male connector, D-Sub HD, 15-pin) Opto-decoupled, reverse polarity protected
	Variant: ECO • 2 x physical • 2 x additional external via optional CMC600 module in CDB620 or CDM420 connection module. Opto-decoupled, reverse polarity protected
Digital switching outputs	Variants: Professional, High Speed, DPM Plus and OCR • 4 x physical, when using CDB650-204 connection module or adapter cable with open end. 2 x additional external via optional CMC600 module in the connection module.

Type	Lector620 (ICR620x-xxxxxx)
Digital switching outputs (continued)	Variants: Professional, High Speed, DPM Plus and OCR • 2 x physical, 2 x additional external via optional CMC600 module and CDB620 or CDM420 connection module when using an adapter cable (female connector, M12, 17-pin, A-coded / male connector, D-Sub HD, 15-pin)
	Variant: ECO • 2 x physical, 2 x additional external via optional CMC600 module in CDB620 or CDM420 connection module
Electrical connections	Variants: Professional, High Speed, DPM Plus and OCR: Swivel connector: 2 x M12. 1 x USB Variant ECO: Cable (0.9 m) with male connector, D-Sub-HD. 1 x USB ➔ See "Pin assignment overview" on page 8.
Optical indicators	• 5 x RGB LEDs: status indicators • 1 x LED: feedback LED, green • 10 x RGB LEDs: bar graph, blue
Acoustic indicators	1 x beeper for signaling events, can be deactivated
External backup of configuration data	Via optional CMC600 module in CDB620, CDB650-204 (not for ECO variant) or CDM420 connection module.
Supply voltage V_S	DC 10 … 30 V, SELV (EN 60950-1: 2006-04 / A11:2009-03 / A1:2010-03 / A12:2011-02 / A2:2013-08) and LPS (EN 60950-1: 2006-04 / A11:2009-03 / A1:2010-03 / A12:2011-02 / A2:2013-08) or Class 2 (UL 1310) required
Current consumption	Max. 2.0 A (with switching outputs)
Power consumption	Typically 3 W (with switching outputs without load)
Weight	Max. 170 g
Material housing	Aluminum die cast
Material reading window	Plastic (PMMA), 2 mm thick, with scratch-proof coating

Technical data table

Type	Lector620 (ICR620x-xxxxxx)
Electrical protection class	III (DIN EN 60950-1: 2006-04 / A11:2009-03 / A1:2010-03 / A12:2011-02 / A2:2013-08)
Enclosure rating	➔ See "Type code" on page 7. • According to EN 60529: 2000-09 • Maintaining the enclosure rating: ➔ See "For your safety" on page 1.
EMC	• Electromagnetic immunity: EN 61000-6-2: 2005-08-01 • Radiated emission: EN 61000-6-3: 2007-01-01 + EN 61000-6-3 / A1: 2011-03-01
Vibration resistance/Shock resistance	• According to EN 60068-2-6: 2008-02 • According to EN 60068-2-27: 2009-05
Ambient temperature	• Operation: 0 °C ... +50 °C • Storage –20 °C ... +70 °C
Permissible relative humidity	0% ... 90%, non-condensing

Tab. 5: Technical data

For more technical data, see the online data sheet on the product page on the Internet:

www.sick.com/Lector62x

Type code

I	C	R	6	2	0	x	–	x	x	x	x	x	x
1	2	3	4	5	6	7		8	9	10	11	12	13

Position	Description
1 ... 5	**Product family** ICR62 Lector62x
6	**Image sensor resolution** 0 752 px x 480 px (WVGA)
7	**Model** C OCR D DPM Plus E ECO H High Speed S Professional
8	**Focus** H Adjustable focus (only ECO variant) T Teach auto focus

Position	Description
9	**Image orientation, focal distance of the lens** 0 Imagers unlike housing shape, 7 mm working distance 3 Imagers like housing shape, 11.7 mm working distance 5 Imagers like housing shape, 18.6 mm working distance
10	**Illumination** 1 Blue + Red 2 Red 6 Infra-red 7 Blue
11	**Electrical connection 1)** 1 Cable, 0.9 m, with male connector, D-Sub HD, 15-pin 5 Swivel connector, 2 x M12, with male connector, 17-pin, A-coded and female connector, 4-pin, D-coded
12	**Communication (Host)** 0 Serial, USB 2) and Ethernet 1 Serial and USB 2)
13	**IP protection class** 3 IP 65 4 IP 67

1) ➔ See "Pin assignment overview" on page 8.
2) USB interface only for temporary use (service)

NOTE

Not all combinations according to the type code are possible. The available device variants can be found online at: *www.sick.com/Lector62x.*

Information Relating to UL60950 Certification

The certification is only valid with corresponding device identification on the type label of the code reader.

LECTOR®620

SICK **ICR620S-T11503**
D-79276 Reute
Made In Germany
P/N: 1050589
S/N: 1101 0001
DC 10-30V   3W   Imax=1,7 A
LISTED I.T.E. E244281
MAC 00:06:77:05:2E:11
Manufactured: January 2011

Fig. 11: Type label example

• Type: ICR62xx-xxxxxx
• Supply voltage: DC 10 V ... 30 V
• Power consumption: 3 W
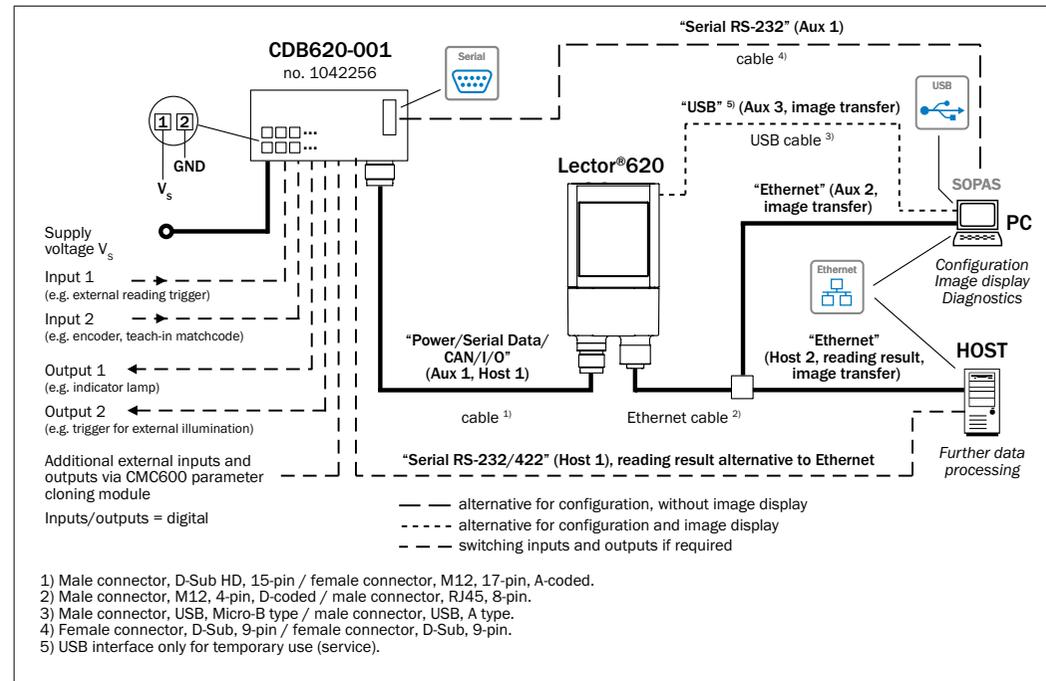
Overview of all interfaces and connection options

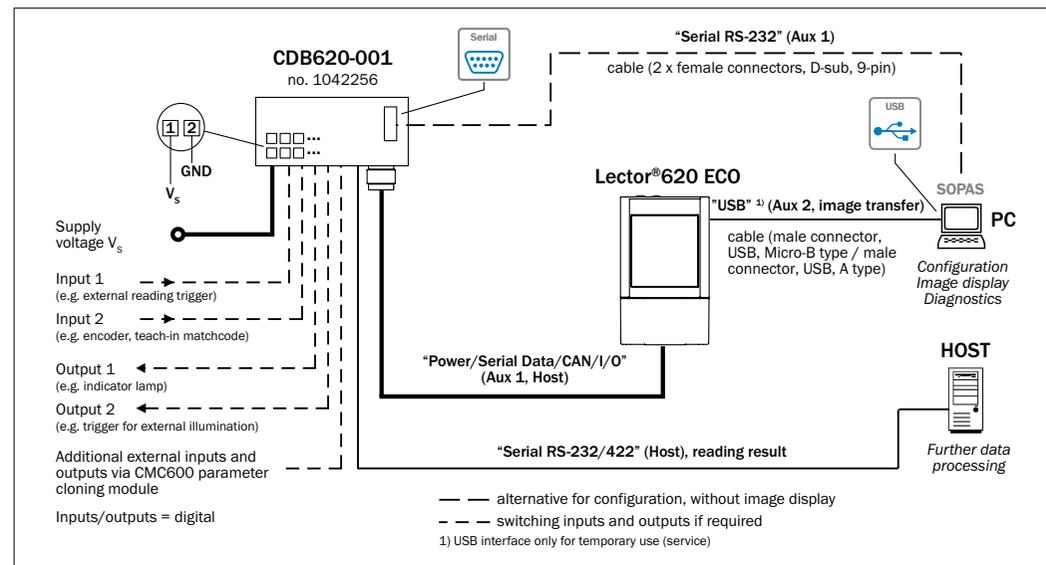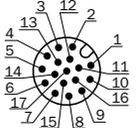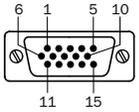Fig. 12: Lector62x Professional, High Speed, DPM Plus, OCR with swivel connector

1) Male connector, D-Sub HD, 15-pin / female connector, M12, 17-pin, A-coded.
2) Male connector, M12, 4-pin, D-coded / male connector, RJ45, 8-pin.
3) Male connector, USB, Micro-B type / male connector, USB, A type.
4) Female connector, D-Sub, 9-pin / female connector, D-Sub, 9-pin.
5) USB interface only for temporary use (service).

Fig. 13: Lector62x ECO with cable outlet

1) USB interface only for temporary use (service)

Pin assignment overview
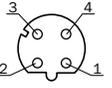
| Pin | Power / SerialData / CAN / IO | | Ethernet |
	Not for ECO variant	ECO variant	Not for ECO variant
	Male connector, M12, 17-pin, A-coded	Male connector, D-Sub-HD, 15-pin	Female connector, M12, 4-pin, D-coded
	Signal	**Signal**	**Signal**
1	GND	Supply voltage V_s	TX+
2	Supply voltage V_s	RxD (RS-232), Aux	RX+
3	CAN L	TxD (RS-232), Aux	TX–
4	CAN H	Sensor 2	RX–
5	TD+ (RS-422), Host	GND	–
6	TD– (RS-422), Host TxD (RS-232), Host	RD+ (RS-422), Host	–
7	TxD (RS-232), Aux	RD– (RS-422), Host RxD (RS-232), Host	–
8	RxD (RS-232), Aux	TD+ (RS-422), Host	–
9	SensGND	TD– (RS-422), Host TxD (RS-232), Host	–
10	Sensor 1, switching input	CAN H	–
11	RD+ (RS-422), Host	CAN L	–
12	RD– (RS-422), Host RxD (RS-232), Host	Result 1, switching output	–
13	Result 1, switching output	Result 2, switching output	–
14	Result 2, switching output	Sensor 1, switching input	–
15	Sensor 2 switching input	SensGND	–
16	Result 3 switching output	–	–
17	Result 4 switching output	–	–