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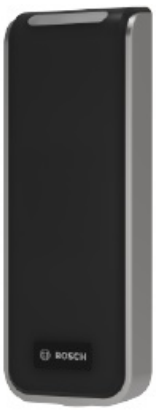
BOSCH

BOSCH ARD-SIGR20-ICL Card Reader



Specifications

- Model Numbers: ARDSIGR20SEO, ARDSIGR20ICL, ARDSIGR20KICL, ARDSIGR40ICL, ARDSIGR40KICL

- Manufacturer: Bosch Security Systems B.V.
- Compliance: FCC Part 15
- Protection Class: III
- Use: Residential, Business, Commercial, Industrial Areas

Product Usage Instructions

Safety

Before installation, ensure compliance with local fire, health, and safety regulations. Always use a fail-safe lock on secured doors and have an emergency switch for immediate de-energization in emergencies. Make changes only with the power off to prevent damage to the device. Protect from electrostatic discharge and wire communication cables securely.

Installation

1. **Choosing Installation Location:** Select a suitable location for the reader.
2. **Installing Data and Supply Lines:** Connect data and supply lines properly.
3. **Assembly Preparation:** Prepare for the assembly of the reader.
4. **Assembling the Reader:** Follow the manual instructions to assemble the reader correctly.

Care Instructions

Regularly check and clean the reader to ensure proper functioning. Avoid physical damage to the device.

Decommissioning

If decommissioning is required, follow the reverse steps of installation carefully.

Safety

- Read, observe and keep the instructions – the entire safety and operating instructions must be read and correctly followed before the readers are operated.
- Take all warnings into account – follow all warnings on the devices and in the operating instructions.

- Power sources – the readers should only be operated with the recommended power sources. If you are unsure whether you can use a specific power supply, contact your dealer.

Warning!

Health and Safety
Installation must be carried out in accordance with local fire, health and safety regulations. A secured door must be installed as part of an escape route and must have:

- a fail-safe lock. the door must be released in the event of power loss. Ideally, a solenoid lock should be used.
- an emergency switch with a glass cover for manual breaking the circuit, so that the fail-safe lock can be de-energized immediately in an emergency.

Notice!

Risk of damage to the equipment
Always switch off the power supply of the device before making changes to the installation. Do not connect or disconnect any plugs, data cables or screws while the power supply is switched on.

Notice!

Risk of damage
Protect the device from electrostatic discharge. Before touching the connector or the electronics, make sure you are not electrostatically charged.

Notice!

Wiegand connection
Wire the communication cable in a secure area and activate the tamper switch detection of the reader.

Danger!

- The device must be operated in a fully assembled state only.
- Before connecting the device to the power supply, make sure that the connected operating voltage does not exceed the permitted values according to the technical specifications.
- Additional safety measures should be enforced whenever there is a risk that failure of malfunction of the device might pose a risk to humans, animals or damage to the equipment, this must be prevented with additional safety measures (limit switches, protective equipment, etc.).

Notice!
Installation and assembly of electrical components must be carried out by a qualified electrician.

Notice!

- The devices are equipped according to EN 62368, with protection class III.
- During the installation, make sure that the facility requirements placed by the corresponding device safety standard are not influenced in an impermissible manner, compromising product safety.
- Electromagnetic compatibility: The devices are designed for use in residential, business, commercial and industrial areas.

Notice!

Warranty disclaimer
The warranty applies to the Wiegand reader with factory settings only. Configuration of the reader is not allowed.

FCC compliance

Compliance statement

- This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may

cause undesired operation.

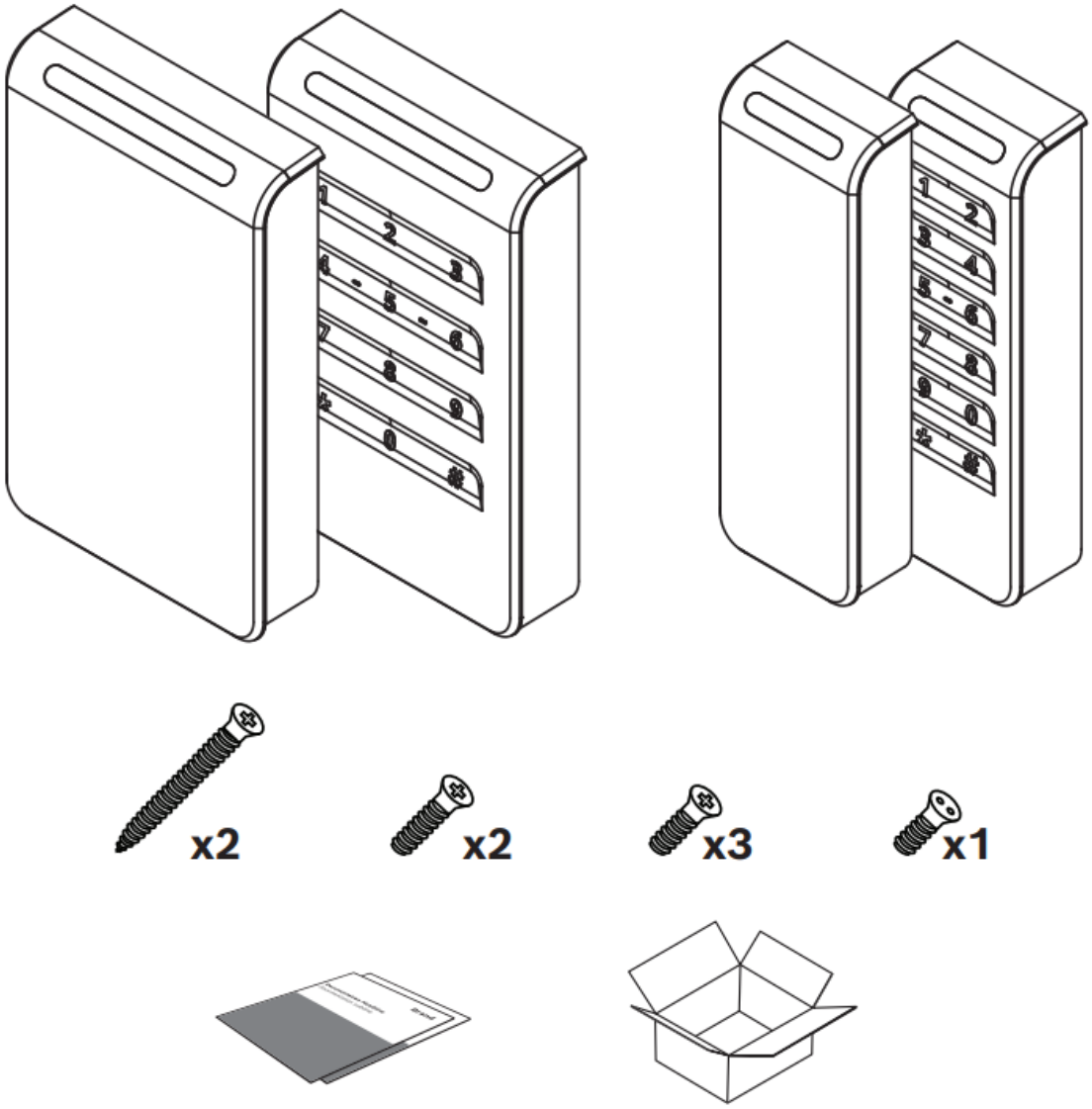
- Changes or modifications not expressly approved by the party responsible for compliance could void the user’s authority to operate the equipment.
- **Note:** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.
- This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
  - Reorient or relocate the receiving antenna.
  - Increase the separation between the equipment and receiver.
  - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
  - Consult the dealer or an experienced radio/TV technician for help.

Short information

Introduction

This installation manual is aimed at authorized service providers. It contains instructions on the installation and configuration of the Bosch Security Systems proximity reader LECTUS secure.

Parts included



Quantity	Component
1	Reader module
8	Screws
1	Quick installation guide
2	Safety and security information
1	OSS information

Functional requirements

- The LECTUS secure reader reads data from contactless RFID credentials and sends the data to a higher-level control center. This is where the evaluation takes place as to

whether the credential is authorized or not.

- The result is sent back to the reader, which then provides a visual and an acoustic signal. Communication between the reader and the control center takes place through a Wiegand interface.
- The reader is available in four variants, mullion and compact design, with and without a keyboard.
- The reader has a tamper monitoring and tear-off detection. It consists of an internal floating contact. This contact must be evaluated separately through a controller input.
- The reader is suitable for both indoor and outdoor use.

Wiegand readers

The following readers support Wiegand protocol.

Commercial Type Number (CTN)	Description
ARD-SIGR20-ICL	Card reader, R20, iCLASS, Wiegand
ARD-SIGR20K-ICL	Card reader w/ kp, R20, iCLASS, Wiegand
ARD-SIGR40-ICL	Card reader, R40, iCLASS, Wiegand
ARD-SIGR40K-ICL	Card reader w/ kp, R40, iCLASS, Wiegand
ARD-SIGR20-SEO	Card reader, R20, SEOS, Wiegand

Data security of Wiegand interface

- Wiegand is a popular type of communication interface for door access systems, but it lacks IT security protection. Data transmission is not secure because the interface is not encrypted.
- The communication cable and the area between the connected devices should be physically protected from access by unauthorized people to avoid unauthorized data. The cable should also be routed in the secured area.
- The tamper detection feature of the reader should be used.

- Data protection note: The card reader sends personal data (card number) over the unsecure interface to the access management system. Check in advance if this is compliant with your data protection regulations.

RFID technology

The LECTUS secure readers support by default the following technologies:

- iCLASS (26 bit and 37 bit)
- iCLASS SE (26 bit and 37 bit)
- Seos (26 bit and 37 bit)

The RFID technology that will be used is dependent on the reader model. Check this in advance.

Reading distances

The normal reading distance depends on the respective reading system, the installation environment, and the type of data carrier. Direct mounting on metal might reduce the optimal reading distance.

CTN	Reading distance (cm)			
	iCLASS ISO card	**iCLASS ISO key fob**	**Seos ISO card**	**Seos key fob**
ARD-SIGR20-ICL	11 cm	6 cm	4 cm	3 cm
ARD-SIGR20K-ICL	9.5 cm	5 cm	2.5 cm	1.5 cm
ARD-SIGR20-SEO	–	–	3 cm	4 cm
ARD-SIGR40-ICL	15 cm	9 cm	4 cm	5.5 cm
ARD-SIGR40K-ICL	13 cm	7 cm	4 cm	2 cm

Table 2.1: Maximum reading distances of the different credentials for the LECTUS

secure readers

Notice!

- The reading distances listed above are distance ranges measured on the basis of a selection of transponder media. These measured reading distances are to be regarded as typical guide values.
- If other transponder media are used (chip type, design, size, production process), the distance ranges may differ and it is recommended to carry out a suitability and functional test of the respective medium before using or planning to use the reader.

Influencing (reducing) the reading distance

The reading distance can be influenced due to different reasons. On the one hand this is influenced by the medium (i.e. the data carrier) and on the other hand by the ambient conditions of the antenna and the data carrier.

The following is a list of points that can reduce the reading distance:

- “Shade” or shield the data carrier with metal, such as EC card in your wallet, key fob on your key ring, etc.
- No optimal coupling, i.e., the antenna surface of the data carrier is perpendicular (90 °) to the antenna surface of the reader
- Data carrier itself
- key fob (small active antenna surface)
- “bad” response from the data carrier (ID card / key fob)
- combination ID card (e.g. LEGIC® / inductive, MIFARE / inductive etc.)
- Metal in the “active” effective area of the HF field. The transmission energy is attenuated. This point is particularly relevant when installing the reader components in metal front panels (including metal columns, etc.).

Installation

Choosing the installation location

Notice!

When choosing the installation location, note that the readers can interfere with each other or be negatively influenced by other systems and sources of interference. The readers can still disturb each other at a distance of about two to three times the reading distance. High-energy sources of interference in the range of the modulation and carrier frequencies can also interfere with the transmission.

Installing data and supply lines

- When supplying the reader (especially over longer distances), ensure that the cable cross-section is adequate. Since the power consumption of the individual systems is partially pulsed, short-term voltage drops cannot be detected with a conventional multimeter (digital or analog). However, these voltage drops can cause a “POWER-ON-RESET” on the reader component, which can lead to communication problems.
- When dimensioning the power supply and the cable cross-sections of the cabling, the maximum current consumption must be taken into account. It is essential to ensure that the input voltage remains constant and corresponds to the technical specifications of the reader.

Assembly preparation

1. Lay the connection cables according to the local conditions and prepare them for connection.
2. Remove the two 5-pin plug-in terminal from the reader module and connect the wires according to the Wiring diagram.

1. + VDC
2. Ground (RTN)
3. Wiegand Data 1
4. Wiegand Data 0 / Data
5. LED Input (GRN)
6. Beeper Input
7. Hold Input / LED Input (BLUE)
8. LED Input (RED)
9. Tamper 2 (RLY2)
10. Tamper 1 (RLY1)

Figure 3.1: Wiring diagram

Type of wire	Stranded	Solid
Diameter	AWG 28 – 16	
Cable stripping length	6 to 7 mm	

Table 3.2: Diameter and cable stripping length of stranded and solid wires

Notice!

The wiring must be carried out in a de-energized state. In other words, the operating voltage may only be switched on after the reader has been fully installed!

Assembling the reader

Notice!

Install the reader on a flat, stable surface. Failure to do so may compromise the IP rating and/or tamper feature.

Notice!

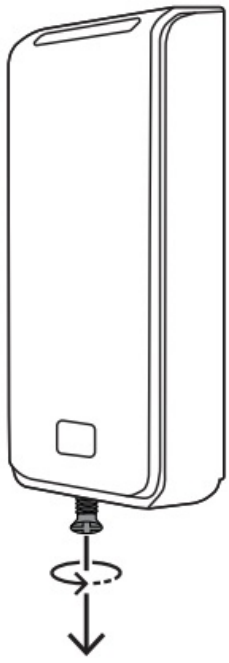
When mounting on or near metal, use a wall mount box to ensure an optimal read performance.

Notice!

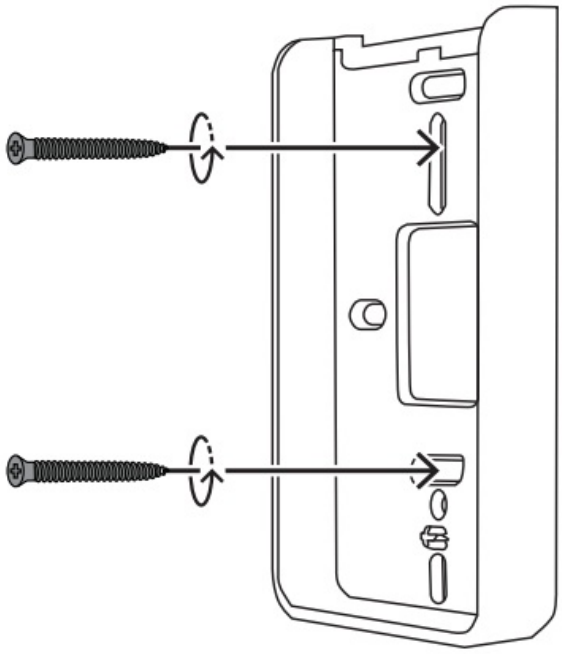
Use the supplied screws to ensure the correct fitting and to avoid damaging the reader or the mounting plate.

To mount the reader:

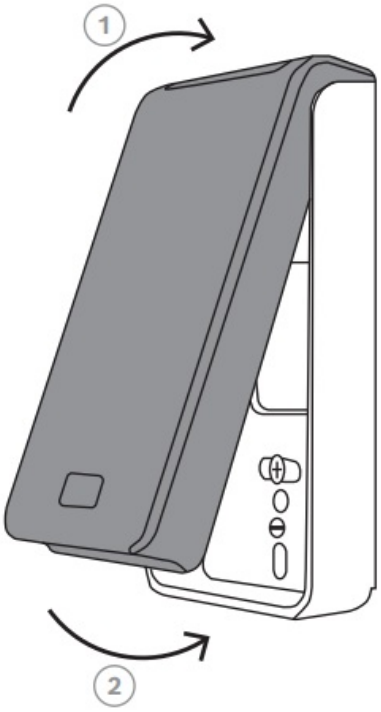
1. Determine an appropriate mounting position for the reader.
2. Unscrew the top cover. The screw is located at the bottom of the reader.



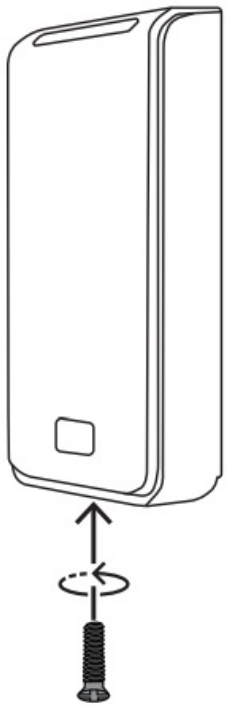
3. Use the supplied appropriate screws and drill the holes to mount the plate.



4. Plug in the terminals that were prepared in Assembly preparation, page 9.
5. Hook the upper part of the reader on the top of the mounting plate. Push the bottom of the reader to the wall until it is inside the mounting plate.



6. Drill back the screw in the bottom of the reader to secure it to the mounting plate.



To test if the reader is working properly:

1. Power the reader. The reader beeps and the LED flashes.
2. Present a credential in front of the reader. The reader beeps and the LED flashes.

Care instructions

1. Do not operate the reader with sharp objects, such as rings, fingernails and keys.
2. For cleaning, do not use any corrosive or plastic-corrosive liquids such as gasoline, turpentine, and nitrous solution. Harsh detergents can damage or discolor the surface.
3. Do not use cleaning agents with mechanical effects, such as scouring milk and scouring sponge.
4. Only clean the reader with a soft, damp cloth and only use clear water.

Decomissioning

Old electrical and electronic equipment

This product and/or battery must be disposed of separately from household waste. Dispose such equipment according to local laws and regulations, to allow their reuse and/or recycling. This will help in conserving resources, and in protecting human health and the environment.

Technical specifications

Connectivity

Reader interfaces	Wiegand
Wiring connection	Terminal Strip

Electrical

Operating voltage (VDC)	12 VDC
Current consumption (mA)	45 mA – 75 mA

Environmental

Operating temperature (°C)	-35 ºC – 66 ºC
Operating temperature (°F)	-31 ºF – 150 ºF
Usage	Indoor; Outdoor
IP rating	IP65
Storage temperature (°C)	-40 ºC – 85 ºC
Storage temperature (°F)	-40 ºF – 185 ºF
Storage relative humidity (%)	0 % – 95 %

Mechanical

	ARD-SIGR20-SEO Card reader, R20, S EOS, **Wiegand**

Color	Black
Dimensions (H x W x D) (mm)	121.50 mm x 45 mm x 21.5 mm
Dimensions (H x W x D) (in)	4.79 in x 1.78 in x 0.85 in
Material	Polycarbonate
Mounting type	Surface-mounted; Mullion-mounted
Weight (g)	75 g
Weight (oz)	2.65 oz

	ARD-SIGR20-ICL Card reader, R20, iCLASS, **Wiegand**
Color	Black
Dimensions (H x W x D) (mm)	121.5 mm x 45 mm x 19.5 mm
Dimensions (H x W x D) (in)	4.78 in x 1.77 in x 0.77 in
Material	Polycarbonate
Mounting type	Surface-mounted; Mullion-mounted
Weight (g)	75 g
Weight (oz)	2.65 oz

	ARD-SIGR20K-ICL Card reader w/ kp, R20, iCLASS, Wiegand
Color	Black

Dimensions (H x W x D) (mm)	121.50 mm x 45 mm x 21.5 mm
Dimensions (H x W x D) (in)	4.79 in x 1.78 in x 0.85 in
Material	Polycarbonate
Mounting type	Surface-mounted; Mullion-mounted
Weight (g)	90 g
Weight (oz)	3.17 oz

	ARD-SIGR40-ICL Card reader, R40, iCL ASS, **Wiegand**
Color	Black
Dimensions (H x W x D) (mm)	121.50 mm x 80 mm x 21.5 mm
Dimensions (H x W x D) (in)	4.79 in x 3.16 in x 0.85 in
Material	Polycarbonate
Mounting type	Surface-mounted
Weight (g)	120 g
Weight (oz)	4.23 oz

	ARD-SIGR40K-ICL Card reader w/ kp, R40, iCLASS, Wiegand
Color	Black
Dimensions (H x W x D) (mm)	121.5 mm x 80 mm x 21.5 mm

Dimensions (H x W x D) (in)	4.79 in x 3.16 in x 0.85 in
Material	Polycarbonate
Mounting type	Surface-mounted
Weight (g)	140 g
Weight (oz)	4.94 oz

Operation

	ARD-SIGR20-SEO Card reader, R20, SEOS, **Wiegand**
Keypad	No
LED indication	Multi-color
Credential type	Cards/keyfobs/tokens
Wireless transmission frequency	13.56 MHz
Reading format	Seos

	ARD-SIGR20-ICL Card reader, R20, iCLASS, **Wiegand**
Keypad	No
LED indication	Multi-color
Credential type	Cards/keyfobs/tokens

Wireless transmission frequency	13.56 MHz
Reading format	iCLASS; iCLASS SE; Seos

	ARD-SIGR20K-ICL Card reader w/ kp, R20, iCLASS, Wiegand
Keypad	Yes
LED indication	Multi-color
Credential type	Cards/keyfobs/tokens; PIN
Wireless transmission frequency	13.56 MHz
Reading format	iCLASS; iCLASS SE; Seos

	ARD-SIGR40-ICL Card reader, R40, iCL ASS, **Wiegand**
Keypad	No
LED indication	Multi-color
Credential type	Cards/keyfobs/tokens
Wireless transmission frequency	13.56 MHz
Reading format	iCLASS; iCLASS SE; Seos

	ARD-SIGR40K-ICL Card reader w/ kp, R40, iCLASS, Wiegand
Keypad	Yes

LED indication	Multi-color
Credential type	Cards/keyfobs/tokens; PIN
Wireless transmission frequency	13.56 MHz
Reading format	iCLASS; iCLASS SE; Seos

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FAQS

Q: Can I configure the Wiegand reader settings?

A: No, the warranty applies to the Wiegand reader with factory settings only. The configuration of the reader is not allowed.

Q: What should I do if I encounter electromagnetic interference?

A: Ensure proper grounding and shielding of cables to minimize electromagnetic interference.

Documents / Resources

	BOSCH ARD-SIGR20-ICL Card Reader [pdf] Instruction Manual ARDSIGR20SEO, ARDSIGR20ICL, ARDSIGR20KICL, ARDSIGR40ICL, ARDSIGR40KICL, ARD SIGR20 ICL Card Reader, ARD SIGR20 ICL, Card Reader

References

- User Manual

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ARD SIGR20 ICL, ARD SIGR20 ICL Card Reader, ARDSIGR20ICL, ARDSIGR20KICL, ARDSIGR20SEO, ARDSIGR40ICL, ARDSIGR40KICL, Bosch, Card Reader

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