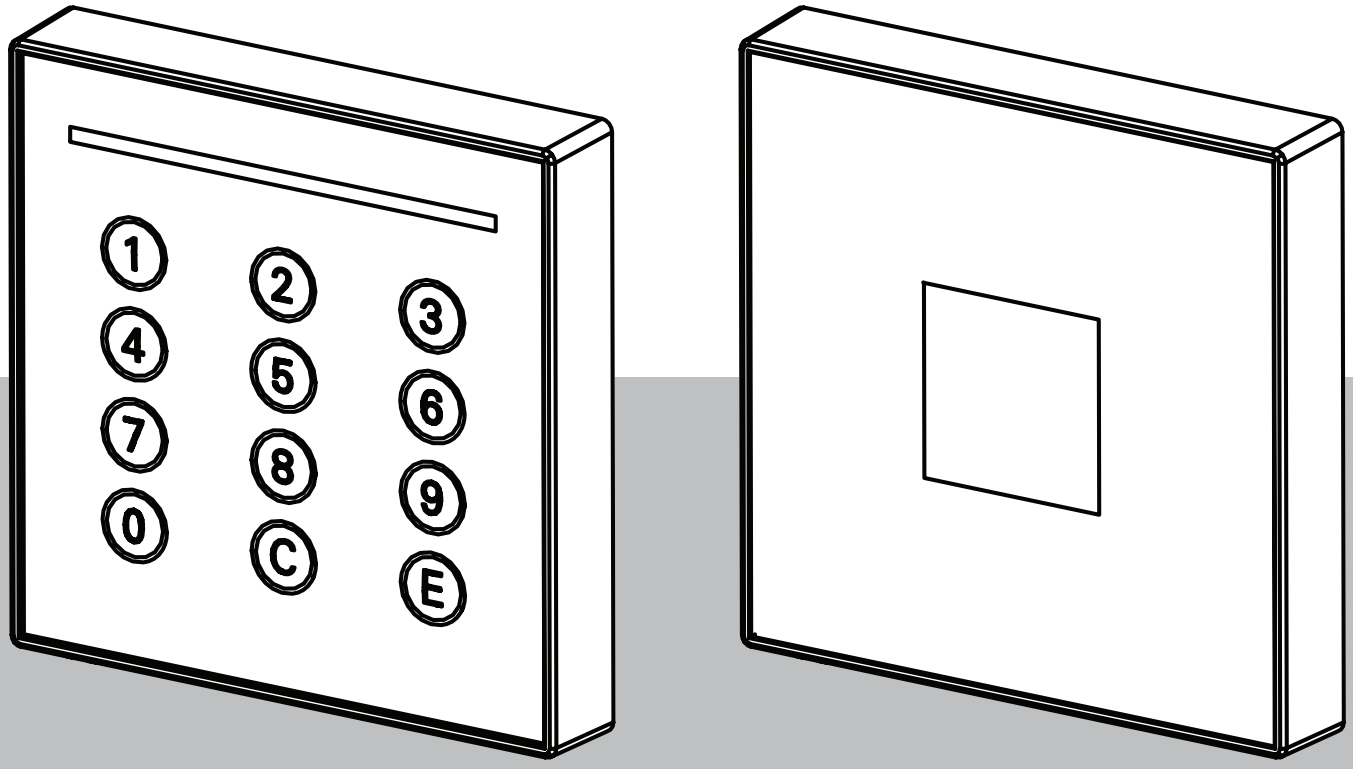
LECTUS select E

ARD-ESELECT-BO | ARD-ESELECT-BOK | ARD-ESELECT-WO | ARD-ESELECT-WOK



en Installation manual

Table of contents

1 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!
Risk of damage to the equipment!
Always switch off the power supply to 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.

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.

Warning!
Risk of damage!
Protect the device against electrostatic discharge by observing the ESD instructions before unpacking or touching the plug and the electronics.

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

Notice!
The circuit board is at risk from electrostatic discharge. Appropriate precautionary measures (grounding, etc.) must be observed.

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.).

1.1 FCC Class B

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.

2 Short information

2.1 Introduction

This installation manual is aimed at authorized service providers.
The installation manual contains instructions on the installation and configuration of the proximity reader LECTUS select E by Bosch Security Systems.

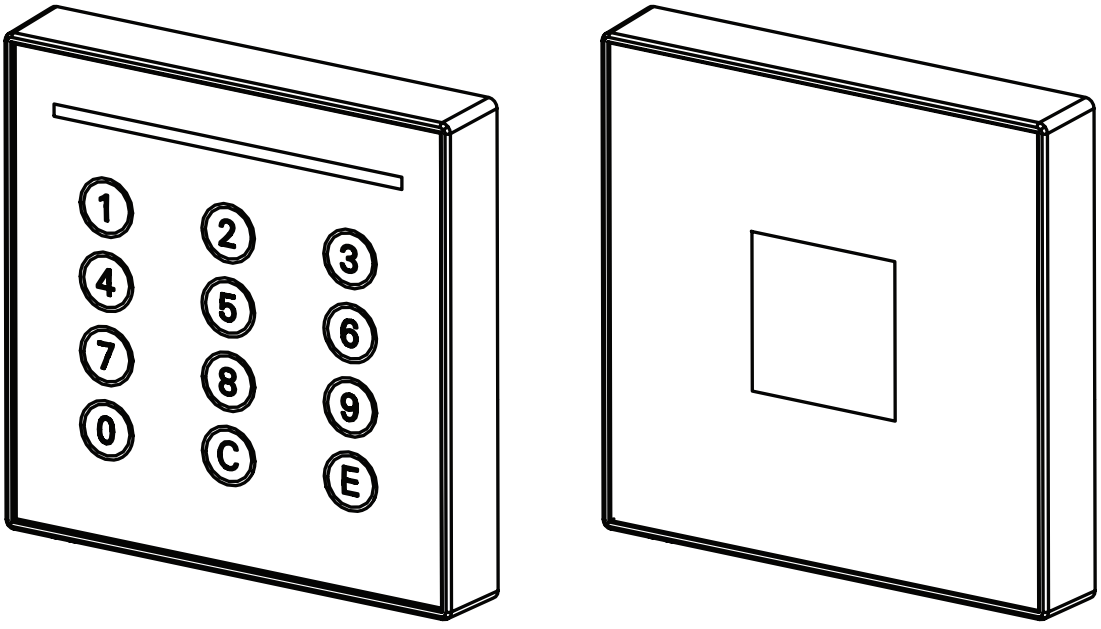
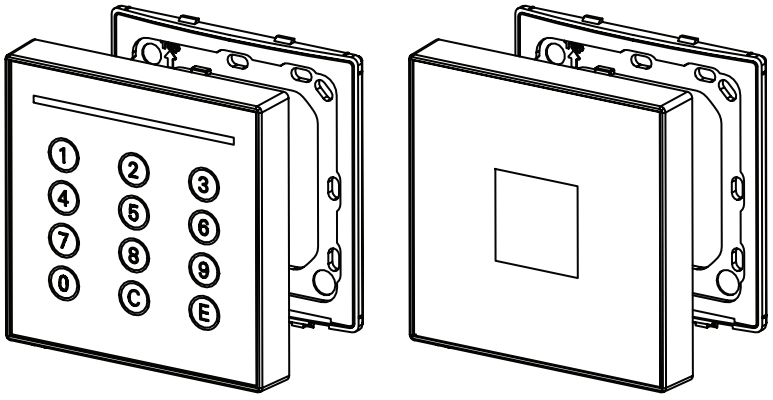
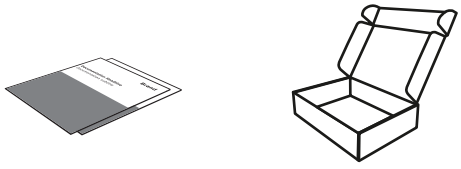


Figure 2.1: LECTUS select E readers

2.2 Parts included





Quantity	Component
1	Reader module
1	Wall bracket
4	Screws
1	Quick installation guide
2	Safety and security information

3 System overview

The LECTUS select E 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 a 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 via an encrypted protocol over an RS485 bus.
The reader has a compact design and is available in two variants, with and without a keyboard. Flush-mount and wall-mount options are available for each variant. The flush-mounted reader fits into any device box in flush-mounted or hollow-wall design according to DIN, with a screw spacing of 60 mm.
The readers support tamper monitoring through an optical sensor. They are suitable for both indoor and outdoor use.
Connection type: push-in spring connector.

3.1 Mounting options and dimensions

Flush-mount installation

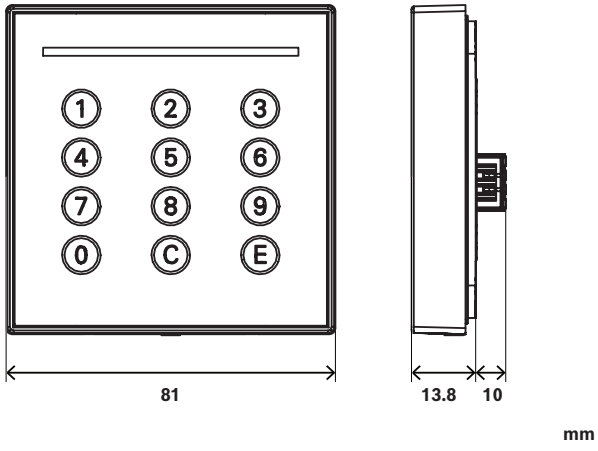


Figure 3.1: Dimensions of reader with fixed wall bracket

The wall bracket is included in the reader delivery.

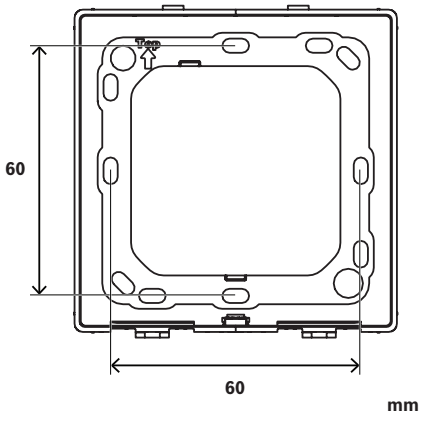


Figure 3.2: Dimensions of wall bracket

Surface-mount installation

Wallmount box for surface mounting (optionally available)

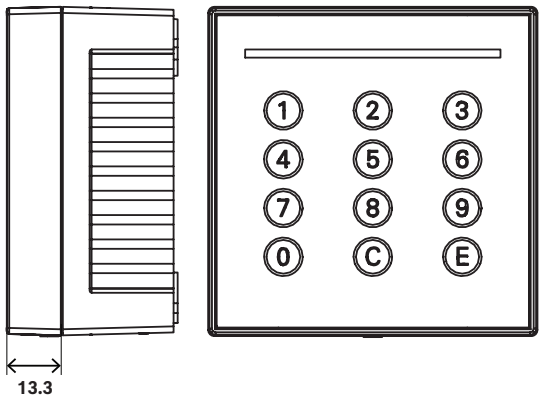


Figure 3.3: Dimensions of the reader with fixed wall bracket and mounting box
Available accessories: ARA-ESELECT-GWA, ARA-ESELECT-WWA.

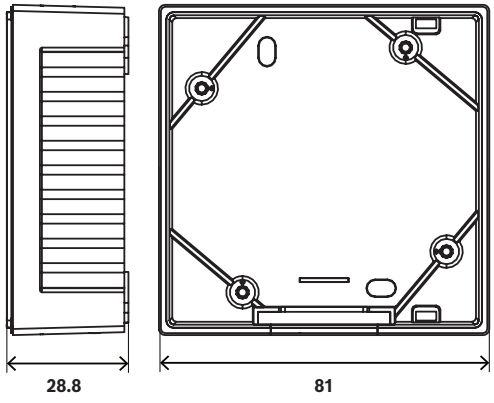


Figure 3.4: Dimensions of the wallmount box

3.2 Supported protocol

The readers support the OSDP v2 protocol.

3.3 RFID technology

The LECTUS select E readers support the following RFID technology:
- MIFARE DESFire EV1
- MIFARE DESFire EV2
- MIFARE DESFire EV3
- MIFARE Classic

3.4 Transponder data

The following non-exhaustive list includes transponder media that are supported by the readers:
- MIFARE Classic (1k /4k)
- MIFARE DESFire 4k

- MIFARE DESFire EV1 2k / 4k / 8k
- MIFARE DESFire EV2 and EV3
- ISO 14443A transponder (CSN)

3.5 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.

Type of transponder media	Reading distances (cm)	
MIFARE	**EC-Format**	**Key fob**
Classic 1k	3.5	3
Classic 4k	4	*
DESFire EV1 2k / 4k / 8k	1	1

*-key fob not available during the test.
Note: Not all designs and transponder media were available at the time the distance was measured.

Notice!
The measurement of the previous reading distances was based on a selection of transponder media. Consider the measured reading distances as typical guide values.
If other transponder media are used, such as different chip type, design, size or production process, the reading distances may differ. It is recommended to do 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:

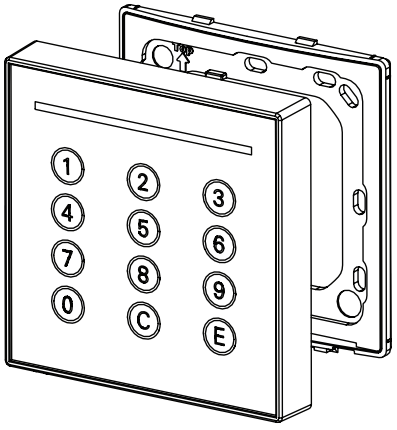
- "Shade" or shield the data carrier with metal, such as EC card in your wallet, key fob on your key ring, etc.
- No optimal coupling, i.e., the antenna surface of the data carrier is perpendicular (90 °) to the antenna surface of the reader
- Data carrier itself
  - key fob (small active antenna surface)
  - "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.).

4 Installation

4.1 Considerations on installation location

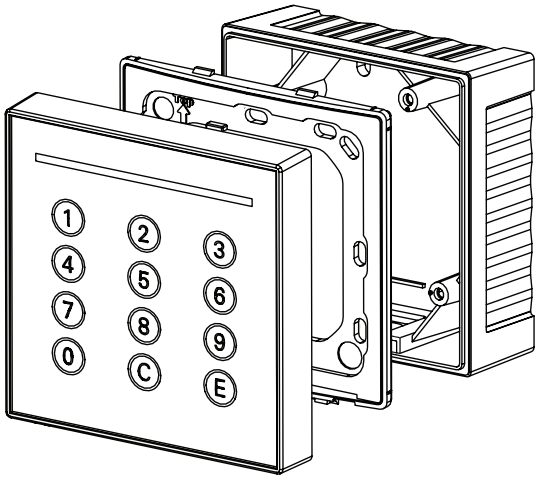
When choosing the installation location, please note:
The readers can interfere with each other or be negatively influenced by other systems and sources of interference. The readers can still disturb each other at a distance of approx. two to three times the reading distance. High-energy sources of interference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

4.2 Mechanical structure of the flush-mount installation



4.3 Mechanical structure of the surface-mount installation

Note : This installation requires the wall mount frame that is optionally available.



4.4 Installing data and supply lines

When supplying the reader with power, 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.

4.5 Assembly preparation

1. Lay the connection cables according to the local conditions and prepare them for connection.
2. Remove the plug-in connector from the reader module and connect the wires according to the following graphic and table.

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!

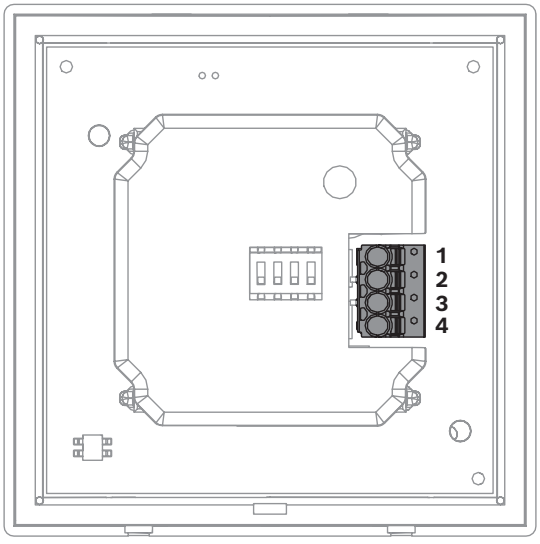


Figure 4.1: PINs and respective numbers at the back of the reader

Connection terminal	
PIN number	**Connector assignment**
1	RS485 data “A”
2	RS485 data “B”
3	DC (0V)
4	DC+ (from 8 to 30 VDC)

Wire type	Wire Gauge	Diameter
Stranded wire	AWG 28-16	Cable stripping length 6 to 7 mm
Solid wire		

NOTE: No additional tool is required to connect the wires to the reader. Push the correspondent orange button to plug a flexible wire into the connector. Solid wires and ferrules can be plugged in directly.

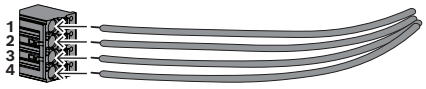


Figure 4.2: Inserting solid wires in the connector

4.6 Assembling the reader

4.6.1 Mounting the reader support

Flush-mount installation

1. Pass the connector with the fixed wires through the opening of the wall bracket.
2. Fix the wall bracket to a DIN device socket, for example, with a screw spacing of 60 mm by using two of the provided screws.

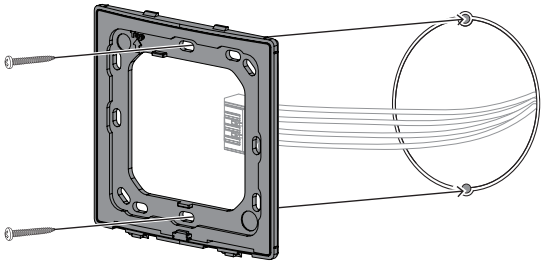


Figure 4.3: Mounting the reader support in flush-mount installation

Surface-mount installation

1. Pass the connector with the fixed wires through the opening of the wallmount box.
2. Fix the wallmount box to the wall using the longer screws provided. The wallmount box can be fixed in any of the possible four positions.
3. Fix the wall bracket to the wallmount box by using four of the provided screws.

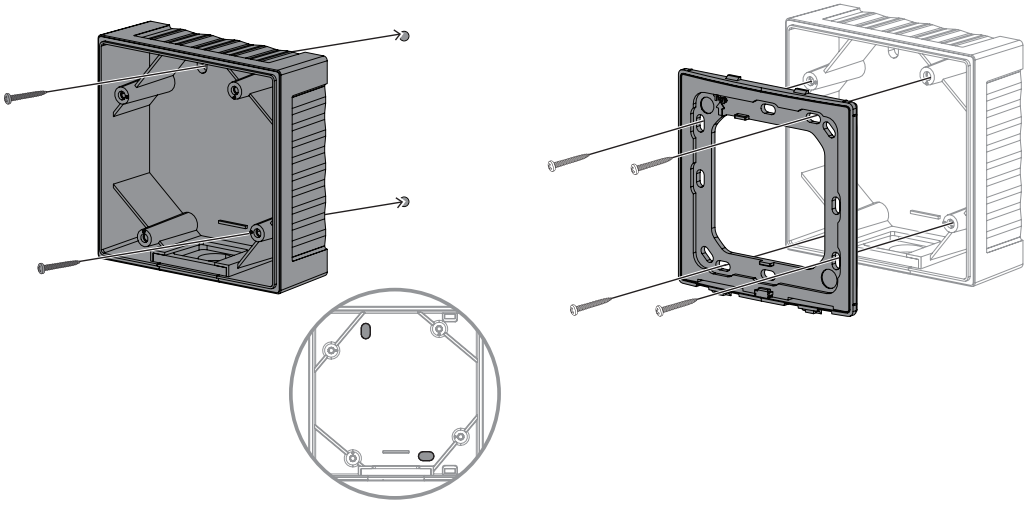


Figure 4.4: Mounting the reader support in surface-mount installation

4.6.2 Configuring the reader DIP switches

Depending on the firmware function, the DIP switches of the reader module must be set accordingly.

The reader has 4 DIP switches. Each switch is numbered from 1 to 4.

With the DIP switches it is possible to:

– Set the address of the reader (DIP switches 1 to 3)
– Set the BUS termination (DIP switch 4)

To change the reader configuration:

1. Power off the reader.
2. Set the DIP switches correctly.
3. Power on the reader.

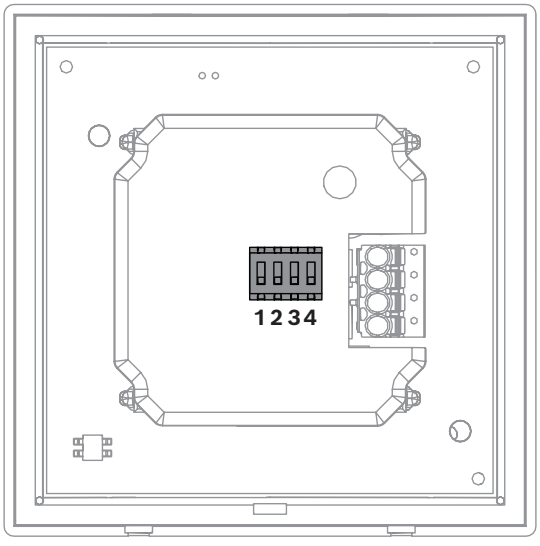


Figure 4.5: DIP switches and respective numbers at the back of the reader

DIP switch	**Address**							
	1	2	3	4	5	6	7	8

1	**ON**	OFF	**ON**	OFF	**ON**	OFF	**ON**	OFF
2	OFF	**ON**	**ON**	OFF	OFF	**ON**	**ON**	OFF
3	OFF	OFF	OFF	**ON**	**ON**	**ON**	**ON**	OFF
4	BUS terminator resistor (default: OFF)							

Table 4.1: OSDP protocol

NOTE: DIP switch 4 is reserved for the BUS terminator resistor and is not used for address 8, unlike other readers.
For information on resetting the OSDP key, refer to *Resetting the OSDP key, page 17*.

4.6.3 Connecting and mounting the reader module

After assembling the wall bracket:

1. Insert the wired connector in the backside of the reader module.
2. Hang the top of the reader module on the two little hooks at the top of the wall bracket.
3. Push the reader module slightly into the lower part of the wall bracket until it clicks.
4. Insert and tighten the smaller screw in the bottom of the reader module.

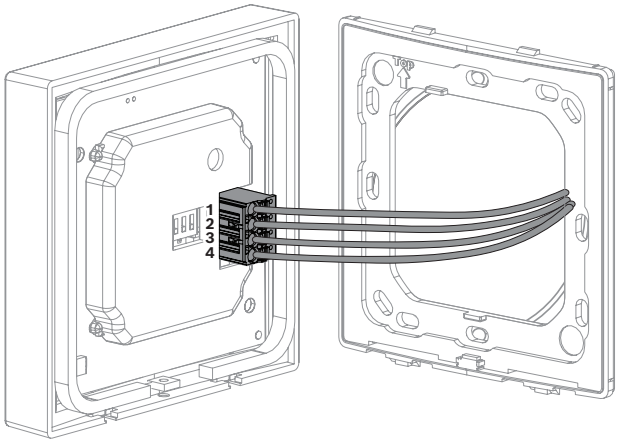


Figure 4.6: Inserting the connector in flush-mount installation (step 1)

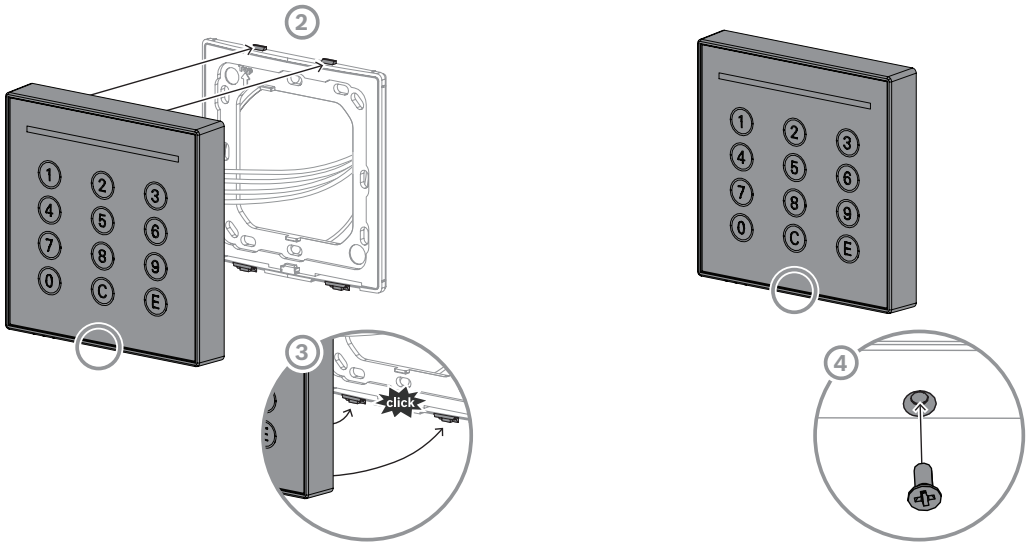


Figure 4.7: Connecting and mounting the reader module in flush-mount installation

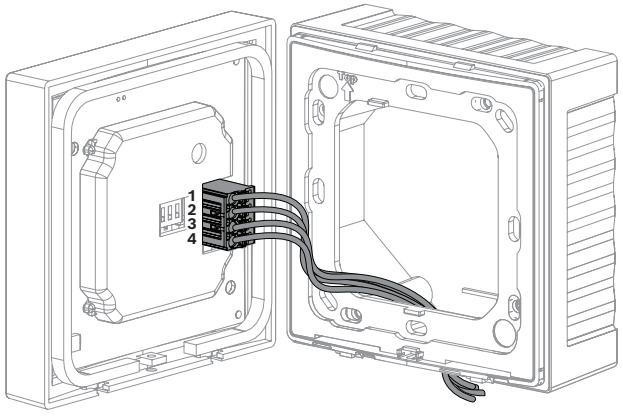


Figure 4.8: Inserting the connector in surface-mount installation (step 1)

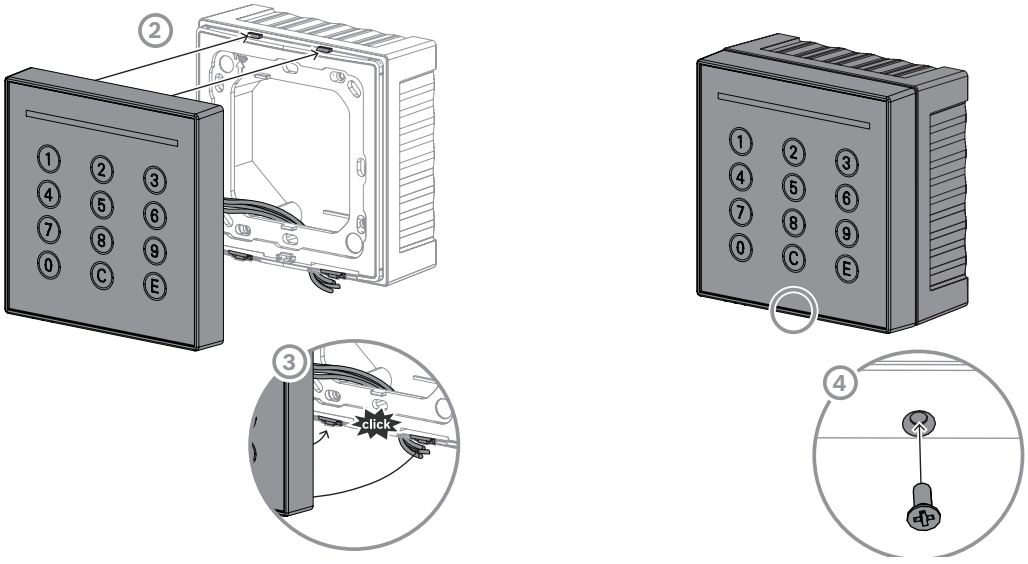


Figure 4.9: Connecting and mounting the reader the reader module in surface-mount installation

4.7 Unmounting the reader module

1. Remove the screw at the bottom of the reader module. Use a cylindrical object or a fine screwdriver with a maximum size of 3 mm.
2. Place the adequate object or screwdriver into one of the unlocking openings at the bottom of the reader and push carefully upwards. At the same time, slightly pull the reader module to the front. The reader module unlocks on one side.
3. Repeat the previous step for the other side.
4. Detach the connector from the reader module.

Notice!
Handle the screwdriver or corresponding object with care to avoid damaging the unlocking openings.

Notice!
Any changes that are done to the DIP-switches while the power is on are not considered.

4.8 Resetting the OSDP key

Upon delivery from the factory, each reader has the ‘OSDP installation mode’ set to active. When operating a reader with an AMC using OSDP secure channel, a dedicated generated encryption key secures operation and prevents the use of the reader in a different site.
It is necessary to reset the OSDP-key:
– if readers and/or access modular controllers need to be changed.
– if the reader must be disposed.

Use the separate configuration card ARA-OSDP-RES to perform a reset in a LECTUS select E reader and do the following:
1. Power off the reader.
2. Set all DIP switches to “0”.
3. Power on the reader.

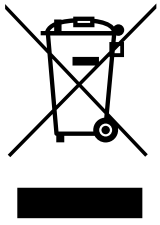
4. Within the first 5 seconds, present and hold the card in front of the reader.
5. After the reader beeps 5 times, remove the card.
6. After the green LED of the reader flashes in quick succession, power cycle the reader again by properly configuring the DIP switches. For information on how to configure the DIP switches, refer to *Configuring the reader DIP switches, page 14*.

5 Care instructions

- Do not operate the reader with sharp objects, such as rings, fingernails and keys.
- 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.
- Do not use cleaning agents with mechanical effects, such as scouring milk and sponge.
- Only clean the reader with a soft, damp cloth and use clear water only.

6 Disposal

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.

7 Technical specifications

Mechanical

Dimensions (H x W x D) (mm)	81 mm x 81 mm x 24 mm
Dimensions (H x W x D) (in)	3.2 in x 3.2 in x 0.9 in
Color	Black; Silver | White
Material	PVC
Mounting type	Surface-mounted; Flush-mounted
Weight (g)	79 g | 81 g
Weight (lb)	0.17 lb | 0.18 lb

Environmental

Usage	Indoor; Outdoor
Operating temperature (°C)	-25 °C – 60 °C
Operating temperature (°F)	-13 °F - 140 °F
IP rating	IP54

Electrical

Operating voltage (VDC)	8 VDC – 30 VDC
Power consumption (VA)	1.70 VA

Operation

Audible indication	Yes
Credential type	Cards/keyfobs/tokens | PIN
Keypad	No | Yes
Optical indication	LED
Software compatibility	Building Integration System; Access Management System
Wireless transmission frequency	13.56 MHz
Reading format	MIFARE DESFire EV1; MIFARE DESFire EV2; MIFARE DESFire EV3; MIFARE Classic; ISO 14443A (CSN/UID)*
Read range (cm)	– MIFARE Classic: card approximately 40 mm maximum, key fob 30 mm maximum – MIFARE DESFire EV1: card approximately 10 mm maximum, key fob 10 mm maximum

Connectivity

Reader interfaces	RS485

System integration

Protocols / standards	OSDP v2

* It is not set by default. Requires specific configuration with OSDP protocol. Ask for more information in advance.

8 More information

Refer to the latest technical documentation for this product available for download in the Bosch online catalog.

Manufacturing dates

For product manufacturing dates, go to www.boschsecurity.com/datecodes/ and refer to the serial number on the product label.

Support

Access our **support services** at www.boschsecurity.com/xc/en/support/.
Bosch Security and Safety Systems offers support in these areas:

- Apps & Tools
- Building Information Modeling
- Warranty
- Troubleshooting
- Repair & Exchange
- Product Security

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