INSTALLATION MANUAL

2N FORTIS HANDLE
ELECTRONIC LEVER

EN

2N TELEKOMUNIKACE a.s.
Modřanská 621 | Prague 4 | 143 01

2N.com

Table of contents

1 About this document

This operating and assembly manual is valid for all versions and is intended for technicians, who are responsible for assembling and disassembling.

The knob cylinders of 2N can be purchased and assembled modulary. This document will show the knob module in its determined context with the separately available cylinder bodies and mechanical knobs.

This operating and assembly manual is valid for all versions and is intended for technicians, who are responsible for assembling and disassembling, as well as for end customers.

- Read this operating and assembly manual carefully for smooth and safe operation and follow the instructions given in it before operating the door lock.
- Keep the operating and assembly manual in a safe place.

2N does not assume any responsibility for disruptions or hazards such as as non-access to injured personnel, malfunctions, property damage or other damages resulting from non-compliance with this operating and assembly manual or incorrectly configured door handles.

- If there are still any doubts after reading this operating and assembly manual, please contact your respective dealer or 2N directly.

1.1 Warnings

Warnings warn against hazards which may arise when using the door handle. There are two levels of warnings that can be identified based on the signal word:

Signal word	Meaning
CAUTION	Indicates a hazard with a low risk that can lead to mild or moderate injury if not avoided.
ATTENTION	Indicates a hazard that results in property damage.

1.2 Symbols

The following symbols may be used in this manual:

This symbol indicates a usage instruction that must be followed by the user.

• This symbol indicates an entry in a list.

¡	This symbol indicates useful and important information.

2 Security

2.1 Proper use

The product is intended to be installed in building doors and for opening the doors. It is compatible with the commonly used European standards for locking systems. The product can be used indoors as well as outdoors (depending on the product version).

The different versions allow it to be used in all the common doors such as wood, steel and aluminium doors as well as doors with narrow frames having a backset of more than 28 mm (depending on the product version).

The assembly should be carried out only by trained technicians. Only the components approved by 2N should be used for installation and maintenance.

Any other use is considered as improper and may result in damage to material or even in physical injury.

2.2 Improper use

The product should not be used for locking up people or animals as well as supplies required in case of emergencies (for example defibrillator, emergency medication, fire extinguishers, etc.).

The product should not be used in potentially explosive surroundings.

Specially approved versions that are intended for the purpose should be installed and used in fire, smoke resistant doors and emergency exit locks. The applicable regulations should be followed.

The product should not be used if the housing or the electronics is damaged. Changes or retrofits to the product are not allowed. The product should not be used outside the given specifications.

The product should not be used in doors that do not open freely or in doors or lock cases that are damaged. The product should not be used as a stopper against obstacles.

2.3 General safety instructions

Follow these basic safety instructions when using the door handle:

- Installation and battery replacement should only be done by qualified technicians according to the instructions in this operating and assembly manual.
- Do not use the door handles in potentially explosive areas.
- Do not make any kind of modifications to the door handles, with the exception of those described in this operating and assembly manual.
- Do not apply paints or acids to the door handles.
- Do not heat the door handle and battery beyond the specified storage temperature.
- Use only original spare parts and accessories from 2N to prevent malfunctions and damages.

3 Product description

3.1 Functional description

The reading unit, the communication electronics, the mechanical system and power supply, are integrated within the door handle.

Different RFID Credentials can be used as keys fort, such as ISO cards or key fobs.

General system features:

- Inner fitting fixed mechanically (only for one-sided electronic authorization)
- Suitable for all doors having a thickness of 30 mm to 110 mm
- Square thickness of 7 mm, 8 mm and 9 mm.
- No cabling required

3.1.1 Battery management

The electronic door handle 2N Fortis Handle comes with a battery management system, which indicates the need for battery replacement by means of a visible and audio signal, when the battery power reduces (capacity loss) during the final 1,000 operations of the battery (6.2.2. Replacing the battery).

The signal is given out in two phases:

Phase 1

If an authorized key is held in front of the reading unit, then the engaging of the door handle is accompanied with flashing of red light (5 times) and 5 short audible signals.

Phase 2

The battery needs to be changed immediately.

If an authorized key is held in front of the reading unit, then the red LEDs flash (5 times) accompanied by 5 short audible signals. The engaging of the door handle is delayed by 5 seconds, during which time the green LEDs flash.

The access data, the events log, the settings of the door handle and the time are stored on non-volatile memory and thus retained even when there is no power supply, for example, when changing the battery or if the battery discharges completely. The time is written to the non-volatile memory once every 30 minutes. If the power supply remains off, then the clock comes to a standstill after a few seconds and starts running from the last stored value onwards after the power supply is restored.

3.1.2 Event log

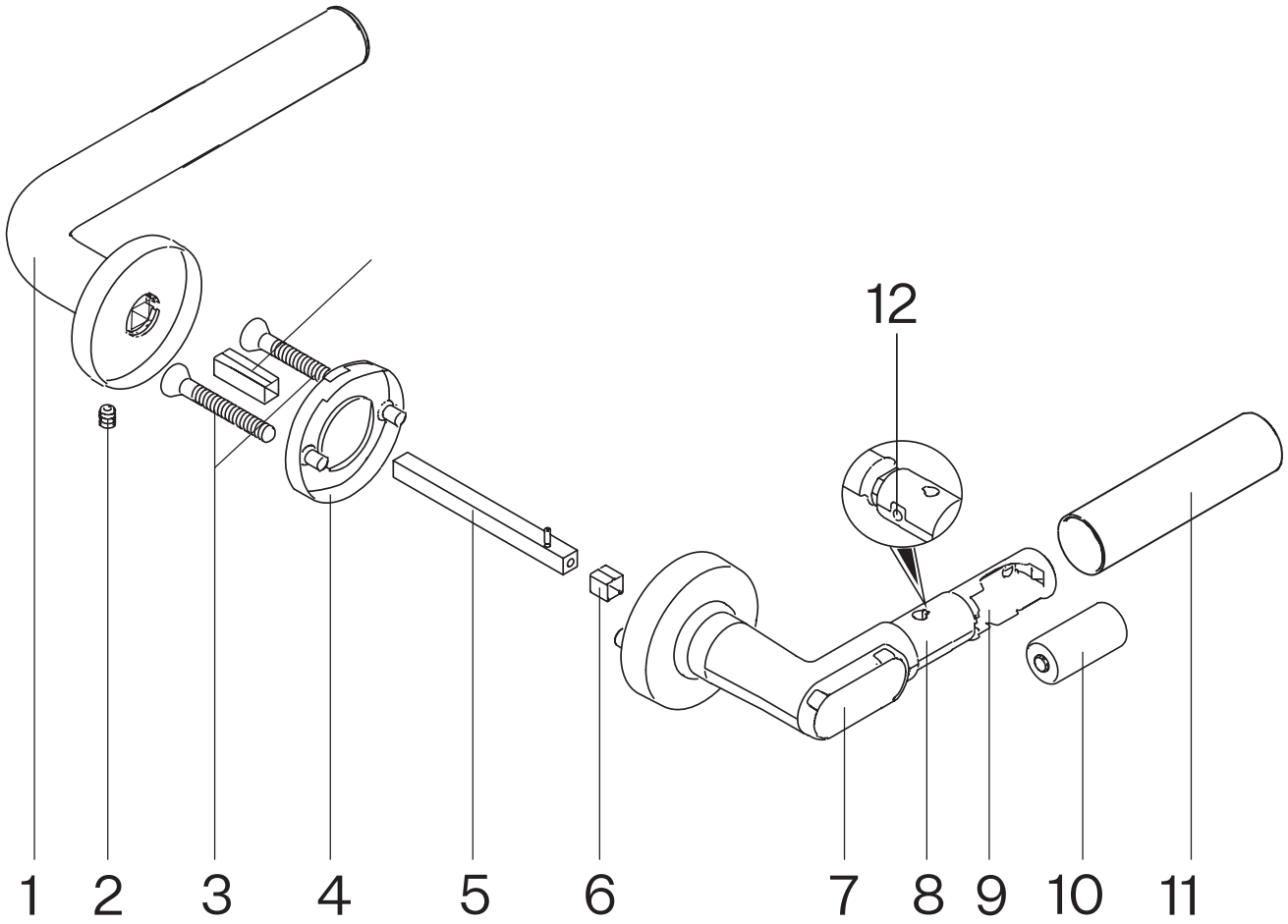
The last 500 events of the door handle are stored in the event log. This number may also reduce depending on the individual concept used.

Event logging can be enabled or disabled for each door handle individually, to comply with specific data privacy guidelines. For this prupose, please contact your system integrator.

3.2 Design

3.2.1 One-sided electronic authorization

Round Rose



1	Mechanischer door handle
2	Locking screw
3	Mounting screw
4	Opener holder (with bayonet lock)
5	Square pin with spiral clamping
6	Adapter sleeve (only for 7 mm square pin)

7	Reading unit
8	Electronic door handle
9	Battery compartment
10	Battery
11	Gripping sleeve
12	Grub screw for gripping sleeve

3.4 Technical data

3.4.1 General technical data

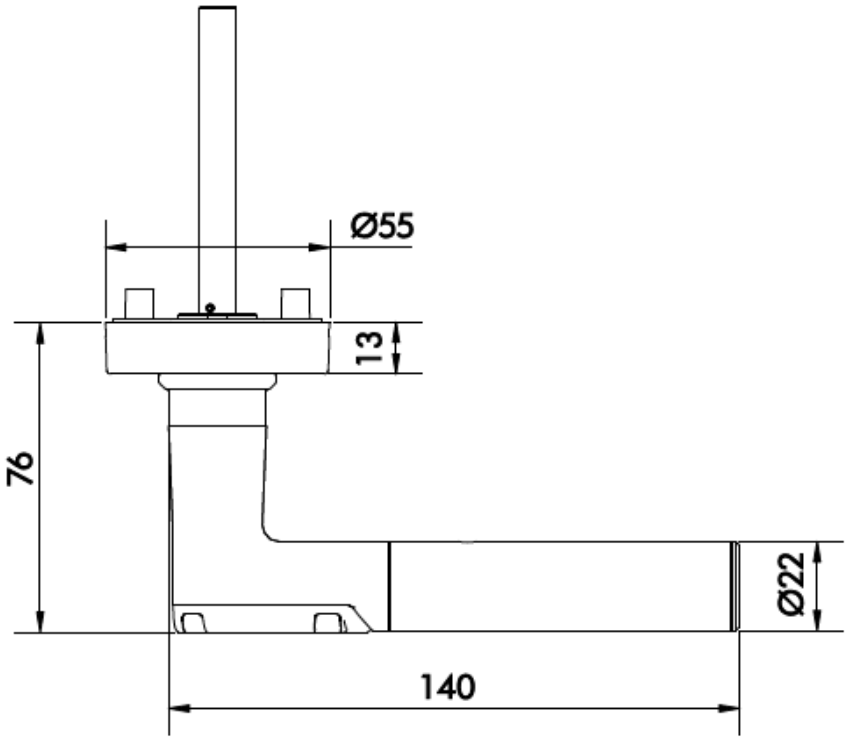
Name	Value
Dimensions of the cylinder	Round rose: 28 mm
Door thickness	30 mm to 110 mm
Maximum door weight	300 kg
Swivel angle	45°
Supported Credential Types	MIFARE® DESFire® (EV1/EV2/EV3)
Radio	Frequency: 2,4 GHz (Bluetooth® Low Energy) Maximum transmission power: 4 mW
Power supply	CR123A 3V battery (1 piece), 3 volts
Battery life	Up to 230 000 operations

3.4.2 Ambient conditions

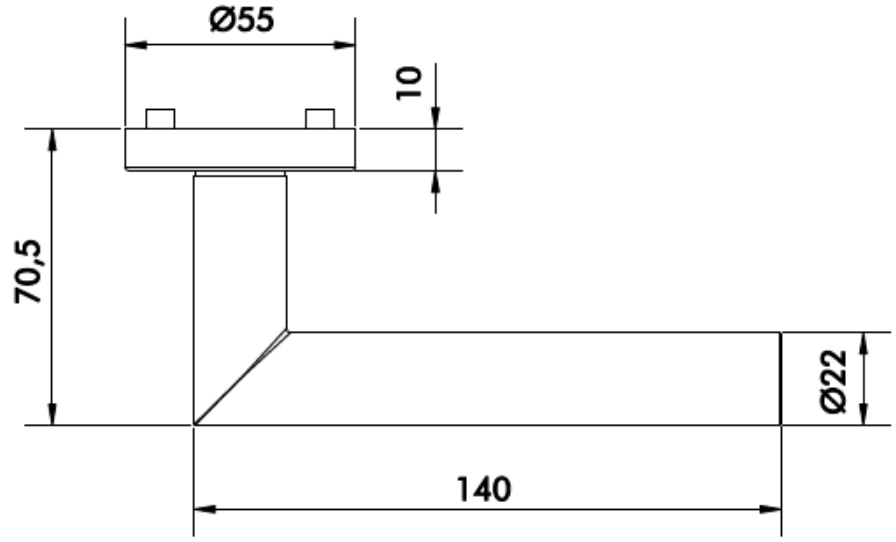
Name	Value
Operating temperature	+5°C to +55°C (indoor version)
Storage temperature	-40°C to +65°C
Maximum relative humidity (door handle)	Up to 95 % non-condensing
Installation location	Indoor or outdoor (depending on the product model)
Protection class	Version for indoor use: IP40

3.4.3 Dimensions

Round Rose
electronics side



Round Rose
mechanical side



3.5 Management accessories

The Clex public firmware can be flexibly modified by integration partners to the needs of individual projects. The product can thus be flexibly integrated into third-party systems. Depending on the integration project, various third-party programs are therefore used for management.

3.5.1 Clex SCT

For Clex public locking units in the OSS Standard Offline version, the Clex SCT program is available as a management tool. It can be procured from the respective system integrator.

3.5.2 Servicekey (programming key)

The service key (programming key) is created in the respective management system. Using the service key, a user identifies himself as an administrator of the locking system. If the service key is held in front of the locking system component, then the respective component goes into programming mode. It is then possible to adjust the settings of the knob module.

Detailed settings for integrating the Clex SCT with the 2N Access Commander are available in the 2N Access Commander User Manual available at **2n.com/manuals**.

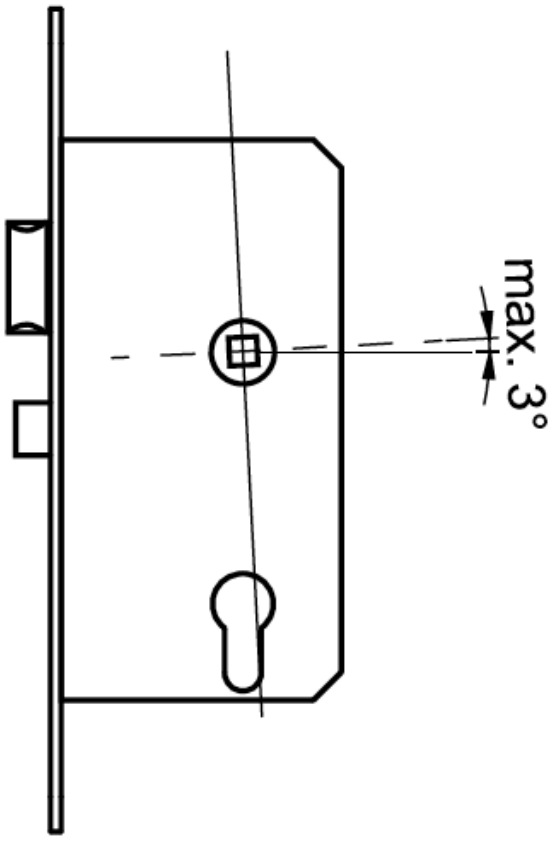
4 Assembly

4.1 Assembly instructions

4.1.1 General assembly instructions

> **!**
> - **The cover of the electronic door handle can be damaged if the mounting screws are too long!**
> - **Tighten the mounting screws with a torque of 2 Nm.**

- 2N Fortis Handle is not designed for fire / smoke resistant door or in an escape door.
- If a cylinder holder is present in the door, then it should be sealed properly, for e.g. using a dummy cylinder.
- Ensure that the latches or seals fitted to the door do not hinder the proper operation of the 2N Fortis Handle.
- Ensure that the door handle does not protrude and prevent the door from swinging freely.
- When installing the 2N Fortis Handle the hole in the door for inserting the handle pin should have a diameter of at least 25 mm.
- Before assembling the door handle, always check whether all the components can move freely.
- After assembly, check the function with the door open.
- The pre-tension in the mortise lock or the deviation of the horizontal basic position must not exceed 3°. If the deviation is greater, the electronic door handle cannot engage and disengage.



4.1.2 Drilling template

- The drilling template supplied is used to mark the drilling holes.

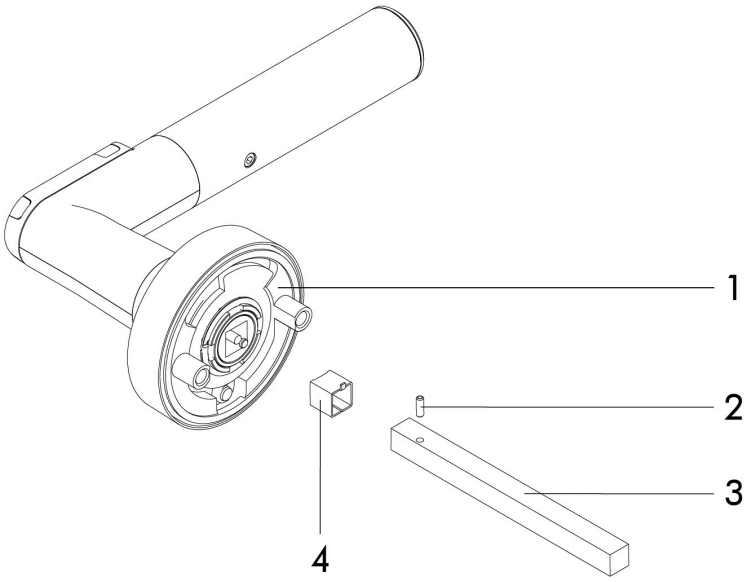
Circular rose

- There should be a distance of at least 38 mm between the two drilling holes for the handle rose and that for the key rose.

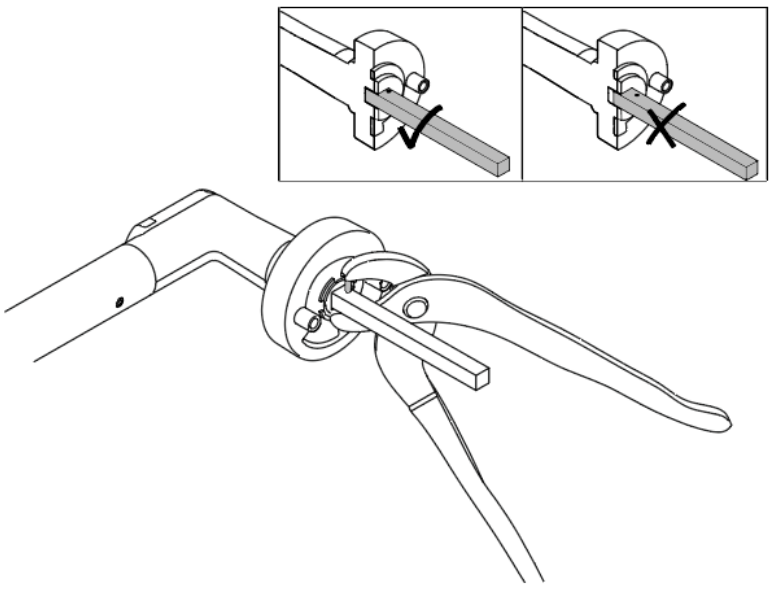
4.2 Assembly

4.2.1 Assembling the square pin

The square pin has to be assembled before installation on the electronic door handle (outside). This applies to all the versions and is shown here using an example of the round rose version.



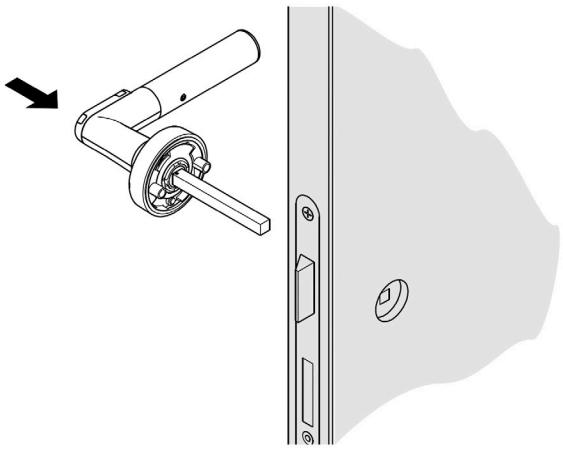
1	Electronic door handle
2	Spiral clamping pin
3	Square
4	Adapter sleeve for square (only for 7 mm square)



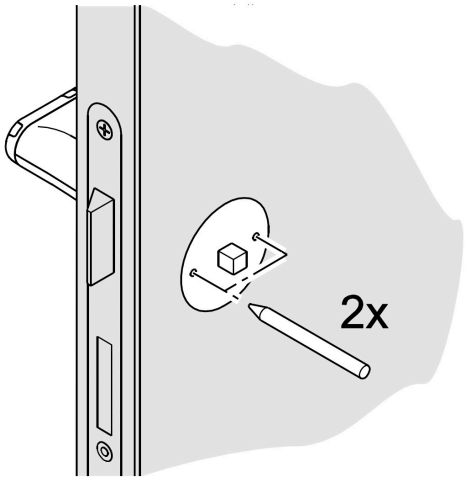
- Insert the adapter sleeve into the square holder (if available)
- Insert the square onto the retaining pin and into the square holder
- Insert the spiral clamping pin into the square

4.2.2 One-sided electronic authorization

Round Rose insert the square pin of the electronic door handle into the square nut of the lock.

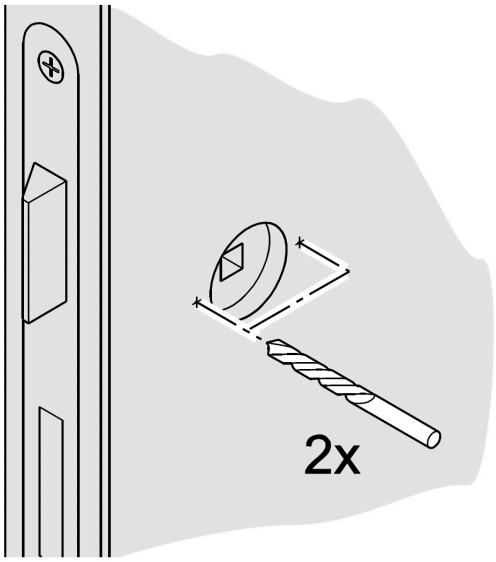


Place the drilling template on the square pin, align horizontally and centre punch the hole markings.



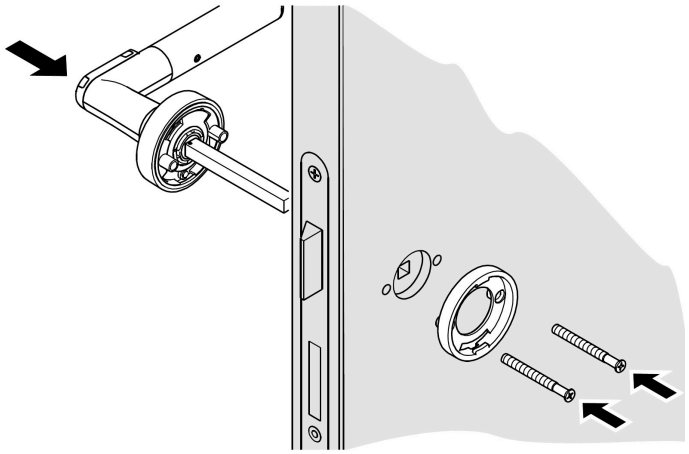
Remove the square pin again.

Drill holes of diameter 8 - 8.5 mm at the marked positions. Do not drill into or through the lock casing.

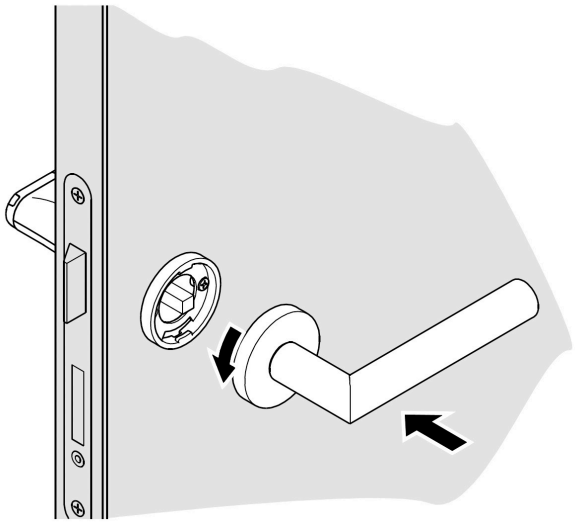


Insert the square pin of the electronic door handle once again into the square nut of the lock. If necessary place the adapter sleeve supplied on the square pin.

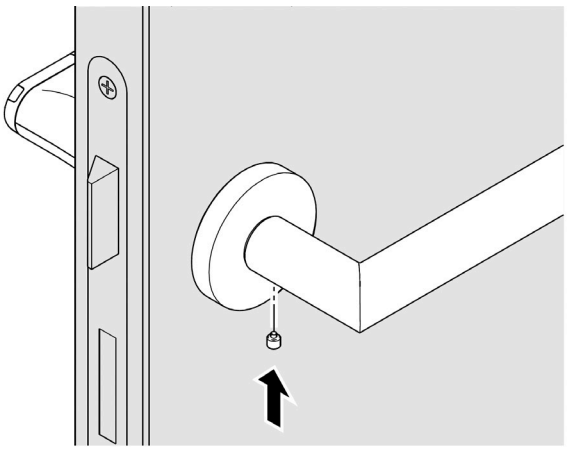
Insert the holder of the mechanical door handle from the other side and screw it along with the electronic door handle through the door panel. Use the supplied mounting screws.



Insert the mechanical door handle keeping it in a horizontal position. For door handles pointing to the right, tighten the rose towards the left, guide it over the handle holder and engage the bayonet lock. Accordingly, tighten the rosetowards the right for door handles pointing to the left.



Insert the locking screw from the bottom of the handle and tighten it.



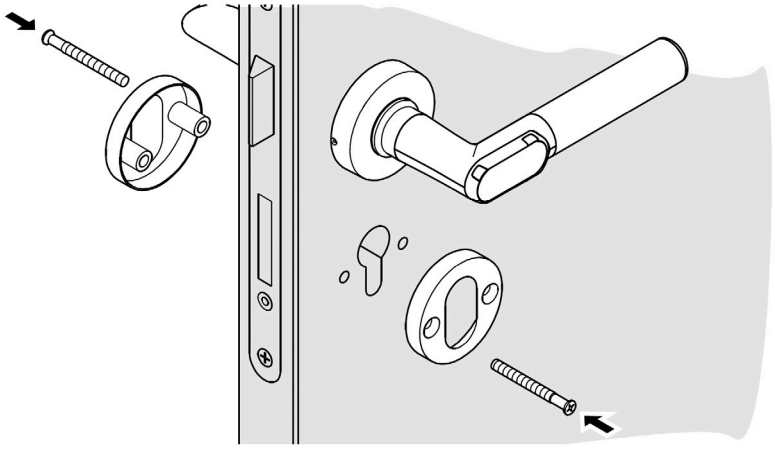
Check the functionality and easy movement of the door handle with the door open. The handle is already engaged when delivered. When engaged, the catch of the lock should be completely inside the lock casing when the latch is pressed down.

To operate the door handle, insert the battery and close the housing (see chapter 6.2.2 Battery replacement). The electronic door handle disengages only after the battery is inserted.

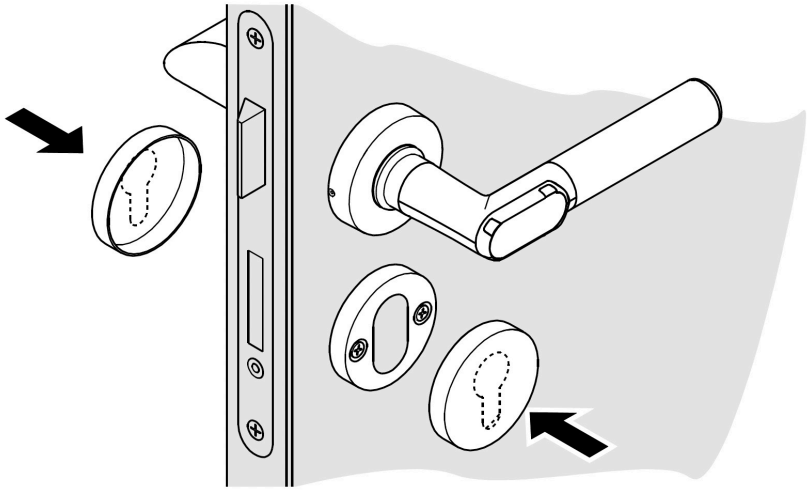
After holding up an authorized key for the first time, only the two upper LEDs light up as an indication. When inserting the battery, make sure that the handle is in its designated horizontal position. This is necessary for the orientation sensor to calibrate and the device to function correctly.

4.2.3 Assembling the key rose

- Place the drilling template, align horizontally and center punch the hole marks.
- Drill holes of diameter 7 - 7.5 mm at the marked positions. Do not drill into or through the lock casing.
- Screw both the key rosettes together through the door panel.



- Place the rose covers and press firmly, till they engage audibly.



5 Operation

The electronic door handle operates only the latch. Hence it should be ensured that the locking cylinder of the door is unlocked or the door is not locked in some other manner. Otherwise, the door cannot be opened even after holding up an authorized key.

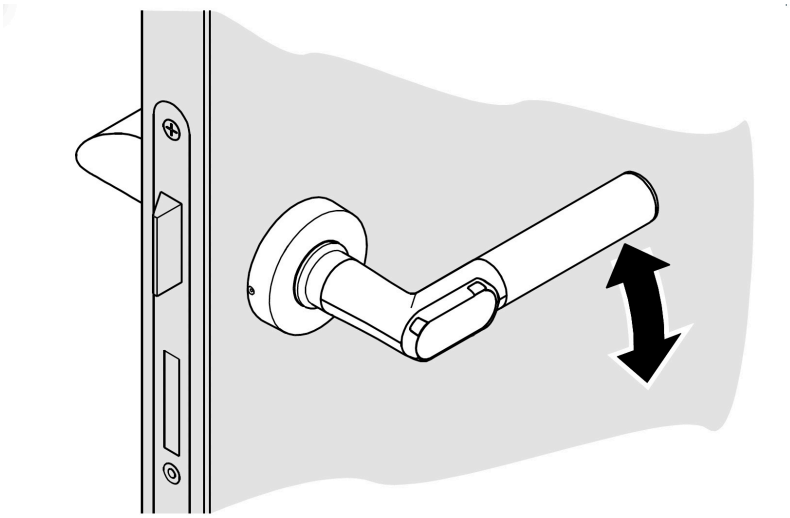
5.1 Automatic wake up

The door handle is in sleep mode as long as it is not used. To check the authorization of a key, it needs to be woken up from the sleep mode. This normally happens automatically when a key is held in front of the reader unit.

If, however, the electronic door handle has been woken up 24 times (for example by metallic objects in the surroundings) without reading a key, then automatic wake up is disabled.

In this case the door handle has to be woken up manually.

- Press the door handle a few times to wake up the reading unit, till an LED starts glowing.
- Hold up the key in front of the reading unit only after this.



Automatic wake up is enabled once again by reading an authorized key.

5.2 Opening the door

Precondition: Handle is in horizontal position.

- Hold the authorised key in front of the reading unit till the green LED starts glowing.

The door handle engages and the door can be opened by pressing the door handle.

The time duration for which the door handle remains engaged can be configured (1 to 15 seconds, the default value is 5 seconds). After successful authorization (engaging) at the door handle, the engagement time starts counting down. The engagement-time timer is reset as soon as the door handle is pressed.

The door handle disengages after the configured engagement time, if it is not pressed or when it is pressed and held.

The door handle disengages immediately, if it is released.

5.3 Toggling the door handle

Keys with special authorization can permanently engage or disengage the door handle. To switch (toggle) between the standard and the permanently open mode, proceed as follows:

- Hold the key with this authorisation in front of the reading unit for two locking cycles until success is signalled by a long beep and simultaneous glow of the LED.

Depending on the initial state, the door handle either engages or disengages permanently.

5.4 Signals

Function	Signal (audible and visible) and explanation
Rest mode	No audible or visible signal
Begin Service mode	— • Long beep followed by a short beep Green LEDs start flashing by units with 868 MHz Blue LEDs start flashing by units with Bluetooth®
End Service mode	• — Short beep followed by a long beep
Key taught	• • 2 short beeps, green LEDs start glowing
Key deleted	— — 2 long beeps, red LEDs start glowing
Read mode (after waking)	Red LEDs start flashing
Key not authorised	— Long low beep, red LEDs start glowing
Key authorised	Green LEDs start glowing
Toggling on	— Long loud beep, green LEDs start glowing
Toggling off	— Long loud beep, red LEDs start glowing
Reset	— Long low beep, all the LEDs are switched on briefly one after the other
Battery warning Phase 1	• • • • • 5 short loud beeps, red LEDs flash 5 times simultaneously
Battery warning Phase 2	• • • • • 5s 5 short loud beeps, red LEDs flash 5 times simultaneously, then 5 seconds engagement delay, green LEDs start flashing at the same time
Battery warning Phase 3	• • • • • 5 short loud beeps, red LEDs flash 5 times simultaneously, no connection but change battery position
Hold up authorized key with door handle pressed	• • • No engagement, 3 brief high audible signals, then green LED flashes once

6 Cleaning and maintenance

6.1 Cleaning

- Clean the door handle with a slightly damp cloth. Use only commercially available household cleaners.
- Do not use any abrasive or caustic cleaning agents.

6.2 Maintenance

6.2.1 Maintenance Cards

Maintenance cards provide authorized access to the lock. They allow for putting the lock in service, battery replacement, lock disassembly.

> ! The maintenance card cannot be used as a user access card at the same time.

Maintenance Card Settings

- Go to Settings > Electronic locks in Access Commander.
- Click Create on the Maintenance Cards tab.
- Select the card type to be created in the open dialog box.
- Click Continue.
- Tap the card on the connected USB RFID reader. Wait until the data has been loaded on the card.

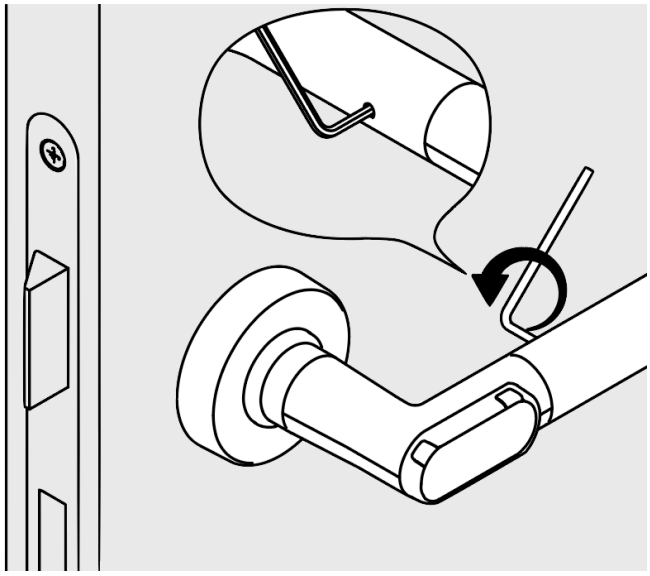
Refer to the 2N Access Commander User Manual for details about how to create maintenance cards for electronic locks.

6.2.2 Replacing the battery

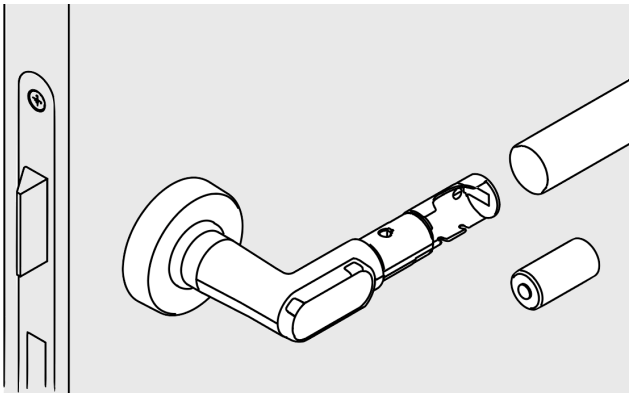
> ! **Danger of injury caused by improper use**
>
> - **Do not charge, open or heat the battery.**
> - **Always replace discharged batteries with new batteries.**
> - **Pay attention to the correct polarity when inserting the batteries.**

> ¡ Change the battery only with the door open. As long as the battery is removed, the knob module cannot engage and thus cannot open the door.

Using the Allen key provided, countersink the screw on the inside of the door handle.



Remove the gripping sleeve.

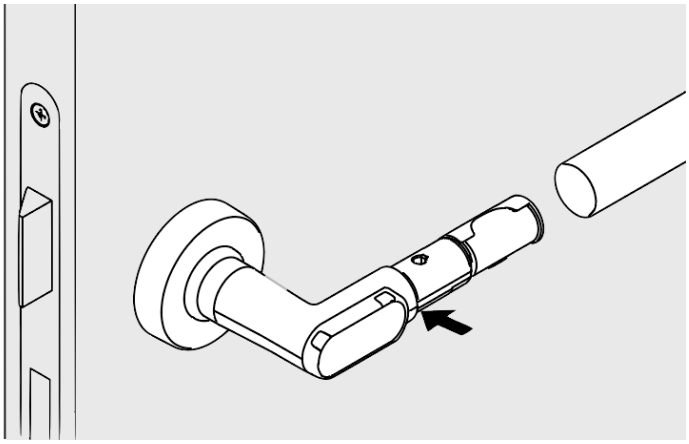


Remove the used battery and insert the new battery, paying attention to the polarity. The minus pole of the battery faces towards the gripping sleeve. When inserting the battery, the door handle has to be in the initital horizontal position so that the position sensor can be adjusted correctly and the proper functioning can be ensured.

6.2.3 Replace the large sealing ring

> **! Damage to the large sealing ring caused by improper handling**
>
> - **Do not use any sharp objects and do not stretch the sealing ring more than what is required for mounting.**

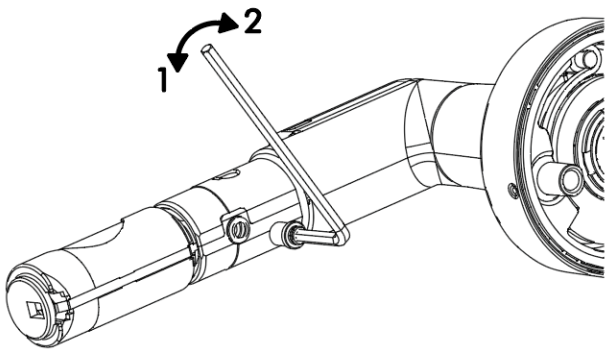
- Precondition: Gripping sleeve is removed



- To remove the large sealing ring, hold it down on one side with the thumb and slide the finger nail of the middle finger on the opposite side. The large sealing ring can now be grasped by the index finger.
- Insert the new large sealing ring.

6.2.4 Replace the large sealing ring

Unscrew the screw on the inside of the door handle in the direction of “1” completely and replace it with the new grub screw from the set. Insert the screw again until it stops in the direction of “2”.



7 Faults during operation

7.1 Fault indications

Function	Audible signal	Explanation
Memory fault / configuration fault	▬ ▬ ▬ ▬ ▬ •	5 long beeps, 1 short beep
Coupling error	▬ ▬ ▬ ▬ ▬ • •	5 long beeps, 2 short beeps
RTC fault (clock)	▬ ▬ ▬ ▬ ▬ • • •	5 long beeps, 3 short beeps
Internal error (unhandled interrupt)	▬ ▬ ▬ ▬ ▬ • • • •	5 long beeps, 4 short beeps
Internal error (bus conflict)	▬ ▬ ▬ ▬ ▬ • • • • •	5 long beeps, 5 short beeps
Internal error (bus conflict)	▬ ▬ ▬ ▬ ▬ • • • • • •	5 long beeps, 6 short beeps
Internal error (bus conflict)	▬ ▬ ▬ ▬ ▬ • • • • • • •	5 long beeps, 7 short beeps

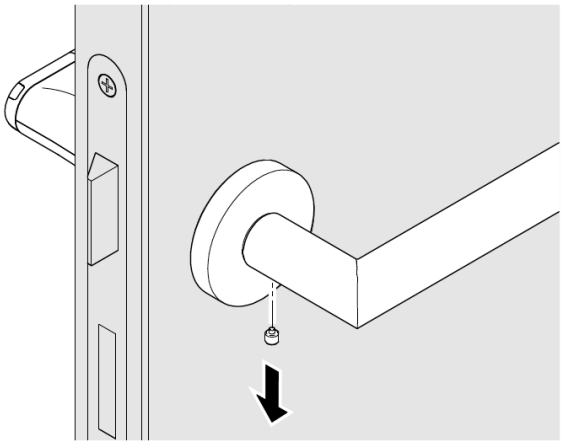
If the faults mentioned above occur repeatedly, then please contact the concerned dealer.

8 Disassembly and Disposal

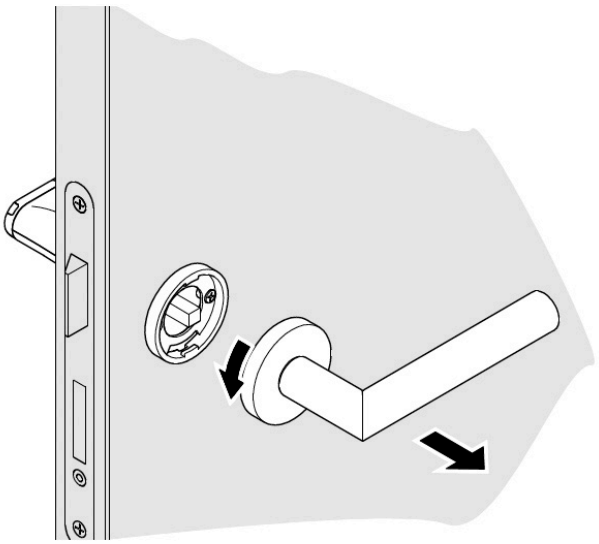
8.1 Disassembly

8.1.1 One-sided electronic authorization

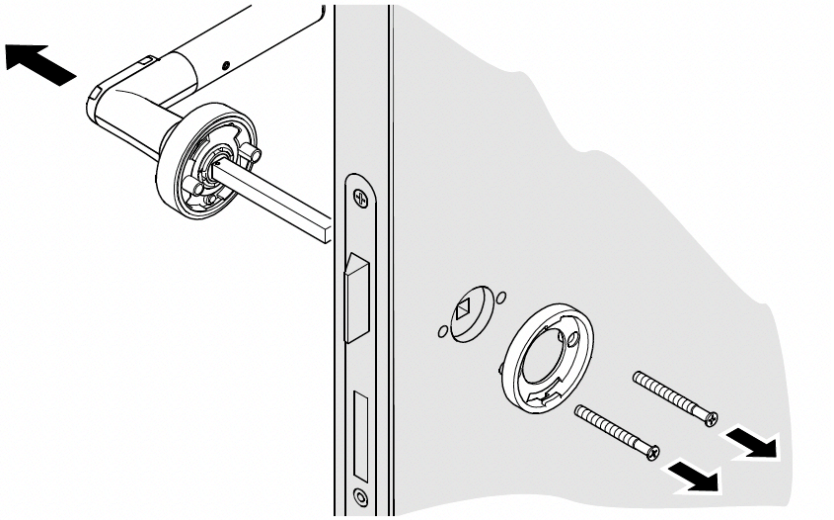
- Unscrew the locking screw at the bottom of the rose.



- Loosen the bajonet lock. To do this, tighten the rose to the left for door handles pointing to the right and remove the mechanical door handle from the square pin. Accordingly, tighten the rose towards the right for door handles pointing to the left.

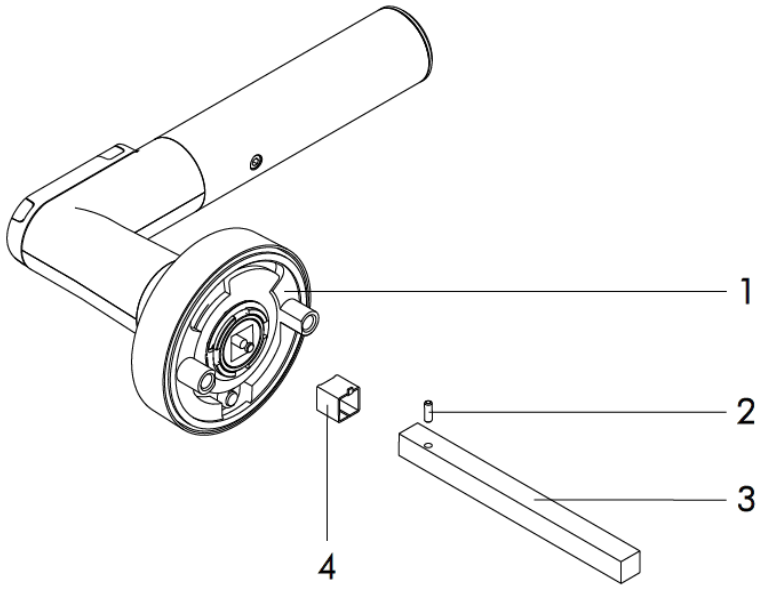


- Unscrew the handle holder. Remove the electronic door handle from the lock.



8.1.2 Removing the square pin

For shortening the square or if the length of the square does not match the lock, it may be necessary to remove the square.



1	Electronic door handle
2	Spiral clamping pin
3	Square
4	Adapter sleeve for square (only for 7 mm square)

- Remove the spiral clamping pin from the square using a punch
- Remove the square from the holder.
- Remove the adapter sleeve from the square holder (if available

8.2 Disposal

Do not dispose of the knob module with domestic waste. Disposal should be in accordance with the European Directive 2002/96/EC at a collection point for electrical waste.

- Defective or used batteries should be recycled in accordance with the European Directive 2006/66/EC.
- Follow the local regulations on separate disposal of batteries.
- Recycle the packaging in an eco-friendly manner.

9 FAQ

9.1 Door handle does not come to rest position

If the electronic door handle does not come to horizontal resting position by itself after being assembled, it may be due to the fact that the lock is not aligned properly. This can be corrected by increasing the hole diameter from 8 to 8.5 mm for mounting the door handle. The door handle can be mounted without any stresses.

9.2 Door does not open even though the motor is running

If the motor of the electronic door handle moves audibly when an authorised transponder is held up, but does not engage, then the position of both the door handles with respect to the lock casing has to be checked in resting position. Both the door handles have to be at 90° ± 1° with respect to the lock casing.