INSTALLATION MANUAL

2N FORTIS CYLINDER ELECTRONIC KNOB

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1 About this document

This operation and assembly manual describes the electronic knob module of the 2N Electronic Locks product family. It is part of the product and contains important information that is necessary for proper operation and maintenance.

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.
- After the installation, hand over the manual to the end customer and make sure that the customer familiar with its use.

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 locking units.

- 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 knob module. 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 2N Fortis Cylinder - Electronic Knob is intended for the installation in building doors and is meant for locking and unlocking doors. They should be fitted with a corresponding lock and fitting. Only the components approved by 2N should be used for installation.

The 2N Fortis Cylinder - Electronic Knob is intended for installation in DIN locks with Europrofile cylinders or in locks with Scandinavian oval profile.

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 knob cylinder:

- 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 knob cylinder in potentially explosive areas.
- Do not make any kind of modifications to the knob cylinder, with the exception of those described in this operating and assembly manual.
- Do not apply paints or acids to the knob cylinder.
- Do not heat the knob cylinder and battery beyond the specified storage temperature.
- Use only original spare parts and accessories from 2N to prevent malfunctions and damages.
- Only use batteries procured from 2N.

3 Product description

3.1 Functional description

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

Different RFID Credentials can be used as key for the electronic knob, for example, ISO card or key fob.

The electronic knob has the following system properties:

- Up to 256 access right groups
- Up to 16 individual access rights per key
- Up to 1 024 events can be recorded in the product
- Permanent engagement possible without additional power consumption
- Engagement time can be programmed from 1 to 15 seconds
- No cabling required

3.1.1 Battery management

The electronic knob module 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 operations of the battery (see chapter 6.2.1 Battery replacement).

The signal is given out in 3 phases. Please note that due to very different usages of the product and the chemical properties of the battery, not all three phases might be displayed in some cases.

Phase 1
The battery needs to be changed soon.

If an authorized key is held in front of the knob module, the locking access right is issued. The engagement is accompanied by red flashing (5x) and 5 short acoustic signals.

Phase 2
The battery needs to be changed.

If an authorized key is held in front of the knob module, the knob module first flashes green for 5 seconds, then the knob module engages. The engagement is accompanied by red flashing (5x) and 5 short acoustic signals.

Phase3
The battery needs to be changed immediately.

If an authorized key is held in front of the knob module, no locking access right is issued, but rather the knob module goes to the battery change position. In addition, the knob module flashes red 5x and gives 5 short acoustic signals.

The access data, the events log, the settings of the knob module 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 goes completely flat. 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 number of events logged can vary depending on the individual concept used.

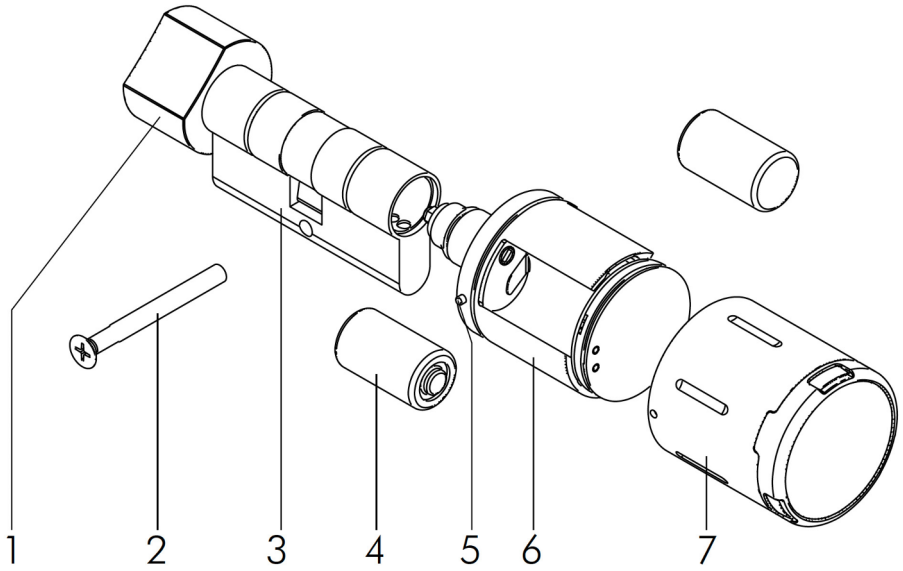
Event logging can be enabled or disabled for each knob module individually, to comply with specific data privacy guidelines. For this prupose, please contact your system integrator.

3.2 Design and configurations

3.2.1 Knob Cylinder

For one sided electronic access

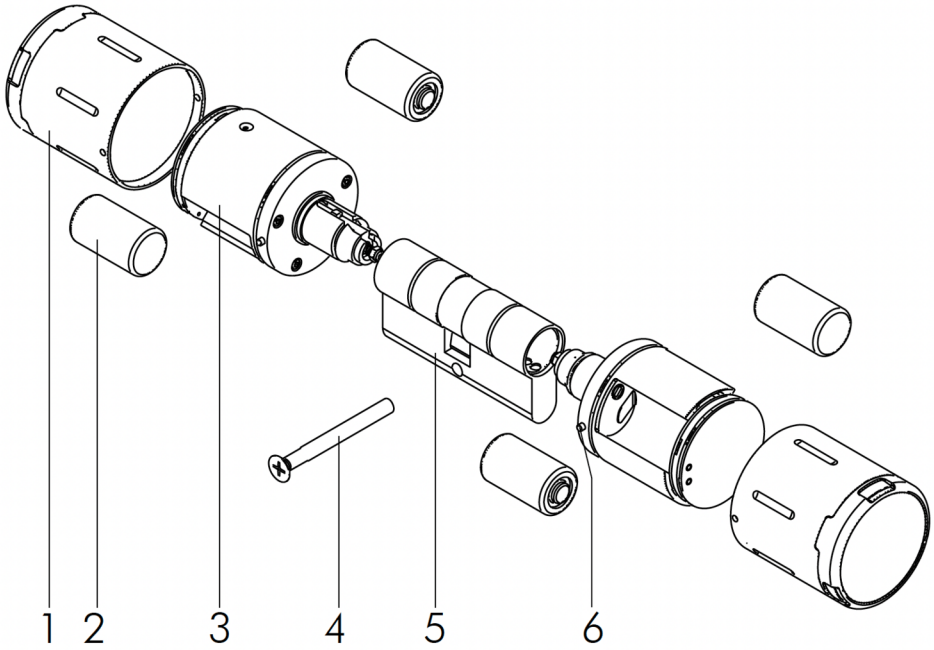
1	Mechanical knob
2	Fixing screw
3	Cylinder body
4	Battery
5	Sleeve-locking pin
6	Electronic knob
7	Knob sleeve



3.2.2 Double-Knob Cylinder

For two sided electronic access

1	Knob sleeve
2	Battery
3	Electronic knob
4	Fixing screw
5	Cylinder body
6	Electronic knob



3.3 Versions

Different versions of the electronic locking cylinder are available for selection:

- For inside or outside use
- Various cylinder casing lengths

3.4 Technical data

3.4.1 General technical data

For one sided electronic access

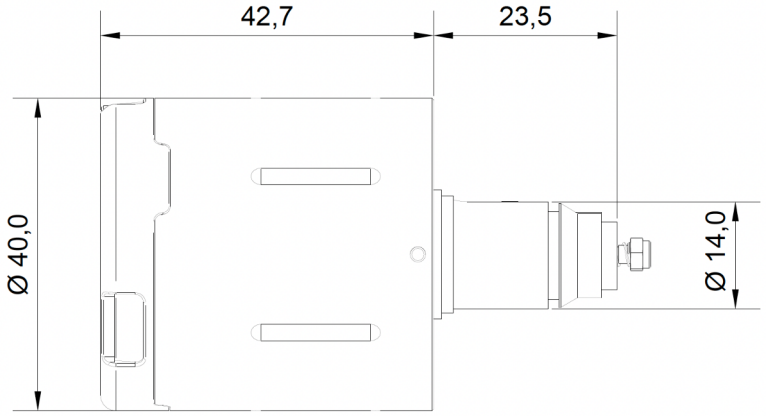
Name	Value
Dimensions of the cylinder	For Europrofil locks conforming to DIN 18252
Cylinder lengths Knob-Cylinder	From 26/26 mm or 30/30 mm to 70/70 mm in 5- mm steps; over-sizes available upon request
Cylinder lengths Double-Knob Cylinder	From 30/35 mm 70/70 mm in 5-mm steps; over- sizes available upon request
Length of the el. knob	42.7 mm (indoor version) / 44.8 mm (outdoor version)
Diameter of the el. knob	40.0 mm (indoor version) / 45.0 mm (outdoor version)
Supported Credential Types	MIFARE® DESFire® (EV1/EV2/EV3)
Radio	Frequency: 2,4 GHz (Bluetooth® Low Energy) Maximum transmission power: 4 mW
Power supply	Battery CR2 3V (2 units)
Battery life	Up to 80 000 operations

3.4.2 Ambient conditions

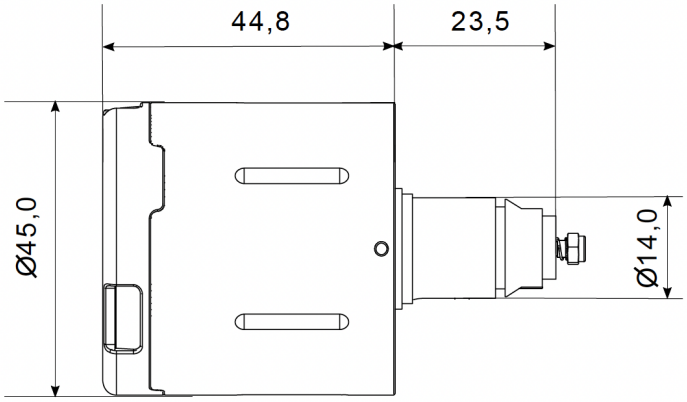
Name	Value
Operating temperature	+5°C to +55°C (indoor version) -25°C to +65°C (outdoor version)
Storage temperature	-40°C to +65°C
Installation location	Indoor or outdoor (depending on the product model)
Protection class	IP65 (indoor version) IP66 (outdoor version)

3.4.3 Dimensions

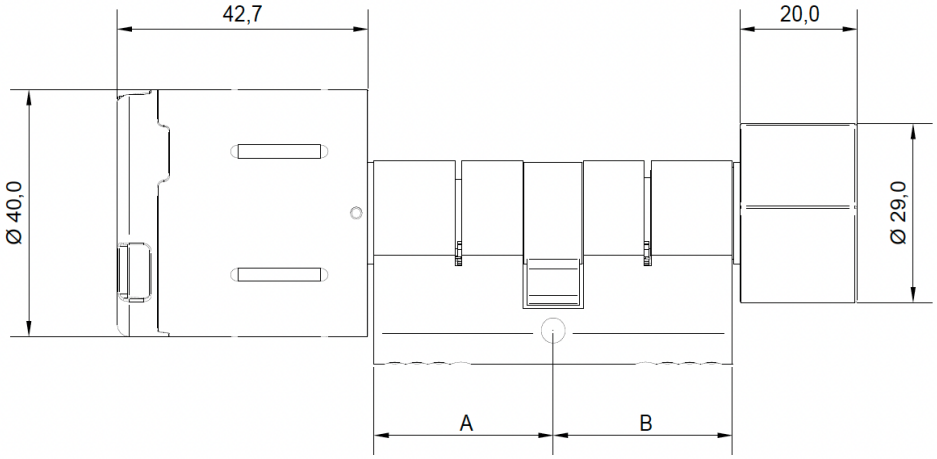
Electronic Knob



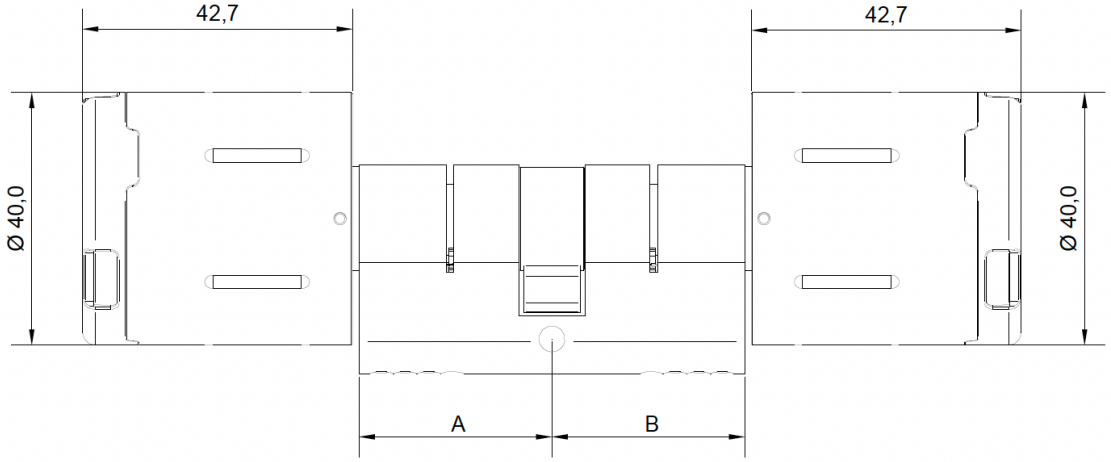
Electronic Knob IP66



Knob-Cylinder



Double-Knob Cylinder



3.5 Management SW

For the proper operation of 2N Fortis Handle, it is necessary to use two software tools – 2N Access Commander and 2N Fortis Commander.

3.5.1 2N Access Commander

2N Access Commander is the central access management system for configuring and administering 2N Fortis electronic locks and other 2N devices. It allows administrators to create users, define time profiles, and assign access rights using MIFARE® DESFire® RFID cards. User RFID cards as well as maintenance/service cards are created and managed directly in the system. It also generates a Master Encryption Key (MEK) and produces an encrypted project file containing the complete installation configuration, which is then used for on-site lock programming.

3.5.2 Servicekey (programming key)

2N Fortis Commander is an offline configuration and service application used to assign and manage physical 2N Fortis locks. Based on the encrypted project file created in Access Commander, it securely transfers configuration data to the locks via Bluetooth. It enables device pairing, maintenance operations, event retrieval, permanent lock/unlock control, and factory reset. After on-site configuration, the updated project file is uploaded back to Access Commander to synchronize changes and recorded events.

Detailed settings for 2N Access Commander and 2N Fortis Commander are available in the 2N Access Commander User Manual available at 2n.com/manuals.

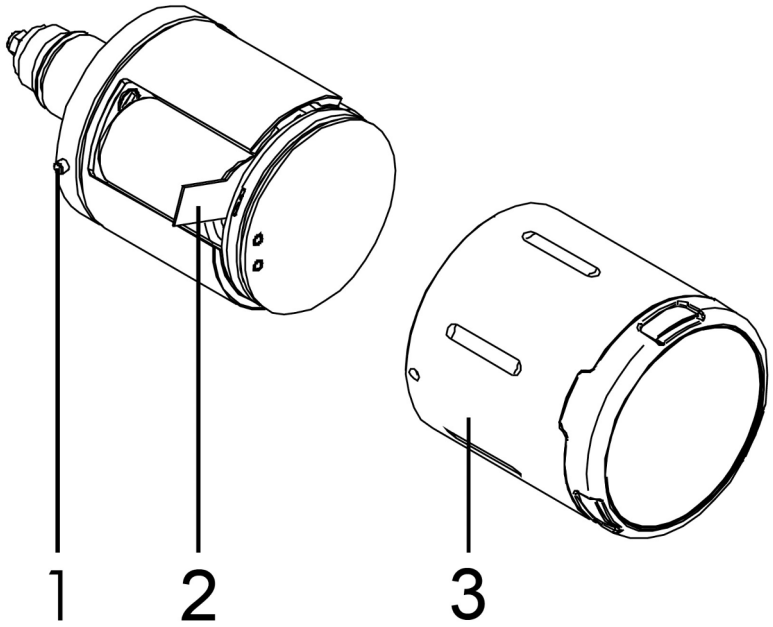
4 Assembly

4.1 Assembly instructions

4.1.1 General assembly instructions

- Ensure that the sealing affixed on the door does not hamper proper operation of the product.
- Ensure that the knob cylinder projections do not obstruct the free swing of the door.
- As electronic knob cylinders are supplied in a completely assembled state as standard, it may be necessary to perform the steps for disassembly, as described in chapter 8, before mounting.
- To activate the knob module, insert the batteries or remove the battery tag, if present, and close the casing (see chapter 6.2.1 Replacing the battery)
- Before mounting the knob module, always check that all components move freely.
- Carry out the assembly with the door open.
- Only for cylinders supplied as single components: During initial installation, put in 1 to 2 drops (max. 0.1 ml) of a non-resinous oil in the cylinder body. It should not be sprayed directly into the cylinder body with a spray can.

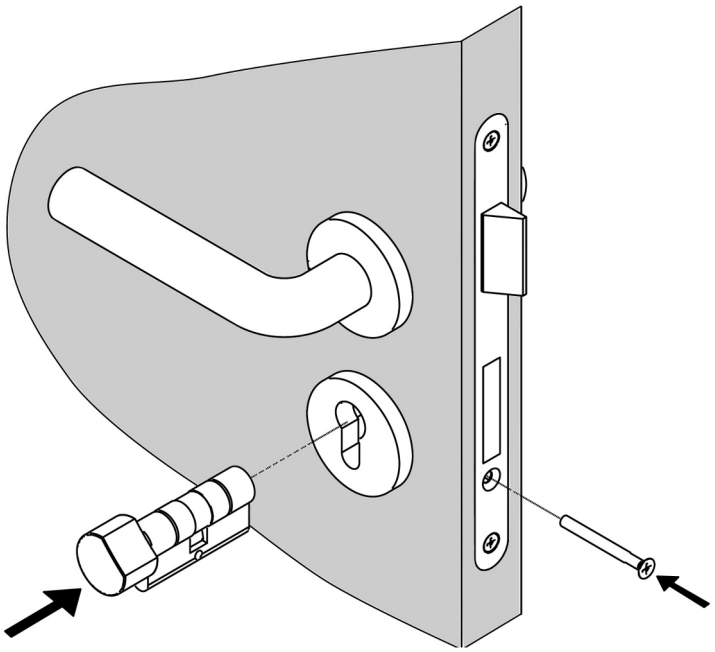
4.1.2 Removing the battery tab



- Remove the knob cover (3).
- Remove the battery tab (2).
- Press the cover locking pin in (1, the second battery locking pin is located on the opposite side of the knob module) and replace the knob cover (3). Please ensure that the locking pins are properly locked in the cover.

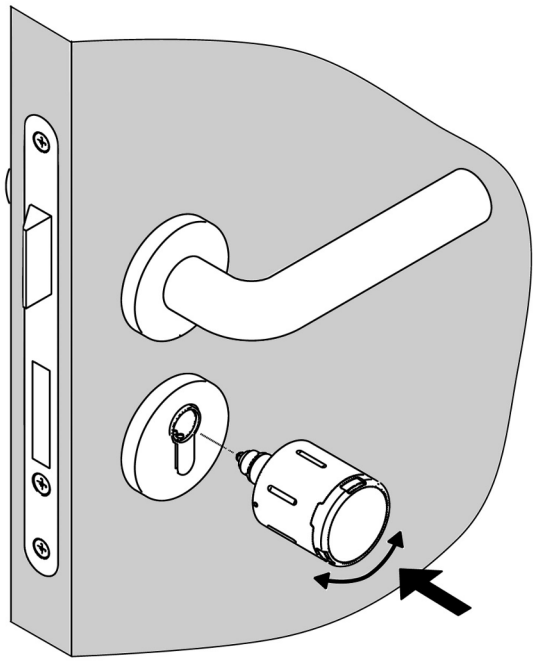
4.2 Assembly

- Remove the fixing screw of the cylinder existing and dismantle the present cylinder.
- Push in the cylinder body and fasten with fixing screw. Tighten the fixing screw by hand, do not use a battery-operated screwdriver with a high torque.



The cylinder body must not project outside its enclosing fitting by more than 1 to 3 mm, but it should also not be installed sunk in the upholstery.

The electronic knob is mounted into the cylinder casing by inserting and turning at the same time.



Make sure that the knob cylinder operates easily and smoothly with the door open.

5 Operation

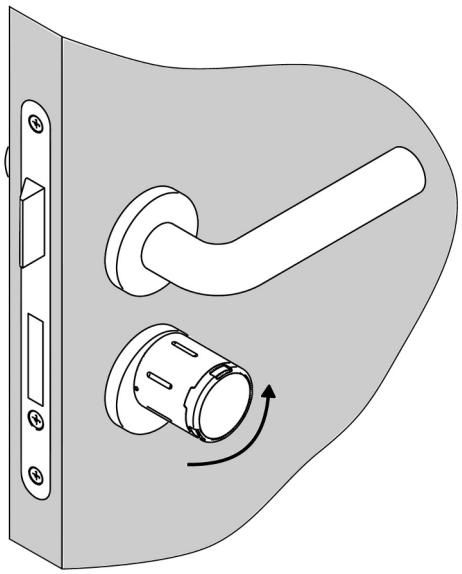
5.1 Automatic wake up

The knob module 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 knob module 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 knob module has to be woken up manually.

- Turn the knob module few times to wake up the reading unit, until an LED starts glowing.
- Hold up an authorized key in front of the reading unit only after this.

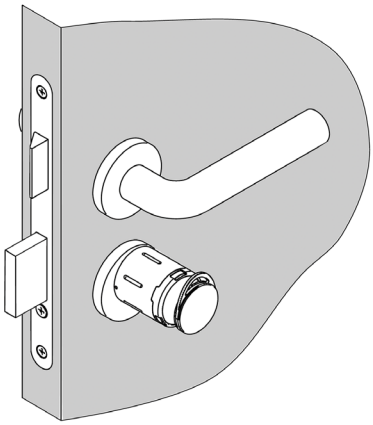


The automatic activation is reactivated when an authorized key is scanned.

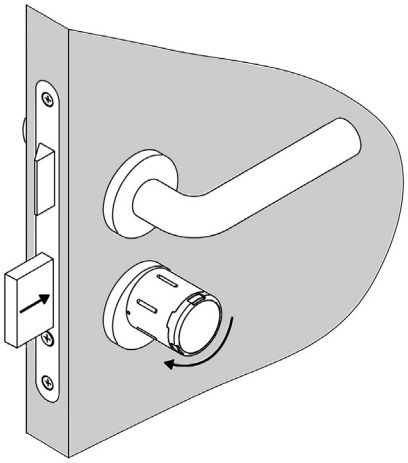
In addition, the wake up sensitivity (that is the number of times the knob module needs to be turned to wake up the reading unit) can be set.

5.2 Opening the door

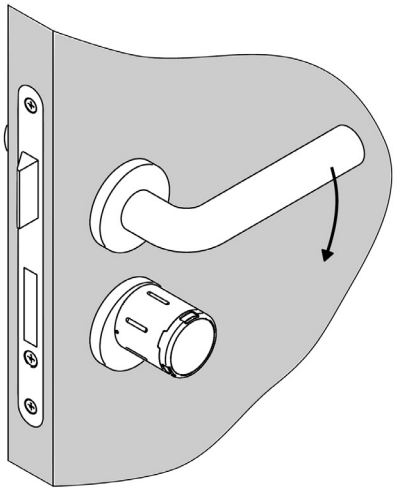
- Hold the authorized key in front of the reading unit until the green LED starts glowing.



- Rotate the knob module in the direction counter to the locking direction until it stops.



- The door can now be opened with the door handle.



5.3 Toggling the knob module (permanently engage lock)

- Hold the key with toggle authorization for two cycles in front of the reading unit.

Depending on the initial state, the knob module either engages or disengages permanently.

Supported from 2N Access Commander version 3.7 and higher.

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

6 Cleaning and maintenance

6.1 Cleaning

- Clean the knob module only with a commercially available household cleaning agent and a damp cloth.
- 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.

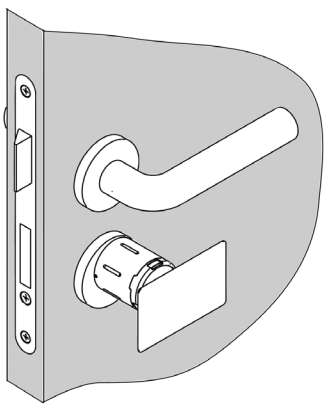
6.2.2 Replacing the battery

> ! 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.

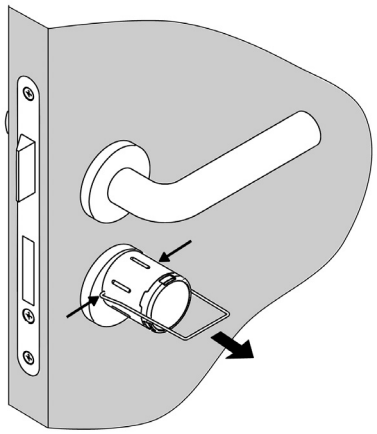
> ¡ Change the battery only with the door open. As long as the battery is removed, the knob module cannot engage and thus cannot open the door.

Battery change in battery phases 0, 1, 2

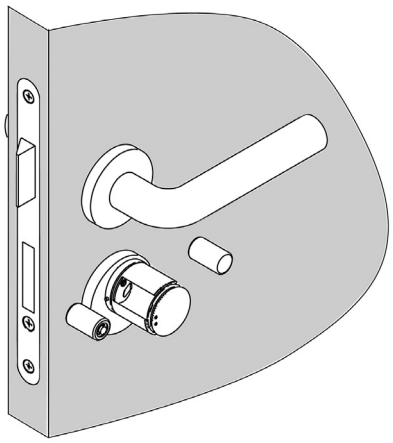
Hold the battery change card in front of the knob module – the knob module enters the battery change position. Before this step, it may be necessary to ‘wake up’ the knob module by turning it.



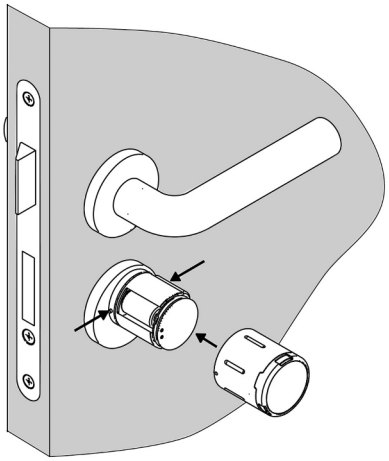
Press in the now unlocked sleeve-locking pin of the knob module with the Battery change tool and simultaneously pull out the sleeve.



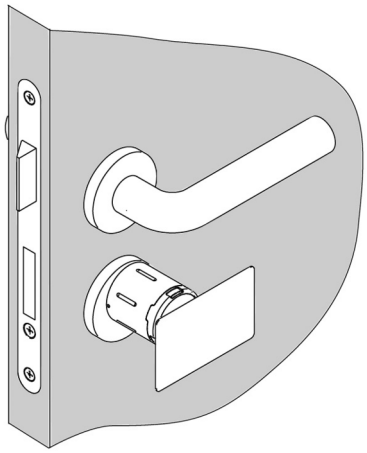
Remove empty batteries and insert the new batteries, paying attention to the polarity.



Press locking pins and again slide on the knob module sleeve. Ensure that the locking pin latches correctly in the sleeve.



After the battery change, the knob module is still in the battery change position. By repeating the step 1 or by presenting an authorized key, the knob module returns to the home position.



Check the knob module time, using a suitable service program (please ask your dealer or integration partner)

Battery Change in Battery Phase 3

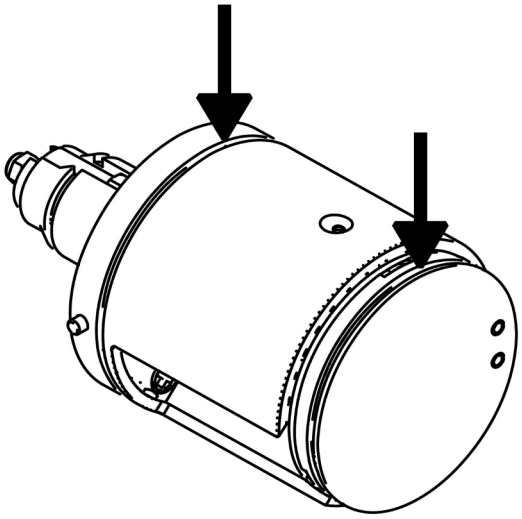
Perform the battery change as described in chapter 6.2.1, beginning with step 2.

6.2.3 Replacing the sealing ring

> **!** Damage to the 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.

Prerequisite: knob sleeve is removed (see chapter 6.2.1 Replacing the battery)

If the knob sleeve is open, both sealing rings are visible. The smaller one is on the side away from the door.



To remove the sealing rings, hold the respective sealing ring on one side with the thumb, while pushing on the opposite side with the fingernail of the middle finger. The sealing ring can now be grasped by the index finger.

In the case of the Oudoor version (IP66), there is only one sealing ring on the side facing the door.

7 Faults during operation

7.1 Fault indications

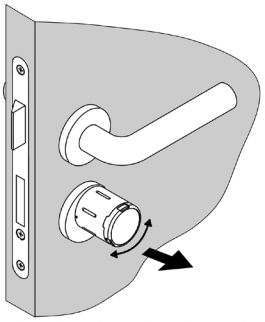
Function	Audible signal	Explanation
Memory fault / configuration fault	▬▬▬▬▬•	5 long beeps, 1 short beep
Coupling error	▬▬▬▬▬••	5 long beeps, 2 short beeps
RTC fault (clock)	▬▬▬▬▬•••	5 long beeps, 3 short beeps
Internal error (unhandled interrupt)	▬▬▬▬▬••••	5 long beeps, 4 short beeps
Internal error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

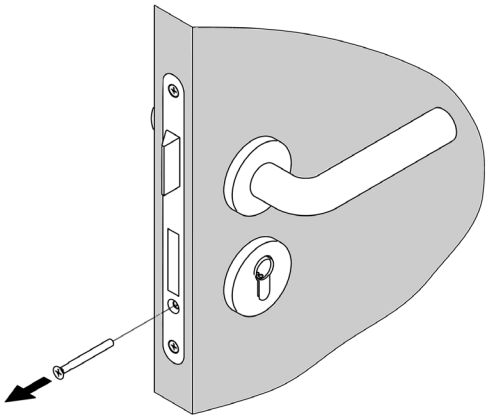
8 Disassembly and Disposal

8.1 Disassembly

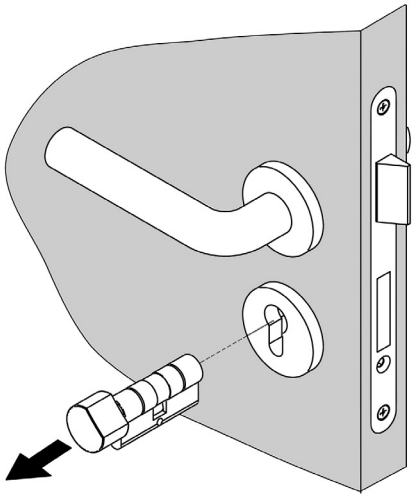
- Bring the knob module into the disassembly position by presenting the disassembly card or using a suitable software tool. (Please ask your dealer or integrator).
- Turn the knob module by lightly pulling it until it can be removed from the cylinder. Disassembly is only possible in one position.



- Remove the fixing screw.



- Remove the cylinder body and mechanical knob from the lock.



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.